

Stock Option Compensation and Managerial Turnover

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Abstract

This study examines the association between managerial turnover and equity-based compensation. I investigate whether stock options act to bond executives to their firms and whether retention of managers is a motivation of companies in designing CEO incentive contracts. The results show that stock options do negatively influence the probability of a CEO leaving the company. The monetary cost of losing the value of equity-based compensation package keeps the manager with his company. I also find that in deciding upon a CEO's compensation scheme, firms take into account the probability of a CEO resigning from the company in the next period and award more stock options to reduce the threat of turnover. In general, the results show that stock options have an important role in managers' retention by testing economic explanations for observed behavior.

Keywords: *managerial retention, executive compensation, stock options, turnover, ownership*

JEL classification: J63, R53

Introduction

Stock options as part of executive compensation have increased dramatically over the last few years. One frequently mentioned reason for awarding stock options to managers (other than aligning managerial incentives with those of shareholders) is that options can be used as a device to retain valuable CEOs. Because options granted to CEOs have a typical three- or four-year vesting period, they can reduce voluntary executive turnover by increasing the cost to the CEO of leaving the firm. The monetary cost to the CEO of leaving a firm includes both the lost value of the unvested portion of stock options and the lost value of vested stock that may have increased over time. The last component represents the time value of unexercised options that accounts for the probability of increase in the share price. On the other side, the decision of awarding stock options belongs to the company's board of directors. Their intentions regarding the manager of the

firm are reflected in the way of compensating the CEO so that he will stay with the firm and take actions according to the shareholders' interests. Executive retention is important to the firm because of the cost of replacing a valuable CEO. Therefore, the decision of awarding stock options reflects the possibility of potential turnover.

In this study I look at the relationship between executive stock option compensation and anticipated turnover. The "anticipated turnover" term is used since a firm's decision of awarding or not awarding stock options at time t is based on the probability that the CEO will leave the company in period $t+1$. The hypothesis is that the adoption of option-based compensation increases as the probability of CEO's turnover increases. To test this hypothesis, I examine all managerial departures in a sample of 7550 publicly traded firms between 1995 and 2005. To analyze the relationship between stock option plans and turnover, I estimate a system of two equations, using an instrumental variable approach to estimate anticipated turnover and stock option compensation. The first equation is estimated as a negative binomial model (probit model) of voluntary executive turnover. In line with the previous literature, the results show a negative relationship between executive turnover and unexercised options, time value of options and restricted stock. I also control for other determinants of turnover, such as ownership, firm's size, firm's performance, age, tenure and industry. In the second equation, stock option compensation is regressed on the predicted value of turnover from the first equation. In this estimation, I control for various firm characteristics including volatility of the firm and industry, performance, size, age, cost of debt, and liquidity constraint. I find that the adoption of stock options is positively related to anticipated turnover.

The findings of this study are highly relevant for the current economic policy in the United States. To limit excessive corporate executive payment, the Obama administration is imposing a cap of \$500 000 on total compensation of CEOs of companies receiving government assistance. The executives at these firms might be tempted to seek other positions at smaller firms that have not received government funds and are willing to pay more than \$500,000 in salary for a valuable manager. In this perspective, we expect to see the executive turnover rate increase. However, the new rules do not include specific limits on the amount of stock options awarded. This so-called "loophole" in the bailout program may allow companies to increase the number of options awarded to keep their CEOs and avoid the turnover costs. While restricted on when they can be redeemed, stock options will be important instruments in managerial retention.

Literature Review

Because of the influential role played by the top corporate managers, there is a great deal of interest surrounding executive turnover. Much of the literature on the determinants of the top management turnover focuses on different aspects of management changes in relation with firm's performance and compensation contracts.

Huson et al. (2004) finds that the firm performance relative to other firms decline prior to the CEO turnover and improve thereafter. Coughlan and Schmidt (1985) also document that CEO turnover is seven times higher for firms in the lowest percentile compared with the highest percentile. Other studies focus on the problem of employee retention in firms that experience financial constraints. Gonzales and Gurtoviy (2006) develop a theoretical model of bargaining over deferred compensation. They find that the use of stock options as a retention device is valuable when firms try to avert bankruptcy. Overall, top management turnover rate and sensitivity of turnover to performance and incentives significantly increased since 1930 (Hadlock and Lumer, 1997) and incentive compensation grew over the past half-century.

There is a smaller body of research on the effectiveness of incentive compensation on executive turnover, and the evidence of that research is mixed. Mehran and Yermack (1999), using 452 U.S. companies between 1984 and 1991, argued that the compensation policy plays a key role in retaining the top managers. The evidence presented by them shows that stock options, the most common type of stock-based pay, has a negative effect on the probability of turnover. Similarly, Balsam and Miharjo (2007) concluded that equity-based compensation, in terms of stock and options, can provide incentive for the manager to stay with the current employer. Using a unique dataset supplied by a Fortune 100 company, Balsam et al. (2007) provided evidence that voluntary turnover is reduced during the period in which stock options cannot be exercised, the vesting period. In contrast to these results, Hasenhuttl and Harrison (2002) find no evidence that stock options negatively affect the likelihood of turnover. However, they restrict their sample only to the executives who take positions with other large corporations. Similarly, Fee and Hadlock (2003) find that options and restricted stock play an insignificant role for CEO's retention. Yet, the data in their study covers only one year, 1995.

Data collection and construction of the sample

To estimate the relationship between stock options and managerial turnover, I study CEOs in a panel of 1314 U.S. industrial companies between 1995 and 2005 using executive compensation data from Standard and Poor's ExecuComp database, stock price information from Industrial Compustat and news searches on Factiva, Lexis-Nexis and the Wall Street Journal.

My primary data source, ExecuComp, is a comprehensive data set that contains information about compensation, stock options, firm performance and other characteristics for the five highest paid executives and their companies. The Compustat database is one of the most extensive databases of financial data available. It provides monthly, quarterly and annual information for earnings, cash flow, ratios, balance sheets, income statements, and stock on over 10000 firms dating back to the 1950s. The information on CEO's turnover was supplemented by news from Factiva, Lexis-Nexis and the Wall Street Journal, which contain

full-text publications and articles covering information on industries, public and private companies, business and management topics and historical news.

I identify as potential turnover instances where the executive is listed in ExecuComp database in one year but he is absent in the following year. For these executive departures, more information about the reasons of leaving is taken from Factiva, Lexis-Nexis and Wall Street Journal databases. Initially 1086 instances were classified as potential turnovers. From these managerial departures, 192 turnover events were dropped, since the executives were fired as suggested as reasons in the databases listed above. Sixty-four more turnover events were excluded from the sample due to the incomplete data on the firm's volatility, cash liquidity and financial debt. The final sample contains 7550 executive-year observations from 1995 to 2005, among which I identify 830 instances of executive turnover. The definition of all variables is given in Table 1.

The empirical model

In deciding the stock option offer in managerial compensation, firms consider the probability that the manager will resign and leave the company. Empirically, we can examine this motive by estimating the effect of anticipated executive turnover on the board's decision to award stock options.

A manager considers the monetary cost when deciding whether to leave a job. The monetary cost of leaving includes the value of unexercisable options, both the intrinsic value and the time value and the value of restricted stock shares that will be forfeited if the CEO is leaving the company. To estimate the value of restricted stock forfeited I use the fair value of those shares as provided by the ExecuComp database at the end of the prior year, deflated by the total compensation. I expect the value of restricted stock (RST) to be inversely related to turnover. With respect to the value of options that have not vested we should differentiate between the intrinsic value and the time value of stock options. The value of an option is composed of two components, intrinsic value and the time value. The intrinsic value represents the excess of the market price over the exercise price of an option at some point in time. If leaving the firm, the CEO loses the intrinsic value of unexercisable options or, in other words, the value of the options held if these options were vested before his departure. I expect the intrinsic value at the end of the prior year deflated by the total compensation (UNEXERC_OPT) to negatively influence a manager's decision to leave. The time value of an option (TIME_VALUE), depends upon the probability that the share price will increase prior to the time the option expires. Therefore, besides the loss the CEO suffers because of the impossibility of cashing his unvested options, he also forgoes the time value component of unexercisable options that could have increased his wealth.

I investigate the relationship between stock option plans and turnover (TURNOV) in a system of two equations, using an instrumental variable approach with the anticipated turnover being estimated in the first stage. I estimate an

instrumental variable probit model in which the dependent variable of the main equation (OPTION_BI), representing the firms' decision of awarding options to its CEO, is dichotomous.

The model is represented by the following two equations:

$$TURNOV_{t,t+1} = \alpha_1 + \beta_1 UNEXERC_OPT_t + \gamma_1 TIME_VALUE_t + \delta_1 RST_t + \theta_1 OVERPAID_t + \mu_1 OWNERSHIP_t + \pi_1 SIZE_t + \eta_1 ROA_t + v_1 AGE_t + \psi_1 AGESQ_t + \omega_1 RETIRE_t + \zeta_1 TENURE_t + \varsigma_1 HIGHTECH_t + \varepsilon_1;$$

$$OPTION_BI_t = \alpha_2 + \beta_2 TURNOV_{t,t+1} + \gamma_2 VOLA_{t-1} + \delta_2 VOLA_IND_{t-1} + \theta_2 DEBT_{t-1} + \mu_2 CASH_{t-1} + \pi_2 SIZE_{t-1} + v_2 AGE_{t-1} + \psi_2 AGESQ_{t-1} + \omega_2 MTB_{t-1} + \chi_2 CHAIR_{t-1} + \tau_2 POLICY_{t-1} + \varepsilon_2;$$

Because turnover variable ($TURNOV_{t,t+1}$) is endogenous with the firm's options decision (OPTION_BI), it is estimated in the first equation of the model. All of the independent variables in the first equation are identifying variables for the variable TURNOV. They influence the CEO's decision of leaving but not firms' decision of awarding options. Therefore, the relevance and exogeneity criteria for considering them as instruments are met.

These are four main hypotheses for this model:

H1: Unexercisable options (UNEXERC_OPT) has a negative effect on probability of CEO predicted turnover (TURNOV), that is, $\beta_1 < 0$.

H2: Time value (TIME_VALUE) has a negative effect on CEO anticipated turnover (TURNOV), that is, $\gamma_1 < 0$.

H3: Restricted stock (RST) has a negative impact on the CEO's anticipated turnover (TURNOV), that is $\delta_1 < 0$.

H4: Anticipated turnover (TURNOV) has a positive effect on the probability of having stock options as part of compensation package (OPTION BI), that is $\beta_2 > 0$.

In relation with executive turnover, I again control for other factors that influence the CEO's decision.

The OVERPAID variable represents the amount the executive is overpaid or underpaid relative to his counterpart. The higher the manager is paid relative to his opportunity cost, the less likely he will quit his job. Therefore, I hypothesize that OVERPAID is negatively related to the turnover. This is in line with the prediction of Balsam and Miharjo's (2007) model.

The OWNERSHIP variable represents the percentage of the firm's equity that is held by the CEO. CEOs are less likely to lose their jobs if they own large amounts of stock. Therefore, I expect a negative relationship between a CEO's stock ownership and the probability of turnover. The previous literature documents a negative effect of the CEO's stock ownership on turnover (Mehran and Yermack, 1999).

The firm's size also influences the likelihood of executive turnover. Managers running larger firms may be more easily able to find alternative employment opportunities than managers at smaller firms. Supported by findings in previous studies (Fee and Hadlock, 2003), a positive relation is expected between firm size and turnover.

Return on assets (ROA) is a proxy for the firm's performance. This measure is correlated with the CEO's morale and satisfaction. Better performing firms have better future prospects and this motivates the manager to stay with the firm. Higher employee morale is likely to be associated with a lower turnover level (Balsam and Miharjo, 2007).

The AGE and AGESQ variables capture the effect of an executive's age on the probability of turnover. I expect that, closer to the beginning and the end of their careers; managers are more likely to quit positions. AGESQ is included to represent any nonlinearity in the relationship between AGE and turnover. CEOs usually retire after age 63. To represent the impact of retirement on the likelihood of turnover, I use the variable RETIRE, a dummy variable with the value one if the manager's age is over 63. I expect a positive relationship between RETIRE and the likelihood of turnover.

I also include in the model CEO tenure, as the executive may become more entrenched over time. I expect TENURE to be inversely related to turnover, as documented in the prior literature (Subramanian et al., 2007).

Finally, HIGHTECH indicates if the company operates in a high-technology industry. In line with prior studies (Henderson et al., 2006), I expect turnover to be greater for firms operating in dynamic industries.

With respect to the second equation, several other factors are controlled in relation with the decision of awarding options. Volatility of the firm (VOLA) is expected to be positively related to the probability of compensating the manager with stock options. Firms that are more risk-intensive are more likely to award their CEOs with stock options in order to insure that the risk-averse managers undertake risky projects needed for the well being of the companies.

Industry volatility (VOLA IND) has a positive effect on the likelihood of awarding stock options to the managers. When the operating environment is more volatile, firms do not want to insulate their managers from the market-wide conditions and therefore more stock options are used to compensate them.

Financial leverage (DEBT) influences the boards' decision of awarding equity-based compensation. Firms with a higher cost of debt are less likely to award stock options to minimize the costs associated with them since the debt holders might ask for higher risk premium for continuing supplying the capital (Năstăsescu, 2009). Therefore, a negative relationship between the financial debt and the decision of awarding options is expected.

I also control for firm's liquidity constraint (CASH) that accounts for cash availability of the company. I expect a negative relation with stock options decision, implying that firms more constrained are less likely to award equity-based compensation to their CEOs.

As the firm becomes larger, the possibility of agency conflicts increases because the managers manage more assets. The need for more incentive compensation leads larger firms to award more options to managers therefore SIZE should be positively related to stock options.

The age of the CEO (AGE) is expected to be positively related to stock option compensation. To control for nonlinearity in this relationship, AGESQ is also included. Previous studies use similar nonlinear specifications of the relationship between age and stock options (Balsam and Miharjo, 2007) and find the CEOs are less likely to hold stock options when they are young and when they are close to retirement age. This suggests a concave relationship between age and stock options.

Market-to-book value of assets (MTB) represents firm's investment opportunities and it is expected to have a positive effect on the decision of awarding stock options. Firms with numerous investment opportunities are more likely to have asymmetric information problems. Consequently, such firms rely on incentive compensation, such as stock options, to align the actions of managers with the interests of shareholders.

The CEO-chair duality allows for the possibility that the CEO is also the chair of the board. Because the CEO's interests are almost aligned with those of the shareholders, stock options play a less important role in the manager's compensation scheme. However, if the CEO is also the chair, he may exert some influence over the board of directors to include stock options as part of his compensation. The conflicting effects just described indicate that the net effect on stock option awards is not predicted by economic theory. Therefore, the sign of the coefficient for the variable CHAIR is ambiguous.

POLICY is a dummy variable that refers to the recent Financial Accounting Standard Board 123 rule regarding the accounting treatment of options. While the previous regulation, APB Opinion 25, did not require stock options to be recorded in the financial statement of the firm, the implementation of this new policy requires stock options to be treated as compensation cost. This new Security Exchange Commission regulation makes the award of stock options less attractive to firms. Therefore, I expect to observe a negative relationship between POLICY and the award of stock options.

Results

Table 2 presents the IV probit coefficient estimates of the CEO turnover model. Because anticipated turnover is a determinant of stock option awards in the second equation of the system, the possibility of endogeneity between turnover and stock option awards arises. To check for the presence of endogeneity, I perform a test of exogeneity for probit analysis proposed by Smith and Blundell (1986). The null hypothesis of exogeneity is rejected at the 1% significance level, indicating that an instrumental variable procedure should be used to estimate both equation models.

Consistent with the hypothesis H1, I find the coefficient on unexercisable in-the-money options (UNEXERC_OPT) to be negative and significant at 5% significance level, showing that the value of the equity that a CEO must forfeit if he leaves the firm counts in his decision of quitting. The greater the value of the options that have not vested, the bigger the monetary loss he suffer, and the less likely the CEO are to resign.

Regarding hypothesis H2, I find a negative relation (significant at 1% level) between the time value of the option portfolio (TIME_VALUE) and the likelihood of turnover. The negative coefficient on the time_value component shows that the CEO is aware of the value that he might forego if he leaves the company and therefore, the greater this value is, the smaller the probability that he departs from the office.

In hypothesis H3, I posit that restricted stock (RST) will be negatively related to turnover. This is supported by the negative sign for RST (significant at 1% level) in Table 2.

The variable that takes into account the CEO compensation relative to his opportunity cost (OVERPAID) has a negative effect on the probability of turnover although it is insignificant. A CEO who is compensated more compared to other managers in the same industry has less incentive to leave the position. On the other side, a high CEO compensation reflects his value not only to the firm he leads but also to the other firms into the market looking for skilled managers to hire. Therefore, a highly paid executive has a high market value and consequently more opportunities to leave for another company that might offer a better compensation package. These opposing influences may explain the insignificant effect of this variable on turnover.

As expected, the OWNERSHIP variable that reflects how entrenched the CEO is in the firm has a negative significant effect on the probability of turnover. The manager has a smaller incentive to leave the company the larger the portion of its equity he owns.

The coefficient on firm size, measured as log of sales, is positive and significant at 1% level. This suggests that the executives of large firms are more highly desired in the labor market, perhaps because a high-level position in a big firm is a relatively more credible signal of managerial quality. Thus, these managers are able to find alternative employment more easily than executives running smaller firms.

Firm performance, represented by return on assets (ROA), is expected to be inversely related to turnover because we expect that the better returns and better prospects of the firm should induce the manager to stay with the firm. Although this variable has a negative association with the CEO turnover, the coefficient estimate is not statistically significant.

Three regressors capture the effects of the CEO's age on the probability of turnover. All of them are significant below 1% significance level and display the expected signs. The estimated coefficients of $-.11$ (SE=.03) on AGE and $.001$ (SE=.0002) on AGESQ imply that the probability of departure falls with age for

AGE less than 43 and rises with age beyond that. The convex relation between turnover and age suggests that the probability that the CEO resigns from the company is highest for the youngest and oldest executives. For example, a younger executive, at the beginning of his career, may be more willing to forfeit the unvested equity compensation and jump to another company since he has more years to recover the amounts lost. At the opposite pole, older executives approaching retirement are more likely to quit than the average executive. For many CEOs, 63 is viewed as the “normal” retirement age and they are expected to step down from the position once they are around this age. This is captured by the variable RETIRE, which has a significant coefficient showing the positive relation between retirement age and CEO turnover.

Consistent with the CEO entrenchment hypothesis, the coefficient on CEO tenure is negative and significant at 1% level.

I find HIGHTECH to be positively and significantly related to turnover showing that executives are more likely to leave from more volatile high-technology firms.

The estimated signs and coefficients from the main equation of the system are consistent with the predictions from the theoretical model. The most important issue addressed in this paper is the positive effect of predicted turnover on the probability of receiving option awards, predicted in hypothesis H4. Regressing the binary variable OPTION_BI on the predicted value of turnover from the structural equation results in a positive coefficient with a statistical significance below 1%. This indicates that an increase in the probability that the CEO leaves the company in the next period will induce an increase in the probability of him receiving stock option in the year previous to his anticipated departure.

The positive coefficient on the average industry volatility (VOLA_IND), significant at 1% level, shows an interesting result regarding the CEO relative performance evaluation (RPE). An often-debated question among the researchers is whether executives' payments should be measured on relative rather than absolute performance. That is, to the extent that some shocks affect all the firms in an industry regardless of the actions of individual executives, firms might find it profitable to filter this common shock out of their managers' compensation. However, in most of the cases, because stock options or other equity-based compensation do not adjust for the industry-wide shocks, the market-wide effects are not filtered out. The result obtained here could be an explanation for this situation. It shows that, from a retention point of view, it might be better for the firms to reward the CEO for industry-level performance rather than firm-level performance. This is because, given that his opportunities are correlated with the industry, the CEO who is paid on the basis of relative performance is more likely to leave for another firm offering a more attractive compensation package. The positive coefficient on the industry volatility shown in this analysis shows that firms award more stock options in response to greater industry shocks and one reason is their interest in keeping their CEOs. Turning to the other determinants of

stock options, we see that they also display the expected signs. As expected, financial debt (DEBT) is negatively related to stock option awards.

With respect to the cash constraint variable (CASH), I find a negative although insignificant relationship to the probability of awarding options. The negative sign suggests that it is more likely for cash-constrained firms to offer stock options plans to their CEOs as a substitute for salary. However, we cannot prevent healthy financial firms from offering stock options to their executives. The inclusion of these less cash-constrained companies in the sample might explain the lack of significance for this relationship.

The firm's size (SIZE) is positively related to the probability of having stock option plans. Larger firms have more complex operations and need managers with more experience. These managers, known for their managerial skills, have better outside opportunities. Therefore, the shareholders might find it cost-effective to award them with more options to avoid the costs of recruiting another manager if the current CEO decides to "jump ship."

Market-to-book value of assets (MTB), a proxy for the firm's investment opportunities, has the expected positive coefficient. This finding indicates that growth-firms use equity-based compensation to encourage managers to maximize shareholder value. Although the coefficient displays the expected sign, it is statistically insignificant.

Being the chair of the board also has an impact on the probability of receiving stock options. The variable CHAIR has a positive significant effect on the likelihood of having options as part of the CEO's compensation. Although, according to the incentive alignment hypothesis, less options are needed to keep the shareholders' and CEO's interests aligned, it is also likely that, as chair of the board, the executive will exert sufficient influence to ensure that a significant part of his compensation is tied to the firm's performance in an equity plan. These two opposite influences may explain the lack of significance of this variable on stock option awards.

The dichotomous variable POLICY reflects the two regimes, before and after the introduction of Security Exchange Commission policy 123R regarding the accounting treatment of the options. The coefficient on this variable is negative and significant at 10% level, suggesting that the implementation of the policy discouraged firms from awarding stock options.

A significant positive coefficient on AGE and negative coefficient on AGESQ suggest that the probability of an option award is a concave function of age. Other things equal, the estimates imply that managers hold the lowest amount of options when they are young or beginning their career and also when they are approaching retirement age. Most importantly, the higher probability of an option award at mid-career (age 47) increases the probability of retention.

Conclusions and policy implications

Executive retention is an important issue in human resources management. This leads many companies to use compensation practices to provide incentives for the key managers to stay with their firms. Most often, due to their favorable characteristics, stock options contracts are used to fulfill this goal.

In this study I focus on the estimated or anticipated turnover prior to the decision of option compensation. I test whether the threat of managerial turnover faced by a firm affects its decision to award stock options held by its executive. I estimate an empirical model of executive turnover and test whether the predicted turnover is a factor in firms' consideration of awarding stock options. In this model, anticipated turnover is endogenously determined in that the CEOs previously consider the monetary cost of leaving the company. The likelihood of turnover is estimated in the first stage of the instrumental variable approach. The results show that the probability of turnover is smaller when the monetary loss is greater. An increase in the probability of turnover induces an increase in the probability of the executive receiving stock options in the year previous to his predicted turnover. Also, to retain the manager, the firm will award more stock as part of the CEO's compensation package if the executive is more likely to leave the firm.

These findings have practical implications for companies and option plan designers. To provide their valuable CEOs sufficient incentive to stay with the firm, the companies offer their executives a significant portion of their wealth in stock options and restricted stock. However, the recent SFAS 123R policy regarding the accounting treatment of options will induce companies to look for ways of avoiding the expense of options in their income statements. Reducing the number of options awarded will decrease this cost but it also lowers the manager's connection with the firm. Compensation consultants can use this information and propose extensions of the vesting periods of stock options or contracts' length. Also, instead of awarding a single or few grants containing of a large number of underlying stocks, the firms could make more frequent grants of the same or fewer underlying stocks. This can insure that the CEO always has unvested options that would be forfeited if he decides to leave the company. Increasing the number of restricted stock shares could also be a way to help the companies with the retention of their executives at a lower cost.

If SFAS 123R policy prevents companies from awarding more options, the current events in the U.S. financial market may have an opposite effect. The ongoing financial crisis and recession have brought changes in executive pay in the United States. In the recent Troubled Asset Relief Program (TARP), managerial compensation is limited to an annual \$500,000 for the most senior executives at the companies that receive "exceptional financial recovery assistance" from the government. However, the new rules are elusive about long-term incentive compensation. They do not cap the amount of stock options awarded, but restrict the time when stock incentives can be exercised. "If these executives receive any

additional compensation, it will come in the form of stock that can't be paid up until taxpayers are paid back for their assistance," said President Barack Obama. With this drastic compensation cap, many executives from large TARP companies are now looking for other job opportunities. As reported by The Wall Street Journal¹, CEOs "are sending out resumes and making calls to smaller investment banks (often called 'boutiques' because of their smaller size) and European banks that haven't taken government money, such as Credit Suisse Group AG and Deutsche Bank AG." In another news article available on MSNBC.com², an executive mentions that "...managers at TARP companies will have incentives to move to their more healthy rival banks, or out to hedge funds or private equity where government restrictions are not an issue. Or, they may just stop working so hard."

However, the turnover rate may not necessarily increase if the companies' boards of directors decide to award the top executives with more stock options to compensate for the salary cut. This scenario is plausible because, according to the Conference Board's Top Executive Compensation report for fiscal year 2007, 99.9% of the CEOs total compensation was in stock and stock option holdings. On the other side, it is also possible that the managers will not be convinced to stay due to greater stock awards. In a slowing economy with weakening corporate performance, in most cases the companies' stock values are significantly down and the CEOs are under pressure from the shareholders to improve performance. These realities together with the restrictions imposed by TARP on the exercising time of stock and options may make executives reluctant to stay with their current firms. The effects of the TARP policy on executive compensation schemes and the subsequent changes in managers' actions present future issues for investigation.

Although the executive retention through stock options compensation plans still remains a subject for future research, the effect of these financial instruments on both the managers' and the companies' behavior is unquestionable and entirely deserving of their name as "golden handcuffs."

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Description of the variables

Table 1

Variable	Description
UNEXERC OPT	Intrinsic value of unexercisable of option divided by total compensation
TIME VALUE	Time value of stock option divided by total compensation
RST	Restricted stock fair value divided by total compensation
OVERPAID	Total cash compensation received by the executive minus the average earned by an executive in the same year and two digit SIC code; this is divided by total compensation
OWNERSHIP	Percentage of firm's equity held by the CEO
SIZE	Log (total sales)
ROA	Return on assets
AGE	CEO's age
AGESQ	Square of CEO's age
RETIRE	Dummy for retirement age; equals 1 if CEO's age is greater than 63
TENURE	CEO tenure-time since the CEO held the position
HIGHTECH	Dummy for high-technology industry; equals 1 if the firm operates under two-digit SIC codes 35, 36, 38, 48 or 73
TURNOV	Dummy for turnover; equals 1 if a CEO holds his position in year t but resigns in year t+1
VOLA	Monthly firm stock volatility
VOLA IND	Standard deviation of the monthly average return in the same two-digit code industry
SIC	code industry
DEBT	Agency cost of debt, computed as ratio of book value of long-term debt divided by the market value of equity
CASH	Liquidity constraint, computed as net cash flow divided by the market value of the firm
MTB	Market-to-book ratio
CHAIR	Dummy for CEO-CHAIR duality; equals 1 if the CEO is also chair of the board
POLICY	Dummy for Policy 123R; equals 1 if it is implemented (for year 2005)

Coefficient estimates from an IV probit model

Table 2

	Predicted sign	Coefficient	Standard error	p-value
Dependent variable: <i>TURNOV</i>				
Instruments				
<i>UNEXERC OPT_t</i>	-	-0.0044	0.0019	0.026**
<i>TIME VALU E_t</i>	-	-0.0047	0.0019	0.012***
<i>RST_t</i>	-	-0.0429	0.0128	0.001***
<i>OVERPAID_t</i>	-	-0.0129	0.0114	0.2590
<i>OWNERSHIP_t</i>	-	-0.0369	0.0045	0.000***
<i>SIZ E_t</i>	+	0.0211	0.0134	0.116*
<i>ROA_t</i>	-	-0.0005	0.0006	0.4180
<i>AGE_t</i>	-	-0.1254	0.0303	0.000***
<i>AGESQ_t</i>	+	0.0014	0.0003	0.000***
<i>RETI RE_t</i>	+	0.2618	0.0676	0.000***
<i>TEN URE_t</i>	-	-0.0092	0.0025	0.000***
<i>HIGHTECH_t</i>	+	0.0995	0.0409	0.015**
<i>INTERCEPT</i>		0.8285	0.9026	0.3590
Dependent variable: <i>OPTION BI</i>				
Independent variables				
<i>TURN OV_{t,t+1} (predicted)</i>	+	1.164	0.0603	0.000***
<i>VOLA_{t-1}</i>	+	-0.254	0.1792	0.1560
<i>VOLA IN D_{t-1}</i>	+	0.8353	0.7757	0.000***
<i>DEBT_{t-1}</i>	-	-0.0272	0.0105	0.009***
<i>CASH_{t-1}</i>	-	-0.0735	0.0529	0.1650
<i>SIZ E_{t-1}</i>	+	0.0501	0.0105	0.000***
<i>AGE_{t-1}</i>	+	0.1700	0.0221	0.000***
<i>AGESQ_{t-1}</i>	-	-0.0017	0.0001	0.000***
<i>MTB_{t-1}</i>	+	0.0002	0.0006	0.7150
<i>CHAI R_{t-1}</i>	+/-	0.0502	0.0285	0.079*
<i>POLICY_{t-1}</i>	-	-0.1273	0.0684	0.063*
<i>INTERCEPT</i>		-4.0943	0.6314	0.000***
Number of observations:	7550			
Log likelihood	-5939			
<i>Model significance :</i>				
Wald χ^2 (d.f.)	527 (21)			
p-value	0.000			
<i>Smith-Blundell test of exogeneity :</i>				
χ^2 (d.f.)	27.37 (1)			
p-value	0.000			

***Significant at the 0.01 level

**Significant at the 0.05 level

*Significant at the 0.1 level