

IPO Pricing and Executive Compensation

Ehsan Nikbakht^a, Manuchehr Shahrokhi^b, Robert Martin, Jr.^c

^a *Professor of Finance, Zarb School of Business, Hofstra University
Hempstead, NY 11549*

finezn@hofstra.edu

^b *Craig Fellow Professor of Finance, California State University-Fresno*

mshahrok@csufresno.edu

^c *CPA, Robert Martin and Associates, Long Island, NY*

robert.martin@gs.com

ABSTRACT

This paper empirically investigates whether executive compensation has any impact on the IPO pricing. Corporate governance issues including the CEO's compensation are critical to the firm at the time of the IPO as many firms establish a formal separation of ownership and control for the first time. Underwriters, financial analysts, and potential investors are involved in pricing of an IPO. Greater levels of ownership by the firm's executives and insiders decrease the underwriters' risk as the new IPO needs price support to be fully placed in the initial offering. Both of these outcomes may decrease underwriters' profits. Initial public offerings present a unique opportunity to study the value that investors assign to executive compensation, because these companies do not have a history of stock prices or publicly available financial information. As such, IPOs block out many of the market forces and media attention that affect their valuations. Through logistic regressions and multiple regressions, we show that if a CEO retains equity ownership in his/her company subsequent to its IPO, this may signal that the IPO price is undervalued based on the anticipated future performance of the company. Thus, both the underwriters and the investors may react differently to the agency implications of equity ownership. The inclusion of other variables, beyond CEO ownership and CEO salary, made the logistic regression model unstable and the coefficients inappropriate. This could be detected from lower significance and lower partial correlations for the variables not in the equation (CEO Options and CEO Bonus). As such, we conclude that the market recognizes the positive signal of the CEO ownership and the CEO salary in IPO pricing in a three-month periods. A correct classification of 85% in the logistic regression also supports the relevance of the CEO ownership and CEO salary in IPO pricing.

JEL Classification: G12; G14; G18; G24; G32; K22; M41

Keywords: IPO pricing; Market efficiency; Governance issues; Agency theory

I. INTRODUCTION

IPO pricing and executive compensation, as separate topics, are among the most widely debated issues both in academe and industry. Despite extensive research in both areas, finance literature is silent as to whether there is a connection between these two important areas. Stated otherwise, “Do investors assign value to executive compensation in pricing an IPO?” This question is the focus of our research. The purpose of our paper is to contribute to a better understanding of a possible relationship between executive compensation and IPO pricing.

According to agency theory, a company’s managers, including CEOs, will act in ways that satisfy their own self-interests. Therefore, in order to maximize shareholder wealth, it appears that aligning the interest of the CEO and other company executives with those of the shareholders would be beneficial to the company and its profitability. Since there are many types of compensation available to shareholders, it seems there is an incentive for companies to design CEO and other executive’s compensation packages that are tailored to the company’s needs. The appropriate CEO compensation package for a company may provide incentives for the CEO to work towards the same goals as shareholders and make decisions that will consider both the long-term and short-term effects to the firm.

Since companies use a variety of compensation packages, and investors form opinions about each type of compensation, it is reasonable that investors also consider CEOs’ compensation structure when determining the value of a company’s securities. For actively traded companies that have an established history of public financial information, it may be difficult to determine the value that investors assign to the CEOs’ compensation packages. However, initial public offerings (IPO) present a unique opportunity to study the value that investors assign to executive compensation, because these companies do not have a history of stock prices or publicly available financial information. As such, IPOs block out many of the market forces and media attention that affect their valuations. Additionally, when a company offers its common stock for sale to the public for the first time many experts, investment bankers and informed investors, participate in determining the value of the IPO company at that point in time. There might be a relationship between a certain type of CEO compensation and investors’ perceptions of the true value of the IPO company’s common stock. Signaling theory suggests that certain information may provide signals to investors about the future performance of a company. If a CEO retains equity ownership in his/her company subsequent to its IPO, this may be one such signal or clue about his/her belief that the IPO price is undervalued based on the anticipated future performance of his company. Thus, both the underwriters and the investors may react differently to the agency implications of equity ownership. “These differing reactions result in retention having asymmetric impacts on IPO-offer price and aftermarket price, thereby causing the degree of underpricing to change with ownership retention” (Robinson, Robinson and Peng, 2004).

In Section II, a review of literature is provided. In Section III, the statement of the problem is discussed and a hypothesis is formulated. Section IV explains the methodology utilized. Section V provides analysis of the results and conclusions followed by references in Section VI and appendices in Section VII.

II. LITERATURE REVIEW

Lowry and Murphy (2005) argue that in about one third of U.S. IPOs between 1996 and 2000, executives received stock options with an exercise price set equal to the IPO offer price (rather than a price determined by the market). Among firms with such "IPO options", 58 percent of top executives receive a net gain from underpricing, meaning the gain from IPO options exceeds the loss from pre-IPO shareholdings. If executives can influence the IPO offer price, one expects a positive relation between these IPO options and underpricing. Alternatively, executives may be able to influence the timing and terms of their stock options, and this would similarly predict a positive relation between IPO options and underpricing. However, they fail to find any evidence of such a relation. Their results run counter to the emerging literature claiming that managers blatantly take self-serving actions to improve their personal welfare at shareholder expense.

Robinson, Robinson and Peng (2004) have identified retention of stock ownership subsequent to the IPO as one of the factors affecting the IPO underpricing. Their basis for this theory dates back to the work of Jensen and Meckling (1976) who stated that if a company's managers were also owners, they would be more likely to seek wealth maximization of the company. Robinson, Robinson and Peng argue that the retention of previous equity ownership by CEOs of IPO companies acts as a signal to investors that the CEO believes in the future profitability of the company. They further argue that underwriters of the IPOs and investors assign different values to this signal information, and accordingly, the retention of equity by CEO is a potential contributing factor to the underpricing of securities that is so often seen with IPOs. They also suggest a curve-linear relationship between retention and underpricing. Their model states that the signaling that occurs from CEO retention of equity ownership subsequent to the IPO occurs as a result of CEOs expecting future increases in revenue and possibility of entrenchment leading to higher agency costs.

Loughran and Ritter (2003 and 2002) have argued that in the 1980s, the average first-day return on initial public offerings (IPOs) was 7%. The average first-day return doubled to almost 15% during 1990-1998, before jumping to 65% during the internet bubble years of 1999-2000. Part of the increase can be attributed to changes in the risk composition of the companies going public and a realignment of incentives. They attribute much of the higher underpricing during the bubble period to a changing issuer objective function. Further, they argue that in the later periods there was less focus on maximizing IPO proceeds due to both an increased emphasis on research coverage and allocations of hot IPOs to the personal brokerage accounts of issuing firm executives.

The different values of CEO retention stem from the fact that underwriters are risk averse (Field and Hanka, 2001) and prefer higher levels of retention because this will reduce the public float of securities that they may need to provide pricing support for, and, thus reduce their risks and maximize their profits. However, investors prefer higher ownership retention by the CEO only to an optimal point, beyond which entrenchment will lead to higher agency costs.

Ritter and Welch (2001) also studied the causes of IPO underpricing. They examined IPOs during the period 1980 through 2001 and found average first day returns ranging from 3.6% to 65% during this period. The 65% extreme first day returns were during the internet company era in 1999 and early 2000. The historical average

first day returns (otherwise known as underpricing) for the 21-year period was approximately 18.8%. They noted that there were several potential causes for this underpricing.

Signaling theory, for instance, suggests that investors have different information than the IPO company and its underwriters. Since investors may not be able to distinguish between high quality and low quality companies, the high quality companies must signal investors of their quality by underpricing their IPO stock. This shows that they are able to forgo the benefit of current proceeds from the IPO because they believe that they will be able to make up for the difference through a combination of future seasoned equity offerings receiving more favorable pricing, a more favorable market response to dividends, and through utilizing the current funds for projects that will add significantly to the company's value.

Benveniste and Spindt (1989), Benveniste and Wilhelm (1990), and Spatt and Srivastava (1991) show that underpricing is potentially caused by the underwriter's method of determining price. This method, book building, employs a road show whereby the underwriter presents their preliminary prospectus to sophisticated investors, who provide information about their perceived value of the IPO company's stock. The underwriter then uses this pricing information to help determine the final offer price for the stock. These parties argue that the underwriter then sets the final offer price slightly below the true value in order to compensate the sophisticated investors for sharing the pricing information that they did during the road show.

The study also considers the possibility that underpricing could be a result of the IPO company accepting lower total IPO proceeds in return for reduced costs associated with marketing the new IPO to the public. This may be done with the hope that investors will perceive the company's stock as a good value and thus they will purchase all of the shares being offered.

The effects of board of directors and other insider ownership on IPO underpricing were studied by Howton, Howton and Olson (2001). They suggest that when the board of directors receives incentives, such as stock ownership, to monitor CEO performance, there may be an impact on the level of underpricing that is seen during an IPO company's first day of stock trading. To determine this impact, they gathered data on IPO first day returns and a variety of board of director information, including considering if the company's CEO was also a board member. Their results indicated "that firms with the lowest levels of ownership by insiders on the board experience less initial day underpricing than firms with the highest levels of insider ownership" The study suggests that the reason for this negative relationship may be due to the inside owners' preference for accepting lower IPO proceeds in exchange for higher future returns. They also showed that "initial-day returns are higher for firms with outside dominated, high inside ownership boards" The importance of these results is the implication that there may be an incentive for inside owners of IPO companies to underprice their stock. Howton, Howton and Olson suggest that this may be because these companies are attempting to provide a signal of their quality to potential investors.

Engel, Gordon, and Hayes (2002) noted that before a company goes public it is more often than not dominated by a handful of inside owners, including the CEO and possible family owners. Usually, the only outside ownership is sophisticated investors such as venture capitalist. They examined the different types of performance measures

used by IPO companies, including current accounting measures, stock returns, or other objective performance measures. The study focused on three separate industries (including internet, non-internet technology, and manufacturing) to examine the effect on each. The first factor affecting CEO compensation, current accounting measures, was found to have the greatest bearing on the CEO's compensation in industries where the Company places a greater emphasis on operating results, such as manufacturing companies. This study also determined that in industries that emphasized stock returns rather than earnings, such as internet and technology companies, the CEO's compensation was based on stock returns.

Weber and Dudney (2003) have found that there is also a relationship between a company's board of directors, CEO ownership and compensation. In their study, Weber and Dudney noted that a CEO's tenure affects his level of compensation because longer tenure CEOs would be expected to earn higher salaries and other incentives than shorter tenure CEOs. Next, they examined the effect of a CEO's age and ownership of their company on their level of compensation. The study included the company's age, total assets, board size, the presence of institutional holdings, and market value of equity and board composition. They also included dummy variables if the current CEO was a founder or family member of the company's founders, and they included the dummy variable for the CEO's education level.

The results of their study show that "higher firm value is associated with higher CEO compensation and that the dual causality exists between the CEO ownership and firm value." The results also show a positive correlation between CEO age and compensation, as well as between CEO ownership and CEO compensation.

Similar to Weber and Dudney, research conducted by Coles, Williams, and Sen (2002) focused on "governance mechanisms ... including board structure, leadership structure, the structure of CEO compensation plans, and ownership structure." While this study included a variety of hypotheses pertaining to the relationships among the factors discussed above, the most relevant to our research examined the relationship between CEO compensation and performance. Their research also noted that CEO compensation can affect opinions towards accepting risk because CEOs have a very narrow interest in preserving their own wealth and retaining employment, while shareholders prefer higher risk projects, which can lead to potentially higher profits. When using the market value added (MVA) as a performance measure, the study shows that there is a negative relationship between CEO salary and company performance. They determined that the reason for the negative relationship is that MVA measure doesn't consider risk, and that once risk is considered the relationship would most likely be positive, showing that CEO pay does impact company performance.

Zhou (2001) examined the relationship between executive stock ownership and stock options to see if both of these incentives were important factors in a company's performance. His purpose was to improve on the work of Himmelberg et al (1991) which "using panel data and controlling for fixed effects"...found "no meaningful correlation between managerial ownership and performance. They conclude that previous studies fail to control for unobserved firm heterogeneity that affects both ownership and performance and hence their results, subject to inconsistent estimates, are likely to be outcomes of spurious correlations"

Zhou (2001) indicates that some of the problems with the Himmelberg et al (1999) study are related to the fact that CEO ownership usually changes slowly over

time and, thus, any changes on the performance of the company would also be long-term. Taking this into consideration, Zhou studied the effect of CEO stock and option ownership over a five-year period. The results of his study indicate that while there was a relationship between a company's use of equity based incentives like stock and option grants, this relationship was different for each CEO. Zhou also concluded that annual changes in the level of stock options held by a CEO do not appear to be related to the level of their stock ownership of their company. Based on this study, it appears that a CEO's stock options and stock ownership must be considered when estimating the effects of CEO compensation in any company performance study including the IPO underpricing.

In summary, the results of our literature review show the following: There are many theories about why underpricing occurs, but there is no evidence for one particular theory of reason to dominate. Despite extensive literature on both IPO underpricing and executive compensation, the interaction of the two has not been examined in the literature.

III. HYPOTHESIS AND JUSTIFICATION

The following is the statement of the hypothesis in this research: The effects of the structure of CEO compensation packages, including the use of cash pay, bonuses, stock, and stock option grants, contribute to investors' perceptions of an IPO company's value through signaling, which can be observed as a component of the underpricing of an IPO company's common stock.

Based on numerous studies, CEO's compensation appears to be related to the behavior that is exhibited by the CEO, such as his risk tolerance and types of corporate decisions. These behaviors, in turn, may have an impact on the performance of the firm. Since CEO compensation receives significant attention in financial media, and it has been shown to have an effect on company performance, one could assume that investors would consider the level and type of CEO compensation when determining the value of a company's common stock.

The initial offering of a company's common stock for sale to the investing public presents a unique opportunity to study the effects that certain company attributes have on the value investors assign to such stocks for several reasons. As pointed out by Engel, Gordon and Hayes (2002), "governance issues [including the CEO's compensation package] are critical to the firm at the time of the IPO as many firms establish a formal separation of ownership and control for the first time." IPOs typically receive much attention from investors.

There are also many specialists, including a syndicate of underwriters from a variety of investment banking firms that are involved in determining the value of an IPO company at a specific point in time. Additionally, an IPO is an event that separates itself from many of the other market forces that affect the value of traded stocks on a daily basis. Greater levels of CEO and other insider ownership decreases underwriters' risk that the new company's stock will need price support or not be fully placed in the initial offering; both of these outcomes may decrease underwriters' profits. This is different from investors because investors prefer an optimal level of CEO ownership that aligns the CEO's goals with the shareholders, without incurring the additional agency costs caused by entrenchment of the CEO. The other types of compensation,

including stock options and cash pay, which are used by shareholders to align a CEO's interests with their own, have also been shown to affect companies' performance. As such, it appears that these factors could also affect the valuation that investors place on a company's common stock.

The significant regulation and attention that IPOs and executive compensation receive allows better transparency and opportunity for data mining. The SEC requires all IPO companies to file a registration statement and prospectus describing the company. These documents includes large amounts of information about the company, its industry, operating results, anticipated risks, officers and their compensation, as well the IPO transaction and a wealth of additional information. As data become more available, empirical research in connecting the two areas of IPO underpricing and executive compensation become more feasible..

IV. METHODOLOGY

We measure an IPO underpricing, as a dependent variable, in two ways: i.e., a continuous value and a dichotomized value. We use the continuous value for the short run (the day of IPO) and the dichotomized value for a longer run (three months after the date of the IPO) as defined below:

A continuous value is computed as the percentage difference between the closing stock price on the first day of trading, and the offer price listed in the company's final prospectus: [% underpricing = (closing price on day one – offer price) / offer price].

A dichotomized value takes the value of "1" if the underpricing is positive and "0" if it is negative three months after the date of the IPO.

Since the magnitude of a price change in a longer period (after three months compared to the same day of IPO) may be attributed to many other factors, we simply record if the price change is positive or negative compared to the date of the IPO. Namely, we ignore the magnitude of the change in price after three months, whereas for the same day effect, we measure the actual price change.

Since we measure the underpricing in two different ways (continuous vs. dichotomized), we should use two separate methodologies in evaluating the hypothesis: A multiple regression in which the continuous value (the actual percentage of the IPO) is the dependent variable. We use this method for the price change in the first day of IPO.

A logistic regression in which the dichotomous value (1 or 0) is the dependent variable. We use this method for the effect in the longer run (three months after IPO) as explained before.

We utilized the SEC's EDGAR database to collect the population of all companies that made their initial public offering of common stock between July 1, 2000 and June 30, 2004. This database includes a list of all IPOs, the stock exchange that they're listed on, the date priced, offer price, and the number of shares. We then narrowed our population by including only IPO's for the sale of common stock of U.S. companies for total proceeds that exceeded \$100,000,000. The reason for including only companies offering over \$100,000,000 in common stock was to identify companies that were large enough to have all types of CEO compensation available for their use. We noted that smaller companies may be less likely to have certain types of

equity-based compensation methods at their disposal, due to the costs and expertise associated with providing these types of compensation (i.e. regulatory costs as well as accounting and legal fees).

We included only U.S. companies in order to focus strictly on IPOs, and excluded foreign companies that may already be publicly traded under ADRs. After arriving at this population, we then randomly selected 96 companies that were listed on the New York Stock Exchange and the NASDAQ National Market. The number of stocks from NYSE and NASDAQ were selected almost evenly to minimize possible effects related to the stock listing. There were 51 stocks from the NYSE and 45 from NASDAQ. A partial list of the stocks selected from both exchanges is available in Exhibit 1. We noted that the number of IPOs of the American Stock Exchange were not sufficient in the database; therefore, we excluded them from this study.

For each company in the sample, we reviewed the final prospectus for the IPO from the SEC's EDGAR database for the information we needed including the following: the offer price, the offer date, price, the number of shares offered, the value of stock owned by the CEO, the percentage of the company's stock owned by the CEO (after completion of the IPO), the number of stock options granted to the CEO in the year prior to the IPO, if options were utilized, the salary of CEO in the year prior to IPO, the bonus paid to CEO in the year prior to IPO, the value of any significant one-time bonuses or perquisites, such as relocation fees or cash fees for going public, the age of the CEO, whether there was a change in CEO in the year prior to the IPO. The equation used for multiple regression models is as follows:

$$\begin{aligned} \% \text{ Underpricing} = & d_0 + d_1 (\text{CEO Stock Ownership}) + d_2 (\text{CEO salary}) \\ & + d_3 (\text{CEO bonus}) + d_4 (\# \text{ of CEO options}) \end{aligned} \quad (1)$$

The same set of independent variables was used both in the multiple regression and in the logistic regression. The dependent variable in the regression was the actual % of the underpricing. In the logistic regression the dependence variable was input either as 1, if the percentage was positive, and 0 if negative.

Table 1
Logistic regression

First model – 2 log likelihood: 68.12 (only constant included in the model)

Variables not in the equation	Score	Significance	Partial Correlation
X1 = CEO Salary	25.25	.000	.623
X2 = CEO Options	21.02	.000	.621
X3 = CEO Bonus	16.18	.120	.436
X4=CEO Ownership	32.11	.000	.692

Table 2
Logistic regression

Second Model – 2 Log Likelihood: 43.13

X4 (CEO Ownership) included in the model; “Pseudo” R² = .631; Cox and Snell R² = .531

Nagelkerke R² = .682; Change in –2LL from first model = 24.98; Significance = .000; Change in –2LL from prior model = 24.98; Significance = .000; Hosmer and Lemeshow: Chi-Square 2.82; Significance = .9529

Variable in the equation	Coefficient	Std. Error	Wald	Significance
Constant	11.723	4.11	15.21	0.000
X4(CEO Ownership)	1.92	0.395	14.23	0.000
Variables not in the equation	Score	Significance	Partial Correlation	
X1= CEO Salary	18.12	0.000	0.587	
X2= CEO Options	4.1	0.139	0.328	
X3 = CEO Bonus	6.34	0.128	0.386	

Correct Classification (analysis sample): 68%

V. ANALYSIS OF RESULTS AND CONCLUSION

Table 1 shows the results of the base model for the logistic regression analysis. Since we could not make a judgment in advance as to which subsets of the hypothesized variable are most explanatory, we begin with a base model using a backward stepwise procedure. Namely, in the first iteration no independent variable is included except the intercept. The log likelihood value (-2LL) of the base model is 68.12. We use this initial value (68.12) to evaluate how the introduction of other hypothesized variables could improve the overall fit. As we introduce new variables, the initial log likelihood decreases. Note that the bigger the reduction in the initial log likelihood value, the better the overall fit is indicated because of the new variable. The score statistics (a measure of association used in logistic regression), and the partial correlation for each independent variable are indicators as to which variable/s should be selected in the backward procedure. One can use several criteria to guide the entry of the new variables in the model; i.e., a greater reduction in the -2LL value, a greater Wald coefficient, and a higher conditional probability. As a criterion to include the variables in the model, we use the reduction of the log likelihood ratio and proceed accordingly.

As seen in Table 2, the CEO ownership (X4) was selected for the first entry. This corresponded to the highest score statistic and the highest partial correlation. As a result, the -2 log likelihood in Table 2 changed from 68.12 to 43.13, a change of 24.99 compared to the initial model with a significant chi-square. The coefficient for the CEO ownership is positive and statistically significant.

Although the entry of CEO ownership variable (X4) into the logistic regression model gave us a reasonable model fit, the examination of the remaining independent variables (not included in the model) indicated that those variables may have potential contributions to the overall fit. Therefore, X1 (CEO salary) with the highest score statistic and the best partial correlation was introduced as a second variable. The results

are in Table 3. There was an improvement in all measures of the model fit including a decrease in the -2LL value and an increase in the value of R2 measure. The R2 and its different versions (Pseudo, Cox and Snell, and Nagelkerke) all exceed 50%. All these measures operate in the same manner, with higher values indicating greater model fit. The value of -2LL has reduced by 44.78 from the initial model, and by 19.79 from its prior model where we had only a single variable. A sizeable reduction in -2LL value is indicative of the relevance of the CEO ownership (X4) in the model.

Table 3
Logistic regression

Third Model -2 Log Likelihood: 23.34
X4 (CEO Ownership) and X1 (CEO Salary) included in the model; "Pseudo" R2 = .631; Cox and Snell R2 = .531; Nagelkerke R2 = .682; Change in -2LL from first model = 44.78; Significance = .000; Change in -2LL from prior model = 19.79; Significance = .000; Hosmer and Lemeshow: Chi-Square 10.44; Significance = .091

Variable in the equation	Coefficient	Std. Error	Wald	Significance
Constant	7.21	7.23	3.21	0.121
X4(CEO Ownership)	1.34	0.723	6.82	0.012
X1(CEO Salary)	1.72	0.932	6.93	0.019
Variables not in the equation	Score	Significance	Partial Correlation	
X2= CEO Options	4.1	0.139	0.328	
X3 = CEO Bonus	6.34	0.128	0.386	

Correct Classification (analysis sample): 85%

Specific to logistic regression, the Hosmer and Lemeshow value measures the correspondence of the actual and predicted values of the dependent variable where a better model fit is indicated by a smaller difference in the observed and predicted classification. In Table 3, the Hosmer and Lemeshow value shows non-significance, indicating there is no difference in the distribution of the actual and predicted values. A good model fit is indicated by a non-significant chi-square value as reported in Table 3.

The Wald statistics for both independent variables are significant. The inclusion of other variables, beyond CEO ownership and CEO salary, made the logistic regression model unstable and the coefficients inappropriate. This could be detected from lower significance and lower partial correlations for the variables not in the equation (CEO Options and CEO Bonus) in Table 3. **As such, we conclude that the market recognizes the positive signal of the CEO ownership and the CEO salary in IPO pricing in a three-month periods.** A correct classification of 85% in the logistic regression also supported the relevance of the CEO ownership and CEO salary in IPO pricing.

To conduct multiple regressions, as a first step, we examined the correlation coefficient matrix of the above four hypothesized variables. Table 4 shows the range of multi-collinearity among these variables from -.12 to +.58 which is not too striking. Therefore, we decided to consider all these variables as possible explanatory variables.

Consistent with the logistic procedure, we adopted a backward stepwise method. The CEO salary was the first significant variable in the model. Unlike the results of the logistic regression, the inside ownership did not show a significant contribution. Neither other variables showed any significant explanatory power in the model. In Tables 6 and 7, we observe that the CEO options, the CEO bonus, and the CEO ownership all fail to exhibit any contribution to the underpricing of the IPOs.

Table 4
Correlation matrix predictors

Predictors	Variables			
	X ₁	X ₂	X ₃	X ₄
X ₁ CEO Salary	1.00			
X ₂ CEO Options	.43	1.00		
X ₃ CEO Bonus	.51	.57	1.00	
X ₄ CEO Ownership	.32	.44	-.12	.51

Table 5
Multiple regression I

Variables	Variable in Equation			Variables Not in Equation		t value
	Coefficient	Standard Error of Coefficient	Standard Regression Coefficient (beta)	Partial t value	Partial Correlation	
Y-intercept	21.653	2.593		8.341*		
X ₁ CEO Salary	8.384	.862	.701	9.722*		
X ₂ CEO Options					.839	9.812*
X ₃ CEO Bonus					-.453	-5.007*
X ₄ CEO Ownership					.720	10.210*

* Significant at 95% level of confidence or higher.

Table 6
Multiple regression II

Variables	Variable in Equation			Variables Not in Equation		t value
	Coefficient	Standard Error of Coefficient	Standard Regression Coefficient (beta)	Partial t value	Partial Correlation	
Y-intercept	-3.489	3.057				
X ₁ CEO Salary	3.336	0.327	.515	6.47*		
X ₂ CEO Options	1.974	1.03	.066	1.91		
X ₃ CEO Bonus					.021	.205
X ₄ CEO Ownership					-.027	-.267

* Significant at 95% level of confidence or higher.

Table 7
Multiple regression III

Variables	Variable in Equation			Variables Not in Equation		
	Coefficient	Standard Error of Coefficient	Standard Regression Coefficient (beta)	Partial t value	Partial Correlation	t value
Y-intercept	-6.520					
X₁ CEO Salary	2.376	.320	.521	4.560*		
X₄ CEO Ownership	1.621	1.13	.607	1.04		
X₃ CEO Bonus					.43	1.97
X₂ CEO Options					.51	1.35

* Significant at 95% level of confidence or higher.

Note that the only variable that shows a significant contribution to the IPO underpricing, both under the logistic regression and multiple regression, is the level of the CEO salary. Since other proxies of executive compensation failed to show any correlation with underpricing, we cannot categorically support our hypothesis in this research. On the other hand, we cannot reject our hypothesis since the correlation between the IPO underpricing and the level of CEO salary is robust, taking other variables constant. This implies that executive compensation should be somehow related to the underpricing although this relationship may not exhibit itself in every aspect of compensation. Further research, with a large IPO sample and longer time series, are needed to shed further light on the connection between the IPO pricing and executive compensation.

ENDNOTES

1. The IPO-offer price represents the price that each share of a company's common stock is sold to investors as part of the initial public offering in the primary market, as listed in the company's final prospectus.
2. For purposes of this paper, aftermarket price is defined as the closing price at the end of the first day that IPO Company's stock trades in the secondary market.
3. In this context, traded stocks refer to established public companies whose securities are actively traded. The stock of these companies is constantly changing based on company and industry news, analysts' predictions, economic data, etc.
4. Any special bonuses for going public or other one-time perquisites amounts were included in the bonus column of my analysis.
5. First day returns were calculated as the difference between "the offer price and the first CRSP-listed closing price" (Ritter and Welch).

REFERENCES

- Benveniste, L.M., S.M. Erdal, and W.J. Wilhelm, Jr., 1998, "Who Benefits from Secondary Market Price Stabilization of IPOs?" *Journal of Banking and Finance* 22, 741-767.

- Benveniste, L.M. and P.A. Spindt, 1998, "Howe Investment Bankers Determine the Offer Price and Allocation of New Issues" *Journal of Financial Economics* 24, 343-362.
- Benveniste, L.M., and W.J. Wilhelm, Jr., 1990, "A Comparative Analysis of IPO Proceeds Under Alternative Regulatory Environments", *Journal of Financial Economics* 28, 173-208.
- Chitru, S.F., S. Krishnamurthy, and P.A. Spindt, 1998. "Is the Offer Price in IPOs Informative? Underpricing, Ownership Structure, and Performance," *Center for Financial Institutions Working Papers*; No.: 01-33, Wharton School Center for Financial Institutions, University of Pennsylvania.
- Ciccotello, C., C. Grant, and G. Grant, 2004, "Impact of Employee Stock Options on Cash Flow," *Financial Analysts Journal* 60.2, 39-46.
- Coles, J., V. McWilliams, and N. Sen, 2001, "An Examination of the Relationship of Governance Mechanisms to Performance," *Journal of Management* 23-50.
- Daily, T.C., A. Cannella, Jr., and D. Dalton, 2003, "Giving Money To Get Money: How CEO Stock Options And CEO Equity Enhance IPO Valuations," *Academy of Management Journal* 46.5, 643-653.
- Datta, S., M. Iskandar-Datta, and K. Raman, 2001, "Executive Compensation and Corporate Acquisition Decisions," *The Journal of Finance* LVI.6, 2299-2336.
- Engel, E., E. Gordon, and R. Hayes, 2002, "The Roles of Performance Measures and Monitoring in Annual Governance Decisions in Entrepreneurial Firms," *Journal of Accounting Research* 40.2, 485-518.
- Financial Accounting Standards Board, 1995, FAS No. 123 "Accounting for Stock-Based Compensation."
- Field, L., and G. Hanka, 2001, "The Expiration of IPO Share Lockups," *The Journal of Finance*. LVI.2, 471-500.
- Frye, M, 2004, "Equity-Based Compensation for Employees: Firm Performance and Determinants," *The Journal of Financial Research* 27.1, 31-54.
- Hanley, K.W., 1993. "The Underpricing of Initial Public Offerings and the Partial Adjustment Phenomenon", *Journal of Financial Economics*, Vol. 34, Issue: 2, pp. 231-250.
- Harvey, K., and R. Shrieves, 2001, "Executive Compensation Structure and Corporate Governance Choices," *The Journal of Financial Research* 24.4, 495-512.
- Himmelberg, C., R.G. Hubbard, and D. Palia, 1999, "Understanding the Determinants of Managerial Ownership and the Link between Ownership and Performance." *Journal of Financial Economics*, 53:353-384.
- Howton, S., S. Howton, and G. Olson, 2001, "Board Ownership and IPO Returns." *Journal of Economics and Finance* 25.1, 100-114.
- Hosmer, D.W. and S. Lemeshow, 1989, "Applied Logistic Regression" New York: John Wiley & Sons, Inc.
- Jensen, M.C., and W.H. Meckling, 1976, "Theory of the Firm: Managerial Behavior, Agency Cost, and Ownership Structure". *Journal of Financial Economics*, 3:205-360.
- Lippert, R., T. Nixon, and E. Pilotte, 2000, "Incentive Compensation and the Stock Price Response to Dividend Increase Announcements," *The Financial Review* 35.4, 69-94.

- Loughran, T, and J. Ritter, 2002, "Why Don't Issuers Get Upset about Leaving Money on the Table in IPOs?" *Review of Financial Studies* 15, 413-443.
- Loughran, T., and J. Ritter, 2003, "Why Has IPO Underpricing Changed Over Time?" www.haas.berkeley.edu/finance/Whynew.pdf.
- Lowry, M., and K. Murphy, 2005, "Executive Stock Options and IPO Underpricing," [www.smeal.psu.edu/faculty/mb13/IPO options 2005_11_15.pdf](http://www.smeal.psu.edu/faculty/mb13/IPO%20options%202005_11_15.pdf).
- Lowry, M., and G.W. Schwert, 2004, "Is the IPO Pricing Process Efficient?" *Journal of Financial Economics* 71, 3-26.
- Mello, A.S., and J.E. Parsons, 1998, "Going Public and the Ownership Structure of the Firm", *Journal of Financial Economics*, Vol. 49: Issue 1, pp. 79-109.
- Ritter, J., and I. Welch, 2002, "A Review of IPO Activity, Pricing, and Allocations," *The Journal of Finance* 57.4, 1795-1828.
- Robinson, R., M. Robinson, and C. Peng, 2004, "Underpricing and IPO Ownership Retention," *Journal of Economics and Finance* 28.1, 132-146.
- Roulstone, D., 2004, "The Relationship between Insider-Trading Restrictions and Executive Compensation," *Journal of Accounting Research* 41.3, 525-551.
- Ruud, J.S., 1993. "Underwriter Price Support and the IPO Underpricing Puzzle," *Journal of Financial Economics*, Vol. 34, Issue:2, pp. 135-151
- Sanders, G., 2001, "Behavioral Response of CEOs to Stock Ownership and Stock Option Pay," *The Academy of Management Journal* 44.3, 477-492.
- Weber, M., and D. Dudney, 2003, "A Reduced Form Coefficients Analysis of Executive Ownership, Corporate Value, and Executive Compensation," *The Financial Review* 38.3, 399-413.
- Yetman, M., 2001, "Accounting-Based Value Metrics and the Informational Efficiency of IPO Early Market Prices", November 30, 2001. <http://ssrn.com/abstract=296686>
- Zhou, X., 2001, "Understanding the Determinants of Managerial Ownership and the Link between Ownership and Performance: Comment," *Journal of Financial Economics* 62, 559-571.