Capital Structure
And Executive Compensation

Arvin Ghosh, (E-mail: ghosha@wpunj.edu), William Paterson University of New Jersey

Abstract

The finance literature is not unanimous regarding the relationship between capital structure and executive compensation. As a firm increases its debt ratio (i.e., ratio of total debt to total assets), its risk of potential bankruptcy also increases. Because of that fact, stock price of the firm generally decreases after the announcement of its bond offering in the market place, thereby decreasing the shareholders' return and the value of the firm. As a result, we would expect less executive compensation (either salary bonuses, or total compensations which include stock option) when a firm issues a substantial bond offering and the price of its stock declines. We have found that there was a positive and statistically significant association between the salary and bonus of the CEOs of the 336 largest U.S. corporations, and the debts these firms incurred during the 1989-1999 time period. This was also true when total compensation (which included realized stock options) of the CEOs was taken as the dependent variable, although the latter was less effective than the former one.

Introduction

Capital structure of firms has been associated with new stock offerings, ownership structure, market power, and business risks, among others. Capital structure changes have been associated with firm size, growth of sales, depreciation, fixed asset ratios, profit margin, R & D expenditures, advertising and selling expenditures as explanatory variables (Ghosh, 2000). Shedidan Titman also found uniqueness (such as the rate at which employees voluntarily leave their job) as the significant variable to explain the changes in capital structure (Titman, 1988).

Similarly, executive compensation of major U.S. firms has been associated with ownership and firm performance Mehran, 1995), corporate investment and financing decisions (Agrawal & Mandelker, 1987), the threat of takeovers (Agrawal & knoebers, 1996), managerial compensation and incentives (Baker, et.al., 1988), among others. Recently, Roy Simarly, Minfag Li, and Kenneth Bass, in an unpublished article, have explored the relationship between CEO compensation and the economic performance of the U.S. firms contributing to the global competitiveness, which, in turn, has enhanced the economic benefits for all (Fisher, 1998).

In this paper we want to explore the relationship between capital structure and executive compensation, not examined directly before, although Mehran had incorporated some of these ideas in his works. The hypothesis to be tested is that when a firm issues bonds, it generally uses the proceeds for investment opportunities and further expansion of the production process, as a result of which profits would increase and so would be the stockholders' returns. Therefore, with the eventual increase of stock price when the profit is higher, the executive compensation would increase as a reward for the expansion of the business and higher profitability.

Thus we will expect a positive and statistically significant correlation between the salary and bonus, or total compensation (including stock options) of the CEOs of major corporations in the United States, and the debts these companies incurred during the period covered by our study. As other explanatory variables, we may use size of firms, sales growth, net income, and stock price returns. We may also use the dummy variables as industry

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characteristics to be related with executive compensations. All these independent variables should be positively associated with executive compensation.

Data Source and Methodology

For the firm performance data, we have used the *Compustat* annual data files for both 1989 and 1999. The following data were obtained from the *Compustat*: debt/asset ratios, asset size, 3-year average of the growth rate of sales, net income, and one-year stock price return of firms. We have also divided the firms into manufacturing and service companies and used the dummy variables to capture the industry characteristics. After carefully matching firm data with executive compensation, we have selected 336 surviving firms for both 1989 and 1999 time periods.

As for the executive compensation data of major U.S. firms, we have used the *Forbes* magazine's list of the 500 largest U.S. firms as measured by sales, total assets, market value of equity or profits. For each firm, we obtain the data on the CEO's annual salary and bonus (SB), as well as the annual total compensation (TComp) from *Forbes*' annual survey of top executive compensation, covering both 1989 and 1999. Total compensation equals salary and bonus, plus payments made under long-term compensation plans, restricted stock awards vested or released from restrictions during the year, thrift plan contributions, and other benefits. Ideally, it should also include the *ex-ante* value of stock options granted during the year, but unfortunately, Forbes does not report this data. However, Yermack has found that the median value of stock options granted is under 10% of a CEO's total compensation. Therefore, its omission should not cause a significant bias.

We have fitted the OLS regression models to the data to calculate the association among the dependent and independent variables as prescribed by our hypothesis. Our models in general are:

- SB = Salary and bonus of the CEO
- Tcomp = Total compensation of the CEO
- Xo =   Intercept
- DA =   Total debts/total assets
- FS =   Firm size
- GR =   3-year average growth rate of sales
- NI =   Net income
- SPR =   Stock price return (one-year)
- DV =   Dummy variables.

Following our null hypothesis, we will expect all the independent variables to be positively and significantly associated with executive compensation, taking both salary and bonus (SB) and total compensation (TComp) of the CEOs into account. The dummy variables will be used, assigning 0 for the manufacturing firms and 1 for the service firms, to examine whether they have any significant effect on executive compensation. Here also, we will expect positive and significant association of the dummy variables with the executive compensation during the Period covered by our study.

Results

In Table 1, we have shown the regression results of capital structure and executive compensation for 1999 with salary and bonus (SB) of the CEO as the dependent variable. Here we find that the b-coefficient for the capital structure variable (i.e., total debts/ total assets) was highly significant, explaining over 14% variation in executive compensation with capital structure

During 1999, similarly, the 3-year average sales growth rate was also very significant, explaining over 15% with the executive compensation. The variable representing one-year stock price return was also significant, associating with 6% variation in executive compensation. The b-coefficient of firm size as an explanatory variable was extremely small although statistically highly significant, while the b-coefficient of the NI variable, although associated with 2% variation in executive compensation, was not statistically significant at all in 1999.

Table 1

Capital Structure and Executive Compensation - 1999			
(SB as the Dependant Variable)			
Independent Variable	**Intercept**	**B-Coefficients**	**t-values**
	X_0-11.3216		4.5181***
X_1		0.148272	2.344186**
X_2		0.001376	11.069428***
X_3		0.153185	2.558458**
X_4		0.025133	0.198048
X_5		0.063730	3.413130***
N=336			
R2=.2956			
F Ratio = 14.7387			
* Significant at the 10% level			
** Significant at the 5% level			
***Significant at the 1% level			

When we use the same regression equation for 1989, as shown in Table 2, we find that here also, the capital structure variable was strongly associated with executive compensation

Table 2

Capital Structure and Executive Compensation - 1989			
(SB as the Dependant Variable)			
Independent Variables	**Intercept**	**B-Coefficients**	**t-values**
	$X_{0=}$63.2439		6.5639***
X_1		0.055567	2.410748**
X_2		0.000908	4.624653***
X_3		0.001636	0.731116
X_4		0.059229	0.867923
X_5		0.036243	3.036584***
N=336			
R^2=.233352			
F Ratio = 12.4377			
* Significant at the 10% level			
** Significant at the 5% level			
***Significant at the 1% level			

(SB), explaining over 5% variation in executive compensation and being statistically significant at the 5% level. Next came the stock price return variable which explained over 3% variation with the executive compensation, being statistically significant at the 1% level. But the firm size variable, although statistically highly significant, 'explained' very little of the variation with capital structure, while both the sales growth and net income as independent variables were not statistically significant at all in 1989.

In Table 3, we have shown the relationship between capital structure and executive compensation for 1999, where the latter includes stock options, beside salary and bonus of The CEO of the selected firms. Here again, capital structure variable was significantly associated with the total compensation of the CEO of the firms, although not as strongly as the salary and bonus components of the CEOs. The b-coefficients of both the sales growth rate and the stock price return as independent variables were highly significant and they both jointly 'explained' over 20% of the variation with executive compensation. But both firm size and net income as independent variables were not statistically significant at all in 1999.

Table 3

Capital Structure and Executive Compensation - 1989			
(TComp as the Dependant Variable)			
Independent Variables	**Intercept**	**B-Coefficients**	**t-values**
	X_0-76.1718		10.5748***
X_1		0.051926	2.286889**
X_2		0.009202	4.688809***
X_3		0.001613	1.976631
X_4		0.029886	0.447163
X_5		0.038902	3.255291***
N=336			
R2=.1119			
F Ratio = 8.2921			
* Significant at the 10% level			
** Significant at the 5% level			
***Significant at the 1% level			

When we use Tcomp as the dependent variable for 1989, as shown in Table 4, the capital structure variable was again statistically significant, although the b-value was slightly less as compared to 1999. But beside this variable, only the stock price return was statistically Significant for this year. It is interesting to note that the sales growth variable which was highly significant in 1999, was not statistically significant at all in 1989. The net income variable was not statistically significant for both 1989 and 1999 time periods.

Table 4

Capital Structure and Executive Compensation - 1989			
(TComp as the Dependant Variable)			
Independent Variables	**Intercept**	**B-Coefficients**	**t-values**
	X_0-76.1718		10.5748***
X_1		0.051926	2.286889**
X_2		0.009202	4.688809***
X_3		0.001613	1.976631
X_4		0.029886	0.447163
X_5		0.038902	3.255291***
N=336			
R2=.1119			
F Ratio = 8.2921			
* Significant at the 10% level			
** Significant at the 5% level			
***Significant at the 1% level			

In Table 5, we have taken industry classification as the dummy variable to capture any industry characteristic as 'explanatory' variable. Here we have incorporated salary and bonus, as well as total compensation of the CEOs for 1999. Here also, capital structure variable was significantly associated both with salary and bonus, as well as the total compensation of the CEOs. Net income was not statistically significant with salary and bonus, but was statistically significant for total compensation as the dependent variable. It is interesting to note that firm size came out to be statistically significant although it 'explained' very little of the variation of the dependent variable in the equations. Similarly stock price return was highly significant in both the equations as they explained over 3% and 4% variation, with salary and bonus, and total compensation, respectively, for the year 1999. But the dummy variables, taking industry characteristics as manufacturing or service industry, were not significant at all in 1999.

Table 5

Independent Variables	SB as Dependent Variable		TComp as a dep. Variable	
Capital Structure and Executive Compensation - 1999 (With Dummy Variables)				
	B-coefficient	t-values	B-Coefficient	t-values
X_1	0.0639	4.4010***	0.0593	2.9755**
X_2	0.0011	5.0921***	0.0015	2.8644**
X_3	0.0248	1.5318*	0.0145	0.4184
X_4	0.0501	0.2671	0.0237	1.9375*
X_5	0.0315	2.5187**	0.0472	2.2009**
X_6	-2.7621	-0.6091	-1.0224	-0.7143
N=336				
R^2	0.4712	0.2683		
F ratio	13.2186	5.5616		
* Significant at the 10% level				
** Significant at the 5% level				
***Significant at the 1% level				

Conclusions

We have found that there was a positive and statistically significant association between the salary and bonus of the CEOs of the 336 largest U.S. corporations, and the debts these firms incurred during 1989-1999 time period. This was also true when total compensation (which included realized stock options) of the CEOs was taken as the dependent variable, although the latter was less effective than the former one. Also, both three-year average sales growth and one-year stock price return showed promises as the explanatory variables in most of the equations, but unfortunately, net income and firm size did not perform at all as the explanatory variables in these equations during the period covered by our study.

It is interesting to note that the b-values of the capital structure variable were higher in 1999 than were in 1989 for all the equations when both salary and bonus, and total compensation were used as the dependent variables. But the dummy variables as proxy for industry characteristics (i.e., manufacturing vs. service industries) were not significant at all in any of the regression equations.

Our study thus shows that if higher leverage of a firm is viewed as growth opportunities to be reflected in higher profits and higher stock returns of these companies, then higher executive salary (including bonus) is taken as a reward for higher risk-taking and further growth of firms. The risk-return relationship also prevails in this area of capital structure and executive compensation. 📖

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Notes