Is Executive Compensation Different Across S&P Listed Firms?

João Paulo Vieito
Polytechnic Institute of Viana do Castelo

Walayet Khan
University of Evansville

António Cerqueira
University of Porto

Elísio Brandão
University of Porto

We investigate, using 13 years of data from 1992 to 2004, whether the total values, determinants, and the forms of executive compensation for firms listed on the S&P 500, S&P Mid Cap, and S&P Small Cap index, are the same or different. We also explore whether the above compensation variables change after the Nasdaq Crash in 2000 and the enactment of the Sarbanes-Oxley (SO) Act in 2002. Our empirical results reveal that generally the average total compensation and component weights are significantly different across S&P index firms during each sample year and also in years before and after the Nasdaq crash and the enactment of the Sarbanes-Oxley Act. Use of stock options decreases and use of restricted stocks and bonuses increases after the year 2000. We also find that the factors that explain executive compensation in these three groups are generally different and that the determinants and forms of executive compensation change after the Nasdaq crash.

Introduction

In this age and era of technological advances, regulatory changes, and increased cross-border flow of information, capital, and labor, firms search for executive talent globally to find the best fit for jobs. The emergence of the global village, removal of barriers to free trade, and the rise of Internet technology have created an increased demand for corporate executives. Perhaps this is the reason that there is a new and growing interest among academics and practitioners in exploring the numerous dimensions of executive compensation. In this paper, we focus on several executive

1939-8123/08/1400/00171/$2.50

compensation questions for firms listed on S&P 500, S&P Mid Cap, and S&P Small Cap firms.

Literature Review and Research Questions

Firm size has been used by a number of authors to analyze diverse situations in executive compensation. Datta, Iskandar-Datta, and Raman (2001) use firm size to explain how executive compensation determines corporate acquisitions. Bushman, Indjejikian, and Smith (1996) analyze individual performance and CEOs' annual incentive plans and find that firm size is positively related to salary and bonuses and negatively related to long-term compensation. Bertrand and Hallock (1999) find that the gender pay gap among highest-paid executives is positively related to firm size.

Some authors also analyze the impact of firm size on the use of resetting, also called repricing, of stock options plans. Bens et al. (2003) find a negative relationship between stock option repurchase and firm size; Brenner et al. (2000), Carter and Lynch (2001,2003), and Chance et al. (2000) find stock option resetting is more common in smaller firms. The same results are uncovered by Chidambaran and Prabhala (2003). Also Chance et al. (2000) believe that firms that reprice stock options plans are generally younger, associated with high technology, and have out-of-the-money stock options plans.

Ueng et al. (2000) describe that CEO pay in large firms is a function of the influence of the CEO on the board, the firm size, and the firm's performance; however, they find that CEO influence on the board in small companies does not affect CEO compensation. Kostiuk (1990) believes that there is significant variability in the level of compensation between firms of the same size. Thus, the CEOs and other executives of the firms listed on S&P 500, Mid Cap, and Small Cap may have different forms and compensation packages.

Hermalin and Wallace (2001), like Aggarwal and Samwick (1999), use the variable size to determine the relationship between compensation and performance and find a positive relationship between these two variables and stock options granted and a negative relationship with the use of golden parachutes, restricted stocks, and with supplemental pension plans. Ryan and Wiggins (2004) also document a positive relationship between total compensation and equity-based compensation. Kato et al. (2005) find the same results on the Japanese market. Morgan and Poulsen (2001) find a positive relation between firm size and the vote returns for management-sponsored compensation proposals.

As we can see, firm size can explain a lot of situations in terms of executive compensation. But what happens if we fix this effect in terms of executive compensation, making separate analyses for firms listed on S&P 500, S&P Mid Cap, and S&P Small Cap?

In this paper, we analyze the following two major sets of questions: Is the value of total compensation packages across S&P firms the same? Are the forms of total

compensation packages across S&P firms the same? Has there been a change in the forms of compensation among S&P firms since the Nasdaq crash (2000) and the enactment of the Sarbanes-Oxley Act (2002)? If there has been a change, is it the same across the S&P firms?

If firms listed on S&P 500, S&P Mid Cap and S&P Small Cap indexes are different, we expect that the factors that explain executive compensation in these firms also can be different. If some of the variables are the same, the intensity of these factors can be different and statistically significant.

The second set of questions explores the following questions: Are the determinants of executive compensation the same across S&P firms? Is the intensity (impact) of the factors explaining executive compensation across S & P firms the same? Have the factors that explain executive compensation changed since the Nasdaq Crash in 2000?

The Nasdaq crash also is effectively associated with a group of financial scandals and the bankruptcy of some large American companies, based on fraudulent accounting practices and executive self-dealing. To solve some of these corporate governance problems, the Sarbanes-Oxley Act was created in the USA in 2002, introducing changes in governance, reporting, and disclosure requirements of public firms with the intent of improving accuracy, reliability, and timeliness of the information provided to investors.

With these significant changes in terms of corporate governance rules, we believe that the weight of each compensation component (salary, bonus, stock options, restricted stocks, and long-term incentive plans) has changed since the Nasdaq crash in 2000 and since the Sarbanes-Oxley Act in 2002 in these three groups. We also expect that these changes, in terms of the structure of executive compensation, will be different in S&P 500, S&P Mid Cap, and S&P Small Cap listed firms.

Data, Sample Selection and Statistics

Data and Sample Selection

We use data from the Standard ExecuComp database, which contains information about executive compensation for publicly traded U.S. companies from 1992 to 2004. The dataset includes all the S&P index listed firms. Together, these firms represent over 80 percent of the total market capitalization of U.S. public firms.[1] This database contains information about the five most well paid executives from each firm included in the database. In terms of compensation, the database categorizes the

[1]The data are from 1992 to 2004 because 1992 is the first year of information in the ExecuComp database and 2004 was the last complete year of information when we started this work. In this database, there are executives with data for all of the years and others with only a small number of years of information.

various components into salary, bonus, ex-ante value of options, restricted stocks award, long-term incentive plan (LTIP), other annual compensation, and all other compensation.

We use unbalanced panel data because not all executives stay with the same firm during the sample period. The sample constitutes 79,650 observations of compensation related to the five most highly paid executives from these 1500 firms[2] from 1992 to 2004. We exclude the executives whose sum of salary and bonuses, and also total compensation, was equal to zero. We also exclude observation for executives who have remunerations more than once in the same year, deleting the observations with lower remunerations.

Using the Consumer Price Index (CPI), compiled by the Bureau of Labor Statistics, and using 1982 as base year, we adjust the monetary variables to the price level of the year 2004.

Table 1—Descriptive Statistics - Mean Total Compensation Levels Adjusted for Inflation by Year (1992-2004) - Top Five

	S&P 500 (1)		S&P Mid Cap(2)		S&P Small Cap(3)		Mean Difference		
Year	N	Mean	N	Mean	N	Mean	(1) & (2)	(1) & (3)	(2) & (3)
1992	1416	1963.48	678	875.84	539	648.81	1087.64	1314.67	227.02
1993	2007	1951.39	1044	908.05	916	684.32	1043.34	1267.07	223.73
1994	2106	2179.17	1132	1019.63	1061	731.25	1159.54	1447.93	288.39
1995	2167	2380.44	1231	1084.13	1220	712.24	1296.30	1668.19	371.89
1996	2250	2975.18	1370	1254.44	1386	814.20	1720.75	2160.98	440.23
1997	2354	3937.39	1524	1511.26	1674	900.35	2426.12	3037.04	610.91
1998	2448	4807.43	1637	1615.16	1964	958.87	3192.26	3848.56	656.30
1999	2515	5557.27	1703	1872.61	2131	1000.30	3684.65	4556.97	872.32
2000	2583	6697.17	1820	2152.70	2223	1347.02	4544.46	5350.15	805.67
2001	2595	6039.35	1845	1962.25	2337	1157.00	4077.10	4882.35	805.25
2002	2636	4663.58	1934	2062.78	2539	1038.81	2600.81	3624.77	1023.97
2003	2690	4332.43	2012	1744.33	2696	1002.22	2588.11	3330.21	742.10
2004	2672	4767.34	1957	1975.63	2671	1181.24	2791.71	3586.10	794.39

Difference is statistically significant at (***) 1 percent level, (**) 5 percent level, and (*) 10 percent level. We use mean test (ANOVA) to analyze if the mean differences between (1) and (2), (1) and (3), and (2) and (3) are statistically significant. All the cases are statistically significant at 1 percent level with the exception of the difference between (2) and (3) in 1992 that is statistically significant at 10 percent level and the difference between (2) and (3) in year 1998 that is not statistically significant

Statistics

Table 1 presents the statistics of average total compensation of executives for firms listed in the S&P 500, S&P Mid Cap, and S&P Small Cap index. We use one-

[2]The information on three groups of executives that we are studying (S&P 500, S&P Mid Cap, and S&P Small Cap listed firms) was extracted using variable SPCODE index from ExecuComp database. This variable classifies the firms listed in the S&P 500 with the code "SP" and the firms listed in the S&P Mid Cap 400 Index with the code "MD" and the firms listed in the S&P Small Cap Index with the code "SM"

way analysis of variance to test the null hypothesis of the equality of three means against the alternative hypothesis that at least one mean is different.[3]

From Table 1, we can see that, on average, the top five executives from the S&P 500 firms consistently receive higher compensation during the period of 1992 to 2004. The means differences of total compensation between S&P 500, S&P Mid Cap, and S&P Mid Cap are significant each year during the sample period except for S&P Mid Cap and S&P Small Cap listed firms in 1998.

Table 2 summarizes the time series percentage changes that each compensation component represents in terms of total compensation for all S & P listed firms during the period from 1992 to 2004.[4] We also perform the one-way analysis of variance to test the hypothesis that the means of each component of executive compensation for S&P 500, S&P Mid Cap, and S&P Small Cap index listed firms are equal. In most cases, we reject the null hypotheses that the means are equal.[5]

We also test in Table 2 whether the differences in executive compensation between year 2001 in relation to year 2000 (Nasdaq crash effect) and the year 2003 in relation to 2002 (Sarbanes-Oxley Act effect) are statistically significant. Based on a t test we find that in most cases, these differences are statistically significant.

If we analyze the top five executives, we conclude that the most important component of executive compensation is salary in the category of S&P Small Cap listed firms. In the case of S&P 500 listed firms, until 1997 the most important component of executive compensation is also salary, but after 1997 stock options becomes the most important component, representing over 46 percent of the total compensation in year 2001. If we analyze S&P Mid Cap listed firms, we see a decrease in salary (as a fraction of the total compensation) from 55.90 percent in 1992 to 32.46 percent in 2004 and an increase of stock options from 16.46 percent in 1992 to 33.63 percent in 2000 and 26.45 percent in 2004.

Essentially after year 2002 (Sarbanes-Oxley Act), firms give fewer stock options and more restricted stocks and bonuses and generally these differences are statistically significant. (See the significance levels in Table 2 comparing the values of 2003 with those of 2002.) Salary continues to decrease in all cases, but it is still the

[3]We use the Bonferroni correction, which is a multiple-comparison correction used when several dependent or independent statistical tests are being performed simultaneously.

[4]Last year of information available from Execucomp database when we started this investigation.

[5]We also use the Levene's test for homogeneity of variance and Bonferroni correction, which is a multiple-comparison correction used when several dependent or independent statistical tests are being performed simultaneously.

Table 2—Executive Compensation Components as a Percentage of Total Compensation for S&P 500, S&P Mid Cap, and S&P Small Cap Listed Firms (1992-2004)

Panel A: Top Five (% of Total Compensation)

	Salary			Bonus			Stock Options			Restricted Stocks			LTIP		
Year	SP	MD	SM	SP	MD	SM	SP	MD	SM	SP	MD	SM	SP	MD	SM
1992	41.67	55.90*	59.54***	20.38	17.25***	18.40***	22.63	16.46***	13.95***	5.25	3.33***	5.25	3.33***	5.25	3.33***
1993	40.66	51.02*	56.26***	22.45	20.28***	19.51***	21.90	16.30***	15.68***	4.88	3.55***	4.88	3.55***	4.88	3.55***
1994	37.90	48.30*	53.57***	22.35	20.79**	20.59***	25.39	20.06***	17.68***	4.47	3.79	4.47	3.79	4.47	3.79
1995	36.02	47.15*	54.78***	23.21	21.86***	20.24***	24.50	18.75***	15.96***	5.34	3.78***	5.34	3.78***	5.34	3.78***
1996	33.02	43.28*	51.32***	21.81	23.31**	19.12***	29.74	20.71***	20.31	5.57	4.17***	5.57	4.17***	5.57	4.17***
1997	29.54	40.63*	48.21***	20.92	21.18	20.65	33.45	24.17***	22.22	6.23	4.76***	6.23	4.76***	6.23	4.76***
1998	27.84	40.26*	47.00***	19.84	18.39**	17.87***	35.72	29.43***	26.00	6.36	4.13***	6.36	4.13***	6.36	4.13***
1999	25.10	36.51*	45.83***	19.16	19.27	18.21	41.93	33.00***	27.18	5.12	3.85***	5.12	3.85***	5.12	3.85***
2000	23.05	35.04*	44.19***	18.31	20.30*	18.37	42.53	33.63***	29.29	7.58	3.86***	7.58	3.86***	7.58	3.86***
2001	23.71(*)	36.30*	44.84***	15.95 (***)	16.44(*)	14.80 **/(***)	46.09 (*)	35.92 ***/(***)	31.06 ***/(***)	6.97 (***)	4.82 ***/(***)	6.97 (***)	4.82 ***/(***)	6.97 (***)	4.82 ***/(***)
2002	25.77	34.95*	45.52***	18.18	18.95**	17.23***	39.32	34.20***	27.74***	6.46	5.65***	6.46	5.65***	6.46	5.65***
2003	25.07 (***)	36.00 ***/(***)	46.91 *(***)	21.18 (**)	19.99 (**)	17.93 (***)	32.49 ***/(***)	28.91 **/(***)	24.05	10.94 (***)	7.71 ***/(***)	10.94 (***)	7.71 ***/(***)	10.94 (***)	7.71 ***/(***)
2004	21.80	32.46***	42.09***	23.08	22.98	20.22***	31.98	26.45***	23.92***	13.28	10.06***	13.28	10.06***	13.28	10.06***

Table 2 (cont.)—Executive Compensation Components as a Percentage of Total Compensation for S&P 500, S&P Mid Cap, and S&P Small Cap Listed Firms (1992-2004)

Panel B: CEOs (% of Total Compensation)

	Salary			Bonus			Stock Options			Restricted Stocks			LTIP		
Year	SP	MD	SM	SP	MD	SM	SP	MD	SM	SP	MD	SM	SP	MD	SM
1992	36.39	55.29***	63.11***	22.78	12.54***	19.32	22.89	21.83	12.16	6.41	0.68	6.41	0.68	6.41	0.68
1993	37.64	49.22***	52.17***	23.31	19.42**	21.22	23.07	17.80***	16.71***	4.62	4.06	4.62	4.06	4.62	4.06
1994	33.85	43.80***	50.59***	23.22	21.16	21.06	28.44	23.10**	19.31***	4.51	4.39	4.51	4.39	4.51	4.39
1995	31.82	42.46***	51.36***	24.21	23.06	21.53	26.76	21.42**	18.21***	5.75	4.99	5.75	4.99	5.75	4.99
1996	28.50	38.82***	47.18***	22.52	24.13	20.67	31.98	23.88***	22.04***	5.96	3.90	5.96	3.90	5.96	3.90
1997	24.16	36.09***	43.77***	21.93	22.33	23.10	36.40	26.05***	23.53***	6.70	5.16	6.70	5.16	6.70	5.16
1998	23.34	35.02***	40.81***	20.22	20.12	19.15	40.27	32.35***	29.01***	5.90	4.49	5.90	4.49	5.90	4.49
1999	20.33	31.81***	40.49***	19.35	20.57	19.15	46.09	35.90***	30.01***	4.94	3.76	4.94	3.76	4.94	3.76
2000	18.43	30.16***	38.65***	17.93	20.35	19.94	47.24	36.92***	31.54***	7.28	4.23***	7.28	4.23***	7.28	4.23***
2001	18.63	32.12***	39.44***	14.86 (***)	15.40 (***)	14.99 (***)	51.80 (**)	39.99***	35.01*/(**)	7.09	5.52	7.09	5.52	7.09	5.52
2002	20.03	28.90***	39.63***	15.92	18.97	17.88	45.98	38.48***	31.65***	7.90	6.67	7.90	6.67	7.90	6.67
2003	18.83	30.18***	40.25***	17.35 (***)	21.02 (**)	18.91 **	36.93 (***)	31.08 ***/(***)	29.04 ***/(**)	11.88 (***)	9.16 ***/(***)	11.88 (***)	9.16 ***/(***)	11.88 (***)	9.16 ***/(***)
2004	16.39	27.09***	35.95***	16.30	24.09	21.28	36.52	29.73*	27.50*	14.32	11.04**	14.32	11.04**	14.32	11.04**

Table 2 (cont.)—Executive Compensation Components as a Percentage of Total Compensation for S&P 500, S&P Mid Cap, and S&P Small Cap Listed Firms (1992-2004)

Panel C: Directors (% of Total Compensation)

	Salary			Bonus			Stock Options			Restricted Stocks			LTIP		
Year	SP	MD	SM	SP	MD	SM	SP	MD	SM	SP	MD	SM	SP	MD	SM
1992	38.98	52.87***	56.55***	21.41	17.89***	20.33	23.29	18.90***	14.50***	5.35	3.72	5.35	3.72	5.35	3.72
1993	38.23	49.52***	54.31***	23.22***	21.12***	21.05	22.86	16.58***	16.10***	5.34	3.99	5.34	3.99	5.34	3.99
1994	35.62	45.44***	50.59***	23.27	22.35	21.22	25.98	21.24***	19.84***	5.15	4.34	5.15	4.34	5.15	4.34
1995	33.59	44.98***	51.29***	23.29	22.80***	21.00	25.58	29.59***	17.87***	5.91	4.52*	5.91	4.52*	5.91	4.52*
1996	30.53	40.94***	46.49***	22.41**	25.64**	19.91	30.47	21.01***	23.74***	5.94	4.15**	5.94	4.15**	5.94	4.15**
1997	26.17	38.95***	44.59***	21.86	23.66	22.56	34.62	23.67***	23.32***	6.74	4.76**	6.74	4.76**	6.74	4.76**
1998	25.40	37.89***	43.13***	20.41	19.61	18.69	37.29	30.41***	28.07***	5.82	4.36*	5.82	4.36*	5.82	4.36*
1999	22.99	34.70***	42.30***	20.23	20.47	18.93	42.37	33.93***	29.02***	5.38	3.25***	5.38	3.25***	5.38	3.25***
2000	20.75	33.15***	41.86***	18.63***	20.47	19.71	44.06	34.23***	29.29***	6.90	4.31***	6.90	4.31***	6.90	4.31***
2001	20.73	35.49	41.11	16.15	16.58	15.92	48.53	35.95***	32.68	6.47	5.26	6.47	5.26	6.47	5.26
	(*)	***/(**)	***/(***)	(***)	(***)	(***)	(***)		***/(***)	(***)	(***)/(***)	(***)	(***)/(***)	(***)	(***)/(***)
2002	21.29	31.57	41.11	18.80	19.06	18.89	42.08	36.40*	29.72***	8.15	5.96***	8.15	5.96***	8.15	5.96***
2003	21.10	33.55	41.24	21.81(*)	21.12(*)	19.90	35.05(*)	29.74*/(*)	26.74*/(*)	11.56(*)	7.97*/(*)	11.56(*)	7.97*/(*)	11.56(*)	7.97*/(*)
2004	18.79	28.84	37.10	23.02	24.01	21.78	34.25	28.19*	26.26*	14.08	10.56*	14.08	10.56*	14.08	10.56*

Note: Difference between SP and MD (column MD), and between SP and SM (column SP) is statistically significant at 10 percent level *, 5 percent level ** and 1 percent level ***. In rows for years 2001 and 2003 we also describe whether the differences between each component of compensation between years 2001 and 2000 (Nasdaq crash effect) and 2003 related to 2002 (Sarbanes-Oxley Act effect) are statistically significant. Significance is presented as ( ).

most important component of executive compensation in S&P Small Cap listed firms (42.09 percent of total compensation in 2004).

If we analyze CEOs and directors separately, we conclude that CEOs receive more stock options than directors; this compensation component represents over 50 percent of total executive compensation in S&P 500 listed firms and over 30 percent in the case of S&P Mid Cap and S&P Small Cap listed firms. The weight of stock options decreases from 1992 to 2004, but still represents over 30 percent in S&P 500 and S&P Mid Cap companies and over 20 percent in S&P Small Cap companies in 2004.

Directors now receive more salary than CEOs, and this is more significant in small companies. They also receive more bonuses than CEOs, but the difference is not so pronounced as in the case of salary. In the case of stock options, CEOs receive, in the later years, a little more than directors. This is also the case for the restricted stocks.

From these results we conclude that essentially after the introduction of Sarbanes-Oxley in 2002, the structure of executive compensation changed, reducing the use of stock options and increasing the use of bonus and restricted stocks as compensation component.

Regression Research Design

We control for firm size by making an individual analysis for each of the three S & P listed index firms—S&P 500, S&P Mid Cap, and S&P Small Cap index—and attempt to identify the determinants of executive compensation in each of S & P subgroups. We also perform separate analysis for CEOs versus directors, as did Cheng and Hung (2006), because both groups of executives have different characteristics.

We use unbalanced panel data with fixed effect regression model, also called within estimator or least squares dummy variable (LSDV).

Dependent Variables

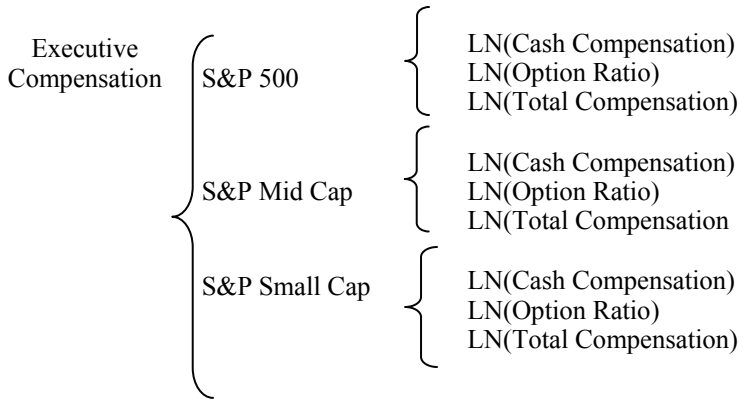
We use three different classifications for executive compensation. The dependent variables are LN (total compensation), LN (short-term compensation), and LN (option ratio).

LN (total compensation) is the total of the remunerations received by the executives and is the sum of salary, bonus, stocks options, restricted stocks, LTIP, other annual compensation, and all other compensation. We use this variable like Chen and Hung (2006). This variable, without logarithms, was also used by Aggarwal and Samwick (1999) to evaluate the contracts offered to executives in a context of strategic competition between products and evaluation of relative performance and by Fields and Fraser (1999) to unmask the commercial banks when they attribute compensations to link executives to performances. LN (short-term compensation) is the LN (salary+bonus). Salary and bonus are considered short-term remunerations, and

they are usually received in money. We use this variable in a way similar to Aggarwal and Samwick (1999), Stathopoulos et al. (2004), and Chen and Hung (2006). Finally, we also use LN (option ratio). We define option ratio as the value of options received by the executive divided by the total compensation. This variable was also used by Chen and Hung (2006).

Each one of the above dependent variables will be confronted separately with a group of independent financial and governance variables with the intention of finding, in a more reliable way, possible differences of executive compensation between S&P 500, S&P Mid Cap, and S&P Small Cap listed firms.

Essentially, we analyze:



$$LN(Compensation)=\beta_0+\beta_1*LN(Not\ Exercised\ Ratio)+\beta_2*LN(Ajex)+\beta_3*Trs1yr+$$
$$+\beta_4*LN(Bs\ Volatility)+\beta_5*LN(Number\ Mtgs)+$$
$$+\beta_6*LN(Tenure)+\beta_7*ROA+\beta_8*Pdirpens+\beta_9*Interlock$$
$$+\beta*Industry\ Dummys+\beta*Years\ Dummy(1993...2004)+$$
$$+f+\varepsilon$$

The dependent variable LN (compensation) can assume the values of LN (total compensation), LN (option ratio), and LN (short-term compensation), and f is the fixed effect.

Independent Variables

In order to explore the determinants of executive compensation for firms from the S&P 500, S&P Mid Cap, and S&P Small Cap listed indexes we use the following independent variables.

Financial Variables

To analyze the relationship between firm performance and executive compensation, we use the variable ROA, which is the net income before extraordinary items and discontinued operations divided by total assets. This variable was employed by

Zenner (2001) to analyze the relationship between executive compensation and performance. We expect a positive relationship between executive compensation and firm performance because better returns can lead to higher compensation.

We also use the variable LN(not exercised ratio), which is the natural logarithm of the number of unexercised options the executive held at year end that were vested, divided by the aggregate number of stock options/stock appreciation rights granted. We expect this variable to have a negative relationship with total compensation and options ratio, meaning that if the executive has stock options that are not exercised, the firm probably will give fewer stock options in the future.

We also analyze the relationship between the volatility of a firm's stock returns and executive compensation. To do this we use the variable LN (BS volatility), which is the natural logarithm of the standard deviation of returns calculated over 60 months using the Black and Scholes model. This variable is used by authors such as Chen (2004). If the volatility of firms' stock returns increases, the value of stock options also will increase, and eventually shareholders will prefer to provide incentive to their executives with more stock options and less salary and fewer bonuses (short-term compensation). Thus, we expect a positive relationship between risk and option ratio, an inherent positive relationship with total compensation, and a negative relationship with short-term compensation.

We also analyze the relationship between the total returns to shareholders and executive compensation. We use the variable (Trs1yr), which is the one-year total return to shareholders, including the monthly reinvestment of dividends. We expect that if shareholders receive a high return from their investments in the company, they do not need to give more stock options to executives to align their interests with executives' interests. Based on this, we expect a negative relationship between the option ratio, total compensation, and the one-year shareholders' return and a small positive relationship with cash compensation in the sense that companies probably will give some money to compensate executives' efforts, but they do not need to give more stock options to motivate them.

LN (Ajex) is the natural logarithm of the ratio used to adjust per-share data for all stock splits that have occurred subsequent to the end of the company's fiscal year. We expect that executives might influence the determination of this ratio, and they will do so in the sense of having personal benefits. Based on this, we expect a positive relationship between LN (Ajex) and the dependent variables.

We also use a dummy variable for each year between 1993 and 2004, as do Barron and Waddel (2003) and Grinstein and Hribar (2004), to control for the time effect on executive compensation. We expect that time will be one of the important factors in explaining the evolution of executive compensation during the period examined. Based on Fama and French (1997) industry classification we also use dummy variables to control the industry effect.

Governance Variables

One of the most important topics in corporate governance and executive compensation is the influence of the board and compensation committee's composition on executive compensation. Ryan and Wiggins (2004) find that the determination of CEO compensation is related to the power and influence that the CEO has on the board. They find evidence that firms with external directors on the board pay more compensation in the form of stock options and restricted stocks. Anderson and Bizjak (2003) also analyze whether board independence promotes shareholders' interests and whether the presence of the CEO on the compensation committee is related to opportunistic behavior. They do not find evidence that when executives leave the compensation committee their remuneration decreases.

To analyze this relationship we use two variables: LN (Number Mtgs) and Interlock. LN (Number Mtgs) is the natural logarithm of the number of board meetings held during the indicated fiscal year. According to Davidson, Pilger, and Szakmary (1998), board members align more with shareholders` interests when they have more meetings during the year. We also use the dummy variable Interlock, which assumes the value one if the named executive is on two different boards or compensation committees and zero if not. Based on Hallock (2007), we expect that the executives who are on two boards (interlocked) will receive more compensation than the executives who are not. We also examine the influence of the number of years of the tenure of a CEO [LN (Tenure)] on executive compensation. This variable has been used extensively by researchers including Chindambaran and Prabhala (2003), Ryan and Wiggins (2004), Murphy (1986), and Barro and Barro (1990) to explain the variation in executive compensation. We expect a positive relationship between executive compensation and the number of years as CEO.

Finally, we test the influence of the presence of director pension/retirement plan (Pdirpens) on executive compensation. This is a dummy variable that assumes the value equal to one when true and zero if not. We expect a negative relationship between Pdirpens and executive compensation—if the firm already contributes to the pension plan for the executive, this will give the firm a reason not to increase current compensation. Expected correlations are:

	Dependent Variables		
Independent Variables	LN(Total Comp)	LN(Option Ratio)	LN(Short-Term Comp)
LN (Not Exercised Ratio)	-	-	+
LN(Ajex)	+	+	+
Trs1yr	-	-	+
LN(Bs Volatility)	+	+	-
LN(Number Mtgs)	-	-	-
LN (Tenure)	+	-	+
ROA	+	+	+
Pdirpens	-	-	-
Interlock	+	+	+
Year Dummy	+	+	+

Empirical Results

Summary Statistics

We test for correlations among independent variables and do not find any significant correlations.

Table 3—Statistics from S&P 500, S&P Mid Cap and S&P Small Cap Listed Firms

The table displays descriptive statistics from firms that belong to the S&P 500, Mid Cap 400, and Small Cap 600 indexes. LN (BS Volatility) is the natural logarithm of standard deviation of returns calculated over 60 days with the Black Scholes method. LN (Number Mtgs) is the natural logarithm of the number of the board meetings. LN(Shrownpc) is the natural logarithm of executive ownership. LN (Tenure) is the natural logarithm of the number of years as CEO. LN (Not Exercised Ratio) is the natural logarithm of the number of unexercised options that the executive held at year end that were vested, divided by the aggregate number of stock options/stock appreciation rights granted. Trs1tyr is the one-year total return to shareholders, including the monthly reinvestment of dividends. ROA is the net income before extraordinary items and discontinued operations divided by total assets. Interlock is a dummy variable that assumes the value 1 when true, indicating that the executive is involved in a relationship requiring disclosure in the Compensation Committee Interlocks and Insider participation and 0 when not. Pdirpens is a dummy that assumes the value equal to 1 when it is true that the company contributes into a directors' pension plan and 0 when not

	S&P 500	S&P Mid Cap	S&P Small Cap
LN (Bs Volatility)	-1.148	-1.040	-0.881
LN(Number Mtgs)	1.968	1.870	1.829
LN(Shrownpc)	0.437	0.419	0.342
LN(Tenure)	2.112	2.161	2.119
LN (Not Exercised Ratio)	0.736	0.690	0.677
Trs1yr	26.838	28.166	25.903
ROA	5.357	5.036	4.605
Interlock	0.020	0.030	0.0314
Divyield	1.668	1.501	1.271
Pdirpens	0.183	0.0970	0.0671

From Table 3, we can conclude that S&P 500 listed firms have higher stock returns volatility and the boards of these firms have more meetings during the year. Executives from the large companies also have more firm stock ownership than executives from the S&P Mid Cap and the S&P Small Cap listed firms. The number of years of the executives' tenure (tenure) and the executive average age are similar in all three groups. Executives from large companies have more stock options vested but not exercised than executives from other sub-groups. In terms of the one-year return to shareholders the medium size companies produce higher returns to shareholders.

The ROA is higher in S&P 500 firms than in S&P Mid Cap or S&P Small Cap listed firms, and the executives from Small Cap listed firms are more interlocked.

Table 4—Fixed Effect Regression Analysis of Determinants of CEO Compensation for S&P 500 Listed Firms

	LN (Total Comp.)	t Statistics	LN (Option Ratio)	t Statistics	LN (Short-Term Comp.)	t Statistics
Constant	8.840***	22.735	-3.256	-1.171	8.560*	4.391
LN (Not Exercised Ratio)	-0.245***	-26.930	-0.315***	-35.246	0.007	0.920
LN(Ajex)	-0.227***	-8.313	-0.035	-1.354	-0.028	-1.203
Trs1yr	0.001***	3.749	-0.001***	-8.031	0.001***	10.004
LN(Bs Volatility)	-0.028	-0.430	0.192***	3.100	-0.317***	-5.600
LN(Number Mtgs)	-0.033	-0.972	-0.046	-1.438	-0.074***	-2.373
LN(Tenure)	-0.265	-0.276	1.027	0.897	-0.666	-0.830
ROA	0.001	1.330	-0.0006	-0.630	0.006***	6.952
Pdirpens	-0.043	-1.136	-0.101***	-2.788	-0.027	-0.868
Interlock	0.136**	2.574	0.108**	2.124	-0.015	-0.326
N		3841		3841		3841
Adjusted R- square		80.30%		71.07%		74.49%

*Significant at 10 percent level, ** significant at 5 percent level, *** significant at 1 percent level

Large companies give more dividends than small and medium size companies; however, the medium size companies exhibit higher increase in net income.

Finally, firms from S&P 500 give better pension plans to executives than other companies.

Determinants of Executive Compensation in S&P 500, S&P Mid Cap, and S&P Small Cap Listed Firms

Based on the summary statistics described in Table 3, we develop the idea that if S&P 500 listed firms are so different in terms of growth of net incomes, dividends, etc, from S&P Mid Cap and Small Cap companies, the factors that explain executive compensation in these three groups will be different.

We use the Hausman test to detect whether it is better to use a fixed or random effect regression model. The results are favorable for using fixed effect regression analysis, also called within method or least squares dummy variable regression (LSDV). In all the regressions, standard errors are corrected using period seemingly unrelated regression (SUR) – panel corrected standard errors (PCSE). Correction for both period heteroskedasticity and general correlation of observations occurs within a given cross section (Beck and Katz, 1995). In this section, the results of the multivariate analyses are described in Tables 4 through 9.

Impact of Nasdaq Crash on the Determinants of Executive Compensation

In Tables 10 and 11 we analyze whether the Nasdaq crash changed the determinants and the associated impact on total executive compensation.

Table 5—Fixed Effect Regression Analysis of the Determinants of Directors Compensation in S&P 500 Listed Firms

	LN (Total Comp.)	t Statistics	LN (Option Ratio)	t Statistics	LN (Short-Term Comp.)	t Statistics
Constant	8.035***	2.930	-3.093	-1.083	7.982***	3.490
LN (Not Exercised Ratio)	-0.246***	-30.827	-0.299***	-41.115	0.004	0.552
LN(Ajex)	-0.195***	-7.679	-0.064***	-2.901	-0.019	-0.757
Trs1yr	0.001***	4.607	-0.001***	-8.084	0.001***	9.880
LN(Bs Volatility)	-0.117*	-1.896	0.244***	4.606	-0.367***	-6.196
LN(Number Mtgs)	-0.003	-0.098	-0.044	-1.544	-0.100***	-3.277
LN(Tenure)	-0.063	-0.052	1.026	0.822	-0.051	-0.521
ROA	0.004*	4.799	-0.001	-0.954	0.006***	6.341
Pdirpens	-0.057*	-1.695	-0.057*	-1.901	-0.020	-0.611
Interlock	0.103**	2.085	0.093**	2.068	-0.026	-0.563
N		5207		5207		5207
Adjusted R-Square		78.75%		70.40%		67.06%

*Significant at 10 percent level, ** significant at 5 percent level, *** significant at 1 percent level
Note: Standard errors are corrected using period seemingly unrelated regression (SUR) – panel corrected standard errors (PCSE): correction for both period heteroskedasticity and general correlation of observations within a given cross section (Beck and Katz, 1995)

Table 6—Fixed Effect Regression Analysis of the Determinants of CEO Compensation for S&P Mid Cap Listed Firms

	LN (Total Comp.)	t Statistics	LN (Option Ratio)	t Statistics	LN (Short-Term Comp.)	t Statistics
Constant	3.753***	5.994	-2.934***	4.959	5.482***	12.203
LN (Not Exercised Ratio)	-0.225***	-19.624	-0.353***	-26.917	-0.010	-1.195
LN(Ajex)	-0.186***	-4.341	-0.157***	-3.241	-0.058*	-1.756
Trs1yr	-0.00002	-1.096	-0.00001	-0.702	0.0003*	1.722
LN(Bs Volatility)	-0.050	-0.574	0.229**	2.358	-0.114*	-1.674
LN(Number Mtgs)	0.038	0.904	0.036	0.770	-0.028	-0.855
LN(Tenure)	1.435***	5.630	0.914***	3.788	0.357*	1.898
ROA	0.009***	6.288	0.0002	0.146	0.012***	10.873
Pdirpens	0.040	0.604	-0.056	-0.757	0.065	1.319
Interlock	-0.052	-0.831	0.076	1.069	0.059	1.250
N		1997		1997		1997
Adjusted R-Square		72.64%		67.70%		70.19%

*Significant at 10 percent level, ** significant at 5 percent level, *** significant at 1 percent level
Note: Standard errors are corrected using period seemingly unrelated regression (SUR) – panel corrected standard errors (PCSE): correction for both period heteroskedasticity and general correlation of observations within a given cross section (Beck and Katz, 1995)

Analysis of the Results

In Tables 4 through 9 we compare compensation for the CEOs and directors of S&P 500, S&P Mid Cap, and S&P Small Cap listed firms. We find that the factors that explain their compensation are not all the same. In the case of factors that are the same, the intensity of the coefficients is different, and this difference is statistically

Table 7—Fixed Effect Regression Analysis of the Determinants of Directors Compensation for S&P Mid Cap Listed Firms

	LN (Total Comp.)	t Statistics	LN (Option Ratio)	t Statistics	LN (Short-Term Comp.)	t Statistics
Constant	3.421***	5.983	-2.437***	-4.211	4.739***	9.878
LN (Not Exercised Ratio)	-0.245***	-23.625	-0.333***	-30.245	-0.008	-0.956
LN(Ajex)	-0.193***	-5.021	-0.217***	-5.374	-0.035	-1.105
Trs1yr	0.0000003	-0.015	-0.00001	-0.730	0.000**	2.245
LN(Bs Volatility)	0.036	0.509	0.364***	4.898	-0.153**	-2.571
LN(Number Mtgs)	0.048	1.242	-0.004	-0.104	-0.066**	-2.051
LN(Tenure)	1.659***	6.627	0.820***	3.234	0.700***	3.332
ROA	0.010***	8.550	0.001	0.784	0.009***	10.037
Pdirpens	0.086	1.445	-0.010	-0.153	0.065	1.300
Interlock	0.023	0.380	0.100	1.524	0.045	0.874
N		2669		2669		2669
Adjusted R-square		70.49%		64.98%		64.63%

*Significant at 10 percent level, ** significant at 5 percent level, *** significant at 1 percent level
Note: Standard errors are corrected using period seemingly unrelated regression (SUR) – panel corrected standard errors (PCSE): correction for both period heteroskedasticity and general correlation of observations within a given cross section (Beck and Katz, 1995)

Table 8—Fixed Effect Regression Analysis of Determinants of the CEO Compensation for S&P Small Cap Listed Firms

	LN (Total Comp.)	t Statistics	LN (Option Ratio)	t Statistics	LN (Short-Term Comp.)	t Statistics
Constant	6.492***	5.054	4.527***	3.233	-2.158**	-2.238
LN (Not Exercised Ratio)	-0.243***	-22.273	-0.332***	-25.975	0.008	0.826
LN(Ajex	-0.309***	-6.236	-0.310***	-5.380	-0.046	-1.110
Trs1yr	0.001***	3.773	-0.001***	-5.404	0.001***	7.095
LN(Bs Volatility)	0.161**	2.194	0.020	0.237	-0.119*	-1.957
LN(Number Mtgs)	0.070*	1.811	-0.064	-1.144	-0.017	-0.515
LN(Tenure)	0.375	0.699	-2.190***	-3.791	3.443***	8.541
ROA	0.003***	3.187	-0.002*	1.914	0.004***	5.605
Pdirpens	0.092	1.096	0.067	0.702	0.119*	1.697
Interlock	0.098	1.458	0.214***	2.839	0.060	1.021
N		2209		2209		2209
Adjusted R-Square		75.49%		71.91%		70.60%

*Significant at 10 percent level, ** significant at 5 percent level, *** significant at 1 percent level
Note: Standard errors are corrected using period seemingly unrelated regression (SUR) – panel corrected standard errors (PCSE): correction for both period heteroskedasticity and general correlation of observations within a given cross section (Beck and Katz, 1995)

significant based on tests (results not shown but available from authors upon request) for equality of regression parameters.

The number of stock options vested has a negative influence on executive compensation in S&P 500, S&P Mid Cap, and S&P Small Cap listed firms and also on the number of stock options that are granted to the executives Essentially, when executives have stock options that go unexercised due to the market price staying below the exercise price, companies reduce compensation based on stock options

Table 9—Fixed Effect Regression Analysis of the Determinants of Directors Compensation for S&P Small Cap Listed Firms

	LN (Total Comp.)	t Statistics	LN (Option Ratio)	t Statistics	LN (Short-Term Comp.)	t Statistics
Constant	6.091***	4.318	3.305**	2.202	-1.785	-1.511
LN (Not Exercised Ratio)	-0.235***	-25.758	-0.318***	-32.193	0.009	1.141
LN(Ajex)	-0.281***	-6.772	-0.331***	-7.313	-0.050	-1.400
Trs1yr	0.0005***	4.011	-0.0008***	-5.955	0.001***	8.423
LN(Bs Volatility)	0.178***	2.825	0.158**	2.242	-0.055	-1.015
LN(Number Mtgs)	0.017	0.501	-0.025	-0.662	-0.078***	-2.543
LN(Tenure)	0.467	0.749	-1.818***	-2.747	3.524***	6.769
ROA	0.004***	4.698	-0.0002	-0.256	0.005***	7.583
Pdirpens	0.079	1.030	0.085	1.038	0.041	0.616
Interlock	0.084	1.346	0.139**	2.097	0.077	1.398
N		3003		3003		3003
Adjusted R-Square		72.29%		69.64%		66.96%

*Significant at 10 percent level, ** significant at 5 percent level, *** significant at 1 percent level

Note: Standard errors are corrected using period seemingly unrelated regression (SUR) – panel corrected standard errors (PCSE): correction for both period heteroskedasticity and general correlation of observations within a given cross section (Beck and Katz, 1995)

Table 10—Fixed Effect Regression Analysis of CEO Total Compensation Determinants Before and After Nasdaq Crash in 2000

	S&P 500 Ln(Total Comp.) (t statistics)		S&P Mid Cap Ln(Total Comp.) (t statistics)		S&P Small Cap Ln(Total Comp.) (t statistics)	
Independent Variables	1992-2000	2001-2004	1992-2000	2001-2004	1992-2000	2001-2004
Constant	9.434***	14.339***	7.193***	8.734***	7.863***	7.584***
	(2.970)	(4.955)	(29.674	(39.759)	(3.358)	(40.093)
LN (Not Exercised Ratio)	-0.246	-0.300***	-0.201***	-0.260***	-0.236***	-0.284***
	(-22.937)	(-13.835)	(-12.825)	(-12.383)	(-15.017)	(-15.752)
LN (Ajex)	-0.283***	-0.269***	-0.236***	-0.144	-0.271***	0.337***
	(-8.792)	(-2.771)	(-3.864)	(-1.444)	(-3.989)	(-2.863)
Trs 1 yr	0.001***	-0.0004	0.00007	-0.00001	0.0005**	0.00005
	(4.496)	(-1.144)	(0.317)	(-1.056)	(2.431)	(0.189)
LN(Bs Volatility)	0.177**	0.045	-0.070	0.345	0.345***	-0.052
	(2.087)	(0.234)	(-0.610)	(1.619)	(3.378)	(-0.320)
LN (#/mtgs)	0.065	-0.099***	0.066	-0.067	-0.010	0.113**
	(1.311)	(-1.844)	(1.122)	(-0.994)	(-0.159)	(2.012)
LN(Tenure)	-0.442	-2.385		…	-0.072	…
	(-0.373)	(-1.644)			(-0.079)	
ROA	0.011***	-0.004***	0.011***	0.002	0.003***	0.006***
	(5.972)	(-3.265)	(4.637)	(0.867)	(2.585)	(3.345)
Pdirpens	0.002	-0.141	0.053	-0.112	0.029	0.010
	(0.041)	(-1.281)	(0.701)	(-0.567)	(0.255)	(0.031)
Interlock	0.080	-0.015	-0.063	-0.008	0.169	-0.018
	(1.310)	(-0.129)	(-0.804)	(-0.056)	(1.291)	(-0.189)
N	2391	1450	1187	951	1089	1173
Adjusted R-Square	83.13%	81.31%	76.04%	77.32%	78.47%	81.22%

*Significant at 10 percent level, ** significant at 5 percent level, *** significant at 1 percent level

Table 11—Fixed Effect Regression Analysis of Determinants of Directors´ Total Compensation Before and After Nasdaq Crash for S&P Listed Firms

	S&P 500 Ln(Total Comp.) (t statistics)		S&P Mid Cap Ln(Total Comp.) (t statistics)		S&P Small Cap Ln(Total Comp.) (t statistics)	
Independent Variables	1992-2000	2001-2004	1992-2000	2001-2004	1992-2000	2001-2004
Constant	8.522**	13.848***	7.205***	3.191***	6.569**	7.348***
	(2.441)	(4.889)	(57.585)	(3.396)	(2.509)	(56.320)
LN (Not Exercised Ratio)	-0.251***	-0.294***	-0.226***	-0.291***	-0.264**	-0.271***
	(-27.623)	(-19.719)	(-21.824)	(-15.055)	(-20.984)	(-18.994)
LN (Ajex)	-0.244***	-0.297	-0.247	-0.127	-0.234***	-0.225*
	(-8.511)	(-3.945)	(-6.402)	(-1.554)	(-4.326)	(-2.590)
Trs1yr	0.001***	0.000**	0.001	-0.0002	0.008***	-0.0002
	(4.929)	(0.394)	(0.788)	(-0.885)	(4.371)	(-1.002)
LN(Bs Volatility)	0.083	-0.290	0.067	-0.021	0.372***	-0.113
	(1.089)	(-2.040)	(0.908)	(-0.101)	(4.226)	(-0.836)
LN(#mtgs)	0.125***	-0.060	0.020	-0.020	-0.012***	0.071
	(2.916)	(-1.367)	(0.499)	(-0.325)	(-0.243)	(1.538)
LN(Tenure)	-0.271	2.492**	…	…	0.336***	…
	(-0.195)	(-1.695)			(1.316)	
ROA	0.014***	-0.0002	0.12***	0.005***	0.003	0.008***
	(7.914)	(-0.242)	(8.150)	(3.725)	(2.906)	(5.449)
Pdirpens	-0.011	-0.099	0.057	-0.293*	-0.196	-0.179
	(-0.293)	(-1.140)	(0.964)	(-1.802)	(81.852)	(-0.653)
Interlock	0.010	0.087	0.039	-0.059	0.107	-0.010
	(0.180)	(0.923)	(0.639)	(-0.478)	(1.209)	(-0.120)
N		2241	2547	1343	1655	1909
Adjusted R-Square		80.46%	79.52%	70.00%	75.64%	83.52%

and increase cash compensation with the purpose of not losing the executives and giving them incentive again.

The ratio used to adjust per-share data for all stock splits has a negative influence on total compensation for all the executives of S&P listed firms; however, it has higher impact on small size companies. In the case of S&P Mid Cap and S&P Small Cap firms, this ratio also negatively affects the number of stock options and the cash compensation that executives receive.

The one-year return to shareholders positively affects, on a small scale, both the total and cash compensation of CEOs and directors of S&P 500 listed firms. But it impacts only cash compensation for all S&P firms. The one-year return to shareholder is negatively related to the option ratio for S&P 500 and S&P Small Cap listed firms. This means that when shareholders are satisfied with the returns generated by the firm on their investment, they do not feel the need to give more incentive to the executives with stock options to align executive interests with their own.

The volatility of stock returns has a positive relationship with the number of stock options and a negative relationship with cash compensation for the executives of S&P 500 and S&P Mid Cap listed companies. When volatility is high, companies pay more with stock options and less with cash compensation. Only large companies have a positive and statistically significant relationship. We find a positive

relationship between stock return volatility and total compensation in the case of S&P Small Cap CEOs and a negative relationship with S&P 500 directors. The option ratio is positively influenced by stock return volatility in all the cases except CEOs and directors from S&P Small Cap listed firms. Stock return volatility is negatively related to cash compensation in all the situations excluding S&P Small Cap directors. We can conclude that when volatility is higher, shareholders prefer to grant stock options to executives and reduce the use of cash compensation.

The number of board meetings is generally negatively related to cash compensation of CEOs and directors for S&P 500 firms, but for directors only for S&P Mid Cap and S&P Small Cap firms. Our findings are congruent with those of Ryan and Wiggins (2001) and Chen and Hung (2006) in the sense that monitoring power can reduce the necessity to motivate executives with more compensation to reduce agency problems. According to Davidson, Pilger, and Szakmary (1998), board members are more aligned with shareholders´ interests when they have more meetings during the year (and therefore CEO compensation is more controlled). We only find a positive relationship between total compensation and the number of meetings in the case of CEOs from S&P Small Cap listed firms—when the number of board meetings is higher, CEOs from these firms will receive more.

We also analyze the impact of the CEO (tenure) on total compensation, option ratio, and short-term compensation, respectively. The number of years that executives are leading the company (tenure) has a strong and positive influence on CEOs' and directors' total compensation in the case of medium size companies. The number of stock options that they receive is also positively influenced by CEO tenure. In the case of large size companies, the relationship is negative; when executives have more years of experience as CEO, compensation decreases, as does the number of stock options that they receive. The number of stock options granted is positively related to CEO and directors' tenure in S&P Mid Cap firms. We also find a positive relationship between cash compensation of CEO and directors and tenure for S&P Mid Cap and S&P Small Cap listed firms. We can conclude, like Chen and Hung (2006) and Chung and Pruitt (1996), that tenure influences executive compensation.

ROA has a positive influence on total compensation in the case of all CEOs and directors, with the exception of CEOs from S&P 500 firms, but has a negative influence on the number of stock options granted to executives for small size companies.

As we expected, the effect of the existence of a firm's pension plan on total compensation is negative, but only for CEOs and directors from S&P 500 and S&P Small Cap listed firms. In the case of S&P Mid Cap listed firms, the coefficients are not statistically significant. The results imply that when firms already contribute to a pension plan for the executives, they do not increase the compensation. In the case of CEOs and directors of S&P 500 firms, the number of stock options granted to the executives is also negatively influenced by the existence of a pension plan.

We find, like Hallock (1997), that CEO interlocking (being a member of two different boards at the same time) positively influences the total compensation of CEOs of S&P 500 firms. The number of options that executives receive is also positively related to interlocking for CEOs and directors of S&P 500 firms and only CEOs for S&P Small Cap Listed firms. We can conclude that CEOs and directors from big companies can extract benefits from interlock relationships.

Time has a positive effect on total compensation, the number of options, and short-term compensation. Based on Fama and French (1997) industry classification, we also analyze the effect of the industry on executives' compensation.

In Tables 10 and 11 we find interesting results about the impact of the Nasdaq crash on the variables that explain executive compensation. In the case of CEOs of S&P 500 firms after the Nasdaq crash, the variables one-year return to shareholders and volatility are not significant. The variable number of board meetings changes its sign from positive to negative, and the signs are statistically significant. In the case of S&P listed firms, the most important changes are that LN (Ajex) is not statistically significant after the Nasdaq crash, but ROA becomes statistically significant. In the case of S&P Small Cap firms after the Nasdaq crash, volatility is not statistically significant but the number of meetings becomes significant.

With regard to the sub-sample of S&P 500 directors, LN (Ajex), the number of board meetings, and ROA are not statistically significant after the Nasdaq crash. In the case of S&P Mid Cap firms, the number of board meetings and executive interlocking are not statistically significant after the Nasdaq crash. The dummy variable if firms have pension plans for executives (Pdirpens) changes from positive influence before the Nasdaq crash to negative influence after the crash. Finally, in the case of S&P Small Cap firms, the one-year return to shareholders and the number of board meetings are not statistically significant after the Nasdaq crash, but ROA is now positively related to total compensation. This relationship is statistically significant.

Conclusion

In this paper we analyze whether the total compensation value and the components of executive compensation across S&P 500, S&P Mid Cap, and S&P Small Cap listed firms are the same during the period from 1992 to 2004. We also examine whether the total compensation and forms of compensation change after the Nasdaq crash and the Sarbanes-Oxley Act in 2002. Furthermore, we control for firm size and industry effect based on the Fama and French (1997) industry classifications and analyze whether the determinants that explain executive compensation are the same or different across S&P large, medium, and small firms.

Our results reveal that the mean executive compensation and the component weights (forms of compensation) are significantly different for firms across S&P 500, S&P Mid Cap, and S&P Small Cap indexes. Total compensation and forms of compensation change after the Nasdaq crash and enactment of the Sarbanes-Oxley

Act. In general, salary and stock options decrease and the use of restricted stocks and bonuses increase after the Sarbanes-Oxley Act, among S&P 500 and also S&P Small Cap firms. The Sarbanes-Oxley Act seems to be effective. Corporate salaries and stock option awards were subject to a lot of public debate before the introduction of the Sarbanes-Oxley Act, and it appears that firms made significant changes in their compensation packages.

Our results also reveal that controlling for firm size and industry effect, the factors that explain CEO and director compensation in S&P 500, S&P Mid Cap, and S&P Small Cap listed firms are, in general, not all the same. When factors are the same, the intensity of the coefficients is significantly different. We also find that the Nasdaq crash changed the influence of some of the factors that explain executive compensation. Results, not shown but briefly discussed in the conclusion section, are similar for the impact of the enactment of the Sarbanes-Oxley Act (2002).

References

1. Aggarwal, R., and A. Samwick, "Executive Compensation, Strategic Competition and Relative Evolution: Theory and Evidence," *The Journal of Finance,* 54, no. 6 (1999), pp. 1999-2043.

2. Aggarwal, R., and A. Samwick, "Performance Incentives Within the Firms: The Effects of Managerial Responsibility," *The Journal of Finance*, 58, no. 4 (2003), pp. 1613-1649.

3. Anderson, R., and J. Bizjak, "An Examination of the Role of the CEO and the Compensation Committee in Structuring Executive Pay," *Journal of Banking & Finance*, 27, no. 7 (2003), pp. 1323-1348.

4. Barro, J., and R. Barro, "Pay, Performance and Turnover of Bank CEOs," *Journal of Labor Economics*, 8, no. 4 (1990), pp. 448-481.

5. Barron, M., and G. Waddel, "Executive Rank, Pay and Project Selection," *Journal of Financial Economics*, 67, no. 2 (2003), pp. 305-349.

6. Beck, N., and J. Katz, "What to do (and Not to Do) With Time-Series Cross-Section Data," *American Political Science Review*, 89, no. 3 (1995), pp. 663-647.

7. Bens, D., V. Nagar, D. Skinner, and M. Wong, "Employee Stock Options, EPS Dilution and Stock Repurchases," *Journal of Accounting and Economics*, 36, nos. 1-3 (2003), pp. 51-90.

8. Bertrand, M., and K. Hallock, "The Gender Gap in Top Corporate Jobs," *Industrial & Labour Relations Review*, 55, no. 1 (2001), pp. 3-21.

9. Brenner, M., R. Sundaram, and D. Yermack, "Altering the Terms of Executive Stock Options," *Journal of Financial Economics*, 57, no. 1 (2000), pp. 103-128.

10. Bushman, R., R. Indjejikian, and A. Smith, "CEO Compensation: The Role of Individual Performance Evaluation," *Journal of Accounting and Economics,* 21, no. 1 (1996), pp. 161-193.

11. Carter, M., and L. Lynch, "An Examination of Executive Stock Option Repricing," *Journal of Financial Economics*, 61, no. 2 (2001), pp. 207-225.

12. Carter, M., and L. Lynch, "The Effect of Stock Option Repricing on Employee Turnover," *Journal of Accounting and Economics,* 37, no. 1 (2003), pp. 91-112.

13. Chance, D., R. Kumar, and R. Todd, "The 'Repricing' of Executive Stock Options," *Journal of Financial Economics,* 57, no. 1 (2000), pp.129-154.

14. Chen, M., "Executive Option Repricing, Incentives and Retention," *The Journal of Finance,* 59, no. 3 (2004), pp. 1167-1199.

15. Cheng, Y., and C. Hung "Corporate Governance and Insider Compensation: Nasdaq Technology Firms," Financial Management Conference Working Paper (2006).

16. Chidambaran, N., and N. Prabhala, "Executive Stock Option Repricing, Internal Governance Mechanisms and Management Turnover," *Journal of Financial Economics*, 69, no. 1 (2003), pp. 153-189.

17. Datta, S., M. Iskandar-Datta, and K. Kaman, "Executive Compensation and Corporate Acquisitions Decisions" *The Journal of Finance,* 56, no. 6 (2001), pp. 2299-2326.

18. Davidson, W., T. Pilger, and A. Szakmary, "Golden Parachutes, Board and Committee Composition and Shareholder Wealth," *The Financial Review*, 33, no. 4 (1998), 17-32.

19. Fama, E., and K. French. "Industry Costs of Equity," *Journal of Financial Economics,* 43, no. 2 (1997), pp. 153-193.

20. Fields, L., and D. Fraser, "On the Compensation Implications of Commercial Bank Entry Into Investment Banking," *Journal of Banking & Finance*, 23 (1999), pp. 1261-1276.

21. Grinstein, Y., and P. Hribar, "CEO Compensation and Incentives: Evidence from M&A Bonus," *Journal of Financial Economics,* 73, no. 1 (2004), pp. 119-143.

22. Hallock, K., "Reciprocally Interlocking Boards of Directors and Executive Compensation," *Journal of Financial and Quantitative Analysis*, 32, no. 3 (1997), pp. 331-426.

23. Hermalin, B., and N. Wallace, "Firm Performance and Executive Compensation in the Savings and Loan Industry," *Journal of Financial Economics,* 61, no. 1 (2001), pp. 139-170.

24. Kato, H., M. Lemmon, M. Luo, and J. Schallheim, "An Empirical Examination of the Costs and Benefits of Executive Stock Options: Evidence from Japan," *Journal of Financial Economics,* 78, no. 2 (2005), pp. 435-461.

25. Kostiuk, P., "Firm Size and Executive Compensation," *The Journal of Human Resources,* 25, no. 1 (1990), pp. 90-105.

26. Lambert, R., D. Larcker, and K. Weigelt, "How Sensitive is Executive Compensation to Organizational Size?" *Strategic Management Journa*l, 12 (1991), pp.395-402.

27. Morgan, A., and A. Poulsen, "Linking Pay to Performance," *Journal of Financial Economics,* 62, no. 3 (2001), pp. 489-523.

28. Murphy, K., "Incentives, Learning and Compensation: A Theoretical and Empirical Investigation of Managerial Labour Contracts," *Rand Journal of Economics*, 17, no. 1 (1986), pp.59-76.

29. Murphy, K., "Stock-Based Pay in New Economy Firms," *Journal of Accounting and Economics,* 34, no. 1 (2003), pp. 129-147.

30. Narayanan, M., and H. Seyhun, "Effect of the Sarbanes-Oxley Act on the Influencing of Executive Compensation," SSRM working paper no. 852964 (2005).

31. Ryan, H., and R. Wiggins, "The Influence of Firm- and Manager-Specific Characteristics on the Structure of Executive Compensation," *Journal of Corporate Finance,* 7, no. 3 (2001), pp.101-123.

32. Ryan Jr, H., and R. Wiggins, "Who is in Whose Pocket? Director Compensation, Board Independence, and Barriers to Effective Monitoring," *Journal of Financial Economics,* 73, no. 3 (2004), pp. 497-524.

33. Stathopoulos, K., S. Espenlaub, and M. Walker, "U.K. Executive Compensation Practices: New Economy Versus Old Economy," *Journal of Management Accounting Research*, 16, no. 1 (2004), pp. 57-92.

34. Ueng, C., D. Wells, and J. Lilly, "CEO Influence and Executive Compensation: Large Firms vs. Small Firms," *Managerial Finance,* 26, no. 8 (2000), pp. 3-12.