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Structuring Board of Directors' Compensation Contracts: An Optimal Incentives Perspective

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Boards of directors have been the subject of much research in various business disciplines. Boards are purported to serve as representatives of shareholders, oversee the implementation of the chosen strategy and provide useful external links and contacts to facilitate firm success. We know what we want boards to do, but how do we ensure they will do it? This leads to the issue of how best to compensate board members. This paper explores the relationship between board members' compensation structure and subsequent firm performance. Based on a sample of 1721 directors and 158 firm year observations, compelling evidence suggests a moderate level of performance-based compensation for BOD members is associated with maximum firm performance.

Keywords: Board of directors, compensation, prospect theory

Introduction

Boards of directors have been the subject of much attention in various literature streams including Accounting (Duffy, 2004), Finance (Barlas et al., 2006) and Management (Conyon, 2006). Much of this research has focused on board roles and functions, composition and compensation.

Role-based research has focused on two primary categories: agency role and resource dependence (Hillman et al., 2000). The agency role refers to the governance function where boards serve as a representative of shareholders, approving the decisions of managers and overseeing implementation of strategy (Daily & Dalton, 1994; Hillman et al., 2000). The resource dependence role refers to the utility of boards in providing essential resources or access to these resources through external linkages to the environment (Daily & Dalton, 1994; Hillman et al., 2000). These external linkages provide legitimacy for the firm in the eyes of customers, suppliers, financiers and other key constituents.

Extant research on boards of directors also focuses on board composition. Researchers tend to agree with the logic that a high proportion of outside directors is appropriate. However, empiric results are far from conclusive. Studies have revealed that outside directors are positively associated with performance (Daily & Dalton, 1994; Wagner III et al., 1998), have no relationship with performance (Bhagat & Black, 1997; Wood & Patrick, 2003) or are negatively associated with performance (Goodstein & Boker, 1991). BOD compensation research focuses on the proper structuring of contracts and notes the growing trend toward equity compensation (Dalton & Daily, 2001; Barrier, 2002), but provides little empiric verification of the relationship between BOD compensation and firm performance. Dalton and Daily (2001) suggest that the growing trend for stock and option-based compensation for BOD members will be even more contentious than the controversy over corporate officer pay primarily due to issues surrounding BOD members setting their own compensation packages. The issue of interest is how best to compensate BOD members. Thus, this paper explores the relationship between BOD compensation structure and subsequent firm performance.

BOD Incentive-Based Compensation

The relationship between the board of directors and the compensation committee is complicated. Often, there is considerable overlap in the two groups. However, recent trends have been for BODs and compensation committees to become more independent from one another (Conyon, 2006). Compensation committees must recognize the presence of agency problems when structuring the BOD members' compensation packages. A real temptation exists for a BOD member to view his/her role as merely ceremonial or advisory and not really become vested in the interests of the company (Spira, 1999). This possibility is harmful for the firm. The Journal of Accountancy (2007) reports that median pay for the largest 500 companies in the

United States rose to $185,000 in 2006. So, a BOD member who views his/her role as primarily or completely ceremonial receives a healthy sum of cash in return for very little productive input.

Incentive-based compensation serves to align the individual board member's interests with those of the firm as a whole. American companies have responded to this need by using more stock and less cash as compensation for BOD members while some countries (such as the UK) still use primarily cash (Barrier, 2002). Incentive-based compensation is advantageous for the firm and the BOD member to a certain degree, but one would expect that at some level a member of the board will prefer some mix of cash compensation and incentive compensation rather than a package composed entirely of incentive compensation.

There are four primary ways that prospect theory informs the issue of CEO and BOD compensation. First, prospect theory holds that people often consider outcomes certain when they are really only probable. Therefore, a BOD member who has option "in the money" may adopt a defensive strategy until vesting date in order to cash in on an option value that he/she views considers certain.

Second, the converse also results in incentives being misaligned. If the options are out of the money, there are two alternatives for executives that shareholders would not prefer. The board member may become "too risky" in terms of firm strategy in an attempt to rescue the option value before the vesting date or may become disheartened and give up thinking that the option will never recover to the point of being "in the money."

Third, prospect theory also holds that people shift reference points in many cases (Kahneman & Tversky, 1979). Board members who have options in the money may change their reference point to the current value of the stock and see even a small drop in stock price as a direct loss rather than a reduction in gain. This could again lead to aggressive behavior in loss situations and defensive behavior in gain situations.

Finally, prospect theory helps to explain the threat of a board member attempting to manage earnings. Shen and Chih (2005) specifically applied prospect theory to banks, finding bank executives were indeed managing earnings deceptively to avoid earnings decreases and loss of personal wealth. The same could certainly be true for a board member with compensation tied to the performance of the firm. Barrier (2002) suggests that using incentive-based compensation is useful and appropriate only when accompanied with long-term sale restrictions forcing the director to be concerned with long-term value creation rather than a short-term increase in stock price. Thus, prospect theory leads to the following predicted relationship for the BOD as a whole as well as inside directors:

Hypothesis 1a. The average level of performance-based compensation of the BOD will have a nonlinear (concave) relationship with firm performance.

Hypothesis 1b. The average level of performance-based compensation of inside directors will have a nonlinear (concave) relationship with firm performance.

Outside Directors

Outside directors bring an independent mindset to the firm. They provide governance and serve to monitor implementation of firm strategy. Often, outside directors are asked to serve on the audit and compensation committees signaling independent decisions to the shareholders and those outside the firm (Cotter & Silvester, 2003). Mishra and Nielsen (2000) confirm a relationship between the percentage of independent outside directors and scrutiny of compensation practices.

Outside directors also offer legitimacy and help reduce uncertainty (Hillman et al., 2000). Outside directors bring a new, fresh mindset to the firm. They have built a quality reputation outside the firm and have experiences and knowledge that complements the existing knowledge base in the firm. Outside directors utilize this knowledge to inform and aid the firm in crafting its future courses of action (Hillman et al., 2000).

Firms must determine how best to compensate outside directors for their service and input. The Financial Executive (2003) reports that fully independent board members earn 136% of what regular board members make. As noted above, median BOD pay for 2006 rose to $185,000 (Journal of Accountancy, 2007). If a firm uses all cash compensation, a temptation to serve a purely ceremonial role may develop. Therefore, agency theory would suggest that equity-based compensation is necessary to motivate the BOD member to become an active participant in the firm. However, as more equity compensation is used, the outside director becomes closer to a manager of the company or inside director and less likely to fulfill the independent role mentioned above. As a result, the best results are likely to come from offering an outside director a moderate level of incentive-based compensation, leading to the following hypothesis:

Hypothesis 2. The average level of performance-based compensation of outside directors will have a nonlinear (concave) relationship with firm performance.

As noted above, while most researchers agree with the logic that a high proportion of outside directors is appropriate, empiric results are far from conclusive. Studies have revealed everything from outside directors being positively associated with performance (Daily & Dalton, 1994; Wagner III et al., 1998), having no relationship with performance (Bhagat & Black, 1997; Wood & Patrick, 2003) and being negatively associated with performance (Goodstein & Boker, 1991). Uzun et al. (2004) present compelling findings suggesting that even if outside directors are not solidly linked to increased firm performance, their presence on the board's audit and compensation committees decreased the likelihood of corporate wrongdoing. Outside directors have also been shown to be more likely and more appropriate to serve on the compensation committee (Vafeas, 2000). Additionally, firms with a higher proportion of outside directors are more likely to adopt an incentive plan for BOD members (Vafeas, 1999). Therefore, research suggests that outsiders should serve on the compensation committee, do serve on compensation committees and utilize equity-based compensation. The question remains whether outsiders are associated with positive firm performance. As such, the following hypothesis is presented:

Hypothesis 3. The relative number of outside directors on a BOD will have a positive relationship with firm performance.

Methodology

The four hypotheses in this study were tested using a hand collected board of director dataset. Definitive proxy statements were examined from the EDGAR database for 40 firms. These 40 firms were randomly selected from the list of Fortune 500 companies. For each firm, proxy statements from 2003 through 2006 or 2007 were used based on availability. The final usable dataset contains 1721 directors from 158 proxy statements. For each director, director name, whether they were chairman of the board, inside or outside director status, cash compensation, the number of shares granted and the strike price of those shares was recorded. All other relevant independent variables were calculated. The dependent variable is the cumulative abnormal returns of each firm relative to the market. Six month return intervals were examined: 6 month, 12 month, 18 month, 24 month and 30 month returns for each firm.

Results

Overall board

Hypothesis 1a suggested the overall boards of directors would exhibit a nonlinear (concave) pattern. In order to test this hypothesis, I sorted the overall list of directors (1,721) by the percentage of performance-based compensation and divided the sample into quintiles. Several observations were lost because the performance data in the CRSP database was not available for each firm. The final usable sample contained 1,378 directors. The first quintile contains 264 observations of BOD members compensated with 0% performance compensation. The second quintile contains 253 observations and ranges from 1% to 53% incentive compensation. The remaining quintiles break down as follows: Q3=277 observations 54-73%, Q4=273 observations 74-86%, Q5=311 observations 87-100%.

Table 1. Full BOD sample.

	6 months	1 year	18 months	2 years	30 months
Q1	-0.96	1.95	2.44	4.60	2.29
Q2	2.10	0.69	0.78	0.49	1.68
Q3	2.17	0.88	10.02	10.88	0.03
Q4	-7.96	-15.80	-32.96	-40.34	-91.91
Q5	-7.33	-16.78	-26.02	-35.62	-59.79

Table 1 displays the association study results. As expected, the peak of the data occurs in predominantly in quintile 3 with sharp declines in quintiles 4 and 5. Almost all observations in quintiles 1-3 have positive abnormal returns while all observations in quintiles 4 and 5 have negative abnormal returns. This suggests the firms compensating BOD members with less than 74% incentive compensation perform much better than those using 74% or more.

Table 2. Full Sample 6 month returns.

	Model (1)	Model (2)	Model (3)
Constant	5.554*	8.291**	3.313
	2.288	2.981	1.024
Control variables			
Net Sales	-.003	-.009	.002
	-.090	-.275	.050
Number of Employees	.028	.014	.028
	.889	.422	.861
Total Compensation	.007	.016	.020
	.251	.577	.702
Compensation variables			
Percent Performance Compensation		-.059*	.250*
		-2.009	2.331
Percent Performance Compensation ^ 2			-.317**
			-2.990
Model significance			
R-Squared	.013**	.016**	.022***
Adjusted R-Squared	.010**	.012**	.018***
Change in R-Squared		.003*	.007**

+significant at the .10 level; *significant at the .05 level;**significant at the .01 level; ***significant at the .001 level
top line = standardized beta coefficients (constant is unstandardized); bottom line = t-statistics

Table 3. Full Sample 12 month returns.

	Model (1)	Model (2)	Model (3)
Constant	1.243	10.277*	2.089
	.336	2.435	.426
Control variables			
Net Sales	.001	-.012	-.001
	.019	-.385	-.032
Number of Employees	.075*	.043	.059+
	2.369	1.354	1.825
Total Compensation	-.007	.013	.017
	-.257	.463	.598
Compensation variables			
Percent Performance Compensation		-.127***	.206+
		-4.371	1.932
Percent Performance Compensation ^ 2			-.342**
			-3.244
Model significance			
R-Squared	.014**	.028***	.035***
Adjusted R-Squared	.011**	.024***	.031***
Change in R-Squared		.014***	.008**

+significant at the .10 level; *significant at the .05 level;**significant at the .01 level; ***significant at the .001 level
top line = standardized beta coefficients (constant is unstandardized); bottom line = t-statistics

Table 4. Full Sample 18 month returns.

	Model (1)	Model (2)	Model (3)
Constant	.120	19.614**	10.034
	.020	2.887	1.279
Control variables			
Net Sales	-.036	-.053	-.040
	-.960	-1.419	-1.063
Number of Employees	.073*	.026	.037
	1.970	.687	.987
Total Compensation	.011	.039	.040
	.340	1.227	1.265
Compensation variables			
Percent Performance Compensation		-.194***	.095
		-5.851	.765
Percent Performance Compensation ^ 2			-.296*
			-2.421
Model significance			
R-Squared	.010*	.043***	.049***
Adjusted R-Squared	.006*	.038***	.043***
Change in R-Squared		.033***	.006*

+significant at the .10 level; *significant at the .05 level;**significant at the .01 level ; ***significant at the .001 level
top line = standardized beta coefficients (constant is unstandardized); bottom line = t-statistics

Table 5. Full sample 24 month returns.

	Model (1)	Model (2)	Model (3)
Constant	-.680	25.140**	12.145
	-.096	3.148	1.318
Control variables			
Net Sales	-.026	-.045	-.030
	-.703	-1.218	-.811
Number of Employees	.069+	.016	.030
	1.881	.446	.795
Total Compensation	.004	.035	.037
	.116	1.115	1.159
Compensation variables			
Percent Performance Compensation		-.217***	.114
		-6.593	.926
Percent Performance Compensation ^ 2			-.339**
			-2.796
Model significance			
R-Squared	.011*	.052***	.060***
Adjusted R-Squared	.007*	.048***	.054***
Change in R-Squared		.041***	.007**

+significant at the .10 level; *significant at the .05 level;**significant at the .01 level ; ***significant at the .001 level
top line = standardized beta coefficients (constant is unstandardized); bottom line = t-statistics

Table 6. Full sample 30 month returns.

	Model (1)	Model (2)	Model (3)
Constant	-20.893+	25.854*	15.218
	-1.785	2.015	1.019
Control variables			
Net Sales	.031	.019	.030
	.646	1.973	.657
Number of Employees	.078+	.006	.013
	1.694	.144	.289
Total Compensation	.028	.077*	.074+
	.696	1.973	1.896
Compensation variables			
Percent Performance Compensation		-.295***	-.082
		-7.539	-.521
Percent Performance Compensation ^ 2			-.218
			-1.388
Model significance			
R-Squared	.021**	.100***	.103***
Adjusted R-Squared	.015**	.093***	.094***
Change in R-Squared		.078***	.003

+significant at the .10 level; *significant at the .05 level;**significant at the .01 level ; ***significant at the .001 level
top line = standardized beta coefficients (constant is unstandardized); bottom line = t-statistics

List wise regression examined the significance of the pattern observed from the association study results. Model 1 contains the control variables: industry, net sales, number of employees and total compensation. Model 2 adds the linear term of percentage performance-based compensation. Model 3 adds the squared term of percentage performance-based compensation. All models are significant for the full sample of directors at the .05 level. Only one model (Model 3 for the 30 month return) does not add a significant amount of explanatory power, suggesting that the percentage of performance compensation is a significant variable and the curve fits the data better than a line. Overall, these results lend support to the hypothesis that the full sample of directors has a nonlinear (concave) relationship between incentive compensation and subsequent firm performance.

Inside directors

Hypothesis 1b suggested the inside directors would also exhibit the nonlinear (concave) pattern between incentive compensation and firm performance. In order to test this hypothesis, inside directors were sorted, consisting of a mere 270 directors, by the percentage of performance-based compensation and divided the sample into quintiles. The first quintile contains the 64 observations of BOD members compensated with 0% performance compensation. The second quintile contains 48 observations and ranges from 1% to 54% incentive compensation. The remaining quintiles break down as follows: Q3=49 observations 55-71%, Q4=52 observations 72-83%, Q5=57 observations 84-100%.

Table 7. Outside directors.

	6 months	1 year	18 months	2 years	30 months
Q1	0.64	5.22	8.15	11.21	15.05
Q2	3.19	2.74	5.11	5.31	7.95
Q3	2.51	1.23	12.69	14.62	14.02
Q4	-8.23	-14.32	-35.21	-42.91	-91.59
Q5	-8.09	-18.88	-26.87	-37.48	-61.18

Table 7 displays the association study results. The pattern closely mirrors that of the overall sample as well as the outside directors. Without fail, the peak of the data occurs in the third quintile (55-71%).

Surprisingly, though, the results for quintiles 4 and 5 are very similar to those of quintiles 1 and 2. Recall that in Table 1 for the overall sample, we saw results in quintiles 4 and 5 that are sharply negative and results in quintiles 1-3 that are positive. Here, quintiles 1, 2, 4 and 5 are all negative.

Table 8. Inside directors 6 month returns.

	Model (1)	Model (2)	Model (3)
Constant	9.122	7.635	5.638
	1.408	1.022	.723
Control variables			
Net Sales	-.028	-.027	-.026
	-.332	-.320	-.308
Number of Employees	.072	.073	.078
	.968	.980	1.033
Total Compensation	.024	.016	.028
	.340	.207	.372
Compensation variables			
Percent Performance Compensation		.027	.233
		.402	.980
Percent Performance Compensation ^ 2			-.218
			-.904
Model significance			
R-Squared	.029	.029	.032
Adjusted R-Squared	.013	.009	.009
Change in R-Squared		.001	.003

+significant at the .10 level; *significant at the .05 level;**significant at the .01 level ; ***significant at the .001 level
top line = standardized beta coefficients (constant is unstandardized); bottom line = t-statistics

Table 9. Inside director 12 month returns.

	Model (1)	Model (2)	Model (3)
Constant	2.867	3.510	1.079
	.285	.302	.089
Control variables			
Net Sales	.003	.002	.003
	.031	.027	.037
Number of Employees	.079	.079	.082
	1.055	1.048	1.089
Total Compensation	.003	.006	.016
	.048	.078	.209
Compensation variables			
Percent Performance Compensation		-.007	.155
		-.112	.649
Percent Performance Compensation ^ 2			-.172
			-.708
Model significance			
R-Squared	.021	.021	.023
Adjusted R-Squared	.005	.001	-.001
Change in R-Squared		.000	.002

+significant at the .10 level; *significant at the .05 level;**significant at the .01 level ; ***significant at the .001 level
top line = standardized beta coefficients (constant is unstandardized; bottom line = t-statistics

Table 10. Inside director 18 month returns.

	Model (1)	Model (2)	Model (3)
Constant	5.053	3.976	1.560
	.311	.212	.079
Control variables			
Net Sales	-.066	-.066	-.064
	-.682	-.680	-.655
Number of Employees	.100	.100	.104
	1.148	1.151	1.181
Total Compensation	.048	.045	.050
	.590	.531	.588
Compensation variables			
Percent Performance Compensation		.009	.108
		.116	.404
Percent Performance Compensation ^ 2			-.105
			-.388
Model significance			
R-Squared	.021	.021	.022
Adjusted R-Squared	.000	-.005	-.010
Change in R-Squared		.000	.001

+significant at the .10 level; *significant at the .05 level;**significant at the .01 level: ***significant at the .001 level
top line = standardized beta coefficients (constant is unstandardized; bottom line = t-statistics

Table 11. Inside director 24 month returns.

	Model (1)	Model (2)	Model (3)
Constant	7.848	6.316	5.281
	.414	.288	.228
Control variables			
Net Sales	-.057	-.057	-.057
	-.595	-.593	-.582
Number of Employees	.100	.100	.102
	1.149	1.153	1.159
Total Compensation	.030	.027	.029
	.376	.320	.338
Compensation variables			
Percent Performance Compensation		.011	.047
		.141	.176
Percent Performance Compensation ^ 2			-.039
			-.142
Model significance			
R-Squared	.024	.024	.024
Adjusted R-Squared	.003	-.002	-.008
Change in R-Squared		.000	.000

+significant at the .10 level; *significant at the .05 level;**significant at the .01 level; ***significant at the .001 level
top line = standardized beta coefficients (constant is unstandardized; bottom line = t-statistics

Table 12. Inside director 30 month returns.

	Model (1)	Model (2)	Model (3)
Constant	-13.033	13.751	3.282
	-.435	.401	.090
Control variables			
Net Sales	-.077	-.125	-.118
	-.572	-.905	-.849
Number of Employees	.135	.139	.150
	1.267	1.306	1.400
Total Compensation	.132	.218+	.225+
	1.159	1.731	1.778
Compensation variables			
Percent Performance Compensation		-.151	.113
		-1.568	.349
Percent Performance Compensation ^ 2			-.277
			-.856
Model significance			
R-Squared	.055	.073+	.079
Adjusted R-Squared	.024	.036+	.034
Change in R-Squared		.018	.005

+significant at the .10 level; *significant at the .05 level;**significant at the .01 level ; ***significant at the .001 level
top line = standardized beta coefficients (constant is unstandardized; bottom line = t-statistics

None of the regression models or changes in r-square are significant for the inside directors. This is likely largely attributable to the small sample size of only 270 inside directors. It is interesting to note the extremely small changes in r-square for Models 2 and 3 for the 6 month, 12 month, 18 month and 24 month CARs. The percentage variable is not adding any real explanatory power at all for those dependent variables. It does seem to have an impact (although insignificant) for the 30 month return.

Outside directors

Hypothesis 2 suggested the outside directors would also exhibit the nonlinear (concave) pattern. In order to test this hypothesis, outside directors (1,141) were sorted by the percentage of performance-based compensation and divided the sample into quintiles. The first quintile contains the 200 observations of BOD members compensated with 0% performance compensation. The second quintile contains 226 observations and ranges from 1% to 52% incentive compensation. The remaining quintiles break down as follows: Q3=227 observations 53-73%, Q4=242 observations 74-87%, Q5=246 observations 88-100%.

Table 13. Inside directors

	6 months	1 year	18 months	2 years	30 months
Q1	-5.99	-8.27	-15.63	-16.32	-36.02
Q2	-6.76	-15.49	-20.83	-23.52	-33.15
Q3	2.11	4.59	1.11	0.06	-20.62
Q4	-0.24	-8.09	-17.19	-26.76	-84.44
Q5	-5.76	-16.25	-15.68	-15.81	-44.31

Table 13 displays the association study results. The pattern closely mirrors that of the overall sample. Again, the peak of the data occurs in the first three quintiles with sharp declines in quintiles 4 and 5. All cumulative abnormal returns are positive in the first three quintiles and negative in the last two quintiles. This provides more compelling evidence that using less than 73% incentive compensation yields much better results than using more than 73%.

Table 14. Outside directors 6 month returns.

	Model (1)	Model (2)	Model (3)
Constant	4.739+	8.854**	3.310
	1.826	2.975	.925
Control variables			
Net Sales	-.003	-.015	-.002
	-.077	-.422	-.055
Number of Employees	.021	-.005	.013
	.602	-.131	.360
Total Compensation	-.005	.000	.006
	-.178	.012	.192
Compensation variables			
Percent Performance Compensation		-.092**	.234+
		-2.799	1.916
Percent Performance Compensation ^ 2			-.334**
			-2.775
Model significance			
R-Squared	.010*	.017**	.024***
Adjusted R-Squared	.006*	.012**	.018***
Change in R-Squared		.007**	.007**

+significant at the .10 level; *significant at the .05 level;**significant at the .01 level; ***significant at the .001 level
top line = standardized beta coefficients (constant is unstandardized); bottom line = t-statistics

Table 15. Outside directors 12 month returns.

	Model (1)	Model (2)	Model (3)
Constant	.810	12.587**	3.368
	.206	2.813	.627
Control variables			
Net Sales	-.006	-.029	-.015
	-.176	-.835	-.427
Number of Employees	.076*	.028	.047
	2.186	.779	1.312
Total Compensation	-.010	-.174	.007
	-.325	.033	.232
Compensation variables			
Percent Performance Compensation		-.174***	.183
		-5.328	1.517
Percent Performance Compensation ^ 2			-.365**
			-3.072
Model significance			
R-Squared	.012*	.037***	.046***
Adjusted R-Squared	.008*	.033***	.040***
Change in R-Squared		.025***	.008**

+significant at the .10 level; *significant at the .05 level;**significant at the .01 level ; ***significant at the .001 level
top line = standardized beta coefficients (constant is unstandardized); bottom line = t-statistics

Table 16. Outside directors 18 month returns.

	Model (1)	Model (2)	Model (3)
Constant	-1.094	23.938**	13.662
	-.171	3.347	1.611
Control variables			
Net Sales	-.037	-.068+	-.054
	-.906	-1.696	-1.328
Number of Employees	.069+	.000	.013
	1.699	-.011	.308
Total Compensation	-.010	.006	.011
	-.293	.178	.315
Compensation variables			
Percent Performance Compensation		-.262***	.041
		-7.096	.291
Percent Performance Compensation ^ 2			-.309*
			-2.240
Model significance			
R-Squared	.008	.067***	.073***
Adjusted R-Squared	.003	.061***	.066***
Change in R-Squared		.058***	.006*

+significant at the .10 level; *significant at the .05 level;**significant at the .01 level ; ***significant at the .001 level
top line = standardized beta coefficients (constant is unstandardized); bottom line = t-statistics

Table 17. Outside directors 24 month returns.

	Model (1)	Model (2)	Model (3)
Constant	-2.739	30.274***	15.466
	-.361	3.597	1.552
Control variables			
Net Sales	-.027	-.061	-.044
	-.656	-1.538	-1.094
Number of Employees	.065	-.012	.004
	1.603	-.301	.092
Total Compensation	-.020	-.001	-.004
	-.561	-.044	.123
Compensation variables			
Percent Performance Compensation		-.292***	.076
		-7.952	-2.748
Percent Performance Compensation ^ 2			-.376**
			-2.748
Model significance			
R-Squared	.009	.081***	.090***
Adjusted R-Squared	.004	.075***	.083***
Change in R-Squared		.072***	.009**

+significant at the .10 level; *significant at the .05 level;**significant at the .01 level; ***significant at the .001 level
top line = standardized beta coefficients (constant is unstandardized); bottom line = t-statistics

Table 18. Outside directors 30 month returns.

	Model (1)	Model (2)	Model (3)
Constant	-24.952*	49.529***	18.855
	-1.970	3.746	1.232
Control variables			
Net Sales	.019	-.073	-.060
	.353	-1.516	-1.248
Number of Employees	.085	-.002	.025
	1.639	-.046	.535
Total Compensation	.065	.333***	.392***
	1.424	7.030	7.961
Compensation variables			
Percent Performance Compensation		-.534***	.105
		-11.125	.606
Percent Performance Compensation ^ 2			-.684***
			-3.839
Model significance			
R-Squared	.020*	.207***	.229***
Adjusted R-Squared	.012*	.200***	.220***
Change in R-Squared		.188***	.022***

+significant at the .10 level; *significant at the .05 level;**significant at the .01 level ; ***significant at the .001 level
top line = standardized beta coefficients (constant is unstandardized); bottom line = t-statistics

The regression results for outside directors are the strongest results of this study. The control models are only marginally significant (insignificant for 18 and 24 months). Models 2 and 3 are significant for each dependent variable with r-square values as high as 22.9% for the 30 month returns. In addition, all changes in r-square are significant for Models 2 and 3. Here, the percentage variable is highly significant for outside directors and the significant change in r-square from Model 2 to Model 3 lends support to the curvilinear model.

Board composition

Hypothesis 3 suggests the relative number of outside directors on the board would be positively related to firm performance. In order to test this hypothesis, the percentage of outsiders on the board was calculated for each firm. This calculation reduced my usable sample to 158 firm year observations. The mean percentage of outsiders on the board was 80.46% with a range of 50-100%.

Control variables were entered in Model 1: industry, net sales, number of employees. Model 2 adds the calculated percentage of outside directors on the board. None of the regression models are significant for this test. However, with r-square values approaching 4% for the 30 month return, it is likely that a larger sample size would make this model significant.

The logic underlying this hypothesis suggests outside board members will lead the firm to perform better than inside board members. A simple calculation of the mean CAR for the two sets of directors reveals this is the case. There are 1141 outside directors in the dataset with a mean CAR of -12.52% and 270 inside directors have a mean CAR of -17.15%. This calculation provides further evidence that a larger sample size would likely yield a significant regression result.

Discussion

Significant results

This study provides several intriguing findings and directions for future research. Hypotheses 1a, 2, and 4 were supported. The overall board and the outside directors were found to follow the nonlinear (concave) pattern expected. I was surprised to see the amount of variance explained for the outside directors. In a sample of only 1,141 outside directors, the r-square approached 23% for the 30-month returns. These results provide motivation to continue BOD compensation issues in future research.

Insignificant result

Hypothesis 1b was not supported. There were only 270 inside directors in the dataset; therefore, a lack of significance was not surprising. It is somewhat surprising that the 6 month, 12 month, 18 month and 24 month returns, both the linear percentage term and the squared term added practically no explanatory power to the model. A larger sample size would not have helped for these dependent variables. There does not appear to be a relationship between the incentive-based compensation of inside directors and subsequent firm performance.

Awaiting more data

Hypotheses 3 was not fully supported, but likely would receive full support with an increased sample size. Hypothesis 3 suggests the percentage of outside directors would be positively associated with firm performance. There was a positive but insignificant relationship. Additionally, outside directors in the sample did outperform inside directors in terms of mean cumulative abnormal returns. These results suggest gathering more data would likely yield significant results for the impact of BOD compensation structure on subsequent firm performance.

Conclusion

This study explores some interesting questions relating to the compensation structures of boards of directors. It sought to explain the lack of consistent findings in BOD compensation research in regards to the proper structuring of compensation contracts. The application of agency theory suggests that board members should be given equity stakes in their companies in order to properly align their interests with shareholders' interests. Thus, equity ownership is assumed to have a positive and direct effect on firm performance. This assumption has produced mixed empirical results. Agency theory relies on many of the assumptions of economic utility maximization. This study offers prospect theory as an alternative explanation to utility theory in regards to executive compensation. Based on prospect theory, compelling evidence is presented that a moderate level of performance-based compensation for BOD members is associated with maximum firm performance.

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