

# Corporate Diversification and CEO Compensation: Evidence from the Moderating Effect of Firm Performance

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## Abstract

This study explores whether firm performance moderates the relationship between corporate diversification and CEO compensation. A sample of 2,448 CEO compensations across 1,622 firms from 1997 to 2002 was used to test several hypotheses. Corporate diversification was divided into two categories (international and industry) and firm performance was defined using both market-based and accounting-based measures. For the relationship between international diversification and CEO compensation, our results indicate that both market-based and accounting-based firm performance had a significant negative effect on that relationship. Furthermore, accounting-based firm performance was a better predictor of international diversification and CEO compensation than market-based firm performance. For the relationship between industry diversification and CEO compensation, however, our results show that only market-based firm performance had a significant negative influence whereas accounting-based firm performance did not have any significant influence.

**Keywords:** corporate diversification, CEO compensation, firm performance, international diversification, industry diversification.

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## I. INTRODUCTION

Prior empirical research (Sanders & Carpenter, 1998; Duru & Reeb, 2002) indicates that firm performance is positively associated with CEO compensation. For example, Duru & Reeb (2002) explored the relationship between corporate diversification and CEO compensation and found that geographic diversification provides a compensation premium, while industry diversification is associated with lower levels of CEO pay. In addition, a number of researchers have found a link between incentive compensation and performance (Jensen & Murphy, 1990, Kaplan, 1994). The results in Duru & Reeb (2002) also suggest that firm performance has a moderating effect on the relationship between corporate diversification and CEO compensation.

Our study seeks to expand existing research by using firm performance as a moderating variable for international diversification and industry diversification and for influencing CEO compensation. This distinction is important for understanding the interactive effects of firm performance on both international and industry diversification and CEO compensation. Our results indicate that firms with lower accounting-based and market-based performance produce larger interaction effects to increase international diversification and total compensation pay to CEOs, and firms with lower market-based performance produce larger interaction effects to increase industry diversification and total compensation pay to CEOs. Therefore, our study provides new evidence that firm performance positively influences and moderates the relationship between both international diversification and industry diversification and CEO compensation.

## II. LITERATURE REVIEW

To conduct our research, we relied on metrics used in prior research. Gaver & Gaver (1995) provide a definition of total compensation as the sum base salary plus annual bonus plus long-term compensation where long-term compensation equals gains from the exercise of stock options or stock appreciation rights plus the value of restricted stocks grants plus the value of performance awards or other long-term awards plus the present value of current stock options or grants. Moreover, Duru and Reeb (2002) divide executive compensation into total compensation, short-term compensation, and long-term compensation. Short-term compensation includes salary and cash bonuses whereas long-term compensation includes stock options, restricted stocks, and other long-term compensation.

Past research has measured corporate diversification as both international and industrial (Duru & Reeb, 2002; Kim et al., 2001). This distinction is important because Duru & Reeb (2002) found that international diversification is positively associated with CEO compensation whereas industry diversification is negatively associated with CEO compensation (Duru & Reeb, 2002). They also find that increased diversification is, on average, associated with increases in firm value as measured by shareholder wealth. Research by Balkin et al. (1992), Grossman & Hoskisson (1998), and Duru & Reeb (2002) indicates that companies in different industries are likely to have different measures of firm performance. Two types of company performance measures that have been identified are accounting-based and market-based measures.

Previous studies suggest that accounting-based performance measures are incrementally useful over market-based measures in executive compensation contracts (Baber et al., 1996; Duru & Reeb, 2002). However, when accounting returns are less informative with respect to executive actions, there is a greater reliance on market-based measures than on accounting-based measures (Smith & Watts, 1992; Gaver & Gaver, 1993; Baber et al., 1996; Bryan et al., 2000). Executives have discretion in choosing among various accounting or reporting alternatives, which can be used to manipulate accounting earnings. Consistent with prior research the accounting-based measure of performance used in this study annual earnings before interest and taxes (EBIT) and the market-based measure of performance is common stock return at the end of the fiscal year.

These research studies results suggest that the level of firm performance may be the primary reason for shareholders accepting the level of CEO compensation (Sanders and Carpenter, 1998). A higher level of firm performance may also affect the relationship between other variables and total compensation. For example, the relationship between international diversification, industry diversification, and total compensation may change as firm performance improves. More specifically, the influence of both international diversification and industry diversification on total compensation may increase as firm performance increases. Consequently, firm performance may moderate the relationship between international diversification, industry diversification, and total compensation such that when a firm performing better with a higher level of international diversification and industry diversification may be related to a higher total compensation pay (Duru & Reeb, 2002). This study employs firm performance as a moderating variable to explore its

influence on the relationship between international diversification and industry diversification and total compensation.

### III. HYPOTHESES

Based on the preceding literature review, this study identified two hypotheses examining whether market-based firm performance acts as a moderating variable on the relationship between international diversification or industry diversification and total CEO compensation. Likewise, two additional hypotheses examine whether accounting-based firm performance acts as a moderating variable on the relationship between international diversification or industry diversification and total CEO compensation. In summary, the four hypotheses are:

Hypothesis  $H_{1A}$ : Market-based measures of firm performance will moderate the relationship between international diversification and total CEO compensation.

Hypothesis  $H_{1B}$ : Market-based measures of firm performance will moderate the relationship between industry diversification and total CEO compensation.

Hypothesis  $H_{2A}$ : Accounting-based measures of firm performance will moderate the relationship between international diversification and total CEO compensation.

Hypothesis  $H_{2B}$ : Accounting-based measures of firm performance will moderate the relationship between industry diversification and total CEO compensation.

### IV. RESEARCH METHODOLOGY

#### 4.1. Regression Model

To test the hypotheses, multiple regression analysis was employed to examine firm performance and, in turn, firm performance as a moderator variable on the relationship between international diversification and industry diversification and CEO total compensation with tenure, age, duality, and gender as control variables:

$$TC_{t,i} = \alpha_0 + \alpha_1 INTD + \alpha_2 INDD + \alpha_3 RET + \alpha_4 ACE + \alpha_5 IO + \alpha_6 INTD * RET \\ + \alpha_7 INTD * ACE + \alpha_8 INDD * ACE + \alpha_9 INTD * RET + \alpha_{10} Tenure \\ + \alpha_{11} Age + \alpha_{12} Duality + \alpha_{13} Gender + \varepsilon_{t,i}$$

The dependent variable is total compensation (TC) measured as the sum of salary, bonus, value of restricted stocks granted, stock appreciation rights, value of stock options granted (Black-Scholes model), long-term incentive payouts, and other total compensation using Standard & Poor's Compustat ExecuComp database. Table 1 summarizes both the independent and control variables included in the model as well as the measure and source for each variable. In total, the model includes five independent variables (INTD, INDD, RET, ACE, IO), four moderating variables (INTD \* RET, INTD \* ACE, INDD \* RET, INDD \* ACE), and four control variables (tenure, age, duality, gender).

**Table 1**  
**Independent and Control Variables in Regression Model**

<b>Variable</b>	<b>Measure (Source)</b>
INTD = International Diversification	Firm classified as multinational if it has foreign sales reported; otherwise, classified as domestic. (Compustat Geographic Segment File)
INDD = Industry Diversification	Firm classified as multi-segment if it has more than one business segment; otherwise, classified as single-segment. (Compustat Industry Segment File)
RET = Market-Based Firm Performance	Common stock return at the end of the fiscal year. (CRSP)
ACE = Accounting-Based Firm Performance	Annual earnings before interest and taxes (EBIT). (Compustat)
IO = Investment Opportunity	Research and development expenditures divided by the market value of the firm. (Compustat)
Tenure	Years current CEO has held current position at the end of the fiscal year (ExecuComp).
Age	Age of CEO at the end of the fiscal year. (ExecuComp).
Duality	Considered 1 if the CEO is also the chairman; otherwise, 0. (ExecuComp)
Gender	Considered 1 if CEO is male; otherwise, 0 if female. (ExecuComp)

#### 4.2. Sample and Data Collection

The sample consisted of secondary data collected from three databases and supplemented with additional data from the Securities and Exchange Commission (SEC). Company stock return data from the Center for Research in Security Prices (CRSP) along with financial statement data made available from Standard & Poor's Research Insight was included. For CEO data, Standard & Poor's (S&P) Compustat ExecuComp (hereafter, ExecuComp) database, based on the S&P 400, S&P 500, and S&P 600 indices composed of large, mid, and small-cap firms, was selected to alleviate the difficulty of extracting specific information from proxy statement and individual company reports. However, there is often missing data in ExecuComp, particularly relating to age and employment starting dates for CEOs. Thus, it was sometimes necessary to find that information using LexisNexis.

CEO compensation data was collected from ExecuComp from 1997-2002 and covers both total compensation and current compensation such as salary and bonuses. The data also contains long-term compensation such as long-term incentive plans, restricted stocks, stock appreciation rights, and stock options granted. Most studies of CEO compensation rely upon secondary data from filings with the Securities and Exchange Commission (Miller, 1995). Two Compustat files were used as databases to classify firms based on international diversification and industry diversification. Compustat's Geographic Segment File was used to classify a firm as multinational if it had any foreign sales reported; otherwise, it was classified as a domestic firm. Similarly, Compustat's Industry Segment File was used to classify a firm as multi-segment if it had more than one business segment; otherwise, it was classified as a single-segment firm.

### 4.3. Descriptive Statistics

Each sample firm was classified into its primary Standard Industrial Classification (SIC) Code according to the 10-K product breakdown and then classified each firm according to the industry classification scheme suggested by Lippert & Moore (1995) and further modified in this study. To identify CEOs, we implemented a similar sample selection criterion as Murphy (1985). A CEO was included only if that individual was listed on the firm's financial statement during 1997-2002 and remained with the same firm for at least five years. This sample selection method is also consistent with Miller (1995). For this study 2,448 CEOs across 1,622 firms during the period 1997-2002 were identified. Frequency statistics for sample firms are presented in Tables 2 and 3.

**Table 2**  
**Frequency Statistics for Sample Firms (n = 1,622)**

<b>Panel A: Filing Year</b>		Observations	%
1997		113	7.0
1998		145	8.9
1999		1067	65.9
2000		193	11.9
2001		100	6.3
2002		4	0.0
Total firms		1622	100.0
<b>Panel B: Type of Industry</b>		Observations	%
Aerospace and shipbuilding	3720-3829	65	4.0
Agriculture and metal	0000-1099, 1400-1499	18	1.1
Cars	3711-3716	26	1.6
Chemical, tire, and leather	2800-2821, 3011-3199	42	2.6
Commodity	4812-4899	36	2.2
Computer and software	3570-3579, 7370-7389	180	11.1
Construction, wood, furniture, and house	1500-1799, 2400-2599, 2840-2844, 3200-3299	58	3.6
Electric	3661-3699	115	7.1
Entertainment	7000-7369, 7400-7999	62	3.8
Finance	6000-6799	141	8.7
Food and tobacco	2000-2199	42	2.6
Health, education, and law	8000-9999	64	3.9
Machinery	3510-3569, 3580-3652	88	5.4
Medical, photo, and other	3841-3999	54	3.3
Paper and publishing	2600-2673, 2711-2780	54	3.3
Petroleum and refinery	1220-1389, 2911-2999	64	3.9
Retail and wholesale	5000-5999	201	12.4
Steel	3300-3496	62	3.8
Textile	2200-2399	25	1.5
Transportation	4011-4799	42	2.6
Utility	4911-4991	106	6.5
Other	2833-2836, 2851-2891	77	4.7
Total firms		1622	100.0

**Table 3**  
**Frequency Statistics for Sample CEOs (n=2,448)**

<b>Panel A: Filing Year</b>		Observations	%
1997		335	13.8
1998		414	16.9
1999		828	33.8
2000		438	17.9
2001		362	14.9
2002		71	2.9
Total CEOs		2,448	100.0
<b>Panel B: Type of Industry</b>	SIC Codes	Observations	%
Aerospace and shipbuilding	3720-3829	96	3.9
Agriculture and metal	0000-1099, 1400-1499	34	1.4
Cars	3711-3716	42	1.7
Chemical, tire, and leather	2800-2821, 3011-3199	73	3.0
Commodity	4812-4899	47	1.9
Computer and software	3570-3579, 7370-7389	299	12.2
Construction, wood, furniture and, house	1500-1799, 2400-2599, 2840-2844, 3200-3299	86	3.5
Electric	3661-3699	161	6.6
Entertainment	7000-7369, 7400-7999	93	3.8
Finance	6000-6799	190	7.8
Food and tobacco	2000-2199	69	2.8
Health, education, and law	8000-9999	93	3.8
Machinery	3510-3569, 3580-3652	138	5.6
Medical, photo, and other	3841-3999	81	3.3
Paper and publish	2600-2673, 2711-2780	81	3.3
Petroleum and refinery	1220-1389, 2911-2999	87	3.6
Retail and wholesale	5000-5999	306	12.5
Steel	3300-3496	102	4.2
Textile	2200-2399	34	1.4
Transportation	4011-4799	61	2.5
Utility	4911-4991	160	6.5
Other	2833-2836, 2851-2891	115	4.7
Total CEOs		2,448	100.0

## V. RESULTS AND DISCUSSION

### 5.1. Statistical Tests

The current study makes use of several statistical tests provided by SPSS as follows:

- 1) Descriptive Statistics: means and standard deviations.
- 2) Pearson correlation coefficients were calculated to determine whether multicollinearity among the dependent variables is severe or not.
- 3) Multiple regression analysis was employed to examine firm performance to influence and moderate the relationship between corporate diversification (both international and industrial) and total compensation.

## 5.2. Descriptive Statistics

Table 5 presents the following statistics for the variables in our regression model: mean, median, standard deviation, and minimum and maximum. The sample statistics are divided into the dependent variable and five independent variables (Panel A), control variables (Panel B) and firm characteristics (Panel C) for the period 1997-2002. The average CEO in the sample was approximately 57 years, had been in the CEO position approximately 14 years, and had total compensation of approximately \$2.35 million. A vast majority were male and about two-thirds of sample CEOs also were held the Chairman position.

**Table 5**  
**Descriptive Statistics**

	Observations	Mean	Median	Std. Deviation	Minimum	Maximum
Total Compensation	2,434	5,198.95	2,354.79	11,795.97	0.00	273,415.47
International Diversification	2,448	3.29	3.00	1.11	0.00	5.00 <sup>a</sup>
Industry Diversification	2,448	2.55	2.33	1.57	1.00	10.00 <sup>b</sup>
Market-based Performance	2,448	0.01	0.00	0.04	-0.13	1.03
Accounting-based Performance	2,448	525.29	99.47	2,140.96	-10,537	39,093.50
Investment Opportunities	1,465	0.05	0.02	0.10	0.00	1.82
<b>Panel B: Control Variables</b>						
	Observations	Mean	Median	Std. Deviation	Minimum	Maximum
Tenure (days)	1,069	2,947.66	2,192.00	2,774.43	13.00	19,935.00
Age (years)	1,288	56.91	57.00	7.75	36.00	89.00
Duality <sup>c</sup>	2,448	0.56	0.67	0.45	0.00	1.00
Gender <sup>d</sup>	2,448	0.96	1.00	0.18	0.00	1.00
<b>Panel C: Firm Characteristics</b>						
	Observations	Mean <sup>e</sup>	Median <sup>e</sup>	Std, Deviation <sup>e</sup>	Minimum <sup>e</sup>	Maximum <sup>e</sup>
Assets	2,448	7,994.00	1,199.97	35,813.94	8.66	692,789.00
Sales	2,448	4,346.94	1,102.44	11,799.42	0.00	180,041.33
Capital Expend.	2,426	312.11	51.39	1,270.14	0.00	31,672.50
EBIT/Sales	2,445	89.7	0.51	796.75	-10,537.00	30,877.00
R&D/Sales	1,464	0.22	0.03	2.70	0.00	96.10
Capital Expend./ Sales	2,423	0.13	0.05	1.75	0	85.68
Market Value/ Capital Expend.	2,364	64.27	24.1	264.19	0.05	10,996.64

<sup>a</sup> Compustat's Geographic Segment file limits the number of global segments to five; <sup>b</sup> Compustat's Industry Segment file limits the number of global segments to ten; <sup>c</sup> 0= CEO is not chairperson; 1= CEO is also chairperson; <sup>d</sup> 0=female, 1=male; <sup>e</sup> in \$thousands

## 5.3. Test for Multicollinearity

Because multicollinearity between independent variables can cause large variances and covariances for the estimators of the regression coefficients, it becomes difficult to distinguish their relative influences. This problem is addressed by deriving the correlation coefficient matrix shown in Table 6 using the Pearson correlation coefficients test. The

correlation matrix shows that the strongest correlation coefficient among the variables was 0.37 age and tenure and the next highest correlation coefficient was 0.35 international diversification and investment opportunities. Gujarati (1988) suggests that correlations between independent variables should not be considered “harmful” unless they exceed 0.80 or 0.90. The Pearson correlation coefficients in Table 6 suggest that multi-collinearity is not severe for this study.

**Table 6**  
**Pearson Correlation Coefficient Matrix**

Variables	1	2	3	4	5	6	7	8	9	10
1-Total Compensation	1									
2-International Diversification	0.85**	1								
3-Industry Diversification	0.07**	0.15**	1							
4-Market-based Performance	-0.06**	-0.01	-0.01	1						
5-Accounting-based Performance	0.26**	0.08**	0.33**	-0.09**	1					
6-Investment opportunities	0.02**	0.35**	0.08**	-0.05	-0.30**	1				
7-Gender	-0.04	0.01	-0.01	-0.02	0.06**	-0.03	1			
8-Age	0.07*	-0.02	0.13**	-0.01	0.17**	0.12**	0.11**	1		
9-Duality	0.10**	-0.02	0.25**	0.00	0.11**	0.27**	0.02	0.27**	1	
10-Tenure	-0.03	-0.05	0.20**	-0.12**	0.34**	0.09**	0.13**	0.37**	0.30**	1

\* $p < 0.01$ ; \*\* $p < .05$

#### 5.4. Multiple Regression Analysis and Hypotheses Testing

Hierarchical regression analysis was used to test the four hypotheses on the moderating effects of firm performance on the relationship between international diversification, industry diversification, and CEO compensation. Three steps were taken to enter the variables into the regression equation model. In the first step (Model 1), total compensation and the four control variables were entered: tenure, age, duality, and gender. In the second step (Model 2), the five predictor variables - international diversification (INTD), industry diversification (INDD), market-based performance (RET), accounting-based performance (ACE), and investment opportunities (IO) - were added to the previous regression. Finally, in step three (Model 3), the four moderating variables measured as cross products - INTD\*RET, INTD\*ACE, INDD\*RET, INDD\*ACE - were added to obtain the full regression model used to test the hypotheses.

The results of the three regression models are presented in Table 7. In Model 1, all four control variables were significant. In Model 2, all the control variables remained significant and three of the predictor variables were significant (INTD, ACE, IO) while two of the predictor variables were insignificant (INDD, RET). In Model 3, the control and predictor variables retained their significance from Model 2 except that market-based performance became significant and all of the moderating variables were significant except INDD\*ACE. Therefore, three of the four hypotheses are supported as follows.



Concerning the interactive effects of international diversification and firm performance on total compensation, Hypothesis H<sub>1A</sub> is supported by the regression results which provide evidence that market-based performance significantly and negatively moderates the relationship between international diversification and total compensation ( $p < 0.05$ ). Hypothesis H<sub>1B</sub> is similarly supported: accounting-based firm performance also significantly and negatively moderates the relationship between international diversification and total compensation ( $p < 0.01$ ). Consistent with previous research findings, the significance of the accounting-based firm performance measure is more significant than the market-based performance measure (Holmstrom, 1979; Banker & Datar, 1989; Bushman & Indjejikian, 1993; Baber et al., 1996; Duru & Reeb, 2002).

For the interactive effects of industry diversification and firm performance on total compensation, Hypothesis H<sub>2A</sub> is supported as the regression results. Similar to international diversification, market-based firm performance significantly and negatively moderates the relationship between industry diversification and total compensation ( $p < 0.10$ ). However, the regression results do not support H<sub>2B</sub>. Contrary to international diversification, no significant relationship was found on the moderating effect of accounting-based firm performance on the relationship between industry diversification total compensation.

**Table 7**  
**Results of Regression Models**

Variable (Coefficient)	Beta Value (t-statistic <sup>a</sup> )		
	Model 1	Model 2	Model 3
INTD = International Diversification ( $\alpha_1$ )		0.103*** (5.631)	0.135*** (6.849)
INDD = Industry Diversification ( $\alpha_2$ )		0.007 (.353)	0.022 (0.976)
RET = Market-based Performance ( $\alpha_3$ )		0.006 (.370)	0.160* (1.763)
ACE = Accounting based Performance ( $\alpha_4$ )		0.482*** (24.072)	0.874*** (9.381)
IO = Investment Opportunities ( $\alpha_5$ )		0.084*** (4.426)	0.079*** (4.154)
INTD*RET ( $\alpha_6$ )			-0.165* (-1.847)
INTD*ACE ( $\alpha_7$ )			-0.372*** (-4.047)
INDD*RET ( $\alpha_8$ )			-0.049† (-1.501)
INDD*ACE ( $\alpha_9$ )			0.012 (0.509)
Tenure ( $\alpha_{10}$ )	-0.067** (3.263)	0.033* (1.814)	0.036* (2.021)
Age ( $\alpha_{11}$ )	-0.036† (-1.796)	-0.052** (-2.915)	-0.053** (-2.969)
Duality ( $\alpha_{12}$ )	0.173*** (8.384)	0.055** (2.990)	0.057** (3.086)
Gender ( $\alpha_{13}$ )	-0.063** (-3.152)	-0.053** (-3.025)	-0.054** (-3.105)
Adjusted R <sup>2</sup>	0.039	0.266	0.272
Change in adjusted R <sup>2</sup>	0.041***	0.229***	0.007***

<sup>a</sup> When the predicted sign is either positive or negative, the t-value is a one-tailed test; when the predicted sign is unknown, the t-value is a two-tailed test.; †  $p < 0.100$ ; \*  $p < 0.050$ ; \*\*  $p < 0.010$ ; \*\*\*  $p < .001$

## V. CONCLUSION

This study examines the role of firm performance as a moderating variable on the relationship between corporate diversification and CEO compensation. We found that lower market-based firm performance produces larger interaction effects to increase diversification (both international and industrial) and CEO compensation. Although accounting-based firm performance had a similar negative moderating effect relationship for international diversification and CEO compensation, contrary to prior research, no relationship with industry diversification and CEO compensation was found for accounting-based firm performance.

These findings may help decision-makers, such as the Board of Directors, construct optimal compensation contracts that reduce agency cost and maximize shareholder wealth by understanding the interaction between firm performance, corporate diversification, and CEO compensation. Future research could investigate other moderating variables besides firm performance that help in understanding the relationship between these corporate characteristics.

## REFERENCES

- Baber, W. R., Janakiraman, S. N., & Kang, S. (1996). Investment opportunities and the structure of executive compensation. *Journal of Accounting and Economics*, 21(3), 297-318.
- Balkin, D. B., Markman, G. D., & Gomez-Mejia, L. R. (2000). Is CEO pay in high-Technology firms related to innovation? *Academy of Management Journal*, 43(6), 1118-1129.
- Banker, R. D., & Datar, S. M. (1989). Sensitivity, precision, and linear aggregation of signals for performance evaluation. *Journal of Accounting Research*, 27(1), 21-40.
- Bryan, S., Hwang, L., & Lilien, S. (2000). CEO stock-based compensation: An empirical analysis of incentive-intensity, relative mix, and economic determinants. *The Journal of Business*, 73(4), 661-694.
- Bushman, R., & Indjejikian, R. (1993). Accounting income, stock price, and managerial compensation. *Journal of Accounting and Economics*, 16(1-3), 1-23.
- Duru, A., & Reeb, D. M. (2002). Geographic and industrial corporate diversification: The level and structure of executive compensation. *Journal of Accounting, Auditing and Finance*, 17(1), 1-24.
- Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of Management Review*, 14(1), 57-74.
- Gaver, J. J., & Gaver, K. M. (1993). Additional evidence on the association between the investment opportunity set and corporate financing, dividend and compensation policies. *Journal of Accounting and Economics*, 16(1-3), 125-160.
- Gaver, J. J., & Gaver, K. M. (1995). Compensation policy and the investment opportunity set. *Financial Management*, 24(1), 19-33.
- Gomez-Mejia, L. R., & Balkin, D. B. (1992). *Compensation, organizational strategy, and firm performance*. Cincinnati, OH: South-Western Publishing.
- Grossman, W., & Hoskisson, R. E. (1998). CEO pay at the crossroads of Wall Street and Main: Toward the strategic design of executive compensation. *The Academy of Management Perspectives*, 12(1), 43-58.
- Gujarati, D. N. (1988). *Basic econometrics*. International second edition. Burr Ridge, IL: Irwin, Inc.
- Holmstrom, B. (1979). Moral hazard and observability. *Journal of Economics*, 10(1), 74-91.

- Jensen, M. C., & Murphy, K. J. (1990). Performance pay and top management incentives. *Journal of Political Economy*, 98(2), 225-264.
- Jensen, M. C., & Murphy, K. J. (1990). CEO incentives: It's not how much you pay, but how. *Harvard Business Review*, 68 (3), 138-154.
- Kaplan, S. (1994). Top executive rewards and firm performance: A comparison of Japan and the United States. *Journal of Political Economy*, 102(3), 510-546.
- Kim, C., Kim, S., & Pantzalis, C. (2001). Firm diversification and earnings volatility: An empirical analysis of U.S.-based MNCs. *American Business Review*, 19(1), 26-39.
- Lippert, R., & Moore, W. (1995). Monitoring versus bonding: shareholder rights and management compensation. *Financial Management*, 24(3), 54-62.
- Miller, D. J. (1995). CEO salary increases may be rational after all: Referents and contracts in CEO pay. *Academy of Management Journal*, 38(5), 1361-1386.
- Murphy, K. J. (1985). Corporate performance and managerial remuneration: An empirical analysis. *Journal of Accounting and Economics*, 7(1-3), 1-42.
- Sanders, W. G., & Carpenter, M.A. (1998). Internationalization and firm governance: The roles of CEO compensation, top team composition, and board structure. *Academy of Management Journal*, 41(2), 158-179.
- Smith, C. W., & Watts, R. L. (1992). The investment opportunity set and corporate financing, dividend and compensation policies. *Journal of Financial Economics*, 32(3), 263-292.