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**THE EFFECT OF FIRM SIZE, FIRM PERFORMANCE, AND TOP
EXECUTIVES' PERCENTAGE OF HOLDING ON THEIR
COMPENSATION IN LISTED TAIWANESE COMPANIES**

by

Evangeline Fang

**A Thesis Presented to the
FACULTY OF THE GRADUATE SCHOOL
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In Partial Fulfillment of the
Requirements for the Degree
MASTER OF ARTS
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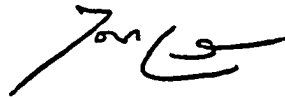
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requirements for the degree of*

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Dean of Graduate Studies

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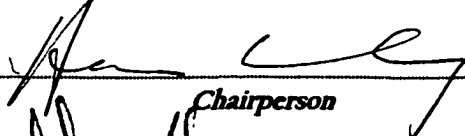
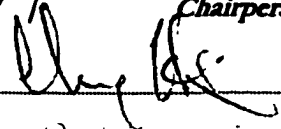

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CHAPTER 1. INTRODUCTION

1.1 Study Motive

Along with the recent gradual growth in scale of business, enterprises must collect abundant funds to operate and extend. However, the percentage of stocks held by outside directors have increased gradually as well, so the phenomenon of separation of ownership and control is more and more obvious. Top executives in control do not always act in the best interests of shareholders. The solution to the problem of conflicting interests of managers and shareholders is one sought by both business and academic circles.

Observing the status of listed Taiwanese companies, it can be discovered that top executives still have the status of being principle shareholders. They are so-called partial-principal agents. It is also fair to say that control and ownership of listed Taiwanese companies are not separate entities. Therefore it gives top executives the dual roles of control as well as partial ownership. The influence of firm size, performance, and percentage of holding on top executives' compensation is the motive of this study.

According to statistical data on "The General Situation of Listed Stocks" edited by the Taiwan stock exchange in 1999, as shown in table 1-1, the number of companies listed Taiwanese companies increase drastically from 163 in 1988 to 462 in 1999. In Fact, the number listed nearly tripled during the 11-year period. This means the phenomenon of separation of ownership and control in listed Taiwanese

Table 1-1 Number of Companies Listed, Capitalization Volume, and Market Value of Listed Stock in Taiwan

Year	Number of Listed Companies	Capitalization Volume (billions of NT dollars)	Market Value of Listed Stock (billions of NT dollars)
1988	163	352.5	3383.3
1989	181	439.2	6174.2
1990	199	533.3	2681.9
1991	221	643.1	3184.0
1992	256	761.1	2545.5
1993	285	908.4	5145.4
1994	313	1,099.8	6504.4
1995	347	1,346.7	5108.4
1996	382	1,661.3	7528.9
1997	404	2,106.3	9696.1
1998	437	2,734.1	8392.6
1999	462	3,086.2	11787.3

Data Source: The Taiwan Stock Exchange, The General Situation of Listed Stocks, 1999

companies is an inevitable trend. In addition capitalization volume of listed Taiwanese companies increased substantially from 352.5 billions of New Taiwan (NT) dollars in 1988 to 3086.2 billions of NT dollars in 1999, and market value of listed Taiwanese stock also increased drastically from 3383.3 billions of NT dollars in 1988 to 11787.3 billions of NT dollars in 1999. This increase in market value of listed stock explains the increased control top executives have on huge amounts of money. Generally, if designed properly, incentives based on effort could be provided for top executives. In doing so, management's self-interest would be congruent with shareholders' interest. Therefore, another motive of this study is the obvious importance of a well-designed top executive compensation system.

1.2 Study Objectives

In the United States, it's easy to obtain data on top executive compensation because the Securities Exchange Commission requires that listed companies must disclose such data in proxy statements. In Taiwan, however, top executive compensation in listed Taiwanese companies has historically been a secret to the public. Until 1995, the Taiwan Securities and Futures Commission just forced public companies to disclose the compensation of directors, supervisor, and managers in financial reports. Therefore this study aims to make statistical analysis by industry and by individual using data on Taiwan's top executive compensation. Hopefully, this can be a basis of reference for authorities to make strategic decisions in the

future, for the directors of each industry to decide the compensation, and for top executives to fight for personal compensation.

Some studies show that in addition to firm performance, there are other factors that affect top executives' compensation [e.g., Simon (1957); Murphy (1985); Finkelstein and Hambrick (1989)]. For example, in certain studies, the level of influence of firm size on compensation was bigger than the influence of firm performance [e.g., Lin (1988); Finkelstein and Hambrick (1989); Douglas and Santerre (1990)]. Hence, firm size became the most important factor in deciding compensation. Such compensation systems seemed to provide incentives for top executives to seek maximum firm scale but not maximum stock price. Due to differing economic situations in Taiwan, this study seeks to research the effect of firm size, firm performance, and top executives' percentage of holding on their compensation using listed Taiwanese companies as an example. The study is done in expectations of providing enterprises with some suggestions, especially boards of directors and those who design compensation systems.

1.3 Main Results

This study looks at data on Taiwan top executives' compensation to make statistical analysis by industry and by individual, and objects of study include presidents, general managers, and divisional managers. Furthermore, it researches the effect of firm size, firm performance, and top executives' percentage of holding

on their compensation. The results are contingent upon the following range and limitations.

I. Study Range

A CEO's compensation is a complex phenomenon requiring more than mere observation. As McEachern (1975) noted, forms of payment to the manager can consist of income, leisure, prestige associated with firm size, and working environment. Financial income can come in various forms: salary, cash bonuses, deferred or contingent compensation, stock options, stock appreciation rights, and pension contributions. However, each form of compensation may have very different determinants. For example, salary and cash bonuses fix attention on the short-term, and are the feedback of past performance. But deferred compensation and stock options fix attention on the long-term, and expect to provide incentives based on top executives' effort in the future. Due to limited data sources, this study deals solely with salary, bonuses, and transportation allowance.

In the US, empirical studies on compensation is mostly aimed at CEO's because they have control power over companies, and their decisions directly affect company performance. Professional titles in Taiwan companies and in United States companies are slightly different. Compensation data were obtained for three distinct levels in the Taiwanese organizational hierarchy:

1. **President** – The chairman of the board of directors.
2. **General manager** – The manger with the highest authority in the corporation.

3. **Divisional manager** – The manager who has responsibility for one or more subgroups.

Because most companies are family businesses in Taiwan, control and ownership are not completely separate. Many company owners also control their firms, so this study also brings in presidents as research objects. In addition, because of the predominance of family businesses, family members usually occupy the positions of general managers. Hence, the compensation of general managers may not reflect its true level. On the other hand, most divisional managers are hired from outside the company. If their performance is lacking, they risk being laid off. So a compensation system gives them an incentive to improve their performance. Hence, this study also brings in divisional managers as research objects.

II. Study Limitations

The limitations of this study are as follows:

1. Top executives' compensation in listed Taiwanese companies as we mentioned above is usually secretive, as the public cannot obtain detailed data except those disclosed in financial reports of listed companies. But these reports only disclose salary, bonuses, and transportation allowances concerning CEO's compensation. Some companies did not even disclose data on bonuses. Therefore the reports may not reflect the true situation.
2. This study does not incorporate a CEO's family holdings but only regards a CEO's individual holdings. Neglecting this factor when studying companies of

family business structure in Taiwan may weaken the significance of empirical results.

3. Because top executives are often family members in Taiwanese businesses, the determination of their compensation may be affected by other factors. This may also affect the empirical results.

1.4 Plan of Thesis

The remainder of this study is organized as follows:

Chapter 2 : Review of Literature

Explains the incentives problem and compensation system with agency theory, and draws from past empirical studies on the influence of firm size, firm performance, and top executives' rate of holding on their compensation in the US and Taiwan.

Chapter 3 : Analysis of C.E.O.'s Compensation in listed Taiwanese Companies

Aims at data on Taiwan top executives' compensation to make statistic analysis by industry and by individual.

Chapter 4 : The Empirical Model

Presents the empirical model and analyzes its results.

Chapter 5 : Conclusion and Further Suggestions

Concludes and makes suggestions for further study.

CHAPTER 2. REVIEW OF LITERATURE

2.1 Principal-Agent Problem and Incentive Compensation

Jensen and Meckling (1976) defined an agency relationship as a contract under which one or more persons (the principal) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent. If both parties to the relationship are utility maximizers there is good reason to believe that the agent will not always act in the best interests of the principal. Therefore it brings three agency costs:

1. The principal can limit divergences from his interest by establishing appropriate incentives for the agent and by incurring *monitoring costs* designed to limit the aberrant activities of the agent.
2. In some situations it will pay for the agent to expend resources (*bounding cost*) to guarantee that he will not take certain actions which would harm the principal or to ensure that the principal will be compensated if he does take such actions.
3. The dollar equivalent of the reduction in welfare experienced by the principal due to divergences between agent and principal is also a cost of the agency relationship (*residual loss*).

Alchian and Demsetz (1972) also pointed out that the economic organization through which input owners cooperate will make better use of its comparative advantages to the extent that it facilitates the payment of reward in accord with productivity. Therefore, metering input productivity and metering rewards are two

key demands placed on an economic organization. With team production it is difficult, solely by observing total output, to either define or determine each individual's contribution to this output of the cooperating inputs. This is one of the causes of the principal-agent problem.

Agency theory is concerned with resolving two problems that can occur in agency relationships. The first is that the principal cannot verify that the agent has behaved appropriately. The second is the problem of risk sharing that arises when the principal and agent have different attitudes toward risk. An overview of agency theory is given in table 2-1.

Since the relationship between the stockholders and manager of a corporation fit the definition of a pure agency relationship it should be no surprise to discover that the issues associated with the "separation of ownership and control" in the modern diffused ownership corporation are intimately associated with the general agency problem. However, Watts and Zimmerman (1978) thought that a management compensation plan may bring management's self-interest into congruency with the shareholders' interest.

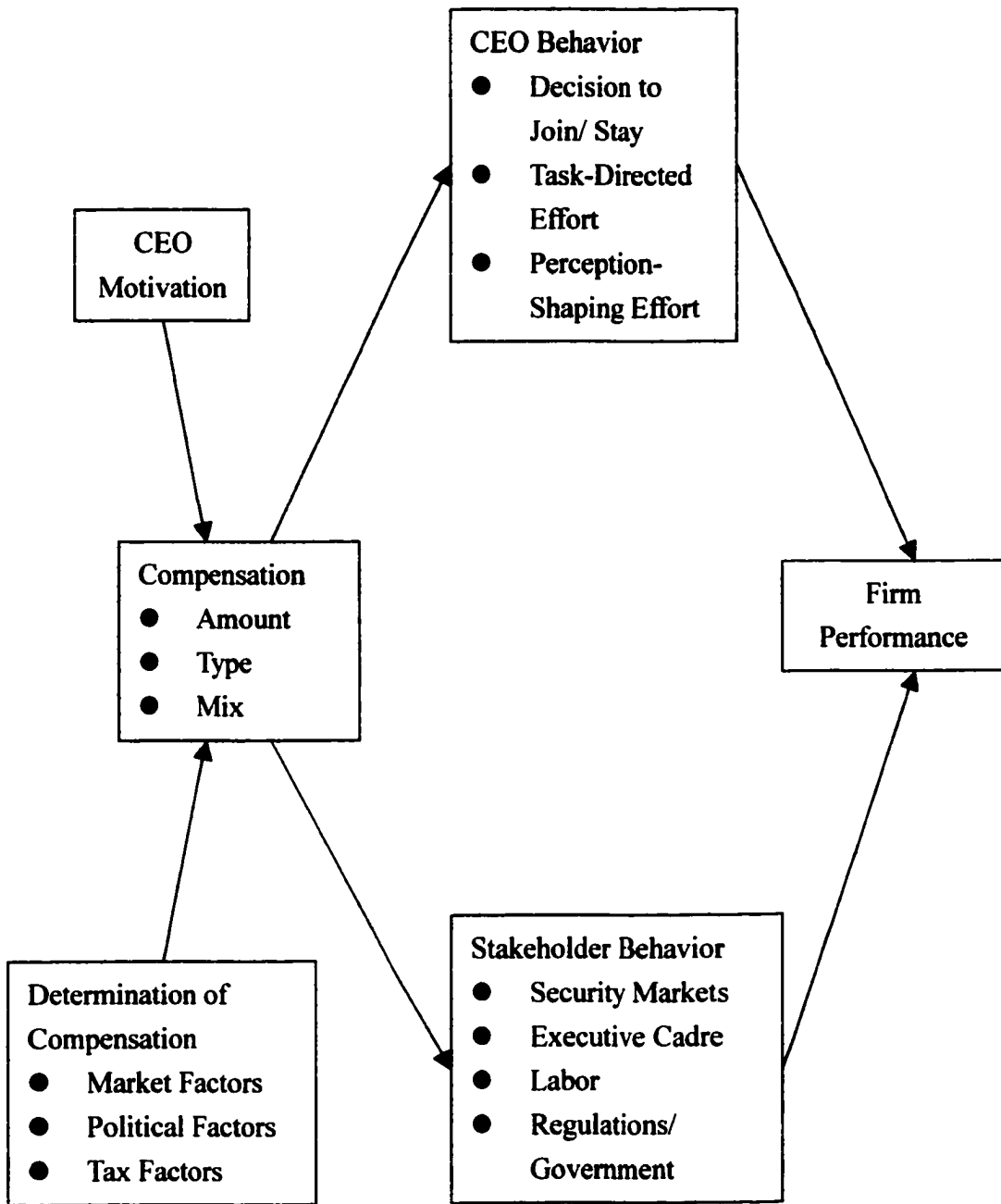
The effects of compensation schemes depend on what motivates the individual. It is clearly shown in figure 2-1. The nature of the CEO's job is one of substantial pressure to perform well. There is considerable evidence that CEOs are highly motivated due to many reasons. Whether planned by the board or not, the pay package sends a signal to the CEO about which behaviors are likely to be rewarded. For example, the inclusion of stock options supposedly directs the CEO to consider

Table 2-1 Agency Theory Overview

Key idea	Principal –agent relationships should reflect efficient organization of information and risk-bearing costs
Unit of analysis	Contract between principal and agent
Human assumptions	Self-interest Bounded rationality Risk aversion
Organizational assumption	Partial goal conflict among participants Efficiency as the effectiveness criterion Information asymmetry between principal and agent
Information assumption	Information as purchasable commodity
Contracting problems	Agency (moral hazard and adverse selection) Risk sharing
Problem domain	Relationships in which the principal and agent have partly differing goals and risk preferences (e.g., compensation, regulation, leadership, impression management, whistle-blowing, vertical integration, transfer pricing)

Data Source: Eisenhardt (1989)

Figure 2-1 Compensation Framework



Data Source: Finkelstein and Hambrick (1988)

the long-term implications of his or her decisions. However, this does not mean that the CEO will automatically respond with a series of far-sighted initiatives. He or she may choose to alter stakeholder perceptions of behavior or performance.

2.2 The Influence of Firm Size on CEO's Compensation

Simon (1957) has proposed a theory of executive compensation that assumes that salaries are determined by requirements of internal “consistency” of the salary scale with the formal organization and by norms of proportionality between salaries of executives and their subordinates. The observed relation is $C = A \cdot b^{L-1}$, where C is total annual compensation of the highest paid official, A is a salary that executives at the first, or lowest, level are paid, b is a ratio that makes an appropriate differential in salary that exists between an executive and his immediate subordinates, and L is the number of levels in the executive hierarchy. From this relationship, the CEOs get more remuneration when there are more levels in the executive hierarchy, if A and b are constants. This also means that when the scale of company is bigger, the CEOs get more remuneration.

Although the relationship between firm size and CEO pay is well known, the rationale for this association is disputed, ranging from greater demands on CEO, greater ability to pay, and more hierarchical layers in large firms. But Finkelstein and Hambrick (1989) suggested that bigger firms tend to pay more because the CEO oversees substantial resources, rather than because of the firms' ability to pay more or because of their number of hierarchical pay levels. This finding ties into the

marginal product argument. Whether the managerial actions are strategic (e.g. acquisitions), structural (information systems) or symbolic (ceremonies), they can have a far greater dollar impact in large firms. The theory of marginal products would thus require more pay for the manager in a larger firm. However, since marginal products of CEO's are difficult to calibrate, this extra yield to the CEO in large firms is based on quite vague estimates.

Gerhart and Milkovich (1990) pointed out that large firms have both a higher ability to pay and a greater need for high-quality employees than small firms. So sales volume and number of employees have been positively related to pay level. Worker shirking is more of a problem in large firms because it is more difficult to monitor each worker's performance. Thus, large firms may use high pay levels to justify stringent hiring standards. One hypothesis is that a high pay level reduces shirking because employees realize that they would be unlikely to find another job that pays as well.

2.3 The Influence of Firm Performance on CEO's Compensation

Efforts to document a pronounced effect of firm performance on executive compensation have generally been unsuccessful. Periodicals such as Fortune and The Wall Street Journal have repeatedly reported the apparent lack of correlation between managerial earnings and various measures of corporate performance. However, Murphy (1985) thought these results can be criticized for several reasons. First, most have concentrated only on the most visible aspect of remuneration - the sum of salary

and bonuses. This method omits potentially performance-sensitive compensation components (such as stock-options, deferred compensation, and stock awards) and ignores interesting differences in the extent to which the individual components of remuneration are affected by firm performance. Second, most previous results are based on cross-sectional analysis of remuneration and performance data. Economics theories of efficient compensation suggest that, in addition to current performance, contracts will depend on other factors such as entrepreneurial ability, managerial responsibility, firm size, and past performance. Absent a theory indicating the relevant variables, and data on these variables, these cross-sectional models are inherently subject to a serious omitted variables problem. However, if these omitted factors are unchanging over time for individual executives, we can correctly assess the relationship between compensation and performance by analyzing time-series regressions for individual executives.

But Kerr and Bettis (1987) indicated that as representatives of a corporation's shareholders, a board of directors is responsible for evaluating and rewarding executive performance. And the purpose of both a corporation's management and its board is to maximize the economic value of shareholders' investment. In the context of such a principal-agent relationship, variation in shareholder returns should provide a logical basis for executive compensation.

Finkelstein and Hambrick (1989) showed that the effect of corporate performance, particularly profitability, on CEO pay has been widely explored. Results have varied from no association to strongly positive associations. Murphy

(1985) has importantly documented, however, that the typical CEO is rewarded for corporate performance more through his or her own shareholdings in the firm than through cash incentives. However, an element of cash compensation can reasonably be considered a performance-related reward. Many compensation agreements include such an incentive component. Although these rewards are not always effective in fostering appropriate managerial actions, we would expect cash compensation, and especially bonuses, to vary with the economic performance of the firm.

2.4 The Influence of Percentage of holding on CEO's Compensation

In an owner-controlled firm, the dominant stockholder may have the power and incentive to align the compensation of a hired CEO with the firm's performance. Executives in management-controlled firms, on the other hand, recognize their positions as sources of discretion and may use this power to further their own interests. Therefore, Gomez-Mejia, Tosi, and Hinkin (1984) brought up that a firm's type of ownership significantly affects its CEO's pay. When there are dominant stockholders, CEO's compensation levels primarily reflect their firms' performance levels. These executives are paid more for performance than CEOs in firms without dominant stockholders.

Benston (1985) pointed out that the officer-directors of large corporations with diversely held shares tend to own a sufficiently large amount of shares in their companies, giving them a considerable incentive to make decisions that tend to

increase the market value of those shares. For these top managers, stock options and annual remuneration are not nearly as important as determinants of changes in their wealth. It appears, therefore, that stock ownership is an important means by which the managers are induced or bonded to act in the interest of shareholders.

Salancik and Pfeffer (1980) thought that an executive's shareholdings in the firm is expected to affect compensation. But economists have studied this possibility with generally inconclusive results. Finkelstein and Hambrick (1989) suggested that executives who own significant portions of their firms are likely to control not only operating decisions but board decisions as well. Such executives would thus be in a position to essentially set their own compensation. Thus, the greater the CEO's ownership of the firm is, the greater his or her compensation is. Alternatively, the question arises as to whether it is in an owner- manager's best economic interest to pay himself extravagantly. On one hand, money taken out of the firm escapes the firm's own marginal tax rate and escapes proportional claims that other shareholders can make on any increases in the firm's value. On the other hand, there can be advantages in leaving money in the firm, because personal capital gains historically have been taxed at a far lower rate than earned income.

2.5 The Empirical Study in United States

I. The Study of Finkelstein and Hambrick (1989)

A model of the determinants of CEO compensation is presented and tested in this study. Data were collected on the chief executives of companies listed under

'Leisure' in the Forbes Annual reports on American Industry, in the years 1971, 1976, 1982, and 1983. The choice of the "leisure" industry, which includes recreation and entertainment companies, was carefully considered. Because first, this industry is known for its variability in executive compensation. Thus we could reasonably be assured of well-dispersed scores on our dependent variables. Second, the industry is not thought to be overly homogeneous or mechanistic in its management processes. So we expected companies in the leisure industry not to be prone to formula approaches to compensation. And these years, which encompass a wide range of economic conditions, were chosen to ensure that any such conditions would not bias the study. The sample was from 110 proxy statements, and included 63 different executives' salary and bonuses separately.

In Finkelstein and Hambrick's view, CEO cash compensation is a function of both market and political processes. Market factors include firm size, corporate performance, corporate complexity, and human capital. Political factors include CEO tenure, CEO holdings, CEO's family holdings, and board vigilance. Firm size was operationalized as the logarithm of total assets. Return on equity was taken as a measure of corporate performance. Corporate complexity was operationalized as the number of four-digit SIC codes. Human capital was coded as a dummy variable (1-primarily general management experience; 0-other). CEO tenure was operationalized as the number of years the executive has been in position. CEO holdings were measured by the percentage of outstanding stock the CEO owned. CEO's family holdings were measured as the percentage of outstanding stock the

CEO's family owned. Board vigilance was defined as the percentage of stock owned or controlled by outside directors.

The results are listed as the following:

1. Firm assets were positively related to total compensation and salary, but were unrelated to bonuses.
2. Firm profitability was positively related to total compensation and bonuses, but was unrelated to salary.
3. Corporate complexity was not related to total compensation, salary or bonuses.
4. CEO general management experience was unrelated to both total compensation and salary, but strongly positively related to bonuses.
5. An inverted U-shaped relationship existed between CEO tenure and total compensation. And this finding was relatively strong, with inflation-adjusted pay starting to decline at about 18 years of tenure.
6. Consistent with the tenure patterns, there was a significant inverted U-shaped relationship between CEO holdings and salary. However, results for total compensation and bonuses were not significant.
7. The stockholdings of the CEO's family were negatively related to total compensation and salary, and neared a significant negative relationship to bonuses.
8. Board vigilance did not have a significant link to any of the three measures of compensation.

II. The Study of Douglas and Santerre (1990)

The purpose of this study is to research the relationship between CEO cash compensation and firm size, profitability, and the degree of stockholder control. They assembled a sample of 65 *Fortune 500* firms for which CEO salary and bonus data are reported separately, and for which the other data are also available. Since the *Corporate Data Exchange's* directories on stock ownership related only to 1980, the study related only to the determinants of 1980 salary and bonuses of the chief executive officer in these firms.

The compensation was measured by the logarithm of salary, bonus, and total cash compensation. Firm size was measured by the logarithm of assets. Profitability was measured by the logarithm of the profit rate (accounting profit divided by stockholder equity). And the degree of stockholder control was measured by the logarithm of the Herfindahl index of stock ownership.

The results are listed following:

1. Firm size is a significant determinant of salary, while neither the degree of stockholder control nor current profitability significantly affects salary.
2. All three aforementioned independent variables are highly significant determinants of the manager's bonus. The results suggest that a 10 percent increase in the profit rate will lead to a 6-8 percent increase in the manager's bonus in the current period. And a 10 percent increase in the Herfindahl index of stock ownership will reduce the manager's bonus by about 1.2 percent.

3. For total compensation, all three independent variables are highly significant. It is evident that it occurs largely because of the influence of profitability and stockholder control on bonuses, and despite the fact that profitability and stockholder control have no significant impact on salary.

Therefore, they concluded that incentive contracts and stockholder monitoring are substitute ways of aligning managerial performance with stockholder objectives.

III. The Study of Hill and Phan (1991)

The purpose of this study is to examine the relationship between CEO pay and stock returns, size, and risk, each relationship is also contingent upon CEO tenure. Data were collected on the total cash compensation paid from 1977 through 1988 to the CEOs of firms included in a survey of executive compensation conducted by *Forbes* magazine. There are 104 firms after exclusion. To factor out the effects of inflation over the 1977-88 period, they used the U.S. Bureau of Labor Statistics cost-of-living index to deflate cash compensation into constant dollars.

Returns to stockholders were measured by abnormal stock returns. Firm size was measured by the natural logarithm of the number of a firm's employees. Risk was calculated by one-year stock market betas. And CEO tenure was measured by the number of years an individual had been the CEO of a given company.

They proposed three hypotheses:

1. The relationship between the pay of a firm's CEO and its stock returns will be positive. This relationship will be weaker the longer the tenure of the CEO.

2. The relationship between the pay of a firm's CEO and its size will be positive.

This relationship will be stronger the longer the tenure of the CEO.

3. The relationship between the pay of a firm's CEO and its risk will be positive.

This relationship will be stronger the longer the tenure of the CEO.

All results are consistent with expectations, that is, tenure influences the strength of the relationship between absolute pay and firm size, absolute pay and firm risk, and changes in pay and stock returns. And the sign is consistent with the proposition that tenure gives CEOs time to build influence within firms and hence to tie their compensation packages more closely to their own preferences. Over time CEOs can circumvent monitoring and incentive alignment mechanisms and strengthen their positions vis-à-vis those of stockholders.

IV. The Study of Lambert, Larcker, and Weigelt (1991)

This paper examines the association between percentage changes in executive compensation and percentage changes in organizational size, that is, it examines the sensitivity of compensation to organizational size and the ability of organizational size to explain the variance in compensation.

Compensation data were obtained from the confidential compensation survey files of a major human resources consulting firm. Annual salary and annual bonus data were collected during 1982, 1983, and 1984 for five distinct levels in the organizational hierarchy: corporate CEO, group CEO, subgroup CEO, divisional CEO, and plant manager. The sample consists of 303 large publicly traded U.S.

corporations spanning many sectors of the economy. The firms operate in a variety of manufacturing and service industries (42 different two-digit SIC codes). Firm size was measured by corporate sales and business units supervised by CEO's.

The results indicate that the correlation between CEO compensation and firm size is much smaller, although still statistically significant, in changes than in levels. This suggests that changes in an executive's compensation are not primarily driven by changes in organizational size.

V. The Study of Schaefer (1998)

The purpose of this study is to research the relationship between firm size and the extent to which managers' compensation depends on the wealth of the firm's shareholders. 3,041 observations were obtained from the Compustat ExecuComp database. This data source contains different measures of compensation for top executives at large American firms between 1991 and 1995. Two measures of compensation were selected for this paper. One is executive salary plus bonus, and the other is the change in CEO-pay-related wealth.

Estimation of the nonlinear economic model revealed that CEO pay-performance sensitivity appears to be approximately inversely related to the square root of the size of the firm, where size was measured by either market capitalization or assets. Since the variance of shareholder wealth is increasing with size, a larger firm that increases its executive's pay-performance sensitivity reduces the total certainty equivalent by more than a small firm. It would be efficient for a

large firm to do this only if the value created by the resulting increase in executive effort more than offsets the loss due to executive risk aversion.

Schaefer also explored the possibility that CEO pay-performance sensitivity decrease with firm size merely because the size of the relevant management team decreases with the size of the firm. He examined groups of the four best paid executives at each firm and found that group pay-performance sensitivities exhibit characteristics similar to those of CEOs.

2.6 The Empirical Study in Taiwan

I. The Study of Ying-Fen Lin (1988)

This paper examines the association between top executives' compensation, their human capital, firm performance and firm size in companies in Taiwan. The 400 general managers and 290 divisional managers were selected from *The First 500 Enterprise* of Taiwan in 1987. These managers filled out a questionnaire of individual data on total compensation, the record of formal schooling, and past experiences in the same or a different company. But the rate of questionnaire return was very low, there are data on only 67 general managers and 101 divisional managers.

Firm performance was measured by the natural logarithm of net profit, rate of return on total assets, rate of return on equity, rate of return on net profit, per-share earnings, rate of return on stock, and abnormal return. Firm size was calculated by

the natural logarithm of gross sales. Human capital was measured by years recorded of formal schooling, and years of past experience in the same or different companies.

The results are listed following:

1. The relationship between the total compensation of general managers and firm size is significantly positive, but neither the firm performance nor human capital significantly affects total compensation.
2. Total compensation of divisional managers was positively related to firm size and firm performance, but was unrelated to human capital.
3. Total compensation of divisional managers in listed companies was positively related to firm performance, while total compensation of divisional managers in unlisted companies was positively related to firm size. The possible reason is that listed companies emphasize profit, but unlisted companies emphasize growth.

II. The Study of Li-Ming Hsiao (1993)

This paper examined the association between top executives' compensation, their stock-holding ratio and corporate performance in Taiwan's listed firms. By means of this research, the author hopes to propose some suggestions to top executive compensation decision makers. Data were collected from public brochures of listed Taiwanese firms and the Taiwan Economy Newspaper Office database in 1990 and 1991.

Stock-holding ratios were measured by the manager's plus his or her family's percentage of holding. Corporate performance was measured by rate of return on stockholder's equity and profit after tax. This paper had the following conclusions:

1. There exists a significant negative relationship between the president's compensation and their stock-holding ratio. There is a significant positive relationship between the president's compensation and the corporate performance.
2. There exists a significant positive relationship between corporate performance and the general manager's compensation. This finding is not consistent with Taiwan's past research. In past research the 'convergence-of-interest hypothesis' was ignored, which caused the past research to find no significant relationship between the compensation of general managers and corporate performance.

III. The Study of Chiu-Ping Ku (1997)

The purpose of this study is to analyze the relationship between top executives' remuneration, firm performance and firm size in listed Taiwanese companies. Data were collected on the chief executives of 356 and 373 listed companies of Taiwan in 1995 and 1996 respectively. Two years' pool and average data are used. Top executives' remuneration was measured by total cash compensation, including salary and bonuses. Firm performance was measured by rate of return on total assets, rate of return on stockholder's equity, and rate of profit and loss on sales. Firm size was measured by total asset, sales, and market value.

The results show that remuneration of general managers was positively related to firm performance in 1% significant level. And the relationship between remuneration of general managers and firm size were also significantly positive. But when tested by industry, it is found that only the Electric and Information industries supported the same results.

The data used by Ku are similar to this study, but she didn't consider the predominant situation of family businesses in Taiwan. The objects of Ku's study only included general managers. However, the objects of this study included not only general managers but also presidents and division managers. Furthermore, besides firm size and firm performance, this study also thought percentage of holding might be one of determinants of CEO's compensation.

CHAPTER 3. ANALYSIS OF TOP EXECUTIVES' COMPENSATION IN TAIWAN

3.1 Data Source

Much attention is usually paid to top executives' compensation in US companies. The Securities and Exchange Commission (SEC) requires all public companies to disclose CEOs' compensation information, including salary, dividends, bonuses, long-term stock rewards, etc. Many publications, such as *Forbes*, *Fortune*, and *Business week*, also rank CEO compensation every year.

In Taiwan, however, compensation data is always regarded with secrecy. Top executives' compensation in listed companies is especially confidential. Therefore, it is difficult to obtain minutely statistical information. The Auditing Department of Executive Yuan in Taiwan conducts a poll every month to announce average salary and subsidies in each industry. In 1988 "Salary Yearbook" edited by the Industry and Commerce Times, investigated the salary of all level employees in individual companies. In 1989, *Management* magazine investigated top executives' compensation by questionnaire. But the above-mentioned investigations and charts often lacked completeness and reliability. The sample data cannot be representative of general data, because some questionnaires had low return rates. Before 1991 in "the criterion of what should be recorded in the public brochure when a company collects and issues valuable securities", a company must disclose the compensation of directors and supervisors. But there was no criterion regulating the disclosure of top executives' compensation. On April 16th 1991, the revised criterion regulated that

a public issued company should disclose compensation of directors, supervisors, and top executives in its public brochure. But the public brochure is published only when a company issues new stock, collects debenture bonds, or collects stock to establish a new company. So we cannot obtain the top executives' compensation data every year. Until November 7th 1995, the revision, "the criterion of security issuers editing financial report", forced all public companies to disclose compensation of directors, supervisors, and top executives in its financial reports. As a result, we are now able to obtain more complete information.

According to "the criterion of security issuers editing financial reports" from 1995, public companies should record the compensation of directors, supervisors, and top executives as following in the financial report:

1. The amount paid for each director and supervisor's transportation allowance and salary in the recent accounting year; if a director served another position concurrently, his or her compensation should be disclosed separately.
2. The separate amounts paid to general managers and division managers in the recent accounting year, including salary and bonuses.
3. In addition to the above two items, their names, positions, and cost of assets should be disclosed if real estate or other compensation was provided to directors, supervisors, or top executives.

Therefore, the data resource of this study comes from 1999 financial reports of all listed companies in Taiwan. Deducing a few companies that did not provide data, leaving 307 company's data after the exclusion.

3.2 Data Limitations

Although these criterion had similar regulations in principle, they did not have the same standard formats for disclosure. Consequently, the data from each company had a different form. There were even some companies that violated the criterion entirely. Following are some rules to improve data reliability:

1. Many companies did not follow the criterion of recording salary, bonuses, and transportation allowances separately. On the basis of the same rule, this study uses total cash compensation including salary, bonuses, and transportation allowance.
2. The data used in this study does not include the companies that changed top executives in the accounting year. Some companies disclosed the compensation of predecessors; some disclosed the compensation of successors. Even though some companies disclosed the compensation of both predecessors and successors, different companies had different times at which they changed their top executives, making comparison impossible. Furthermore, each CEO has his own abilities; the predecessor and the successor may not have the same salary level. Therefore they cannot be added directly.
3. Some companies did not disclose presidents' compensation, and some companies did not disclose general managers' compensation. A few companies even disclosed the compensation of presidents and general managers by one total amount instead of recording the compensation of presidents and general managers separately. The reason these companies did so was that they had a

secret compensation system. The data missing may deduct the reliability of data.

4. In annual compensation data of presidents, a few presidents did not receive compensation. It was recorded as zero, and was noted to show that the president did not receive the compensation. Usually, however, they received compensation in another form, so this study did not include these data to avoid underestimation.
5. If a company had two or more division managers, their average annual compensation was used for that company's annual compensation of division managers.

3.3 Statistical Analysis of Industries

Many are interested in top executives' compensation in each industry. Some thought top executives' compensation in oncoming industries was higher than those in conventional industries. And some thought presidents' compensation in a certain industry was higher than general managers' in the same industry. Hence this study puts data in order to see true compensation scenarios of presidents, general managers, and division managers. (All amounts in New Taiwan (NT) dollars)

I. President

From table3-1, we can get:

1. In 1999, average annual compensation for all industry presidents was \$8,153,000. The standard deviation was \$76,375,000. The maximum was \$1.2 billion, and the minimum was \$60,000. We see that the variation is very large. Also, the

maximum of \$1.2 billion was so much greater than the average of \$8,153,000 that the average value does not truly represent the scenario. Therefore this study excludes the maximum value of \$1.2 billion, and the results are listed following:

Industry	Average (thousands of NT dollars)	Standard Deviation (thousands of NT dollars)	Maximum (thousand of NT dollars)	Minimum (thousands of NT dollars)	Number of Companies
Plastics Industry	2.881	1,991	6,576	732	10
Total	3.289	3,401	38,439	60	245

The maximum president's compensation of \$1.2 billion was one found in the plastics industry. The new average, excluding this outlier, had a lower standard deviation.

- From table 3-1, it is clear that the plastics industry has the highest average annual compensation. Plastics industry presidents had an average annual compensation of \$111,710,000. But without the maximum outlier, the automobile industry had the highest average annual compensation. Automobile industry presidents had an average annual compensation of \$9,339,000. The lowest annual president's compensation in the automobile industry was \$4,242,000, which was 29% higher than the \$3,289,000 average annual president's compensation across all industries. This proves that every president in the automobile industry had a

Table 3-1 Annual Compensation of Presidents Classified According to Industry

Industry	Average (thousands of NT dollars)	Standard Deviation (thousands of NT dollars)	Maximum (thousands of NT dollars)	Minimum (thousands of NT dollars)	Number of Companies
Plastics	111,710	360,950	1,200,000	732	11
Automobile	9,339	5,433	15,840	4,242	5
Electric and Information	4,717	7119	38,439	64	26
Financial Services	4,304	3,842	17,489	140	27
Electric Wire and Cable	3,639	2,790	10,299	346	11
Cement	3,624	3,771	10,337	203	8
Mechanical and Electrical	3,389	2175	6,461	122	19
Building and Construction	3,259	2,322	9,736	60	19
Glass and Ceramics	3,023	661	3,747	2,363	6
Chemical	2,879	2,054	7,553	480	14
Foodstuff	2,877	1,871	8,370	76	16
Transportation	2,672	1,402	4,455	500	14
Rubber	2,645	1,575	5,056	320	9
General Merchandise Services	2,595	1,088	4000	1250	7

Table 3-1 (Continuation)

Industry	Average (thousands of NT dollars)	Standard Deviation (thousands of NT dollars)	Maximum (thousands of NT dollars)	Minimum (thousands of NT dollars)	Number of Companies
Iron and Steel	2,499	1,769	5,811	120	14
Textile	2,110	1,526	5,800	117	27
Paper-making	1,622	1,904	4,193	110	6
Tourism	1,497	942	3,386	702	7
Total	8,153	76,375	1,200,000	60	246

very high amount of compensation, at least higher than the average across industries. The second highest ranking industry was the Electric and Information industry with an average of \$4,717,000. And ranking third was the Financial Services industry with an average of \$4,304,000.

- As noted previously, in 1999, the highest annual presidential compensation, \$1.2 billion, is in plastics industry. This value was 147 times of the average across all industries, 11 times the average of the plastics industry, and 31 times the second highest president's annual compensation across all industries of \$38,439,000 found in the Electric and Information industry. Obviously, this maximum was an extreme value. There were only two individual industry averages that were higher than the average across industries, making the results unreasonable. As a result, the value of the average across industries was biased. If, instead, we use

the new value of \$3,289,000 for analysis, excluding the outliers, six industry averages were found to be higher than the average across all industries. Presidents with these higher than average amounts of compensation were mostly in the Plastics Automobile, Electric and Information, Financial Services, Electric Wire and Cable, and Cement industries. Contrary to previous results, the new average of plastics industry's presidents was lower than new average across all industries.

4. Among presidents with lower compensation, the lowest average annual presidential compensation was found in the Tourism industry with \$1,497,000. The next was found in the Paper-making industry with \$1,622,000. The lowest individual president's compensation was found in Building and Construction.

II. General Manager

From table 3-2, we conclude the following:

1. In 1999, average annual compensation of general managers across all industries was \$7,640,000. The standard deviation was \$69,167,000. The maximum was \$1.081 billion, and the minimum was \$125,000. As seen above in presidents' compensation, the variation was just as large for general managers. The maximum outlier of \$1.081 billion was obviously much greater than the average of \$7,640,000, causing a bias in the average value. Therefore this study ignores the outlier of \$1.081 billion. Again, the maximum of \$1.081 billion compensation was one of Plastics industry's general managers. The new average

has a lower standard deviation and decreased variation. The new results are listed following:

Industry	Average (thousands of NT dollars)	Standard Deviation (thousands of NT dollars)	Maximum (thousands of NT dollars)	Minimum (thousands of NT dollars)	Number of Companies
Plastics Industry	2,587	1,457	4,653	132	12
Total	3,205	1,912	19,423	125	242

2. From table 3-2, it can be seen that the industry with the highest average annual compensation was the Plastics industry. Plastics industry presidents had an average annual compensation of \$85,542,000. With the maximum outlier omitted, the highest average annual compensation's industry was the Cement industry. Cement industry presidents had an average annual compensation of \$4,307,000. The secondary highest industry average was found in the Electric and Information industry with \$4,210,000. Ranking third was the Financial Services industry with \$3,892,000.
3. In 1999, the general manager with the highest annual compensation of \$1.081 billion was one in plastics industry. This value was 141 times of the average across industries, 13 times the plastics industry's average, and the 56 times the annual compensation of the second highest general managers, \$19,423,000. Obviously, the value was an outlier, causing it to be the only industry average higher than the average across all industries. This is the result of an unreasonably

Table 3-2 Annual Compensation of General Managers Classified According to Industry

Industry	Average (thousands of NT dollars)	Standard Deviation (thousands of NT dollars)	Maximum (thousands of NT dollars)	Minimum (thousands of NT dollars)	Number of Companies
Plastics	85,542	299,101	1,081,000	132	13
Cement	4,307	1,845	7,414	2,278	7
Electric and Information	4,210	3457	19,423	125	27
Financial Services	3,892	2,328	11,652	764	29
Mechanical and Electrical	3,584	2,415	11,896	1,243	16
Electric Wire and Cable	3,409	1513	5,482	1,347	10
Rubber	3,344	1,355	5,529	1,256	9
Chemical	3,288	1,502	6,454	1,525	15
Paper-making	3,206	1,725	5,687	1,267	6
Textile	3,036	1,272	6,021	1,722	20
Automobile	2,961	1,633	4,469	720	4
General Merchandise Services	2,882	1,246	5,060	1,260	9
Iron and Steel	2,807	877	5,101	1,389	16
Building and Construction	2,755	1,069	4,475	1,006	21

Table 3-2 (Continuation)

Industry	Average (thousands of NT dollars)	Standard Deviation (thousands of NT dollars)	Maximum (thousands of NT dollars)	Minimum (thousands of NT dollars)	Number of Companies
Transportation	2,637	676	3,912	1,466	12
Glass and Ceramics	2,289	209	2,559	1,945	6
Foodstuff	2,270	776	4,108	756	16
Tourism	2,109	1,206	3,565	814	7
Total	7,640	69,167	1,081,000	125	243

biased industry average due to the outlier. If we use the new value (excluding the outlier), of \$3,205,000 for analysis, there were eight industry' averages higher than the average across all industries. Now, general managers with relatively high compensation were mostly found in the Plastics, Cement, Electric and Information, Financial Services, Mechanical and Electrical, Electric wire and cable, Rubber, and Chemical industries. Also, the new average of compensation for Plastics industry general managers was lower than the new average of general managers' compensation across industries.

4. Among general managers with lower compensation, the industry with lowest average annual compensation was Tourism with \$2,109,000. Next lowest was the Foodstuff industry with \$2,270,000.

III. Division Manager

From table 3-3, we conclude the following:

- 1. In 1999, the average annual compensation of all industries' division managers was \$2,292,000. The standard deviation was \$1,097,000. The maximum was \$7,952,000, and the minimum was \$180,000. Compared to presidents and general managers, the average and standard deviation of division managers' compensation are relatively small, showing that division managers in different industries have about the same compensation level.**
- 2. From table 3-3, the highest average annual compensation was found in the Cement industry with \$3,101,000. The second highest industry average was the Electric and Information industry's \$2,753,000. Third was Financial Services with \$2,700,000. The ranking was the same as for general managers.**
- 3. In 1999, the division manager who had the highest annual compensation, \$7,952,000 was of the Electric and Information industry. In contrast to the values for presidents and general managers, there was no extreme outlier as a maximum value. There were eight industries with averages higher than the average across all industries as a whole. On the other hand, presidents with higher compensation were mostly found in the Cement, Electric and Information, Financial Services, Plastics, Electric Wire and Cable, General Merchandise Services, Mechanical and Electrical, and Transportation industries.**
- 4. Among division managers with lower compensation, the industry with the lowest average annual compensation was Tourism with \$954,000. Next lowest was the**

Table 3-3 Annual Compensation of Division Managers Classified According to Industry

Industry	Average (thousands of NT dollars)	Standard Deviation (thousands of NT dollars)	Maximum (thousands of NT dollars)	Minimum (thousands of NT dollars)	Number of Companies
Cement	3,101	1,179	4,310	1,609	6
Electric and Information	2,753	1,562	7,952	898	30
Financial Services	2,700	1,151	5,324	747	28
Plastics	2,500	666	3,268	1,631	7
Electric Wire and Cable	2,459	1,237	4,913	1,178	12
General Merchandise Services	2,358	1,107	4,944	1,123	9
Mechanical and Electrical	2,313	1,157	5,021	1,000	13
Transportation	2,313	663	3,412	1,372	11
Chemical	2,231	929	4,263	1,385	14
Rubber	2,224	824	3,284	1,033	7
Building and Construction	2,129	729	3,463	1,024	17
Iron and Steel	2,113	1,245	5,112	421	15
Paper-making	2,055	768	2,943	1,171	4
Textile	2,010	804	5,112	963	29

Table 3-3 (Continuation)

Industry	Average (thousands of NT dollars)	Standard Deviation (thousands of NT dollars)	Maximum (thousands of NT dollars)	Minimum (thousands of NT dollars)	Number of Companies
Glass and Ceramics	1,710	120	1,889	1,642	6
Foodstuff	1,656	449	2,614	1,033	15
Automobile	1,573	1,575	3,639	180	4
Tourism	954	352	1,361	750	3
Total	2,292	1,097	7,952	180	228

Automobile Industry with \$1,573,000. The lowest individual compensation for a general manager was in the Automobile Industry. However, it is interesting that in when ranking annual compensation of presidents, the automobile industry was found to be the highest, after omitting outliers.

IV. Comparison

Annual compensation averages, standard deviations, and maximums for presidents was found to be greater than that of general managers'. It is thus evident that presidents always play more important roles than general managers in listed Taiwanese companies. Presidents have more responsibility, so are worthy of more reward. Also, presidents may play two extreme roles. One being that presidents are

responsible for every issue of concern, the other being that presidents are only in name, while general managers are charge of all pertinent affairs in the company.

3.4 Statistical Analysis of Individuals

Individual rankings of top executives may not reflect average rankings, where extreme values existed to affect the average. Furthermore, a CEO concurrently serving another position may be appropriately compensated. This study tabulates the individual data of presidents, general managers, and division managers.

I. President

As see from table 3-4, in the Financial Services, Automobile, and Cement Industries, each industry had two presidents in one of the top ten ranked positions. In the Electric and Information, Plastics, Building and Construction, and Electric Wire and Cable industries, each industry had one president in a top ten ranked position.

II. General Manager

As see from table 3-5, the Electric and Information and Financial Services industries each had three general managers in top ten positions. In the Plastics, Mechanical and Electrical, Cement, and Chemical industries, each industry had one general manager in the top ten. In the top ten, there were six general managers serving the position of director concurrently. Only one general manager was serving the position of president concurrently. One would think that a general manager

Table 3-4 Individual Ranking of Presidents' Annual Compensation

Ranking	Annual Compensation of President (thousands of NT dollars)	Industry of President	Serving other Position Concurrently
1	1,200,000	Plastics	No
2	38,439	Electric and Information	No
3	38,439	Financial Services	No
4	15,840	Automobile	No
5	14,400	Automobile	No
6	12,339	Financial Services	No
7	10,337	Cement	No
8	10,299	Electric Wire and Cable	No
9	9,736	Building and Construction	No
10	8,725	Cement	No

Table 3-5 Individual Ranking of General Managers' Annual Compensation

Ranking	Annual Compensation of The General Manager (thousands of NT dollars)	Industry of General Manager	Serving other Position Concurrently
1	1,081,000	Plastics	No
2	19,423	Electric and Information	Director
3	11,896	Mechanical and Electrical	Director
4	11,652	Financial Services	Director
5	8,470	Financial Services	Director
6	7,557	Electric and Information	President
7	7,414	Cement	No
8	6,870	Financial Services	No
9	6,866	Electric and Information	Director
10	6,454	Chemical	Director

serving as a president concurrently would receive the highest compensation, but this does not conform to the results of this study.

III. Division Manager

As seen from table 3-6, the Electric and Information industry had three division managers in the top ten. Financial services had two division managers in the top ten. And in the Textile, Iron and Steel, Mechanical and Electrical, General Merchandise, and Electric Wire and Cable industries, each industry had one general manager in the top ten. Five division managers served the position of director concurrently. Finally, we conclude that the Electric and Information and Financial Services industries both have remarkable ratios in the top ten ranking regardless of the position.

3.5 Distribution of Top Executives' Compensation

Besides the top ten ranking of top executives' compensation, the general public also wants to know its distribution. After all, the top ten ranking shows only a minority, but the distribution shows the more general situation. (All amounts in New Taiwan (NT) dollars)

I. President

From table 3-7 and figure 3-1, we see that the largest number was in the range between \$2,000,000~3,000,000. 23.6% of presidents were in this range. The second largest was 18.3% of presidents in the range of less than \$1,000,000. Third was 15.9% of presidents in the range between \$1,000,000~2,000,000. Clearly,

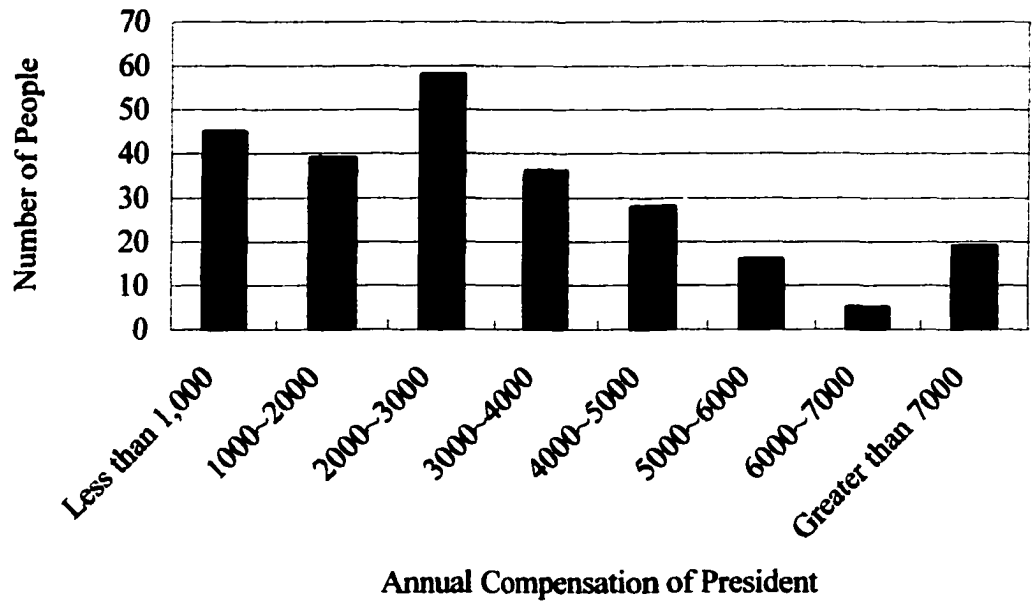
Table 3-6 Individual Ranking of Division Managers' Annual Compensation

Ranking	Annual Compensation of The Division Manager (thousands of NT dollars)	Industry of Division Manager	Serving other Position Concurrently
1	7,952	Electric and Information	No
2	6,191	Electric and Information	Director
3	5,534	Electric and Information	No
4	5,324	Financial Services	No
5	5,112	Textile	Director
6	5,112	Iron and Steel	Director
7	5,021	Mechanical and Electrical	Director
8	4,965	Financial Services	Director
9	4,944	General Merchandise Services	No
10	4,913	Electric Wire and Cable	No

Table 3-7 Distribution of Presidents' Annual Compensation

Annual Compensation of Presidents (thousands of NT dollars)	Number of People	Percentage	Cumulative Percentage
Less than 1,000	45	18.3%	18.3%
1000~2000	39	15.9%	34.2%
2000~3000	58	23.6%	57.8%
3000~4000	36	14.6%	72.4%
4000~5000	28	11.4%	83.8%
5000~6000	16	6.5%	90.3%
6000~7000	5	2.0%	92.3%
Greater than 7000	19	7.7%	100.0%
Total	246	100.0%	100.0%

Figure 3-1 Bar Graph of Presidents' Annual Compensation



57.8% of presidents were in the range of less than \$3,000,000. Also to say, over half of the presidents' annual compensation was under \$3,000,000.

II. General Manager

From table 3-8 and figure 3-2, we see that the largest ratio was in the range between \$2,000,000~3,000,000. 36.2% of presidents were in this range. The second was 20.2% of presidents in the range of \$3,000,000~4,000,000. Third was 17.3% of presidents in the range between \$1,000,000~2,000,000. Clearly, 73.7% of presidents were in the range between \$1,000,000~4,000,000. The distribution in the bar graph was skewed to the right, and entirely different from the bar graph for presidents.

III. Division Manager

From table 3-9 and figure 3-3, we see that the largest number was in the range between \$1,000,000~2,000,000. There were 47.8% of presidents in this range. Second, 29.0% of presidents were in the range between \$2,000,000~3,000,000. Third was 11.4% of presidents in the range between \$3,000,000~4,000,000. Clearly, 88.2% of presidents were in the range between \$1,000,000~4,000,000. The distribution in the bar graph was also skewed to the right.

Table 3-8 Distribution of General managers' Annual Compensation

Annual Compensation of General Managers (thousands of NT dollars)	Number of People	Percentage	Cumulative Percentage
Less than 1,000	7	2.9%	2.9%
1,000~2,000	42	17.3%	20.2%
2,000~3,000	88	36.2%	56.4%
3,000~4,000	49	20.2%	76.6%
4,000~5,000	30	12.3%	88.9%
5,000~6,000	13	5.3%	94.2%
6,000~7,000	7	2.9%	97.1%
Greater than 7,000	7	2.9%	100.0%
Total	243	100.0%	100.0%

Figure 3-2 Bar Graph of General Managers' Annual Compensation

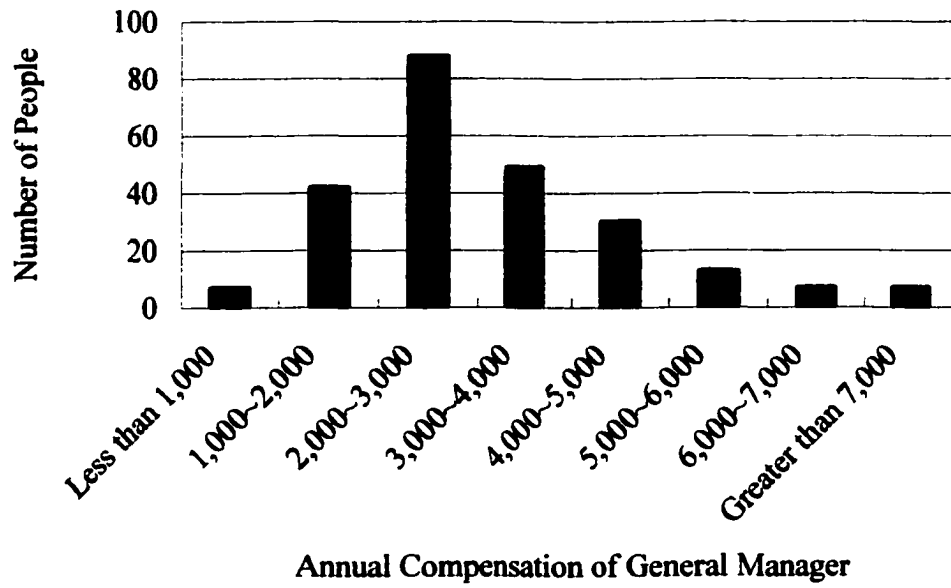
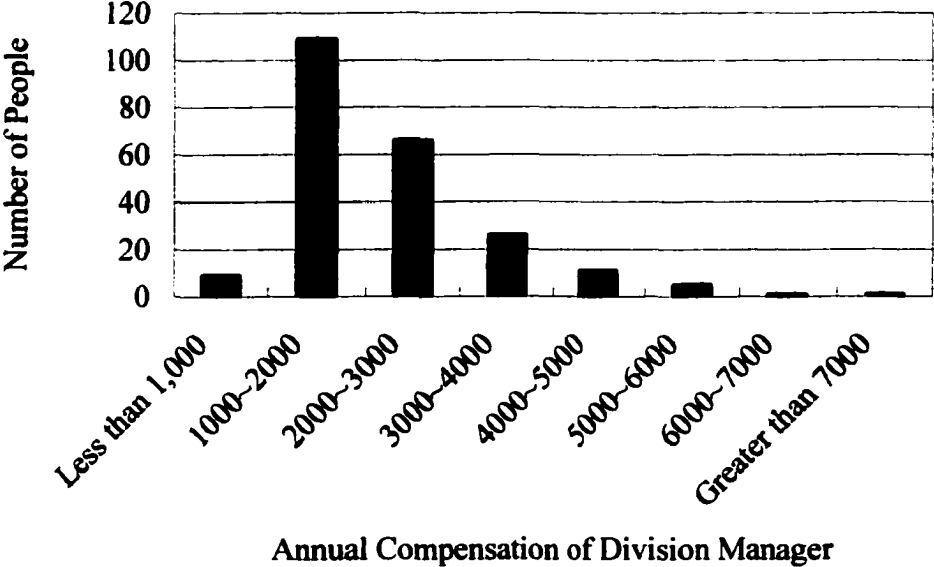


Table 3-9 Distribution of Division Managers' Annual Compensation

Annual Compensation of Division Managers (thousands of NT dollars)	Number of People	Percentage	Cumulative Percentage
Less than 1,000	9	4.0%	4.0%
1000~2000	109	47.8%	51.8%
2000~3000	66	29.0%	80.8%
3000~4000	26	11.4%	92.2%
4000~5000	11	4.8%	97.0%
5000~6000	5	2.2%	99.2%
6000~7000	1	0.4%	99.6%
Greater than 7000	1	0.4%	100.0%
Total	228	100.0%	100.0%

Figure 3-3 Bar Graph of Division Managers' Annual Compensation



3.6 Analysis of top executives serving other position concurrently

Because of the nature of family businesses in Taiwan, some general managers may serve the position of president concurrently. Many top executives may also serve the position of director concurrently. This study tabulates the data for analysis.

As seen from table 3-10, there were 17.6% of companies whose general managers serve as presidents concurrently. There were 45.0% of companies whose general managers serve as directors concurrently. It showed a high percentage, 62.6%, of general managers who not only took over the business but also took part in boards of directors to make strategic decisions. There was a lower percentage, 24.8%, of division managers who served as directors concurrently.

3.7 Comparison of Presidents' and General Managers' Annual Compensation

As seen from above information, presidents' annual compensation was greater than general managers' on average. But some may want to know whether this was consistent across industries. It may have different results because each industry has its own character.

As seen in table 3-11, 59.1% of companies had annual presidential compensation was greater than that of general managers'. All presidents in Glass and Ceramics and Automobile industries had higher annual compensation than general managers in the same industry. In General Merchandise Services, Foodstuff, Building and Construction, Electric Wire and Cable, Financial Services,

Table 3-10 Percentage of General Managers and Division Managers Serving Other Positions Concurrently

Other Positions Concurrently Serving by General Manager	Number of People	Percentage
Serving the Position of President Concurrently	54	17.6%
Serving the Position of Director Concurrently	138	45.0%
Serving No Other Position Concurrently	115	37.4%
Total	307	100.0%

Other Position Concurrently Serving by Division Manager	Number of People	Percentage
Serving the Position of Director Concurrently	76	24.8%
Serving No Other Position Concurrently	231	75.2%
Total	307	100.0%

Table 3-11 Comparison of Presidents' and General Managers' Annual Compensation

Industry	Number of President's Annual Compensation Greater than General Manager's	Percentage of President's Annual Compensation Greater than General Manager's	Number of General Manager's Annual Compensation Greater than President's	Percentage of General Manager's Annual Compensation Greater than President's
Glass and Ceramics	6	100.0%	0	0.0%
Automobile	4	100.0%	0	0.0%
General Merchandise Services	5	83.3%	1	16.7%
Foodstuff	11	73.3%	4	26.7%
Building and Construction	12	70.6%	5	29.4%
Electric Wire and Cable	7	70.0%	3	30.0%
Financial Services	18	66.7%	9	33.3%
Transportation	8	66.7%	4	33.3%
Plastics	6	66.7%	3	33.3%
Electric and Information	15	60.0%	10	40.0%
Iron and Steel	8	57.1%	6	42.9%
Rubber	5	55.6%	4	44.4%
Chemical	7	53.8%	6	46.2%

Table 3-11 (Continuation)

Industry	Number of President's Annual Compensation Greater than General Manager's	Percentage of President's Annual Compensation Greater than General Manager's	Number of General Manager's Annual Compensation Greater than President's	Percentage of General Manager's Annual Compensation Greater than President's
Mechanical and Electrical	7	46.7%	8	53.3%
Tourism	3	42.9%	4	57.1%
Cement	2	28.6%	5	71.4%
Textile	5	26.3%	14	73.7%
Paper-making	1	20.0%	4	80.0%
Total	130	59.1%	90	40.9%

Transportation, Plastics, and Electric and Information industries, most presidents had a higher annual compensation than general managers.

CHAPTER 4. THE EMPIRICAL MODEL

4.1 Setting Up the Model

The research period is 1999 and the research objects are top executives in listed Taiwanese companies, including presidents, general managers, and division managers. This study seeks to analyze if firm size, firm performance, and top executives' percentage of holding affect their compensation in listed Taiwanese companies. Firm size was measured by capitalization volume and firm performance was measured by rate of return on stockholder's equity. Percentage of holding was measured by the holdings of the CEO himself or herself, excluding his or her family's holdings. Lastly, compensation was measured by salary, bonuses, and transportation allowance.

It may cause different result in the empirical model to use the original data as opposed to using transformed data in logarithmic form. Ciscel and Carrol (1980) brought up that using transformed data in logarithmic form could achieve better results than by using original data. Since that time, many scholars, such as Cubbin and Hall (1983), Coughlan and Schmidt (1985), Murphy (1985), and Finkelstein and Hambrick (1989), have all used logarithms to transform all or some variables. Therefore, the same research method is used in this study. Data of compensation and capitalization volume are transformed to logarithmic form. Hopefully this yields a better regression model.

The regression model:

$$\text{COM}(\ln)_i = \beta_0 + \beta_1 \text{CAP}(\ln)_i + \beta_2 \text{ROS}_i + \beta_3 \text{POH}_i + \varepsilon_i$$

where

$COM(\ln)_i$: compensation of top executives in i th company (in logarithmic form)

$CAP(\ln)_i$: capitalization volume in i th company, as firm size's substitute variable (in logarithmic form)

ROS_i : rate of return on stockholder's equity in i th company, as firm performance's substitute variable

POH_i : top executives' percentage of holding in i th company

4.2 Statistical Analysis of Data

The data used was from the empirical model continued from Chapter 3. Omitting the companies that provided insufficient data, there was data for 207 presidents, 176 general managers and 138 division managers. (All amounts in New Taiwan (NT) dollars)

I. President

From table 4-1, we conclude the following:

1. The average presidential annual compensation was \$3,344,000. The maximum was \$38,439,000. The minimum was \$64,000. The standard deviation was \$3,568,000. We find that the variation to be very large. Transformation into logarithmic form will reduce the variation between the data of independent variables. The standard deviation of presidents' annual compensation in logarithmic form is \$1,000.

Table 4-1 Presidents' Statistics

Variables	Average	Standard Deviation	Maximum	Minimum	Median
Annual Compensation (thousands of NT dollars)	3,344	3,568	38,439	64	2,644
Annual Compensation in Logarithmic Form (thousands of NT dollars)	7.72	1.00	10.56	4.16	7.88
Capitalization Volume (thousands of NT dollars)	39,827,893	148,183,544	1,178,681,338	688,060	7,411,693
Capitalization Volume in Logarithmic Form (thousand of NT dollars)	16.05	1.35	20.89	13.44	15.82
Rate of Return on Stockholder's Equity (%)	2.07	17.67	30.02	-143.00	5.48
Percentage of Holding (%)	7.20	8.76	52.39	0.01	4.03

Note:

1. The outlier 1.2 billions of NT dollars in the data of annual compensation was excluded.
2. The outlier -205.43% in the data of rate of return on stockholder's equity was excluded.
3. N=207

2. Average capitalization volume was \$39,827,893,000. The maximum was \$1,178,681,338,000. The minimum was \$688,060,000. The standard deviation was \$148,183,544,000. We find that the variation is very large. So, transformation into logarithmic form is also used here to reduce the variation between the data of independent variables. The standard deviation of capitalization volume in logarithmic form is \$1,350.
3. The average of rate of return on stockholder's equity was 2.07%. The maximum was 30.02%, and the minimum was -143.00%. The standard deviation was 17.67%.
4. The average percentage of holding was 7.20%. The maximum was 52.39% and the minimum was 0.01%. The standard deviation was 8.76%.

II. General Manager

From table 4-2, we conclude the following:

1. The average general manager's annual compensation was \$3,351,000. The maximum was \$19,423,000 and the minimum was \$132,000. The standard deviation was \$2,058,000. We find that the variation is very large. So again, transformation into logarithmic form reduces the variation between the data of independent variables. The standard deviation of president's annual compensation in logarithmic form is \$540.
2. The average capitalization volume was \$38,137,398,000. The maximum was \$1,069,985,644,000 and the minimum was \$30,226,000. The standard deviation

Table 4-2 General Managers' Statistics

Variables	Average	Standard Deviation	Maximum	Minimum	Median
Annual Compensation (thousands of NT dollars)	3,351	2,058	19,423	132	2,870
Annual Compensation in Logarithmic Form (thousands of NT dollars)	7.98	0.54	9.87	4.88	7.96
Capitalization Volume (thousands of NT dollars)	38,137,398	116,269,457	1,069,985,644	30,226	8,743,067
Capitalization Volume in Logarithmic Form (thousands of NT dollars)	16.17	1.43	20.79	10.32	15.98
Rate of Return on Stockholder's Equity (%)	1.82	19.89	30.02	-144.04	6.16
Percentage of holding (%)	2.52	5.27	49.60	0.00	0.36

Note:

1. The outlier 1.081 billions of NT dollars in the data of annual Compensation was excluded.
2. The outlier -205.43% in the data of rate of return on stockholder's equity was excluded.
3. N=176

was \$116,269,457,000. We find that the variation was very large. So here also, transformation into logarithmic form reduces the variation between the data of independent variables. The standard deviation of capitalization volume in logarithmic form is \$1,430.

3. The average rate of return on stockholder's equity was 1.82%. The maximum was 30.02% and the minimum was -144.04%. The standard deviation was 19.89.
4. The average percentage of holding was 2.52%. The maximum was 49.60% and the minimum was 0.00%. The standard deviation was 5.27.

III. Division Manager

From table 4-3, we conclude the following:

1. The average division manager's annual compensation was \$2,379,000. The maximum was \$7,952,000, and the minimum was \$681,000. The standard deviation was \$1,172,000. We find that the variation is very large. So transformation into logarithmic form to reduce the variation between the data of independent variables is necessary. The standard deviation of president's annual compensation in logarithmic form is \$450.
2. The average capitalization volume was \$58,900,791,000. The maximum was \$1,178,681,338,000 and the minimum was \$963,653,000. The standard deviation was \$185,337,923,000. We again find that the variation was very large. So also, transforming into logarithmic form to reduce the variation between the

Table 4-3 Division Managers' Statistics

Variables	Average	Standard Deviation	Maximum	Minimum	Median
Annual Compensation (thousands of NT dollars)	2,379	1,172	7,952	681	1,990
Annual Compensation in Logarithmic Form (thousands of NT dollars)	7.67	0.45	8.98	6.52	7.60
Capitalization Volume (thousands of NT dollars)	58,900,791	185,337,923	1,178,681,338	963,653	6,929,450
Capitalization Volume in Logarithmic Form (thousands of NT dollars)	16.16	1.59	20.89	13.78	15.75
Rate of Return on Stockholder's Equity (%)	4.15	13.20	30.22	-56.54	6.48
Percentage of holding (%)	1.35	2.86	17.91	0.00	0.13

Note:

1. The outlier -205.43% in the data of rate of return on stockholder's equity was excluded.
2. N=138

data of independent variables is helpful. The standard deviation of capitalization volume in logarithmic form is 1.59 thousand NT dollars.

3. The average rate of return on stockholder's equity was 4.15%. The maximum was 30.22% and the minimum was -56.54%. The standard deviation was 13.20.
4. The average of percentage of holding was 1.35%. The maximum was 17.91% and the minimum was 0.00%. The standard deviation was 2.86.

IV. Analysis of Multicollinearity

If there is high multicollinearity between independent variables, it may reduce the explanatory ability of independent variables. The problem of multicollinearity is quite serious, if the coefficient of correlation between any two independent variables greater than 0.8 [Judge et al. (1985)]. We can conclude from table 4-4 that the coefficient of correlation between any two independent variables is quite small. Therefore there is no serious multicollinearity.

4.3 The Empirical Results

First, this study regresses all data including Cement, Foodstuff, Plastics, Textiles, Mechanical and Electrical, Electric Wire and Cable, Chemical, Glass and Ceramics, Paper-making, Iron and Steel, Rubber, Automobile, Electric and Information, Building and Construction, Transportation, Tourism, Financial Service, and General Merchandise Service industries. Next, this study selects the Electric and Information and Financial Services industries to stand for oncoming industries, and

Table 4-4 Analysis of Coefficient of Correlation

President

	CAP(ln)	ROS	POH
CAP(ln)	1		
ROS	0.011355	1	
POH	-0.191402	0.174254	1

General manager

	CAP(ln)	ROS	POH
CAP(ln)	1		
ROS	0.087221	1	
POH	-0.223598	0.066681	1

Division Manager

	CAP(ln)	ROS	POH
CAP(ln)	1		
ROS	-0.070457	1	
POH	-0.279161	0.044166	1

Note:

1. CAP(ln) : capitalization volume, as firm size's substitute variable (in logarithmic form)
2. ROS : rate of return on stockholder's equity, as firm performance's substitute variable (in logarithmic)
3. POH : top executives' percentage of holding

Foodstuff, Plastics, Textile, and Chemical industries to stand for conventional industries. It compares oncoming industries with conventional industries, to see if there are differences between top executives' compensation in oncoming industries and in conventional industries.

From table 4-5, we conclude the following:

1. Firm size

Regardless of position, whether presidents, general managers, or division managers, annual compensation and capitalization volume had a positive relationship. This meant if firm size was larger, CEOs would get more compensation. This result was as expected, given the strong support exhibited in the relationship in previous research [e.g., Simon (1957); Finkelstein and Hambrick (1989); Gerhart and Milkovich (1990)]. The rationale for this association may be that large firms have greater demands on CEOs and greater ability to pay.

2. Firm performance

There is no statistically significant relationship between the annual compensation of presidents and the rate of return on stockholder's equity. However, there is a positive relationship between annual compensation of general managers and division managers and rate of return on stockholder's equity. The possible reasons for that are listed following.

First, the board of directors may give compensation to presidents in a form other than salary and bonus. As noted above, there are many kinds of compensation such as contingent compensation, stock options, stock appreciation rights, and

Table 4-5 The Empirical Results

Presidents (N=207)

Variables	Coefficient	T-statistic	P-value
Constant	3.989282	4.90993	1.88E-06***
CAP(ln)	0.235974	4.750557	3.84E-06***
ROS	0.003531	0.931903	0.352499
POH	-0.00872	-1.12014	0.263983

General Managers (N=176)

Variables	Coefficient	T-statistic	P-value
Constant	6.766069	14.56527	7.93E-32***
CAP(ln)	0.074141	2.615423	0.009704***
ROS	0.005062	2.535818	0.012109**
POH	0.002257	0.293016	0.769863

Division Managers (N=138)

Variables	Coefficient	T-statistic	P-value
Constant	6.015384	16.367000	9.24E-34***
CAP(ln)	0.099716	4.473981	1.62E-05***
ROS	0.012080	4.676488	7.04E-06***
POH	-0.004537	-0.366561	0.714525

Note:

1. *****, **, and *** show significantly different from zero at the 1%, 5%, and 10% level.
2. **CAP(ln)** : capitalization volume, as firm size's substitute variable (in logarithmic form)
3. **ROS** : rate of return on stockholder's equity, as firm performance's substitute variable (in logarithmic form)
4. **POH** : top executives' percentage of holding

pension contributions. But this study only considers salary and bonuses, so the relationship is not statistically significant. Next, because the president is a member of the board of directors, he has the authority to make compensation decisions. Hence the president can determine his or her own compensation, without necessarily considering firm performance.

As for general managers and divisional managers, they are purely managers, not partial-principal agents. The board of directors designed compensation systems depending on firm performance in order to give them incentives. So there is a positive relationship between annual compensation of general managers and division managers and firm performance.

3. Percentage of holding

Regardless of position, whether presidents, general managers, or division managers, their annual compensation and CEO's percentage of holding have no statistically significant relationship. The possible reason is that this study didn't include the top executive family's holding. Neglecting this factor in studying Taiwanese family businesses may weaken the significance of empirical results.

From table 4-6 and 4-7, we conclude the following:

1. Firm size

Regardless of position, whether presidents, general managers, or division managers, their annual compensation and capitalization volume had a positive relationship in conventional industries. But only presidents' and division managers' compensation and capitalization volume has a positive relationship in oncoming

Table 4-6 The Empirical Results of Oncoming Industries

Presidents (N=43)

Variables	Coefficient	T-statistic	P-value
Constant	4.714580	4.150604	0.000174***
CAP(ln)	0.200565	3.117594	0.003418***
ROS	0.017617	1.956585	0.057584*
POH	-0.022190	-1.733148	0.090971*

General Managers (N=43)

Variables	Coefficient	T-statistic	P-value
Constant	7.088681	7.702426	2.37E-09***
CAP(ln)	0.057393	1.106247	0.275397
ROS	0.009751	1.510035	0.139095
POH	0.018606	0.443312	0.659990

Division Managers (N=47)

Variables	Coefficient	T-statistic	P-value
Constant	6.493875	10.866822	6.52E-14***
CAP(ln)	0.073392	2.184511	0.034424**
ROS	0.011965	2.592005	0.012984**
POH	0.024454	0.615142	0.541703

Note:

1. *****, **, and *** show significantly different from zero at the 1%, 5%, and 10% level.
2. **CAP(ln)** : capitalization volume, as firm size's substitute variable (in logarithmic form)
3. **ROS** : rate of return on stockholder's equity, as firm performance's substitute variable (in logarithmic form)
4. **POH** : top executives' percentage of holding
5. The oncoming industries include the Electric and Information industry and Financial Services.

Table 4-7 The Empirical Results of Conventional Industries

Presidents (N=59)

Variables	Coefficient	T-statistic	P-value
Constant	1.741731	0.842401	0.403212
CAP(ln)	0.378637	2.885653	0.005570***
ROS	-0.001937	-0.227140	0.821157
POH	-0.022194	-1.240418	0.220086

General Managers (N=42)

Variables	Coefficient	T-statistic	P-value
Constant	4.317476	2.570739	0.014189**
CAP(ln)	0.222845	2.100651	0.042361**
ROS	0.002021	0.602426	0.550469
POH	0.022554	0.838928	0.406756

Division Managers (N=34)

Variables	Coefficient	T-statistic	P-value
Constant	5.631131	5.511182	5.5E-06***
CAP(ln)	0.121510	1.869395	0.071357*
ROS	0.009473	2.493380	0.018396**
POH	-0.002028	-0.133044	0.895047

Note:

1. *****, **, and *** show significantly different from zero at the 1%, 5%, and 10% level.
2. **CAP(ln)** : capitalization volume, as firm size's substitute variable (in logarithmic form)
3. **ROS** : rate of return on stockholder's equity, as firm performance's substitute variable (in logarithmic form)
4. **POH** : top executives' percentage of holding
5. The conventional industries include Foodstuff, Plastics, Textile, and Chemical industries.

industries. There is no statistically significant relationship between general managers' compensation and capitalization volume in oncoming industries.

2. Firm performance

There is a positive relationship between annual compensation of presidents and division managers and rate of return on stockholder's equity in oncoming industries. Only division managers' compensation is positively related to rate of return on stockholder's equity in conventional industries.

3. Percentage of Holding

Regardless of position, whether presidents, general managers, or division managers, their annual compensation and CEO's Percentage of holding have no statistically significant relationship in conventional industries. But the presidents' percentage of holding is negatively related to his or her compensation in oncoming industries.

CHAPTER 5. CONCLUSION AND FURTHER SUGGESTION

5.1 Conclusion

This study aims at the data of Taiwan top executives' compensation to make statistic analysis by industry and by individual. Study objects include presidents, general managers, and divisional managers. Furthermore, it researches the influence of firm size, firm performance, and top executives' percentage of holding on their compensation. Data were collected on the total cash compensation paid including salary, bonuses, and transportation allowances of listed companies in Taiwan. There are 307 firms after exclusion of extreme outliers. This study's concluded the following: (All amounts in New Taiwan (NT) dollars)

I. Statistical Analysis of CEO's Compensation in Listed Taiwanese Companies

- 1. Average annual compensation of all presidents, general managers, and divisional managers were \$3,289,000, \$3,205,000, and \$2,292,000 respectively. Moreover, the variation of total presidents' annual compensation was greater than that of general managers.**
- 2. The industries with the highest presidents', general managers', and divisional managers' average annual compensation were the Automobile, Cement, and Cement industries respectively. And the industries with the highest presidents', general managers', and divisional managers' annual compensation variation were the Automobile, Electric and Information, and Automobile industries respectively.**

3. The individual top level of compensation for presidents, general managers, and divisional managers were \$1.2 billion in the Plastics industry, \$1.081 billion also in the Plastics industry, and \$7,952,000 in the Electric and Information industry respectively.
4. The largest number of presidents', general managers', and divisional managers' average annual compensation were in the ranges between \$2-3 million, \$2-3 million, and \$1-2 million respectively. And the bar graph of presidents showed entirely different results from the bar graph of general managers.
5. In 17.6% of companies, general managers served as presidents concurrently. In 45.0% of companies, the general managers served as directors concurrently. But there were only 24.8% of division managers who served as directors concurrently.
6. In 59.1% of companies, presidents' annual compensation was greater than that of general managers'.

II. The Effect of Firm Size, Firm Performance, and Top Executives' Percentage of Holding on Their Compensation

1. Firm Size: regardless of position, whether presidents, general managers, or division managers, there was a positive relationship between annual compensation and capitalization volume. This means that if firm size was larger, the CEOs would get more compensation.

2. **Firm Performance:** there is no statistically significant relationship between annual compensation of presidents and rate of return on stockholder's equity. However, there is a positive relationship between annual compensation of general managers and division managers and rate of return on stockholder's equity.
3. **Percentage of Holding:** regardless of position, whether presidents, general managers, or division managers, annual compensation and CEO's percentage of holding have no statistically significant relationship.

5.2 Suggestions

I. Suggestions for Compensation Designers and Authorities of Organizations

1. Managers receive pecuniary incentives from compensation based on firm performance to resolve the agency problem between top management and shareholders. According to empirical results, although there is a positive relationship between annual compensation of general managers and firm performance, also between that of division managers and firm performance, its degree cannot compare with firm size and general and division managers' annual compensation. Such a compensation system provides incentives for top executives to seek the maximum scale of firm but not the maximum price of stock. Therefore, compensation designers should consider every factor that may affect firm performance.

2. **Although there were three regulations about how to disclose top executives' compensation in financial reports, there was no standard format for disclosure. Furthermore, some companies violate the regulations entirely. So complete data cannot be collected. The authorities of an organization should have better rules to clarify top executive compensation data.**

II. Suggestions for Further studies

1. **This study only considered one period, but researching compensation and its determinants with cross-sectional analysis has its defects. The top executives' compensation of this period usually depend on the results of previous period. For this reason, further studies may try to research several periods for more accurate results.**
2. **Since salaries are set at the beginning of a fiscal year, it is bonuses that drive the pay-performance patterns. Therefore it is important to split these into two major components of total cash compensation. If separate data can be obtained in the future, further studies may deal solely with salary or bonuses.**
3. **This study does not consider a CEO's family holdings. Neglecting this factor while studying Taiwanese family businesses may weaken the significance of empirical results. If data on family holdings can be obtained in the future, the relationship between top executives' compensation and percentage of holding may be significant.**

- 4. Further studies may add more variables in the model to increase the explanatory abilities of the regression model.**

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