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CEO COMPENSATION AND EARNINGS SENSITIVITY: A PERSPECTIVE FROM CEO DUALITY

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ABSTRACT

The design of chief-executive-officer (CEO) compensation influences a CEO's decisions and the degree to which the company in question values foreign and domestic earnings. This study explores how CEO compensation structure influences foreign and domestic earnings. This study investigates 1,393 listed and over-the-counter companies from 2001 to 2004. The results show that when a CEO also serves as the chairperson of the board of directors, the design of CEO compensation does not assign high weighting to foreign earnings. By contrast, when a CEO is not the chairperson of the board of directors, the design of CEO compensation assigns significantly high weighting to foreign earnings. This research is one of the few studies that explore the influence of a CEO who also serves as the chairperson of the board of directors on CEO compensation composition. The findings reveal that agency problems due to a CEO also serving as the chairperson of the board of directors may influence the importance of foreign earnings in relation to CEO compensation. This study substantially contributes to the fields of corporate governance and earnings management.

JEL: M41 M52

KEYWORDS: CEO Compensation, CEO Duality, Earnings Sensitivity, Corporate Governance

INTRODUCTION

This study explores the compensation structure of chief-executive-officer (CEO) working in listed and over-the-counter (OTC) companies. A CEO is responsible for the corporate strategies, growth, risk, budget, and performance of a company and influences the allocation of corporate resources and investment funds (Currim, Lim, and Kim, 2012). In a perfect market and under an effective compensation contract, a CEO's investment decisions and the calculation of an investment's present value should be based on the interests of all shareholders (Jensen, 1986). However, because of information asymmetry, CEOs typically have access to more information than shareholders. When conducting decision-making and resource management, a CEO often considers only short-term goals (Mizik, 2010). Therefore, determining a suitable CEO compensation structure is crucial in enabling a board of directors to supervise their CEO.

Because of limited resources for economic development in Taiwan, making transnational investments to obtain additional resources has become a commonly adopted strategy. Internationalization helps companies enhance their competitiveness and business performance (Lu and Beamish, 2004). Previous studies have indicated that to encourage CEOs to take responsibility for company risks, companies often use a compensation design to motivate CEOs (Miller, Wiseman, and Gomez-mejia, 2002). Therefore, how a board of directors responds to the risks of internationalization and adjusts their CEO's compensation contract warrants investigation.

According to previous studies, compensation is significantly and positively correlated with performance (Lambert and Larcker, 1987, Murphy, 1998). Huson, Tian, Wiedman, and Wier (2012) analyze earnings composition and CEO compensation and indicate that in the final year of a CEO's term of office, to prevent the CEO from manipulating earnings to raise his or her level of compensation, the reward committee typically adjusts the earnings composition and assigns low weighting to discretionary accruals. A fair compensation design can motivate a CEO and encourage him or her to be responsible for company risks and achieve corporate goals. Thus, the first objective of this study is to explore whether a company values foreign and domestic earnings differently when designing CEO compensation.

A company's internationalization strategies exacerbate the information asymmetry and agency conflicts between internal managers and external shareholders (Duru and Reeb, 2002). Therefore, the present study considers that when a company's CEO is the chairperson of the board, the occurrence of agency conflicts is reduced and the compensation contract does not require adjustment. If a CEO is not the chairperson of the board, the company requires a strong supervision mechanism to supervise its CEO's internationalization strategies. Accordingly, the compensation composition values the performance of foreign earnings. This is the second research objective of this study. The remainders of this study include the sections of literature review, data and methodology, results and conclusions.

LITERATURE REVIEW

A compensation design is a crucial mechanism for a board of directors to supervise a CEO. Compensation design has received substantial attention from numerous researchers. For example, most related studies have shown that compensation is significantly and positively correlated with performance; a company that offers high compensation exhibits excellent business performance (Lambert and Larcker, 1987, Murphy, 1998). If compensation is closely related to performance, the incentive effect of a CEO's compensation is strong.

However, some studies have indicated that if compensation depends too heavily on an accounting performance indicator, the motivation of a CEO to manipulate earnings is enhanced (Watts and Zimmerman, 1986). Grant, Markarian, and Parbonetti (2009) indicate that if a compensation contract contains a strong incentive to take responsibility for risk, CEOs' decisions regarding the adoption of a financial statement method are influenced, and accordingly, the company in question endeavors to stabilize its earnings.

Some studies have explored how to determine suitable compensation indicators. For example, Hayes and Schaefer (2000) indicate that a board of directors typically considers financial and nonfinancial information indicators in a CEO's compensation contract. Tsai (2003) finds that after a performance indicator for the current period has been controlled, CEO compensation contains information regarding a company's future business performance, indicating that CEO compensation is determined based on nonfinancial indicators. In summary, CEO compensation has a substantial impact on business performance and is influenced by numerous internal company factors; for example, a company's domestic and foreign earnings can influence CEO compensation.

Chen (2012) finds that innovation and production performance are two nonfinancial performance indicators that are significantly and positively correlated with CEO compensation. Enterprises adopt different strategies depending on the degree to which they value innovation and production. For example, an enterprise that seeks to develop its own brand values innovation performance over production performance when designing CEO compensation.

Previous studies have explored the influence of corporate governance or company size on CEO compensation. For instance, Lin and Hu (2003) indicate that for enterprises with high growth opportunities,

CEO compensation is highly correlated with business performance. The relationship between the supervision mechanism of the board of directors and CEO compensation depends on company size. For large-scale (small-scale) companies, the relationship between this supervision mechanism and CEO compensation is a complementary (substitution) relationship. Lin, Kuo, and Wang (2013) find that if a CEO is experienced and the company is a large-scale company, the company exhibits unsatisfactory business performance and the CEO has high compensation. The cited studies have shown that CEO compensation is closely related to company size, innovation, and performance.

For companies that engage in business activities overseas, corporate earnings comprise domestic and foreign earnings (Lacina, Marks, and Shin, 2013). Foreign earnings are influenced by numerous factors in a host country. Operating a business is considerably more complex in a foreign market than in the company's domestic market because of differences in culture, regulations, customs, and government systems. In addition, because foreign markets differ considerably from the Taiwanese market, information asymmetry occurs easily. Accordingly, foreign earnings are easily influenced by earnings management, and thus CEO compensation is insensitive to foreign earnings. Thus, we propose the first hypothesis:

H1: CEO compensation is significantly less sensitive to foreign earnings than to domestic earnings.

Numerous studies have explored the influence of a CEO also serving as the chairperson of the board of directors, also known as CEO duality. Donaldson and Davis (1991) consider that under such circumstances, the highly concentrated power can enhance business operating efficiency. By contrast, Patton and Baker (1987) indicate under CEO duality, the function of the chairperson of the board of directors to supervise the CEO on behalf of the board and shareholders is lost, and thus agency problems occur.

Yermack (1996) finds that CEO duality can weaken the supervision function of the board of directors, thereby negatively influencing business performance. Steven and Nina (2008) find that CEO duality can reduce the occurrence of performance-based incentives. In other words, CEO duality may increase compensation. Similarly, Irani, Gerayeli, and Valiyan (2017) find that CEO compensation is negatively correlated with managerial ownership and CEO duality is significantly and positively correlated with CEO compensation. Therefore, CEO duality can increase CEO compensation. In summary, CEO duality and CEO compensation are closely related.

Nagar et al. (2003) assert that when a CEO intends to benefit him or herself, he or she is highly likely to conceal information related to the company. Muslu (2010) indicates that when a CEO has considerable influence over the board of directors, he or she is highly likely to conceal information regarding CEO compensation. A company often considers a CEO's compensation contract as crucial for ensuring shareholder interest. A company's internationalization strategies can exacerbate the information asymmetry between internal managers and external shareholders (Duru and Reeb, 2002), potentially leading to severe agency conflicts between managers and external shareholders.

The present study considers that when a CEO is also the chairperson of the board of directors, agency conflicts occur less frequently and the company in question does not need to adjust the compensation contract. However, when a CEO is not the chairperson of the board of directors, the company requires a strong supervision mechanism to supervise the CEO's internationalization strategies. Accordingly, compensation composition highly emphasizes the importance of foreign earnings performance. Thus, we propose the second hypothesis:

H2: CEO compensation is insensitive to foreign earnings when a CEO is also the chairperson of the board of directors

DATA AND METHODOLOGY

Samples

In Taiwan, since 2005, CEO compensation reported in annual financial statements is displayed in "brackets" (i.e., a range as opposed to the exact amount) and information on detailed for individual people cannot be obtained. Therefore, this study investigates listed and OTC companies in Taiwan from 2001 to 2004. During the sample observation period, global market has just recovered from the 2000 stock market crash. CEO compensation may be an important issue that was looked into in this financial market crisis. Hence, our study intends to explore this issue in time of stock market recovery.

Sample compensation data is obtained from the Taiwan Economic Journal (TEJ). Annual reports of shareholders' meetings and annual financial statements are also collected. Data regarding financial and market performance and control variable in the model are obtained from the TEJ. The financial and insurance industries are excluded from this study because of the nature of those industries. Data of 1,393 listed and OTC companies from 2001 to 2004 are collected.

Table 1 shows the distribution of sample companies according to industry type (Panel A) and that of sample companies over the years (Panel B). As shown in Panel A of Table 1, electronic businesses account for the highest proportion of the total number of sample companies (58.4%) mainly because numerous electronic businesses and OTC companies are listed. As shown in Panel B of Table 1, from 2001 to 2004, the number of samples increased annually, indicating that the number of listed and OTC companies increased annually during this period.

Table 1: Distribution of Sample Companies According to Industry Type and Distribution of the Sample Companies from 2001 to 2004

Panel A Distribution of Sample Companies According to Industry Type

Industry Type	TEJ Industry Type	Number of Industries*	Sample Size	Sample Ratio	Sample Size–Number of Industries Ratio
Cement	11	5	11	0.008	2.200
Food	12	12	22	0.016	1.833
Plastic	13	15	39	0.028	2.600
Textile	14	17	46	0.033	2.706
Electric motor	15	35	65	0.047	1.857
Electrical cable	16	9	14	0.010	1.556
Chemistry	17	43	89	0.064	2.070
Glass	18	1	3	0.002	3.000
Papermaking	19	3	7	0.005	2.333
Steel	20	23	57	0.041	2.478
Rubber	21	8	24	0.017	3.000
Automobile	22	2	6	0.004	3.000
Electronics	23	368	813	0.584	2.209
Construction	25	25	38	0.027	1.520
Transportation	26	13	31	0.022	2.385
Tourism	27	5	10	0.007	2.000
General merchandise	29	12	22	0.016	1.833
Cultural & creative	32	3	4	0.003	1.333
Oil and gas	97	7	10	0.007	1.429
Others	99	35	82	0.059	2.343
	Total	641	1,393	1.000	2.173

Panel B Distribution of Sample Companies from 2001 to 2004

Year	2001	2002	2003	2004	Total
Sample size	209	304	415	465	1,393

This table shows distribution of sample companies. Panel A shows that electronic businesses account for the highest proportion of the total number of sample companies (58.4%). Panel B shows that the number of listed and OTC companies increased annually during this the sample period.

Empirical Model

In a compensation contract, an enterprise often associates compensation with performance to motivate its CEO. In other words, an enterprise often uses performance to reflect its CEO's efforts (Banker and Datar, 1989). The assessment of a performance variable can be based on market performance or accounting performance.

In this study, the sensitivity of CEO compensation to accounting performance assessment is examined. Therefore, after market performance has been controlled in the empirical regression, accounting performance is explored and domestic and foreign earnings in relation to accounting performance are analyzed. According to previous studies on the sensitivity of compensation to performance (Aggarwal and Samwick, 1999), Model (1) is established by Equation (1) in this study:

$$\begin{aligned}\ln COM_{it} = {} & \alpha_0 + \alpha_1 ACC_{it} + a_2 RET_{it} + a_3 OUTDIR_{it} + a_4 FOWN + a_5 ASSET \\ & + a_6 DEBT_{it} + a_7 MB_{it} + a_8 SDRET + \sum IND + \sum YEAR + \varepsilon_{it}\end{aligned} \quad (1)$$

where ln COM is the logarithm of CEO compensation, ACC denotes the accounting performance indicator (subtracting total assets from earnings before interest and taxes), α1 denotes the sensitivity of compensation to accounting performance, and the other variables are control variables.

In this study, when analyzing a compensation contract, different weighting values are assigned to domestic and foreign earnings. Considering accounting performance, domestic and foreign earnings are assessed separately, and variation in domestic earnings (□DEARN) and that in foreign earnings (□FEARN) are calculated. To test the hypotheses, Model (1) is modified into Model (2) by Equation (2) as follows:

$$\begin{aligned}\Delta COM_{it} = {} & \alpha_0 + \alpha_1 \Delta DEARN_{it} + \alpha_2 \Delta FEARN_{it} + \alpha_3 \Delta FEARN_{it} \times DUALITY_{it} \\ & + \alpha_4 \Delta FEARN_{it} \times NDUALITY_{it} + \sum CONTROL_{it} + \varepsilon_{it}\end{aligned} \quad (2)$$

Variable Assessment

CEO compensation: In this study, based on data on share allotment to senior managers in the TEJ database, we collect data on CEO salaries, bonuses, expenses (including special expenses and food expenses), and dividends. The data on dividends are obtained from the TEJ. The number of dividend shares is first calculated. The number of dividend shares for the current month is calculated as follows: number of dividend shares for the current month × (1 + share allotment rate) + number of transferred shares following share allotment. Share allotment rate = stock dividends (NT$) / 10 (stock dividends must be divided by NT$10). In contrast to Lin and Hu (2003), the TEJ considers the number of transferred shares during the current month following share allotment. Therefore, errors related to share allotment should be minimized. Then, the number subsequently was multiplied by the ex-right value to obtain a CEO's dividend. Finally, the logarithm of the sum of a CEO's salary, bonus, expenses, and dividend is used to assess CEO compensation.

CEO Duality: In this study, we use two dummy variables (DUALITY and NDUALITY) to examine the effect of CEO duality. If a CEO is also the chairperson of the board of directors, DUALITY equals 1; otherwise, DUALITY equals 0. If a CEO is not the chairperson of the board of directors, NDUALITY equals 1; otherwise, NDUALITY equals 0.

Control Variables: This study explores the factors that influence how a company designs a compensation contract. Following previous studies (Lambert, Larcker, and Weigelt, 1993, Finkelstein and Hambrick, 1989), several variables are controlled. Market performance (RET) is calculated based on rewards following market adjustment over all 12 months of the year. Market risks (SDRET) is measured by the standard deviation of RET for the first 5 years. Proportion of external director seats (OUTDIR) is measured by the proportion of external director seats to total director seats. Proportion of shares owned by foreign shareholders (FOWN) is measured by the proportion of shares owned by foreign shareholders to outstanding shares. Company risks (DEBT) is assessed based on a corporate debt ratio (total indebtedness / total assets). Company size (SIZE) is measured based on the logarithm of a company's total assets. Investment opportunities (MB) is assessed based on a company's market capitalization and net worth (market capitalization / net worth).

RESULTS

Table 2 presents the descriptive statistics (i.e., mean, standard deviation, median, and quartile) of various variables. As shown in Table 2, the mean, standard deviation, and median of CEO compensation ("COM" in the table) are 15.356, 1.020, and 15.208, respectively. The mean, standard deviation, and median of market performance (RET) are 23.559, 63.667, and 10.689, respectively.

The mean, standard deviation, and median of market risks (SDRET) are 61.629, 47.135, and 49.594, respectively. The mean, standard deviation and median of the proportion of shares owned by foreign shareholders (FOWN) are 6.534, 10.249, and 2.020, respectively. The mean, standard deviation, and median of the proportion of external director seats (OUTDIR) are 0.307, 0.192, and 0.333, respectively. The mean, standard deviation and median of company risks (DEBT) are 0.430, 0.150, and 0.445, respectively. The mean, standard deviation, and median of company size (SIZE) are 22.355, 1.370, and 22.072, respectively. The mean, standard deviation, and median of investment opportunities (MB) are 1.761, 1.011, and 1.504, respectively. The mean, standard deviation, and median of variation in domestic earnings (DEARN) are 0.061, 0.066, and 0.051, respectively. The mean, standard deviation, and median of variation in foreign earnings (FEARN) are 0.013, 0.043, and 0.000, respectively.

Table 3 shows correlations among all the variables. The upper right triangle shows Pearson correlations and the lower left triangle shows the Spearman correlations. Although several variables indicate significant correlations, we gauge the VIF (variance inflation factors) values by using the procedures proposed by Kennedy (1992) and the results show that no problem of multicolinearity among the variables with all the VIF values less than 10.

Table 4 presents the results of the regression analyses. According to Model (1), compensation is significantly influenced by domestic and foreign earnings. The coefficient for domestic earnings (DEARN) is significantly greater than that for foreign earnings (FEARN). Therefore, H1 is not supported. The samples are divided into two groups. In Model (2), the CEO is not the chairperson of the board of directors; CEO compensation is significantly influenced by domestic and foreign earnings. In Model (3), the CEO also serves as the chairperson of the board of directors; CEO compensation is not influenced by domestic or foreign earnings.

In Model (4), all samples are examined using Equation (2); the results show that the coefficient for FEARN × DUALITY is 0.147, which is nonsignificant, and the coefficient for FEARN × NDUALITY is 2.261, which is significant. These results support H2. Therefore, a company where the CEO is not the chairperson of the board of directors places greater emphasis on the importance of foreign earnings during compensation design than does a company where the CEO also serves as the chairperson of the board of directors.

Table 2 Descriptive Statistics

Variable	Mean	Standard Deviation	First Quartile	Median	Third Quartile
COM	15.356	1.020	14.733	15.208	15.876
RET	23.559	63.667	-17.084	10.689	44.293
SDRET	61.629	47.135	32.132	49.594	79.980
FOWN	6.534	10.249	0.110	2.020	7.935
OUTDIR	0.307	0.192	0.200	0.333	0.429
DEBT	0.430	0.150	0.322	0.445	0.536
ASSET	22.355	1.370	21.384	22.072	22.988
MB	1.761	1.011	1.039	1.504	2.167
DEARN	0.061	0.066	0.023	0.051	0.091
FEARN	0.013	0.043	-0.002	0.000	0.016

This table shows the descriptive statistics, including mean, standard deviation, first quartile, median and third quartile. The mean, standard deviation, and median of CEO compensation are 15.356, 1.020, and 15.208, respectively.

Table 3 Pearson and Spearman Correlation Analyses

	COM	RET	SDRET	FOWN	OUTDIR	DEBT	ASSET	MB	DEARN	FEARN
COM	1	-0.038 (0.156)	0.069 (0.011)**	0.324 (0.000)***	-0.076 (0.005)***	-0.081 (0.002)***	0.456 (0.000)***	0.315 (0.000)***	0.240 (0.000)***	0.038 (0.154)
RET	-0.040 (0.141)	1	0.301 (0.000)***	-0.067 (0.012)**	-0.054 (0.043)**	0.036 (0.179)	0.051 (0.056)*	0.264 (0.000)***	0.062 (0.021)**	0.040 (0.137)
SDRET	0.103 (0.000)***	0.171 (0.000)***	1	0.001 (0.975)	-0.094 (0.000)***	0.036 (0.179)	0.134 (0.000)***	0.183 (0.000)***	0.076 (0.005)***	-0.043 (0.107)
TFOWN	0.351 (0.000)***	-0.074 (0.006)***	0.050 (0.060)*	1	-0.100 (0.000)***	0.007 (0.787)	0.466 (0.000)***	0.211 (0.000)***	0.083 (0.002)***	0.056 (0.035)**
OUTDIR	-0.071 (0.008)***	-0.055 (0.042)**	-0.075 (0.005)***	-0.133 (0.000)***	1	0.000 (1.000)	-0.359 (0.000)***	0.113 (0.000)***	0.099 (0.000)***	0.074 (0.006)***
DEBT	-0.070 (0.009)***	0.008 (0.777)	0.002 (0.947)	0.011 (0.670)	0.012 (0.651)	1	0.222 (0.000)***	-0.152 (0.000)***	-0.391 (0.000)***	0.003 (0.913)
ASSET	0.454 (0.000)***	0.091 (0.001)***	0.168 (0.000)***	0.498 (0.000)***	-0.337 (0.000)***	0.253 (0.000)***	1	0.020 (0.456)	-0.078 (0.003)***	0.019 (0.482)
MB	0.342 (0.000)***	0.235 (0.000)***	0.198 (0.000)***	0.219 (0.000)***	0.127 (0.000)***	-0.119 (0.000)***	0.011 (0.681)	1	0.521 (0.000)***	0.138 (0.000)***
DEARN	0.273 (0.000)***	0.085 (0.001)***	0.081 (0.003)***	0.061 (0.023)**	0.095 (0.000)***	-0.380 (0.000)***	-0.115 (0.000)***	0.537 (0.000)***	1	-0.424 (0.000)***
FEARN	0.050 (0.061)*	0.065 (0.016)**	-0.052 (0.055)*	0.105 (0.000)***	0.039 (0.143)	0.089 (0.001)***	0.072 (0.007)***	0.082 (0.002)***	-0.381 (0.000)***	1

*This table shows Pearson and Spearman correlation analyses. Figures in the upper right portion above the diagonal line are Pearson correlation coefficients and those in the lower left portion below the diagonal line are Spearman correlation coefficients. Figures in parentheses are p values; ***, **, and * denote the significance levels of 1%, 5%, and 10%, respectively.*

Table 4 Regression Analyses

Independent Variable	**Dependent Variable: COM**			
	Model 1	**Model 2 Duality=0**	**Model 3 Duality=1**	**Model 4**
Intercept	6.839	7.395	5.530	6.849
	(0.000)***	(0.000)***	(0.000)***	(0.000)***
RET	-0.001	-0.001	-0.001	-0.001
	(0.018)**	(0.094)*	(0.046)**	(0.018)**
SDRET	-0.001	-0.002	0.000	-0.001
	(0.051)*	(0.003)***	(0.632)	(0.050)**
FOWN	0.004	0.006	-0.001	0.004
	(0.095)*	(0.036)**	(0.821)	(0.089)*
OUTDIR	0.067	-0.088	0.201	0.069
	(0.597)	(0.582)	(0.356)	(0.588)
DEBT	-0.554	-0.349	-0.909	-0.560
	(0.002)***	(0.113)	(0.006)***	(0.002)***
ASSET	0.383	0.357	0.447	0.383
	(0.000)***	(0.000)***	(0.000)***	(0.000)***
MB	0.133	0.108	0.214	0.134
	(0.000)***	(0.007)***	(0.001)***	(0.000)***
DEARN	2.737	3.903	0.099	2.706
	(0.000)***	(0.000)***	(0.931)	(0.000)***
FEARN	1.988	3.039	-0.495	
	(0.005)***	(0.000)***	(0.718)	
FEARN*DUALITY				1.470
				(0.126)
FEARN*NDUALITY				2.261
				(0.004)***
INDUSTRY	control	control	control	control
YEAR	control	control	control	control
Adjusted R^2 (%)	40.7%	45.2%	31.1%	40.6%
N	1387	922	465	1387

*This table shows the results of regression analyses. Model 2 and Model 3 reports the results based on the DUALITY. Model 4 reports the results covering the interaction of the variables which include FEARN, DUALITY and NDUALITY. ***, ** and * denote the significance levels of 1%, 5%, and 10%, respectively.*

CONCLUDING COMMENTS

An increasing number of companies are investing funds overseas. This study examines CEO compensation composition, compares domestic and foreign earnings in a contract, and explores the influence of CEO duality on the relationship between CEOs and foreign earnings. Because corporate governance increasingly receives attention, the results of this study can facilitate understanding of the sensitivity of CEO compensation contracts to domestic and foreign earnings.

This study investigates 1,393 listed and OTC companies from 2001 to 2004. The results show that in companies where the CEO also serves as the chairperson of the board of directors, CEO compensation does not emphasize the importance of foreign earnings. By contrast, for companies where the CEO is not the chairperson of the board of directors, CEO compensation highly emphasizes the importance of foreign earnings.

This study is one of few studies that explore the influence of CEO duality on CEO compensation composition. The findings show that agency problems due to CEO duality may influence the importance of foreign earnings in relation to compensation. The results of this study can serve as a reference for future studies on corporate governance, international enterprises, and CEO compensation. In addition, in practice, the results of this study can facilitate understanding of the interrelationships between CEO compensation in Taiwan, CEO duality, and domestic and foreign earnings. Thus, this study has theoretical and practical value.

Inevitably, this study has limitations that can be extended in the future research. The data we collected was during the period after financial market crash. Although this period has significant meaning for our research purpose, future research may expand the sample period, which may make our results more robust. On the other hand, our study has a limitation that we only investigate the research issues domestically. However, CEO compensation may have different results in different cultural contexts. Future research is encouraged to conduct a cross-cultural research to make a comparison between the Chinese culture and the Western culture.

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