JEL Classification: M12
Keywords: excess pay, managerial compensation, firm performance, institutional ownership, agency problem

Can Firms Create Value Through Excess Managerial Compensation? Evidence from Taiwan

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Abstract

This study investigates the relationship between excess managerial compensation and subsequent firm performance as well as the influence of institutional ownership on this association. Using a sample of non-financial firms listed on the Taiwan Stock Exchange, this study reveals that excess pay negatively influences subsequent performance, suggesting that providing extra compensation to top managers may exacerbate agency problems. However, the adverse effect of excess compensation on firm performance is mitigated when firms have a higher proportion of institutional ownership.

1. Introduction

Compensation has long been acknowledged as a critical tool for businesses to align the interests of their managers and shareholders. However, the continuous growth in managerial compensation over recent decades has ignited debate on the formulation of these compensation policies. Ultimately, these concerns boil down to a central question: Does offering excess pay to executives genuinely contribute to firm value?

In response, a body of research has explored the link between excess managerial compensation and subsequent financial performance, yet the findings have been mixed. Some studies report a positive association, suggesting that excess compensation incentivizes executives to increase their efforts, thereby improving firm performance (e.g., Fahlenbrach, 2009; Fong et al., 2015; Tai et al., 2015). For example, Fong et al. (2015) found a positive relationship between excess CEO compensation and firm performance, implying that providing excess compensation can enhance a company's value by motivating its executives.

Nevertheless, other studies documented a negative association between excess managerial pay and firm performance (e.g., Hassen, 2015; Carter et al., 2016), suggesting that the executive labor market is inefficient and that high pay is primarily driven by managerial power and a lack of adequate oversight. For example, Carter et al. (2016) suggest that excess compensation signals worse future performance and can be used as an indicator of agency problems.

https://doi.org/10.32065/CJEF.2025.01.04

The authors report no conflicts of interest.

We revisit this issue due to the conflicting evidence and, more importantly, because studies have used varied designs for measuring variables when investigating the association, some of which may introduce endogeneity. However, most studies in this area have failed to address this issue, undermining the robustness of their results.

Using the TSLS instrumental variable estimation approach, we find no evidence of endogeneity among our tested variables. Based on multiple tests, our results show a negative association between excess managerial compensation and subsequent firm performance, measured by industry-adjusted return on assets. These findings suggest that providing excess compensation to executives not only fails to create additional value but also has a harmful effect on future financial performance.

Expanding on the above findings, we further investigate the impact of institutional investors on executive compensation policies within their portfolio firms. Acknowledging the critical role of executive compensation and shareholders' vigilance within the corporate governance framework, we specifically investigate the interactive impact of excess compensation and institutional ownership on firms' subsequent performance.

Our results indicate that institutional ownership negatively influences the relationship between excess managerial compensation and subsequent performance. In other words, as institutional ownership increases, the negative effect of excess pay on firm performance diminishes. This discovery underscores the significance of institutional investors in improving corporate governance through vigilant oversight, and emphasizes the crucial necessity for effective monitoring, particularly in cases where top managers receive disproportionately high compensation.

In addition, since our study period spans the COVID-19 pandemic, we extend our analysis to examine the impact of COVID-19 on the relationship between excess managerial compensation and firm performance. The results show that the previous findings remain consistent during the pandemic. However, interestingly, the negative effect of excess pay on firm performance weakened during the COVID-19 period.

This study makes several contributions to the existing literature. First, it addresses potential endogeneity concerns by employing Two-Stage Least Squares (TSLS) regression analysis and conducting rigorous validity tests for the instrumental variables (IVs), thereby enhancing the credibility of the results. Second, it provides robust evidence that excess compensation for top managers not only fails to create additional value for shareholders but also exacerbates agency problems. These findings have practical implications, challenging the assumption that continuously increasing executive compensation is necessary to maintain performance levels.

Third, this study presents evidence that institutional shareholders play a crucial role in mitigating agency problems by reducing the negative impact of excess managerial compensation on future firm performance. This finding has practical implications, particularly for emerging economies where institutional ownership is typically lower. Finally, the study contributes to the literature by revealing that the adverse impact of excess managerial compensation on future performance was less pronounced during the COVID-19 pandemic. This suggests that agency problems may be less severe during challenging periods for firms, highlighting an intriguing issue that warrants further investigation.

The remainder of this paper is structured as follows: Section two provides a literature review and formulates our hypotheses. Section three details our methodology, data and sample. Section four presents and discusses the findings. The concluding section draws conclusions and outlines the implications and the underlying limitations.

2. Literature Review and Hypotheses

2.1 Institutional Background

Executive compensation has long been a major concern for the Taiwanese public. Since 1991, the Financial Supervisory Commission (FSC) has taken significant steps to enhance pay transparency by implementing regulations mandating firms listed on the Taiwan Stock Exchange to disclose detailed executive compensation in their annual reports. These regulations were later integrated into the Regulations Governing Information to Be Published in Annual Reports of Public Companies (referred to hereafter as the Regulations).

In 2005, in response to the Enforcement Rules of the Personal Data Protection Act issued by the Ministry of Justice, the FSC amended the Regulations to strike a balance between pay transparency and privacy rights in relation to executive compensation. This amendment allows firms to disclose executive compensation using either Individual Disclosure or Combined Disclosure formats. Under Individual Disclosure, firms are required to list the names and annual compensation of their CEO and vice CEOs separately. In contrast, Combined Disclosure requires firms to report the total compensation of all executives, along with the compensation ranges within which individual executives' annual compensation falls. At that time, the range was divided into eight levels, from below NT$ 5,000,000 to over NT$ 100,000,000, covering various components such as salaries, retirement pay, special rewards, cash-based bonuses, and stock-based bonuses.

In 2011, the Securities and Exchange Act introduced additional requirements that compelled listed firms to establish a compensation committee responsible for recommending executive compensation. Subsequently, in 2020, amid mounting concerns regarding the disparity between hefty executive pay and lackluster corporate performance, the FSC revised the Regulations to bolster disclosure obligations. The amendment mandates firms to divulge the names and compensation details of each executive if the company does not meet the criteria set by the FSC. For instance, firms must opt for 'Individual Disclosure' if they fall within the lowest two tiers of the corporate governance evaluation conducted by the Corporate Governance Evaluation Committee in the most recent year. Furthermore, the compensation range under the Combined Disclosure format was expanded from 8 to 10 levels, with the aim of enhancing transparency.

2.2 Excess Pay and Firm Performance

Compensation is widely acknowledged as a vital tool for addressing the complexities arising from the separation of ownership and managerial control within a company. Yet, determining the appropriate level of compensation for executives has long been a contentious subject. The persistent upward trend in executive pay has sparked concerns regarding corporate executive compensation practices, prompting

research efforts to refine the evaluation of compensation fairness (e.g., Core et al., 1999; Brick et al., 2006; Wade et al., 2006; Core et al., 2008).

Studies evaluating the appropriateness of executive pay levels typically adopt a consistent methodology. They start by formulating a compensation estimation equation and then determine excess pay by subtracting the predicted compensation from the actual pay. Although these studies vary in the factors included in the models to estimate equitable pay levels, they typically incorporate operating and stock market performance as key factors. For example, Core et al. (2008) and Robinson et al. (2011) incorporated factors such as previous-year sales, previous-year return on assets, previous-year stock returns, and market-to-book value in the previous year in their models, along with current-year return on assets, current-year stock returns, and CEO tenure. Similarly, Core et al. (1999) and Liu and Yin (2011) included variables like current-year return on assets, current-year stock returns, current-year sales, and current-year market value-to-book value in their models, along with standard deviation measurements for return on assets and stock returns.

A subsequent question arises: Why do firms offer excess pay to executives? Some proponents justify this practice by likening it to entering into an implicit contract with executives, motivating them to work harder to create value for shareholders (Jayes and Schaefer, 2000; Tai et al., 2015). Excess pay may also serve to attract and retain talented executives (Pandey et al., 2022), thereby potentially enhancing organizational performance. Jayes and Schaefer (2000) bolster this perspective by identifying a positive association between the variation in current CEO cash compensation unexplained by current performance (i.e., excess pay) and subsequent firm performance. Similarly, Fong et al. (2015) revealed a positive relationship between excess CEO pay and future performance, suggesting that offering excess compensation motivates CEOs to perform better. Drawing on the theory of implicit contracts, Tai et al. (2015) examined the relationship between excess director pay and subsequent performance, yielding similar results. They demonstrated that excess director pay is significantly and positively associated with subsequent performance (Tobin's Q), positing that paying directors more than the labor market wage produces an incentive effect. These studies collectively argue that firms compensate executives for their skills and experience, with excess pay serving as a valuable indicator for predicting future performance.

Fahlenbrach (2009) presents another perspective supporting overpayment to executives. He argues that excess managerial compensation can be attributed to governance substitution. Specifically, the study demonstrated that in firms with weaker governance structures, the compensation contract plays a pivotal role in aligning the interests of shareholders and the CEO. Fahlenbrach suggests that overpayment to executives not only encourages future performance but also serves as an effective tool to mitigate agency problems.

However, in contrast, others argue that inflated compensation is a result of executives prioritizing their self-interest. According to rent extraction theory, executives, particularly those wielding significant influence over the board (referred to as powerful managers), may exploit their positions to secure additional pay (Gox and Hemmer, 2020). For instance, Carter et al. (2016) observed a negative correlation between excess CEO pay and subsequent firm performance, suggesting that abnormally high CEO compensation can serve as a foreboding indicator of

future company performance. Similarly, Chung et al. (2015) uncovered an adverse association between surplus executive compensation and firm value.

We revisit this matter due to the conflicting evidence and, more importantly, because studies employ varied designs for measuring tested variables when investigating the association, some of which may introduce endogeneity. However, most studies in this area have failed to address this issue, which undermines the robustness of their results. We speculate that endogeneity may be the primary contributing factor, as many of these studies overlook its impact. As emphasized by research such as Stock et al. (2002) and Rouen (2020), endogeneity bias can arise from factors such as measurement errors, omitted variables, and simultaneity. Determining whether the tested variables are endogenous is critical in empirical research that seeks to establish causal relationships through statistical analysis of non-experimental data.

To reassess this issue, we formulate our Hypothesis 1 without predicting the direction of the association between excess managerial compensation and subsequent firm performance. We refrain from predicting any specific sign due to the conflicting theories in this area and the varied findings in prior empirical studies.

> **Hypothesis 1:** Excess executive pay is associated with subsequent firm performance.

2.3 Institutional Investors and Future Performance

Recognizing the unavoidability of opportunistic behavior among executives, corporate governance plays a pivotal role in safeguarding shareholders' interests. In addition to external regulations and oversight, such as the presence of independent directors and auditors, both compensation and shareholder vigilance are acknowledged as essential mechanisms within the corporate governance framework. This prompts an exploration of the interplay between excess compensation and shareholder oversight, and their collective impact on firm performance.

Institutional investors have attracted increasing attention within the corporate governance framework primarily because of their expanding ownership in the stock market. This motivates an examination of whether and how excess compensation and institutional ownership collaborate to influence firm performance.

The literature generally presents three contrasting perspectives on institutional shareholders (e.g., Hsu and Koh, 2005; Lin and Fu, 2017; Lewellen and Lewellen, 2022). One perspective suggests that institutional shareholders exhibit short-term, profit-driven behaviors akin to transient investors, focusing on speculative, short-term trading gains rather than diligent monitoring for corporate governance. Another viewpoint argues that institutional investors demonstrate a stronger commitment to the long-term value of their portfolio companies. They actively engage in monitoring and disciplining managerial discretion, thereby reducing information asymmetries and maximizing shareholder value. A third perspective posits that institutional shareholders may align with company executives to exploit smaller shareholders. In this scenario, they might overlook managerial misconduct as long as they stand to benefit from it.

Despite an array of theoretical arguments concerning the role of institutional investors, empirical findings consistently support their effectiveness as corporate

governance monitors. For instance, Hartzell and Starks (2003) found that a higher concentration of institutional ownership corresponded to reduced executive compensation and that a stronger institutional presence tended to result in more performance-sensitive pay structures. Hsu and Koh (2005) concluded that long-run oriented institutional shareholders served as a corporate governance mechanism to curtail aggressive earnings management. Further supporting this perspective, Ozkan (2007) reported a significantly negative correlation between institutional ownership and CEO compensation. In addition, Lewellen and Lewellen (2022) offer direct insights into the financial incentives that drive institutional investors to become actively engaged shareholders. According to their calculations, during 2017, institutional investors on average could gain an additional $129,000 in annual management fees for every 1% increase in the value of their stockholding, with fees ranging from $19,600 for investments in small firms to $307,600 for investments in large enterprises.

In a meta-analysis spanning 46 studies conducted across 11 Middle Eastern nations, Al-Janadi (2021) concluded that institutional ownership was positively correlated with firm performance. Similarly, Zhang et al. (2021) revealed that domestic mutual funds in China had a beneficial impact on the CEO pay-performance relationship. This influence was notably more pronounced when the ownership stake was higher and closer to that of the controlling shareholder.

While numerous empirical studies suggest that institutional investors effectively monitor their portfolio firms, leading to improved performance, limited research has examined the impact of institutional ownership on the relationship between excess executive compensation and firms' future performance. This gap motivates us to explore whether institutional ownership moderates the association between excess pay and future firm outcomes. We hypothesize that institutional ownership plays an active role in enhancing firm performance, and that it may either weaken the negative effects of excess pay on performance or amplify positive effects if excess pay aligns with improved performance.

Several reasons support this hypothesis. First, as previously noted, substantial empirical evidence highlights institutional investors as professional and engaged shareholders. Second, during our study period, corporate governance mechanisms in Taiwanese firms remain relatively underdeveloped, providing opportunities for institutional investors to exert influence. For example, although the minimum ratio of independent directors on boards has been introduced, this requirement is currently mandated only for newly public firms, leaving many publicly traded firms without full compliance.

> **Hypothesis 2:** Institutional ownership affects the relationship between excess managerial compensation and subsequent firm performance.

3. Research Method

3.1 Sample and Data

To test our hypotheses, we analyze non-financial firms listed on the Taiwan Stock Exchange over the period 2013–2022, using data sourced from the Taiwan Economic Journal (TEJ) database. Our initial sample comprises 7,648 firm-year

observations, which are used to calculate the predicted value of excess managerial compensation, following prior studies (e.g., Core et al., 2008; Rouen, 2020). After excluding 810 firm-year observations due to missing data in our empirical models, the final sample consists of 6,838 firm-year observations.

3.2 Measure

Dependent Variable

The outcome variable is industry-adjusted return on assets (INDadjROA), a widely used measure of firm performance in empirical research. It is calculated as a firm's earnings before interest and taxes (EBIT) divided by total assets, adjusted by subtracting the industry average ROA.

Independent Variable

In examining the impact of excess managerial compensation on subsequent performance, we calculate excess managerial pay (EXCESS) using the compensation estimation model, as outlined in Eq. (1). EXCESS is derived by subtracting the predicted managerial pay from the actual managerial pay, thus quantifying the difference between actual and anticipated labor market rates. It is important to note that firms listed on the Taiwan Stock Exchange are required to disclose compensation details of the CEO and deputy CEOs, typically in the format of either Individual Disclosure or Combined Disclosure. However, the majority of firms opt for the Combined Disclosure format. Therefore, in this study, managerial pay is defined as the average compensation received by the CEO and deputy CEOs, encompassing cash pay, cash bonuses, stock bonuses, fringe benefits, and pension accruals.

$$\begin{aligned} EXEpay_{i,t} = {} & \beta_0+\beta_1 INDadjROA_{i,t}+\beta_2 INDadjRET_{i,t}+\beta_3 STD\_INDadjROA_{i,t}+\beta_4 STD\_I \\ & NDadjRET_{i,t}+\beta_5 RET_{t-1}+\beta_6 LOSS_{i,t}+\beta_7 SIZE_{i,t}+\beta_8 MTB_{i,t}+\beta_9 LEVERAGE_{i,} \\ & {}_t+\text{Industry Fixed Effects} + \text{Year Fixed Effects} +\mu_{i,t} \end{aligned} \quad (1)$$

where 'i' denotes a specific firm and 't' a given year. EXEpay=the average pay of the CEO and deputy CEOs, INDadjROA=industry-adjusted return on assets, INDadjRET=industry-adjusted annual stock returns, STD_INDadjROA=standard deviation of annual industry-adjusted ROA for the prior 5 years, STD_INDadjRET=standard deviation of annual stock returns for the prior five years, LOSS= a net loss indicator variable (coded as 1 if net income is negative and 0 otherwise), SIZE=the natural logarithm of total assets, MTB=the ratio of market to book value, LEVERAGE=the ratio of total debt to total assets.

INST (institutional ownership) represents the proportion of shares held by institutional investors, and INST×EXCESS is the interaction variable formed by multiplying INST and EXCESS.

Control Variable

In addition to year and industry dummy variables, which account for variations across time and sectors, we include several control variables expected to influence firm performance. MANSHARE, representing the percentage of shares held by managers, is one such variable. Prior research supports interest convergence

theory, indicating that higher managerial ownership aligns managers' incentives with firm performance improvements (e.g., Boshnak, 2023; Suzan and Ramadhani, 2023).

R&D, measured as the ratio of research and development expenditures to total sales (also called R&D intensity), and GROWTH, defined as the year-over-year change in sales, are widely used indicators of company growth. Prior studies indicate a positive relationship between R&D intensity and firm performance (e.g., Broome et al., 2023), as well as between GROWTH and firm performance (e.g., Liljeblom et al., 2020; Boshnak, 2023; Kahloul et al., 2023).

Given the pivotal role of the board of directors in overseeing business operations on behalf of shareholders, board structure can significantly impact firm performance. To capture these effects, we incorporate three board-related variables: board size, board independence, and CEO duality. Board size (BOARDSIZE) is measured by the number of board members. While some studies suggest that larger boards can leverage more human and social capital, potentially providing greater resources than smaller boards (e.g., Hassoun and Aloui, 2017; Yasser et al., 2017; Merendino and Melville, 2019; Pucheta Martínez and Gallego Álvarez, 2020), the relationship between board size and firm financial performance remains inconclusive, as many studies failed to establish a definitive link (e.g., Tawfik et al., 2022; Wangwan and Leemakde, 2023).

Board independence (BOARDIND) represents the percentage of independent directors. While board independence is generally seen as a governance mechanism to mitigate malpractices (Al-Gamrh et al., 2020; Al-Saidi, 2021), its effect on firm performance is mixed. Some studies reported a positive correlation (e.g., Arikawa et al., 2017; Hung et al., 2020; Pucheta-Martínez and Gallego-Álvarez, 2020), while others found a negative relationship (e.g., Hassoun and Aloui, 2017), or no significant correlation at all (e.g., Tawfik et al., 2022; Wangwan and Leemakdej, 2023).

CEO duality (DUALITY) refers to whether the CEO also serves as the board chair, assigned a value of 1 if the CEO holds both roles and 0 otherwise. According to stewardship theory, combining these roles can enhance decision-making efficiency, benefiting shareholders. Conversely, agency theory warns that CEO duality may lead to a dominant CEO, undermining effective oversight. Empirical findings are mixed: Bansal and Sharma (2016) and Pucheta-Martínez and Gallego-Álvarez (2020) suggest a positive impact on firm performance, while Hassoun and Aloui (2017) and Tawfik et al. (2022) report a negative effect.

We also control for various firm characteristics. SIZE, measured as the natural log of total assets, serves as a proxy for firm size. The relationship between SIZE and firm performance is debated. Some studies indicate a positive link (e.g., Nguyen et al., 2017; Hassoun and Aloui, 2017; Huang et al., 2022; Long and Yang, 2022; Zhang et al., 2023; Yudhanto and Simamora, 2023; Khan et al., 2023; Wata and Gularso, 2023), while others suggest a negative association (e.g., Laplume et al., 2022; Tawfik et al., 2022; Boshnak, 2023; Kahloul et al., 2023).

LEVERAGE, indicating a firm’s debt level, is measured as the ratio of total debt to total assets. Firms with higher leverage might face stricter monitoring from creditors, potentially curbing managerial malpractices. However, high leverage can also signal increased risk and higher capital costs (Jackling and Johl, 2009; García-Ramos and Díaz, 2021). Empirical evidence is mixed, with some studies

finding a positive relationship (e.g., Tawfik et al., 2022; Liljeblom et al., 2020; Yudhanto and Simamora, 2023) and others identifying a negative association (e.g., Yasser et al., 2017; Al-Gamrh et al., 2020; Boshnak, 2023; Kahloul et al., 2023; Wangwan and Leemakdej, 2023). FIRMAGE, measured by the number of years since incorporation, reflects a firm's growth prospects and industry experience (García-Ramos and Díaz, 2021). Empirical studies show conflicting findings on its relationship with performance: some suggest a negative link (e.g., Liljeblom et al., 2020; Huang et al., 2022; Zhang et al., 2023), while others find a positive correlation (e.g., Boshnak, 2023). Still, some research detects no significant association (e.g., Long and Yang, 2022; Wangwan and Leemakdej, 2023).

4. Results and Discussion

4.1 Managerial Pay Estimation Equation

Table 1 Executive Pay Estimation Equation

	$EXEpay_t$	
	ß	***t-stat.***
(Constant)		16.153***
$INDadjROA_t$	0.217	20.018***
$INDadjRET_t$	-0.023	-2.476**
$STD\_INDadjROA_t$	0.013	1.197
$STD\_INDadjRET_t$	-0.012	-1.198
RET_{t-1}	0.016	1.648*
$LOSS_t$	0.011	1.036***
$SIZE_t$	0.522	58.083***
MTB_t	0.065	5.934***
$LEVERAGE_t$	0.031	3.264***
Industry-fixed effects	(included)	
Year-fixed effects	(included)	
Observations	7,648	
F-statistic	87.251	
R^2	0.446	
Adjusted R^2	0.441	

Notes: 'i' denotes a specific firm, 't' represents a specific year measured, 't-1' represents one year before a specific observation year, INDadjROA=industry-adjusted ROA, INDadjRET=industry-adjusted stock returns for the year, STD_INDadjROA=standard deviation of annual return on assets for the prior five years, STD_INDadjRET=standard deviation of annual stock returns for the prior five years, RET=annual stock returns, LOSS=a loss indicator variable (coded as 1 if the net income is negative and 0 otherwise), SIZE=the natural logarithm of total assets, MTB=the ratio of market value to book value, LEVERAGE=the ratio of total debt to total assets. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed), respectively.

Table 1 presents the regression coefficient estimates and corresponding t-statistics for our managerial pay equation, which is used to calculate the excess managerial pay (EXCESS). With the exception of the variables STD_INDadjROA, STD_INDadjRET, and LOSS, all other explanatory variables exhibit a high degree of correlation with the dependent variable, managerial pay (EXEpay). Overall, our pay equation explains 44.1% of the variance in managerial pay, which aligns with findings from previous studies. For instance, Wade et al. (2006) achieved an

explanatory power of 37%, Core et al. (2008) reported 42.9%, Fong (2010) found 36%, and Fong et al. (2015) demonstrated 50%.

4.2 Descriptive Statistics

Table 2 presents descriptive statistics for the variables used in our regression analysis. The mean industry-adjusted Return on Assets (INDadjROA) for year t+1 is -2.3%, while the average excess managerial pay (EXCESS) is NT$-49,000. Institutional ownership (INST) and managerial ownership (MANSHARE) have mean values of 44.723% and 0.828%, respectively. These figures align with prior studies, underscoring the significant role of institutional investors in the stock market and the separation of control from management. Among the sample firms, 31.2% of board chairs also serve as chief executive officers (DUALITY).

The natural logarithm of total assets (SIZE) has a mean value of 16.127. Firm age (FIRMAGE) ranges from 7 to 67 years, with an average of approximately 31.281 years (mean natural logarithm=3.443). The mean debt ratio (LEVERAGE), research and development intensity (R&D), and sales growth rate (GROWTH) are 43.999%, 3.432%, and 6.073%, respectively. The number of board directors (BOARDSIZE) ranges from 5 to 15, with a mean of 7.962, while independent directors (BOARDIND) represent an average of 29.3% of the board.

Table 2 Descriptive Statistics

Variable	*Mean*	*Std. dev.*
INDadjROAt+1 (%)	-0.023	7.101
EXCESSt (NTD $1,000)	-49	3,795
INSTt (%)	44.723	22.380
MANSAHREt (%)	0.828	1.543
DUALITYt	0.312	0.463
SIZEt	16.127	1.395
FIRMAGEt	3.443	0.470
LEVERAGEt (%)	43.999	17.645
R&Dt (%)	3.432	2.829
GROWTHt (%)	6.073	32.760
BOARDSIZEt	7.962	2.231
OUTt	0.293	0.144

Notes: 'i' denotes a specific firm, 't' represents a given year, INDadjROA=industry-adjusted ROA, EXCESS=excess managerial pay, INST=the percentage of shares owned by institutional investors, MANSHARE=the percentage of shares owned by the CEO, DUALITY=a dummy variable indicating whether the firm's chair of the board is also the CEO (coded as 1 if the CEO is also the chair of the board and 0 otherwise), SIZE=the natural logarithm of total assets, FIRMAGE=the natural logarithm of the number of year since listing, LEVERAGE=the ratio of total debt to total assets, R&D=the ratio of research and development expenditures to total sales, GROWTH=year-over-year change in sales, BOARDSIZE=the number of board members, OUT=the percentage of independent directors. All continuous variables are winsorized at the 1st and 99th percentiles to mitigate the impact of outliers.

Table 3 presents the correlation matrix for the variables used in the empirical analyses. Without controlling for other factors, institutional ownership (INST), managerial ownership (MANSHARE), firm size (SIZE), sales growth (GROWTH), board size (BOARDSIZE), and the percentage of independent directors (OUT) are all significantly and positively associated with the outcome variable, INDadjROA in

year t+1. In contrast, excess managerial compensation (EXCESS), CEO duality (DUALITY), firm age (FIRMAGE), financial leverage (LEVERAGE), and research and development intensity (R&D) are significantly and negatively related to the outcome variable.

Table 3 Correlation Matrix

	-1	-2	-3	-4	-5	-6
(1)$INDadjROA_{t+1}$	1					
(2)$EXCESS_t$	-0.026 **	1				
(3)$INST_t$	0.234 ***	102 ***	1			
(4)$MANSAHRE_t$	0.043 ***	-0.004	-0.138 ***	1		
(5)$DUALITY_t$	-0.059 ***	-0.029 ***	-0.190 ***	0.039 ***	1	
(6)$SIZE_t$	0.171 ***	0.197 ***	0.471 ***	-0.183 ***	-0.113 ***	1
(7)$FIRMAGE_t$	-0.062 ***	-0.015	-0.013	-0.251 ***	-0.046 ***	0.177 ***
(8)$LEVERAGE_t$	-0.136 ***	0.025 **	0.084 ***	-0.051 ***	-0.014	0.337 ***
(9)$R\&D_t$	-0.072 ***	0.055 ***	-0.142 ***	0.111 ***	-0.066 ***	-0.204 ***
(10)$GROWTH_t$	0.130 ***	-0.013	-0.056 ***	0.068 ***	0.008	0.034 ***
(11)$BOARDSIZE_t$	0.060 ***	0.085 ***	0.293 ***	-0.092 ***	-0.132 ***	0.386 ***
(12)OUT_t	0.012	0.009	0.031 ***	0.043 ***	0.062 ***	-0.010
	-7	-8	-9	-10	-11	-12
(7)$FIRMAGE_t$	1					
(8)$LEVERAGE_t$	0.091 ***	1				
(9)$R\&D_t$	-0.315 ***	-0.289 ***	1			
(10)$GROWTH_t$	-0.037 ***	0.065 ***	-0.020 **	1		
(11)$BOARDSIZE_t$	0.146 ***	0.037 ***	-0.091 ***	-0.009	1	
(12)OUT_t	-0.215 ***	0.015	0.164 ***	0.038 ***	-0.080 ***	1

Notes: 'i' denotes a specific firm, 't' represents a given year, INDadjROA=industry-adjusted ROA, EXCESS=excess managerial pay, INST=the percentage of shares owned by institutional investors, MANSHARE=the percentage of shares owned by the CEO, DUALITY=a dummy variable indicating whether the firm's chair of the board is also the CEO (coded as 1 if the CEO is also the chair of the board and 0 otherwise), SIZE=the natural logarithm of total assets, FIRMAGE=the natural logarithm of the number of year since listing, LEVERAGE=the ratio of total debt to total assets, R&D=the ratio of research and development expenditures to total sales, GROWTH=year-over-year change in sales, BOARDSIZE=the number of board members, OUT=the percentage of independent directors. Continuous variables are winsorized at the 1st and 99th percentiles. The values presented in the table are Pearson correlation coefficients. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed), respectively.

4.3 Hypothesis Tests

To conduct the analysis, we first employ an Ordinary Least Squares (OLS) regression to examine the effect of excess pay (EXCESS) on subsequent firm performance. After controlling for potential confounding factors, the findings, presented in Table 4, Column (1), indicate that EXCESS has a negative and statistically significant impact on future performance, as measured by industry-adjusted ROA (INDadjROA) in year t+1 (t-stat.=-5.637, $p<0.01$). These results support Hypothesis 1, suggesting that excess managerial compensation not only fails to enhance firm value but also negatively impacts future performance.

Building on previous research that highlights the critical role of institutional investors in shaping managerial behavior, we further investigate whether institutional ownership (INST) moderates the relationship between excess managerial

compensation and subsequent financial performance, extending our earlier findings. The detailed results are presented in Table 4, Column (2).

Again, the coefficient on EXCESS remains negative and significantly associated with future performance (t-stat.=-7.613, p<0.01), further confirming Hypothesis 1. Institutional ownership (INST) has a positive and significant impact on INDadjROA in year t+1 (t-stat.=12.810, p<0.01), suggesting that institutional investors play a critical monitoring role in their portfolio firms. The coefficient on the interaction term, INST×EXCESS, is negative and statistically significant (t-stat.=-6.181, p<0.01), supporting Hypothesis 2. This finding suggests that the adverse effect of excess managerial pay (EXCESS) on subsequent firm performance ($INDadjROA_{t+1}$) is mitigated when firms have a higher proportion of institutional ownership.

Table 4 The Impact of Excess Executive Pay on Subsequent Performance

				$INDadjROA_{t+1}$		
	coef.	**t-stat.**		**coef.**	**t-stat.**	
(constant)	-11.621	-7.670	***	-12.550	-8355	***
$EXCESS_t$ (H1)	**-1.4×10^{-4}**	**-5.637**	***	**-5.8×10^{-4}**	**-7.613**	***
$INST_t$	0.057	12.377	***	0.060	12.810	***
$EXCESS_t \times INST_t$ (H2)				**-8.1×10^{-6}**	**-6.181**	***
$MANSAHRE_t$	0.337	5.750	***	0.330	5.658	***
$DUALITY_t$	-0.249	-1.371		-0.224	-1.243	
$SIZE_t$	1.277	14.532	***	1.318	15.156	***
$FIRMAGE_t$	-1.644	-5.977	***	-1.615	-5.906	***
$LEVERAGE_t$	-0.105	-18.954	***	-0.105	-19.103	***
$R\&D_t$	-0.139	-6.388	***	-0.134	-6.226	***
$GROWTH_t$	0.028	8.568	***	0.028	8.645	***
$BOARDSIZE_t$	-0.127	-3.068	***	-0.124	-2.989	***
OUT_t	1.167	1.650	*	1.152	1.643	
Fixed-industry effects	(included)			(included)		
Fixed-year effects	(included)			(included)		
Observations	6,838			6,838		
F-statistic	19.075 (p<0.001)			19.718 (p<0.001)		
Adjusted R^2	0.152			0.159		

Notes: 'i' denotes a specific firm, 't' represents a given year, 't+1' represents one year after a specific observation year, INDadjROA=industry-adjusted ROA, EXCESS=excess managerial pay, INST=the percentage of shares owned by institutional investors, MANSHARE=the percentage of shares owned by the CEO, DUALITY=a dummy variable indicating whether the firm's chair of the board is also the CEO (coded as 1 if the CEO is also the chair of the board and 0 otherwise), SIZE=the natural logarithm of total assets, FIRMAGE=the natural logarithm of the number of year since listing, LEVERAGE=the ratio of total debt to total assets, R&D=the ratio of research and development expenditures to total sales, GROWTH=year-over-year change in sales, BOARDSIZE=the number of board members, OUT=the percentage of independent directors. Continuous variables are winsorized at the 1st and 99th percentiles. White heteroskedasticity-consistent standard errors and covariance are used to compute the t-statistics. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed), respectively.

4.4 Robustness Tests

Addressing Endogeneity Concerns

As previously discussed, we revisit the issue mainly due to the conflicting evidence found in prior studies. These studies often employ diverse designs to measure the tested variables, some of which may introduce endogeneity problems. However, many of these studies have tended to overlook this issue, thereby compromising the robustness of their findings. To address endogeneity, we implement a more rigorous analysis using the Two-Stage Least Squares (TSLS) estimation method. This approach involves identifying valid instrumental variables (IVs) that satisfy the conditions of relevance, exclusion restriction, and exogeneity (e.g., Stock et al., 2002; Angrist and Pischke, 2009; Abdallah et al., 2015; Lousdal, 2018).

To meet these criteria, we select industry-level managerial excess pay (Industry EXCESS) and the unexplained pay ratio (UPR) as instrumental variable candidates. Industry EXCESS represents the average managerial excess pay within a specific industry for a given year. Prior research suggests that the industry mean or median of an endogenous variable can be a suitable IV candidate since the industry-level variable may be correlated with the endogenous variable but unaffected by firm-level outcome measures (e.g., Prawitt et al., 2009; Park et al., 2023). The UPR is derived in three steps, following Rouen (2020). First, we calculate explained executive pay (Explained EXEpay) and explained employee pay (Explained EMPpay) using Equations (1) and (2), respectively. Second, we compute the explained pay ratio (EPR) by dividing Explained EXEpay by Explained EMPpay, as outlined in Equation (3). Finally, the unexplained pay ratio (UPR) is determined by subtracting the actual pay ratio (APR) from the EPR, as described in Equation (4). Since the UPR reflects the relative level of abnormal executive compensation compared to abnormal employee pay, a higher UPR may indicate abnormal executive compensation and serve as another potential IV. We then conduct a series of tests to verify whether these IV candidates meet the necessary conditions.

$$EMPpayi,t = \beta_0 + \beta_1 Ch\_EMP_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 FIRMAGE_{i,t} + \beta_4 R\&D_{i,t} + \beta_5 INDadjROA_{i,t} + \beta_6 INDadjRET_{i,t} + \beta_7 STD\_INDAdjROA_{i,t} + \beta_8 STD\_INDadjRET_{i,t} + \beta_9 PROD_{i,t} + \beta_{10} FixAssets_{i,t} + \beta_{11} LEVERAGE_{i,t} + \beta_{12} MTB_{i,t} + \beta_{13} GROWTH_{i,t} + Fixed\text{-}Industry\ Effects + Fixed\text{-}Year\ Effects + \varepsilon_{i,t} \quad (2)$$

$$EPRi,t = Explained\ EXEpay \div Explained\ EMPpay \quad (3)$$

$$UPRi,t = APRi,t - EPRi,t \quad (4)$$

Where EMPpay is the average annual employee pay; Ch_EMP is the year-over-year percentage change in the number of employees; SIZE is the natural logarithm of total assets; FIRMAGE is the natural logarithm of the number of years since listing; R&D is the ratio of research and development expenditures to total sales; INDadjROA is the industry-adjusted return on assets; INDadjRET is the industry-adjusted annual stock returns; STD_INDadjROA is the standard deviation

of annual industry-adjusted ROA over the prior 5 years; STD_INDadjRET is the standard deviation of annual stock returns over the prior 5 years; PROD is employee productivity, measured as sales divided by the number of employees; FixAssets is the natural logarithm of total fixed assets; LEVERAGE is the ratio of total debt to total assets; MTB is the market-to-book ratio; GROWTH is the year-over-year change in sales; EPR is the explained pay ratio; Explained EXEpay is the predicted managerial pay from Eq. (1); Explained EMPpay is the predicted average employee pay from Eq. (2); UPR is the unexplained pay ratio; and APR is the actual pay ratio, measured as average annual executive pay divided by average annual employee pay.

Table 5 shows that Industry EXCESS (IV1) is significantly correlated with the endogenous variable, firm-level EXCESS (Pearson correlation coefficient=0.137, $p<0.001$), but not with the outcome variable $INDadjROAt_{+1}$ (Pearson correlation coefficient<0.001, p=0.971). These findings indicate that EXCESS (IV1) meets both the relevance requirement and the exclusion restriction. Similarly, UPR (IV2) is strongly associated with the endogenous variable, EXCESS (Pearson correlation coefficient=0.759, $p<0.001$), but shows no significant relationship with $INDadjROAt_{+1}$ (Pearson correlation coefficient=0.009, p=0.455), confirming that IV2 also satisfies both the relevance and exclusion conditions.

Table 5 IV Tests for the Relevance Requirement and Exclusion Restriction

	***EXCESS* (endogenous variable)**	***INDadjROA*$_{t+1}$ (outcome variable)**
IV1: Industry EXCESS	r=0.137 (p<0.001)	r=0.000 (p=0.971)
IV2: UPR	r=0.759 (p<0.001)	r=-0.009 (p=0.455)

Notes: r: Pearson correlation coefficient.

Next, we conduct the TSLS regression. As summarized in Table 6, Stage 1, the weak instrument tests confirm that the IVs satisfy the relevance condition, whether assessed through the Wald test (F-stat.=18.249, $p<0.001$) or the Cragg-Donald test (F-stat.=620.548). Additionally, the Sargan test of over-identifying restrictions shows no evidence rejecting the null hypothesis that all variables are exogenous (J-stat.=0.155, p=0.694), confirming that the IVs meet the exogeneity condition.

Using these validated instruments, we proceed to the second stage of the TSLS regression. The results, presented in Table 6, Stage 2, indicate that EXCESS is negatively associated with $INDadjROAt_{+1}$ (stat.=-3.455, $p<0.01$), supporting Hypothesis 1. Furthermore, the interaction term EXCESS×INST has a positive and significant effect on $INDadjROAt_{+1}$ (stat.=3.018, $p<0.01$), supporting Hypothesis 2.

Finally, we perform the Durbin-Wu-Hausman test to assess the potential endogeneity of the OLS model. As shown in Table 6, Stage 2, the test reveals no significant endogeneity problems (χ^2=0.382, p=0.537), suggesting that the OLS model is appropriate for analyzing the relationship between EXCESS and $INDadjROAt_{+1}$.

Table 6 Two-Stage Least Squares (TSLS) Analysis and Tests for Endogeneity

	Stage 1			*Stage 2*		
	$EXCESS_t$			*$INDadjROA_{t+1}$*		
	Coef.	*Stat.*		*Coef.*	*Stat.*	
(constant)	-2,534	-9.149	***	-13.031	-7.905	***
IV1: Industry EXCESS	**0.075**	**2.957**	***			
IV2: UPR	**151.392**	**5.226**	***			
$EXCESS_t$ (H1)				**-7.1×10^{-4}**	**-3.455**	***
$INST_t$	5.315	5.651	***	0.060	12.636	***
$EXCESS_t \times INST_t$ (H2)	0.014	36.900	***	**1.0×10^{-5}**	**3.018**	***
$MANSAHRE_t$	11.659	1.231		0.335	5.705	***
$DUALITY_t$	44.160	1.387		-0.172	-0.946	
$SIZE_t$	100.395	5.343	***	1.346	14.419	***
$FIRMAGE_t$	79.690	1.689	*	-1.636	-5.781	***
$LEVERAGE_t$	0.934	0.956		-0.105	-18.977	***
$R\&D_t$	31.127	6.688	***	-0.125	-5.684	***
$GROWTH_t$	-0.222	-0.336		0.028	8.576	***
$BOARDSIZE_t$	19.977	2.154	**	-0.122	-2.919	***
OUT_t	-74.595	-0.604		1.189	1.687	*
Fixed-industry effects	(included)			(included)		
Fixed-year effects	(included)			(included)		
Observations	6,764			6,764		
F-statistic	975.685 (p<0.001)			18.810 (p<0.001)		
Adjusted R^2	0.910			0.160		
IV: Relevance test						
Wald test F-stat.	18.249 (p<0.001)					
Cragg-Donald F-stat.	620.548					
IV: Exogeneity test						
Over-identifying restrictions: J-stat.				0.155 (p=0.694)		
Endogeneity test						
Durbin-Wu-Hausman test: χ^2				0.382 (p=0.537)		

Notes: 'i' denotes a specific firm, 't' represents a given year, 't+1' represents one year after a given year, Instrument variables (IV): Industry Excess=industry average EXCESS, UPR=unexpected pay ratio. INDadjROA=industry-adjusted ROA, EXCESS=excess managerial pay, INST=the percentage of shares owned by institutional investors, MANSHARE=the percentage of shares owned by the CEO, DUALITY=a dummy variable indicating whether the firm's chair of the board is also the CEO (coded as 1 if the CEO is also the chair of the board and 0 otherwise), SIZE=the natural logarithm of total assets, FIRMAGE=the natural logarithm of the number of year since listing, LEVERAGE=the ratio of debts to total assets, R&D=the ratio of research and development expenditures to total sales, GROWTH=year-over-year change in sales, BOARDSIZE=the number of board members, OUT=the percentage of independent directors. Continuous variables are winsorized at the 1st and 99th percentiles. White heteroskedasticity-consistent standard errors and covariance are used to compute the t-statistics. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed), respectively.

Considering the impact of performance stickiness

Given that the outcome variable, firm performance, often exhibits stickiness, we assess whether this characteristic affects our findings. To test this, we incorporate the prior year's performance as an additional control variable in the analytical model. The results, presented in Table 7, indicate a significant increase in the explanatory power of the models (adjusted R-squared), rising from 0.152 in the model without the interaction term and 0.159 in the model with the interaction term (see Table 4) to 0.711 in the model without the interaction term and 0.712 in the model with the interaction term (see Table 7). Although the prior year's performance is highly

correlated with the outcome variable ($p<0.01$), confirming its stickiness, the core results remain largely unchanged.

Table 7 The Impact of Excess Pay on Subsequent Performance: Considering the Effects of Performance Stickiness

	INDadjROA$_{t+1}$					
	coef.	***t-stat.***		***coef.***	***t-stat.***	
(constant)	0.515	0.051		1.075	0.107	
EXCESS$_t$ (H1)	**-1.2×10^{-4}**	**-5.276**	***	**-2.6×10^{-4}**	**-3.318**	
INST$_t$	0.024	2.193	**	0.024	2.161	**
EXCESS$_t$×INST$_t$ (H2)				**2.9×10^{-6}**	2.411	**
MANSAHRE$_t$	-0.158	-1.909	*	-0.155	-1.874	*
DUALITY$_t$	-0.186	-0.724		-0.176	-0.678	
SIZE$_t$	-0.170	-0.290		-0.192	-0.327	
FIRMAGE$_t$	1.206	1.716	*	1.131	1.641	
LEVERAGE$_t$	-0.027	-1.180		-0.026	-1.149	
R&D$_t$	-0.384	-10.891	***	-0.378	-10.355	***
GROWTH$_t$	0.016	5.909	***	0.016	5.955	***
BOARDSIZE$_t$	-0.022	-0.362		-0.025	-0.406	
OUT$_t$	-0.282	-0.566		-0.309	-0.622	
INDadjROA	**0.296**	**6.096**	***	**0.295**	**6.130**	***
Fixed-industry effects	(included)			(included)		
Fixed-year effects	(included)			(included)		
Observations	5,94			5,94		
F-statistic	18.971 ($p<0.001$)			18.974 ($p<0.001$)		
Adjusted R^2	0.711			0.712		

Notes: 'i' denotes a specific firm, 't' represents a given year, 't+1' represents one year after a specific observation year, INDadjROA=industry-adjusted ROA, EXCESS=excess managerial pay, INST=the percentage of shares owned by institutional investors, MANSHARE=the percentage of shares owned by the CEO, DUALITY=a dummy variable indicating whether the firm's chair of the board is also the CEO (coded as 1 if the CEO is also the chair of the board and 0 otherwise), SIZE=the natural logarithm of total assets, FIRMAGE=the natural logarithm of the number of year since listing, LEVERAGE=the ratio of total debt to total assets, R&D=the ratio of research and development expenditures to total sales, GROWTH=year-over-year change in sales, BOARDSIZE=the number of board members, OUT=the percentage of independent directors. Continuous variables are winsorized at the 1st and 99th percentiles. White heteroskedasticity-consistent standard errors and covariance are used to compute the t-statistics. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed), respectively.

Addressing the impact of COVID-19

The COVID-19 pandemic, which began in December 2019 and ended in May 2022, had a significant impact on the global economy and fundamentally altered business practices. Whether this event influenced managerial behavior presents a new and valuable area of research. Since our sample spans the pandemic period, we speculate that COVID-19 may have affected our previous findings. To explore this possibility, we introduce a binary variable coded as 1 for observations during the pandemic and 0 otherwise.

To assess the effect of COVID-19 on the relationship between EXCESS (excess executive compensation) and INDadjROA$_{t+1}$ (i.e., Hypothesis 1), we incorporate both the COVID-19 variable and the interaction term between EXCESS and COVID-19 into our regression model. The results, shown in Table 8, column (1), reveal that the coefficient for EXCESS remains largely unchanged (t-stat.=-6.035, $p<0.01$), continuing to support Hypothesis 1. While the coefficient for COVID-19 is negative, it is not statistically significant (t-stat.=-1.619). More importantly, the

coefficient on EXCESS×COVID-19 is positive and significant (t-stat.=2.5, $p<0.05$), suggesting that the adverse impact of excess executive compensation (EXCESS) on subsequent firm performance ($INDadjROAt_{+1}$) was significantly reduced during the pandemic compared to the non-pandemic period.

Next, we analyze the impact of COVID-19 on firm performance using the regression with the interaction term between EXCESS and institutional ownership (INST). As shown in Table 8, Column 2, the coefficient for EXCESS is negative and significant ($p<0.01$), while the coefficient for EXCESS×INST is positive and significant ($p<0.01$), consistent with prior findings. These results indicate that offering executives excess compensation signals poor performance, but increased monitoring from institutional owners mitigates the negative effects.

Notably, in the model with the interaction term, the coefficient for COVID-19 is negative and significant at the $\alpha=0.1$ level (two-tailed), suggesting that the pandemic had a negative effect on firm performance. However, the coefficient on EXCESS×COVID-19 remains positive and significant ($p<0.01$), further confirming that excess compensation during the pandemic had a less detrimental effect on firm performance ($INDadjROAt_{+1}$) compared to the non-pandemic period.

Table 8 The Relationship of Excess Executive Pay on Subsequent INDadjROA: The Impact of COVID-19

	$INDadjROA_{t+1}$					
	coef.	***t-stat.***		***coef.***	***t-stat.***	
(constant)	-11.349	-7.459	***	-12.245	-8.126	***
$\boldsymbol{EXCESS_t}$ **(H1)**	$\mathbf{-1.8\times10^{-4}}$	**-6.035**	***	$\mathbf{-6.2\times10^{-4}}$	**-7.869**	***
$COVID\text{-}19_t$	-0.346	-1.619		-0.407	-1.901	*
$\boldsymbol{EXCESS_t \times COVID\text{-}19_t}$	$\mathbf{1.6\times10^{-4}}$	**2.50**	**	$\mathbf{1.7\times10^{-4}}$	**2.638**	***
$INST_t$	0.057	12.367	***	0.059	12.787	***
$\boldsymbol{EXCESS_t \times INST_t}$ **(H2)**				$\mathbf{8.0\times10^{-6}}$	**6.142**	***
$MANSAHRE_t$	0.337	5.750	***	0.330	5.660	***
$DUALITY_t$	-0.272	-1.497		-0.249	-1.379	
$SIZE_t$	1.272	14.527	***	1.314	15.144	***
$FIRMAGE_t$	-1.702	-6.283	***	-1.682	-6.257	***
$LEVERAGE_t$	-0.104	-18.909	***	-0.105	-19.057	***
$R\&D_t$	-0.138	-6.343	***	-0.133	-6.186	***
$GROWTH_t$	0.027	8.454	***	0.026	8.512	***
$BOARDSIZE_t$	-0.132	-3.270	***	-0.131	-3.221	***
OUT_t	0.866	1.424		0.797	1.320	
Fixed-industry effects	(included)			(included)		
observations	6,838			6,838		
F-statistic	20.253 (p<0.001)			20.909 (p<0.001)		
Adjusted R^2	0.153			0.159		

Notes: 'i' denotes a specific firm, 't' represents a specific year measured, 't+1' represents one year after a given observation year, INDadjROA=industry-adjusted ROA, EXCESS=excess managerial pay, COVID-19= a dummy variable indicating whether the observation falls in the period of COVID-19 (coded 1, if the observation falls in the COVID-19 period, 0 otherwise), INST=the percentage of shares owned by institutional investors, MANSHARE=the percentage of shares owned by the CEO, DUALITY=a dummy variable indicating whether the firm's chair of the board is also the CEO (coded as 1 if the CEO is also the chair of the board and 0 otherwise), SIZE=the natural logarithm of total assets, FIRMAGE=the natural logarithm of the number of year since listing, LEVERAGE=the ratio of debts to total assets, R&D=the ratio of research and development expenditures to total sales, GROWTH=year-over-year change in sales, BOARDSIZE=the number of board members, OUT=the percentage of independent directors. Continuous variables are winsorized at the 1st and 99th percentiles. White heteroskedasticity-consistent standard errors and covariance are used to compute the t-statistics. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed), respectively.

5. Conclusions, Implications, and Limitations

5.1 Conclusions

In summary, this study confirms that excess managerial compensation is closely linked to agency problems. Specifically, the findings reveal that paying top management more than necessary not only fails to generate additional value for shareholders but also exacerbates agency issues. Given these results, firms should exercise caution when increasing managerial compensation, ensuring that such decisions are aligned with tangible benefits to the company. Furthermore, our study highlights that institutional ownership plays a significant role in mitigating the adverse effects of excess compensation on firm performance, underscoring the importance of strong corporate governance, particularly when executive pay is disproportionately high.

While our analysis shows that the COVID-19 pandemic did not alter the core findings, the results suggest that the negative impact of excess compensation on firm performance was less pronounced during the crisis. This may indicate that challenging periods pressure executives receiving excess pay to improve performance, potentially strengthening the link between excess pay and firm outcomes. However, further research is necessary to validate this observation and provide more robust evidence.

5.2 Theoretical Implications

This study offers several key theoretical contributions. First, the evidence shows that providing extra compensation to top managers does not enhance firm value, suggesting that agency problems are likely the driving force behind excess pay. Second, it supports existing literature indicating that overly generous compensation packages can foster managerial overconfidence, leading to poor decisions such as excessive investment and empire-building, which ultimately harm firm performance (e.g., Malmendier and Tate, 2009; Ben-David et al., 2013). Finally, the finding that the negative impact of excess compensation was less pronounced during the pandemic suggests that managerial behavior may shift in times of crisis or economic hardship, potentially mitigating the detrimental effects of agency issues.

5.3 Practical Implications

The finding that excess compensation leads to underperformance, rather than motivating executives, challenges the notion that firms must raise executive pay to prevent declining performance. As executive pay continues to rise, it is critical for corporate boards, particularly compensation committees, to carefully evaluate the appropriateness of managerial compensation. This study also highlights the essential role of institutional shareholders in reinforcing corporate governance, suggesting that higher institutional ownership can serve as an early indicator of improved future performance.

5.4 Limitations

There are several limitations to consider when interpreting these results. First, accurately measuring excess executive pay remains a challenge in this research area,

as no universally accepted model exists for determining fair compensation. Additionally, different studies apply varying factors to estimate equitable pay, making direct comparisons difficult. Second, this study defines 'managerial pay' as the average compensation of the firm's CEO and deputy CEOs, due to the unavailability of individual CEO compensation data under current Taiwanese disclosure rules. This limitation warrants caution when generalizing the findings to other contexts. Lastly, since the analysis is based solely on Taiwanese firms, the results should be interpreted carefully. However, the strong global performance of Taiwanese firms, particularly in the semiconductor industry, lends broader significance to the findings for international audiences.

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