

CEO facial masculinity, CEO power, and long-term compensation: Moderating role of monitoring intensity

Moonseok Choi^{*1}, Jeongkwon Seo^{†2}, Dongjoon Kim^{‡3}, Seokjin Choi^{§4}, and Seung Hun Han^{¶5}

^{1,2,3,4,5}School of Business and Technology Management, KAIST, Republic of Korea

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Abstract

This study examines the impact of CEO facial masculinity (*FWHR*) on long-term compensation structure and investigates whether CEO power and monitoring intensity moderate this relationship. Utilizing a dataset comprising 11,645 firm-year observations from US firms, the findings indicate that CEOs with more masculine facial traits receive a greater proportion of their compensation as long-term incentives, especially when they possess higher bargaining power. However, stronger monitoring intensity captured by higher director compensation and firm ESG performance significantly moderates this tendency. These findings suggest that monitoring intensity can effectively balance CEO masculinity and dominance, underscoring the necessity of considering behavioral traits in compensation design to ensure alignment with stakeholders' long-term interests. These results remain consistent after a battery of robustness tests.

JEL Classification: G32, G34, G35

Key Words: CEO facial masculinity; CEO power; CEO compensation; Long-term compensation

^{*}School of Business and Technology Management, KAIST, Republic of Korea; email: moonstar1268@kaist.ac.kr; conflict of interest: none

[†]School of Business and Technology Management, KAIST, Republic of Korea; email: sjk9204@kaist.ac.kr; conflict of interest: none

[‡]School of Business and Technology Management, KAIST, Republic of Korea; email: djrobort@kaist.ac.kr; conflict of interest: none

[§]School of Business and Technology Management, KAIST, Republic of Korea; email: b5613@kaist.ac.kr; conflict of interest: none

[¶]School of Business and Technology Management, KAIST, Republic of Korea; email: synosia@kaist.ac.kr; conflict of interest: none

1 Introduction

Top executive compensation is arguably one of the most contentious issues in corporate finance. While it is widely believed that CEOs' wealth is accumulated proportionally as their firms grow, empirical evidence suggests that CEO wealth tends to increase linearly and independently of firm performance, which raises questions about conventional beliefs. For instance, Jensen and Murphy (1990) documents that CEO wealth changes by approximately \$3.25 for every \$1,000 change in shareholder wealth. Additionally, Core et al. (1999) demonstrates that firms characterized by weak governance structures tend to overcompensate their CEOs despite poorer firm performance, thereby exacerbating agency problems.

Therefore, board-level influence is critical in shaping CEO compensation, as ineffective board oversight can result in misalignment between executive pay and shareholder interests. For instance, in firms with weak governance structures, CEOs often receive compensation increases driven by luck rather than their own performance (Andreani et al., 2025; Bertrand & Mullainathan, 2001). Therefore, boards must design pay packages that attract talent, motivate effort, and align managerial incentives with long-term shareholder value, all while discouraging excessive risk-taking and opportunistic behavior. Standard pay packages combine salary, annual bonuses, and long-term incentives such as restricted stock or stock options, with long-term incentives often accounting for roughly 40% of total compensation (Harvard Law School Forum on Corporate Governance, 2019). Firms increased their reliance on performance-vested stock after the 2000s so that executives' wealth creation was tied to total shareholder return or other long-term metrics. Short-term pay, in contrast, has been criticized for encouraging riskier actions because commissions or bonuses are sometimes based on volumes rather than risk-adjusted outcomes. Consequently, regulators and investors have encouraged compensation structures that emphasize longer horizons, stock retention, and clawback provisions to curb risk-taking (Li and Wang, 2016; Bettis et al., 2018).

Nevertheless, there has been an ongoing debate over whether long-term compensation

consistently aligns with the interests of stakeholders, arguing that long-term incentives may not always reflect the company's and stakeholders' interests. Compensation structures with over-emphasis on equity-based instruments, such as stocks and options, can lead CEOs to engage in riskier behaviors. For example, Coles et al. (2006) empirically demonstrates that CEOs whose wealth is more sensitive to stock return volatility are more likely to pursue risky firm policies, such as increased R&D investment and higher leverage. Similarly, Low (2009) finds that CEOs with strong equity-based incentives are less likely to reduce firm risk compared to those with weaker incentives. Furthermore, Gande and Kalpathy (2017) shows that banks led by CEOs who received a high proportion of stock options took on excessive risk during the financial crisis to the extent of encountering solvency issues. Taken together, these findings suggest that an over-reliance on long-term compensation may induce excessive risk-taking, thereby raising concerns about assigning a large share of long-term incentives in the total compensation package.

While the incentive effects of compensation and the ideal compensation structure have been extensively studied, less attention has been paid to how CEOs' traits influence pay design. Upper echelons theory posits that executives' personal traits systematically shape strategic decisions and firm outcomes (Hambrick & Mason, 1984). Recent studies extend this view by examining physical appearance, particularly facial width-to-height ratio (*FWHR*), as a proxy for testosterone exposure and masculinity. For instance, Y. H. A. Kim et al. (2022) find that male CEOs with higher *FWHR* tend to exhibit a strong achievement drive that can translate into superior firm performance. Amin et al. (2024) found that high *FWHR* CEOs engage in more aggressive financial reporting, exhibiting significantly less accounting conservatism. And Jia et al. (2014) found that such CEOs were also markedly more likely to incur SEC enforcement actions and to be implicated in insider trading and option backdating scandals.

Building on this line of research, this study empirically examines whether CEOs with a high *FWHR* adjust the design of their compensation structure through enhanced bargaining power. Specifically, we test whether high *FWHR* CEOs increase the proportion of long-term compensation within their total pay package and whether monitoring in-

tensity mitigates this tendency. The results show that high *FWHR* CEOs with greater bargaining power allocate a larger share of their compensation to long-term incentives, which in turn leads to poorer firm performance. However, this adverse effect is alleviated when monitoring intensity is high, and the findings remain consistent across a battery of robustness tests.

Long-term incentives, tying wealth to future performance, can either encourage risk-taking or serve as a bonding mechanism that forces risk-prone CEOs to bear downside risk. Since high *FWHR* CEOs are more risk-tolerant, boards may grant larger stock-based compensation to motivate them to focus on long-term value creation or to compensate them for bearing additional firm-specific risk.

Conversely, shareholders may be reluctant to reward aggressive managers with long duration equity if they fear potential misreporting or fraud. We also consider whether monitoring intensity, through average director compensation level and firm-level ESG performance, moderates the association between *FWHR* and long-term pay. Enhanced monitoring can limit managerial discretion and reduce the need for heavy stock incentives, particularly when CEOs display traits associated with aggression.

Our paper contributes to the executive compensation literature by integrating insights from finance, behavioral economics, and evolutionary psychology. First, it documents a novel linkage between a biological proxy for masculinity and the structure of compensation contracts. Second, it extends prior findings on the corporate consequences of CEO *FWHR* by focusing on how boards design long-term incentives in response to risk-related CEO traits. Third, it highlights the role of monitoring in moderating the potential agency costs associated with aggressive or risk-seeking CEOs.

The structure of the paper is as follows: Section 2 reviews previous research and develops the hypotheses. Section 3 describes the sample and methodology. Sections 4 and 5 present the analysis results. Section 6 summarizes the findings and concludes the paper.

2 Literature review and Hypothesis development

2.1 CEO facial masculinity

CEO appearances are the most immediate information accessible to stakeholders, influencing their decision-making processes consciously or unconsciously. For instance, prior research demonstrates that CEO attractiveness correlates positively with higher executive compensation and increased likelihood of promotion to prominent leadership roles, such as CEO or board chair—interestingly, this pattern is less evident when attractiveness is assessed via subjective survey methods (Cook & Mobbs, 2023). Additionally, Halford and Hsu (2020) constructed a facial attractiveness index using an extensive sample of CEOs and reported that firms led by more attractive CEOs exhibited higher firm valuation and superior stock market performance.

Conversely, another line of research interprets CEO appearance as a manifestation of underlying personal traits. Instead of focusing on stakeholder reactions to a CEO’s outward appearance, this line of research posits that hormone-related characteristics manifest in physical features, which in turn serve as observable proxies for otherwise latent traits. A prominent example in this domain is CEO facial masculinity, commonly measured by the facial width-to-height ratio (*FWHR*). Drawing on evolutionary theories, this measure rests on the premise that testosterone levels influence facial structure. Numerous studies in the medical sciences (Lefevre et al., 2013; Penton-Voak & Chen, 2004; Pound et al., 2009; Verdonck et al., 1999) document that individuals with higher testosterone levels tend to exhibit greater *FWHR*. In contrast, Hodges-Simeon et al. (2016) report no association between *FWHR* and testosterone levels. While the prevailing view in the medical literature suggests that *FWHR* is related to testosterone, the debate remains ongoing.

Building on these findings, finance research has adopted *FWHR* as a proxy for executive masculinity to capture the behavioural implications of more masculine CEOs. Empirical evidence links elevated testosterone levels (proxied by the *FWHR*) to various firm-level outcomes. For instance, higher testosterone levels are significantly associated

with financial risk preferences, including greater aggression, heightened risk-taking behavior, lower hedging intensity, and increased competitiveness (Apicella et al., 2008; Archer, 2006; Barbi, Febo, et al., 2025). Moreover, high *FWHR* CEOs tend to exhibit higher incidences of corporate fraud (Y. H. A. Kim et al., 2022). Prior studies also document that high *FWHR* CEOs more actively engage in aggressive financial reporting practices (Amin et al., 2024), have a greater propensity to delay disclosing negative information, thereby increasing the likelihood of stock price crash risk (Z. Zheng et al., 2023). Since *FWHR* is a relatively stable individual trait that does not vary significantly over time (Jia et al., 2014), it provides an appropriate setting for analysis using a panel dataset.

2.2 CEO facial masculinity and long-term compensation

Research linking facial masculinity to corporate policies suggests that CEOs with higher *FWHR* exhibit greater risk tolerance, aggressiveness, and competitiveness. For instance, using facial photographs of over 1,100 male CEOs, Kamiya et al. (2019) shows that firms with high *FWHR* CEOs have higher stock return volatility, more leverage, and undertake more acquisitions. Importantly, they find that these CEOs' compensation is more sensitive to firm risk, implying that boards adjust incentives to reflect riskier corporate policies.

Similarly, Jia et al. (2014) and Elsheikh, Hashim, Mohamad, and Almaqtari (2022) report that CEOs with higher *FWHR* are more likely to engage in earnings management and financial misreporting, while Y. H. A. Kim et al. (2022) documents a higher likelihood of corporate fraud among masculine CEOs. This suggests that CEOs with elevated *FWHR* may pursue performance outcomes through opportunistic or even illicit means, driven by their excessive risk-taking tendencies. Considering that behavioural studies show higher testosterone levels are associated with greater risk-taking behaviour, stakeholders may perceive high *FWHR* CEOs as being more inclined to undertake long-term projects with uncertain payoffs. Such behavioural tendencies have ambiguous implications for the design of executive compensation.

The merits and drawbacks of long-term incentives remain a subject of ongoing debate.

Research focused on CEO characteristics suggests that expanding the share of long-term incentives, which tie compensation to the performance of inherently risky assets such as equity, can prompt executives to pursue riskier strategic choices. Increasing the proportion of long-term compensation may constitute a risky choice. For instance, extending the vesting horizon of executive compensation increases the portion of risk borne by the CEO, which largely falls outside the executive’s direct control (Edmans & Gabaix, 2016). At the firm level, a higher equity-based sensitivity of CEO wealth to share price movements is empirically associated with more pronounced corporate risk taking reflected in elevated return volatility, a greater likelihood of severe downside events, and bolder strategic choices (Knopf et al., 2002; Coles et al., 2006; Low, 2009; Acharya et al., 2016).

On one hand, compensation committees may offer larger long-term incentives in order to align a risk-seeking CEO’s interests with those of shareholders and ensure that the executive shares in downside risk. Long-term incentives encourage commitment and can mitigate short-termism, particularly when combined with stock retention guidelines and clawbacks. For instance, Brickley et al. (1985) and DeFusco et al. (1990) found that the introduction of long-term incentive plans for executives generated significantly positive abnormal stock returns. Similarly, Jensen and Murphy (1990) emphasized that stock-based long-term incentives serve as a primary mechanism for aligning CEO and shareholder interests. Furthermore, Abowd (1990) and Mehran (1995) demonstrated that the provision of CEO incentives and the increased proportion of long-term stock-based compensation are associated with higher firm market value and improved performance.

On the other hand, stakeholders may be cautious about granting substantial equity to high *FWHR* CEOs if they anticipate misreporting or aggressive accounting. The documented association between facial masculinity and misreporting (Amin et al., 2024), fraud (Y. H. A. Kim et al., 2022), and risk-seeking behavior (Apicella et al., 2008; Archer, 2006; Barbi, Febo, et al., 2025) suggests that high-powered incentives could exacerbate agency problems when CEOs have a greater tendency to exploit information asymmetries.

Our first hypothesis, therefore, posits that high *FWHR* CEOs receive greater long-term compensation than low *FWHR* CEOs, reflecting either compensation committees’ efforts

to align incentives or these CEOs’ ability to negotiate pay packages commensurate with their aggressive strategies. Consistent with Kamiya et al. (2019), we expect the sensitivity of long-term pay to firm risk to be stronger when the CEO has a more masculine face.

Hypothesis 1 *High FWHR CEOs allocate a larger proportion of their total compensation to long-term incentives than low FWHR CEOs.*

In a similar context, the effect is likely to intensify when the CEO holds greater power. Prior studies show that powerful CEOs can sway compensation system design in their favor when external pressures arise (Abernethy et al., 2015), earn more long-term incentive pay (Tien et al., 2013), more engage in “rent-extraction” which fits to the CEO’s favor (Choe et al., 2014), and take a larger slice of the pay pie, which harms firm value and profitability (Bebchuk et al., 2011). Therefore, we employ two proxies of CEO power, namely *CRN* and *DUAL*, to further examine how the proportion of long-term compensation changes when CEO bargaining power is high.

In particular, elevated CEO power and bargaining position can provide highly influential CEOs with the ability to shape the compensation structure in their favour, primarily by increasing the emphasis on long-term compensation. Prior studies show that such influence can manifest in preferences for compensation components that align with the CEO’s interests. For instance, Brahma and Economou (2024) showed that powerful CEOs sometimes even repriced stock options to remain in the money. Also, powerful CEOs were able to obtain higher overall pay through generous stock option grants (Boyer, 2009).

High *FWHR* CEOs are also expected to exhibit a preference for stock-based or long-term compensation due to their inherent risk tolerance. Furthermore, when such CEOs possess high levels of power, their inclination to pursue long-term incentives is likely to increase.

Islam et al. (2024) defines the CEO remuneration (*CRN*) as the fraction of total compensation awarded to the overall directors that is captured by the CEO. A higher *CRN* indicates stronger bargaining power in shaping firm-level decisions. Likewise, CEOs who concurrently serve as board chairpersons (CEO duality, *DUAL*) are also considered

to possess substantial bargaining power. Using these variables, the second hypothesis to be tested is as follows:

Hypothesis 2 *High FWHR CEOs with greater bargaining power allocate a larger proportion of their total compensation to long-term incentives.*

2.3 Agency conflict and monitoring intensity

According to agency theory, excessive CEO influence over compensation decisions can trigger agency conflicts, especially when discrepancies exist between the objectives pursued by CEOs and stakeholders (Hartzell & Starks, 2003). Monitoring intensity, including both internal and external monitoring mechanisms, serves as a critical tool to mitigate such agency problems. For instance, Hartzell and Starks (2003) demonstrates that CEO compensation aligns more closely with shareholder interests in firms exhibiting concentrated institutional ownership. Similarly, John and Knyazeva (2006) shows that managers facing heightened takeover threats are incentivized to pursue stock repurchases, thereby generating more stakeholder-friendly outcomes. Monitoring intensity exerts influence even over aspects of compensation beyond CEOs' intentional control. For instance, Andreani et al. (2025) demonstrates that heightened monitoring intensity can reduce the level of compensation CEOs receive for outcomes driven by luck.

Additionally, high governance standards and ESG performance have also been identified as effective forms of monitoring. Companies with strong ESG performance, for example, tend to engage less in earnings management activities (Sun et al., 2024). Moreover, effective corporate governance reduces managerial bias and safeguards shareholder interests by moderating tendencies toward overly conservative accounting practices among firms with strong sustainability performance (Khelifi et al., 2024).

High *FWHR* CEOs, characterized by higher testosterone levels, tend to exhibit aggressive behaviours, thereby heightening the need for monitoring. Prior research indicates that high *FWHR* CEOs exhibit a higher propensity for corporate fraud (Y. H. A. Kim et al., 2022), are more likely to engage in earnings management (Elsheikh, Hashim,

Mohamad, Almaqtari, & Ettish, 2022), and have increased tendencies toward financial misreporting (Jia et al., 2014). Additionally, they often pursue excessive leverage, further exacerbating potential agency problems (Kamiya et al., 2019).

Thus, prior studies have explored methods to mediate these negative outcomes, identifying monitoring intensity as an effective moderator. For instance, Amin et al. (2024) finds that monitoring mitigates the aggressive financial reporting practices of high *FWHR* CEOs. Similarly, Y. H. A. Kim et al. (2022) demonstrates that ESG performance can mediate the relationship between CEO masculinity and corporate fraud.

Building on this theoretical framework, this study posits that monitoring intensity moderates the relationship between CEO facial masculinity and long-term compensation structure. In particular, it is expected that in firms demonstrating superior ESG performance or higher director compensation, high *FWHR* CEOs will exhibit a lower propensity to seek excessive long-term compensation.

Firm ESG performance can function as an effective monitoring tool. For instance, Cai et al. (2011) finds that higher CSR performance was associated with lower CEO cash and total compensation, supporting the idea that stakeholder-oriented CEOs do not extract as much pay. Also Keddie and Magnan (2023) argues that ESG criteria strengthen accountability, even powerful CEOs received lower than expected bonuses when pay was linked to ESG, consistent with external stakeholder expectations tempering pay outcomes.

Additionally, the higher levels of average director compensation level can serve as an monitoring mechanism. Radwan et al. (2022) shows that larger cash payments to independent directors significantly curtail corporate fraud, indicating that well-paid directors have stronger incentives to engage in active oversight and thus strengthen governance. Likewise, Sengupta and Zhang (2015) find that increasing the share of equity-based pay for independent directors is positively associated with higher financial-disclosure quality, because better-aligned incentives prompt directors to demand transparent reporting and enforce prudent governance practices.

Accordingly, we treat firm-level ESG performance and the average director compensation level as proxies for monitoring intensity and test whether this monitoring constrains

the bargaining power of masculine CEOs in determining their pay packages. This reasoning yields the following hypothesis:

Hypothesis 3 *The proportion of long-term compensation to total pay will be lower for high FWHR CEOs when the monitoring intensity is higher.*

3 Data and Methods

3.1 Sample selection

We construct our dataset from U.S. listed firms covering the period 1998–2023, excluding financial firms (SIC codes 6000–6999) and firms with missing data. Our main variable is *FWHR*, a proxy for CEO facial masculinity, constructed following (Carré & McCormick, 2008). To measure *FWHR*, we hand-collected CEO facial images primarily from firm websites and Google Images; if unavailable, we visited CEOs’ personal or professional webpages following prior studies (Amin et al., 2024; Barbi, Febo, et al., 2025; Kamiya et al., 2019; Y. H. A. Kim et al., 2022; Z. Zheng et al., 2023). We then utilized Python-based facial recognition tools to calculate the *FWHR*. To better identify the effect of CEO facial masculinity on firm outcomes, we restrict our sample to firms with a single CEO.

We construct several control variables following prior studies (Amin et al., 2024; Barbi, Febo, et al., 2025; Kamiya et al., 2019; Y. H. A. Kim et al., 2022; Z. Zheng et al., 2023). To account for alternative explanations of compensation structure, we include a comprehensive set of firm-level, CEO- and director-level control variables. Firm fundamentals are obtained from CRSP and COMPUSTAT, while CEO characteristics and board information are drawn from BoardEx and Execucomp. At the firm level, *LEV* is the ratio of total debt to total assets. *SALES* and *SIZE* are the natural logarithm of total sales and total assets, respectively. *CAPX* is annual capital expenditure scaled by total assets. *TOBINSQ* represents market valuation measured as the ratio of market value to book value. *CF* is the ratio of net income before depreciation to net property, plant, and

equipment. *DIV* is the natural logarithm of dividends.

At the CEO and director level, *TEN* denotes CEO tenure, and *DIR* is the total number of directors on the board. *GEN* is the ratio of male directors. *TBR* is the mean board tenure, while *STBR* is the standard deviation of board tenure within the firm. *RET* captures the remaining years to retirement, assuming a retirement age of 70. *CEO_PAY* is total CEO compensation (*CEO_TDC1*) scaled by 1,000. Following Campbell et al. (2011), we also include CEO overconfidence (*OVER*) to disentangle the effect of *FWHR* from managerial overconfidence.

All variance inflation factors (VIFs) are below the conventional threshold of 10, indicating that multicollinearity is not a concern in our analysis. Table 1 provides detailed definitions of all variables.

[Insert Table 1 About Here]

The final sample comprises 11,645 firm-year observations, encompassing 2,249 unique firms and 4,722 distinct CEOs. All variables are winsorized at 1% and 99% level. Table 2 shows the sample’s descriptive statistics.

[Insert Table 2 About Here]

The table 3 shows the correlation matrix.

[Insert Table 3 About Here]

3.2 Empirical model

We estimate the baseline results utilizing the following model:

$$\text{LONG_COMP}_{i,t} = \beta_0 + \beta_1 \text{FWHR}_i + \gamma \cdot \text{Controls}_{i,t} + \text{Year FE} + \text{Ind FE} + \epsilon_{i,t} \quad (1)$$

To capture the facial masculinity of CEOs, we employ the facial width-to-height ratio (*FWHR*), which is widely used as a proxy for testosterone-related dominance traits.

The main dependent variable, $LONG_COMP_{i,t}$, represents the proportion of long-term incentives in the total compensation received by CEO i in year t . Rather than focusing on the absolute amount of long-term incentives, we examine their proportion within total compensation, which controls for variation in total amount of compensation across firms and better reflects how the characteristics of each individual CEO shape the weight of incentive structure based on their preference. In particular, we draw on prior literature suggesting that not only the total level but also the composition of executive compensation has significant implications for firm performance and CEOs' strategic decisions (Gopalan et al., 2014; Mehran, 1995). We classify stock awards, stock options, and long-term incentive plans (LTIPs) as long-term incentives, consistent with prior studies (Gopalan et al., 2014; Hrazdil et al., 2023; Humphery-Jenner et al., 2016; Y. Zheng, 2010). In line with prior literature, we define long-term incentives as compensation components whose performance measurement or vesting periods exceed one year. Accordingly, stock options, stock awards, and LTIPs are classified as long-term pay, as they reward managers based on multi-year performance horizons rather than immediate results. The proportion of fixed, short-term pay and multi-year, performance-based compensation within total compensation package captures how CEOs are evaluated and which dimensions of firm performance the company intends them to emphasize. Moreover, this ratio may also reflect the CEO's own preferences when the CEO possesses sufficient bargaining power to influence the design of the compensation package. Although long-term incentives are designed to align managerial interests with shareholders' long-term value, they can also mirror the CEO's individual traits and preferences. When such personal traits or bargaining influence dominate economic rationale, the balance of the compensation mix can become distorted, potentially leading to unintended consequences such as inefficient risk-taking or misaligned strategic focus.

To ensure a more accurate analysis, particularly focusing on incentive components than can be influenced by the CEO's personal characteristics and motivational orientation, we exclude components such as changes in pension value, deferred compensation, and other non-performance-based benefits. These elements are often shaped by firm-specific

accounting choices or legacy contracts, which may distort the true temporal orientation of the compensation structure. We incorporated only explicit temporal incentive components.¹ Also, we include a comprehensive set of firm- and CEO-level control variables commonly used in the executive compensation literature to account for potential confounding factors and reduce omitted variable bias. Year-fixed and industry-fixed effects are also incorporated. Since *FWHR* is time-invariant unless the CEO changes, this study, in line with prior research, employs industry fixed effects to address potential unobserved heterogeneity (Kamiya et al., 2019; Y. H. A. Kim et al., 2022; Z. Zheng et al., 2023).

To motivate our empirical investigation of the joint effects of CEO power, we construct relevant variables that capture power dimension of CEOs. Specifically, we proxy CEO power using two variables: (i) *DUAL*, a binary indicator equal to one if the CEO also serves as the chair of the board, reflecting concentrated decision-making power; (ii) *CRN* (CEO remuneration), following Islam et al. (2024), which is defined as the proportion of the CEO’s compensation relative to that of the directors.² We estimate the following model incorporating such a CEO power measure.

$$\begin{aligned} \text{LONG_COMP}_{i,t} = & \beta_0 + \beta_1 \text{FWHR}_i \times \text{POWER}_{i,t} + \beta_2 \text{FWHR}_i + \beta_3 \text{POWER}_{i,t} \\ & + \gamma \cdot \text{Controls}_{i,t} + \text{Year FE} + \text{Ind FE} + \epsilon_{i,t} \end{aligned} \quad (2)$$

To capture the monitoring intensity, we employ two proxies: (i) *DIR_COMP* and (ii) *ESG*. *DIR_COMP* is calculated as total board compensation divided by the number of board members, representing the average director compensation level. While *DIR_COMP* reflects internal board characteristics, it functions as an internal monitoring mechanism in compensation decisions, as better-compensated directors are presumed to have stronger incentives to effectively oversee management and align executive pay with shareholder interests (Radwan et al., 2022; Sengupta and Zhang, 2015). For *ESG*,

¹We exclude deferred reported compensation and other compensation due to the ambiguity in their temporal structure. The results using *LONG_COMP* calculated with total compensation, including deferred reported compensation and other compensation, are reported in Table 11.

²Following the approach of Bebchuk et al. (2011), we also employ *CPS* as an alternative proxy for CEO power, and the results are reported in Table 12 and Table 13. The reason for using *CRN* instead of *CPS* in this study is to capture CEO power more comprehensively by observing the CEO’s relative influence over the entire board of directors.

we utilize Bloomberg ESG scores to capture the external stakeholders' monitoring effect.³ Higher ESG scores indicate greater scrutiny and accountability expectations from investors and other stakeholders, shaping firms' approaches to executive compensation design (Cai et al., 2011; Keddie and Magnan, 2023). Accordingly, we estimate the following model incorporating these monitoring mechanisms.

$$\begin{aligned}
\text{LONG_COMP}_{i,t} = & \beta_0 + \beta_1 \text{FWHR}_i \times \text{POWER}_{i,t} \times \text{MONOTIR}_{i,t} + \beta_2 \text{FWHR}_i \times \text{POWER}_{i,t} \\
& + \beta_3 \text{FWHR}_i \times \text{MONITOR}_{i,t} + \beta_4 \text{POWER}_{i,t} \times \text{MONITOR}_{i,t} \\
& + \beta_5 \text{FWHR}_i + \beta_6 \text{MONITOR}_{i,t} + \beta_7 \text{POWER}_{i,t} \\
& + \gamma \cdot \text{Controls}_{i,t} + \text{Year FE} + \text{Ind FE} + \epsilon_{i,t}
\end{aligned} \tag{3}$$

A combination of individual characteristics and monitoring forces shapes the structure of CEO compensation. Given that compensation design reflects a complex interplay between facial masculinity and situational conditions such as CEOs' internal power and intensity of monitoring mechanisms, we examine how these elements jointly influence the proportion of long-term incentives in total CEO compensation. Specifically, we construct interaction terms between the CEO's facial width-to-height ratio (*FWHR*), measures of CEO power, and proxies for monitoring strength. We incorporate the interaction terms of $\text{FWHR} \times \text{POWER}$ and $\text{FWHR} \times \text{POWER} \times \text{MONITOR}$ into our empirical models. The following terms are specified forms: (1) $\text{FWHR} \times \text{DUAL}$, (2) $\text{FWHR} \times \text{CRN}$, (3) $\text{FWHR} \times \text{DUAL} \times \text{DIR_COMP}$, (4) $\text{FWHR} \times \text{CRN} \times \text{DIR_COMP}$, (5) $\text{FWHR} \times \text{DUAL} \times \text{ESG}$, and (6) $\text{FWHR} \times \text{CRN} \times \text{ESG}$. These specifications allow us to examine whether, and to what extent, the effect of the interaction between CEO facial masculinity and internal power (i.e., role duality and compensation dominance) on long-term compensation is moderated by monitoring intensity mechanisms, such as director compensation and ESG performance. This analysis provides insight into how the alignment or misalignment between personal dominance and external oversight shapes the temporal structure of CEO compensation. To ensure analytical precision, we also include

³Additionally, Refinitiv ESG rating data are employed for robustness tests. For detailed results, please refer to Table 10.

two-way interaction terms such as $FWHR \times MONITOR$ and $POWER \times MONITOR$.⁴

4 Results

We first examine the relationship between $FWHR$ and $LONG_COMP$ utilizing OLS regression. Table 4 presents the baseline regression result.

[Insert Table 4 About Here]

Facial masculinity ($FWHR$) of the CEO is significantly and positively associated with the proportion of long-term compensation. An increase of $FWHR$ corresponds to approximately a 4% increase in $LONG_COMP$. Given that the mean value of $LONG_COMP$ is 0.434 (43.4% of total compensation is composed of long-term incentives), this effect represents an increase equivalent to about 9.2% of the mean. This suggests that high $FWHR$ CEOs tend to receive compensation packages with a greater weight on long-term incentives. This observed tendency may reflect the influence of masculine CEOs' risk-tolerant and performance-driven traits on compensation structure, aligning with prior studies (Amin et al., 2024; Kamiya et al., 2019).⁵ It is either because boards strategically incorporate these traits into incentive design, or more likely, because CEOs with masculine traits are better able to negotiate pay structures that align with their personal preferences, especially in terms of riskier long-term orientation.

We then examine cases in which CEOs are granted greater internal power, offering further insight into how high $FWHR$ CEOs come to receive compensation packages with a higher proportion of long-term incentives.

[Insert Table 5 About Here]

⁴In addition, we considered conducting a subsample analysis by dividing firms into high- and low-monitoring-intensity groups. However, to more appropriately capture the continuous effect of monitoring intensity, we instead adopted a triple-interaction methodology.

⁵It cannot be ruled out that the observed effect may be driven by firms that inherently provide a larger portion of compensation in the form of long-term incentives, coinciding with the tenure of high $FWHR$ CEOs. To mitigate this concern, we conducted a CEO turnover analysis following Kamiya et al. (2019). The results show that when a low-median- $FWHR$ CEO is replaced by a high-median- $FWHR$ CEO, $LONG_COMP$ increases, thereby alleviating the aforementioned concern. The related results are reported in Table 15.

Table 5 explores how the relationship between the *FWHR* and long-term compensation varies with CEO role duality (*DUAL*) and CEO remuneration (*CRN*) as proxies for concentrated decision-making power to the CEO. The interaction term ($FWHR \times DUAL$) on column (1) shows a positive and statistically significant effect on *LONG_COMP*, indicating that the association between CEO facial masculinity and the proportion of long-term incentives in compensation is stronger when the CEO also serves as the board chair. This suggests that facially masculine CEOs with greater structural authority, holding the role of board chair, are more likely to receive compensation packages with a higher emphasis on long-term incentives, compared to either (a) non-masculine CEOs in the same position, or (b) equally masculine CEOs without such authority. Given that the proportion of long-term incentives increases under conditions of greater CEO autonomy and power, this result likely reflects the influence of masculine CEOs' preferences for performance-contingent and risk-oriented compensation, such as stock options and long-term incentive plans (LTIPs). The interaction term $FWHR \times CRN$ on column (2) also shows a statistically significant and positive result. This indicates that masculine CEOs with power proxied by the size of compensation compared to directors tend to receive a larger share of their total compensation in the form of long-term incentives compared to non-masculine CEOs under similar power conditions, or masculine CEOs with weaker power conditions.

Overall, both proxies of CEO power and their interaction terms with *FWHR* were statistically significant to the proportion of long-term incentives in the compensation packages. These results support Hypothesis 2, suggesting that high *FWHR* CEOs with greater power tend to receive a larger share of long-term incentives, likely reflecting their enhanced bargaining position that enabled them to reflect their preference in compensation negotiations. This implies that the observed increase in long-term incentive proportion may stem not from long-term incentives' conventional function of governance discipline, but from the influence of powerful, masculine CEOs to shape compensation structures in line with their own preferences. These findings underscore the importance of organizational power dynamics in determining how individual CEO traits, particularly facial masculin-

ity, translate into compensation outcomes, thereby motivating further analysis on the moderating role of monitoring intensity mechanisms.

[Insert Table 6 About Here]

Table 6 examines how the strength of monitoring, proxied by average director compensation (*DIR_COMP*), moderates the relationship between the facial masculinity of the CEO and long-term compensation, particularly in the presence of CEO role duality or receiving high total compensation. The key finding is that the triple interaction terms ($FWHR \times DUAL \times DIR_COMP$, $FWHR \times CRN \times DIR_COMP$) exhibit a negative and statistically significant relationship with *FWHR*, whereas the two-way interaction terms ($FWHR \times DUAL$, $FWHR \times CRN$) remain positive and statistically significant. These results indicate that although high *FWHR* CEOs who also serve as board chairman ($DUAL = 1$) tend to receive compensation with a greater share of long-term incentives, this effect is significantly attenuated in firms where directors receive higher compensation. Similarly, for high *FWHR* CEOs who receive relatively higher compensation than directors ($CRN = 1$), the tendency to receive compensation with a larger share of long-term incentives is mitigated. Consistent moderating effect across different measures of CEO power (*DUAL*, *CRN*) suggests that more generously compensated directors may limit the tendency to place excessive emphasis on long-term incentives, particularly for masculine CEOs with internal power. Those results align with prior studies, which show that higher compensation for directors enhances both their incentives and their capacity to exercise effective monitoring, thereby enabling them to exert greater influence over key governance decisions, including executive compensation design (Radwan et al., 2022; Sengupta and Zhang, 2015).

While the estimated effect size is larger in the *CRN* model (−0.281) than in the *DUAL* model (−0.163), the result is statistically more significant in the latter. This difference likely reflects the distinct nature of the power each variable captures. *DUAL* indicates formal structural authority through the CEO’s simultaneous role as board chair, a relatively stable and observable feature. In contrast, *CRN* represents realized compensation

dominance relative to other directors, which may reflect informal influence such as negotiation leverage or reputation. However, as an outcome-based measure, *CRN* may also embed greater firm-specific variation or measurement noise, potentially reducing its statistical precision. Despite this difference, the consistent negative sign of the triple interaction terms in both models supports Hypothesis 3: higher level of monitoring, proxied by higher director compensation, attenuates the tendency of dominant, high *FWHR* CEOs to receive compensation packages with an excessive emphasis on long-term incentives. Higher director compensation may enhance the incentives and capacity of directors to exercise effective oversight. The evidence thus supports the notion that monitoring intensity strength can mitigate potential disproportionate emphasis on long-term pay structures, even in firms led by masculine CEOs with concentrated decision-making authority.

[Insert Table 7 About Here]

Table 7 presents the results using ESG performance as a proxy for the monitoring intensity. Consistent with the findings obtained using *DIR_COMP*, the triple interaction terms among *FWHR*, *ESG*, and *POWER* (measured by *DUAL* and *CRN*) exhibit negative and statistically significant associations with the proportion of long-term incentives. This suggests that in firms with stronger ESG performance, the positive association between powerful CEO’s facial masculinity and emphasis on long-term incentives is significantly attenuated. These findings support the view that robust ESG oversight serves as an monitoring that counterbalances the CEO’s bargaining power in compensation negotiations. Firms with higher ESG scores are generally subject to greater monitoring from institutional investors, advisors, and other external stakeholders. In such contexts, firm ESG performance appears to function as an monitoring mechanism by moderating the tendency for compensation structures to disproportionately reflect the personal preferences of risk-oriented CEOs with strong internal influence, consistent with prior studies (Cai et al., 2011; Keddie and Magnan, 2023).

Both *DIR_COMP* and *ESG* exhibit a moderating effect on the tendency of internally powerful and high *FWHR* CEOs to receive compensation packages with a higher

proportion of long-term incentives. These findings support Hypothesis 3, suggesting that stronger monitoring reduces the extent to which such masculine CEOs, with greater bargaining power, can shape pay design in line with their personal preferences or appetite for risk. Moreover, by strengthening director oversight and stakeholder accountability, monitoring mechanisms may also reduce the reliance on long-term incentives as a governance tool designed to align risk-taking CEOs with long-term corporate objectives.

5 Robustness tests

5.1 2SLS regression

To mitigate potential endogeneity concerns, a two-stage least squares regression was performed. *FWHR* is an inherent personal characteristic reflecting the CEO's hormonal level, implying a relatively low risk of selection bias. Nevertheless, there may exist a concern that certain industries preferentially select more masculine or less masculine CEOs. Thus, we employed the average facial width-to-height ratio (*IND_FWHR*) of CEOs within the same industry as an instrumental variable. *IND_FWHR* likely influences the focal firm's *FWHR* through industry-level preferences for masculine traits among CEOs, yet it is unlikely to directly affect the focal firm's long-term compensation structure. This variable was computed by averaging the *FWHR* values of CEOs within the same industry, explicitly excluding the focal firm's CEO.

[Insert Table 8 About Here]

Table 8 reports the results of the 2SLS regression. In the first stage, *IND_FWHR* is significantly associated with *FWHR*, validating its relevance as an instrument. The second-stage estimates yields results consistent with those in Table 4, alleviating concerns about endogeneity in our main findings.

5.2 Non-parametric permutation test

To validate the robustness of the baseline results, we conduct a non-parametric permutation test. Specifically, we generate a placebo *FWHR* by randomly reassigning the original *FWHR* values within each *fyear-ticker* cluster and re-matching them to firms. We then re-estimate the baseline regression model specified in Equation (1) using the placebo *FWHR* to obtain placebo coefficients. Repeating this procedure 10,000 times yields 10,000 placebo estimates. The empirical two-sided p-value is 0.006 (observed $t = 2.628$), indicating that the observed coefficient is highly unlikely to arise from random temporal alignment. Across all permutations, only 0.6% of the placebo estimates are significant at the 1% level, further supporting the robustness of the main findings.

5.3 Additional cutoff for the winsorization

It is possible that the main results are driven by extremely masculine CEOs. Therefore, we conduct additional winsorization at the top 5% and 10% levels and report the corresponding results. For better readability, the results of the additional cutoff for winsorization, the only one CEO test, and the CEOs-who-smile-in-their-pictures test are collectively reported in Table 9. Regression results for the additional cutoff for the winsorization are reported in the Panel (A) of Table 9.

5.4 Subsample analysis - Only one CEO test

During the full sample period, there exist firms that experienced no CEO turnover. If the baseline results are indeed driven by the CEO's personal characteristics, such effects should be consistently observed among firms where the CEO remained unchanged throughout the period. To empirically test this conjecture, we construct a subsample consisting of firms that did not experience any CEO turnover. At the same time, we account for the potential influence of founder CEOs. As founder CEOs typically hold a larger ownership stake and exert greater control over the firm's operations, their inclusion may confound the interpretation of CEO-specific effects. Therefore, following prior

studies (Adams et al., 2009; Fahlenbrach, 2009), we exclude founder CEOs from the subsample. The final sample consists of 847 firm-year observations. Despite the substantial reduction in sample size, the results from this subsample analysis remain consistent with those reported in Table 4. The corresponding findings are presented in Panel (B) of Table 9.⁶

5.5 Excluding CEOs who smile on their pictures test

Following Lu and Teo (2022), CEO photographs depicting smiling expressions were excluded from the analysis. We identify "Smiling CEOs" using two quantitative criteria: (1) mouth-corner elevation and (2) teeth exposure. First, we classify the mouth corners as lifted when the vertical displacement between the average of the two mouth corners and the mouth center, normalized by face size, is less than 0.02. Second, we define teeth exposure when more than 10% of the pixels within the inner-lip polygon region exhibit brightness values of at least 190 and saturation values of 70 or lower in the HSV color space. A total of 518 CEOs were removed from the sample, and the baseline regressions reported in Table 4 were re-estimated. Panel (C) of Table 9 presents results consistent with those in Table 4, indicating that the baseline findings are not driven by CEOs' smiling expressions in their photographs.

[Insert Table 9 About Here]

5.6 Alternative measure of ESG

We also test an alternative measure of firm ESG performance. Using ESG rating data from Refinitiv, which cover the period from 2002 to 2021, we employ this alternative ESG measure.⁷

[Insert Table 10 About Here]

⁶We also conducted a CEO turnover analysis, and the corresponding results are reported in Table 15. The findings remain consistent with the baseline results, further supporting the robustness of our conclusions.

⁷Due to data availability of Refinitiv database, the sample period is restricted to 2021.

Table 10 shows the consistent result with the Table 7. Column (1) does not reveal a statistically significant effect; however, column (2) reports results consistent with the main findings.

5.7 Alternative measure of total compensation

In the main analysis, total compensation is defined as the sum of salary, bonus, non-equity incentive pay, stock awards, option awards, and long-term incentive plans. This specification deliberately restricts the definition to compensation components that can be explicitly classified as either short-term or long-term incentives. To assess the robustness of our findings, we expand this definition by additionally incorporating (i) reported deferred compensation, (ii) other compensation, including perquisites and other personal benefits, and (iii) both components. For each alternative specification, we recalculate the proportion of long-term incentives based on the newly defined total compensation.

[Insert Table 11 About Here]

Table 11 shows that the key findings remain statistically significant and directionally consistent across all alternative definitions of total compensation, thereby reinforcing the robustness of our main results reported in Table 4.⁸

5.8 Alternative measures of CEO power

To ensure the robustness of our findings regarding CEO power, we constructed several alternative measures of CEO power, including a CEO power index and the CEO Pay Slice. Following prior studies (Bedford et al., 2023; Finkelstein, 1992; Lisic et al., 2016), we considered four dimensions commonly associated with CEO power: (1) CEO-chair duality, (2) CEO age, (3) CEO tenure, and (4) CEO ownership stake. For each year, a CEO received a score of 1 if the value on a given dimension was above the annual sample

⁸Further analyses including interaction terms between facial masculinity and CEO power measures, as well as governance moderators (e.g., director compensation, ESG performance), confirm the main findings. Full results are available upon request.

median, and 0 otherwise. These binary indicators were summed to create a composite CEO power index (*IND1*) ranging from 0 to 4.

In addition, we extended this index by incorporating a score-based measure of the CEO's compensation relative to that of directors (*CRN*), which serves as our main measure of compensation-based power. CEOs received an additional point if their *CRN* exceeded the annual median, resulting in an extended CEO power index (*IND2*) that ranges from 0 to 5. This index captures both structural and bargaining-related dimensions of CEO power.

Furthermore, following Bebchuk et al. (2011), we constructed the CEO Pay Slice (*CPS*) as an alternative proxy for CEO power. While our primary *CRN* variable reflects the CEO's compensation as a proportion of total directors' compensation, *CPS* measures the CEO's share of total compensation among the top five highest-paid executives. This approach allows us to examine how the CEO's compensation relative to other influential executives reflects their power within the firm.

Using these three measures, CEO Power Index 1 (*IND1*), CEO Power Index 2 (*IND2*), and CEO Pay Slice (*CPS*), we re-estimated the mechanism tests presented in Table 6. The results are reported in Table 12.

[Insert Table 12 About Here]

As reported in Table 12, the results confirm the robustness of our main findings across alternative measures of CEO power, except for column (3). These results are consistent with those presented in Table 6. Under stronger monitoring conditions, proxied by higher compensation for independent directors (*DIR_COMP*), we continue to find consistent evidence that such governance mechanisms mitigate the tendency of powerful and masculine CEOs to obtain a greater share of long-term incentive compensation.

In addition, when we re-estimated the mechanism tests presented in Table 7 using the three alternative proxies for CEO power, the results reported in Table 13 remain consistent with our baseline findings.

[Insert Table 13 About Here]

Under monitoring intensity proxied by ESG scores, the statistical significance of the interaction effects was weaker than in the main results reported in Table 7. Nevertheless, the direction and magnitude of the coefficients remain consistent, providing supportive evidence of a meaningful moderating effect.

5.9 Alternative measures of monitoring intensity

We also employ alternative measures of the monitoring intensity, including (1) the number of analysts following the firm (*ANA*), and the (2) the Google Search Volume Index (*SVI*). *ANA* is defined as the number of analysts following a firm, obtained from the LSEG IBES database. *SVI* represents the yearly average of the Google search volume for the firm’s ticker, obtained from the Google Trends. Consistent with the results reported in Table 7 and Table 6, column (2) of Table 14 presents aligned findings.

[Insert Table 14 About Here]

As the number of analysts monitoring the firm increases and the search volume of the firm ticker on the Google rises, the bargaining power of masculine CEOs over the compensation structure diminishes. This is evidenced by the negative and statistically significant coefficients of $FWHR \times POWER \times ANA$ and $FWHR \times POWER \times SVI$ reported in column (2). The effects are significant at the 10% level, indicating a pattern consistent with the main findings.

6 Additional tests

6.1 CEO turnover analysis

To verify the robustness of the main results, we conduct an additional analysis focusing on CEO turnover. Following Kamiya et al. (2019), we examine changes in the proportion of long-term compensation when turnover occurs from a CEO with below-median *FWHR* to one with above-median *FWHR*. Table 15 presents the variation in long-term

compensation around CEO turnover events. The variable *TURN* is a dummy that equals one when a CEO turnover occurs such that the incoming CEO in year t has an above-median *FWHR*, while the outgoing CEO in year $t - 1$ had a below-median *FWHR*, and zero otherwise. The variable $\Delta LONG_COMP$ captures the change in the proportion of long-term compensation following CEO turnover.

[Insert Table 15 About Here]

Results in Table 15 indicate that CEO turnover from a below-median *FWHR* to an above-median *FWHR* CEO is associated with a significant increase in the proportion of long-term incentives within the newly designed compensation package. This finding suggests that boards actively adjust the structure of executive pay during turnover to reflect the characteristics of the incoming CEO—in this case, masculinity. Such an adjustment may reflect a strategic choice to align the new CEO’s incentives with the firm’s expected long-term orientation, or could also stem from the incoming CEO’s stronger negotiating influence and preference for higher-risk, performance-contingent pay often associated with more masculine traits. This pattern reinforces our main findings by directly showing that the weight on long-term incentives increases when CEO turnover involves a transition from a low- to a high-*FWHR* CEO. As such, this additional test strengthens the interpretation that differences in CEO facial masculinity are systematically reflected in compensation design.

6.2 Trait-contingent consequences of long-term compensation design

Finally, to assess the real consequences of variation in the proportion of long-term incentives within compensation design, we examine how the share of long-term compensation interacts with CEO facial masculinity in explaining firm performance. Specifically, we estimate regressions of firm performance measured up to three years ahead ($t + 3$). Following prior studies on CEO compensation structure and firm outcomes, we employ

Tobin’s Q, return on assets (*ROA*), and net profit margin (*NPM*) as performance indicators, which are widely used in the executive compensation literature (Flammer & Bansal, 2017; Mehran, 1995; Rousseau et al., 2023). In addition, we include Altman’s Z-score to capture firm stability, allowing us to evaluate whether the interaction between CEO masculinity and compensation structure affects not only profitability but also financial soundness (Altman, 1968; Le & Lopez Cruz, 2024). We analyze firm performance using the following model.⁹

$$\begin{aligned} \text{Performance}_{i,t+K} = & \beta_0 + \beta_1 \text{FWHR}_i \times \text{LONG_COMP}_{i,t} + \beta_2 \text{FWHR}_i \\ & + \beta_3 \text{LONG_COMP}_{i,t} + \gamma \cdot \text{Controls}_{i,t} + \text{Year FE} + \text{Ind FE} + \epsilon_{i,t+k} \end{aligned} \quad (4)$$

The three-year horizon is applied as it aligns with the typical vesting or performance measurement periods embedded in long-term incentive plans such as stock awards, stock options, and LTIPs (Flammer & Bansal, 2017; Mehran, 1995). In addition, following Gopalan et al. (2014), the average duration of executive compensation, measured as the weighted average time to vesting of the CEO’s overall pay package, is also approximately three years, indicating that incentive structures have a meaningful influence on managerial actions over this horizon. To ensure consistency in the horizon analysis, we restrict the sample to firms with at least three consecutive years of performance data. This balanced panel design allows us to trace the cumulative impact of incentive structures over the period in which long-term compensation is intended to operate. By integrating market-based indicators, accounting-based outcomes, and measures of profitability and performance stability, our analysis offers a comprehensive assessment of how the structure of executive compensation interacts with CEO characteristics to shape firm performance within the effective duration of long-term incentive contracts.

⁹The dependent variable *Performance*_{*i,t+k*} is evaluated at *t*, *t* + 1, *t* + 2, and *t* + 3. While various CEO- and firm-level characteristics are included as controls, cash flow is excluded from the set of control variables in the regressions where *ROA* and *NPM* serve as the measure of firm performance.

[Insert Table 16 About Here]

The results of analysis on the Table 16 indicate that, on average, the proportion of long-term compensation is positively associated with performance, whereas the coefficient on $FWHR \times LONG$ is negative and statistically significant for *Tobin'sQ*, Altman's *Z-score*, and *NPM* across all horizons, and for *ROA* at selected horizons, implying that expanding the long-term compensation proportion for high *FWHR* CEOs can backfire by impairing performance and financial soundness, even in the long term. At the sample-mean *FWHR* ($= 1.890$), the marginal effect of long-term compensation turns negative, approximately -0.061 for the *Z-score* and -0.011 for *NPM*, and the turning point for *Tobin'sQ* is about 1.92, slightly above the mean.

These patterns suggest that, despite the average benefits of long-term incentives, the optimal compensation mix should consider the traits of the CEO. Consistent with previous evidence that monitoring (*DIR_COMP*, *ESG*) tempers the tendency of high-power, masculine CEOs to push for stronger long-term orientation in pay, such monitoring mechanisms can be interpreted as design safeguards that help prevent performance deterioration.

7 Conclusion

This study examines how a CEO's traits, measured by the facial width-to-height ratio (*FWHR*), shape the structure of CEO compensation packages, particularly the proportion of long-term incentives such as stock awards, options, and LTIPs. The empirical results reveal that CEOs with high *FWHR* tend to receive a greater portion of their total compensation in the form of long-term incentives. This tendency is amplified when the CEO holds greater power within the firm, either by concurrently serving as board chair (*DUAL*) or by receiving a relatively larger compensation than directors (*CRN*). These findings raise the question of the conventional view that long-term compensation is uniformly beneficial for aligning managerial interests with shareholder value. Instead, this study suggests that, under certain conditions or with certain types of CEOs, long-term incentives may excessively reflect the personal preferences and bargaining power of

dominant and masculine CEOs, rather than representing an optimal level for alignment and governance purposes. Such a tendency may arise when firms fail to recognize that compensation structures can be strategically exploited by powerful CEOs to reflect their own preferences rather than shareholders' long-term interests.

Notably, the study demonstrates that monitoring intensity, measured by average director compensation level (*DIR_COMP*) and ESG scores (*ESG*), can effectively mitigate the excessive use of long-term incentives for masculine and powerful CEOs. Empirical evidence indicates that firms with stronger monitoring intensity are less likely to grant such CEOs an unusually high proportion of long-term compensation. These findings suggest that strong monitoring intensity functions as a disciplinary mechanism that preserves the original intent of the long-term incentive system—aligning CEO interests with shareholder value—rather than allowing it to over-reflect the CEO's personal preferences.

Nonetheless, as prior studies have reported that an increase in the proportion of long-term compensation can, in many cases, align managerial and shareholder interests and generate positive outcomes (Abowd, 1990; Brickley et al., 1985; DeFusco et al., 1990; Jensen & Murphy, 1990; Mehran, 1995), caution is warranted in interpreting these findings. Rather, the results of this study can be understood to indicate that, in contexts where CEOs with higher facial masculinity possess greater bargaining power, enhanced monitoring intensity can serve to moderate the influence of such power on pay design.

These findings provide several practical implications. First, high *FWHR* CEOs' behavioral tendencies should be considered in their compensation structures. Previous studies have shown that high *FWHR* CEOs are highly associated with risk tolerance and confident behavior, which explains their preference for long-term, performance-sensitive incentives. Focusing solely on the conventional benefits of long-term incentives, without considering such CEO traits and preferences, may lead to overuse of long-term incentives. Excessive reliance on long-term incentives poses the risk of unintended problems such as excessive risk-taking or biased strategic choices. The interaction between the proportion of long-term compensation and CEO personality traits can dilute the effectiveness of incentive structures. Boards should remain mindful of the possibility that long-term

incentives may function as a double-edged sword.

Second, in firms where CEOs hold substantial internal power, compensation committees must take additional precautions to ensure that pay design does not become a vehicle for CEO's self-serving arrangements. Without adequate checks, such settings may exacerbate the misapplication of long-term incentives.

Third, investors should exercise caution when interpreting the level of long-term compensation received by CEOs, as a higher proportion of long-term incentives does not necessarily imply alignment with stakeholder interests. Numerous prior studies have reported that an increase in the share of long-term compensation leads to positive outcomes by aligning the interests of CEOs with those of the firm and its shareholders. However, a high proportion of long-term incentives may also reflect excessive risk-seeking or aggressive tendencies of the CEO. Therefore, investors must actively demand transparency in the design of firm-level compensation structures and governance processes.

This study contributes to the growing literature on the impact of CEO personal traits on corporate financial decisions by extending the implications of facial masculinity to the domain of executive compensation design. Based on prior research's emphasis on the role of *FWHR* in shaping risk-taking and unethical behavior, this paper shows that such a trait may also influence how compensation is structured, particularly when CEOs are in an influential position. It emphasizes the importance of assessing CEO-specific characteristics for compensation policy to effectively shape and align with firm strategy, especially in governance contexts that may allow these traits to affect the firm's outcomes. Furthermore, this study empirically demonstrates that monitoring mechanisms can offset the influence of CEO power on compensation structures. Strong monitoring intensity serves to mitigate the reflection of personal preference on long-term incentives that may deviate from firm-level alignment needs. By illustrating this moderating role, the study contributes to the literature of executive compensation by revealing how governance mechanisms may counterbalance potential distortions by CEO power and traits in incentive design.

Overall, this study suggests that the effectiveness of long-term incentives can be com-

promised when CEO-centric forces affect compensation structures. Specifically, masculine CEOs with prominent internal power tend to receive compensation with a larger share of long-term incentives. This finding shows that the long-term incentives proportion may reflect their personal preferences rather than the intended function of strategic alignment with shareholder interests. The potential risk of overly representing CEOs' preferences may distort the intended alignment function of long-term incentives. A nuanced approach to CEO compensation, incorporating governance safeguards and CEO traits, is essential to ensure the intended role of long-term incentives. Notably, this study confirms that monitoring intensity can moderate the association of CEO personal traits and internal power on the proportion of long-term incentives within compensation. Future research should continue exploring how CEOs' individual traits and governance structures interact to shape incentive designs that promote both alignment between the CEO and the company and accountability in corporate decision-making.

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Data availability

Data will be made available on request.

Appendix A: Measuring $fWHR$ with Python

The facial width-to-height ratio ($fWHR$) employed in this study was constructed through a systematic four-step procedure: (1) collection of CEO facial images, (2) standardization based on predefined photo inclusion criteria, (3) Python-based facial landmark detection and ratio computation, and (4) post-estimation validation and exception handling. First, CEO facial images were collected through Google Image searches using combinations of the CEO's name and firm name. The original sources of the images were subsequently verified by consulting official corporate websites (e.g., executive profile pages, investor relations pages, annual reports, or sustainability reports), as well as CEOs' personal websites or publicly recognized profile pages, where available. Following established procedures in the literature, image selection was restricted to photographs that approximated a frontal orientation. Specifically, included images were required to show the face oriented toward the camera with both zygomatic arches clearly visible, minimal head rotation (yaw, pitch, and roll), and no obstructions from hats, hair, hands, or accessories covering key facial regions such as the cheekbones, eyebrows, or upper lip boundary. Images with inadequate lighting, poor focus, or insufficient resolution that prevented clear identification of facial contours and key landmarks were excluded. When multiple candidate images were available for a given CEO, a single image with the highest frontal alignment, resolution, and lighting quality was selected to ensure consistency in the unit of measurement. Figure A1 demonstrates the detection results on Elon Musk, the CEO of Tesla.

Second, $fWHR$ was computed using an automated Python-based pipeline relying on publicly available libraries. Image files were loaded using an OpenCV-based approach, with byte-level decoding applied to ensure stable processing of non-ASCII file paths. Images were then converted from the BGR to the RGB color space. Facial landmarks were detected using the MediaPipe FaceMesh module, which provides high-resolution coordinates of facial feature points. In this study, the static image mode and the refined landmark option were enabled to enhance detection accuracy for fine features such as eyebrows and lips. Images in which no face was detected, or in which multiple faces were



Figure A1: Face recognition

simultaneously detected, were classified as failing to meet the single-CEO criterion and were automatically excluded from further analysis. Third, for images with successfully detected facial landmarks, $fWHR$ was defined as the ratio of facial width to upper-face height. Facial width (bizygomatic width) was calculated as the Euclidean distance between the landmarks corresponding to the left and right zygomatic regions. Upper-face height was defined as the vertical distance between the average y-coordinate of the left and right eyebrow landmarks and the y-coordinate of the upper boundary of the upper lip. Accordingly, $fWHR$ was computed as the distance between the cheekbones divided by the vertical distance from the eyebrow midpoint to the upper lip. Observations were excluded if required landmark indices were missing or if abnormal geometric configurations arose, such as a non-positive upper-face height. Final $fWHR$ values were rounded to four decimal places and stored for subsequent analysis. Fourth, image processing was conducted in batch mode at the directory level for predefined image file extensions. Each image filename was matched with its computed $fWHR$ value and saved to an output file. Cases excluded due to face detection failure, multiple-face detection, or abnormal geometric structures were logged separately. To enhance transparency and reliability, landmark detection results were visually overlaid on the original images and saved for inspection. In these overlays, particular attention was given to displaying landmarks corresponding to the lower facial region relative to the eyebrows, enabling visual verification

that the upper-face area used in the $fWHR$ calculation was appropriately identified. Finally, post-estimation validation procedures were implemented to ensure the validity of the automated detection and computation results. For a subset of observations, $fWHR$ calculations were conducted only after manual inspection of the landmark-overlaid images to confirm that the detected landmarks accurately corresponded to the CEO's facial features. Images deemed ambiguous due to insufficient frontal orientation, strong shadows, partial occlusion, or low resolution were replaced with alternative images where possible; otherwise, they were excluded from the final sample. Through these procedures, the study sought to maximize consistency and reliability in the measurement of $fWHR$.

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Table 1: Definition of variables

Variable	Description	Source
FWHR	Face Width-to-Height Ratio constructed following Carre & McCormick (2008).	Hand-Collected
LEV	Total debt scaled by the total asset	COMPUSTAT
SALES	Natural logarithm of the total sales	COMPUSTAT
SIZE	Natural logarithm of the total asset	COMPUSTAT
CAPX	Annual expenditures by the firm for acquiring or upgrading physical assets, including property, plant, and equipment	COMPUSTAT
TOBINSQ	Market value scaled by the book value	COMPUSTAT
TEN	The tenure of the CEO at firm i	BoardEx
DIR	Number of directors on the board	BoardEx
GEN	Male director ratio on the board	BoardEx
TBR	The mean number of years directors have served on the board of firm i	BoardEx
STBR	The standard deviation in board members' tenure durations within a firm i	BoardEx
RET	Time to retirement for the board member assuming the retirement age of 70	BoardEx
CF	Ratio of the sum of net income before extraordinary items and depreciation and amortization to the net property, plant, and equipment	COMPUSTAT
CEO_PAY	Variable scaled by 1,000 based on CEO pay (TDC1)	COMPUSTAT
DIV	Natural logarithm of the dividend payment	COMPUSTAT
OVER	CEO overconfidence constructed following Campbell et al. (2011)	COMPUSTAT
DUAL	CEO duality variable equals one if the CEO is both chair and CEO of the firm, otherwise zero	BoardEx
CRN	Proportion of CEO compensation relative to the total compensation of the CEO and directors constructed following Islam et al. (2024)	COMPUSTAT
ESG	ESG rating of the firm i in year t	BLOOMBERG
DIR_COMP	Natural logarithm of the average director compensation level of the firm i in year t	BoardEx
CPS	CEO pay slice constructed following Bebchuk et al. (2011)	COMPUSTAT
ANA	Number of analysts following of the firm i in year t	LSEG IBES
SVI	Google Search Volume Index of the firm ticker constructed following Da et al. (2011)	GOOGLE TRENDS
Z-score	Measure of financial stability following Altman (1968)	COMPUSTAT
NPM	Operating income before depreciation per sales	COMPUSTAT
ROA	Net income per total asst	COMPUSTAT

Table 2: Descriptive statistics

Our dataset comprises 11,645 observations. All variables are at the 1st and 99th percentiles.

	Obs	Mean	Std. Dev.	Min	Max
LONG_COMP	11,645	0.434	0.294	0.000	1.000
FWHR	11,645	1.890	0.124	1.478	2.362
LEV	11,645	0.233	0.164	0.000	0.883
SALES	11,645	8.107	1.466	3.121	11.456
SIZE	11,645	8.272	1.573	3.939	11.692
TEN	11,645	6.686	7.058	-6.000	35.000
CAPX	11,645	0.049	0.041	0.001	0.244
TOBINSQ	11,645	1.972	1.202	0.747	9.656
DIR	11,645	10.004	2.083	5.000	15.000
GEN	11,645	0.827	0.113	0.500	1.000
TBR	11,645	9.507	8.924	0.300	40.200
STBR	11,645	6.347	3.312	0.000	15.600
RET	11,645	7.312	6.461	-11.800	24.700
CF	11,645	0.001	0.003	-0.087	0.028
CEO_PAY	11,645	6.790	6.152	0.171	32.588
DIV	11,645	17.992	1.940	12.612	22.574
OVER	11,645	0.617	0.486	0.000	1.000
DUAL	11,645	0.550	0.497	0.000	1.000
CRN	5,489	1.700	0.834	-0.683	4.080
ESG	2,391	3.765	1.404	0.990	7.740
DIR_COMP	5,511	4.950	0.580	2.537	6.628
ANA	9,460	7.283	4.681	1.000	23.000
Z-score	11,645	5.111	4.917	0.582	31.473
NPM	11,645	0.148	0.202	-1.167	0.611
ROA	11,645	0.267	2.046	-12.515	7.982

Table 3: Correlation matrix

Table 3 presents the correlation matrix of the variables used. All variance inflation factors (VIFs) are below 10, indicating that multicollinearity is not a significant concern.

	LONG_COMP	FWHR	LEV	SALES	SIZE	TEN	CAPX	TOBINSQ	DIR	GEN	TBR	STBR	RET	CF	CEO_PAY	DIV	OVER	DUAL	CRN	ESG	DIRCOMP	ANA	Z-score	NPM	ROA
LONG_COMP	1.0000																								
FWHR	0.0109	1.0000																							
LEV	0.0735	-0.0636	1.0000																						
SALES	0.0008	0.0209	1.0000																						
SIZE	0.0355	-0.0957	0.1083	1.0000																					
TEN	-0.0242	-0.0407	-0.0195	-0.0039	-0.0100	1.0000																			
CAPX	0.0066	0.0081	0.0190	-0.0109	0.1185	0.0149	1.0000																		
TOBINSQ	0.0023	-0.0005	0.0086	-0.1393	-0.3780	0.0870	-0.2045	1.0000																	
DIR	-0.0062	-0.0751	0.0947	0.3347	0.4083	-0.0546	0.0083	-0.1501	1.0000																
GEN	-0.0370	0.0548	-0.0752	-0.2302	-0.1692	0.0971	0.0502	0.0119	-0.1128	1.0000															
TBR	-0.0766	-0.0104	-0.0420	0.0027	-0.0418	0.7735	0.0247	0.0772	-0.0663	0.1070	1.0000														
STBR	-0.1219	0.0067	-0.0923	-0.2090	-0.2408	0.2298	-0.0051	0.1379	-0.0353	0.1626	0.3847	1.0000													
RET	-0.0179	-0.0191	0.0427	-0.0554	-0.0524	-0.4152	-0.0758	-0.0310	0.0518	-0.0622	-0.4637	-0.1065	1.0000												
CF	-0.0407	0.0356	-0.2103	-0.3998	-0.5113	0.1157	-0.2134	0.4413	-0.2421	0.0935	0.1642	0.1879	-0.0293	1.0000											
CEO_PAY	0.2146	-0.0804	0.0282	0.4936	0.4833	0.1893	-0.1238	-0.0124	0.1376	-0.1298	0.1758	-0.0866	-0.1430	-0.1678	1.0000										
DIV	0.0001	-0.0740	0.0573	0.6928	0.7538	-0.0455	-0.0241	0.0487	0.3528	-0.1395	-0.0655	-0.1652	-0.0041	-0.2604	0.3791	1.0000									
OVER	0.0080	-0.0116	-0.0563	0.0117	-0.0615	-0.0235	-0.0654	-0.0283	0.0060	-0.0253	-0.0287	0.0129	0.0455	-0.0492	-0.0048	-0.0504	1.0000								
DUAL	-0.0067	-0.0246	-0.0716	0.2198	0.2029	0.2415	0.0657	-0.0395	0.1156	-0.0393	0.2290	-0.0644	-0.2190	-0.0830	0.1825	0.1937	-0.0244	1.0000							
CRN	0.2714	0.0001	-0.0235	0.1968	0.1772	0.0881	-0.0766	0.0531	0.0352	-0.0144	0.0452	-0.0333	-0.0540	-0.0484	0.6827	0.1102	0.0442	0.0661	1.0000						
ESG	0.0944	0.0668	0.0826	0.1935	0.3600	-0.0538	0.0666	-0.0811	0.2295	-0.3242	-0.1715	-0.2159	0.0192	-0.2391	0.1693	0.3218	0.0241	0.0646	0.1381	1.0000					
DIR_COMP	-0.0014	-0.1005	0.0642	0.2859	0.2750	0.2134	-0.0655	-0.0447	-0.2078	-0.0995	0.2333	-0.0410	-0.2027	-0.1191	0.3666	0.2228	-0.0341	0.1536	-0.2313	0.0038	1.0000				
ANA	0.0115	-0.0760	-0.0254	0.2649	0.2983	-0.0236	0.2069	-0.0915	-0.0576	0.0612	0.0003	0.0105	-0.0655	-0.1945	0.1662	0.2371	0.0556	-0.0292	0.0666	0.0595	0.1668	1.0000			
Z-score	-0.0498	0.0090	-0.3499	-0.1769	-0.4633	0.0948	-0.1261	0.7223	-0.2431	0.0742	0.1074	0.1774	-0.0278	0.4960	-0.0638	-0.1308	-0.0062	-0.0647	0.0465	-0.1842	-0.0814	1.0000			
NPM	-0.0012	-0.0827	0.1488	-0.2520	0.1320	0.0229	0.1361	0.0916	0.0196	0.0848	-0.0392	-0.0011	0.0478	0.0876	0.0261	0.2187	-0.1077	-0.0332	0.0044	0.1545	-0.0008	-0.0072	1.0000		
ROA	0.0318	0.0378	-0.1120	-0.1028	-0.1630	0.0792	-0.3481	0.3871	-0.1122	-0.0300	0.0272	0.0464	0.0409	0.5802	0.0797	0.0770	-0.0361	-0.0693	0.0495	-0.0736	0.0180	0.2585	0.1822	1.0000	

Table 4: Masculine CEO and Long-term compensation

Table 4 shows the effect of CEO facial masculinity (*FWHR*) on the proportion of long-term compensation within total compensation (*LONG_COMP*). *FWHR* and *LONG_COMP* exhibit a positive, statistically significant correlation, confirming that more masculine CEOs receive a greater share of total compensation to long-term incentives. T-statistics are reported in parentheses. Statistical significance is denoted at the 1% (***), 5% (**), and 10% (*) levels.

	(1) LONG_COMP	(2) LONG_COMP	(3) LONG_COMP	(4) LONG_COMP
FWHR	0.085*** (4.39)	0.047*** (3.04)	0.070*** (3.65)	0.040*** (2.63)
LEV	0.088*** (5.45)	0.034*** (2.61)	0.145*** (8.40)	0.072*** (5.17)
SALES	-0.013*** (-3.15)	-0.003 (-0.82)	-0.030*** (-5.39)	-0.007* (-1.65)
SIZE	0.018*** (3.78)	0.022*** (5.65)	0.028*** (4.71)	0.024*** (4.90)
TEN	0.003*** (5.35)	0.000 (0.12)	0.003*** (5.33)	0.000 (0.03)
CAPX	-0.230*** (-3.92)	-0.001 (-0.02)	-0.108 (-1.44)	0.147** (2.42)
TOBINSQ	-0.001 (-0.36)	0.008*** (4.15)	-0.008*** (-3.28)	0.003* (1.77)
DIR	-0.012*** (-8.47)	0.004*** (3.13)	-0.009*** (-6.10)	0.005*** (4.40)
GEN	-0.382*** (-16.60)	0.011 (0.52)	-0.411*** (-17.23)	-0.030 (-1.37)
TBR	-0.006*** (-12.76)	-0.003*** (-8.19)	-0.006*** (-11.60)	-0.003*** (-6.87)
STBR	-0.003*** (-3.07)	-0.005*** (-6.69)	-0.003*** (-3.69)	-0.005*** (-6.67)
RET	-0.003*** (-6.42)	0.000 (0.44)	-0.003*** (-5.92)	0.000 (1.01)
CF	-2.464*** (-3.00)	-3.221*** (-4.92)	-2.185*** (-2.67)	-3.033*** (-4.64)
CEO_PAY	0.013*** (24.33)	0.010*** (24.36)	0.012*** (22.45)	0.010*** (23.00)
DIV	0.018*** (7.35)	0.001 (0.38)	0.025*** (9.94)	0.004** (2.04)
OVER	-0.006 (-1.26)	0.043*** (10.49)	-0.010** (-2.09)	0.037*** (9.05)
Cons	0.331*** (6.24)	0.070 (1.62)	0.274*** (5.05)	0.054 (1.22)
IND FIXED	NO	NO	YES	YES
YEAR FIXED	NO	YES	NO	YES
# of obs.	11,645	11,645	11,645	11,645
Adj R ²	0.243	0.521	0.268	0.536

Table 5: Masculine CEO, CEO power, and Long-term compensation

Table 5 examines the effect of the interaction between *FWHR* and *POWER* on *LONG_COMP*. The coefficient on $FWHR \times POWER$ is positive and statistically significant, indicating that CEOs with greater power have stronger bargaining power to secure a larger share of their compensation in the form of long-term incentives. These findings hold consistently in column (1), where *POWER* is defined as *DUAL* (CEO duality), and in column (2), where *POWER* is defined as *CRN* (CEO remuneration). T-statistics are reported in parentheses. Statistical significance is denoted at the 1% (***), 5% (**), and 10% (*) levels.

	(1) POWER = DUAL LONG_COMP	(2) POWER = CRN LONG_COMP
FWHRxPOWER	0.086*** (2.78)	0.062*** (2.59)
FWHR	-0.006 (-0.26)	-0.067 (-1.45)
POWER	-0.161*** (-2.76)	-0.042 (-0.92)
LEV	0.071*** (5.09)	0.069*** (3.45)
SALES	-0.008* (-1.70)	-0.014** (-2.09)
SIZE	0.024*** (4.92)	0.010 (1.40)
TEN	0.000 (0.04)	-0.001 (-1.15)
CAPX	0.144** (2.37)	-0.122 (-1.34)
TOBINSQ	0.003* (1.78)	-0.002 (-0.70)
DIR	0.005*** (4.40)	0.006*** (4.27)
GEN	-0.030 (-1.38)	-0.012 (-0.38)
TBR	-0.003*** (-6.90)	0.000 (0.21)
STBR	-0.005*** (-6.58)	-0.004*** (-4.34)
RET	0.000 (1.09)	0.000 (0.14)
CF	-3.013*** (-4.61)	-5.016 (-1.19)
CEO_PAY	0.010*** (22.93)	0.001 (1.33)
DIV	0.004** (2.04)	0.005* (1.68)
OVER	0.037*** (9.02)	0.023*** (4.28)
Cons	0.143*** (2.60)	0.358*** (3.57)
IND FIXED	YES	YES
YEAR FIXED	YES	YES
# of obs.	11,645	5,489
Adj R ²	0.536	0.648

Table 6: Masculine CEO, CEO power, and Long-term compensation : moderating role of director compensation

Table 6 presents the moderating effect of monitoring intensity, as proxied by director compensation (*DIR_COMP*). The negative and significant coefficient of $FWHR \times POWER \times DIR_COMP$ suggests that the level of director compensation moderates the bargaining power of masculine CEOs. T-statistics are reported in parentheses. Statistical significance is denoted at the 1% (***), 5% (**), and 10% (*) levels.

	(1) POWER = DUAL	(2) POWER = CRN
	LONG_COMP	LONG_COMP
FWHRxPOWERxDIR_COMP	-0.162** (-2.07)	-0.084*** (-2.69)
FWHRxPOWER	0.828** (2.13)	0.457*** (2.91)
POWERxDIR_COMP	0.298** (2.02)	0.159*** (2.69)
FWHRxDIR_COMP	0.023 (0.34)	0.038 (0.61)
FWHR	-0.088 (-0.27)	-0.225 (-0.70)
POWER	-1.518** (-2.07)	-0.777*** (-2.61)
DIR_COMP	-0.083 (-0.66)	-0.048 (-0.41)
LEV	0.083*** (3.98)	0.066*** (3.25)
SALES	-0.018*** (-2.71)	-0.015** (-2.27)
SIZE	0.012* (1.72)	0.009 (1.23)
TEN	-0.001* (-1.77)	-0.001 (-1.21)
CAPX	-0.147 (-1.57)	-0.111 (-1.21)
TOBINSQ	-0.001 (-0.54)	-0.002 (-0.70)
DIR	0.002 (1.45)	0.008*** (5.17)
GEN	0.016 (0.50)	-0.011 (-0.37)
TBR	-0.000 (-0.01)	0.000 (0.16)
STBR	-0.004*** (-4.47)	-0.004*** (-4.03)
RET	-0.000 (-0.65)	0.000 (0.24)
CF	-9.107** (-2.12)	-4.375 (-1.04)
CEO_PAY	0.008*** (16.12)	-0.001 (-1.06)
DIV	0.005* (1.67)	0.005 (1.57)
OVER	0.027*** (4.78)	0.023*** (4.28)
Cons	0.692 (1.11)	0.540 (0.89)
IND FIXED	YES	YES
YEAR FIXED	YES	YES
# of obs.	5,511	5,489
Adj R ²	0.633	0.649

Table 7: Masculine CEO, CEO power, and Long-term compensation : moderating role of ESG performance

Table 7 presents the moderating effect of monitoring intensity, as proxied by the firm ESG performance (*ESG*). The negative and significant coefficient of $FWHR \times POWER \times ESG$ suggests that the firm-level ESG performance moderates the bargaining power of masculine CEOs. T-statistics are reported in parentheses. Statistical significance is denoted at the 1% (***), 5% (**), and 10% (*) levels.

	(1) POWER = DUAL	(2) POWER = CRN
	LONG_COMP	LONG_COMP
FWHRxPOWERxESG	-0.140*** (-2.93)	-0.108** (-2.07)
FWHRxPOWER	0.626*** (3.29)	0.249 (1.12)
POWERxESG	0.261*** (2.87)	0.200** (2.00)
FWHRxESG	0.064* (1.90)	0.166 (1.44)
FWHR	-0.207 (-1.54)	-0.200 (-0.42)
POWER	-1.176*** (-3.26)	-0.372 (-0.87)
ESG	-0.110* (-1.70)	-0.297 (-1.35)
LEV	0.058* (1.89)	0.006 (0.16)
SALES	-0.036*** (-3.56)	-0.025* (-1.95)
SIZE	0.020* (1.81)	-0.005 (-0.37)
TEN	0.002 (1.30)	0.001 (0.92)
CAPX	0.052 (0.37)	0.069 (0.37)
TOBINSQ	0.007* (1.81)	-0.009* (-1.84)
DIR	0.006** (2.41)	0.003 (0.98)
GEN	-0.022 (-0.48)	0.032 (0.57)
TBR	-0.006*** (-6.04)	-0.003** (-2.06)
STBR	-0.003** (-2.02)	-0.002 (-1.26)
RET	-0.002** (-2.29)	-0.001 (-1.00)
CF	-4.177 (-0.39)	33.562 (0.96)
CEO_PAY	0.012*** (13.49)	0.002 (1.41)
DIV	0.003 (0.70)	0.009 (1.27)
OVER	0.035*** (4.25)	0.002 (0.23)
Cons	0.875*** (3.31)	0.890 (0.96)
IND FIXED	YES	YES
YEAR FIXED	YES	YES
# of obs.	2,389	1,442
Adj R ²	0.296	0.202

Table 8: 2SLS regression results

Table 8 presents the results of the 2SLS regression using the industry-level average *FWHR* (*IND_FWHR*) as an instrumental variable. The positive and significant coefficient of *FWHR* in the second stage aligns with the baseline results reported in Table 4. This result mitigates the endogeneity concern associated with the findings presented in Table 4. T-statistics are reported in parentheses. Statistical significance is denoted at the 1% (***), 5% (**), and 10% (*) levels.

	1st Stage	2nd Stage
	(1) <i>FWHR</i>	(2) <i>LONG_COMP_PCT</i>
<i>IND_FWHR</i>	-0.159*** (0.027)	
<i>FWHR</i>		0.551** (0.258)
<i>DUAL</i>	0.001 (0.004)	0.013* (0.006)
<i>DIR_COMP</i>	-0.003 (0.004)	-0.047*** (0.007)
<i>LEV</i>	0.005 (0.015)	0.088*** (0.026)
<i>SALES</i>	-0.005 (0.004)	-0.019** (0.008)
<i>SIZE</i>	-0.005 (0.005)	0.021*** (0.008)
<i>TEN</i>	-0.002*** (0.000)	-0.001 (0.001)
<i>CAPX</i>	0.091 (0.064)	-0.242** (0.107)
<i>TOBINSQ</i>	-0.001 (0.002)	-0.001 (0.003)
<i>NUMBERDIRECTORS</i>	-0.001 (0.001)	0.002 (0.002)
<i>GENDERRATIO</i>	0.013 (0.020)	0.010 (0.035)
<i>TIMEBRD</i>	0.001** (0.000)	-0.000 (0.001)
<i>STDEVTIMEBRD</i>	0.002*** (0.001)	-0.005*** (0.001)
<i>TIMERETIREMENT</i>	-0.000 (0.000)	-0.000 (0.001)
<i>CF</i>	4.569 (3.224)	-10.490** (4.843)
<i>CEO_PAY</i>	0.000 (0.000)	0.008*** (0.001)
<i>DIV</i>	0.003 (0.002)	0.003 (0.004)
<i>OVER</i>	0.002 (0.004)	0.026*** (0.006)
Cons	2.101*** (0.069)	-0.833* (0.478)
Industry FE	Yes	Yes
Year FE	Yes	Yes
# of obs.	5,264	5,264
R ²	0.104	0.591

Table 9: Additional robustness tests results

Table 9 presents the results of the additional tests. T-statistics are reported in parentheses. Statistical significance is denoted at the 1% (***), 5% (**), and 10% (*) levels.

	Panel (A) : Additional cutoff for the winsorization	
	5% level	10% level
	LONG_COMP	LONG_COMP
FWHR	0.036** (2.34)	0.031** (2.04)
# of obs.	11,646	11,646
Adj. R ²	0.548	0.559
IND FIXED	YES	YES
YEAR FIXED	YES	YES
CONTROLS	YES	YES
Panel (B) : Subsample Analysis - Only one CEO Test		
	LONG_COMP	
FWHR	0.186*** (2.77)	
# of obs.	847	
Adj. R ²	0.605	
IND FIXED	YES	
YEAR FIXED	YES	
CONTROLS	YES	
Panel (C) : Excluding CEOs who smile on their pictures test		
	LONG_COMP	
FWHR	0.039** (2.32)	
# of obs.	10,087	
Adj. R ²	0.533	
IND FIXED	YES	
YEAR FIXED	YES	
CONTROLS	YES	

Table 10: Alternative measure of ESG

Table 10 presents the moderating effect of monitoring intensity, as proxied by the firm ESG performance, utilizing the alternative measure of ESG performance from Refinitiv (*ESG2*). The negative and significant coefficient of $FWHR \times POWER \times ESG2$ on column (2) suggests that the firm-level ESG performance mediating effect is consistent with the result of table 7. T-statistics are reported in parentheses. Statistical significance is denoted at the 1% (***), 5% (**), and 10% (*) levels.

	(1) POWER = DUAL	(2) POWER = CRN
	LONG_COMP	LONG_COMP
FWHRxPOWERxESG2	0.216 (1.27)	-0.214* (-1.68)
FWHRxPOWER	-0.099 (-0.79)	0.251*** (2.58)
POWERxESG2	-0.446 (-1.37)	0.430* (1.77)
FWHRxESG2	0.019 (0.14)	0.197 (0.87)
FWHR	-0.034 (-0.34)	-0.261* (-1.65)
POWER	0.209 (0.88)	-0.399** (-2.16)
Cons	0.308 (1.54)	0.834*** (2.68)
IND FIXED	YES	YES
YEAR FIXED	YES	YES
# of obs.	5,040	3,256
Adj R ²	0.461	0.569

Table 11: Alternative measure of Total compensation

Table 11 presents the baseline results examining the relationship between CEO facial masculinity (*FWHR*) and the proportion of long-term compensation, incorporating alternative specifications of total compensation. Column (1) includes deferred pay, column (2) includes other compensation, and column (3) incorporates both components in the calculation of total compensation. Across all specifications, the results remain consistent with the baseline findings reported in Table 4. T-statistics are reported in parentheses. Statistical significance is denoted at the 1% (***), 5% (**), and 10% (*)

	(1) + Deferred LONG_COMP	(2) + Othcomp LONG_COMP	(3) + Both LONG_COMP
FWHR	0.041*** (2.66)	0.034** (2.29)	0.034** (2.25)
LEV	0.073*** (5.20)	0.059*** (4.36)	0.060*** (4.36)
SALES	-0.007* (-1.65)	-0.006 (-1.35)	-0.006 (-1.28)
SIZE	0.023*** (4.88)	0.025*** (5.33)	0.024*** (5.17)
TEN	0.000 (0.06)	0.000 (0.19)	0.000 (0.23)
CAPX	0.147** (2.42)	0.159*** (2.68)	0.153** (2.58)
TOBINSQ	0.003* (1.77)	0.005*** (2.81)	0.005*** (2.60)
DIR	0.005*** (4.42)	0.005*** (4.29)	0.005*** (4.42)
GEN	-0.031 (-1.41)	-0.039* (-1.81)	-0.040* (-1.87)
TBR	-0.003*** (-6.90)	-0.003*** (-6.86)	-0.003*** (-6.85)
STBR	-0.005*** (-6.68)	-0.004*** (-6.46)	-0.004*** (-6.61)
RET	0.000 (1.04)	0.001* (1.87)	0.001* (1.73)
CF	-3.034*** (-4.65)	-2.944*** (-4.63)	-2.935*** (-4.58)
CEO_PAY	0.010*** (22.95)	0.009*** (21.49)	0.009*** (21.58)
DIV	0.004** (2.05)	0.003 (1.53)	0.003 (1.52)
OVER	0.037*** (9.04)	0.037*** (9.27)	0.037*** (9.21)
Cons	0.054 (1.22)	0.056 (1.29)	0.060 (1.39)
IND FIXED	YES	YES	YES
YEAR FIXED	YES	YES	YES
# of obs.	11,645	11,645	11,645
Adj R ²	0.536	0.535	0.527

Table 12: Alternative measures of CEO power : moderating role of director compensation

Table 12 reexamines the results in Table 6 using alternative measures of CEO power. In column (1), the CEO power index (*IND1*) is constructed based on four attributes, CEO-chair duality, age, tenure, and ownership stake, each coded as a binary variable equal to one if above the annual median. The average value is 2.07 (SD = 0.93). Column (2) extends this index by including *CRN*, also median-dummy coded (*IND2*). The average value is 2.88 (SD = 1.12). In column (3), the CEO power proxy (*CPS*) is constructed following Bebchuk et al. (2011), which is the proportion of CEO pay among the top 5 directors compensation. The average value is 0.42 (SD = 0.14). Findings on the column (1) and column (2) are consistent with the result in column (1) of Table 6. T-statistics are reported in parentheses. Statistical significance is denoted at the 1% (***), 5% (**), and 10% (*) levels.

	(1) POWER = IND1	(2) POWER = IND2	(3) POWER = CPS
	LONG_COMP	LONG_COMP	LONG_COMP
FWHRxPOWERxDIR_COMP	-0.068** (-2.16)	-0.095*** (-3.34)	-0.240 (-0.89)
FWHRxPOWER	0.328** (2.10)	0.460*** (3.28)	1.195 (0.87)
POWERxDIR_COMP	0.123** (2.08)	0.182*** (3.40)	0.361 (0.70)
FWHRxDIR_COMP	0.073 (0.87)	0.189** (2.11)	-0.032 (-0.24)
FWHR	-0.303 (-0.74)	-0.868** (-1.97)	0.186 (0.29)
Cons	1.075 (1.38)	2.161** (2.55)	-0.380 (-0.31)
IND FIXED	YES	YES	YES
YEAR FIXED	YES	YES	YES
# of obs.	5,511	5,511	4,495
Adj R ²	0.633	0.640	0.554

Table 13: Alternative measures of CEO power : moderating role of ESG performance

Table 13 reexamines the results in Table 7 using alternative measures of CEO power. The negative and significant coefficients of $FWHR \times POWER \times ESG$ under alternative measures of CEO power were consistent with the results reported in Table 7. T-statistics are reported in parentheses. Statistical significance is denoted at the 1% (***), 5% (**), and 10% (*) levels.

	(1) POWER = IND1	(2) POWER = IND2	(3) POWER = CPS
	LONG_COMP	LONG_COMP	LONG_COMP
FWHRxPOWERxESG	-0.034* (-1.84)	-0.032* (-1.87)	-0.451** (-2.37)
FWHRxPOWER	0.175** (2.54)	0.146** (2.28)	0.430 (0.61)
POWERxESG	0.066* (1.86)	0.062* (1.93)	0.0818** (2.27)
FWHRxESG	0.064 (1.62)	0.083* (1.75)	0.172* (1.96)
FWHR	-0.241 (-1.54)	-0.301 (-1.58)	0.008 (0.02)
Cons	0.971*** (3.18)	1.117*** (3.03)	-0.095 (-0.15)
IND FIXED	YES	YES	YES
YEAR FIXED	YES	YES	YES
# of obs.	2,389	2,389	2,275
Adj R ²	0.296	0.296	0.313

Table 14: Alternative measures of the monitoring intensity

Table 14 reports the moderating effect of monitoring intensity through the number of analysts following (*ANA*) and Google Search Volume (*SVI*). The negative and statistically significant coefficient of $FWHR \times POWER \times ANA$ and $FWHR \times POWER \times SVI$ in column (2) indicates that the extent of analyst monitoring moderates the influence of CEO facial masculinity on bargaining power with respect to compensation structure at the 10% level. Although other double interaction terms were included in the regression, they are omitted from the table for brevity. T-statistics are reported in parentheses, and statistical significance is denoted at the 1% (***), 5% (**), and 10% (*) levels.

Panel (A) : Analysts coverage		
	(1) POWER = DUAL	(2) POWER = CRN
	LONG_COMP	LONG_COMP
FWHRxPOWERxANA	0.010 (1.32)	-0.009* (-1.89)
FWHRxPOWER	-0.053 (-0.84)	0.165*** (2.97)
Cons	0.081 (0.86)	0.552*** (2.62)
IND FIXED	YES	YES
YEAR FIXED	YES	YES
# of obs.	9,458	4,779
Adj R ²	0.553	0.658
Panel (B) : Google Search Volume		
	(1) POWER = DUAL	(2) POWER = CRN
	LONG_COMP	LONG_COMP
FWHRxPOWERxSVI	-0.002 (-0.91)	-0.003* (-1.74)
FWHRxPOWER	0.137*** (3.14)	0.093** (2.44)
Cons	-0.114 (-1.26)	0.167 (1.09)
IND FIXED	YES	YES
YEAR FIXED	YES	YES
# of obs.	9,940	4,528
Adj R ²	0.438	0.506

Table 15: CEO turnover analysis

Table 15 reports the results of the CEO turnover analysis following Kamiya et al. (2019). The positive and statistically significant coefficient of *TURN* in both column (1) and column (2), under different fixed-effect specifications, indicates that transitions from a CEO with below-median *FWHR* to one with above-median *FWHR* are associated with an increased proportion of long-term incentives in compensation packages. T-statistics are reported in parentheses, and statistical significance is denoted at the 1% (***), 5% (**), and 10% (*) levels.

	(1) $\Delta LONG_COMP$	(2) $\Delta LONG_COMP$
TURN	0.040*** (2.84)	0.036** (2.40)
LEV	-0.010 (-0.74)	-0.031 (-1.38)
SALES	-0.002 (-0.43)	-0.010 (-0.99)
SIZE	-0.012*** (-2.64)	0.007 (0.72)
TEN	-0.001 (-1.19)	-0.001 (-1.17)
CAPX	0.194*** (3.32)	0.274*** (2.98)
TOBINSQ	-0.000 (-0.24)	-0.001 (-0.47)
DIR	0.000 (0.33)	0.000 (0.22)
GEN	0.022 (1.07)	0.067** (2.02)
TBR	-0.001** (-2.11)	-0.001** (-1.96)
STBR	0.001 (1.26)	-0.000 (-0.35)
RET	0.000 (1.01)	0.000 (0.86)
CF	0.785 (1.34)	2.084** (2.00)
CEO_PAY	0.007*** (16.06)	0.010*** (18.87)
DIV	-0.004* (-1.87)	-0.003 (-0.99)
OVER	-0.005 (-1.19)	-0.001 (-0.13)
Cons	0.136*** (4.33)	-0.012 (-0.16)
IND FIXED	YES	NO
FIRM FIXED	NO	YES
YEAR FIXED	YES	YES
# of obs.	13,455	13,455
Adj R ²	0.088	0.046

Table 16: Firm performance, CEO facial masculinity and Long-term compensation

Table 16 reports the effect of percentage of long-term compensation and masculinity. The negative and significant coefficient of $FWHR \times LONG$ indicates that for masculine CEOs, a higher proportion of long-term compensation can backfire, harming firm performance. While long-term incentives alone show positive effects at $t + 3$, ignoring CEO characteristics may lead to short- and long-term deterioration in performance. T-statistics are reported in parentheses, and statistical significance is denoted at the 1% (***), 5% (**), and 10% (*) levels.

Panel (A) : Tobin's Q				
	t	t+1	t+2	t+3
FWHR×LONG	-0.713*** (-2.59)	-0.684** (-2.46)	-0.625** (-2.23)	-0.416 (-1.44)
LONG.COMP	1.366*** (2.61)	1.284** (2.43)	1.209** (2.27)	0.814 (1.48)
FWHR	0.414*** (3.01)	0.441*** (3.19)	0.431*** (3.09)	0.378*** (2.62)
# of obs.	8,401	8,401	8,401	8,401
Adj. R ²	0.364	0.349	0.331	0.315
Panel (B) : Z-score				
	t	t+1	t+2	t+3
FWHR×LONG	-3.012*** (-3.70)	-2.786*** (-3.44)	-3.124*** (-3.85)	-2.427*** (-2.99)
LONG.COMP	5.632*** (3.64)	5.014*** (3.26)	5.630*** (3.65)	4.320*** (2.80)
FWHR	1.593*** (3.91)	1.542*** (3.81)	1.654*** (4.08)	1.342*** (3.31)
# of obs.	8,202	8,202	8,202	8,202
Adj. R ²	0.450	0.425	0.402	0.384
Panel (C) : ROA				
	t	t+1	t+2	t+3
FWHR×LONG	-0.484* (-1.81)	-0.320 (-1.16)	-0.206 (-0.70)	-0.882*** (-2.97)
LONG.COMP	0.717 (1.41)	0.269 (0.51)	0.103 (0.18)	1.537*** (2.72)
FWHR	0.314** (2.36)	0.310** (2.26)	0.307** (2.10)	0.446*** (3.01)
# of obs.	8,455	8,455	8,455	8,455
Adj. R ²	0.240	0.200	0.140	0.126
Panel (D) : NPM				
	t	t+1	t+2	t+3
FWHR×LONG	-0.109*** (-4.01)	-0.122*** (-4.38)	-0.131*** (-4.73)	-0.141*** (-4.87)
LONG.COMP	0.195*** (3.76)	0.221*** (4.17)	0.242*** (4.60)	0.266*** (4.84)
FWHR	0.071*** (5.19)	0.081*** (5.84)	0.082*** (5.96)	0.079*** (5.50)
# of obs.	8,452	8,452	8,452	8,452
Adj. R ²	0.523	0.518	0.526	0.503
IND FIXED	YES	YES	YES	YES
YEAR FIXED	YES	YES	YES	YES
CONTROLS	YES	YES	YES	YES