

Executive Risk Asymmetry: CFO Equity Ownership, CEO Education, and Firm Risk

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Abstract

Purpose: This study examines whether Chief Executive Officer (CEO) and Chief Financial Officer (CFO) characteristics relate to firm risk asymmetrically and identifies which attribute holds the most robust association.

Research Methodology: We analyze 372 firm-year observations of non-financial firms listed on the Indonesia Stock Exchange between 2022 and 2024. CEO financial education, CFO positional diversity, CFO stock ownership, and CFO gender are the variables of interest in this study. Idiosyncratic risk is regressed with firm and year fixed effects, with total volatility as a robustness check.

Results: CFO stock ownership is negatively related to both risk measures ($p < 0.01$), while CEO financial education is positively related to idiosyncratic risk alone. Female CFOs are associated with higher total volatility only, and CFO positional diversity remains insignificant.

Conclusions: Executive attributes have different empirical signatures. CFO equity exposure is associated with lower risk across all measures, whereas CEO financial education is associated with firm-specific risk alone.

Limitations: The design identifies conditional associations rather than causal effects, and the binary executive indicators draw identification from executive turnover within the firms.

Contributions: Whereas prior work examines CEO and CFO attributes in isolation, this study allows four characteristics to compete for explanatory power over firm risk in an emerging market, isolating CFO equity exposure as the most robust executive correlate. This extends the CEO versus CFO literature from financial policy to firm risk and positions CFO incentive design as a governance lever in its own right.

Keywords: *CEO Education, CFO Stock Ownership, Corporate Governance, Idiosyncratic Risk, Upper Echelons Theory*

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1. Introduction

Firm risk surfaces in market outcomes, financing conditions, operating volatility, and the odds that a strategic decision creates or destroys the value. No abstract corporation produced these outcomes. Individuals holding distinct positions at the top of the organization do. Upper echelons theory argues that executives read complex situations through personalized lenses built from their own experience,

values, and training, so observable background characteristics predict part of what a firm does ([Hambrick, 2007](#); [Hambrick & Mason, 1984](#)). [Bertrand & Schoar \(2003\)](#) put numbers behind that claim: manager fixed effects explain a large share of the variation in how firms invest, borrow, and organise themselves.

Two executives sit at the center of this argument. The CEO commands the strategic direction, organizational priorities, and major resource commitments. The CFO controls financing, reporting, liquidity, capital allocation, and the financial consequences of a strategic choice. Recent studies have confirmed that these two roles do not substitute for each other. [Alkebsee et al. \(2022\)](#) also show that CFO compensation has a greater influence on real earnings management than CEO compensation. [Qiao et al. \(2022\)](#) reach the same ranking for overconfidence, and [Marlinah & Itsnani \(2026\)](#) find that CFO ability outweighs CEO ability in shaping corporate tax policy. Treating the two sets of characteristics as interchangeable hides the basic concept of corporate risk.

Most of the executive risk literature still concentrates on the CEO. [Cid-Aranda & López-Iturriaga \(2023\)](#) trace six CEO traits across 369 Latin American firms. [Loukil & Yousfi \(2023\)](#) study CEO demographics in [France](#), [Yeoh & Hooy \(2021\)](#) study CEO foreign experience in [Malaysia](#), [Dissanayake et al. \(2025\)](#) study engineer CEOs in [Australia](#), and [Aldoseri \(2025\)](#) studies CEO power, tenure, and confidence in Saudi Arabia. Work on the CFO side remains thinner and tends to stop at reporting outcomes rather than firm risk itself ([Ferdous et al., 2025](#); [Zhao et al., 2022](#)). Studies that place CEO and CFO attributes in the same specification and let them compete for explanatory power over risk are even rarer. This gap motivated this study.

We examine four executive characteristics simultaneously in a sample of non-financial firms listed on the Indonesia Stock Exchange, an emerging market where concentrated ownership and family control give executives wide discretion and where evidence on CFO attributes remains scarce. The four characteristics are CEO education, CFO positional diversity, CFO stock ownership and CFO gender. The design assumes nothing about their sharing direction or magnitude. It asks which attributes still carry information once stable firm heterogeneity, common year shocks, and financial controls absorb what they can. By separating incentive-based attributes from demographic and positional ones, this study clarifies which executive characteristics carry information about which slice of firm risk. This reasoning motivates what we call executive risk asymmetry. The claim is not that CEOs manufacture risk, whereas CFOs remove it. Rather, the attributes tied to the two roles leave different empirical fingerprints. CEO human capital may widen strategic discretion and increase firm-specific exposure ([Custódio et al., 2019](#)). CFO equity ownership ties personal wealth to firm outcomes and, for an undiversified executive, sharpens attention to the downside consequences and financing discipline.

This study contributes to the literature in three ways. First, it moves the question from whether executive characteristics matter to which ones matter and for which slice of risk, since a coefficient significant under one risk measure need not survive another risk measure. Second, it brings CFO incentives into the foreground as a corporate governance consideration instead of treating the CFO as a junior partner, carrying the CEO–CFO comparison from financial policy and reporting into firm risk. Third, it splits incentive-based attributes from demographic and positional ones, testing whether economic alignment matters more for risk than a generic bundle of CFO traits does.

2. Literature Review

2.1 Upper Echelons Theory and Executive Determinants of Firm Risk

[Hambrick and Mason \(1984\)](#) proposed that executives operate under bounded rationality and interpret strategic situations through personalised frames, which makes observable background characteristics workable proxies for the cognitive bases behind strategic choice. [Hambrick \(2007\)](#) refined this by tying the strength of that influence to the managerial discretion and the latitude executives have to translate personal preferences into organizational choices. [Bertrand and Schoar \(2003\)](#) supplied the empirical anchor by documenting manager fixed effects across investment, financing, and organisational policy.

A growing body of work applies this frame to risk, although the findings conflict on the direction. CEO education and foreign exposure raise risk-taking in some settings but dampen it in others. [Cid-Aranda and López-Iturriaga \(2023\)](#) find CEO age, tenure, duality, and education move Latin American risk-taking non-linearly, while [Yeoh and Hooy \(2021\)](#) show that OECD-educated Malaysian CEOs take more risk yet non-OECD work experience reduces it. [Loukil and Yousfi \(2023\)](#) report that CEO attributes shape financial and strategic risk in [Dissanayake, Weerasinghe, and Dissanayake \(2025\)](#) link engineer CEOs to higher risk-taking through technical self-confidence. Regarding the risk decomposition central to this study, [Aldawsari, Choudhry, and Luo \(2025\)](#) find that CEO power raises risk mainly through the idiosyncratic rather than the systematic component, directly motivating our focus on idiosyncratic risk for CEO education. [Aldoseri \(2025\)](#) ties CEO power and confidence to market-based risk in Saudi Arabia.

Recent Indonesian evidence is consistent with the narrower proposition that executive attributes are associated with specific corporate choices rather than a uniform risk tendency. CEO characteristics predict earnings management firms by [Christian and Sulistiawan \(2022\)](#), [Nurmayanti, Indrawati, and Dp \(2022\)](#) and [Salsabilla, Indayani, and Dinaroe \(2024\)](#), water disclosures by [Ivone, Susanti, Tang, and Yopie \(2026\)](#), and distress-conditional auditor switching by [Kristianti and Herawaty \(2023\)](#). These outcomes differ from firm risk, establishing the relevance of executive heterogeneity without fixing the directions predicted here.

Corporate finance reaches the same conclusion through a different route. Agency theory holds that undiversified managers, whose human capital and personal wealth are concentrated in one firm, prefer less risk than diversified shareholders by [Jensen and Meckling \(1976\)](#), providing the premise for our expectation that CFO stock ownership is negatively related to firm risk. Equity pay offsets that preference, and the sensitivity of managerial wealth to volatility predicts riskier investments and financing. [Carline, Pryshepa, and Wang \(2023\)](#) sharpen this with the FAS 123R shock: when option incentives fall, firms cut both systematic and idiosyncratic risks. [Dunn and Jensen \(2021\)](#) frame the same tension as a leadership disposition running from risk-seeking to risk-averse. Both literatures point in the same direction. Executive attributes deserve to be modeled as heterogeneous rather than proxies for one latent managerial trait.

2.2 Role Asymmetry Between the CEO and the CFO

An executive-characteristics perspective gains precision once it respects what each position actually does, as the two roles anchor distinct internal governance functions. A CEO attribute sits inside a role with authority over strategic orientation, organizational design, investment priorities, and the coordination of senior managers. A CFO attribute is closer to financial information, capital constraints, cash flow implications, financing arrangements, and formal control systems. Even when the CEO holds the final authority, the CFO decides which strategic options are financially feasible, how their downside is assessed, and how fast an emerging risk becomes visible. The evidence for this asymmetry is direct and accumulating. Across reporting and risk outcomes, the CFO shows greater influence on real earnings management by [Alkebsee, Alhebry, and Tian \(2022\)](#), crash risk via option sensitivity and overconfidence by [Qiao, Adegbite, and Nguyen \(2022\)](#), and tax avoidance ([Marlinah & Itsnani, 2026](#)).

Studies on CFO attributes in isolation reinforce this point. [Wang, Wang, Wen, and Zhang \(2021\)](#) show that female CFOs engage more strongly in risk-sensitive environmental management, particularly in high-risk firms, whereas [Li, Goodell, Liao, Yao, and Liu \(2022\)](#) associate female CFOs with greater accounting conservatism. [Zhao, Xiong, Wang, and Ye \(2022\)](#) link female CFOs to fewer disclosure violations, and [Karavitis, Kazakis, and Xu \(2022\)](#) connect a CFO skills index to tax aggressiveness. [Florackis and Sainani \(2021\)](#) further show that CFOs able to resist undue CEO pressure are associated with less earnings management. These findings confirm that the CFO is an independent site of risk-relevant decisions rather than a conduit for CEO preferences.

2.3 CEO Financial Education and Firm-Specific Risk

Education ranks among the background characteristics of [Hambrick and Mason \(1984\)](#) as predictors of strategic outcomes; however, the field rather than the level matters for firm risk. We focus on CEOs trained in accounting, finance, or auditing, whose expertise equips them to read statements, price risks, and structure transactions. [Kang, Xu, Tong, and Li \(2025\)](#) show that CEOs with financial backgrounds promote corporate financialization, partly by reducing financing constraints in the firm. Such expertise may therefore widen the set of financially executable strategic choices, rather than necessarily implying caution. [King, Srivastav, and Williams \(2016\)](#) find that MBA-led banks outperform when they run riskier and more innovative models. [Cid-Aranda and López-Iturriaga \(2023\)](#) and [Yeoh and Hooy \(2021\)](#) report higher risk-taking for educated and foreign-educated CEOs. Thus, financial training appears to widen the action set rather than narrow it ([Custódio, Ferreira, & Matos, 2019](#); [Karavitis, Kazakis, & Xu, 2022](#)). However, the evidence on the direction of the effect is not unanimous. [Zhang, Xue, and Zhang \(2023\)](#) reported a negative association between the educational background of CEOs and corporate risk-taking in China.

Where greater capability allows an executive to identify and execute strategies that depart from peer practice, the consequence should show up in the firm-specific portion of returns rather than in market-wide co-movement. Idiosyncratic risk suits this argument because it reflects firm-specific information that enters prices ([Deng, 2025](#); [Gul, Srinidhi, & Ng, 2011](#)). [Aldawsari, Choudhry, and Luo \(2025\)](#) show that CEO power operates on the idiosyncratic rather than systematic component. Therefore, the split belongs to the prediction itself, not the robustness section. Indonesian evidence reinforces this separation: penny stocks show lower systematic but far higher idiosyncratic volatility, with 88.4% of total volatility firm-specific ([Sembiring & Nainggolan, 2026](#)).

H₁: CEO financial education is positively associated with firm-specific idiosyncratic risks

2.4 CFO Equity Ownership and Firm Risk

Equity ownership changes what a CFO personally stands to gain or lose from firm outcomes, and the theory splits on the direction. Holding stocks generates pay-performance sensitivity rather than pay-volatility sensitivity. For an executive whose wealth and human capital are already concentrated in one firm, a larger stock position raises the personal cost of a bad outcome. The classical agency argument therefore predicts risk reduction: undiversified managers with substantial stakes have a reason to lower firm risk through diversification, hedging, and avoidance of volatile projects. The competing view holds that equity aligns the manager with shareholders and encourages value-increasing risk, but work separating the channels locates the risk-increasing effect in option convexity rather than in share ownership ([Carline et al., 2023](#)).

When applied to the CFO, the risk-reducing channel gains operational content. A CFO holding more equity has reason to interrogate financing choices, liquidity buffers, earnings quality, and project downsides and commands information access and control apparatus ([Ferdous et al., 2025](#)) to act on it. Because such discipline touches many sources of volatility, not just the firm-specific component, we expect the association to persist across risk measures.

H₂: CFO stock ownership is negatively associated with firm risk, and this association persists across alternative risk measures

2.5 CFO Positional Diversity and CFO Gender as Exploratory Research Questions

Two further CFO attributes enter the model exploratory research questions rather than formal hypotheses because the supporting theory pulls in opposing directions and evidence outside large United States samples remains thin. Therefore, we pose them as open questions and report what the estimates show. RQ1: How is CFO positional diversity associated with firm risks? Positional diversity captures the breadth of roles that a CFO occupies. Breadth may sharpen judgement and improve risk recognition; however, it is also linked to a greater willingness to back complex or unconventional strategies ([Custódio et al., 2019](#)). [Karavitis et al. \(2022\)](#) find that high-work-experience CFOs pursue more aggressive

tax positions, pointing toward the second channel. Neither mechanism dominates the current evidence.

RQ2: How is the gender of the CFO associated with firm risk? Executive gender rests on firmer ground but is still context-dependent. Recent evidence suggests that female CFOs exhibit greater risk sensitivity in corporate decisions, greater accounting conservatism, and fewer disclosure violations (Zhao et al., 2022). Two features of our setting caution against importing this prediction. First, women hold 68% of the sample CFO positions; therefore, they are the norm rather than a minority whose appointment might signal a conservative board where US selection mechanisms do not apply, and the behavioral gap may not either. Second, Gul et al. (2011) link board gender diversity to price informativeness, suggesting that gender may relate to firm-specific and systematic volatility through different channels (Wang et al., 2021). Figure 1 illustrates the framework. The upper path treats CEO education as human capital linked to firm-specific strategies. The lower path treats CFO stock ownership as a financial incentive linked to a broader risk discipline. These are organizing interpretations for evaluation against the coefficients, not established causal mechanisms.



Figure 1. Executive risk asymmetry framework

3. Research Methodology

3.1 Sample Selection

This study examines non-financial firms listed on the Indonesia Stock Exchange (IDX) over the 2022–2024 observation period. Financial data collection extends back to 2020 because the effective tax rate enters the model as a three-year rolling measure; therefore, each observation from 2022 onward draws on tax and earnings data from the two preceding years. We exclude financial firms because their capital structure, regulatory capital requirements, and risk reporting differ from those of other sectors, which would make the financial control variables incomparable across samples. We further restrict the frame to firms reporting positive earnings throughout the collection window because the effective tax rate and profitability measures lose their economic meaning once the denominator turns negative.

Applying these criteria yielded 143 firms. We then remove firms whose shares were not actively traded for more than 25 weeks in any sample year because thin trading distorts the estimation of return volatility and produces stale prices that understate both idiosyncratic risk and total volatility. Firms with incomplete data on the executive or financial variables drop out in the same pass. Together, these two screens remove 16 firms and leave a final sample of 127 firms. Observing each of these firms across the three years from 2022 to 2024 produces an unbalanced panel of 372 firm-year observations for the final sample.

Table 1. Sample selection procedure

Criteria	Number of firms
Non-financial firms listed on the IDX reporting positive earnings	143
Less: firms with shares not actively traded for more than 25 weeks or with incomplete data	16
Firms in the final sample	127
Total firm-year observations (unbalanced panel, 2022-2024)	372

Table 1 shows how the 143 firms meeting the initial criteria were reduced to the 127 firms analyzed here. The active-trading screen matters more than a routine data filter because both dependent variables are derived from the return series. Thinly traded shares generate zero-return days that bias volatility estimates downward; therefore, retaining those firms would attenuate the coefficients rather than merely adding noise. The panel is unbalanced; most of the 127 firms contribute one observation per year across the three-year window, while a few are observed for only one or two years, giving 372 firm-year observations in total. Therefore, clustering standard errors at the firm level rests on 127 clusters, comfortably above the range where cluster-robust inference becomes unreliable ([MacKinnon et al., 2023](#)).

3.2 Variable Measurement

Table 2. Operational definition of variables

Variables	Symbol	Measurement
Idiosyncratic risk	IdioRisk	Standard deviation of the residuals from a market model estimated on weekly stock returns over the firm-year
Total volatility	VolRisk	Standard deviation of weekly stock returns over the firm-year
CEO education	CEOedu	Dummy equal to 1 if the CEO holds an educational background in accounting, finance, or auditing, and 0 otherwise
CFO positional diversity	CFOdiffpos	Number of distinct positions the CFO has held over their career
CFO stock ownership	CFOstockown	Number of shares held by the CFO divided by total shares outstanding
CFO gender	CFOgender	Dummy equal to 1 if the CFO is female, and 0 if male
Tax Avoidance	ETR	Sum of tax expense over years $t-2$ to t divided by the sum of pre-tax income over the same three years
Liquidity	Liquidity	Current assets divided by current liabilities
Profitability	Profitability	Earnings after tax divided by total assets
Solvability	Solvability	Total liabilities divided by total equity
Sales growth	SalesGrowth	$(Sales_t - Sales_{t-1})$ divided by $Sales_{t-1}$

Table 2 presents the operational definitions and measurement methods of the variables used in this study. The dependent variables, namely idiosyncratic risk (IdioRisk) and total volatility (VolRisk), are measured using the standard deviation of residuals from the market model and the standard deviation of weekly stock returns, respectively. The main explanatory variables consist of CEO education (CEOedu), CFO positional diversity (CFOdiffpos), CFO stock ownership (CFOstockown), and CFO gender (CFOgender). CEO education and CFO gender are measured using dummy variables, while CFO positional diversity is measured based on the number of distinct positions held by the CFO throughout their career, and CFO stock ownership is calculated as the proportion of shares owned by the CFO relative to total shares outstanding.

The study also includes several control variables to account for firm-level characteristics that may influence the dependent variables. Tax avoidance (ETR) is measured using the ratio of accumulated

tax expense to accumulated pre-tax income over three years ($t-2$ to t), while liquidity is measured by the ratio of current assets to current liabilities. Profitability is calculated as earnings after tax divided by total assets, solvability is measured by total liabilities divided by total equity, and sales growth is calculated based on the percentage change in sales from the previous year. All variables are measured consistently across the observation period to ensure comparability in the empirical analysis.

3.2.1 Dependent Variables

We estimate both risk measures from weekly stock returns for each firm-year. Idiosyncratic risk (IdioRisk) is the standard deviation of the residuals from a market model ([Acheampong, Ibeji, Owusu, & Nguyen, 2025](#); [Bigdelo, Bashiri, Tehrani, & Kheilkordi, 2022](#); [Menla, Wu, & Zhang, 2024](#)). Which strips out the portion of return variation attributable to market-wide movement and leaves the firm-specific component that reflects private information reaching prices ([Gul, Srinidhi, & Ng, 2011](#)). After winsorization, it has a mean of 0.2915, a standard deviation of 0.2094, a median of 0.2355, and a range from 0.0584 to 1.3999. Total volatility (VolRisk) is the standard deviation of raw weekly returns by [Acheampong et al. \(2025\)](#) and [Campbell, Lee, and Steele \(2020\)](#), therefore pools firm-specific and systematic sources, with a mean of 0.3513, standard deviation of 0.2273, median of 0.2969, and range from 0.0805 to 1.5700. The two correlate at 0.904 ($p < 0.01$), confirming that they capture related dimensions of risk while leaving room for the divergent inferences reported in Section 4.

3.2.2 Executive Characteristics

CEOedu is a dummy variable equal to one if the CEO holds a degree in accounting, finance, or auditing, and zero otherwise. The measure therefore captures functional financial expertise rather than educational attainment in general, following [Yan, Gu, and Xie \(2024\)](#) who identify CEO financial background through finance-related education or work experience. CFOdiffpos counts the number of distinct positions a CFO has held over their career. The measure follows the logic of the CFO managerial-skills index of [Karavitis, Kazakis, and Xu \(2022\)](#), which builds breadth from the number of concurrent positions, functional departments, and firms in a CFO's work history. The values range from 1 to 9, with a mean of 4.0645 and a standard deviation of 1.5123; thus, the typical CFO in the sample has passed through four distinct roles.

CFOstockown is the number of shares the CFO holds divided by the total shares outstanding, a standard proportional measure of insider equity exposure used in the risk-taking literature. After winsorization, it has a mean of 0.0021, a median of zero, a standard deviation of 0.0124, and a maximum of 0.0958. The zero median signals a concentrated distribution: most CFOs in the sample hold no equity in the firms they serve, while a smaller group holds stakes that reach almost 10% of the outstanding shares. CFOgender is a dummy equal to one for a female CFO and zero for a male CFO, matching the coding used by [Zhao, Xiong, Wang, and Ye \(2022\)](#). A mean of 0.6801 indicates that women occupy the CFO position in 68.0% of firm-year observations, a proportion far above the levels reported in the United States samples. This makes the Indonesian setting useful for testing whether the gender findings established there apply to a market where female CFOs are the majority rather than the exception.

3.2.3 Control Variables

ETR proxies for tax avoidance and enters as a three-year rolling measure: we sum tax expenses across year t and the two preceding years and divide by the sum of pre-tax income over the same window. This construction follows [Dyreng, Hanlon, and Maydew \(2010\)](#), who show that annual effective tax rates predict a firm's longer-run tax position poorly because a single year absorbs the timing of temporary differences and one-off settlements. The rolling ratio smooths these fluctuations and captures a more persistent tax profile. Higher values indicate a heavier tax burden and, therefore, less avoidance. The ETR averages 0.2129 after winsorization, close to the 22% statutory corporate rate applying in Indonesia over the observation period.

The remaining controls followed the conventional financial statement definitions. Liquidity is the current ratio, calculated as current assets divided by current liabilities, and averages 3.0220. Profitability is the return on assets, calculated as earnings after tax divided by total assets, and

averages 0.0795. Solvability is the debt-to-equity ratio, calculated as total liabilities divided by total equity, and averages 0.3770. Sales growth is the change in sales from year $t-1$ to year t , scaled by sales in year $t-1$, and averages 0.0983. Including these five controls lowers the chance that the executive coefficients merely absorb contemporaneous differences in financial conditions, and prior work links each to firm risk.

3.3 Empirical Model

The baseline model takes the following form:

$$Risk_{it} = \beta_1 CEO_{eduit} + \beta_2 CFO_{diffposit} + \beta_3 CFO_{stockownit} + \beta_4 CFO_{genderit} + \gamma Controls_{it} + \alpha_i + \delta_t + \varepsilon_{it} \quad (1)$$

Formula 1 shows the specification, where α_i denotes firm fixed effects, and δ_t denotes year fixed effects. Firm fixed effects absorb time-invariant firm characteristics such as persistent organisational traits or business-model features that could correlate with executive characteristics and with risk, following the firm-and-manager fixed-effects tradition established by [Bertrand and Schoar \(2003\)](#). Year fixed effects absorb shocks that are common to all firms in a period. We cluster standard errors at the firm level to allow for arbitrary within-firm dependence in the residuals over time.

We complemented the baseline model with two additional tests. The robustness specification keeps the same right-hand-side variables, fixed effects, and clustering, replacing idiosyncratic risk with volatility. This tests the argument hard because the alternative outcome correlates strongly with idiosyncratic risk without being identical to it; a coefficient that survives with the same sign and significance across both outcomes reaches further than one confined to the firm-specific measure. We then run a reverse causality test that regresses CFO stock ownership in year $t+1$ on firm risk in year t , holding the control set and fixed-effects structure constant, to assess whether the baseline association reflects boards adjusting executive equity in response to observed volatility ([Bellemare, Masaki, & Pepinsky, 2017](#)). Together with the firm and year fixed effects, which absorb time-invariant heterogeneity and common temporal shocks, these two tests address the concerns of reverse causality and time-varying omitted variables.

3.4 Within-Firm Variation and Identification of the Binary Variables

Because CEOedu and CFOgender are binary, their coefficients under firm fixed effects are identified only for firms in which the attributes change across the observation window. To gauge the extent of identifying variation available, we counted the within-firm transitions in each variable over 2022–2024. A firm is a “switcher” when its dummy variable is not constant across its observed years, and a firm may contribute up to two transitions. Table 3 reports these results.

Table 3. Within-firm variation in the binary executive variables, 2022–2024

Variables	Switching firms	Total within-firm transitions	Firm-years with value = 1
CEO education (CEOedu)	12	14	151
CFO gender (CFOgender)	6	6	253

Twelve firms switch CEO financial education (14 transitions), and six switch CFO gender (six transitions); therefore, both binary coefficients rest on a small set of switchers. Nonetheless, fixed-effects estimation remains appropriate: the continuous executive and control variables vary within firms every year and supply within-firm identification independent of the switchers, while firm fixed effects purge time-invariant heterogeneity governance quality, ownership structure, and business model that a pooled or random-effects model would leave to confound the executive characteristics. We treat the CEOedu and CFOgender estimates with the corresponding caution given the few switching firms.

4. Results and Discussions

4.1 Descriptive Statistics

Table 4. Descriptive statistics after winsorization

Variables	N	Mean	SD	Median	Min	Max
IdioRisk	372	0.2915	0.2094	0.2355	0.0584	1.3999
VolRisk	372	0.3513	0.2273	0.2969	0.0805	1.5700
CEOedu	372	0.4059	0.4917	0.0000	0.0000	1.0000
CFOdiffpos	372	4.0645	1.5123	4.0000	1.0000	9.0000
CFOstockown	372	0.0021	0.0124	0.0000	0.0000	0.0958
CFOgender	372	0.6801	0.4671	1.0000	0.0000	1.0000
ETR	372	0.2129	0.0847	0.2191	0.0136	0.4907
Liquidity	372	3.0220	3.0506	1.9567	0.2527	15.4902
Profitability	372	0.0795	0.0619	0.0656	0.0006	0.3130
Solvability	372	0.3770	0.2094	0.3468	0.0427	1.0567
SalesGrowth	372	0.0983	0.2506	0.0693	-0.4630	1.4754

Table 4 shows the three features that matter for reading the regressions. Both risk outcomes spread widely: idiosyncratic risk carries a standard deviation of 0.2094 against a mean of 0.2915, and total volatility 0.2273 against 0.3513, respectively. CFO stock ownership skews hard to the right, with a median of zero and a post-winsorization maximum of 0.0958. Several financial controls also vary widely, particularly liquidity and sales growth, which justifies both winsorization and multivariate controls. The skew in CFO stock ownership also signals thin within-firm variation, a point we return to when interpreting the fixed-effects estimates as associations, rather than effects.

4.2 Correlation Analysis

Table 5. Selected Pearson correlations

Variable pair	Correlation	Significance
IdioRisk–VolRisk	0.904	***
IdioRisk–CEOedu	–0.065	
IdioRisk–CFOdiffpos	–0.022	
IdioRisk–CFOstockown	–0.022	
IdioRisk–CFOgender	0.035	
VolRisk–CEOedu	–0.068	
VolRisk–CFOdiffpos	–0.057	
VolRisk–CFOstockown	–0.028	
VolRisk–CFOgender	0.020	
CEOedu–CFOdiffpos	0.160	***
CFOdiffpos–CFOstockown	–0.123	**
Liquidity–Solvability	–0.544	***
IdioRisk–SalesGrowth	0.288	***
VolRisk–SalesGrowth	0.293	***

Table 5 shows almost no support for the simple cross-sectional story. CEO education correlates – 0.065 with idiosyncratic risk and –0.068 and total volatility. CFO positional diversity correlates – 0.022 and –0.057, CFO stock ownership –0.022 and –0.028, and CFO gender 0.035, and 0.020. None of these focal pairs reached significance. In contrast, sales growth correlates positively with idiosyncratic risk (0.288, $p < 0.01$) and total volatility (0.293, $p < 0.01$). The weak bivariate correlations do not settle the question because they compare firms that differ on many persistent dimensions at once; the fixed-effects estimates that follow condition those differences.

4.3 Baseline Regression: Idiosyncratic Risk

Table 6. Firm and year fixed-effects regressions of firm risk

Variables	(1) IdioRisk	(2) Total volatility
CEOedu	0.1551*** (2.675)	0.0969 (1.384)
CFOdiffpos	−0.0183 (−0.926)	−0.0188 (−0.754)
CFOstockown	−13.8397*** (−3.012)	−15.3492*** (−3.034)
CFOgender	0.0345 (1.008)	0.0647** (2.289)
ETR	0.5542** (2.021)	0.5352* (1.708)
Liquidity	−0.0224 (−1.160)	−0.0207 (−0.924)
Profitability	1.1878** (2.290)	0.9663* (1.755)
Solvability	0.3287 (1.464)	0.4163* (1.946)
SalesGrowth	0.1047* (1.658)	0.1146** (2.017)
Constant	0.0087 (0.057)	0.0743 (0.426)
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Firm-clustered SE	Yes	Yes
Observations	372	372

Table 6 reports the specifications. Column 1 uses the idiosyncratic risk. CEO education is positive and significant at the 1% level, with a coefficient of 0.1551 and a t-statistic of 2.675. Because CEOedu is binary, the coefficient indicates that, within firms and conditional on covariates and fixed effects, firm-years with a CEO trained in accounting, finance, or auditing are associated with idiosyncratic risk 0.1551 higher than firm-years without such a background. Against the winsorized mean of 0.2915, that amounts to roughly 53%. This association is consistent with H_1 , which was supported. Because the CEO education indicator is binary and firm fixed effects absorb its cross-sectional component, the estimate is identified from within-firm changes in the CEO financial background; therefore, it should be read as a conditional association rather than a treatment effect.

CFO stock ownership is the strongest focal predictor. Its coefficient reaches −13.8397, with a t-statistic of −3.012, significant at the 1% level. Because the variable is a proportion on a small numerical scale, the raw coefficient does not describe a plausible one-unit change. The observed standard deviation of 0.0124 provides a better translation: a one-standard-deviation increase in CFO stock ownership is associated with a change of approximately −0.172 in idiosyncratic risk, or roughly 59% of the mean. This association carries economic weight within the observed scale of the data.

The contrast between the two focal executives sits at the center of this study. A one-standard-deviation change in the CEO financial education indicator is associated with approximately 0.076 in idiosyncratic risk, against roughly −0.172 for CFO stock ownership. These transformations do not convert the estimates into causal effects. They place variables measured on different scales into one comparable metric. They standardize the magnitudes for comparison and do not identify causal effects.

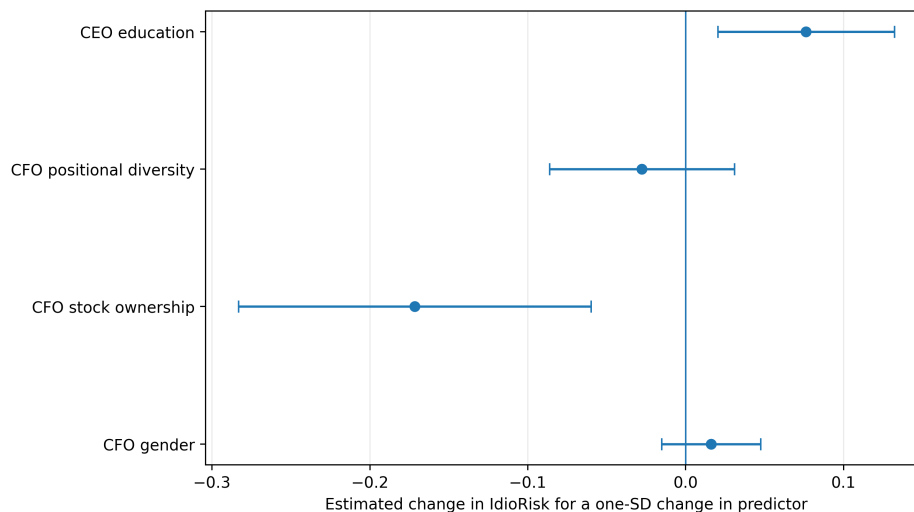


Figure 2. One-standard-deviation associations of focal executive predictors

Figure 2 shows the one-standard-deviation associations for the four focal predictors in the baseline model, with confidence intervals approximated from reported t-statistics. CFO positional diversity and CFO gender, treated here as exploratory characteristics rather than formal hypotheses, both miss significance in this specification. Positional diversity carries a coefficient of -0.0183 and a t-statistic of -0.926 ; scaled by its standard deviation of 1.5123 , the implied association reaches approximately -0.028 and the interval crosses zero. CFO gender has a coefficient of 0.0345 and a t-statistic of 1.008 . These nulls locate the ownership association in the CFO's financial exposure rather than in CFO characteristics as a class. Several controls are related to idiosyncratic risk. The ETR is positive at 5% (0.5542 , $t = 2.021$), profitability is positive at 5% (1.1878 , $t = 2.290$), and sales growth is positive at 10% (0.1047 , $t = 1.658$). Liquidity and solvability miss significance in this specification.

4.4 Robustness: Total Volatility

Column 2 of Table 6 swaps idiosyncratic risk for total volatility, which separates broad executive associations from measure-specific ones and serves as an alternative measure robustness check. CEO education retains its positive sign, but the coefficient falls to 0.0969 and the t-statistic to 1.384 , missing conventional significance. This draws a boundary around the CEO education findings. The association appears for firm-specific risk and does not extend, at conventional confidence, to the total volatility. CFO stock ownership. The coefficient reaches -15.3492 , with a t-statistic of -3.034 , again significant at the 1% level. Applying the same one-standard-deviation increase of 0.0124 implies a change of approximately -0.190 in total volatility, roughly 54% of the mean of 0.3513 . CFO stock ownership is the only focal characteristic that is significant in both models with the same sign and the same 1% level, consistent with H_2 . Because the estimate survives the change of the dependent variable, it is unlikely to be an artifact of one risk measure, although robustness across measures does not by itself establish causality.

CFO gender changes the status. Its coefficient rises from 0.0345 to 0.0647 with a t-statistic of 2.289 , significant at 5%, indicating that, among the exploratory characteristics, firm-years with a female CFO are associated with total volatility 0.0647 higher than firms with a male CFO, roughly 18% of the mean value. CFO positional diversity remains insignificant at -0.0188 ($t = -0.754$). The controls strengthen slightly in this model: ETR, profitability, and solvability turn positive at 10%, and sales growth is positive at 5%, while liquidity remains insignificant. These results align with the descriptive correlations between sales growth and both risk measures, and they justify holding the control set constant when comparing executive coefficients across outcomes.

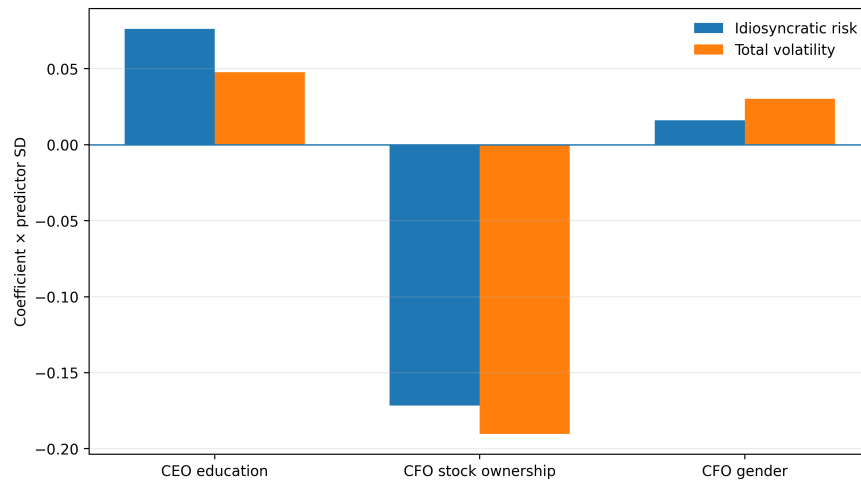


Figure 3. Scaled executive coefficients across idiosyncratic risk and total volatility

Figure 3 shows the three distinct profiles. CFO stock ownership is negative in both models and has the largest scaled association among the focal variables. CEO education is positively related to both, but only earns statistical support for idiosyncratic risk. CFO gender is positive in both but supports only total volatility. A three-tier reading follows: the confirmatory result for CFO stock ownership is robust across risk measures, the confirmatory result for CEO education is risk-specific, and among the exploratory characteristics, gender depends on the outcome measure, while positional diversity finds no support in either specification.

4.5 Additional Analysis: Endogeneity and Reverse Causality

The main threat to the causal reading of the CFO ownership association is reverse causality. Firms anticipating a change in risk may adjust executive compensation in advance, in which case the negative coefficient would reflect boards' responses to expected volatility rather than ownership shaping it. As a direct endogeneity check, we regress CFO stock ownership in year $t+1$ on firm risk in year t , retaining the full control set, firm fixed effects, and outcome-year fixed effects, with standard errors clustered by firms.

Table 7. Reverse-direction test: CFO stock ownership at $t+1$

Variable at t	(1) IdioRisk model	(2) Total volatility model
IdioRisk	-0.0000 (-0.169)	
VolRisk		-0.0000 (-0.226)
CEOedu	0.0002 (0.752)	0.0002 (0.752)
CFOdiffpos	-0.0001 (-0.777)	-0.0001 (-0.777)
CFOgender	-0.0002 (-0.749)	-0.0002 (-0.749)
ETR	-0.0014 (-0.863)	-0.0014 (-0.863)
Liquidity	0.0001 (0.993)	0.0001 (0.995)
Profitability	-0.0013 (-0.469)	-0.0013 (-0.469)
Solvability	0.0027 (0.872)	0.0027 (0.871)
SalesGrowth	-0.0003 (-0.715)	-0.0003 (-0.715)
Within R-squared	0.0198	0.0198
Firm fixed effects	Yes	Yes
Outcome-year fixed effects	Yes	Yes

Table 7 reports these results. Neither risk measure predicted subsequent CFO ownership. Idiosyncratic risk carries a t -statistic of -0.169 and total volatility of -0.226. None of the control variables reaches significance either, and the within R -squared of 0.0198 indicates limited explanatory power for

changes in ownership within the firms. When read against the baseline result, the contrast is informative. CFO ownership carries a coefficient of -13.8397 on idiosyncratic risk in the forward direction and a t-statistic of -3.012, whereas risk carries an effectively zero coefficient on ownership in the reverse direction. The asymmetry runs in the direction that the theory predicts, such as CFO ownership is negatively associated with contemporaneous firm risk, whereas current risk does not predict subsequent CFO ownership. Boards in this sample do not appear to adjust their CFO equity holdings in response to the volatility they have just observed.

Two qualifications limit the extent to which this test is applicable. This rules out one specific mechanism, namely a board that observes risk in year t and revises CFO ownership in year $t+1$, and leaves open channels operating with different timing or through unobserved variables that move both quantities at once. Moreover, CFO ownership has a median of zero and a standard deviation of 0.0124; therefore, within-firm variation in the dependent variable is thin. The appropriate conclusion is that the reverse-causality concern is mitigated rather than eliminated, and that a design exploiting an exogenous shock to executive equity such as the regulatory change to option accounting used by [\(Carline et al., 2023\)](#) would identify the effect more definitively than the panel design available here.

4.6 Discussion of the CFO Ownership Result

The evidence points to an executive risk asymmetry in which CFO financial ownership is more consistently associated with firm risk than the other attributes examined. What matters here is persistence across the dependent variables rather than significance alone. Idiosyncratic risk and total volatility correlate at 0.904 and share substantial information; however, they differ sufficiently to flip the inference for CEO education and CFO gender. CFO stock ownership survives the switch with its sign and significance intact, which makes it difficult to dismiss the coefficient as an artifact of one operationalization.

This negative association matches the classical agency prediction for undiversified managers. Executives whose wealth and human capital are concentrated in one firm absorb the personal costs from volatility that diversified shareholders escape; therefore, they prefer lower risk. This result also fits the finding that the risk-increasing effect of equity pay works through option convexity rather than share ownership. In particular, for a CFO, a larger stake raises the personal cost of a bad outcome and strengthens the case for questioning projects, financing structures, or operating strategies that generate excess volatility. It may also come with closer monitoring of liquidity, solvency, reporting and internal controls ([\(Biggerstaff et al., 2021; Ferdous et al., 2025\)](#)). Our design cannot separate these channels or establish their direction; therefore, they remain interpretive possibilities rather than findings. Nonetheless, the cross-measure robustness gives the financial alignment reading a consistent empirical footing.

The magnitude deserves comment. A one-standard-deviation change in CFO stock ownership is associated with roughly -0.172 in idiosyncratic risk and -0.190 in total volatility, more than half of each dependent-variable mean. Two cautions apply, such as fixed-effects coefficients are associations, not treatment effects, and the ownership distribution skews hard with a median of zero, so the magnitudes rest on limited within-firm variation. However, the magnitudes rule out a result that registers only because the sample happens to be large enough to detect it.

4.7 Discussion of the CEO Education Result

CEO education conveys a different message. Its positive association with idiosyncratic risk suggests that executive human capital is connected to the firm-specific portion of strategic exposure. A better-educated or differently educated CEO may bring greater analytical capacity, confidence, or facility with complex opportunities, and these capacities support strategies that break from convention and lift firm-specific volatility ([\(Choi, Chung, Han, & Pinsonneault, 2021\)](#)). [King, Srivastav, and Williams \(2016\)](#) support this reading by locating the performance advantage of MBA-educated bank CEOs in riskier and more innovative business models, as do [Cid-Aranda and López-Iturriaga \(2023\)](#) for emerging markets and [Yeoh and Hooy \(2021\)](#) for CEOs educated abroad. [Custódio, Ferreira, and Matos \(2019\)](#) show that broader managerial human capital raises innovation output, while [Yang, Xia,](#)

[Li, Zhao, and Liu \(2021\)](#) and [Yan, Gu, and Xie \(2024\)](#) extend the relevance of the CEO financial background to emerging market settings. However, the direction of this relationship is not yet settled. In Chinese samples, CEO education and financial background have been found to reduce rather than increase corporate risk-taking and innovation, which underscores that the sign depends on the institutional context and whether the outcome isolates firm-specific or total risk. The evidence here does not show that CEO education is associated with total volatility at conventional confidence, so the result favors a reading in which CEO human capital relates to the distinctiveness of firm risk rather than to generalized instability.

This boundary has theoretical value. Research on executive characteristics often interprets one significant coefficient as evidence of a broad behavioral tendency. These results show the cost of this habit. CEO education reaches significance when the outcome isolates firm-specific risk and misses it when the outcome pools all volatilities. The CFO gender inverts this pattern. Only CFO stock ownership is held across both. The choice of risk measure therefore changes which executive attribute appears to matter, echoing the argument that idiosyncratic risk carries distinct informational content rather than serving as a scaled version of total risk ([Aldawsari, Choudhry, & Luo, 2025](#); [Gul, Srinidhi, & Ng, 2011](#)).

Related Indonesian evidence from LQ45 firms shows that fiscal uncertainty can condition market outcomes: tax risk significantly moderates several relationships between financial, macroeconomic, and tax-avoidance variables and stock returns, even though most of these variables have no significant direct association with returns ([Pratama, Junaidi, & Yuniarti, 2026](#)). Because stock returns are not the same construct as volatility, this evidence is used only to contextualize how firm-specific uncertainty can alter market responses to earnings announcements.

4.8 Exploratory Characteristics and the Identification Contrast

As an exploratory characteristic, the CFO gender coefficient runs against the established literature and warrants a direct explanation, rather than a hedge. Female CFOs are associated with higher total volatility, in contrast to the literature documenting greater conservatism among female executives. Three readings were tested. The first turns on representation: female CFOs make up 68% of our observations, against the small minorities studied in United States and Chinese samples. Where women routinely hold the position, the selection mechanism that concentrates female appointments in conservative firms disappears, and with it, the gap that the mechanism helps generate. Consistent with this, recent evidence finds that firms led by female CEOs or CFOs do not exhibit greater risk aversion than their male-led counterparts under conditions of high uncertainty ([Chen & Cheng, 2025](#)). The second turn on the measurement. The coefficient reaches significance for total volatility but not for the idiosyncratic component, which is consistent with the possibility of a systematic risk channel but does not establish it. [Valls and Soriano \(2022\)](#) link board gender composition to systematic market risk measured through stock beta, and an effect operating through market beta or through sector composition would produce exactly this split. Third, there is a compositional issue: female CFOs in our sample may cluster in industries or firm sizes with higher baseline volatility, which firm fixed effects address only for the time-invariant portion. Notably, evidence from Indonesian consumer-sector firms similarly documents a positive association between board gender diversity and stock return volatility by [Sabila, Rahmawati, Djuminah, and Dwianto \(2024\)](#), suggesting that the pattern is not unique to our sample. Decomposing total volatility into its systematic and idiosyncratic parts and re-estimating it with industry interactions would separate these explanations.

The null result for CFO positional diversity, likewise an exploratory characteristic, strengthens the case for separating executive incentives from executive biographies. A broader positional background might lower the risk through accumulated experience or raise it through confidence and adaptability ([Karavitis, Kazakis, & Xu, 2022](#)). In these models, neither mechanism wins sufficiently to produce a significant coefficient. The null narrows the locus of the CFO result: the data do not say that CFO characteristics as a class are associated with lower firm risk, only that CFO stock ownership does.

The gap between the bivariate correlations and fixed-effects coefficients is substantively important. Near-zero correlations for CFO stock ownership would have supported the conclusion of no relationship if the analysis had stopped at descriptive statistics. Firm fixed effects turn the association strong and negative, indicating that cross-sectional differences between firms conceal within-firm relationships. Firms that differ in business models, industry exposure, governance, or risk culture will differ in both ownership practices and baseline risk. Firm fixed effects absorb those persistent differences and let the coefficient come from within-firm variation, in the spirit of [Bertrand and Schoar \(2003\)](#).

CEO financial education shows the same lesson more clearly. Its unconditional correlation with idiosyncratic risk is slightly negative, while the conditional coefficient is positive. Firms that appoint financially trained CEOs may differ systematically from other firms in ways that lower unconditional risk, perhaps because such appointments concentrate on mature firms with stable cash flows, even where a within-firm switch to a financially trained CEO coincides with higher idiosyncratic risk after controls. Executive research built on cross-sectional comparisons alone can therefore reach conclusions that within-firm designs reverse. [Li and Farah \(2021\)](#) make a related point by tracking equity volatility around CEO turnover rather than across firms.

5. Conclusions

5.1 Conclusion

This study set out to determine whether CEO and CFO characteristics relate to firm risk uniformly or asymmetrically and which attributes carry the most robust association. The findings reveal a clear executive risk asymmetry, such as the relevance of executive attributes differs by executive role and the dimensions of firm risk examined. CFO stock ownership is negatively related to both risk measures and therefore provides the most consistent support for H2 across alternative risk measures. CEO education is positively related to idiosyncratic risk but not to total volatility, supporting *H1* within its stated boundary. Among the exploratory attributes, female CFOs are associated with higher total volatility but not with idiosyncratic risk, whereas CFO positional diversity is not significant in both models.

The central conclusion is not that executive characteristics raise or lower firm risk as a class. Different attributes leave different empirical signatures. CFO equity ownership is consistently associated with lower risk across both measures, whereas CEO financial education is associated only with firm-specific risk. This contrast supports the concept of executive risk asymmetry and places CFO financial incentives at the center of the contribution. By extending executive role asymmetry to firm risk, this study shows that CFO financial incentives constitute a distinct component of a firm's risk architecture rather than a secondary feature of CEO-centered governance.

Beyond these empirical conclusions, the findings also have important theoretical implications for understanding how executive characteristics are reflected in different dimensions of firm risk. The findings extend upper echelons and agency perspectives by showing that the risk relevance of executive attributes depends on both the executive's functional role and the dimension of risk being examined. CEO financial education, a human capital attribute, is associated only with firm-specific risk, whereas CFO stock ownership, an incentive attribute, is associated with both risk measures. This role-specific interpretation is consistent with evidence that CEO–CFO incentive structures are associated differently with corporate financial and investment policies, highlighting the distinct influence of CFO incentives on financially oriented decision-making. Therefore, the theoretical contribution is that executive role and attribute type jointly shape where managerial characteristics become visible in firm risk.

These theoretical implications also translate into managerial and governance implications, particularly for boards, compensation committees, and investors who assess executive incentive structures and firm risk. Boards and compensation committees may use CFO equity exposure as an input when evaluating whether executive incentive structures are consistent with the firm's risk appetite, financing policy, and control environment, treating the CFO incentive design as a distinct governance lever

rather than an appendage of a CEO-centered pay system. Investors may also incorporate changes in CFO ownership into governance assessments alongside CEO attributes and firm fundamentals rather than treating CFO ownership as a standalone predictor of future volatility. Because the estimates identify conditional associations, they do not establish a causal or optimal level of CFO ownership, and the models test no nonlinearity. Firms may also grant ownership in anticipation of a risk change, a reverse causality concern addressed elsewhere through simultaneous estimation and regulatory shocks. Therefore, the findings should not be interpreted as recommending mechanically higher CFO shareholdings.

5.2 Research limitations

This study has three limitations bound the argument. First, the fixed-effects specification handles time-invariant firm heterogeneity and common year shocks but leaves room for time-varying omitted variables that could drive both executive characteristics and risk. Stock ownership may respond to expected risks. CEO or CFO appointments may follow strategic transitions that change volatility for independent reasons. Although the reverse-direction test reported in Section 4.5 reduces the concern that observed risk predicts subsequent CFO ownership, it does not eliminate endogeneity arising from time-varying omitted variables or alternative timing mechanisms. Without an exogenous shock or instrument, the coefficients describe conditional associations rather than causal effects.

Second, and more specific to this design, firm fixed effects absorb every time-invariant firm characteristic, so the coefficients on the binary indicators for CEO education and CFO gender draw identification from executive turnover within firms. In the observed panel, CEO education changes in 12 firms (14 within-firm transitions), whereas the CFO gender changes in six firms (six transitions). Accordingly, these estimates rely on a relatively small set of switchers and should be interpreted with caution. The three-year observation window further limits the within-firm variation available for binary attributes. Third, the CFO gender result runs opposite to the established risk-aversion literature, and this study cannot adjudicate among the representation, measurement, and composition explanations set out in Section 4.8 above. Readers should treat that coefficient as a finding requiring replication and mechanism-specific testing rather than as evidence against the risk-aversion account.

5.3 Suggestions and directions for future research

Future studies can extend this research in several important directions. First, researchers may examine whether the relationship between CFO stock ownership and corporate risk varies according to firm conditions, such as financing constraints, leverage, internal control quality, and investment uncertainty. These factors may help explain the mechanisms through which CFO ownership influences managerial risk-taking and corporate decision-making. Future research could also employ non-linear models to determine whether the effect of CFO ownership changes at higher ownership levels, including the possibility that the relationship becomes weaker or changes direction after reaching a certain threshold.

Second, future research could use executive transition or CFO turnover as a stronger identification strategy. Comparing corporate risk before and after changes in CFO ownership may provide deeper insight into whether ownership directly influences risk rather than merely being associated with it. Researchers could also examine CEO education in greater detail by distinguishing educational level, academic field, and type of qualification instead of relying only on a binary indicator. This approach would provide a more precise understanding of how executive human capital affects corporate risk.

Finally, future studies should consider expanding the research sample across different countries, industries, and institutional environments. Cross-country comparisons could determine whether the relationships identified in this study remain consistent under different regulatory systems, corporate governance structures, and capital-market conditions. Researchers may also incorporate additional executive characteristics, such as professional experience, tenure, age, international exposure, and managerial expertise, to provide a more comprehensive understanding of how top management characteristics shape corporate risk.

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Author Contributions

AM contributed to the conceptualization of the study, research design, data processing and analysis, manuscript drafting, and final approval of the manuscript. MM contributed to the research supervision, methodological guidance, critical revision of the manuscript, and final approval. ND contributed to data collection and processing, literature review, data interpretation, manuscript revision, and the final approval of the manuscript.

References

- Acheampong, A., Ibeji, N., Owusu, F., & Nguyen, T. (2025). Narrative disclosure tone and bank risk: The role of economic policy uncertainty. *Managerial and Decision Economics*, 46(6), 3428-3447. <https://doi.org/10.1002/mde.4539>
- Aldawsari, H., Choudhry, T., & Luo, D. (2025). CEO power and firm risk at the onset of the 2007 financial crisis and the COVID-19 health crisis: International evidence. *Review of Quantitative Finance and Accounting*, 64(4), 1633-1670. <https://doi.org/10.1007/s11156-024-01347-4>
- Aldoseri, M. (2025). CEO characteristics and risk-taking behavior: Statistical evidence from Saudi Arabia. *Journal of Risk and Financial Management*, 18(11), 600. <https://doi.org/10.3390/jrfm18110600>
- Alkebeese, R., Alhebry, A. A., & Tian, G. (2022). Whose cash compensation has more influence on real earnings management, CEOs or CFOs? *Journal of Accounting in Emerging Economies*, 12(1), 187-210. <https://doi.org/10.1108/JAEE-12-2020-0336>
- Bellemare, M. F., Masaki, T., & Pepinsky, T. B. (2017). Lagged explanatory variables and the estimation of causal effect. *The Journal of Politics*, 79(3), 949-963. <https://doi.org/10.1086/690946>
- Bertrand, M., & Schoar, A. (2003). Managing with style: The effect of managers on firm policies. *Quarterly Journal of Economics*, 118(4), 1169-1208. <https://doi.org/10.1162/003355303322552775>
- Bigdelo, J., Bashiri, N., Tehrani, R., & Kheilkordi, F. (2022). CEO power, corporate risk-taking, and the role of institutional owners: Pieces of evidence of Tehran Stock Exchange market and Iran Fara Bourse. *Iranian Journal of Finance*, 6(1), 117-141. <https://doi.org/10.30699/ijf.2021.232129.1131>
- Biggerstaff, L. E., Cicero, D. C., Goldie, B., Reid, L. C., Ge, W., & Moon, K. (2021). CFO effort and public firms' financial information environment. *Contemporary Accounting Research*, 38(2), 1068-1113. <https://doi.org/10.1111/1911-3846.12624>
- Campbell, J. L., Lee, H. S. "Grace," Lu, H., & Steele, L. B. (2020). Express yourself: Why managers' disclosure tone varies across time and what investors learn from it. *Contemporary Accounting Research*, 37(2), 1140-1171. <https://doi.org/10.1111/1911-3846.12561>
- Carline, N. F., Pryshchepa, O., & Wang, B. (2023). CEO compensation incentives and playing it safe: Evidence from FAS 123R. *Journal of Financial and Quantitative Analysis*, 58(7), 2993-3026. <https://doi.org/10.1017/S0022109023000017>
- Chen, Y., & Cheng, L. (2025). Does executive gender matter for corporate financial policies under uncertainty? *Global Finance Journal*, 65, 101108. <https://doi.org/10.1016/j.gfj.2025.101108>
- Choi, I., Chung, S., Han, K., & Pinsonneault, A. (2021). CEO risk-taking incentives and IT innovation: The moderating role of a CEO's IT-related human capital. *Management Information Systems Quarterly*, 45(4), 2175-2192. <https://doi.org/10.25300/MISQ/2022/15606>

- Christian, P. G., & Sulistiawan, D. (2022). When narcissus became a CEO: CEO narcissism and its effect on earnings management. *Jurnal Dinamika Akuntansi Dan Bisnis*, 9(2), 135-148. <https://doi.org/10.24815/jdab.v9i2.24947>
- Cid-Aranda, C., & López-Iturriaga, F. (2023). C.E.O. characteristics and corporate risk-taking: Evidence from emerging markets. *Economic Research-Ekonomska Istraživanja*, 36(2), 2175008. <https://doi.org/10.1080/1331677X.2023.2175008>
- Custódio, C., Ferreira, M. A., & Matos, P. (2019). Do general managerial skills spur innovation? *Management Science*, 65(2), 459–476. <https://doi.org/10.1287/mnsc.2017.2828>
- Deng, J. (2025). Exploring the heterogeneous effects of environmental, social, and governance performance on idiosyncratic risk: Do political ties matter? *Humanities and Social Sciences Communications*, 12(1), 422. <https://doi.org/10.1057/s41599-025-04755-6>
- Dissanayake, S., Weerasinghe, A., & Dissanayake, D. (2025). Engineer CEOs and corporate risk taking. *Journal of Accounting Literature*, 47(5), 249-269. <https://doi.org/10.1108/JAL-06-2024-0132>
- Dunn, S. L., & Jensen, J. D. (2021). Risk in leadership and management: Risk-seeking vs. *Risk averse*. *International Journal of Business Administration*, 12(2), 64-75. <https://doi.org/10.5430/ijba.v12n2p64>
- Dyreng, S. D., Hanlon, M., & Maydew, E. L. (2010). The Effects of executives on corporate tax avoidance. *The Accounting Review*, 85(4), 1163-1189. <https://doi.org/10.2308/accr.2010.85.4.1163>
- Ferdous, L. T., Atawnah, N., Liu, J., & Zhou, Y. (2025). Chief financial officer power and conditional accounting conservatism. *Review of Quantitative Finance and Accounting*, 66(1), 155-200. <https://doi.org/10.1007/s11156-025-01396-3>
- Florackis, C., & Sainani, S. (2021). Can CFOs resist undue pressure from CEOs to manage earnings? *Journal of Corporate Finance*, 67, 101859. <https://doi.org/10.1016/j.jcorpfin.2020.101859>
- Gul, F. A., Srinidhi, B., & Ng, A. C. (2011). Does board gender diversity improve the informativeness of stock prices? *Journal of Accounting and Economics*, 51(3), 314–338. <https://doi.org/10.1016/j.jacceco.2011.01.005>
- Hambrick, D. C. (2007). Upper echelons theory: An update. *Academy of Management Review*, 32(2), 334-343. <https://doi.org/10.5465/amr.2007.24345254>
- Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, 9(2), 193-206. <https://doi.org/10.2307/258434>
- Ivone, I., Susanti, S., Tang, S., & Yopie, S. (2026). The influence of green CEO and family CEO on water disclosure in Indonesia. *Studi Akuntansi, Keuangan, Dan Manajemen*, 5(4), 361-377. <https://doi.org/10.35912/sakman.v5i4.6233>
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
- Kang, D., Xu, J., Tong, Q., & Li, J. (2025). CEO financial background and corporate financialization. *Finance Research Letters*, 71, 106382. <https://doi.org/10.1016/j.frl.2024.106382>
- Karavitis, P., Kazakis, P., & Xu, T. (2022). CFO working experience and tax avoidance. *Forthcoming, Journal of International Accounting, Auditing and Taxation*. <https://doi.org/10.2139/ssrn.4286164>
- King, T., Srivastav, A., & Williams, J. (2016). What's in an education? Implications of CEO education for bank performance. *Journal of Corporate Finance*, 37, 287–308. <https://doi.org/10.1016/j.jcorpfin.2016.01.003>
- Kristianti, I., & Herawaty, V. (2023). Analisis pengaruh CEO turnover, opini audit dan pertumbuhan perusahaan terhadap auditor switching dengan financial distress sebagai variabel moderasi. *Akuntansi dan Auditing Reviu*, 1(2), 143-152. <https://doi.org/10.35912/gaar.v1i2.2167>
- Li, H., & Farah, P. (2021). CEO turnover and equity volatility. *Review of Economics and Finance*, 19, 17–28. <https://doi.org/10.55365/1923.x2021.19.03>

- Li, X., Goodell, J. W., Liao, J., Yao, S., & Liu, X. (2022). Does executive gender diversity supply accounting conservatism in traditional societies? Evidence from CEO-CFO combinations in China. *Finance Research Letters*, 48, 102946. <https://doi.org/10.1016/j.frl.2022.102946>
- Loukil, N., & Yousfi, O. (2023). Do CEO's attributes increase risk-taking? Empirical evidence from France. *Asia-Pacific Journal of Business Administration*, 15(5), 721-745. <https://doi.org/10.1108/APJBA-07-2021-0330>
- MacKinnon, J. G., Nielsen, M. Ø., & Webb, M. D. (2023). Cluster-robust inference: A guide to empirical practice. *Journal of Econometrics*, 232(2), 272-299. <https://doi.org/10.1016/j.jeconom.2022.04.001>
- Marlinah, A., & Itsnani, N. L. (2026). *Who shapes tax policy? Disentangling CEO versus CFO ability in explaining corporate tax avoidance* (Report No. 22).
- Menla Ali, F., Wu, Y., & Zhang, X. (2024). ESG disclosure, CEO power and incentives and corporate risk-taking. *European Financial Management*, 30(2), 961-1011. <https://doi.org/10.1111/eufm.12447>
- Nurmayanti, P., Indrawati, N., & Dp, E. N. (2022). Top management characteristics and earnings management strategies: Evidence from Indonesia. *Jurnal Dinamika Akuntansi Dan Bisnis*, 9(2), 169-188. <https://doi.org/10.24815/jdab.v9i2.25664>
- Pratama, R. D., Junaidi, A., & Yuniarti, R. (2026). Determinants of stock returns with tax Risk as a moderating variable. *Jurnal Akuntansi, Keuangan, Dan Manajemen*, 7(2), 461-482. <https://doi.org/10.35912/jakman.v7i2.6126>
- Qiao, L., Adegbite, E., & Nguyen, T. H. (2022). Chief financial officer overconfidence and stock price crash risk. *International Review of Financial Analysis*, 84, 102364. <https://doi.org/10.1016/j.irfa.2022.102364>
- Sabila, I., Rahmawati, R., Djuminah, D., Dwi Amperawati, E., & Dwianto, A. (2024). The Interplay between board gender diversity, earnings quality, and return volatility: Considering the reputation of corporate awards. *Qubahan Academic Journal*, 4(3), 638-650. <https://doi.org/10.48161/qaj.v4n3a1006>
- Salsabilla, D., Yossi Diantimala, Indayani, & Dinaroe. (2024). Board gender diversity, CEO characteristics, and earning management in the banking sector. *Jurnal Akuntansi*, 28(2), 340-356. <https://doi.org/10.24912/ja.v28i2.2084>
- Sembiring, H., & Nainggolan, R. (2026). Deconstructing the risk and return profile of penny stocks: Evidence from the market model. *Reviu Akuntansi, Manajemen, Dan Bisnis*, 5(3), 71-82. <https://doi.org/10.35912/rambis.v5i3.6544>
- Valls Martínez, M. D. C., & Soriano Román, R. (2022). Women in monitoring positions and market risk. *Are the stocks of companies with gender diverse boards less volatile? Frontiers in Psychology*, 13, 1049175. <https://doi.org/10.3389/fpsyg.2022.1049175>
- Wang, B., Wang, Z., Wen, J., & Zhang, X. T. (2021). Executive gender and firm environmental management: Evidence from CFO transitions. *Sustainability*, 13(7), 3653. <https://doi.org/10.3390/sul3073653>
- Yan, J., Gu, X., & Xie, Z. (2024). CEO cultural and financial backgrounds and corporate innovation. *Finance Research Letters*, 66, 105670. <https://doi.org/10.1016/j.frl.2024.105670>
- Yang, C., Xia, X., Li, Y., Zhao, Y., & Liu, S. (2021). CEO financial career and corporate innovation: Evidence from China. *International Review of Economics & Finance*, 74, 81-102. <https://doi.org/10.1016/j.iref.2021.01.018>
- Yeoh, S.-B., & Hooy, C.-W. (2021). Foreign experience of CEOs and managerial risk taking. *Malaysian Journal of Economic Studies*, 58(2), 239-265. <https://doi.org/10.22452/MJES.vol58no2.4>
- Zhang, J., Xue, C., & Zhang, J. (2023). The impact of CEO educational background on corporate risk-taking in China. *Journal of Risk and Financial Management*, 16(1), 9. <https://doi.org/10.3390/jrfm16010009>

Zhao, Y., Xiong, J., Wang, J., & Ye, N. (2022). CFO gender, corporate risk-taking, and information disclosure violations. *Frontiers in Psychology, 13*, 902472. <https://doi.org/10.3389/fpsyg.2022.902472>