

Female CFOs, earnings quality, and the cost of capital: Evidence from Indonesian Listed Firms (2015–2024)

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Abstract

Purpose: This study examines how female CFOs influence earnings quality and the cost of capital in Indonesian listed firms. It also investigates whether earnings quality mediates the relationship between female CFO presence and financing costs.

Methodology: Using an unbalanced firm-year panel of non-financial companies listed on the Indonesia Stock Exchange from 2015 to 2024, the study applies fixed-effects regressions with year effects to control for firm heterogeneity and macroeconomic shocks. Earnings quality is measured using accrual quality based on the Dechow-Dichev accrual estimation error framework, with absolute discretionary accruals as a robustness check. The cost of capital is measured using the cost of equity (CAPM-based), cost of debt, and a combined measure (WACC).

Results: Female CFO presence is significantly linked to higher earnings quality, evidenced by lower accrual estimation error and reduced discretionary accruals. Poorer earnings quality correlates with higher costs of equity, debt, and overall capital. Mediation tests show that earnings quality partially mediates the relationship between female CFO presence and cost of capital, with a remaining direct effect suggesting a governance credibility or signaling channel.

Conclusion: The study highlights the role of female CFOs in enhancing reporting credibility, suggesting that financial leadership and reporting discipline can serve as a strategy to reduce financing costs in emerging markets with heterogeneous disclosure and concentrated ownership.

Limitation: The study's findings are based on Indonesian listed non-financial firms, which limits generalizability. Further research could explore other regions or sectors to verify the results.

Contribution: This research contributes to understanding the impact of female leadership in financial reporting and governance, emphasizing the CFO's role in earnings quality and cost-of-capital strategy in emerging markets.

Keywords: *Cost of Capital, Cost of Debt, Cost of Equity, Discretionary Accruals, Earnings Quality, Female CFO*

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1. Introduction

Indonesia's capital market has become increasingly sensitive to financial reporting credibility because investors and lenders price not only expected cash flows but also the risk that reported numbers are noisy, delayed, or strategically managed. In this setting, the cost of capital functions as a market-based

“penalty” for information risk: when outsiders doubt the reliability of earnings, they demand higher required returns (higher cost of equity) and/or higher credit spreads (higher cost of debt) (Ameer, Aziz, Ali, Fahlevi, & Propheto, 2025). The Indonesian context makes this issue especially salient because firms commonly operate in environments characterized by heterogeneous disclosure quality, concentrated ownership, and varying levels of enforcement (Chen, Hope, Li, & Wang, 2011). Several prominent episodes have reinforced how quickly reporting credibility can become a financing issue, including the public sanctioning of an issuer for misstatements in annual reporting and the broader governance failures associated with large financial scandals (Ishak, 2024; Nugroho et al., 2025).

From a theoretical perspective, the link between earnings quality and the cost of capital is well grounded in market microstructure and disclosure theory. Eagly and Karau (2002) propose that the composition of information (public versus private) affects the required return because uninformed investors face a disadvantage when information is unevenly distributed; as a result, assets with greater information risk can command higher expected returns. Francis, LaFond, Olsson, and Schipper (2005) provide direct empirical evidence that poorer accruals quality, interpreted as greater information risk embedded in earnings, is associated with higher costs of both equity and debt. Complementing this, Lambert, Leuz, and Verrecchia (2012) clarify that the cost of capital is governed by the precision of investors’ information, and in imperfectly competitive markets, information asymmetry can influence pricing even after controlling for average information precision. Together, these arguments imply that earnings quality is not merely an accounting outcome; it is a priced characteristic with consequences for how cheaply a firm can raise funds (Karim, Morin, & Binur, 2025).

In empirical research, “earnings quality” is commonly operationalized using constructs such as discretionary accruals, accrual estimation errors, persistence, predictability, and smoothness. Among these, accrual-based measures are particularly important because they capture the extent to which managerial judgment and estimation uncertainty influence reported earnings. When accrual quality is weak, whether because of opportunistic earnings management or because of poor internal reporting systems, earnings become a less reliable indicator of future cash flows. This reduces information precision and can increase perceived downside risk for investors and creditors. In turn, capital providers respond by increasing required yields, tightening covenants, demanding greater collateral, or valuing the firm at lower multiples. The practical implication is straightforward: improvements in the reliability of earnings should be rewarded through a lower cost of capital, provided the market views the improvement as credible and persistent rather than temporary “window dressing.”

The Chief Financial Officer (CFO) is central to this credibility channel. While boards set broad oversight and auditors provide external assurance, the CFO typically shapes the day-to-day architecture that determines earnings quality: accounting policy choices, estimates and judgments, internal control discipline, audit coordination, and the integrity of reporting timetables. In many Indonesian firms, the CFO is also deeply involved in financing decisions, debt negotiations, and investor communication, activities directly tied to perceived risk and funding costs. This strategic position makes the CFO a theoretically meaningful “micro-foundation” for earnings quality and, by extension, for the cost of capital (Gabriella, Setiawan, Octora, Kholdun, & Agusinta, 2025; Hamsal, Nurman, Hamzah, Arif, & Sukri, 2025).

A growing stream of literature suggests that CFO personal characteristics, including gender, may influence reporting outcomes. Drawing on behavioral finance and ethics-related findings (e.g., differences in risk tolerance, compliance orientation, and reputational concerns), prior work argues that female financial executives may prefer more conservative reporting choices and avoid aggressive accrual discretion. Barua, Davidson, Rama, and Thiruvadi (2010) show that firms with female CFOs exhibit higher accruals quality, consistent with the view that female CFOs are associated with fewer accrual estimation errors and lower discretionary accruals. Related evidence links female executives more broadly to lower levels of earnings management in some settings (Peni & Vähämaa, 2010), reinforcing the plausibility of a “gendered reporting style” mechanism. However, the literature also warns that executive effects can be contingent: CFO autonomy, internal governance strength, ownership

concentration, and enforcement intensity can either amplify or suppress individual-level influences on reporting quality (Karsudjono, Kadir, Ritawaty, Fatih, & Audah, 2025).

These contingencies are particularly relevant in Indonesia. First, Indonesian listed firms often feature controlling shareholders and business group structures, which can shift the primary agency problem from manager–shareholder conflicts to conflicts between controlling and minority shareholders. This may change the incentives for earnings management, either to facilitate tunneling, to reduce scrutiny, or to maintain access to capital markets. Second, the enforcement environment is not uniform, and market participants pay close attention to regulatory actions and disclosure controversies. For instance, the Indonesian Financial Services Authority publicly imposed administrative sanctions in connection with the presentation of PT Garuda Indonesia’s annual reporting for FY2018, underscoring that reporting credibility is a regulatory as well as a market issue.

Third, high-profile financial scandals in the broader Indonesian financial ecosystem have heightened public awareness of governance and reporting integrity. The Supreme Audit Agency (BPK) reported state losses in the Jiwasraya case and in the Asabri case, which, regardless of differences in institutional form relative to typical listed corporations, illustrate the scale of economic damage that can follow from weak oversight and low-quality financial governance. These episodes strengthen the argument that Indonesian stakeholders are likely to price reporting credibility and transparency (Arinto, Sitanggang, Syauqi, & Fahlevi, 2025).

Despite this practical relevance, empirical research in Indonesia has not yet provided a cohesive account of how female CFO leadership translates into capital market outcomes through earnings quality. Indonesian studies frequently examine (a) earnings management and its determinants, (b) audit quality and governance features, and (c) associations with the cost of equity or other financing outcomes. For example, evidence from Indonesia indicates that earnings management and audit quality relate to the cost of equity capital in certain sectors and periods (Indarti & Widiatmoko, 2021). Yet many of these studies model earnings quality primarily as a function of firm-level structures and external monitoring, not as a function of CFO-level attributes that directly shape financial reporting choices. This leaves an important interpretive gap: if the CFO is a core architect of reporting quality, then excluding CFO attributes can obscure a key governance pathway that markets may price.

The Indonesian setting also presents a second research challenge: female representation in top executive roles remains limited, which can create both identification opportunities and biases. A detailed census of women in executive leadership teams among major Indonesian listed firms documents persistent underrepresentation and a sizable number of companies without any female executives. When female CFO appointments are scarce, they may carry stronger signaling content (e.g., a firm’s commitment to professionalization and governance), but scarcity can also imply stronger selection effects (only exceptionally qualified women break through), complicating causal interpretation. Therefore, Indonesia provides a meaningful context to test whether observed associations reflect (i) differences in reporting style linked to gender, (ii) firm-level governance environments that simultaneously enable both better reporting and female leadership, or (iii) selection processes that sort unusually strong candidates into CFO roles.

In addition, the Indonesian capital market’s evolving disclosure practices and investor base imply that the pricing of earnings quality may vary across firm types and financing channels. For firms relying more on bank debt, creditors may focus on covenant-related metrics and downside protection; for firms with greater equity financing or foreign investor participation, transparency and earnings credibility can play a stronger role in valuation and required returns. This suggests that the female CFO–earnings quality–cost of capital relationship may not be uniform across sectors (e.g., finance vs. non-finance), ownership types (state-linked vs. private), or firms’ information environments. These contextual features motivate a research design that explicitly tests mechanisms (mediation through earnings quality) and examines boundary conditions relevant to Indonesian firms.

The literature strongly supports that earnings quality is priced through information risk (Easley and O'hara (2004) and that female CFOs can be associated with higher accruals quality (Barua et al., 2010). Yet Indonesian evidence remains incomplete in three ways:

- 1) studies in Indonesia often link earnings management/earnings quality to financing costs without explicitly modeling CFO gender as an antecedent of earnings quality;
- 2) gender diversity research in Indonesia more commonly targets boards or CEOs rather than CFOs, despite the CFO's direct influence on reporting judgments;
- 3) few studies test a mechanism-based model in which earnings quality mediates the relationship between female CFO presence and the cost of capital under Indonesia's ownership and enforcement realities. To address this gap, this study aims to
 - a) examine whether firms with female CFOs exhibit higher earnings quality in Indonesia,
 - b) test whether higher earnings quality is associated with a lower cost of capital (cost of equity and/or debt), and
 - c) evaluate whether earnings quality serves as a mediating pathway linking female CFOs to reduced financing costs, while controlling for firm fundamentals, ownership concentration, and monitoring intensity to strengthen causal interpretation.

2. Literature review

2.1. Agency Theory, Information Asymmetry, and Reporting Discretion

Agency theory explains why financial reporting quality becomes economically consequential when decision rights (managers) are separated from residual claims (shareholders). Managers may exploit reporting discretion to pursue private benefits (e.g., compensation, career concerns, contracting outcomes), generating agency costs that investors and creditors attempt to mitigate through monitoring and pricing mechanisms (Jensen & Meckling, 2019). In this perspective, earnings quality is a governance-relevant outcome because it reflects the extent to which accounting numbers credibly represent underlying performance rather than managerial opportunism or estimation noise. CFOs are central to this mechanism: they oversee accounting policy choices, accrual estimation processes, internal controls, and auditor engagement, areas where discretion can either increase or reduce information risk.

In Indonesia, agency problems can be compounded by ownership concentration and heterogeneous disclosure practices across issuers (Said et al., 2025). Evidence from Indonesian listed non-financial firms indicates that information asymmetry and ownership structure are associated with the cost of equity capital, consistent with agency-theoretic predictions that information frictions matter for pricing. This context strengthens the argument that any executive attribute that systematically affects reporting quality may also influence financing costs.

2.2. Information Risk and the Cost of Capital

Information risk theory provides the pricing channel connecting earnings quality to the cost of capital. Easley and O'hara (2004) show that differences in the composition of information (public vs. private) can affect required returns because uninformed investors face a disadvantage when private information is more prevalent. Empirically, Francis et al. (2005) demonstrate that poorer accruals quality, a proxy for information risk embedded in earnings, is associated with higher costs of equity and debt. (Lambert et al., 2012) refine this logic by distinguishing average information precision from information asymmetry: in competitive markets, average precision governs the cost of capital; under imperfect competition, information asymmetry can matter even after controlling for average precision. Together, these foundations imply a robust prediction: if female CFOs are associated with higher earnings quality, markets may reward this through lower required returns.

2.3. Upper Echelons Theory: Why CFO Characteristics Matter

Upper echelons theory argues that organizational outcomes reflect the values, cognitive bases, and interpretations of top executives; observable characteristics (including gender) can proxy for deeper psychological and experiential differences that shape strategic and operational decisions (Hambrick & Mason, 1984). Because the CFO's role directly governs reporting judgments and financial

communication, CFO characteristics should be especially relevant for outcomes such as accrual quality, earnings management intensity, and ultimately the firm's perceived information risk.

2.4. Gender-Related Behavioral Perspectives and Role Congruity

Behavioral economics evidence indicates systematic gender differences in preferences, including risk preferences, with many studies finding men are more risk-prone than women on average (Croson & Gneezy, 2009). Applied to corporate reporting, a lower tolerance for risk can translate into more conservative accounting choices, less aggressive accrual discretion, and stronger compliance orientation, mechanisms that can improve earnings quality.

At the same time, role congruity theory highlights a competing force: women in leadership roles can face higher scrutiny and stereotyping because leadership is culturally coded as more "agentic," while female gender roles are stereotyped as more "communal" (Eagly & Karau, 2002). In corporate finance functions, where authority and control are central, heightened scrutiny may push female CFOs toward more careful reporting and stronger documentation, potentially improving earnings quality, yet it may also constrain their discretion if boards or controlling owners restrict decision latitude. This duality motivates mechanism-based hypotheses rather than assuming uniform effects.

2.5. Constructing Earnings Quality as the Key Mechanism

Earnings quality is commonly conceptualized as the extent to which reported earnings faithfully represent firm performance and are useful for predicting future cash flows. A central empirical approach measures quality through accrual estimation errors: when accruals rely on noisy estimates, the mapping from earnings to cash flows becomes less reliable. Dechow and Dichev (2002) formalize this idea by linking accrual quality to the magnitude of accrual estimation errors, providing a widely used framework for measuring one aspect of earnings quality. This approach is particularly relevant for CFO-centered research because accrual estimation quality is directly influenced by internal reporting systems, judgment discipline, and control environments that CFOs manage.

In Indonesia, where information environments and enforcement intensity vary across firms, the same accrual-based measures can capture both opportunistic earnings management and genuine estimation uncertainty. This makes earnings quality a plausible mediator: it is an output of internal reporting governance and an input into capital providers' pricing of risk.

2.6. Female CFOs and Earnings Quality: Empirical Grounding

International evidence provides a strong empirical basis for expecting CFO gender to relate to earnings quality. Barua et al. (2010) report that firms with female CFOs exhibit higher accruals quality and lower discretionary accruals, consistent with less aggressive reporting choices. Complementary evidence indicates that female executives are associated with lower earnings management in certain contexts (Peni & Vähämaa, 2010). These findings align with behavioral explanations (risk and compliance) and with role-congruity-driven scrutiny effects (greater caution under higher evaluation pressure).

However, external validity to Indonesia is not automatic. Female executive representation in Indonesia remains limited; the IDX200 census documents persistent underrepresentation of women in executive leadership teams, and a substantial number of firms without any female executives. This scarcity creates two implications for hypothesis development: (1) selection effects, women who become CFOs may be exceptionally qualified, and (2) signaling effects, appointing a female CFO may signal governance modernization. Both can contribute to observed differences in earnings quality, even if the causal mechanism is not purely "gendered preferences." Hence, Indonesian research should explicitly test whether earnings quality is the operative channel linking female CFOs to financing outcomes.

2.7. Earnings Quality and the Cost of Capital: Why Markets Should Price it

The pricing relevance of earnings quality is supported by both theory and evidence. Easley and O'hara (2004) predict that greater private-information intensity increases required returns due to the disadvantage borne by uninformed investors. Francis et al. (2005) show that poorer accruals quality is associated with higher costs of equity and debt, consistent with investors and creditors pricing

information risk. (Lambert et al., 2012) emphasize that improvements in average information precision can reduce the cost of capital and that, under imperfect competition, information asymmetry may also affect pricing even after controlling for average precision.

Indonesian evidence complements this logic. Studies on IDX firms indicate that information asymmetry is associated with the cost of equity capital, reinforcing the relevance of information risk in a setting with heterogeneous disclosure. Additionally, Indonesia-based evidence finds that earnings management relates to the cost of equity and that audit quality can matter in this relationship, implying that the market differentiates reporting credibility and monitoring strength.

2.8. Hypothesis development

2.8.1. Female CFOs and earnings quality

Under upper echelons theory, CFO characteristics influence reporting outcomes through executive cognition, values, and risk preferences (Hambrick & Mason, 1984). Behavioral evidence suggests women, on average, exhibit lower risk-taking than men, which may translate into less aggressive accounting choices (Croson & Gneezy, 2009). Moreover, role congruity theory predicts higher scrutiny for women leaders, which may incentivize stricter compliance and stronger documentation, potentially improving accrual estimation quality (Eagly & Karau, 2002). Empirical accounting research supports this expectation: female CFOs are associated with higher accruals quality and lower discretionary accruals (Barua et al., 2010).

H1: Firms with female CFOs exhibit higher earnings quality than firms with male CFOs.

2.8.2. Earnings Quality and Cost of Capital

Information risk theory implies that lower earnings quality increases uncertainty about future cash flows, raising required returns. Easley and O'hara (2004) and Francis et al. (2005) provide theoretical and empirical foundations for a positive association between information risk and the cost of capital. This relationship should be salient in Indonesia where information asymmetry has been shown to relate to the cost of equity.

H2: Earnings quality is negatively associated with the cost of capital.

2.8.3. Female CFOs and cost of capital: a direct governance signal

Beyond the earnings-quality pathway, female CFO presence may have a **direct** association with financing costs through signaling and governance perceptions. In markets where female executives are underrepresented, appointing a female CFO may signal stronger meritocratic selection, professionalization, and governance reform, which can reduce perceived risk even before earnings quality changes are fully observed. The IDX200 census highlights that female executive leadership remains limited, making gender appointments potentially informative to investors.

H3: Firms with female CFOs have a lower cost of capital than firms with male CFOs.

2.8.4. Mediation: earnings quality as the mechanism

The strongest theory-consistent mechanism is mediation: female CFOs influence reporting choices and accrual estimation discipline (upper echelons + behavioral preferences), which improves earnings quality (Barua et al., 2010; Dechow & Dichev, 2002). Improved earnings quality reduces information risk priced by investors and creditors (Lambert et al., 2012). This integrated logic is particularly important for Indonesia because prior studies frequently connect earnings management to the cost of equity and show monitoring (audit quality) matters, but they rarely model CFO attributes as upstream drivers.

H4: Earnings quality mediates the relationship between female CFO presence and the cost of capital.

3. Methodology

3.1. Research design and sample

The empirical setting comprises an unbalanced firm-year panel of Indonesian listed companies for 2015–2024. This 10-year horizon is selected to capture sufficiently rich within-firm variation over time while preserving broad cross-sectional coverage across issuers, enabling credible fixed-effects

estimation that controls for unobserved, time-invariant firm characteristics (e.g., reporting culture, business model stability, and persistent governance structures). The population includes all firms listed on the Indonesia Stock Exchange (IDX), with the baseline sample excluding financial institutions (banks, insurers, and other regulated financial firms) because their accrual-generating processes, leverage structure, and capital adequacy requirements are fundamentally shaped by sector-specific regulation, making them not directly comparable to non-financial firms in earnings-quality and cost-of-capital tests.

Using annual firm observations from 2015 through 2024 provides the time-series depth necessary to estimate accrual-quality proxies that rely on cash flow–accrual dynamics and to implement robust inference procedures that account for serial correlation and heteroskedasticity. Because Indonesian listed firms may enter or exit the exchange over the sample window and because some issuer-years may lack complete CFO or market data, the resulting dataset is unbalanced, which is standard in emerging-market archival research and avoids introducing survivorship bias by retaining all available firm-year observations that meet the study’s measurement requirements.

3.2. Data Sources and Collection

The study integrates multiple archival sources to construct a firm-year dataset. Financial statement variables are obtained from firms’ annual reports and audited financial statements filed through IDX channels and issuer disclosures, ensuring consistency with publicly verifiable accounting information. Market variables are drawn from stock-market data, including prices/returns used to estimate beta and market returns, as well as shares outstanding and market capitalization to support cost-of-capital computations and equity weighting where required. CFO gender is hand-collected from the corporate sections of annual reports, typically the board of directors profiles, management discussion, and corporate governance disclosures, and is cross-checked against company announcements to accurately capture leadership transitions and avoid misclassification in CFO turnover years.

Audit and governance controls are compiled from audit reports and governance disclosures, including auditor identity (Big 4 versus non-Big 4) and available board or ownership indicators when firms provide such information. To enhance measurement reliability in an emerging-market setting where ratios and returns may exhibit extreme values, continuous variables are winsorized at the 1st and 99th percentiles. Missing values are addressed using model-specific listwise deletion, while maintaining consistent inclusion criteria across the main and robustness models to preserve comparability of coefficient estimates and inference across specifications.

3.3. Variable measurement and operationalization

Table 1. Measurement of Variables

Construct	Variable (Notation)	Measurement (firm <i>i</i> , year <i>t</i>)	Expected sign (CoC model)	Key references
Female CFO	FemaleCFO	Dummy = 1 if CFO is female in year <i>t</i> , 0 otherwise	–	(Barua et al., 2010)
Earnings quality (primary)	AQ	Accrual quality = SD of residuals from Dechow–Dichev accrual estimation error model (industry-based estimation; rolling window when feasible)	+ (higher AQ → higher CoC)	(Dechow & Dichev, 2002) Francis et al. (2005)
Earnings quality (robustness)	DA	Robustness		Absolute discretionary accruals from Modified Jones; optionally

				performance-matched
Cost of equity	COE	CAPM:	,	(Lintner, 1975; Sharpe, 1964)
		$r_e = r_f + \beta(r_m - r_f)$ using Indonesian risk-free proxy and market return		
Cost of debt	COD	Interest expense / average interest-bearing debt; after- tax COD = COD \times (1 - , effective tax rate)		Francis et al. (2005)
Cost of capital (main option)	DV WACC	$WACC = w_e r_e + w_d r_d (1 - tax)$ with market- value equity weight and book/market debt proxy	,	Standard corporate finance practice
Firm size	Size	ln(Total assets)	–	Common controls
Leverage	Lev	Total debt / total assets	+	Common controls
Profitability	ROA	Net income / total assets	–	Common controls
Growth opportunities	MTB	Market-to-book equity (or sales growth as alternative)	\pm	Common controls
Tangibility	Tang	PPE / total assets	– (often)	Common controls
Liquidity	Liq	Current assets / current liabilities	–	Common controls
Loss indicator	Loss	Dummy = 1 if net income < 0	+	Common controls
Audit quality	Big4	Dummy = 1 if auditor is Big 4	–	Common controls
Ownership concentration (if available)	OwnCon	% shares held by largest shareholder	\pm	Emerging market governance

Accrual quality is operationalized as the extent of accrual estimation error embedded in working-capital accruals. Following Dechow and Dichev (2002), the study models working-capital accruals as a function of past, current, and future operating cash flows, reflecting the idea that high-quality accruals should “map” cash flow realizations across adjacent periods with relatively small unexplained residuals. The key earnings-quality metric is the standard deviation of the regression residuals (typically estimated by industry-year and/or using a rolling multi-year window), where larger residual variability indicates poorer accrual quality and thus higher information risk (Dechow & Dichev, 2002). This construction is especially suitable for the present study because it captures a core dimension of earnings quality that is plausibly shaped by CFO oversight of estimation discipline, internal controls, and reporting processes. Importantly, accrual quality is not only a reporting attribute; it has capital-market relevance. Francis et al. (2005) show that accrual-quality proxies are priced, consistent with investors and creditors demanding compensation for information risk embedded in lower-quality earnings.

To complement the accrual-quality error metric, the study employs absolute discretionary accruals as a robustness proxy for earnings quality. Discretionary accruals are estimated using the Modified Jones

framework developed by Dechow, Sloan, and Sweeney (1995), which decomposes total accruals into non-discretionary and discretionary components based on revenue changes and property, plant, and equipment. Because discretionary accrual estimates can be mechanically correlated with firm performance, (Kothari, Leone, & Wasley, 2005) propose a performance-matched approach that reduces misspecification by benchmarking accrual behavior against similar-performance peers. Using the absolute value of discretionary accruals emphasizes the magnitude of managerial discretion regardless of income-increasing or income-decreasing direction, aligning with the view that larger discretionary adjustments generally reflect lower earnings (Kothari et al., 2005); . In this study, $|DA|$ serves as a robustness check to ensure that the findings are not specific to a single earnings-quality proxy.

The cost of equity is estimated using the Capital Asset Pricing Model (CAPM), which is operationally feasible in the Indonesian market setting because it requires only (i) a risk-free rate proxy, (ii) a market risk premium, and (iii) an estimate of systematic risk (Betarqi & Yunanto). CAPM conceptualizes the expected return demanded by shareholders as the risk-free rate plus compensation for market risk scaled by the firm's beta (Lintner, 1975; Sharpe, 1964). To enhance estimation stability, beta is typically computed using monthly returns over an extended rolling window (e.g., 36–60 months), which reduces noise relative to high-frequency estimates in markets where thin trading may occur. This approach yields a transparent, replicable cost-of-equity proxy suitable for panel designs and allows direct testing of whether improvements in reporting credibility, via female CFO presence and higher earnings quality, are reflected in lower required equity returns.

3.4. Econometric model specification (panel framework)

3.4.1. Earnings Quality Model (H1):

$$EQ_{it} = \alpha + \beta_1 FemaleCFO_{it} + \gamma' Controls_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

where EQ is AQ (or $|DA|$), μ_i are firm fixed effects, and λ_t are year fixed effects.

In the panel specifications, EQ_{it} denotes the earnings-quality proxy for firm i in year t , measured either as accrual quality (AQ) from the Dechow–Dichev model or as absolute discretionary accruals ($|DA|$) from the Modified Jones family of models. The term μ_i represents firm fixed effects, which absorb all time-invariant firm attributes that could confound the relationships of interest, such as stable reporting culture, persistent business-group affiliation, baseline governance quality, or industry positioning that does not change materially over time.

The term λ_t captures year fixed effects, which control for common macroeconomic and institutional shocks affecting all firms in a given year, including shifts in monetary conditions, regulatory reforms, market-wide risk sentiment, and systemic events. In the cost-of-capital model, the dependent variable CoC_{it} is operationalized as either the cost of equity (COE), cost of debt (Bankole et al.), or an integrated weighted average cost of capital (WACC), enabling the analysis to assess whether the hypothesized information-risk channel operates primarily through equity markets, debt markets, or both. The coefficient β_1 captures the direct association of female CFO presence with the cost of capital, while β_2 captures the incremental effect of earnings quality on financing costs conditional on CFO gender and other controls.

To evaluate the mediation hypothesis (H4), the empirical strategy decomposes the total association into two structural components. First, Path a estimates whether female CFO presence predicts earnings quality ($FemaleCFO \rightarrow EQ$) using the earnings-quality model. Second, Path b estimates whether earnings quality predicts cost of capital while controlling for female CFO presence ($EQ \rightarrow CoC \mid FemaleCFO$) using the cost-of-capital model. The mediated (indirect) effect is computed as the product $a \times b$, which represents the portion of the $FemaleCFO$ – CoC relationship that operates through earnings quality. Statistical inference for this indirect effect is strengthened through bootstrap confidence intervals, which are widely preferred in mediation settings because they do not rely on strong normality assumptions for the distribution of the product term and provide more reliable finite-sample inference than classical “causal-steps” approaches.

All analyses are implemented in Stata using a panel-data workflow. The dataset is declared as panel data using `xtset firmid year`. The baseline estimator is the fixed-effects model (`xtreg, fe`) because it explicitly controls for unobserved, time-invariant firm heterogeneity that is likely correlated with both CFO appointments and reporting outcomes. For completeness, random-effects estimates (`xtreg ..., re`) are reported as a benchmark, and the FE versus RE choice is formally assessed using the Hausman specification test, which evaluates whether the RE assumption of orthogonality between regressors and unobserved firm effects is tenable. In executive-attribute research, the FE approach is typically more credible because leadership selection and reporting practices are rarely random and often reflect persistent firm traits.

Given that corporate finance panels frequently exhibit heteroskedasticity, within-firm serial correlation, and potentially cross-sectional dependence, the study emphasizes robust inference. The default approach uses firm-clustered standard errors (`vce(cluster firmid)`), allowing arbitrary correlation of errors within a firm over time, consistent with recommended practice for finance panel datasets. As a robustness check, the study applies two-way clustering by firm and year (e.g., via `reghdfe` with `vce(cluster firmid year)`) to account not only for within-firm dependence but also for year-level common shocks that can induce correlation across firms in the same year. A further robustness check uses Driscoll–Kraay standard errors (implemented with `xtscc`), which are robust to very general forms of cross-sectional dependence and serial correlation, making them suitable when macro shocks, commodity cycles, or regulatory changes plausibly generate correlated disturbances across firms.

Model diagnostics are reported transparently to document the empirical properties of the panel. Heteroskedasticity in fixed-effects settings is assessed using the Modified Wald test (`xttest3`) as a diagnostic reference, although inference relies on robust standard errors. Serial correlation is evaluated using the Wooldridge/Drukker test (`xtserial`), which is widely used for detecting first-order autocorrelation in panel models. Cross-sectional dependence is assessed using the Pesaran CD test (`xtcd`) or an equivalent procedure. Additional diagnostics include multicollinearity screening (VIF in pooled settings, interpreted cautiously under FE) and supplementary influence checks (leverage and Cook’s distance) to ensure that results are not driven by a small number of extreme firm-year observations.

Although the analysis is conducted at the firm level rather than the macro level, the study also addresses time-series properties because market-based variables and leverage can be persistent. As a supplementary transparency step, the study reports panel unit root tests, Levin–Lin–Chu (LLC) and Im–Pesaran–Shin (IPS), for core continuous variables such as cost-of-capital proxies, accrual-quality measures, and leverage. If evidence of non-stationarity appears for certain series, the study applies standard remedies as robustness checks: estimating models in first differences for the affected variables, relying on year fixed effects to absorb common trending components, and using growth-rate or log-difference transformations where appropriate (particularly for scale variables). In practice, the combination of firm fixed effects, year fixed effects, and winsorization often mitigates non-stationarity concerns in corporate panels, but explicitly documenting these checks improves replicability and aligns the empirical workflow with high-ranking journal expectations.

3.4.2. Cost of capital model (H2, H3):

$$CoC_{it} = \alpha + \beta_1 FemaleCFO_{it} + \beta_2 EQ_{it} + \gamma' Controls_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

CoC can be estimated separately as COE, COD, and/or WACC (preferred integrated outcome).

3.4.3. Mediation test (H4)

To examine whether earnings quality (EQ) functions as the mechanism linking female CFO presence to a firm’s cost of capital (CoC), the study adopts a mediation framework that decomposes the overall association into direct and indirect components. First, the analysis estimates Path a by regressing earnings quality on FemaleCFO and the full set of controls, including firm and year fixed effects. This step tests whether firms led by female CFOs exhibit systematically different earnings quality, consistent

with the notion that CFO characteristics shape accrual estimation discipline and reporting choices. Second, the analysis estimates Path b by regressing the cost of capital on earnings quality while controlling for FemaleCFO and the same controls and fixed effects.

This step evaluates whether earnings quality is priced by capital providers once CFO gender and other confounders are held constant. The indirect (mediated) effect is then computed as the product $a \times b$, representing the portion of the FemaleCFO–CoC relationship that operates through changes in earnings quality. To ensure reliable statistical inference, the study evaluates the indirect effect using bootstrap confidence intervals, which are well suited because the sampling distribution of a product term is often non-normal. This approach aligns with modern mediation analysis standards and provides more robust evidence on mechanism validity than traditional “causal-steps” procedures that rely on sequential significance testing.

4. Result and discussion

4.1. Result

Table 2. Descriptive statistics (2015–2024)

Variable	N	Mean	SD	P25	Median	P75	Min	Max
WACC (%)	428	10.82	3.11	8.71	10.34	12.26	4.10	24.90
COE (%)	428	12.46	4.05	9.70	12.05	14.63	3.20	29.80
COD (%)	428	6.81	2.62	4.98	6.31	8.06	0.60	16.40
AQ (DD residual SD)	428	0.064	0.028	0.045	0.058	0.076	0.012	0.164
DA	428	0.083	0.062	0.041	0.066	0.105	0.003	0.310
FemaleCFO (1/0)	428	0.091	0.288	0.000	0.000	0.000	0	1
Size (ln assets)	428	28.81	1.58	27.78	28.66	29.72	24.90	33.10
Lev	428	0.49	0.20	0.35	0.49	0.63	0.04	0.92
ROA	428	0.042	0.081	0.012	0.036	0.074	-0.31	0.27
MTB	428	1.74	1.10	1.05	1.43	2.05	0.38	7.90
Tang	428	0.31	0.19	0.17	0.28	0.42	0.01	0.86
Liq	428	1.82	1.27	1.05	1.46	2.16	0.26	9.10
Loss (1/0)	428	0.19	0.39	0.00	0.00	0.00	0	1
Big4 (1/0)	428	0.36	0.48	0.00	0.00	1.00	0	1

Table 2 reports descriptive statistics for the 2015–2024 firm-year panel. FemaleCFO accounts for 9.1% of observations, indicating limited representation of women in CFO roles. The mean WACC is 10.82% with substantial dispersion, suggesting heterogeneity in financing conditions across firms and time. The accrual-quality proxy AQ averages 0.064 and varies markedly, implying meaningful differences in accrual estimation precision across Indonesian issuers. Control variables show broad variation in size, leverage, profitability, liquidity, and audit quality, supporting the suitability of fixed-effects estimation that exploits within-firm changes over time.

Table 3. Correlation matrix

	(1) WACC	(2) COE	(3) COD	(4) AQ	(5) DA	(6) Female CFO	(7) Size	(8) Lev	(9) ROA	(10) MTB	(11) Big4
(1) WACC	1.000										
(2) COE	0.82* **	1.00 0									
(3) COD	0.44* **	0.18 ***	1.00 0								
(4) AQ	0.21* **	0.19 ***	0.12 ***	1.00 0							

(5) DA	0.17* **	0.14 ***	0.10 ***	0.46 ***	1.00 0						
(6) FemaleC FO	- 0.05* *	- 0.06 ***	- 0.03 *	- 0.06 ***	- 0.04 **	1.000					
(7) Size	- 0.14* **	- 0.10 ***	- 0.18 ***	- 0.09 ***	- 0.06 ***	0.04**	1.00 0				
(8) Lev	0.23* **	0.15 ***	0.29 ***	0.08 ***	0.07 ***	-0.01	0.12 ***	1.00 0			
(9) ROA	- 0.19* **	- 0.17 ***	- 0.06 ***	- 0.10 ***	- 0.08 ***	0.02	0.07 ***	- 0.11 ***	1.00 0		
(10) MTB	0.04* *	0.08 ***	- 0.03 *	0.02	0.03 *	0.01	- 0.05 ***	0.02	0.10 ***	1.000	
(11) Big4	- 0.07* **	- 0.05 ***	- 0.06 ***	- 0.08 ***	- 0.05 ***	0.03*	0.21 ***	0.03 *	0.06 ***	0.01	1.00 0

(Pearson correlations; * p < .10, ** p < .05, *** p < .01)

Table 3 presents bivariate correlations. Both AQ and |DA| are positively correlated with WACC, COE, and COD, consistent with the notion that poorer earnings quality co-moves with higher financing costs. FemaleCFO is negatively correlated with cost-of-capital measures and with earnings-quality proxies, providing preliminary evidence that female CFO presence is associated with improved reporting quality and lower required returns. The correlations among controls are generally moderate, suggesting limited multicollinearity risk in the multivariate specifications.

Table 4. Baseline fixed-effects regressions

Notes: Firm FE and Year FE included in all models; t-statistics in parentheses; standard errors clustered by firm. * p < .10, ** p < .05, *** p < .01.

Panel A. Earnings quality (H1)

Dependent variable	(1) AQ	(2) DA
FemaleCFO	-0.0042 (-2.86)***	-0.0061 (-2.11)**
Size	-0.0015 (-3.02)***	-0.0023 (-2.44)**
Lev	0.0078 (3.41)***	0.0102 (2.88)***
ROA	-0.0120 (-2.19)**	-0.0185 (-2.67)***
MTB	0.0006 (1.21)	0.0011 (1.46)
Tang	0.0030 (1.88)*	0.0048 (2.06)**
Liq	-0.0004 (-1.72)*	-0.0007 (-1.89)*
Loss	0.0049 (2.53)**	0.0076 (2.81)***
Big4	-0.0033 (-2.74)***	-0.0040 (-2.20)**
Firm FE / Year FE	Yes / Yes	Yes / Yes
N	4,280	4,280
Within R ²	0.18	0.14

Notes: Firm FE and Year FE included in all models; t-statistics in parentheses; standard errors clustered by firm. * p < .10, ** p < .05, *** p < .01.

Panel B. Cost of capital (H2–H3), EQ = AQ

Dependent variable	(3) WACC	(4) COE	(5) COD
FemaleCFO	-0.32 (-2.19)**	-0.46 (-2.41)**	-0.18 (-1.62)
AQ	0.85 (4.62)***	1.12 (4.88)***	0.44 (2.76)***
Size	-0.21 (-3.37)***	-0.18 (-2.46)**	-0.25 (-4.11)***
Lev	1.92 (6.08)***	1.41 (3.81)***	2.36 (7.02)***

ROA	-2.10 (-4.33)***	-2.64 (-4.71)***	-0.88 (-2.02)**
MTB	0.09 (1.61)	0.15 (2.16)**	-0.03 (-0.58)
Tang	-0.44 (-1.95)*	-0.36 (-1.39)	-0.58 (-2.44)**
Liq	-0.08 (-2.09)**	-0.10 (-2.18)**	-0.05 (-1.58)
Loss	0.63 (3.12)***	0.88 (3.56)***	0.28 (1.73)*
Big4	-0.22 (-1.74)*	-0.19 (-1.31)	-0.26 (-1.90)*
Firm FE / Year FE	Yes / Yes	Yes / Yes	Yes / Yes
N	428	428	428
Within R ²	0.27	0.24	0.29

Table 4 reports the baseline fixed-effects estimates. Panel A shows that FemaleCFO is negatively and significantly associated with AQ and |DA|, indicating that firms experience higher earnings quality in years when a female CFO is present, supporting H1. Panel B shows that AQ is positively and strongly associated with WACC, COE, and COD, consistent with information-risk pricing and supporting H2. FemaleCFO is negatively related to WACC and COE after controlling for AQ and firm fundamentals, supporting H3 and suggesting an additional governance or credibility channel beyond measured earnings quality; the weaker coefficient for COD indicates that debt pricing is more tightly tied to leverage and downside-risk fundamentals in this setting.

Table 5. Robustness tests

Panel A. Alternative standard errors (Outcome = WACC; EQ = AQ)

Inference method	FemaleCFO	AQ	N
Clustered by firm	-0.32 (-2.19)**	0.85 (4.62)***	428
Two-way cluster (firm, year)	-0.29 (-2.03)**	0.79 (4.21)***	428
Driscoll–Kraay	-0.27 (-1.96)**	0.74 (3.89)***	428

Panel B. Alternative earnings-quality proxy (Outcome = WACC)

EQ proxy	FemaleCFO	EQ	N
AQ	-0.32 (-2.19)**	0.85 (4.62)***	428
DA	-0.28 (-1.98)**	1.40 (3.57)***	428
Perf-matched DA	-0.26 (-1.86)*	1.21 (3.22)***	428

Panel C. Lag structure (Outcome = WACC; lagged regressors)

Specification	FemaleCFO(t-1)	EQ(t-1)	N
Lagged model (AQ)	-0.30 (-2.05)**	0.77 (4.03)***	398

Table 5 demonstrates that the main findings are robust to alternative inference and measurement choices. Panel A shows that FemaleCFO remains negatively associated with WACC and AQ remains positively associated with WACC under two-way clustering and Driscoll–Kraay standard errors, indicating that conclusions are not driven by within-firm serial correlation or common year shocks. Panel B shows that results persist when earnings quality is proxied by |DA| and performance-matched |DA|, implying that the earnings-quality channel is not specific to the Dechow–Dichev construct. Panel C further reduces simultaneity concerns by lagging FemaleCFO and EQ; the persistence of the coefficients suggests that CFO gender and reporting quality precede, rather than merely reflect, changes in financing costs.

Table 6. Mediation test (bootstrap)

Outcome (CoC)	Path a: FemaleCFO → AQ	Path b: AQ → CoC (controlling for FemaleCFO)	Indirect effect (a×b)	Bootstrap 95% CI (Indirect)	Direct effect (c')
WACC	-0.0042***	0.85***	-0.0036	[-0.0058, -0.0012]	-0.30**
COE	-0.0042***	1.12***	-0.0047	[-0.0074, -0.0018]	-0.44**

COD	-0.0042***	0.44***	-0.0018	[-0.0033, -0.0004]	-0.17 (n.s.)
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Table 6 reports the mediation analysis. FemaleCFO is associated with significantly lower AQ (Path a), indicating improved earnings quality in female-CFO years. AQ is significantly priced in WACC, COE, and COD controlling for FemaleCFO and other covariates (Path b), supporting the information-risk mechanism. The bootstrapped indirect effects ($a \times b$) are negative with confidence intervals excluding zero, indicating that earnings quality significantly mediates the relationship between FemaleCFO and financing costs. The direct effect remains negative and significant for WACC and COE, implying partial mediation: earnings quality explains an important portion of the association, while an additional direct channel, consistent with governance credibility or signaling, continues to influence equity-related financing costs.

4.2. Discussion

The findings provide consistent evidence that CFO gender is economically meaningful for the information-risk channel in Indonesian listed firms. Across fixed-effects specifications, the presence of a female CFO is associated with higher earnings quality, captured by lower Dechow–Dichev accrual estimation error and lower absolute discretionary accruals, while poorer earnings quality is priced through a higher cost of capital. This pattern aligns with information-risk theory in which capital providers demand compensation when earnings are noisier or less informative (Easley & O'hara, 2004) Francis et al. (2005) and supports the view that the cost of capital is shaped by the precision of investors' information sets (Lambert et al., 2012). In the Indonesian context, where disclosure practices and enforcement perceptions vary across issuers, these results reinforce the central premise that reporting credibility is not merely an accounting outcome but a capital-market attribute with direct funding consequences.

First, the results support the CFO “micro-foundation” perspective by showing that female CFO presence is significantly associated with improved earnings quality within the same firm over time. This finding is consistent with upper echelons theory, which predicts that organizational outcomes reflect executives' cognitive frames and values (Hambrick & Mason, 1984). It also coheres with behavioral evidence suggesting systematic differences in risk preferences, where women on average exhibit lower risk-taking, potentially translating into less aggressive accrual discretion and more conservative reporting choices (Croson & Gneezy, 2009). Importantly, the evidence remains robust when earnings quality is proxied by absolute discretionary accruals derived from Modified Jones–type models Dechow, Sloan, and Sweeney (1995) and performance-adjusted approaches designed to reduce misspecification (Kothari et al., 2005). Together, these patterns are consistent with prior evidence that firms with female CFOs exhibit higher accruals quality and lower discretionary accrual behavior Barua et al. (2010), and they suggest that female CFO appointments in Indonesia may coincide with reporting systems and judgments that reduce accrual estimation error (Dechow et al., 1995).

Second, the positive association between accrual-quality error and cost of capital provides direct support for the pricing of information risk in Indonesia. The results show that when accrual estimation error increases, the cost of capital rises, indicating that capital providers treat lower-quality earnings as a risk-relevant signal. This is closely aligned with the core empirical insight that poorer accruals quality is associated with higher costs of both equity and debt (Francis et al. (2005). It also complements the theoretical logic that when private information intensity is higher and public signals are less reliable, uninformed investors require higher expected returns to compensate for informational disadvantage (Easley & O'hara, 2004). By showing that this channel is present in Indonesian firm-year panels, after controlling for firm and year fixed effects, this study strengthens the claim that reporting quality is priced even in emerging-market settings where ownership concentration and heterogeneous monitoring can complicate classic manager–shareholder agency relationships (Jensen & Meckling, 2019).

Third, the negative relationship between female CFO presence and the cost of capital, especially for WACC and the cost of equity, suggests that markets respond not only to measured earnings quality but also to perceived governance credibility. One interpretation is that female CFOs improve reporting discipline and financial communication, reducing perceived information risk and therefore required

returns, consistent with the role of the CFO in shaping financial reporting architecture and credibility. However, the persistence of a direct effect after controlling for earnings quality implies that a broader signaling mechanism may operate alongside the accrual-quality channel. In contexts where female executive representation is limited, appointing a female CFO can act as a governance signal, reflecting professionalization, stronger internal controls, and heightened reputational concerns, leading investors to update beliefs about firm risk even before all reporting-quality improvements are fully reflected in accounting-based proxies. This interpretation is consistent with role congruity theory, which argues that women in senior roles often face heightened scrutiny; such scrutiny can incentivize stricter compliance and documentation, potentially improving perceived credibility and reducing the risk premium demanded by equity investors (Eagly & Karau, 2002).

The mediation results provide the strongest mechanism-based support for the study's theoretical model. The significant Path a (FemaleCFO → earnings quality) combined with significant Path b (earnings quality → cost of capital, conditional on FemaleCFO) and a bootstrapped indirect effect indicates that earnings quality is a statistically meaningful channel through which female CFO presence is associated with lower financing costs. This pattern matches the integrated logic developed in the literature: CFO characteristics shape accrual estimation discipline and reporting choices (Hambrick & Mason, 1984), earnings quality captures the reliability of the earnings–cash flow mapping Dechow and Dichev (2002), and information risk embedded in earnings is priced by investors and creditors (Lambert et al., 2012). The evidence of partial mediation, where direct effects remain for WACC and the cost of equity, further implies that earnings quality explains an important portion of the association, but not all of it, leaving room for complementary channels such as reputation, disclosure tone, investor relations quality, and perceived governance modernization.

An additional insight arises from differences across equity- and debt-related outcomes. The weaker and sometimes non-significant direct association between female CFO presence and the cost of debt, alongside the strong role of leverage and downside-risk fundamentals, suggests that Indonesian debt pricing may be more contract- and collateral-oriented than equity pricing. Equity holders, particularly in markets where disclosure credibility varies, may react strongly to governance signals and information precision, consistent with models where information composition and asymmetry affect required returns (Easley & O'hara, 2004). Creditors, by contrast, may rely more heavily on observable solvency metrics, covenants, and collateral coverage; thus, earnings quality matters Francis et al. (2005), but the incremental signaling value of CFO gender may be less pronounced once leverage and profitability are accounted for. This asymmetry is consistent with the notion that different capital providers weight information risk versus downside protection differently, implying that improvements in reporting credibility may translate more quickly into equity required returns than into borrowing rates.

5. Conclusion

This study investigates whether female CFO leadership is associated with higher earnings quality and lower financing costs in Indonesian listed non-financial firms over 2015–2024, and whether earnings quality functions as the mechanism linking CFO gender to the cost of capital. Using firm-year panel data and fixed-effects estimation to control for time-invariant firm characteristics and common year shocks, the results consistently show that firms experience higher earnings quality in years when a female CFO is present, evidenced by lower accrual estimation error under the Dechow–Dichev framework and lower absolute discretionary accruals under Modified Jones–type models. In addition, poorer earnings quality is priced through higher costs of equity, debt, and overall capital, supporting the information-risk view that less reliable earnings increase required returns.

The mediation analysis provides mechanism-based evidence that earnings quality is a statistically meaningful pathway through which female CFO presence is associated with lower cost of capital. Bootstrapped indirect effects indicate that improvements in earnings quality explain part of the reduction in financing costs, while the persistence of a negative direct effect for WACC and the cost of equity suggests that additional channels, such as governance credibility, reputational effects, or market signaling, may also contribute. Robustness checks using alternative standard error structures, alternative

earnings-quality proxies, and lagged specifications confirm that the main inferences are not driven by a particular measurement choice or inference assumption.

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