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# Earnings, Book Value and Share Prices: Does Firm Size Condition Value Relevance? Evidence from Indonesia's Basic and Chemical Industry

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ABSTRACT

This study examines whether earnings per share (EPS) and book value per share (BVPS) explain the stock prices of companies in the basic and chemical industries in Indonesia, and whether firm size enhances the value relevance of earnings. Based on the Ohlson valuation model and signaling theory, this study analyzes balanced panel data of 30 companies listed on the Indonesia Stock Exchange for the 2021-2024 period (120 observations). The Chow, Hausman, and Lagrange Multiplier tests select a fixed-effects model estimated with clustered standard errors per company, then examined using wild cluster bootstrapping and four robustness tests. The results show that EPS has a positive and robust effect on stock prices ($\beta = 6.09$; $p = 0.003$) and remains significant in both logarithmic and scale-corrected models. BVPS does not have a positive effect on stock prices within the company. Firm size appears to strengthen the relationship between EPS and stock price in the level model ($\beta = 2.08$; $p = 0.006$), but this effect does not persist in the wild bootstrap ($p = 0.206$), reverses direction in the log-price model, and disappears after scale correction. These findings suggest that investors value earnings, not book value, and that the moderation of firm size in the price-level regression primarily reflects scale effects.

## INTRODUCTION

Financial statements are useful to investors only if the numbers they report are reflected in share prices. This property, value relevance, is the main capital-market test of accounting information (Collins et al., 1997; Ohlson, 1995). Recent evidence suggests that the relevance of the two summary numbers, earnings and book value, is shifting. Earnings carry a larger valuation weight than book value in Vietnam, Thailand and Romania (Burlacu et al., 2024; Nguyen et al., 2026; Visedsun et al., 2025), while crises and earnings management can weaken the weight on earnings (Aljughaiman et al., 2023; Kim et al., 2025). Some authors argue that reported earnings are losing relevance altogether, especially for loss-making and recently listed firms (Srivastava, 2023).

Firm size is a natural candidate to explain why value relevance differs across firms. Larger firms are followed by more analysts and investors, disclose more and report more persistent earnings (Alrobai et al., 2025). Under signalling theory, their earnings should therefore be more credible signals of future cash flows (Connelly et al., 2025; Spence, 1973). Recent Saudi evidence reports that larger firms receive a higher pricing weight on EPS (Al Naim et al., 2026). Size, however, also creates a well-known econometric problem. In price-level regressions, large firms have large prices, large earnings per share and large book values simultaneously. A positive EPS × size interaction can then reflect differences in scale rather than differences in information quality (Barth & Clinch, 2009; Easton & Sommers, 2003).

Evidence from Indonesia remains limited on both points. Indonesian studies show that governance characteristics such as director tenure increase value relevance (Widianingsih & Setiawan, 2023), and that size, value and profitability factors explain Indonesian stock returns (Li et al., 2023). Few studies test whether firm size conditions the pricing of earnings, and fewer still check whether such a moderation survives scale corrections. The basic and chemical industry is a useful setting. Its firms range from large cement and feed producers to small plastics and chemicals manufacturers, and the 2021-2024 period covers post-pandemic recovery and tighter monetary conditions that lowered share prices across the sector (Setiawan & Septiani, 2025; Zhao & Han, 2025).

This study asks three questions. Is EPS value relevant for Indonesian basic and chemical firms? Is BVPS value relevant? Does firm size strengthen the value relevance of EPS? It contributes in three ways. First, it provides recent industry-specific evidence on the relative pricing of earnings and book value in Indonesia. Second, it tests size as a moderator of earnings relevance, which prior Indonesian studies have treated only as a control variable. Third, it shows that the apparent size moderation depends on model scale, and it offers a simple robustness protocol — log prices, price deflation and wild cluster bootstrap inference — for researchers working with small panels.

***Theoretical Background***

Ohlson (1995) shows that, under clean-surplus accounting, a firm's equity value equals its book value plus the present value of expected abnormal earnings. Because current earnings help forecast future abnormal earnings, share price can be written as a linear function of book value and earnings per share. The model gives value-relevance research its standard specification: price regressed on EPS and BVPS. Earnings capture the flow of value created in the period, while book value captures the stock of net assets and serves as a floor when earnings are transitory or negative (Collins et al., 1997). Recent applications confirm that both numbers explain prices in emerging markets, but usually with a larger weight on earnings (Nhleko & Schutte, 2024; Nguyen et al., 2026; Sukmadilaga et al., 2023).

Signalling theory explains why investors respond to reported numbers when managers know more than outsiders (Spence, 1973). A reported figure works as a signal only if investors find it credible, which depends on its cost of imitation and on the sender's reputation and

visibility (Connelly et al., 2025). EPS is the most visible accounting signal: it is announced, forecast by analysts and widely reported (Goh, 2024). Its credibility, however, varies across firms. Earnings that persist and come from firms with richer information environments should be priced more heavily (Supattarakul & Rueangsuwan, 2024).

***Hypothesis Development***

Under the Ohlson model, higher current earnings imply higher expected future abnormal earnings and thus higher value. Profitability-related factors are priced in the Indonesian market (Li et al., 2023), and EPS is the main driver of prices in recent regional evidence (Visedsun et al., 2025).

**H1:** *Earnings per share is positively associated with share price.*

Book value represents net assets that investors can recover and anchors valuation when earnings are uncertain. Its relevance has been documented in Romania and Thailand (Burlacu et al., 2024; Visedsun et al., 2025), although it tends to weaken during uncertainty (Kim et al., 2025).

**H2:** *Book value per share is positively associated with share price.*

Larger firms have more persistent earnings, more analyst coverage and more public disclosure (Alrobai et al., 2025). Their EPS should therefore be a more credible signal, and investors should place more weight on it. Al Naim et al. (2026) find exactly this pattern in Saudi Arabia. Figure 1 presents the research model.

**H3:** *Firm size strengthens the positive relation between EPS and share price.*

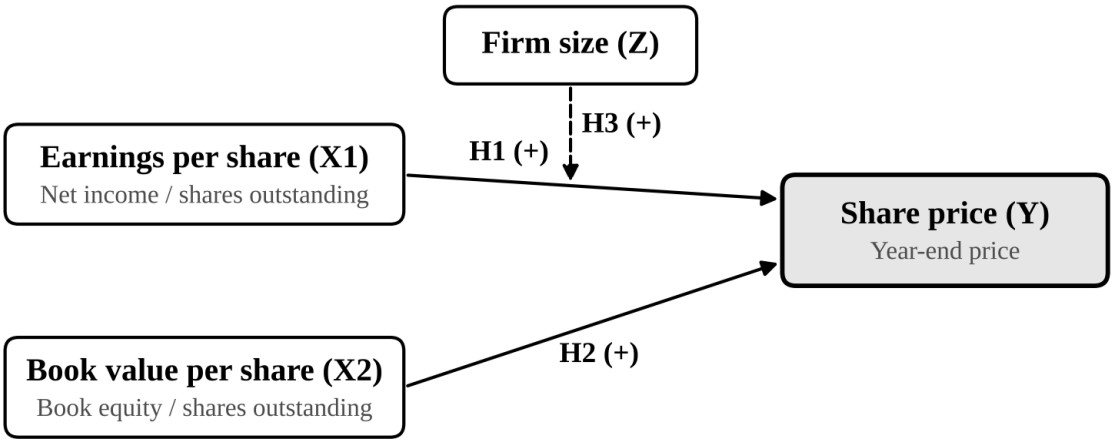



**Figure 1.** Research model

## RESEARCH METHOD

***Sample and Data***

The population is the basic and chemical industry of the Indonesia Stock Exchange. The sample comprises 30 firms observed annually from 2021 to 2024, a balanced panel of 120 firm-years. The data were obtained from audited annual reports published on the IDX website (www.idx.co.id) and the companies' official websites. Firms were selected by purposive

sampling using three criteria: (1) listed in the basic and chemical industry throughout 2021-2024; (2) published complete audited annual reports for each year; and (3) reported financial statements in rupiah. The firms belong to eight subsectors: plastics and packaging (7), chemicals (6), cement (5), ceramics, porcelain and glass (5), animal feed (3), metals (2), wood processing (1) and pulp and paper (1). Continuous variables are winsorised at the 5th and 95th percentiles to limit the influence of outliers. Table 1 defines the variables.

**Table 1.** Variable definitions

| Variable | Symbol | Measurement | Role |
|---|---|---|---|
| Share price | P | Year-end market capitalisation / shares outstanding (rupiah) | Dependent |
| Earnings per share | EPS | Net income / shares outstanding (rupiah) | Independent |
| Book value per share | BVPS | Book equity / shares outstanding (rupiah) | Independent |
| Firm size | SIZE | Natural log of total assets | Moderator |
| Year effects | $\tau_t$ | Dummies for 2022, 2023 and 2024 | Control |

***Research Model***

Following Ohlson (1995), the baseline model is:

$$P_{it} = \alpha + \beta_1 EPS_{it} + \beta_2 BVPS_{it} + \sum_t \tau_t + u_i + \varepsilon_{it} \quad (1)$$

The moderation model (moderated regression analysis) adds firm size and its interactions with EPS and BVPS. All three variables are mean-centred before the products are formed, which reduces non-essential collinearity and lets $\beta_1$ be read as the effect of EPS for a firm of average size:

$$P_{it} = \alpha + \beta_1 EPS_{it} + \beta_2 BVPS_{it} + \beta_3 SIZE_{it} + \beta_4 (EPS_{it} \times SIZE_{it}) + \beta_5 (BVPS_{it} \times SIZE_{it}) + \sum_t \tau_t + u_i + \varepsilon_{it} \quad (2)$$

H3 is supported if $\beta_4$ is positive and significant. BVPS × SIZE is included so that the EPS interaction does not absorb a size effect on book value.

***Estimation Procedure***

The model is estimated in four steps. First, the common-effect model (CEM), fixed-effect model (FEM) and random-effect model (REM) are compared with the Chow test, the Hausman test and the Breusch-Pagan Lagrange Multiplier test; a cluster-robust Mundlak test confirms the Hausman result under heteroskedasticity (Hazlett & Wainstein, 2022). Second, classical assumption tests examine normality (Jarque-Bera), multicollinearity (variance inflation factor), heteroskedasticity (modified Wald), autocorrelation (Wooldridge) and cross-sectional dependence (Pesaran CD).

Third, hypotheses are tested with standard errors clustered by firm, which remain valid under heteroskedasticity and within-firm autocorrelation (Abadie et al., 2023). Because 30 clusters is a small number, key coefficients are also tested with the restricted wild cluster bootstrap with 4,999 replications (MacKinnon et al., 2023). For the moderation, the effect of

EPS is computed at low (mean − 1 SD), average and high (mean + 1 SD) firm size. Fourth, four robustness tests address outliers and scale: (R1) excluding the one firm with negative book equity (ESIP); (R2) unwinsorised data; (R3) natural log of price as the dependent variable; and (R4) price, EPS and BVPS deflated by the previous year's price, a standard correction for scale effects (Barth & Clinch, 2009; Easton & Sommers, 2003).

## RESULTS AND DISCUSSION

### *Descriptive Statistics*

Table 2 shows that share prices, EPS and BVPS are strongly right-skewed: means are about three times their medians, reflecting a few large cement and feed producers. Mean share price fell from Rp1,496 in 2021 to Rp963 in 2024, while mean EPS fell from Rp137 to Rp93 and mean BVPS from Rp1,564 to Rp1,284. Price correlates with EPS (r = 0.774), BVPS (r = 0.791) and SIZE (r = 0.637). EPS and BVPS are themselves highly correlated (r = 0.883), so their separate effects must be interpreted with care.

**Table 2.** Descriptive statistics (N = 120 firm-years, winsorised at 5%/95%)

| Variable | Mean | SD | Min | Median | Max |
|---|---|---|---|---|---|
| P (rupiah) | 1,258.60 | 1,847.95 | 55.95 | 439.00 | 6,408.75 |
| EPS (rupiah) | 112.50 | 167.48 | 3.89 | 41.04 | 611.34 |
| BVPS (rupiah) | 1,411.53 | 2,156.01 | 100.73 | 451.87 | 7,531.64 |
| SIZE (ln total assets) | 28.72 | 1.50 | 25.16 | 28.63 | 32.05 |

### *Model Selection and Classical Assumption Tests*

Table 3 shows that all model selection tests point to the fixed-effect model, which is therefore used for hypothesis testing.

**Table 3.** Model selection tests

| Test | Baseline model | Moderation model | Conclusion |
|---|---|---|---|
| Chow (CEM vs FEM) | $F(29, 85) = 24.54$; $p < .001$ | $F(29, 82) = 11.03$; $p < .001$ | FEM |
| Hausman (FEM vs REM) | $\chi^2(5) = 92.98$; $p < .001$ | $\chi^2(8) = 16.82$; $p = .032$ | FEM |
| Lagrange Multiplier (CEM vs REM) | $\chi^2(1) = 86.20$; $p < .001$ | $\chi^2(1) = 76.06$; $p < .001$ | REM over CEM |
| Cluster-robust Mundlak | $\chi^2(2) = 44.18$; $p < .001$ | $\chi^2(5) = 35.04$; $p < .001$ | FEM |

Table 4 reports the classical assumption tests. Heteroskedasticity and autocorrelation are addressed with firm-clustered standard errors, and cross-sectional dependence with year dummies. In the moderation model, VIFs for EPS (13.2) and BVPS (15.2) rise because the two

variables are highly correlated with each other, not because of the interaction terms (EPS × SIZE: 5.9). This inflates their standard errors but does not bias the coefficients.

**Table 4.** Classical assumption tests (baseline FEM)

| Test | Result | Implication |
|---|---|---|
| Normality (Jarque-Bera) | JB = 182.9; p < .001 | Non-normal residuals; inference relies on N = 120 and bootstrap |
| Multicollinearity (VIF) | EPS 4.56; BVPS 4.56 | Below 10 |
| Heteroskedasticity (modified Wald) | $\chi^2(30) = 66{,}876$; p < .001 | Present |
| Autocorrelation (Wooldridge) | F(1, 29) = 10.59; p = .003 | Present |
| Cross-sectional dependence (Pesaran CD) | CD = 5.82; p < .001 | Present; year effects included |

***Hypothesis Testing***

Table 5 presents the regression results. **H1 is supported.** EPS is positively and significantly related to share price in the selected FEM (β = 6.087, p = .003): within a firm, each additional rupiah of EPS is associated with about Rp6 of share price. The effect remains significant in the moderation model (β = 3.861, p = .013) and under the wild cluster bootstrap (p = .017).

**Table 5.** Regression results (dependent variable: share price)

| Variable | (1) CEM | (2) REM | (3) FEM | (4) FEM moderation |
|---|---|---|---|---|
| EPS | 3.679 (2.514) | 5.148*** (1.454) | 6.087*** (1.882) | 3.861** (1.457) |
| BVPS | 0.424** (0.182) | −0.086 (0.197) | −0.357** (0.149) | −0.180 (0.123) |
| SIZE | | | | −519.70 (949.47) |
| EPS × SIZE | | | | 2.081*** (0.706) |
| BVPS × SIZE | | | | −0.323* (0.179) |
| Year 2022 | −61.22* (34.73) | −77.40*** (27.98) | −83.62** (32.29) | −51.51 (88.77) |
| Year 2023 | −24.17 (135.44) | −99.78 (105.97) | −133.97 (105.89) | −106.03 (68.99) |
| Year 2024 | −253.38 (180.19) | −331.81** (121.29) | −366.44*** (122.52) | −305.00** (111.05) |
| Constant | 1,343.30*** (220.61) | 1,385.85*** (275.52) | 1,404.61 | 1,656.63 |
| $R^2$ | 0.654 | 0.539 (overall) | 0.467 (within) | 0.519 (within) |
| F (cluster-robust) | | | 11.01 | 10.70 |
| Wild bootstrap p: EPS | | | | .017 |
| Wild bootstrap p: EPS × SIZE | | | | .206 |

Note: Firm-clustered standard errors in parentheses; continuous regressors mean-centred. *** p < .01, ** p < .05, * p < .10. N = 120, 30 firms.

**H2 is not supported.** BVPS is positively priced only in the pooled CEM (β = 0.424, p = .027), which compares different firms. Within firms, its coefficient is negative (β = −0.357, p = .023) in the baseline FEM and insignificant in the moderation model. Book value explains which firms trade at higher prices, but changes in a firm's book value do not raise its price.

**H3 is supported in the levels model but is not robust.** The EPS × SIZE interaction is positive and significant with clustered standard errors (β = 2.081, p = .006). Figure 2 shows the implied effect of EPS across firm size: it is near zero for small firms (0.73 at mean − 1 SD, p = .753), 3.86 for average firms (p = .013) and 6.99 for large firms (mean + 1 SD, p < .001). However, the restricted wild cluster bootstrap gives p = .206 for the interaction, so the evidence is weak once the small number of clusters is accounted for.

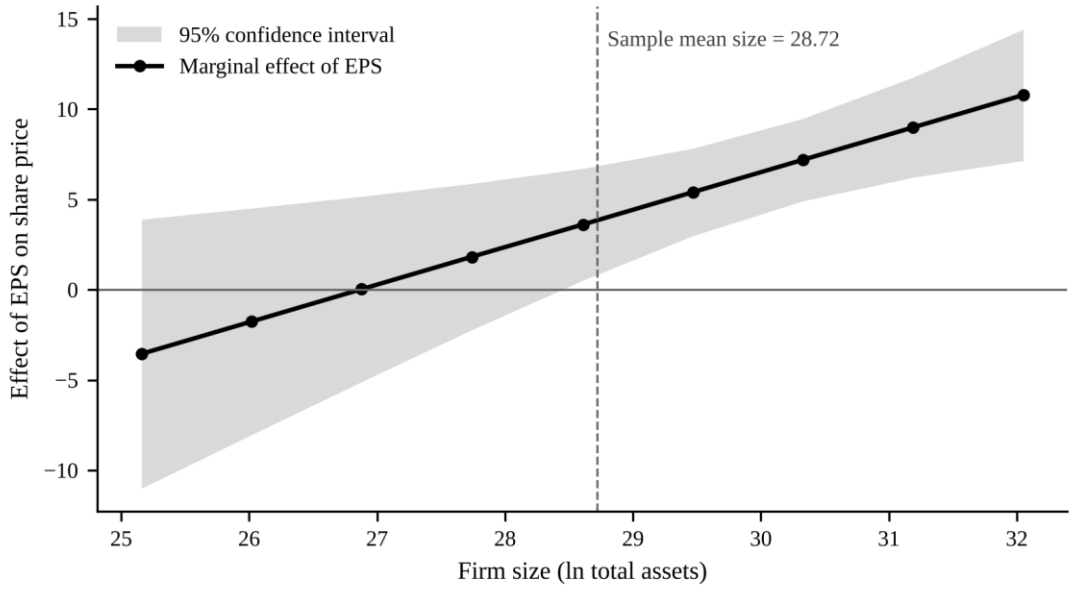



**Figure 2.** Effect of EPS on share price across firm size (levels model, 95% confidence interval)

***Robustness Tests***

Table 6 shows that the value relevance of EPS survives every specification except the unwinsorised data, where a few extreme prices dominate. It is strongly significant in the log-price model (R3) and the scale-deflated model (R4). The size moderation does not survive: it turns negative in the log-price model (−0.0009, p = .021) and disappears when all per-share variables are deflated by lagged price (0.118, p = .764). A split-sample check points the same way: the EPS coefficient is 5.89 (p = .008) for the 15 larger firms and 4.34 (p = .028) for the 15 smaller firms, a modest difference.

**Table 6.** Robustness of the FEM moderation results

| Specification | n | EPS | EPS × SIZE |
|---|---|---|---|
| Baseline (winsorised price levels) | 120 | 3.861** (1.457) | 2.081*** (0.706) |
| R1 Excluding ESIP | 116 | 4.008** (1.508) | 2.165*** (0.722) |
| R2 Unwinsorised data | 120 | 1.164 (1.224) | 2.520* (1.376) |
| R3 Log share price | 120 | 0.0051*** (0.0010) | −0.0009** (0.0004) |
| R4 Deflated by prior-year price | 90 | 3.671*** (0.819) | 0.118 (0.389) |

Note: Firm-clustered standard errors in parentheses; year effects, BVPS, SIZE and BVPS × SIZE included. *** p < .01, ** p < .05, * p < .10.

Taken together, the positive interaction in the levels model reflects scale. Large firms have higher prices and higher EPS in rupiah, so a given change in EPS corresponds to a larger rupiah change in price. Once prices are expressed in logs or deflated, the extra weight on large firms' earnings vanishes.

***Discussion***

The results confirm that EPS is the accounting number that Indonesian investors price in this industry. This matches the Ohlson (1995) prediction that current earnings forecast future abnormal earnings, and it agrees with recent evidence that earnings carry more valuation weight than book value in Southeast Asia and Europe (Burlacu et al., 2024; Nguyen et al., 2026; Visedsun et al., 2025). It is also consistent with asset-pricing evidence that profitability and its changes are priced (Kilic et al., 2022; Lim et al., 2024; Yin & Yang, 2022), including in Indonesia (Li et al., 2023). From a signalling perspective, EPS is the most visible and most frequently communicated performance signal, so it is the number investors anchor on (Goh, 2024).

Book value tells a different story. It explains why some firms trade at higher prices than others, but a rise in a firm's own book value did not raise its price over 2021-2024. One explanation is the period itself: mean share price fell by 36% while mean BVPS fell by only 18%, so within-firm movements in book value and price diverged. Another is that book value matters most as a floor for loss-making or distressed firms (Collins et al., 1997), and no firm in this sample reported a loss. The declining relevance of book value under uncertainty reported elsewhere (Kim et al., 2025) points the same way. The high correlation between EPS and BVPS ($r = 0.883$) also means that the negative within-firm BVPS coefficient should not be read as a negative valuation of net assets.

The levels model reproduces the Saudi finding that larger firms receive a higher price weight on earnings (Al Naim et al., 2026), which would fit the signalling argument that large firms' earnings are more persistent and credible (Alrobai et al., 2025; Connelly et al., 2025). The robustness tests show, however, that this interpretation is premature. The interaction loses significance under the wild bootstrap, reverses sign in log prices and disappears when variables are deflated by lagged price. This is the pattern scale effects produce: when large firms have systematically larger per-share prices and earnings, an undeflated regression attributes part of the scale difference to a steeper slope (Barth & Clinch, 2009; Easton & Sommers, 2003). Value-relevance studies that report moderation by size, governance or audit quality in price-level models should therefore show that the interaction survives scale corrections and small-sample inference (Abadie et al., 2023; MacKinnon et al., 2023).

Finally, the negative year effects, especially in 2024 (about Rp305-366 below 2021 at the same EPS and BVPS), show that prices fell for reasons beyond firm fundamentals. Higher interest rates raise discount rates and change corporate financing (Zhao & Han, 2025), and crisis-period evidence shows investors shifting weight among fundamentals as uncertainty rises (Kim et al., 2025; Neukirchen et al., 2022). The continued relevance of EPS through this period suggests that earnings remained the primary valuation anchor even as market-wide prices fell.

## CONCLUSION AND SUGGESTIONS

This study tested the value relevance of earnings and book value for 30 Indonesian basic and chemical firms over 2021-2024, and whether firm size strengthens the relevance of

earnings. EPS is value relevant: it is positively and robustly related to share prices within firms, under bootstrap inference, and in log and scale-deflated models (H1 supported). BVPS is not value relevant within firms; it distinguishes firms in the cross-section, but changes in a firm's book value do not move its price (H2 not supported). Firm size does not robustly strengthen the value relevance of EPS, because the positive interaction in the levels model disappears once scale and small-sample inference are addressed (H3 not supported after robustness tests).

Theoretically, the findings support the earnings component of the Ohlson model in an emerging-market industry and suggest that the book-value component is weaker when no firms are loss-making; for signalling theory, they caution that a size-based credibility argument cannot be inferred from price-level interactions alone. Practically, managers of Indonesian industrial firms should recognise that investors price earnings far more than book value, so sustaining EPS matters more for share prices than building equity. Investors and analysts can rely on EPS as the primary valuation anchor in this sector, and the Financial Services Authority (OJK) and the IDX should continue to prioritise the timeliness and quality of earnings disclosure (Aljughaiman et al., 2023; Burlacu et al., 2024).

This study is limited to 30 firms in one industry over four years, which restricts statistical power and generalisability, and it uses year-end prices that do not capture the timing of earnings announcements. Future research is suggested to use prices three months after year-end or a returns model, to include cash flows, dividends, audit quality and governance (Visedsun et al., 2025; Widianingsih & Setiawan, 2023), and to extend the sample to all IDX sectors and a longer period that includes loss-making firms, building on earlier Indonesian evidence on corporate financing and value (Alghifari et al., 2022). Researchers using small panels should also report log or deflated specifications and wild bootstrap p-values whenever they claim a moderating effect.

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