

Working Capital, Net Profit Margin, and Exchange Rate Effects on Corporate Value through Leverage: Evidence from Listed Indonesian Construction Companies

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Abstract: This study analyzes the effects of Working Capital, Net Profit Margin (NPM), and Exchange Rate on Leverage (Debt to Asset Ratio) and Corporate Value (Price to Book Value), and the effect of Leverage on Corporate Value among publicly listed construction companies on the Indonesia Stock Exchange (IDX) during 2021–2025. Using a quantitative approach with panel data regression, twelve construction companies were selected through purposive sampling, generating 60 balanced observations. The Fixed Effect Model (FEM) was applied to the Leverage equation and the Random Effect Model (REM) to the Corporate Value equation, determined through Chow, Hausman, and Lagrange Multiplier tests. Results indicate that: (1) Working Capital has no significant effect on Leverage ($t = -1.673$; $p = 0.1014$); (2) NPM has a significant negative effect on Leverage ($t = -3.587$; $p = 0.0008$); (3) Exchange Rate has a significant negative effect on Leverage ($t = -7.483$; $p = 0.0000$); (4) Working Capital has no significant effect on Corporate Value ($t = 0.390$; $p = 0.6981$); (5) NPM has a significant negative effect on Corporate Value ($t = -2.599$; $p = 0.0120$); (6) Exchange Rate has a significant negative effect on Corporate Value ($t = -3.748$; $p = 0.0004$); and (7) Leverage has a significant negative effect on Corporate Value ($t = -2.809$; $p = 0.0069$). Adjusted R-squared values of 79.45% and 81.11% for the two models demonstrate strong explanatory power. Findings support Pecking Order Theory in explaining leverage decisions and Trade-off Theory in explaining the negative impact of excessive leverage on firm value. Exchange rate emerges as the most dominant variable, reflecting the construction sector's significant macroeconomic exposure to rupiah depreciation.

Introduction

The construction sector is one of the strategic pillars of Indonesia's economy, playing a vital role in driving national infrastructure growth. Construction companies listed on the Indonesia Stock Exchange (IDX) face complex challenges arising from both internal company dynamics and external macroeconomic pressures, particularly exchange rate fluctuations of the rupiah against foreign currencies. Under such conditions, a comprehensive understanding

of the factors that influence corporate value is critically important, not only from a managerial perspective, but also from the viewpoint of investors and other stakeholders.

As a capital-intensive sector, listed construction companies exhibit financial dynamics that are substantially more complex than those in other industries. The primary objective of every public company is to maximize Corporate Value—the investors' perception of a firm's degree of success, which is closely associated with its stock price. However, maintaining firm value in the construction sector is particularly challenging, given the high operational risks and heavy dependence on external financing.

Three key variables have been identified as central determinants of corporate value through leverage. First, Working Capital management is critical because construction firms routinely tie up capital in long-cycle project receivables; inefficient working capital management impedes project completion and reduces market confidence, while simultaneously influencing leverage decisions under Pecking Order Theory (Myers & Majluf, 1984). Second, Net Profit Margin (NPM) serves as an indicator of operational efficiency; construction firms are frequently squeezed between rising material costs and high interest burdens, directly compressing their margins. Third, the Exchange Rate constitutes a major macroeconomic pressure because many construction issuers are exposed to foreign-currency debt or specialist material imports, such that rupiah depreciation inflates obligations and production costs.

Empirical analysis of sector-wide trends during 2021–2025 reveals an alarming picture. Average Net Working Capital fell from IDR 1,911.42 billion in 2021 to only IDR 640.83 billion in 2025, reflecting deteriorating short-term liquidity. Average NPM remained consistently negative across the five-year period, reaching its worst level of –6.95% in 2025. The IDR/USD exchange rate depreciated from IDR 14,269 in 2021 to IDR 16,335 in 2025. Although Debt to Asset Ratio (DAR) declined gradually from 0.749x to 0.724x, it remained at a high level. Price to Book Value (PBV) fell from 1.20x to 0.95x, dipping below 1.0x in 2025—signaling that the market now values construction firms below their book value.

A review of existing literature reveals several research gaps. Most prior studies examine these variables in isolation and do not integrate Working Capital, NPM, and Exchange Rate into a single mediation model with Leverage as an intervening variable, particularly within the construction sector. Furthermore, earlier studies largely cover pre-pandemic periods and fail to capture the post-pandemic macroeconomic volatility that has intensified since 2022. These gaps justify the present study, which was conducted to analyze the effects of Working Capital, Net Profit Margin, and Exchange Rate on Corporate Value through Leverage among publicly listed Indonesian construction companies.

Signalling Theory

Signalling Theory, first developed by Spence (1973) and applied to corporate finance by Ross (1977), is grounded in information asymmetry—the condition in which managers possess more complete information about a firm's prospects than external investors. High-quality firms use costly signals to distinguish themselves. In the context of capital structure, an increase in debt can be interpreted by the market as a positive signal, since only firms with stable cash flows and sound growth prospects can bear the commitment of fixed interest payments. Conversely, an equity issuance tends to be read as a negative signal, consistent with the Pecking Order preference for internal financing first (Myers & Majluf, 1984).

Pecking Order Theory and Trade-off Theory

Pecking Order Theory posits that firms prefer internal financing over debt, and debt over equity, to minimize adverse selection costs arising from information asymmetry. Firms with higher profitability accumulate more retained earnings and consequently rely less on external debt, producing a negative relationship between profitability and leverage. Trade-off Theory, by contrast, posits that firms balance the tax shield benefits of debt against the costs of financial distress. When leverage reaches excessive levels—as is common among construction issuers with average DAR of 72.99%—the costs of financial distress outweigh the tax benefits, leading to a negative relationship between leverage and corporate value.

Working Capital

Working capital represents the net difference between current assets and current liabilities, and constitutes the operational liquidity buffer of a firm. In the construction industry, working capital is frequently tied up in long-cycle project receivables and material inventories. Rodriguez (2024) and Sari & Wijaya (2023) argue that firms with strong working capital can self-finance operational needs without resorting to additional debt, consistent with Pecking Order Theory. However, in construction, where payment timing is project-driven and unpredictable, working capital may not serve as a reliable determinant of leverage or market-perceived value.

Net Profit Margin

Net Profit Margin (NPM), defined as net income divided by net revenue, measures how efficiently a company converts sales into profit after all expenses and taxes. In the construction sector, NPM is sensitive to material cost inflation, tight tender competition, and high interest burdens on long-term debt. A strong NPM provides internal financing capacity that reduces leverage dependence (Brigham & Houston, 2019), and under Signalling Theory, positive and stable margins transmit fundamental strength to market participants, supporting higher corporate valuation.

Exchange Rate

The exchange rate—the price of one currency relative to another—represents a critical macroeconomic variable for Indonesian construction issuers. Rupiah depreciation raises the cost of imported specialty materials (steel, heavy equipment, specialist electrical components) and inflates the burden of foreign-currency denominated debt. According to Purchasing Power Parity and Interest Rate Parity theories, exchange rate movements reflect inflation and interest rate differentials and translate directly into changes in real production costs and financial obligations (Madura, 2020; Eiteman et al., 2019).

Leverage

Leverage, proxied in this study by the Debt to Asset Ratio ($\text{DAR} = \text{Total Debt} / \text{Total Assets}$), reflects the proportion of a firm's assets financed by debt. High leverage amplifies returns in favorable conditions but increases financial distress risk under adverse conditions. In the construction sector, firms frequently rely on external debt to bridge the gap between project commencement and payment receipt, resulting in structurally elevated DAR ratios (Kasim, 2016; Brigham & Houston, 2019).

Corporate Value

Corporate Value represents investors' perception of a firm's success and future prospects, and is proxied in this study by Price to Book Value (PBV = Market Price per Share / Book Value per Share). A PBV above 1.0x indicates the market values the firm above its book value, while a PBV below 1.0x signals undervaluation. As of 2025, the average PBV of the construction sector fell to 0.95x, indicating that the market assigns these firms a value below their recorded net assets—a significant deterioration from the 1.20x recorded in 2021 (Brealey, Myers, & Marcus, 2024).

Hypotheses

Based on the theoretical framework and empirical gaps identified above, this study proposes the following seven hypotheses:

H1: Working Capital has a significant effect on Leverage in publicly listed construction companies.

H2: Net Profit Margin has a significant effect on Leverage in publicly listed construction companies.

H3: Exchange Rate has a significant effect on Leverage in publicly listed construction companies.

H4: Working Capital has a significant effect on Corporate Value in publicly listed construction companies.

H5: Net Profit Margin has a significant effect on Corporate Value in publicly listed construction companies.

H6: Exchange Rate has a significant effect on Corporate Value in publicly listed construction companies.

H7: Leverage has a significant effect on Corporate Value in publicly listed construction companies.

Research Method

This study was conducted using a quantitative approach employing panel data regression. The research population consists of all 20 construction companies listed on the Indonesia Stock Exchange (IDX). Purposive sampling was applied using five criteria: (1) listed in the construction sector during 2021–2025; (2) complete annual financial report publication throughout the observation period; (3) no delisting or trading suspension during the study period; (4) availability of complete financial data required by the study; and (5) not experiencing continuous losses for more than three consecutive years. Applying these criteria yielded a final sample of 12 companies, producing 60 balanced panel observations (12 companies × 5 years).

Table 1. Research Sample Companies

No	Company Name	Code	IPO Date	Sub-sector
1	PT Adhi Karya (Persero) Tbk	ADHI	18 Mar 2004	Construction & Engineering
2	PT Wijaya Karya (Persero) Tbk	WIKA	29 Oct 2007	Construction & Engineering
3	PT Waskita Karya (Persero) Tbk	WSKT	19 Dec 2012	Construction & Engineering

No	Company Name	Code	IPO Date	Sub-sector
4	PT PP (Persero) Tbk	PTPP	9 Feb 2010	Construction & Engineering
5	PT Jaya Konstruksi Manggala Pratama Tbk	JKON	4 Dec 2007	Construction & Engineering
6	PT Surya Semesta Internusa Tbk	SSIA	27 Mar 1997	Construction & Engineering
7	PT Acset Indonusa Tbk	ACST	24 Jun 2013	Construction & Engineering
8	PT Totalindo Eka Persada Tbk	TOPS	16 Jun 2017	Construction & Engineering
9	PT Wijaya Karya Bangunan Gedung Tbk	WEGE	30 Nov 2017	Construction Buildings
10	PT Nusa Konstruksi Enjiniring Tbk	DGIK	19 Dec 2007	Construction & Engineering
11	PT Hutama Karya Infrastruktur Tbk	HKII	3 Jul 2019	Construction & Engineering
12	PT Paramita Bangun Sarana Tbk	PBSA	28 Sep 2016	Construction Buildings

Table 2. Operational Definition of Research Variables

Variable	Role	Proxy / Measurement	Source
Working Capital (X1)	Independent	Net Working Capital (NWC) = Current Assets – Current Liabilities; natural log transformation (LNNWC)	Gitman (2015)
Net Profit Margin (X2)	Independent	NPM = Net Income / Net Sales	Brigham & Houston (2021)
Exchange Rate (X3)	Independent	Midpoint IDR/USD exchange rate; natural log transformation (LNKURS)	Bank Indonesia (2025)
Leverage (Y)	Intervening	Debt to Asset Ratio (DAR) = Total Debt / Total Assets	Brigham & Houston (2021)
Corporate Value (Z)	Dependent	Price to Book Value (PBV) = Market Price per Share / Book Value per Share	Brealey et al. (2024)

Data were collected from the annual financial reports of each company published on the IDX website and supplementary data from Bank Indonesia for exchange rate figures. The study employs two panel data regression equations: Model 1 with DAR as the dependent variable (Leverage equation) and Model 2 with PBV as the dependent variable (Corporate Value equation). Model selection followed a three-step procedure—Chow Test, Hausman Test, and Lagrange Multiplier (LM) Test—as recommended by Baltagi (2021) and Gujarati & Porter (2023). Data processing was performed using Eviews 12. Mediation analysis was conducted through path analysis and the Sobel test, with an indirect effect deemed significant when $|z| > 1.96$ ($p < 0.05$).

Results and Discussion

Descriptive Statistics

Table 3. Descriptive Statistics of Research Variables

Statistic	LNNWC	NPM	LNKURS	DAR	PBV
Mean	5.597	-0.036	9.650	0.730	1.100
Median	6.791	0.012	9.653	0.770	0.985
Maximum	8.648	0.102	9.701	0.946	2.020
Minimum	-8.343	-0.542	9.566	0.403	0.215
Std. Dev.	4.199	0.131	0.048	0.159	0.401
Observations	60	60	60	60	60

LNNWC exhibits the widest range (-8.343 to 8.648) and highest standard deviation (4.199), reflecting substantial heterogeneity in liquidity positions across the sample, including cases where current liabilities exceeded current assets. NPM shows a mean of -3.63%, confirming persistent profitability pressures across the sector, driven by a few firms—notably WSKT in 2022 (NPM = -54.21%)—experiencing severe losses. LNKURS has the smallest standard deviation (0.048), indicating that the rupiah's movement over the period, while directionally depreciating, was not dramatically volatile in proportional terms. DAR averages 72.99%, affirming the construction sector's structural reliance on debt financing. PBV averages 1.10 but with a median of 0.985, indicating that the majority of firms were valued below book value once outliers are excluded.

Panel Model Selection

For Model 1 (dependent variable: DAR), the Chow Test yielded a Cross-section F of 439.947 ($p = 0.0000$), indicating Fixed Effect Model (FEM) superiority over Common Effect Model (CEM). The subsequent Hausman Test produced a Chi-Sq. statistic of 8.592 ($p = 0.0352$), confirming that FEM is preferable to Random Effect Model (REM) due to significant correlation between individual effects and explanatory variables. The LM Test (Breusch-Pagan = 84.456; $p = 0.0000$) corroborated the presence of significant individual effects, validating the selection of FEM for Model 1.

For Model 2 (dependent variable: PBV), the Chow Test yielded Cross-section F = 12.787 ($p = 0.0000$), rejecting CEM. The Hausman Test produced Chi-Sq. = 0.000 ($p = 1.000$), accepting the null hypothesis that individual effects are uncorrelated with regressors, making REM more appropriate. The LM Test confirmed significant individual effects (Breusch-Pagan = 9.415; $p = 0.0022$), establishing REM as superior to CEM. REM for Model 2 was estimated using the Swamy and Arora variance component estimator.

Panel Regression Results

Table 4. Panel Regression Results — Model 1: Fixed Effect Model (Dependent: DAR / Leverage)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.7273	0.4008	9.3001	0.0000
LNNWC (Working Capital)	-0.0010	0.0006	-1.6725	0.1014
NPM (Net Profit Margin)	-0.1250	0.0349	-3.5867	0.0008
LNKURS (Exchange Rate)	-0.3105	0.0415	-7.4829	0.0000
R-squared	0.8258	Adjusted R-squared	0.7945	
F-statistic	765.102	Prob(F-statistic)	0.0000	

Source: EVIEWS output, processed (2025); * significant at $\alpha < 5\%$

Table 5. Panel Regression Results — Model 2: Random Effect Model (Dependent: PBV / Corporate Value)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	25.8659	6.4759	3.9942	0.0002
LNNWC (Working Capital)	0.0050	0.0129	0.3900	0.6981
NPM (Net Profit Margin)	-1.5601	0.6004	-2.5986	0.0120
LNKURS (Exchange Rate)	-2.4720	0.6595	-3.7483	0.0004
DAR (Leverage)	-1.3649	0.4859	-2.8090	0.0069
R-squared	0.8580	Adjusted R-squared	0.8111	
F-statistic	3.8326	Prob(F-statistic)	0.0081	

Source: EViews output, processed (2025); * significant at $\alpha < 5\%$

The Adjusted R-squared of 79.45% for Model 1 confirms that the three independent variables collectively explain a substantial proportion of leverage variation. For Model 2, the Adjusted R-squared of 81.11% indicates that the model—incorporating Working Capital, NPM, Exchange Rate, and Leverage simultaneously—provides a strong explanation of corporate value variation across the sample firms and observation period.

Hypothesis Testing Results

Table 6. Summary of Hypothesis Testing Results

H	Path	Coefficient	Prob.	Decision
H1	Working Capital (LNNWC) → Leverage (DAR)	-0.0010	0.1014	Rejected
H2	Net Profit Margin (NPM) → Leverage (DAR)	-0.1250	0.0008	Supported
H3	Exchange Rate (LNKURS) → Leverage (DAR)	-0.3105	0.0000	Supported
H4	Working Capital (LNNWC) → Corporate Value (PBV)	0.0050	0.6981	Rejected
H5	Net Profit Margin (NPM) → Corporate Value (PBV)	-1.5601	0.0120	Supported
H6	Exchange Rate (LNKURS) → Corporate Value (PBV)	-2.4720	0.0004	Supported
H7	Leverage (DAR) → Corporate Value (PBV)	-1.3649	0.0069	Supported

Mediation Analysis (Path Analysis and Sobel Test)

Table 7. Path Analysis and Sobel Test Results

Mediation Path	Path a (X→DAR)	Path b (DAR→PBV)	Indirect Effect (a×b)	z-Sobel	Prob.	Mediation Result
LNNWC → DAR → PBV	-0.001038	-1.364946	0.001417	1.4355	0.1512	No Mediation
NPM → DAR → PBV	-0.124994	-1.364946	0.170610	2.2124	0.0269	Partial Mediation
LNKURS → DAR → PBV	-0.310486	-1.364946	0.423797	2.6300	0.0085	Partial Mediation

Source: Processed from Table 4 and Table 5, Sobel Test formula (2026).

The Sobel test confirms that Leverage (DAR) acts as a significant partial mediator in the relationships of both NPM ($z = 2.2124$; $p = 0.0269$) and Exchange Rate ($z = 2.6300$; $p = 0.0085$) with Corporate Value (PBV). The indirect effects for both are positive in sign—because both variables reduce Leverage (negative path a), and reduced Leverage increases Corporate Value (negative path b, so $a \times b$ is positive)—reflecting competitive or inconsistent mediation: the direct effects are negative, but the mediated pathway partially offsets these direct effects. Working Capital, whose direct effects on both Leverage (H1) and Corporate Value (H4) were insignificant, does not produce a significant mediated effect ($z = 1.4355$; $p = 0.1512$).

Discussion

Working Capital (LNNWC) does not significantly affect Leverage (H1 rejected) or Corporate Value (H4 rejected). This finding is consistent with the unique operational characteristics of the Indonesian construction sector, where working capital levels fluctuate dramatically with project milestones and termin payment cycles rather than reflecting stable internal financing capacity. Ibbar & Haedar (2022) found a similar pattern in construction firms on the IDX, arguing that the project-driven nature of construction cash flows decouples working capital from leverage decisions in ways that differ from manufacturing. Investors also appear unresponsive to working capital levels in their valuation of construction firms, likely because they prioritize backlog and contract pipeline signals over balance-sheet liquidity metrics.

Net Profit Margin significantly and negatively affects Leverage (H2 supported; $\beta = -0.125$; $p = 0.0008$). This is fully consistent with Pecking Order Theory: profitable firms accumulate retained earnings and reduce their reliance on external debt. Fadlillah & Ferli (2024) and Ben Moussa & El Feidi (2023) document an identical inverse relationship in construction and listed firms respectively. The negative effect of NPM on Corporate Value (H5 supported; $\beta = -1.560$; $p = 0.0120$) is a counter-intuitive finding that reflects a sector-specific dynamic: in the construction industry, periods of high NPM typically arise from the completion of large one-time contracts rather than from structural efficiency improvements. Investors therefore do not extrapolate short-term margin spikes into sustained future profitability, and firms achieving temporarily high margins may be more conservative in expansion—resulting in a lower growth premium in PBV. This interpretation is supported by Modigliani-Miller logic that firm value is determined by future cash flow sustainability rather than historical profitability.

Exchange Rate (LNKURS) is the most dominant variable in both models. It significantly and negatively affects Leverage (H3 supported; $\beta = -0.311$; $p = 0.0000$). This counter-intuitive negative relationship—whereby rupiah depreciation is associated with reduced DAR—is interpreted through the deleveraging behavior that IDX construction firms adopt when macroeconomic cost pressures escalate: as rising import costs and foreign-currency debt burdens materialize, firms and their lenders alike become more conservative about additional borrowing. Alhamid & Wahyudi (2023) document a significant exchange rate–leverage link, though they find the more conventional positive direction in non-construction samples. Exchange rate also significantly and negatively affects Corporate Value (H6 supported; $\beta = -2.472$; $p = 0.0004$), reflecting the combined channel of higher material costs, expanded foreign-currency debt burdens, and compressed future cash flow expectations, all of which depress investor willingness to pay above book value. Khan et al. (2023) and Aminin (2024) confirm this negative exchange rate–corporate value nexus across developing market contexts.

Leverage (DAR) significantly and negatively affects Corporate Value (H7 supported; $\beta = -1.365$; $p = 0.0069$). With an average DAR of 72.99%, sample firms operate well into the zone where, according to Trade-off Theory, the costs of financial distress—driven by the risk of delayed or defaulted project payment receipts—exceed the tax shield benefits of debt. Sudarmanto & Putri (2023), Hidayat et al. (2022), and Marjohan et al. (2023) document consistent negative leverage–value relationships in Indonesian listed companies, with the penalty being particularly acute in capital-intensive sectors where debt obligations become rigid relative to unpredictable project revenues.

Conclusion

Based on panel data regression analysis of 12 publicly listed Indonesian construction companies over 2021–2025 (60 balanced observations), this study concludes: (1) Working Capital has no significant effect on Leverage; (2) Net Profit Margin has a significant negative effect on Leverage, consistent with Pecking Order Theory; (3) Exchange Rate has a significant negative effect on Leverage, reflecting construction firms' deleveraging response to macroeconomic cost pressures; (4) Working Capital has no significant effect on Corporate Value; (5) Net Profit Margin has a significant negative effect on Corporate Value, attributable to the non-recurring nature of construction margin spikes; (6) Exchange Rate has a significant negative effect on Corporate Value, reflecting the sector's high sensitivity to rupiah depreciation; and (7) Leverage has a significant negative effect on Corporate Value, supporting Trade-off Theory in the context of excessive debt. Mediation analysis confirms that Leverage partially mediates the effects of NPM and Exchange Rate on Corporate Value, but does not significantly mediate the Working Capital pathway.

Exchange rate emerges as the single most dominant variable, confirming the construction sector's substantial macroeconomic exposure. The Adjusted R-squared values of 79.45% (Model 1) and 81.11% (Model 2) indicate strong model fit.

These findings carry practical implications for construction company management: a dual profitability strategy that reduces both leverage and raises firm value simultaneously; comprehensive exchange rate risk hedging through forward contracts or natural hedging; active DAR management targeting a corridor below 70%; and transparent communication of project backlog to market participants. Investors should integrate rupiah exchange rate forecasts into construction equity valuation models and treat high single-period margins with caution without confirming earnings sustainability. Future research should extend the sample to ASEAN construction companies, add macroeconomic variables (BI Rate, inflation), and employ shorter data intervals to capture dynamic responses.

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