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Transfer Pricing as a Moderator: Impact on Effective Tax Rate and ROA in Indonesia's Manufacturing Sector (2021-2025)

ABSTRACT

This study investigates the direct effect of ¹Effective Tax Rate (ETR) on ²Return on Assets (ROA) and evaluates whether ³Transfer Pricing moderates this relationship among ⁴manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2025 period. The research adopts a ⁵quantitative approach using ⁶secondary panel data from ⁷financial statements of manufacturing firms listed on the IDX. The study employs Moderated Regression Analysis (MRA) and Conditional Process Analysis (Simple Slope Analysis) to test the hypothesized direct and moderating relationships across low, medium, and high levels of transfer pricing. The empirical results reveal that Effective Tax Rate exerts a statistically significant negative direct influence on ROA (coeff = -0.5747, $p = 0.0003$), whereas Transfer Pricing independently demonstrates a direct positive relationship with ROA (coeff = 0.0672, $p = 0.0002$). However, the interaction term between ETR and Transfer Pricing yields a statistically significant negative moderating effect (coeff = -1.9954, $p = 0.0008$), contributing an additional 20.28% of explanatory power to the model ($\Delta R^2 = 0.2028$). Conditional process analysis further shows that while ETR does not significantly impact ROA at low transfer pricing levels, higher levels of transfer pricing significantly intensify the negative impact of tax burdens on profitability. Thus, Transfer Pricing acts as an enhancing moderator that exacerbates the adverse performance effects of higher tax rates. For corporate decision-makers, the findings indicate that utilizing extensive transfer pricing under high tax rate environments creates operational and compliance friction that ultimately harms profitability. For tax authorities and regulators, the study highlights key audit risk indicators, showing that firms combining high transfer pricing exposure with elevated tax rates display heightened operational vulnerability. This study offers novel empirical insights by positioning Transfer Pricing as an enhancing moderator within the Indonesian manufacturing sector during a post-pandemic economic period (2021–2025), clarifying the boundary conditions under which tax rates impact corporate financial performance.

Keywords: Effective Tax Rate, Return on Assets, Transfer Pricing, Manufacturing Sector, IDX.

INTRODUCTION

Transfer Pricing serves a crucial role in the financial strategies of companies, particularly in how they manage their tax obligations. Companies often utilize Transfer Pricing to set prices for transactions between their divisions, which can influence their Effective Tax Rate (ETR). Research by Komarudin et al. (2022) highlights the connections between Transfer Pricing, tunneling incentives, and intangible assets. This interplay suggests that corporations strategically manipulate Transfer Pricing to optimize their tax liabilities and enhance

profitability, making it an essential mechanism in the broader framework of corporate finance and governance.

Additionally, the relationship between Transfer Pricing and ETR can vary significantly depending on other factors, such as debt covenants and corporate ownership structures. Mizvi et al. (2026) shed light on how institutional ownership can modify corporate decision-making regarding Transfer Pricing, particularly in relation to tax havens and tunneling incentives. Similarly, the study by Solikhah et al. (2025) emphasizes the impact of related party transactions and the role of government ownership in tax avoidance strategies. These insights demonstrate that the dynamics of Transfer Pricing not only affect ETR but also reflect a complex interaction of various economic and governance factors, illustrating the significance of these concepts in corporate decision-making and tax strategies.

Tax revenue plays a pivotal role in a country's economic stability and growth, serving as a primary source of funding for public services and infrastructure. Najwa et al. (2024) highlight those various methods of tax collection, such as force letters, can significantly impact corporate income tax revenue. This approach not only encourages compliance among businesses but also enhances the government's ability to secure necessary funds for development projects. The effectiveness of tax collection strategies directly influences the financial health of a nation, underscoring the importance of robust tax policies.

Indonesia's tax authority, the Directorate General of Taxes (DGT), has systematically tightened its transfer pricing regulations over the past two decades to curb aggressive tax planning and profit shifting. The regulatory framework originated under rules like PER-43/PJ/2010 (later amended by PER-32/PJ/2011), which formally introduced the Arm's Length Principle (ALP) and required taxpayers to document related-party transactions. However, as international standards evolved under the OECD BEPS (Base Erosion and Profit Shifting) project, Indonesia consolidated and upgraded these rules, culminating in PMK-172/2023. This comprehensive regulation unifies guidelines on transfer pricing documentation, Advance Pricing Agreements (APA), and Mutual Agreement Procedures (MAP) into a single omnibus framework, while explicitly enforcing an ex-ante (price-setting) approach and mandatory preliminary diagnostic analyses for affiliated transactions.

Research by Shaqira et al. (2025) indicates that the size and intensity of the manufacturing sector in Indonesia can affect tax avoidance patterns, which in turn impacts overall tax revenue. These studies collectively illustrate the critical relationship between tax revenue generation and the mechanisms employed to optimize collections, highlighting the need for innovative strategies to enhance fiscal sustainability.

The empirical data highlights significant cross-sectional variations in Transfer Pricing engagement among the observed manufacturing companies during the 2021–2025 period. Consumer goods giants such as ICBP and ROTI continuously maintained substantial transfer pricing ratios throughout the five-year window, with ICBP averaging around 47% to 54% and ROTI consistently recording levels between 44% and 48%. Similarly, CEKA demonstrated heavy involvement in related-party transactions, peaking at 76.87% in 2022 before adjusting downward to around 40.85% in 2025. These persistently high proportions reflect well-established supply chains and extensive intra-group sales across domestic and international affiliates.



Figure 1. Descriptive Analysis of Transfer Pricing (2021–2025)

Conversely, companies such as INTP, MDKI, and EKAD exhibited minimal rely on transfer pricing strategies for most of the observation period. INTP maintained low transfer pricing intensity ranging from 1.51% to 2.55%, while EKAD stayed under 2% across all five years. However, several firms displayed dramatic operational shifts; SMBR experienced a major structural jump from single-digit figures (9.45% in 2021 and 5.42% in 2022) to dominant levels exceeding 83% in 2024 and 2025 following corporate restructuring. Similarly, BOBA and MDKI saw sharp increases in 2025, reaching 45.90% and 11.34% respectively, signaling strategic expansions in intra-group business activities.

Overall, the longitudinal trend reveals two distinct corporate operational profiles within the Indonesian manufacturing sector: a mature group maintaining steady, high-volume related-party transactions, and a secondary group shifting dynamically from low to moderate or high transfer pricing levels. The multi-year average reflects substantial operational variance across firm-years, providing a rich empirical foundation for testing how differing transfer pricing intensities moderate corporate tax strategies and financial performance (ROA).

¹ The relationship between Effective Tax Rate (ETR) and Return on Assets (ROA) is a nuanced area of inquiry, particularly within manufacturing companies. ETR can significantly influence a firm's profitability and operational efficiency; however, understanding the underlying dynamics remains a challenge. This research aims to investigate whether ² Transfer Pricing serves as a moderating factor in this relationship, specifically among firms listed on the Indonesia Stock Exchange (IDX). The complexity arises from diverse tax regulations and corporate strategies that can either mitigate or exacerbate the effects of taxes on asset returns. Previous studies, such as those by Rachidi and El Moudden (2025), demonstrate how profit-shifting tactics can impact profitability across different contexts, highlighting the need for localized analysis in Indonesia's unique market.

Furthermore, the exploration of this moderation effect is vital in the wake of changing tax policies, similar to those discussed by He et al. (2023) and Zhu et al., (2023) where tax reforms can drive corporate behavior in unexpected ways. In Indonesia, manufacturers may adopt varying Transfer Pricing strategies to optimize their tax liability, thus affecting their

ROA. Additionally, the influence of external factors, such as socioeconomic conditions and regulatory frameworks, should not be overlooked, as they can significantly alter corporate decision-making. (Gu & Wang, 2023)

Farooq and Chisti (2023) examine how multinational corporations adjust their transfer pricing intensity across different economic environments, specifically analyzing Indian MNCs before and during the COVID-19 pandemic. They demonstrate that structural firm-level determinants—such as firm size, foreign involvement, intangible asset holdings, and profitability—actively drive the extent to which companies engage in related-party transactions. Addressing the broader systemic risks of transfer pricing and profit shifting, Bares et al. (2026) evaluate the transformative impact of the Pillar Two global minimum tax regime. They analyze how establishing a 15% effective tax floor reshapes corporate incentives for international business location, capital investment, and artificial profit shifting. Focusing on the operational side of transfer pricing in emerging markets, Shabika et al. (2023) investigate the direct link between transfer pricing, book-tax differences, foreign ownership, and corporate tax avoidance.

Moreover, Transfer Pricing practices can significantly influence tax revenues in developing countries, as highlighted by Kalra and Afzal (2023). This underscores the necessity to examine how these practices can affect both corporate performance and tax obligations within the Indonesian context. Additionally, the findings from Duho et al. (2024) emphasize that Transfer Pricing is not only about tax efficiency; it also intertwines with aspects of earnings management and corporate governance. By focusing on these dimensions, this research aspires to provide a comprehensive understanding of how Transfer Pricing might moderate the relationship between ETR and ROA, offering valuable implications for policymakers and business leaders in Indonesia's manufacturing sector.

Despite contributing significantly to national economic growth, manufacturing companies in Indonesia face continuous pressure to optimize profitability while managing their tax obligations. A primary indicator of corporate profitability, Return on Assets (ROA), reflects how efficiently management utilizes firm assets to generate earnings. However, the Effective Tax Rate (ETR) often creates a direct financial strain on corporate cash flows; higher effective tax burdens reduce retained earnings and directly diminish overall profitability. While conventional economic theory suggests an inverse relationship between corporate tax burdens and net returns, empirical studies show inconsistent findings, indicating that tax strategy alone does not fully explain performance variations.

To mitigate heavy tax burdens and protect profit margins, multinational and multi-entity manufacturing firms on the Indonesia Stock Exchange (IDX) frequently engage in intra-group transactions via Transfer Pricing. While strategic transfer pricing allows companies to allocate costs and profits across affiliated entities—sometimes enhancing direct returns—it simultaneously exposes firms to severe regulatory oversight, compliance costs, tax audit adjustments, and operational friction from tax authorities (such as the Directorate General of Taxes). Under high Effective Tax Rate conditions, engaging in extensive transfer pricing may amplify tax audit risks and operational complexity rather than protecting profitability. Consequently, a crucial empirical gap exists regarding whether Transfer Pricing

serves as a significant boundary condition (moderating variable) that alters or intensifies the impact of tax burdens on firm profitability within the Indonesian manufacturing sector.

This research seeks to provide insights into these intricate relationships, contributing to a deeper understanding of tax management strategies and their implications for financial performance in the manufacturing sector.

METHOD

This study employs a quantitative explanatory research design to examine the direct relationship between Effective Tax Rate (ETR) and Return on Assets (ROA), as well as the moderating role of Transfer Pricing. The explanatory framework allows the researcher to test pre-specified statistical hypotheses and analyze conditional process mechanisms.

The study evaluates publicly traded manufacturing companies registered on the Indonesia Stock Exchange (IDX). The study applies a purposive sampling method based on specific criteria: manufacturing firms continuously listed on the IDX that published complete, audited financial statements for the 2021–2025 period and engaged in intra-group related-party transactions. The final sample includes 9 manufacturing companies observed across a 5-year period (2021–2025), yielding a balanced panel dataset of 45 firm-year observations.

The research framework categorizes variables into four distinct operational roles, Return on Assets (ROA), measures overall asset profitability and operational efficiency. Effective Tax Rate (ETR), measures the actual corporate tax burden relative to financial accounting income. Transfer Pricing (TP), measures the extent of related-party transactions relative to total operational activity.

The researcher collected secondary panel data through documentation techniques by retrieving audited annual financial reports and annual statements for the 2021–2025 financial years from the official Indonesia Stock Exchange platform ([www.idx.co.id] (<https://www.idx.co.id>)) and individual company corporate investor relations portals. Prior to running the moderation regression model, the study subjects the dataset to standard Classical Assumption Tests to ensure unbiased and robust linear estimations: Normality Test, Multicollinearity Test, Heteroskedasticity Test, and Outlier Diagnostics. To prevent multicollinearity in interaction terms and ease simple slope interpretation, the moderating variable (Transfer Pricing) was mean-centered prior to running Model 1 in Hayes' PROCESS Macro.

To test the moderation framework, the researcher utilizes Hayes' PROCESS Macro (Model 1) for Conditional Process Analysis (CPA). The study estimates the following moderated regression equation:

$$ROA = \beta_0 + \beta_1 ETR + \beta_2 \text{Transfer Pricing} + \beta_3 (ETR * \text{Transfer Pricing}) + e$$

Where:

β_0 = Constant intercept.

β_1 = Direct unconditional effect of Effective Tax Rate.

β_2 = Direct effect of Transfer Pricing.

β_3 = Moderating interaction coefficient (ΔR^2 evaluation).

e = Random error term.

To probe the precise moderating mechanism across varying levels of Transfer Pricing (M), the Hayes PROCESS CPA estimates conditional direct effects at three benchmark levels Low Level, Medium Level and High Level. Hypotheses are evaluated using 95% bias-corrected bootstrap confidence intervals (LLCI and ULCI). A moderating interaction or conditional effect achieves statistical significance when its 95% confidence interval excludes zero and yields a p-value < 0.05.

RESULTS AND DISCUSSION

The classical assumption tests confirm that this regression model meets all standard diagnostic criteria required for linear modeling. The analysis indicates that the residuals follow a normal distribution, as the skewness value (-0.0001) remains virtually zero and the kurtosis value (-0.2945) stays within an acceptable range relative to its standard error. Furthermore, the model shows no evidence of influential outliers; the largest studentized residual ($t = 2.12799$) yields a Bonferroni-corrected p-value of 1.0000, well above the 0.05 threshold. The Breusch-Pagan test confirms homoscedasticity across the dataset, producing p-values of 0.6032 for the normal test and 0.5110 for the robust test, which proves that the variance of the residuals remains constant.

Multicollinearity diagnostics and influence measures further demonstrate the structural stability of the model. All independent variables—including Effective Tax Rate (ETR), Transfer Pricing (TP), and their interaction term (Int_1)—display strong tolerance levels ranging from 0.5967 to 0.7548 and low Variance Inflation Factors (VIF) between 1.3249 and 1.6760, far below the critical threshold of 10. Additionally, the DFBETA values remain small across all predictors (peaking at 0.3690 for the interaction term), confirming that no single observation exerts undue leverage over the estimated regression coefficients. Overall, these findings validate the model's reliability and soundness for statistical inference.

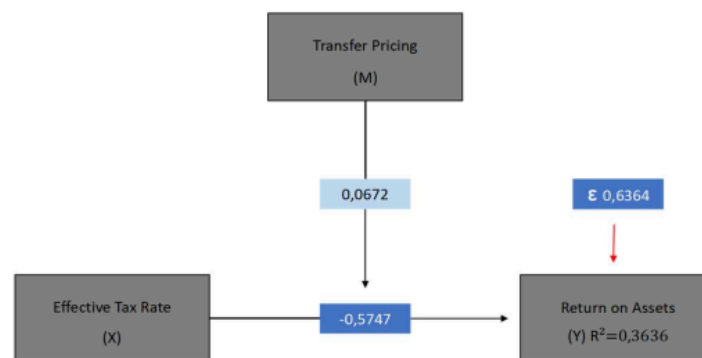


Figure 2. Model Summary

The model summary evaluates how effectively the regression model explains variations in corporate profitability as measured by Return on Assets (ROA). The statistical analysis yields a multiple correlation coefficient (R) of 0.6030, which indicates a strong combined relationship among Effective Tax Rate, Transfer Pricing, their interaction term,

and ROA. This moderate-to-strong correlation highlights that these financial predictors jointly align with changes in corporate return on assets.

Furthermore, the coefficient of determination (R^2) reaches 0.3636, demonstrating that the joint contribution of Effective Tax Rate, Transfer Pricing, and their moderation effect accounts for 36.36% of the variance in ROA. Consequently, external factors outside the scope of this regression model explain the remaining 63.64% of the variation in firm profitability. Statistical testing firmly confirms the overall validity and goodness-of-fit of the estimated model. The analysis produces an F-statistic of 7.8081 with a highly significant p-value of 0.0003, which falls well below the standard 0.05 threshold. This statistical significance proves that the combination of independent variables and their interaction term serves as a reliable and fit predictor of ROA, justifying further analysis of individual regression coefficients.

The moderated linear regression equation illustrates how Effective Tax Rate, Transfer Pricing, and their interaction influence Return on Assets ($ROA = 0.0738 - 0.5747 \text{ Effective Tax Rate} + 0.0672 \text{ Transfer Pricing} - 1.9954 \text{ Int}_1$). Direct effect evaluations reveal that Effective Tax Rate exerts a statistically significant negative influence on corporate profitability (coeff = -0.5747, $t = -3.9178$, $p = 0.0003$). The 95% confidence interval (-0.8709 to -0.2784) remains entirely below zero, confirming that higher effective tax rates consistently reduce ROA.

Conversely, Transfer Pricing demonstrates a statistically significant direct positive relationship with ROA (coeff = 0.0672, $t = 4.0420$, $p = 0.0002$). Because its 95% confidence interval (0.0336 to 0.1007) excludes zero, the statistical result indicates that transfer pricing practices independently enhance corporate performance when holding other factors constant. This direct positive effect highlights the standalone financial benefit firms achieve through strategic transfer pricing strategies.

The moderation analysis confirms that Transfer Pricing significantly moderates the effect of Effective Tax Rate on ROA through their interaction term (coeff = -1.9954, $t = -3.6143$, $p = 0.0008$). A 95% confidence interval excluding zero (-3.1104 to -0.8805) demonstrates that higher transfer pricing levels amplify the negative impact of tax burdens on profitability. Furthermore, incorporating this interaction term produces a substantial R^2 change ($\Delta R^2 = 0.2028$, $F = 13.0633$, $p = 0.0008$), proving that the moderating effect contributes an additional 20.28% of explanatory power to the overall model.

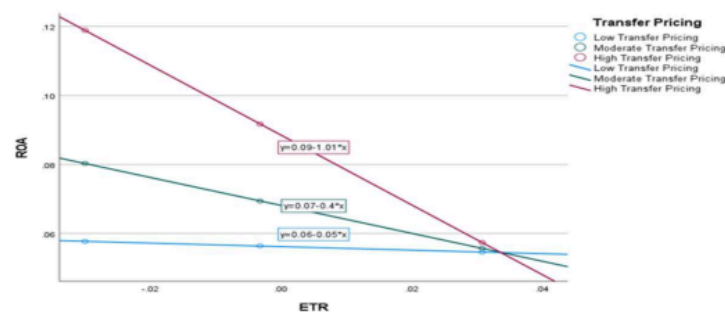


Figure 3. The conditional process analysis

The conditional process analysis illustrates how the impact of the Effective Tax Rate on Return on Assets (ROA) changes across low, medium, and high levels of Transfer Pricing.

At a low level of Transfer Pricing (-0.2628), the Effective Tax Rate shows no statistically significant impact on ROA (effect = -0.0502). Because the 95% confidence interval spans across zero (-0.3488 to 0.2488), variations in the Effective Tax Rate do not meaningfully alter financial performance when firms minimize transfer pricing activities.

At the average or medium level of Transfer Pricing (-0.0849), a statistically significant negative relationship emerges between the Effective Tax Rate and ROA (effect = -0.4052). The 95% confidence interval (-0.6687 to -0.1418) excludes zero, demonstrating that under typical transfer pricing conditions, higher tax rates significantly reduce corporate profitability as measured by ROA.

When firms engage in a high level of Transfer Pricing (0.2185), the negative effect of the Effective Tax Rate on ROA intensifies substantially (effect = -1.0107). The 95% confidence interval (-1.4768 to -0.5445) remains entirely below zero, confirming a highly significant adverse effect. These findings indicate that higher transfer pricing practice strengthens the negative impact of tax burdens on ROA, revealing that aggressive tax positions alongside high tax rates severely undermine corporate profitability.

In recent research, it has been found that Transfer Pricing plays a significant role as a moderator between Effective Tax Rate and Return on Assets (ROA). This means that the way companies set prices for transactions between their own divisions can actually amplify the negative relationship that exists between how much tax they pay and their return on investments. Specifically, a higher level of Transfer Pricing correlates with a stronger adverse effect of the Effective Tax Rate on ROA. Such findings, as noted by researchers like Hajjaj et al. (2026) in their analysis of European economies, illuminate the intricate dynamics at play, illustrating how strategic financial practices can influence overall business performance.

Moreover, the implications of these findings extend beyond mere statistics. They reveal a deeper truth about the relationship between taxation and business efficiency. When multinational firms engage in practices of tax avoidance, as highlighted by Le and Zamarian (2025), the consequences can ripple through the economy, affecting not just their financial standing, but also broader market stability. Teles et al. (2024) further discuss the reactions to regulations aimed at curbing these profit-shifting strategies, showcasing a developing country's view on such measures. These insights emphasize how closely linked financial strategies and regulatory environments are, and they provide a contextual backdrop for understanding corporate behaviors in various economic landscapes. (Qi & Li, 2023)

The overall moderation analysis demonstrates that Transfer Pricing serves as a significant moderating variable that amplifies the negative impact of the Effective Tax Rate on Return on Assets (ROA). When companies operate with low transfer pricing involvement, the tax burden alone does not substantially harm profitability. However, as firms engage more heavily in transfer pricing activities, higher effective tax rates lead to progressively sharper declines in financial performance. This statistical dynamic proves that Transfer Pricing acts as a synergistic (or enhancing) moderator, intensifying the adverse effect of tax burdens on corporate performance. Rather than sheltering profitability, extensive transfer pricing under high tax rate conditions appears to create additional compliance costs, operational friction,

or tax audit risks. Consequently, these compounding pressures further erode corporate profitability as measured by ROA.

CONCLUSION AND RECOMMENDATION

This study demonstrates that Transfer Pricing significantly moderates the ¹relationship between Effective Tax Rate (ETR) and Return on Assets (ROA) among manufacturing companies listed on the IDX. The direct empirical results confirm that Effective Tax Rate exerts a statistically significant negative influence on ROA, whereas Transfer Pricing independently exerts a direct positive impact on corporate performance. However, when examining the moderating process, the interaction term produces a statistically significant negative effect. Furthermore, the conditional process analysis reveals that at low levels of transfer pricing, ETR does not significantly affect ROA; however, as transfer pricing involvement moves from average to high levels, the negative impact of ETR on ROA becomes progressively stronger and highly pronounced. Overall, these findings confirm that Transfer Pricing acts as an enhancing moderator that intensifies the adverse effects of higher tax burdens on corporate profitability.

This study enriches the corporate finance and tax management literature by demonstrating that transfer pricing does not merely act as a direct determinant of performance, but serves as a critical boundary condition that accelerates profitability losses when corporate tax burdens rise. Corporate managers and CFOs must recognize that aggressive transfer pricing under high tax rate environments fails to protect overall earnings. Instead, it creates compounding compliance burdens and operational risks that ultimately erode return on assets. Tax authorities (such as the Directorate General of Taxes) and market regulators can utilize these insights to monitor manufacturing firms that combine high transfer pricing activities with elevated effective tax rates, as this combination reflects greater operational and tax-related vulnerability.

The empirical observation focuses exclusively on publicly traded manufacturing companies on the IDX, ¹²which may limit the generalizability of the findings to non-listed firms or other business sectors (such as service, technology, or financial industries). Researchers should integrate complementary governance variables—such as Board Independence, Audit Committee Quality, or Ownership Concentration—to evaluate whether strong corporate governance mitigates the negative moderating effect of transfer pricing.

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