International Symposium on Green Innovation, Governance, and Sustainability
Vol. 4 No. 1 | 2026
E-ISSN 3047 - 1877

The Effect of Capital Structure, Total Asset Turnover, and Investment Opportunity Set on Company Value in the Transportation and Logistics Sector on the Indonesian Stock Exchange (BEI) for the Period 2021 - 2025

Diana Guretti Gita Puspitasari[1] and *Rendra* Arief Hidayat[2]

[1]Accounting Study Program, Faculty of Economics and Business, Universitas Negeri Surabaya, Surabaya, Indonesia
[2]Accounting Study Program, Faculty of Economics and Business, Universitas Negeri Surabaya, Surabaya, Indonesia

Abstract. The transportation and logistics sector in Indonesia grew faster than the national economy from 2022 to 2025, yet the average firm value of companies in this sector fell from 2.900 in 2021 to 1.220 in 2024. This study examines the effect of capital structure, total asset turnover (TATO), and investment opportunity set (IOS) on firm value, using signaling theory and trade-off theory as the theoretical basis. The sample consists of 28 transportation and logistics companies listed on the Indonesia Stock Exchange (IDX) in 2021–2025, selected by purposive sampling, which gives 140 firm-year observations. Capital structure is measured by the debt to equity ratio (DER), IOS by the market to book value of equity (MBVE), and firm value by Tobin's Q. The data were analysed with panel data regression, and a robustness check was carried out by adding firm size, profitability, and firm age as control variables. Capital structure has a negative and significant effect on firm value, IOS has a positive and significant effect, and TATO has a positive but insignificant effect. Together, the three variables significantly affect firm value and explain 52.35% of its variation, and these results do not change when the control variables are added. In a capital-intensive sector, investors appear to treat additional debt as a financial risk rather than as a source of tax savings.

Keywords: Capital structure; Firm value; Investment opportunity set; Total asset turnover; Transportation and logistics

[1] Corresponding author: diana.23045@mhs.unesa.ac.id

1 Introduction

Firm value reflects how well a company manages its resources and pursues its long-term goals, and investors use it to judge past, present, and expected performance. A higher firm value is reflected in a higher share price and, in turn, in greater wealth for shareholders. Transportation and logistics companies in Indonesia saw their revenues fall sharply when public mobility was restricted, and the Russia–Ukraine conflict that began in 2022 later raised energy prices and disrupted supply chains. Even so, the rise of e-commerce made the sector a strategic part of distribution. According to Statistics Indonesia (BPS), the sector grew by 19.87%, 13.96%, 8.69%, and 8.78% in 2022–2025, faster than GDP in every year, and its contribution to GDP rose from 4.24% in 2021 to 6.16% in 2025.

The capital market did not follow the same path. The IDX transportation and logistics index (IDXTRANS) fell by 18,78% in 2024, the deepest decline among all sectoral indices that year, and the average firm value of the sector dropped from 2.900 in 2021 to 1.220 in 2024 before recovering to 1.555 in 2025. This gap between sector growth and market response suggests that investors also look at the internal decisions of each company.

This study focuses on three such factors. Capital structure describes how a company combines debt and equity to finance its activities; the industry is capital intensive and depends on fixed assets and external funding [1], which tends to push debt ratios up. Total asset turnover (TATO) measures how effectively a company uses its assets to generate sales. Investment opportunity set (IOS) combines assets in place with future investment options and reflects the company's growth opportunities.

Previous studies have produced mixed results. Capital structure has been found to raise firm value because debt provides a tax shield and additional funding [2, 3], while other studies report a negative effect [4]. TATO had a positive effect in [5], a negative effect in [6], and no significant effect in [7]. IOS had a positive effect in [8, 9], whereas [10] found no effect. This study therefore tests the effects of capital structure, TATO, and IOS on the firm value of transportation and logistics companies listed on the Indonesia Stock Exchange (IDX) in 2021–2025.

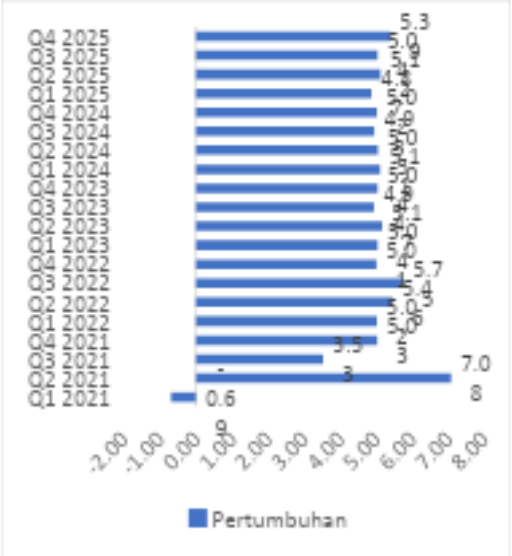

Fig 1. Indonesia's GDP Growth, 2021–2025 (year-over-year)

2 Literature review and hypotheses

Signaling theory explains the information gap between management and investors [11]. Management knows more about the company's condition and prospects and passes this on through signals such as financial statements, investment policy, and financing policy. Good prospects are received as a positive signal that raises investor confidence and firm value, while signs of higher risk are read as a negative signal. Trade-off theory states that a company weighs the tax savings from debt against the costs of financial distress [12]. Interest reduces taxable income, but excessive debt raises bankruptcy risk and agency costs, so firm value is maximized when the marginal benefit of debt equals its marginal cost.

Under trade-off theory, debt at an optimal level raises firm value through the tax shield, and financing decisions can also signal good prospects. Tubastuvi et al. [3] found that profitable companies take on more debt to benefit from interest tax savings, and Bui et al. [2] showed that a higher debt ratio raises Tobin's Q because tax savings lower the weighted average cost of capital.

H1: Capital structure has a positive effect on firm value.

Efficient use of assets signals good operating performance. Suriawinata et al. [5] found that higher asset turnover comes with higher net cash flow, which raises firm value since value reflects expected future cash flows.

H2: Total asset turnover has a positive effect on firm value

A company with large investment opportunities signals strong growth prospects. Cahya and Septiani [8] and Tabe et al [9] found that a higher IOS encourages investors to buy the shares and raises firm value.

H3: Investment opportunity set has a positive effect on firm value.

Since firm value depends on financing decisions, asset efficiency, and growth opportunities together, the fourth hypothesis is as follows (see Fig. 1):

H4: Capital structure, total asset turnover, and investment opportunity set simultaneously affect firm value

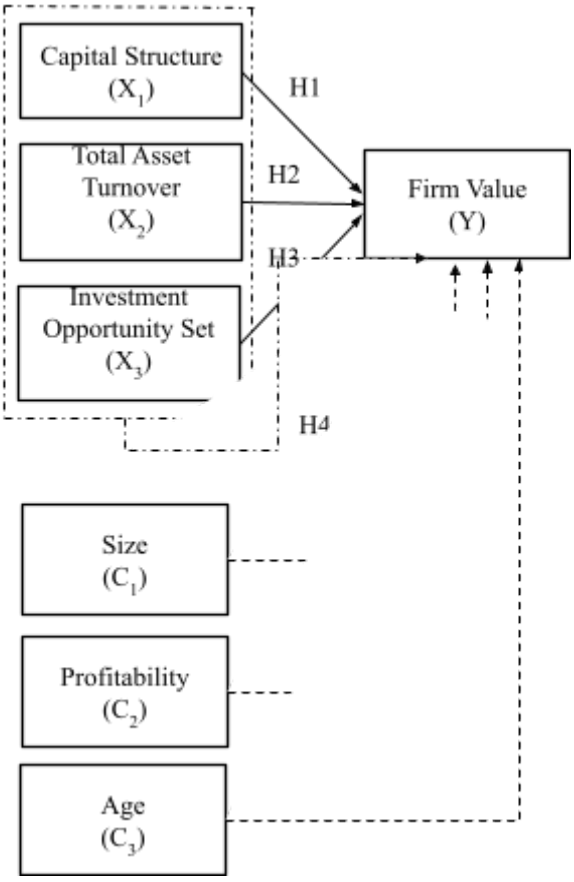

Fig 2. Conceptual Framework

3 Research method

This quantitative study uses secondary data from the annual reports and financial statements of transportation and logistics companies listed on the IDX in 2021 – 2025. Of the 40 listed companies, purposive sampling excluded 11 that were not listed throughout the period and one without complete financial statements, leaving 28 companies and 140 firm-year observations. Firm value (Y) is measured by Tobin's Q [13]:

$$Tobin's\ Q = \frac{MVE + DEBT}{TA} \quad (1)$$

Where MVE is the market value of outstanding shares, DEBT is total liabilities, and TA is total assets. Capital structure X_1) is measured by the debt to equity ratio (DER = total liabilities / total equity), and TATO (X_2) by sales divided by total assets. IOS (X_3) is measured by the market to book value of equity (MBVE = market value of equity / book value of equity), a price-based proxy [14]. The control variables are firm size (SIZE, natural logarithm of sales), profitability (PROF, net profit margin), and firm age (AGE, years since establishment) [10].

The data were analysed with panel data regression in Eviews 13. The Chow, Hausman and Lagrange Multiplier (LM) tests were used to choose between the common effect

(CEM), fixed effect (FEM), and random effect (REM) models, followed by classical assumption tests and *t*- and *F*-tests at the 5% level. A robustness check compared the main model with a model that includes the control variables [15]:

$$Y_{it} = \alpha + \beta_1 SM_{it} + \beta_2 TATO_{it} + \beta_3 IOS_{it} + \varepsilon_{it} \quad (2)$$

$$Y_{it} = \alpha + \beta_1 SM_{it} + \beta_2 TATO_{it} + \beta_3 IOS_{it} + \beta_4 SIZE_{it} + \beta_5 PROF_{it} + \beta_6 AGE_{it} + \varepsilon_{it} \quad (3)$$

Where SM is capital structure, i is the company, and t is the year. The results are robust if signs and significance stay stable accros both models.

4 Results and discussion

4.1 Descriptive statistics and model tests

Table 1 shows that DER and MBVE have very wide ranges and standard deviations far above their means, because some companies have negative equity. TATO has a mean of 0.6586, so each rupiah of assets generated about Rp 0.66 of sales, and its standard deviation is lower than its mean

Table 1. Descriptive statistics (N=140)

Variable	Min.	Max.	Mean	Median	Std. dev.
Firm value (Y)	−1.1901	3.0310	0.2599	0.0981	0.6672
DER (X_1)	−90.2981	79.8662	0.6760	0.4884	11.1119
TATO (X_2)	0.0403	2.3694	0.6586	0.5730	0.4735
MBVE (X_3)	−40.7412	26.1332	1.7488	0.9790	5.5105
SIZE	21.8046	31.5689	26.6398	26.4458	2.1601
NPM	−3.7466	1.9290	−0.0051	0.0516	0.5116
AGE	1.7918	4.3307	3.2116	3.2770	0.6161

The Chow test (Prob. 0.0000) favours FEM over CEM, the Hausman test (Prob. 0.1775) favours REM over FEM, and the LM test (Prob. 0.0000) favours REM over CEM, so REM is used for the main model; FEM was selected for the robustness model. The residuals are normal (Prob. 0.5047). The highest correlation between independent variables is 0.8295 (DER and MBVE), below 0.90, the heteroskedasticity test gives probabilities above 0.05 for all variables, and the Durbin–Watson value of 2.0521 lies between $d_U = 1.7678$ and $4 - d_U = 2.2322$.

4.2 Regression results

In the main model (Table 2), DER has a negative and significant effect (-0.0540; Prob. 0.0000), MBVE a positive and significant effect (0.1284; Prob. 0.0000), and TATO a positive but insignificant effect (0.1263; Prob. 0.1638). The *F*-statistic of 41.6566 (Prob. 0.0000) shows that the three variables jointly affect firm value, and the adjusted R^2 of 0.5235 means they explain 52.35% of its variation. With the control variables added, the signs and significance do not change and none of the controls is significant, so the findings are robust. H1 and H2 are rejected, and H3 and H4 are accepted.

Table 2. Panel regression results of the main and robustness models

Variable	Main model (REM)			Robustness model (FEM)		
	Coef.	*t*-stat.	Prob.	Coef.	*t*-stat.	Prob.
Constant	−0.0114	−0.1225	0.9027	5.1118	2.4210	0.0172
DER	−0.0540	−12.0936	0.0000	−0.0484	−10.4815	0.0000
TATO	0.1263	1.4001	0.1638	0.2613	1.5973	0.1132
MBVE	0.1284	13.7169	0.0000	0.1161	11.9129	0.0000
SIZE	–	–	–	−0.1545	−1.6039	0.1117
NPM	–	–	–	−0.0098	−0.1852	0.8534
AGE	–	–	–	−0.3361	−1.0442	0.2988
R^2	0.5364					
Adjusted R^2	0.5235					
F-statistic	41.6566		(0.0000)			
Durbin–Watson	2.0521					

4.3 Discussion

The negative effect of capital structure means that more debt relative to equity lowers firm value. Transportation and logistics companies rely on debt to finance fleets and warehouses, and this adds to their interest burden, so investors see high debt as a financial risk rather than a driver of growth. In trade-off terms, debt raises value only while the tax shield exceeds the cost of financial distress [12]; here, interest and principal must be paid on fixed dates regardless of revenue, and the added default risk outweighs the tax benefit. High debt can also be read as a negative signal of dependence on external funding [11]. The result agrees with Ardiansa et al. [4], Cahya and Septiani [8], and Ahmad et al. [6].

TATO is not significant, which means investors do not yet use asset efficiency to value companies in this sector. Turnover is low because fleets and infrastructure require large investments that do not quickly turn into sales, and the narrow spread of TATO between companies does little to set them apart. Asset efficiency becomes a positive signal only when it leads to better overall performance. This is in line with Ishak et al. [7].

IOS has a positive effect because a high MBVE shows that the market expects the company to grow; the mean MBVE of 1.7488 indicates that equity in this sector is generally valued above book value. In line with signaling theory, large investment opportunities signal future expansion and profits, which raises demand for the shares. This agrees with Tabe et al. [9] and Cahya and Septiani [8]. The simultaneous effect is driven mainly by capital structure and IOS, so market valuation in this sector responds more to debt financing and growth opportunities than to asset turnover.

5 Conclusion

For 28 transportation and logistics companies listed on the IDX in 2021 – 2025, capital structure has a negative and significant effect on firm value, IOS has a possituve and significant effect, and TATO has no significant effect. The three variables jointly explain 52.35% of the variation in firm value, and the results hold after firm size, profitability, and firm age are controlled for. The findings support trade-off theory, as companies in this capital-intensive sextor appear to have passed their optimal debt level, and signaling theory for IOS. Managers should keep debt at level that does not strain cash flow, consider equity or rentained earnings to fund expansion, and communicate investment plans clearly to the market. Investors should look beyond sector growth and examine each compoany's leverage and growth prospects. Future studies could add variables such as dividend policy, liquidity,

or ESG disclosure, use alternative proxies, treat extreme DER and MBVE values, and cover other sectors or countries.

Reference

1. I.C. Negkakis, How capital leases affect firm performance: an analysis in the shipping industry. J. Risk Financial Manag. **18**, 371 (2025) https://doi.org/10.3390/jrfm18070371
2. T.N. Bui, X.H. Nguyen, K. Pham, The effect of capital structure on firm value: a study of companies listed on the Vietnamese stock market. Int. J. Financial Stud. **11**, 100 (2023) https://doi.org/10.3390/ijfs11030100
3. N. Tubastuvi, A.E. Yuswadani, A. Fitriati, A. Darmawan, P. Jroenwanit, Profitability as a moderator: assessing the influence of capital structure, investment decision, and firm size on firm value. Riset Akunt. Keuang. Indones. **9**(1) (2024) https://doi.org/10.23917/reaksi.v9i1.4044
4. G. Ardiansa, Wiyono, F. Fitriasari, The effect of capital structure on company value in automotive and component sector companies in go public period 2015–2019. Jamanika J. Manaj. Bisnis Kewirausahaan **1**(2) (2021) https://doi.org/10.22219/jamanika.v1i2.17074
5. I.S. Suriawinata, E.T. Budiyani, G. Mais, M. Anhar, Cash conversion cycle, asset turnover, capital expenditure and firm value: the mediating role of profitability. J. Reviu Akunt. Keuang. **13**, 674–695 (2023) https://doi.org/10.22219/jrak.v13i3.25161
6. H. Ahmad, M. Muslim, N. Syahrah, Several factors affecting firm value manufacturing in Indonesia. J. Akunt. **26**, 127–143 (2022) https://doi.org/10.24912/ja.v26i1.821
7. J.F. Ishak, A.A. Nugraha, E. Noviriani, E. Sri, The determinants factors of firm value. E3S Web Conf. **479**, 07025 (2024) https://doi.org/10.1051/e3sconf/202447907025
8. Y.D. Cahya, D. Septiani, The effect of investment opportunity set, funding decision and dividend policy on firm value. J. Ekon. Bisnis (AGREGAT) **8**, 100–111 (2024) https://doi.org/10.22236/agregat_vol8.i1/15967
9. R. Tabe, L.S.L.V. Joyce, S. Murni, J.B. Maramis, The effect of firm size, investment opportunity set, and capital structure on firm value. Seybold Rep. **17**, 56–74 (2022) https://doi.org/10.5281/zenodo.6592088
10. Rismawandi, Martini, The role of investment opportunity set (IOS), firm age, and managerial ownership in increasing company value. Bul. Poltanesa **26**, 237–242 (2025) https://doi.org/10.51967/tanesa.v26i1.3269
11. B.L. Connelly, S.T. Certo, C.R. Reutzel, M.R. DesJardine, Y.S. Zhou, Signaling theory: state of the theory and its future. J. Manage. **51**, 24–61 (2025) https://doi.org/10.1177/01492063241268459
12. E.F. Brigham, M.C. Ehrhardt, Financial Management: Theory & Practice (Cengage Learning, Boston, 2019)
13. K.H. Chung, S.W. Pruitt, A simple approximation of Tobin's q. Financ. Manage. **23**, 70–74 (1994) https://doi.org/10.2307/3665623
14. S. Kallapur, M.A. Trombley, The investment opportunity set: determinants, consequences and measurement. Manag. Finance **27**, 3–15 (2001) https://doi.org/10.1108/03074350110767060
15. X. Lu, H. White, Robustness checks and robustness tests in applied economics. J. Econometrics **178**, 194–206 (2014) https://doi.org/10.1016/j.jeconom.2013.08.016