

Transformation of the Chemical Industry Sector in Indonesia to Enhance Corporate Value

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ABSTRACT

Keywords:

Chemical Industry; Debt to Equity Ratio; Firm Value; Price to Book Value; Firm Size

This study aims to analyze the transformation of the chemical industry sector in Indonesia in increasing company value. The independent variables include the Debt to Equity Ratio (DER) and stock price, with company size as a moderating variable. The study focused on 60 chemical industry companies listed on the Indonesia Stock Exchange (IDX) during the period 2019–2023. The analytical method used was panel data regression. The results of the Chow and Hausman tests indicate that the Random Effect model is more appropriate, whereas the Lagrange Multiplier test supports the Fixed Effect model. The test results show that DER has no significant effect on company value, as measured by Price to Book Value (PBV). Meanwhile, stock price and company size have a negative and significant effect on PBV. In addition, company size cannot moderate the effect of DER on PBV, whereas it has been shown to moderate the effect of stock price on PBV. This study provides practical implications for chemical industry companies in increasing company value through effective management of capital structure, stock price movements, and company scale.

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ABSTRAK

Penelitian ini bertujuan untuk menganalisis transformasi sektor industri kimia di Indonesia dalam meningkatkan nilai perusahaan. Variabel independen yang digunakan meliputi Debt to Equity Ratio (DER) dan harga saham, dengan ukuran perusahaan sebagai variabel moderasi. Objek penelitian adalah 60 perusahaan sektor industri kimia yang terdaftar di Bursa Efek Indonesia (BEI) selama periode 2019–2023. Metode analisis yang digunakan adalah regresi data panel. Hasil uji Chow dan Hausman menunjukkan bahwa model Random Effect lebih sesuai, sedangkan uji Lagrange Multiplier mendukung penggunaan model Fixed Effect. Hasil pengujian menunjukkan bahwa DER tidak berpengaruh signifikan terhadap nilai perusahaan yang diukur dengan Price to Book Value (PBV). Sementara itu, harga saham dan ukuran perusahaan berpengaruh negatif dan signifikan terhadap PBV. Selain itu, Ukuran Perusahaan tidak dapat memoderasi DER terhap PBV dan ukuran perusahaan

terbukti mampu memoderasi pengaruh harga saham terhadap PBV. Penelitian ini memberikan implikasi praktis bagi perusahaan sektor industri kimia dalam meningkatkan nilai perusahaan melalui pengelolaan struktur modal, pergerakan harga saham, dan skala perusahaan secara efektif.

INTRODUCTION

Indonesia has significant potential for rapid development in the chemical industry sector, thanks to its abundant natural resources. This wealth of natural resources is one of the main factors driving the development of the chemical industry. Additionally, the demand for chemical raw materials needed by various sectors, such as energy, food, pharmaceuticals, healthcare, materials, and others, can reduce dependence on imports. With maintained quality, these chemical products can even be exported, which in turn can drive national economic growth.

Corporate financial transformation is the process of structural changes in how companies manage their financial resources, with the goal of increasing the company's value. Company value, as reflected by Price to Book Value (PBV), serves as an important measure for assessing financial performance. According to Brigham, E.F., dan Houston (2013), the company value measured by Price to Book Value reflects investors' views on the risk and growth potential of a company. One sector that has attracted significant investor interest but has experienced a decline in value in recent years is the Basic and Chemical Industry sector.

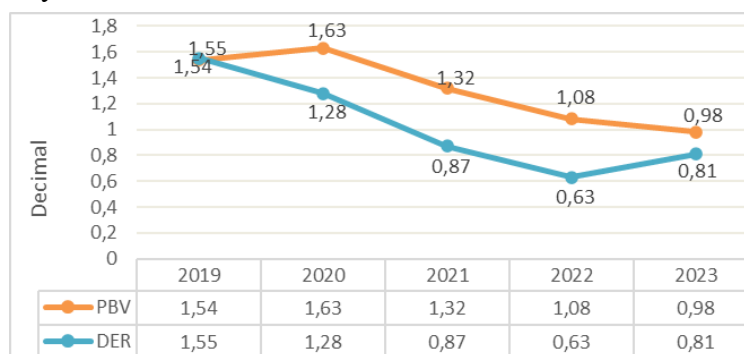


Figure 1. Development of Company Value in the Basic Chemical Industry

The chart shows two different metrics for the company from 2019 to 2023, namely PBV (Price to Book Value), represented by the green line, which indicates a gradual decline from 1.54 in 2019 to 0.98 in 2023. This shows a decrease in the PBV ratio over the past five years, while DER (Debt to Equity Ratio), represented by the blue line, also shows a decrease from 1.55 in 2019 to 0.81 in 2023. This indicates a significant decline in the company's debt-to-equity ratio during the same period.

The reduction in DER observed between 2019 and 2022 reflects a strategic shift toward lower debt utilization. From an investor perspective, this trend is considered favorable due to the associated decrease in financial risk, which should positively affect

firm value as measured by PBV. However, the chart shows that despite the decline in DER during the 2020-2022 period, PBV actually decreased. This contradicts the findings in the study by Dewi et al. (2022) which stated that DER reflects the company's debt level, and companies with high debt tend to have high debt costs. High debt costs can be a burden for the company, which in turn can reduce investor confidence and decrease the company's value.

The Efficient Market Hypothesis (EMH) states that stock prices in an efficient market reflect the true value of a company, as all available information is already incorporated into the stock price. This price is recorded as the market price for each share traded at a given time. Stock prices are influenced by various factors, such as the company's performance, economic conditions, market sentiment, government policies, and global factors (Ismawati, 2021). This means that stock prices are the result of the interaction between numerous internal and external factors that influence investors' perceptions and expectations about the future of the company in question (Saerang et al., 2014; Santos & Montezano, 2017)

Company size is a key determinant of firm value, particularly in the Basic and Chemical Industry sector, which is inherently capital-intensive and demands considerable investment in fixed assets such as production equipment, facilities, and raw materials. As a result, companies with larger sizes tend to have competitive advantages in terms of production scale, cost efficiency, and resilience to market fluctuations (Avdalović & Milenković, 2017; Oktaviani et al., 2023). Given these considerations, firm size becomes a crucial variable that needs to be accounted for when analyzing a company's value in the Basic and Chemical Industry sector. It is not only an indicator of operational scale but also a determinant of investor confidence, competitiveness, and the company's ability to withstand the complexities of the industry, which ultimately can enhance its corporate value.

The Basic Chemical Industry sector faces various challenges, one of which is seen in PT Solusi Bangun Indonesia Tbk (SMCB). On December 30, 2024, SMCB's stock price closed at Rp710.03. In the first semester of 2025, SMCB reported a net profit of Rp266.52 billion, a 63% increase compared to the same period in 2024. Despite this significant profit growth, SMCB's stock price remained stagnant. This reflects a gap between financial performance and market perception, possibly influenced by industry conditions and competitive pressures (SMCB Financial Report, 2025).

Another issue is faced by PT Indo-Rama Synthetics Tbk (INDR), where in December 2024, INDR's stock price was recorded at Rp2,690.00. INDR reported a net loss of Rp305.5 billion for the year, an improvement compared to the loss of Rp629.1 billion in 2023. However, despite the improvement in financial performance, INDR's stock price remained low. This reflects a gap between stock price and intrinsic value, possibly shaped by market perceptions of the textile and polyester industry's prospects in

Indonesia. Therefore, the researcher is conducting a study on Corporate Financial Transformation: The Impact of Debt to Asset Ratio, Stock Price, and Company Size on Corporate Value, to analyze these discrepancies and factors affecting the companies' performance and market valuations.

LITERATURE REVIEW

Signaling Theory is a response made by company management to provide cues to investors regarding managerial behavior in assessing the company's prospects. Its main goal is to ensure that investors and managers have the same information about the company's prospects, known as symmetric information (Brigham & Houston, 2013). However, in reality, managers often possess better information than external investors, which is referred to as asymmetric information. Company value, according to (Ningrum, 2022) is the perception of investors regarding the level of success of a company, closely linked to its stock price. An increase in stock price signals higher firm value and greater shareholder wealth (Makrychoriti & Pyrgiotakis, 2024). Firm value is a crucial measure that captures investor perceptions regarding corporate performance and growth potential (Zhu & Shin, 2024). Moreover, the Debt to Equity Ratio (DER) represents the extent to which a company's equity finances its liabilities.

A company with a high DER is considered more risky by investors, which can affect investor valuations, stock prices, and company value (Hutahean, et. al, 2024). A decrease in DER can provide a positive signal to investors, indicating better debt management (Banerjee, et. al, 2025). Stock prices themselves are indicators of shareholder wealth, with the goal of maximizing the company's stock price, which is directly related to the expected future cash flows (Brigham, E.F., dan Houston, 2013) On the other hand, company size, measured using the logarithm of total assets listed in the financial statements at the end of the period, reflects the scale of the company. Company size also indicates the relative size of a company's operations (Hery, 2017) All of these factors are interconnected in determining the company's performance and value in the eyes of investors (Mudjiyanti, et. al, 2021).

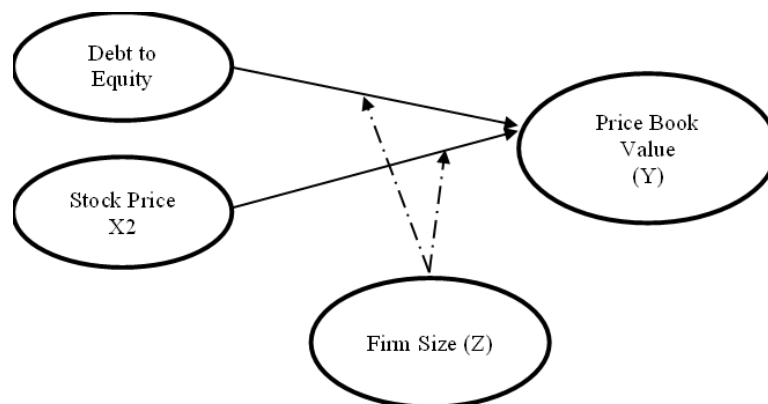


Figure 2. Conceptual Framework

The increase in company value is supported by factors such as Debt to Equity (DER), stock price, and company size (Jiang, 2024). The first hypothesis explains that Debt to Equity influences company value, where a higher debt ratio increases the risk faced by the company, which impacts the reduction of the company's value (Nabilah & Anwar, 2022). Meanwhile, stock price also influences company value, as stated in the second hypothesis, where an increase in stock price indicates positive prospects that can enhance the company's value, whereas a decrease in stock price has the opposite effect (Fonseka, et.al 2025). The third hypothesis suggests that company size affects company value, with larger companies generally having a higher value due to greater stability and more resources. Company size also plays a role in moderating the influence of Debt to Asset on company value (fourth hypothesis), where larger companies are better equipped to manage debt without negatively affecting the company's value. The fifth hypothesis explains that company size moderates the relationship between stock price and company value, with larger companies having more stable stock prices, which contributes to an increase in company value.

METHOD

An associative research approach is employed to analyze the relationship between independent and dependent variables based on secondary data. The study population consists of Basic and Chemical Industry firms listed on the Indonesia Stock Exchange from 2019 to 2023, resulting in 60 observations used for analysis. The operational definitions are as follows:

- a. Debt to Equity: The DER is computed as the proportion of total liabilities to total equity. Data on liabilities and equity are sourced from balance sheet financial statements and reported in nominal rupiah, with the resulting ratio presented in decimal values.
- b. Stock price is defined as the market value of a company's shares and is measured using the closing price reported in the stock summary.
- c. Size: Firm size is measured using total assets obtained from balance sheet data and transformed into natural logarithmic form to reduce scale disparities among variables.
- d. Firm Value: The firm value is measured using the Price to Book Value ratio, expressed in decimal units. This is obtained by first looking at the book value of the stock and then comparing it with the stock price in Rupiah (Rp). The book value of the stock is measured by comparing total equity with the number of shares outstanding. Total equity can be seen in the balance sheet financial statements, the number of shares outstanding can be found in the company's annual report in the shareholders' equity section, while the stock price can be viewed in the annual report's stock price information section, specifically the closing price.

This research is quantitative with a path analysis approach, using Structural Equation Modeling (SEM) to analyze the data. SEM will be used to test the relationships between the variables defined in the research model. The software used for this analysis is AMOS (Analysis of Moment Structures). Data analysis techniques include normality testing, validity and reliability testing, SEM analysis, and hypothesis testing.

RESULT AND DISCUSSION

Result

Table 1. Uji Chow (CEM)

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.667029	(14,42)	0.7920
Cross-section Chi-square	12.046166	14	0.6026

Source: Processed data (2025)

Based on the Chow test results, the F-statistic is 0.667029 with a p-value of 0.7920, indicating no significant difference between the fixed effects and random effects models in terms of cross-sectional effects. Additionally, the Chi-square statistic of 12.046166 with a p-value of 0.6026 further confirms that the fixed effects model is not preferable to the random effects model.

Table 2. Uji Hausman (REM)

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.820191	3	0.6106

Source : Processed data (2025)

The Hausman test yields a Chi-square statistic of 1.820191 and a p-value of 0.6160, suggesting no significant difference in coefficient estimation between the fixed effects and random effects models. Consequently, the Random Effects Model (REM) is deemed more appropriate for this analysis.

Table 3. Uji LM (CEM)

Lagrange Multiplier Tests for Random Effects			
Null hypotheses: No effects			
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives			
	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	0.970190 (0.3246)	1.862969 (0.1723)	2.833159 (0.0923)
Honda	-0.984982 (0.8377)	-1.364906 (0.9139)	-1.661622 (0.9517)
King-Wu	-0.984982 (0.8377)	-1.364906 (0.9139)	-1.652408 (0.9508)
Standardized Honda	-0.845415 (0.8011)	-1.172825 (0.8796)	-5.246551 (1.0000)
Standardized King-Wu	-0.845415 (0.8011)	-1.172825 (0.8796)	-4.551661 (1.0000)
Gourieroux, et al.	--	--	0.000000 (1.0000)

Source : Processed data (2025)

The Breusch–Pagan test reports a statistic of -0.970190 with a p-value of 0.3246 , indicating no significant cross-sectional random effects. Consistently, the Honda and King–Wu tests also show negative statistics with p-values above 0.05 , while their standardized versions yield p-values greater than 0.8 . These findings suggest a lack of strong evidence supporting random effects, thereby indicating that the fixed effects model is more suitable for this dataset.

The Chow and Hausman test results favor the Random Effects Model (REM) over the Fixed Effects Model. While the LM test suggests that the Fixed Effects Model may be more appropriate due to the insignificance of random effects, the Hausman test indicates that REM is more suitable. Consequently, the Random Effects Model is selected as the best estimation approach for this study.

Table 4. Uji MRA

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1551.004	366.9180	4.227115	0.0001
X1	-0.045708	0.028655	-1.595107	0.1165
X2	-0.187653	0.069595	-2.696361	0.0093
Z	-51.06075	12.71010	-4.017336	0.0002
X1Z	15.87294	10.11374	1.569443	0.1224
X2Z	0.006206	0.002376	2.611525	0.0116
Root MSE	36.31328	R-squared		0.470681
Mean dependent var	51.35000	Adjusted R-squared		0.421670
S.D. dependent var	50.33341	S.E. of regression		38.27755
Akaike info criterion	10.22224	Sum squared resid		79119.24
Schwarz criterion	10.43168	Log likelihood		-300.6673
Hannan-Quinn criter.	10.30417	F-statistic		9.603577
Durbin-Watson stat	1.702294	Prob(F-statistic)		0.000001

The results of the MRA test indicate that the Debt to Equity Ratio variable has no significant effect at the 5% level (p-value = 0.1165). Despite the negative relationship shown by the coefficient (i.e., the higher the DER, the lower the PBV), this relationship is not strong enough to be considered significant. In other words, the debt-to-equity ratio does not have a clear influence on the Price to Book Value (PBV) in this model. According to the research by (Putra & Sari, 2023) as well as (Suardy et al., 2023), the relationship between solvency and firm value is influenced by external factors such as interest rates, economic growth, and stock price indices. Additionally, companies may increase capital contributions from shareholders or use short-term debt for operational needs such as salary payments. Another factor is that investors are more focused on how companies manage and use their funds effectively and efficiently, rather than just looking at the amount of debt the company has.

Discussion

The stock price variable demonstrates a significant negative effect on Price to Book Value (PBV), as evidenced by a p-value of 0.0093, indicating a statistically significant relationship between stock price and firm value. This negative association suggests that increases in stock prices are accompanied by a decline in PBV, implying that market valuations do not proportionally reflect improvements in the company's underlying book value. From a signaling theory perspective, fluctuations in stock prices convey information regarding market expectations of firm performance and future prospects. A decline in stock price may serve as a negative signal, reflecting investor concerns related to financial conditions, operational performance, or heightened uncertainty about future growth. Such perceptions can lead to further downward pressure on stock prices, thereby reducing PBV as the market assigns a valuation below the firm's book value. Conversely, situations in which stock prices increase while PBV continues to decline may indicate market perceptions of overvaluation, where price appreciation is driven more by short-term market sentiment than by fundamental improvements in book value. This misalignment between market price and intrinsic value reinforces the notion that PBV captures not only firm fundamentals but also investor expectations, consistent with prior empirical findings (Dewi Teresia & Hermi, 2016).

The Firm Size variable has a highly significant negative effect on PBV. An increase of one unit in firm size will lead to a decrease in PBV by approximately 51.0608 units. This indicates that larger companies tend to have a lower Price to Book Value (PBV). This could suggest that investors prefer smaller companies with higher growth potential over larger companies, which may be seen as more stable but with limited growth. The results for DER and Size are not significant, with a p-value of 0.1224, indicating that the effects of the debt-to-equity ratio and firm size on PBV do not significantly strengthen or weaken each other. Despite having positive coefficients, their influence on PBV is not significant enough. If DER and firm size do not send clear signals to the market, their effect on PBV becomes insignificant. For example, large companies or those with high debt might not provide strong or consistent signals regarding their future prospects, leading the market not to value them higher, despite their size or debt levels. These results align with the Capital Structure Theory, which suggests that the impact of capital structure may not be very significant, especially if the market does not view debt or firm size as primary indicators in assessing the potential or value of a company.

Firm size is unable to moderate the relationship between the debt-to-equity ratio (DER) and PBV. This may be attributed to the fact that firms with substantial asset holdings tend to have easier access to external financing from creditors. As a result, large asset bases encourage management to rely more heavily on debt financing, which may reduce the firm's ability to effectively manage its debt levels due to excessive borrowing.

Such conditions can lead to heightened financial risk, particularly when the firm's total debt becomes excessively large (Rachmad Reza, Jufrizen, 2023; Trisnawati et al., 2024). The empirical results further indicate that firm size strengthens the relationship between stock prices and PBV. Changes in stock prices do not always proportionally reflect improvements in PBV, however, in larger firms, stock prices are perceived as more credible signals of future prospects and corporate performance. This finding is consistent with signaling theory, which posits that firm scale enhances information quality, supported by higher visibility, broader analyst coverage, and greater stock liquidity, thereby enabling faster and more accurate market responses (Abbasi & Malik, 2015; Wijaya et al., 2025).

CONCLUSION

This study on corporate financial transformation examines the effects of Debt to Equity Ratio (DER), stock price, firm value, and firm size on Price to Book Value (PBV). The results indicate that DER does not have a statistically significant effect on PBV, although the negative relationship suggests that higher leverage tends to be associated with lower firm valuation. This finding implies that investors may not place primary emphasis on capital structure decisions when assessing firm value in this context. In contrast, stock price exhibits a significant negative effect on PBV, indicating that declines in stock prices are associated with reductions in firm value relative to book value. From a signaling perspective, a decrease in stock price may convey negative information to the market regarding a firm's internal conditions, such as weakened performance or uncertainty surrounding future prospects, which subsequently depresses market valuation.

Firm size is also found to have a significant negative effect on PBV, suggesting that larger firms tend to be valued lower relative to their book value. This outcome may reflect investor preferences for smaller firms that are perceived to offer higher growth potential and greater flexibility. Furthermore, the interaction between DER and firm size does not significantly influence PBV, indicating that firm size does not strengthen or weaken the effect of leverage on firm value. However, the results reveal a significant moderating effect of firm size on the relationship between stock price and PBV. This finding suggests that the impact of stock price movements on firm value varies depending on firm size, highlighting the role of firm size as a contextual factor in market valuation. Consequently, firm size serves as an important moderating variable that alters how stock price changes are reflected in PBV, providing valuable insights for investors and financial analysts in evaluating corporate value.

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