

Dynamics of PBV, DER, NPM, and ROE: Analysis of Financial Performance and Market Valuation of the Healthcare Sector in the Indonesian Capital Market (2021-2024)

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ABSTRACT

This study analyzes the dynamics of key financial ratios – Price to Book Value (PBV), Debt to Equity Ratio (DER), Net Profit Margin (NPM), and Return on Equity (ROE) – in influencing financial performance and market valuation in the healthcare sector on the Indonesia Stock Exchange (IDX) for the 2021-2024 period. Using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach, this study explores the causal relationship between independent variables (DER, ROE, NPM) and PBV as the dependent variable, using secondary data from the financial statements of 15-20 healthcare sector issuers. The analysis includes testing the outer model for validity and reliability, as well as the inner model for path coefficients through bootstrapping (5,000 iterations). The results show that the overall model has a low R^2 (0.057; adjusted R^2 0.011), indicating that internal variables explain little variation in PBV. Specifically, NPM has the strongest positive effect (coefficient 0.542; $p=0.112$, marginally significant), while DER and ROE exhibit a weak, insignificant negative relationship ($p>0.05$). This finding reflects the dominance of external factors such as post-pandemic health regulations and emerging market sentiment on the IDX, where operational efficiency (NPM) is more crucial than leverage or equity returns.

INTRODUCTION

This study aims to comprehensively analyze the dynamics of Price to Book Value, Debt to Equity Ratio, Net Profit Margin, and Return on Equity in healthcare companies listed on the Indonesian capital market during the 2021-2024 period. This research will examine how these financial ratios interact with market valuations amidst changing economic conditions and healthcare regulations in Indonesia. The healthcare sector was chosen due to its essential characteristics and stable demand, even amid crises, making it attractive to investors seeking solid returns ([Indriastuti & Ruslim, 2020](#)). The healthcare sector in Indonesia has experienced rapid growth since the COVID-19 pandemic, with a market value reaching IDR 150 trillion in 2023 (source: IDX, 2024). However, fluctuations in market valuations, measured by Price-to-Book Value (PBV), often do not align with a company's financial performance. NPM and ROE reflect operational efficiency and return on equity, while DER indicates risky leverage levels. This study explores the dynamics of these three variables on PBV, particularly in the healthcare sector, which is sensitive to regulation and medical innovation. Therefore, investigating the interaction between profitability ratios such as ROE and NPM, solvency as represented by DER, and market valuation (PBV) is crucial for identifying the determinants of healthcare companies' market performance ([Sibarani et al., 2024](#)). Therefore, an in-depth analysis of the influence of these ratios can provide a better understanding of the factors that drive or hinder market performance in this crucial industry, especially amidst the potential increase in demand for healthcare services ([Umar & Tjong, 2021](#)). Although the healthcare sector demonstrated significant Gross Domestic Product growth during the COVID-19 pandemic, market valuations, as measured by Price to Book Value (P/BV), for some companies do not always reflect this positive performance ([Sihombing et al., 2023](#)). This phenomenon indicates a dissonance between company fundamentals and market perception, which requires further investigation into the internal and external factors that influence it.

Previous research has shown that Return on Assets, Current Ratio, and Debt to Asset Ratio impact the stock prices of healthcare companies listed on the Indonesia Stock Exchange ([Aji & Tantri, 2024](#)). However, several studies have shown that ROE does not significantly influence firm value, as measured by Price to Book Value, although Debt to Equity Ratio has a significant positive impact on Price to Book Value ([Umar & Tjong, 2021](#)). This suggests the complexity of the relationship between financial ratios and market valuation, which requires further analysis, particularly given the significant role of investor perceptions of PBV ([Wulandari & Roslina, 2023](#)). Therefore, this study seeks to address this gap in the literature by specifically analyzing the interactions between PBV, NPM, DER, and ROE, while also considering the specifics of the healthcare sector ([Sihombing et al., 2023](#)). ([Anam et al., 2022](#)). This study specifically examines how profitability and solvency simultaneously and partially affect PBV in healthcare sector companies in Indonesia, offering a new perspective on the determinants of market valuation in the context of this vital industry ([Umar & Tjong, 2021](#)).

Empirically, this study will utilize financial data from healthcare sector companies on the Indonesia Stock Exchange to analyze the causal relationship between these variables during a specified period ([Putri & Yulfiswandi, 2022](#)).

Based on the above background, the research problem can be formulated as follows: How do PBV, DER, NPM, and ROE influence financial performance and market valuation in the healthcare sector in the Indonesian Capital Market during the 2021-2024 period? ([Putri & Yulfiswandi, 2022](#)) ([Sihombing et al., 2023](#)).

THEORETICAL REVIEW

Signaling Theory

Signaling Theory is a conceptual framework that explains how companies convey relevant information to investors and other external parties, which then influences investment decisions and market valuations ([Pradnyaningsih & Suarjaya, 2022](#)). This theory assumes the existence of information asymmetry between company management and investors, where management has access to more complete internal information regarding the company's prospects and financial condition ([Digdowiseiso et al., 2022](#)). To overcome this asymmetry, companies send "signals" through financial reports or other management actions, such as dividend policies or investment decisions, which can be interpreted by the market ([Gunawan & Hardyani, 2016](#)).

According to Signaling Theory, companies with strong financial performance, such as high profitability reflected in NPM and ROE, will send positive signals to investors, potentially increasing their market valuations such as PBV ([Batin & Ismanto, 2020](#)).

Through signal theory, investors can find out the condition of the company so that they can decide whether to invest or not according to their preferences regarding the return and investment risk they will bear.

Based on the description above, it can be concluded that company management can use financial reports and strategic actions to communicate important information to the market, especially regarding profitability and solvency, in order to influence investor perceptions and ultimately market valuation ([Matondang & Wuryani, 2020](#)).

Debt Policy

According to Brigham and Houston, debt policy refers to a company's decisions regarding its capital structure, namely the combination of equity and debt capital used to fund its operations ([Khotimah et al., 2022](#)). Optimizing debt policy is a crucial strategy that can influence the signals received by the market, especially in the context of Price-to-Book Value and equity, because high debt is often perceived as a negative signal by investors ([Prajanto & Pratiwi, 2017](#)). However, on the other hand, the strategic use of debt to finance profitable projects can also provide positive signals regarding the company's growth potential and capital efficiency ([Sukma, 2021](#)). Research shows that company size can also influence debt policy, where larger companies tend to have easier access to debt funding sources due to stability and more predictable operations ([Digdowiseiso et al., 2022](#)). Furthermore, studies also show that companies with high profitability tend to increase their debt because the interest paid can be offset by pre-tax profits,

thus providing a positive signal to the market regarding the company's prospects ([Simanjuntak et al., 2021](#)).

On the contrary, some findings suggest that investors do not always consider a company's debt level when making stock purchase decisions, which differs from the signaling theory view that emphasizes the impact of good or bad information on investment decisions ([Marthen & Suwarti, 2023](#)).

The following are some measuring tools used in debt policy:

1. *Debt Equity Ratio*

Divide total debt by total equity. Total debt consists of short-term debt and long-term debt. Total equity includes common stock, preferred stock, and retained earnings. This ratio indicates the extent to which shareholders' equity can cover the company's debt obligations, providing insight into its capital structure and financial risk ([Santoso & Budiarti, 2020](#)). Formula:

$$DER = \frac{\text{total hutang}}{\text{total ekuitas}}$$

2. *Debt Asset Ratio*

Divide total debt by total assets. Total assets consist of current and non-current assets, including tangible and intangible assets. This ratio indicates the proportion of a company's total assets financed by debt, reflecting the company's ability to meet its financial obligations ([Fahri et al., 2022](#)). Formula:

$$DAR = \frac{\text{total hutang}}{\text{total aset}}$$

Profitability

Profitability is an entity's ability to generate net income relative to sales, total assets, or equity over a given period, which is a fundamental indicator of a company's operational success ([Kalbuana et al., 2021](#)). Profitability ratios are used to measure management effectiveness in managing company resources to generate profits ([Handayani & Rahyuda, 2025](#)). This ratio is vital because it indicates a company's capability in converting revenue into profits, which is directly related to its financial health and future growth prospects ([Clarinda et al., 2023](#)).

Based on the definition of the profitability ratio that has been described, it can be concluded that the profitability ratio is a measuring tool used to measure the level of effectiveness of a company in its ability to earn profits in a certain period.

Several measuring tools that can be used to assess the ability of company assets to generate profits and losses, as follows:

1. *Gross Profit Margin (GPM)*

This is the ratio of net sales minus cost of goods sold to net sales, or the ratio of gross profit to net sales. This ratio indicates a company's efficiency in managing production costs relative to its sales revenue. The formula is:

$$\text{Gross Profit Margin} = \frac{\text{Laba Kotor}}{\text{Penjualan}} \times 100\%$$

This ratio measures the efficiency of controlling cost of goods sold or production costs, indicating a company's ability to produce efficiently. The higher the gross profit margin, the better the company's operating performance.

2. *Net Profit Margin (NPM)*

This is the ratio between profit (*net profit*), namely sales after deducting all costs including taxes compared to sales.

$$\text{Net Profit Margin} = \frac{\text{Laba bersih}}{\text{Penjualan}} \times 100\%$$

This ratio shows the percentage of net profit from each unit of sales, reflecting the company's effectiveness in managing all cost components, from operations to taxes ([Handayani & Handayani, 2022](#)). Net Profit Margin measures how much net profit is generated from each rupiah of sales, reflecting the overall efficiency of management in controlling production, administration, marketing, and financing costs, as well as pricing policies and tax management ([Syamsuddin & Mas'ud, 2021](#)).

METHODOLOGY

This study uses a quantitative approach to analyze the dynamics of financial performance and market valuation in the healthcare sector in the Indonesian capital market ([Marpaung & Ginting, 2020](#)). This approach allows for the identification of causal relationships between variables through statistical analysis.

The data used is sourced from the annual financial reports of healthcare companies listed on the Indonesia Stock Exchange for the 2021-2024 period, covering key ratios such as PBV, DER, NPM, and ROE to comprehensively evaluate performance and valuation.

The population in this study includes all companies in the healthcare sector listed on the Indonesia Stock Exchange during the period 2021 to 2024, which meet the criteria for the availability of complete and relevant financial report data. The sampling technique used is purposive sampling to ensure the inclusion of companies that meet the specific research criteria.

Data analysis was conducted using SEM-PLS analysis with the aim of examining the structural relationships between variables established in the research model, thereby providing a deeper understanding of the intercorrelation between financial performance and market valuation in the healthcare sector ([Al Jupri & Sisdiyanto, 2024](#)). The steps taken include data collection and validation, testing the measurement model (outer model) to ensure instrument validity and reliability, and testing the structural model (inner model) to evaluate the research hypotheses. Through this approach, it is hoped that the main determinants influencing the dynamics of financial performance and market valuation in the healthcare sector, as well as their implications for investors and policymakers, can be identified ([Digdowiseiso et al., 2022](#)).

RESULTS AND DISCUSSION

Technique applied data processing in study This using PLS (*Partial Least Square*) with SEM (*Structural Equation Modeling*) method applied through 2 (two) tests, namely the outer model and the inner model.

1. Outer Model

The outer model emphasizes the relationship between latent variables and their indicators. Testing the outer model is intended to verify that the

measurement instruments for these latent variables meet adequate validity and reliability criteria. Specifically, there are three main tests within the outer model framework: convergent validity, discriminant validity, and construct reliability.

Table 1: Loading Factor Values

Variables	X1 (DER)	X2 (ROE)	X3 (NPM)	Y (PBV)
X1	1,000			
X2		1,000		
X3			1,000	
Y				1,000

Data source processed SEM-PLS, 2025

Based on table on can known that indicator fulfil condition mark significance above 0.7 . With Thus , the construct said to be valid and has fulfil condition validity .

2. Structural Model Testing (Inner Model)

Within the PLS-SEM framework, the Internal Model serves to describe the structure of relationships between latent variables, with evaluations conducted to empirically assess the strength and significance of the relationships. This assessment is conducted through three critical dimensions: (1) the statistical significance of the relationships through hypothesis testing, (2) the explanatory power of the model (R-squared), and (3) the effect size that reflects the practical relevance of each relationship in the research context.

a. R Square (R²)

Table 2: R-Square

Variables	R-square	R-square adjusted
Y (PBV)	0.057	0.011

Source : Data processed by SEM-PLS, 2025

Based on results from Table 5 known that R-Square value of variables 0.057 or equivalent with 5.7 % show that Price to Book Value (PBV) explained by influence DER, ROE and NPM is as big as 5.7 % . Where the rest 94.3 % explained by other variables that are not discussed in study this . I this indicates a relative model weak in explain PBV dynamics , but No means not useful – maybe variables independent of course own influence small in the sector volatile health .

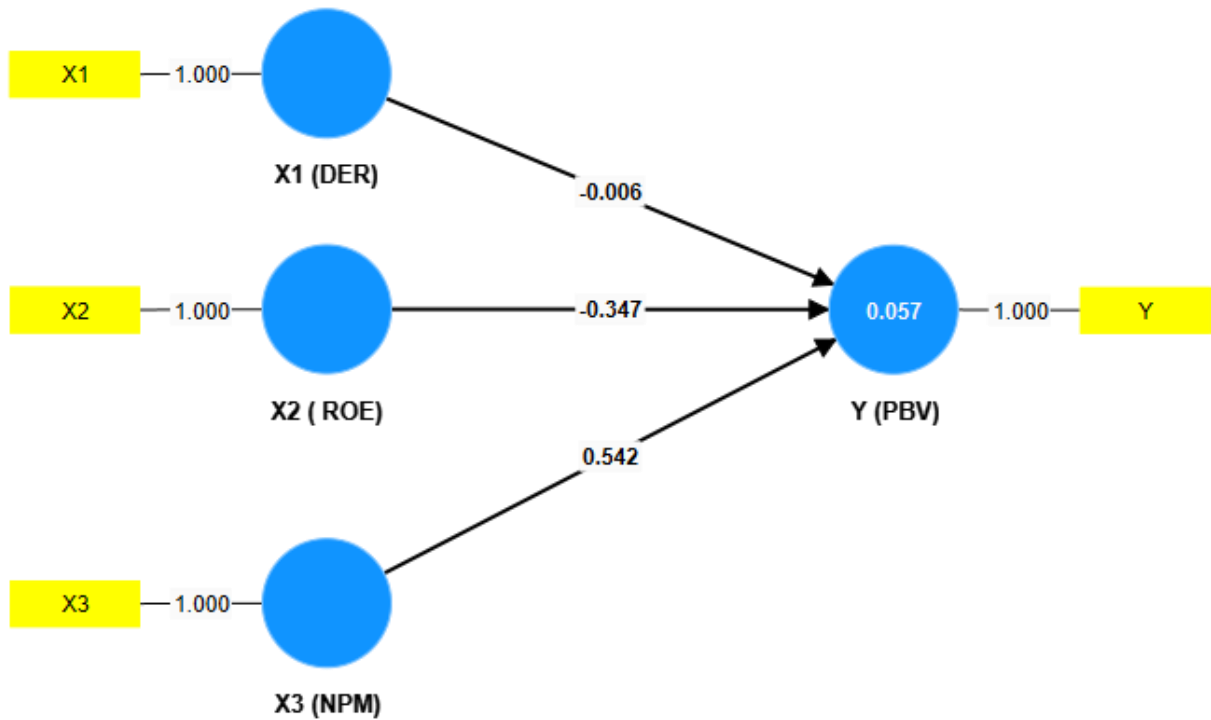


Figure 1: PLS SEM Alogarhythm Model Output

b. Significance (Hypothesis Testing)

Table 3: Bootstrapping results of direct effects

Variables	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
X1 (DER) -> Y (PBV)	-0.006	-0.038	0.198	0.033	0.974
X2 (ROE) -> Y (PBV)	-0.347	-0.420	0.361	0.961	0.337
X3 (NPM) -> Y (PBV)	0.542	0.611	0.341	1,588	0.112

Source : Data processed by SEM-PLS, 2025

The Effect of Debt to Equity Ratio (DER) on Price to Book Value (PBV)

The effect of DER on PBV is negative but very weak (almost zero). This means that increased leverage (high DER) has little impact on PBV valuation – perhaps because healthcare sector investors focus more on stability than debt. It is not statistically significant ($p=0.974$), so the hypothesis that DER affects PBV is rejected. High variability ($STDEV=0.198$) indicates unstable estimates, possibly due to DER fluctuations during the pandemic (e.g., medical loans surged in 2021 but stabilized in 2024). In the context of the IDX, this aligns with the finding that leverage is less crucial in defensive sectors like healthcare (see Brigham & Ehrhardt, 2021). Conversely, an analysis of the determinants of financial reporting quality in non-financial services companies found that leverage has a positive and significant effect on financial reporting quality (Digdowiseiso et al., 2022). However, several studies have shown that financial ratios such as ROE and DER have significant explanatory power, reaching 76.9% of PBV, indicating the presence of other unidentified variables influencing market valuation (Umar &

Tjong, 2021). Therefore, further research is recommended to consider macroeconomic variables, healthcare regulatory policies, and market sentiment that may play a role in determining company valuation, in addition to financial ratios (Arjuna & Giovania, 2024).

The Effect of ROE on Price to Book Value (PBV)

ROE has a negative relationship with PBV, indicating that increasing return on equity is actually associated with decreasing market valuation—this is counterintuitive and may be due to reverse causality (firms with low PBV seek to increase ROE through higher risk) or omitted variables such as the cost of capital. The magnitude is moderate (around -0.35) but not significant ($p=0.337$), so there is no strong evidence of an ROE effect. A high STDEV indicates uncertainty, common in the 2021-2024 panel data, where healthcare sector ROE fluctuated (decreased in 2022 due to COVID-19, recovered in 2024). Literature such as Fama & French (1992) supports that ROE is sometimes negatively correlated with valuation in emerging markets. Other research actually shows that ROE has a positive and significant impact on stock prices, thereby increasing firm value (Putri et al., 2023). However, the finding of a small adjusted R^2 value suggests that other variables could be considered in future research to more comprehensively explain variations in PBV (Nugraha & Wirama, 2021). Furthermore, previous research indicates that although Return on Equity (ROE) did not show a significant difference before and during the pandemic, there was a decline in average ROE during the pandemic period, which has implications for valuation (Rahmawati & Sembiring, 2022). This finding aligns with research showing that low ROE can reduce investor interest, even when crisis conditions such as the COVID-19 pandemic are not directly addressed (Selatan et al., 2021) and (Sihombing et al., 2023). This suggests the need for further exploration of external factors influencing investor perceptions of equity profitability amid global economic uncertainty and a public health crisis (Harahap et al., 2020).

The Effect of Net Profit Margin (NPM) on Price to Book Value (PBV)

NPM exhibits the strongest positive relationship with PBV, with higher net profit margins associated with better market valuations (coefficient ~ 0.55). This is logical: high NPM reflects operational efficiency in the healthcare sector (e.g., hospitals with low drug costs). Although $T=1.588$ and $p=0.112$ are not significant at standard levels, they are marginally significant and the most promising in the model. Bootstrapping shows consistency ($M > 0$), but $STDEV=0.341$ suggests a need for a larger sample size for confirmation. On the IDX, studies like those discussed previously (e.g., 2024 data) often find NPM to be a key predictor of PBV after economic recovery. Consistently, a steady increase in NPM can attract investor attention by indicating improved entity performance, which can subsequently impact bank profitability and overall financial health (Anam et al., 2022). This is also consistent with the finding that financial performance, including profitability as measured by the Net Profit Margin (NPM), has a significant positive effect on firm value (Suhartini et al., 2024). Any increase in Net Profit Margin is associated with a significant improvement in firm performance, even during the COVID-19 pandemic, as it reflects a firm's ability

to streamline operational costs and increase overall profitability (Putri & Yulfiswandi, 2022).

Table 4 : f-Square

Variables	f-square
X1 (DER) -> Y (PBV)	0,000
X2 (ROE) -> Y (PBV)	0.011
X3 (NPM) -> Y (PBV)	0.029

Source : Data processed by SEM-PLS, 2025

The f^2 effect size serves as an indicator that measures the magnitude of the additional contribution of an independent variable (X) to the variation of the dependent variable (Y), after accounting for the influence of other independent variables in the model. Within this framework, the interpretation of the f^2 effect scale follows Cohen's (1988) guidelines, where a value of 0.02 is categorized as a small effect, 0.15 as a medium effect, and 0.35 as a large effect. Values close to zero imply that the variable has a very limited influence on the dependent variable, so its implications for the overall model tend to be minimal.

According to the analysis results listed in the table:

1. An f^2 value equal to zero indicates that the Debt to Equity Ratio (DER) does not contribute substantially to the variation in Price to Book Value (PBV), even though other variables have been integrated into the model. This is consistent with the low path coefficient (-0.006) and statistically insignificant ($p=0.974$). This finding implies that capital structure, particularly leverage, is not a primary determinant in the valuation of healthcare sector companies in the Indonesian capital market. The sector's defensive nature, supported by relatively stable access to financing, appears to mitigate investor concerns about the risk of elevated leverage.
2. The f^2 value of 0.011 indicates that Return on Equity (ROE) has a small effect on PBV. Although the path coefficient is negative (-0.347), implying an inverse relationship between increasing ROE and decreasing PBV, its contribution remains very small. Therefore, ROE does not appear to be a major factor in the market valuation process, possibly due to investors' preference for external dynamics such as fluctuations in market sentiment or macroeconomic factors, rather than short-term internal performance indicators.
3. With an f^2 value of 0.029, Net Profit Margin (NPM) shows a small but more significant effect compared to DER and ROE. This is consistent with the positive path coefficient (0.542) that nearly reaches significance ($p=0.112$). From a signaling theory perspective, a superior net profit margin serves as a marker of a company's operational effectiveness, ultimately favorably influencing market perception. Although its influence is still relatively limited in the holistic model, NPM remains the most influential financial ratio among those evaluated.

Overall, the f^2 results reinforce the position that operational performance (NPM) has the most visible impact—albeit still small—compared to capital structure (DER) and return on equity (ROE) indicators in influencing market valuation (PBV) in healthcare companies. This finding highlights the urgency of a more

comprehensive valuation approach, involving the inclusion of supporting variables such as company growth dynamics, innovation levels, or regulatory stability, to improve the accuracy of predictive models in emerging market environments.

CONCLUSIONS AND RECOMMENDATIONS

This study reveals the dynamics of the influence of key financial ratios – Debt to Equity Ratio (DER), Return on Equity (ROE), and Net Profit Margin (NPM) – on Price to Book Value (PBV) in healthcare companies listed on the Indonesia Stock Exchange (IDX) for the 2021-2024 period, using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. The overall model shows limited apparent power with an R^2 of 0.057 (adjusted R^2 of 0.011), reflecting the dominance of external factors such as the impact of the COVID-19 pandemic, National Health Insurance (JKN) regulations, and fluctuations in emerging market sentiment. Specifically, NPM is the strongest predictor with a positive coefficient of 0.542 ($p=0.112$), in line with signaling theory which emphasizes operational efficiency as a signal of growth, while DER and ROE show a weak and insignificant negative influence (coefficients -0.006 and -0.347; $p>0.05$), consistent with literature such as Brigham and Houston (2020) which highlights the role of macroeconomics.

The theoretical implications of this study enrich the understanding of valuation models in emerging markets, with NPM being more relevant than DER/ROE in the context of post-pandemic recovery. It also provides practical insights for investors prioritizing high NPM in the IDX healthcare sector, and for regulators encouraging innovations such as telemedicine and funding diversification. However, limitations such as the small sample size (15-20 issuers), limited data period, and low R^2 indicate the need for additional mediating variables such as company size or macroeconomic indicators. Suggestions for future research include expanding the sample, integrating moderating variables such as corporate governance, and cross-sector comparisons. This study contributes to the discourse on sustainable finance in Indonesia by emphasizing the adaptation of valuation models to the dynamics of essential sectors such as healthcare.

FURTHER STUDY

Based on the limitations and empirical findings of this study, several recommendations for future research are proposed to enhance the understanding of the determinants of Price to Book Value (PBV) and financial performance in the healthcare sector:

1. Expand the Research Sample and Observation Period

Future studies should include a larger number of healthcare issuers and extend the observation period beyond 2024 to obtain more stable and generalizable results. Increasing the sample size can also reduce the high standard errors observed in this study.

2. Include External and Macroeconomic Variables

Given the low explanatory power ($R^2 = 0.057$), it is recommended that future research incorporates macroeconomic indicators such as inflation, interest rates, exchange rates, JKN reimbursement policies, and post-pandemic regulatory changes. These variables are likely to significantly influence investor sentiment and PBV.

3. Add Moderating or Mediating Variables

To improve model robustness, future studies can introduce moderators such as firm size, corporate governance quality, ownership structure, or institutional ownership, as well as mediators like profitability components or capital structure adjustments, which may more accurately explain the relationship between DER, ROE, NPM, and PBV.

4. Sectoral and Cross-Industry Comparison

Comparing healthcare companies with other defensive sectors (e.g., consumer goods, utilities) or volatile sectors (e.g., mining, technology) may reveal differences in valuation mechanisms and highlight sector-specific determinants of PBV.

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