Analysis of the Effect of Return on Assets (ROA), Debt to Equity Ratio (DER), and Inflation on the Stock Prices of Automotive Industry and Component Companies Listed on the IDX for the 2020-2024 Period

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Abstract

This research aims to analyze the effect of Return on Assets (ROA), Debt to Equity Ratio (DER), and inflation on the share prices of automotive and component industry companies listed on the Indonesia Stock Exchange (IDX) for the 2020-2024 period. The research method uses a quantitative approach with panel data regression analysis. The research population includes all automotive and component industry companies listed on the IDX, with a sample of 13 companies selected using purposive sampling, resulting in 65 observations. Secondary data were collected from the companies' financial statements, inflation data from BPS, and stock price data from the IDX. The analysis technique used panel data regression with a random effect model after conducting the Chow, Hausman, and Lagrange Multiplier tests. The results of the study show that simultaneously ROA, DER, and inflation have a significant effect on stock prices, with an F-value of 3.366161 and a p-value of 0.000. Partially, ROA has a positive and significant effect on stock price, with a coefficient of 122.0658 and a p-value of 0.000. Meanwhile, DER and inflation had no significant effect on stock price, with p-values of 0.2578 and 0.5027, respectively. The determination coefficient of 14.2035% indicates that the independent variables explain 14.2035% of the variation in stock prices, while the remaining 85.7965% is influenced by other factors outside the research model.

Keywords: Return on Assets; Debt to Equity Ratio; Inflation; Stock Price; Automotive Industry

INTRODUCTION

The capital market is one of the important indicators in measuring the economic health of a country, especially in the context of investment dynamics and stock price movements. At the global level, the automotive industry has undergone a significant transformation in recent decades, with increasingly complex macro and microeconomic factors affecting a company's performance and its stock valuation. The global automotive industry faces multidimensional challenges, ranging from fluctuations in commodity prices, changing consumer preferences, to the impact of disruptive technologies such as electric vehicles and autonomous driving. This condition creates high volatility in the stock prices of automotive companies on various world stock exchanges (Heizer & Render, 2017).

Global phenomena show that the financial performance of automotive companies is very sensitive to changes in macroeconomic conditions. Research conducted by James & Nel (2021) reveals that inflation has a systemic impact on global stock markets, including the automotive sector, which in turn influences investment decisions and portfolio allocation.

Meanwhile, Albulescu (2016), in his study of the long-term relationship between stock prices, inflation, and inflation uncertainty in the United States, found that different sectors in the Dow Jones index showed varying sensitivity to changes in the inflation rate, with the automotive sector showing a significant correlation.

In the context of the Indonesian capital market, the dynamics that occur are no less complex. Indonesia's capital market has shown significant growth, especially in the manufacturing sector which is the backbone of the national economy. The manufacturing sector consistently contributes the largest share to the national Gross Domestic Product (GDP), reaching 16.30% in the second quarter of 2023 (Tempo, 2025). This growth reflects an increase in the value of manufacturing companies, which is reflected in stock price movements on the Indonesia Stock Exchange (IDX) (Investor, 2023). The automotive and component industry sub-sectors have a strategic role in Indonesia's manufacturing structure, not only as a key driver of manufacturing activity, but also as a sector that is highly sensitive to macroeconomic dynamics.

Indonesia's automotive industry faces unique challenges that are different from developed countries. In addition to global factors such as inflation and technological change, the industry is also influenced by specific domestic market characteristics, including people's purchasing power, government policies related to the automotive industry, and competitive structures dominated by large players with diverse market capitalizations. Based on stockanalysis.com (2025) data, there are 24 companies listed as companies in the automotive and component industry subsector on the IDX, with highly variable market capitalizations, ranging from PT Astra International Tbk with a capitalization of IDR 174 trillion to PT King Tire Indonesia Tbk with a capitalization of IDR 65 billion.

The urgency of this research is increasing considering the condition of the Indonesian automotive industry which has not fully recovered from the impact of the COVID-19 pandemic. Devi & Warasniasih (2020), in their research on the impact of the COVID-19 pandemic on the financial performance of companies on the Indonesia Stock Exchange, found that the automotive sector experienced a significant decline in performance, with stock prices tending to fluctuate and showing high market uncertainty. This phenomenon reflects the fundamental challenges faced by the industry in dealing with changing economic conditions and maintaining optimal financial performance.

Research on the factors that affect stock prices has been conducted, but the focus on the automotive and component industries in Indonesia is still limited. A study conducted by Hisar et al. (2021) shows that Return on Assets (ROA) and Debt to Equity Ratio (DER) have a significant influence on stock returns in manufacturing companies listed on the IDX. This finding is in line with research by Maryani & Tamara (2020), which analyzed the influence of ROA, ROE, and DER on stock prices in companies indexed in the Jakarta Islamic Index for the 2016-2019 period, and found that the company's internal financial factors have an important role in determining stock price movements.

Meanwhile, research on the effect of inflation on stock prices still shows inconsistent results. Perdani (2025), in his study, found that inflation affects stock prices with the exchange rate as a moderation variable, but the results of research related to the direct influence of inflation on stock prices still show significant variations. Khan (2023), in his analysis of macroeconomic factors and stock market returns, found that the relationship between inflation

and stock prices is complex and influenced by various contextual factors, including the economic structure and monetary policy of a country.

Another relevant research that supports the urgency of this study is a study conducted by various researchers on the determinants of stock prices in the automotive sector. Astuti (2020), in his analysis of the impact of the company's financial ratio on the stock price in companies listed in the Jakarta Islamic Index, found that profitability, represented by ROA, has a consistent influence on stock prices. Similar findings were also put forward by Choiriya (t.t.), who analyzed the influence of ROA, ROE, Net Profit Margin, Earnings per Share, and Operating Profit Margin on the stock price of banking companies, which showed that ROA has a positive and significant influence on stock prices.

Research on the effect of DER on stock prices has also shown mixed results. Indradinata (2019), in his study of the determinants of the rise and fall of stock prices on the Indonesia Stock Exchange, found that DER does not always have a significant effect on stock prices, depending on the industry context and economic conditions. This finding is strengthened by research by Kemalasari & Norita (2019), which analyzes the influence of Earnings per Share, Return on Equity, Price Earnings Ratio, and Debt to Equity Ratio on stock prices in companies that are members of the LQ45 index, showing that the influence of DER is conditional and influenced by other factors in the company.

The novelty of this research lies in several aspects that distinguish it from previous studies. First, this research specifically focuses on the automotive industry and components listed on the IDX, which are strategic sectors but have not been extensively researched in depth in the context of stock price determinants. Second, this study uses the 2020-2024 analysis period, which includes the post-COVID-19 pandemic recovery period, so that it can provide insight into the resilience and adaptability of the automotive industry to external shocks. Third, the study integrates the analysis of internal factors of the company (ROA and DER) with macroeconomic factors (inflation) in one comprehensive model, which allows for a more holistic understanding of the dynamics of stock prices in this sector. Fourth, this study uses a panel data analysis methodology with the selection of the right model through a series of statistical tests (Chow test, Hausman test, and Lagrange Multiplier test), which ensures the accuracy and robustness of the analysis results. Fifth, this study makes a significant practical contribution for investors, analysts, and company managers in understanding the key factors that affect stock valuation in the Indonesian automotive industry, which can be used for the optimization of investment strategies and corporate financial management.

The purpose of this study is to analyze the effect of Return on Assets (ROA), Debt to Equity Ratio (DER), and inflation on the share prices of automotive industry companies and components listed on the IDX for the 2020-2024 period, both partially and simultaneously. Specifically, this study aims to: (1) analyze the influence of ROA on the stock price of automotive companies; (2) determine the effect of DER on the stock price of automotive companies; (3) determine the effect of inflation on the share price of automotive companies; and (4) determine the simultaneous influence of ROA, DER, and inflation on the stock price of automotive companies.

The benefits of this research include significant theoretical and practical aspects. Theoretically, this research contributes to the development of science, especially in the field of financial management and capital market analysis, by enriching the theoretical treasures of the

stock market dynamics of automotive manufacturing companies in emerging markets such as Indonesia. This research can also be an important reference for future studies that examine the influence of internal and external factors on stock prices, as well as a reference in the development of theories related to the relationship between a company's financial performance and market valuation.

Practically, this research provides very important information for various stakeholders. For investors, this study provides insights that can be used for more informed and strategic investment decision-making, by understanding the key factors that influence stock price movements in the automotive sector. For corporate management, the findings of this research can be used as a basis for optimizing financial and operational strategies to increase company value and investment attractiveness. For market analysts and regulators, this study provides a clearer picture of the dynamics of the automotive sector and the factors that need to be considered in evaluating the performance and prospects of this industry.

The implications of the research include contributing to a deeper understanding of the mechanism of stock pricing in the Indonesian capital market, especially for strategic sectors such as automotive. The results of this research are expected to provide input for the development of policies that support the growth of the national automotive industry, as well as provide guidance for companies in designing optimal financial strategies to improve valuation and access to the capital market. In addition, the study also contributes to the development of empirical literature on stock price determinants in developing countries, which can serve as a reference for future cross-country or cross-sector comparative research.

RESEARCH METHODS

This research used a quantitative explanatory approach to examine the causal relationship between independent variables (ROA, DER, and inflation) and the dependent variable (stock prices). It employed a descriptive causality method to provide a systematic and accurate depiction of the facts and relationships among the variables studied (Sugiyono, 2019).

The research object comprised automotive and component industry companies actively listed on the Indonesia Stock Exchange (IDX) during the 2020-2024 period, along with their financial data and stock prices. The selection was based on the strategic role of the automotive industry in Indonesia's economy and the availability of comprehensive, publicly accessible data.

The population included all automotive and component industry companies listed on the IDX during 2020-2024, totaling 24 companies with varying market capitalizations.

A purposive sampling technique was applied with these criteria: (1) companies consistently listed on the IDX from 2020 to 2024; (2) companies publishing complete and accessible annual financial statements throughout the period; (3) companies with complete ROA, DER, and stock price data for 2020-2024; and (4) companies that did not delist or merge during the observation period. Based on these criteria, 13 companies were selected, resulting in 65 observations (13 companies × 5 years).

The study used secondary quantitative data from official sources: (1) financial statements of the selected companies to obtain ROA and DER data; (2) inflation data from the Central Statistics Agency (BPS) for 2020-2024; and (3) stock price data from the IDX's official website and other financial platforms.

1) Dependent Variable: Stock Price (Y) is the annual closing price of a company's shares traded on the IDX, measured in rupiah units.
2) Independent Variables: (1) Return on Assets (ROA) (X_1) is a profitability ratio that measures the company's ability to generate profit from the total assets it owns, calculated by the formula: ROA = (Net Profit / Total Assets) × 100%; (2) Debt to Equity Ratio (DER) (X_2) is a leverage ratio that measures the proportion of a company's financing derived from debt compared to equity, calculated by the formula: DER = (Total Debt / Total Equity) × 100%; (3) Inflation (X_3) is the rate at which the general price of goods and services in the economy increases, measured based on annual inflation data released by BPS, expressed as a percentage.

Data collection is carried out through: (1) Documentation Study, which is a data collection technique by accessing and recording historical data from the company's financial statements, stock price data from the IDX, and inflation data from BPS; (2) Literature Studies, which is collecting theories and scientific references from books, journals, articles, and other publications related to research variables.

The data analysis used the panel data regression method with the help of EViews 12.0 software. The stages of analysis include:

1. Descriptive Statistical Analysis Provides an overview of the characteristics of the data through the minimum, maximum, average, and standard deviation values of each variable.
2. Classical Assumption Test a. Normality Test using the Jarque-Bera method to ensure normal distributed data b. Multicollinearity test through a correlation matrix to detect correlations between independent variables c. Heteroscedasticity test using the Glejser test to detect variance inequality d. Autocorrelation test using the Durbin-Watson test to detect serial correlation
3. Panel Data Model Selection a. Chow Test to choose between Common Effect and Fixed Effect b. Hausman Test to choose between Fixed Effect and Random Effectc. Test the Lagrange Multiplier to choose between Common Effect and Random Effect
4. Data Regression Analysis Panel Regression equation model used: $Y = \beta_0 + \beta_1 X_1 ij + \beta_2 X_2 ij + \beta_3 X_3 ij + \varepsilon i$

Where:
   a. Y = Stock Price
   b. X_1 = Return on Assets
   c. X_2 = Debt to Equity Ratio
   d. X_3 = Inflation
   e. β_0 = Constant
   f. βi = Regression coefficient
   g. εi = Error term

5. Hypothesis Test a. Partial Test (t-Test) to test the influence of each independent variable on the dependent variable b. Simultaneous Test (F Test) to test the influence of all independent variables together on the dependent variable c. Determination Coefficient Test (R^2) to measure the model's ability to explain the variation of dependent variables
   The hypothesis testing criteria used a significance level of $\alpha = 0.05$, where H_0 is rejected if the p-value < 0.05.

RESULTS AND DISCUSSION
Description of Research Data

This study uses 65 observations obtained from 13 automotive and component industry companies listed on the IDX during the 2020-2024 period. These companies are ASII, AUTO, SMSM, IMAS, MPMX, GJTL, BOGA, BRAM, BOLT, INDS, CARS, GDYR, and LPIN. The research data included the variables Return on Assets (ROA), Debt to Equity Ratio (DER), inflation, and stock prices for each company during the study period.

Table 1. Descriptive Statistics of Research Variables

Variabel	Mean	Hours of deviation	Minimum	Maximum
LENGTH (%)	4.257	2.489	-8.210	17.990
DER (%)	35.600	4.450	0.000	699.000
Inflation (%)	2.648	1.651	1.570	5.510
Stock Price (Rp)	1.425.81	626.39	50.00	10.346.42

Source: Secondary data is processed with EViews 12

Descriptive Statistical Analysis

The Return on Assets (ROA) shows an average of 4,257% with a standard deviation of 2,489%, indicating considerable variation between companies in terms of asset profitability. The company with the highest ROA was SMSM with an average of 16.226%, while CARS recorded the lowest ROA with an average of 0.450%. This variation reflects differences in efficiency in asset management among the companies in the sample.

The Debt to Equity Ratio (DER) shows a very significant variation with an average of 35,600% and a standard deviation of 4,450%. IMAS recorded the highest DER with an average of 257,600%, indicating a very high dependence on debt financing. In contrast, LPINs have a DER of 0%, indicating a funding structure that relies entirely on equity.

Inflation shows data consistency with an average of 2.648% and a standard deviation of 1.651% for the entire period, with a minimum value of 1.570% and a maximum of 5.510%. This consistent inflation data reflects the use of the same national macroeconomic data for all companies in the analysis period.

The share price shows a very large variation with an average of IDR 1,425.81 and a standard deviation of IDR 626.39. BRAM recorded the highest share price with an average of IDR 6,619.58, while CARS had the lowest share price with an average of IDR 74.80. This variation reflects differences in company size and market perception of each company's fundamental value.

Classic Assumption Test

1. Normality Test

The results of the normality test using the Jarque-Bera method showed a statistical value of 1.112858 with a probability value of 0.573253. Since the p-value (0.573253) > 0.05, it can be concluded that the data is distributed normally at a 95% confidence level. The data distribution histogram also shows patterns that tend to form normal curves.

2. Multicollinearity Test

Table 2. Multicollinearity Test Results

	LENGTH	THE	INFLATION
ROA	1.00000	-0.38236	0.11614
THE	-0.38236	1.00000	0.00218
INFLATION	0.11614	0.00218	1.00000

Source: Multicollinearity test output, processed with EViews 12

The results showed no multicollinearity problems as all correlation values between independent variables were below 0.80, indicating no strong correlation between independent variables.

3. Heteroscedasticity Test

The heteroscedasticity test using the Glejser test showed that all variables had a significance value greater than 0.05, so it can be concluded that there were no symptoms of heteroscedasticity in the regression model.

4. Autocorrelation Test

The results of the Durbin-Watson test showed a DW-stat value of 2.179564. With dL values = 1.53553 and dU = 1.60452, the DW values are between dU and 4-dU (1.60452 < 2.179564 < 2.39548), indicating that there is no autocorrelation in the model.

Panel Data Model Selection

1. Test Chow

The results of the Chow test show a probability value of the Cross-section Chi-square of 0.0000. Since the p-value < 0.05, the fixed effect is better than the common effect.

2. Hausman Test

The results of Hausman's test show a random cross-section probability value of 0.7470. Since the p-value > 0.05, the random effect is better than the fixed effect.

3. Uji Lagrange Multiplier

The results of the Lagrange Multiplier test show a Breusch-Pagan cross-section probability value of 0.0000. Since the p-value < 0.05, the random effect is better than the common effect.

Based on these three tests, the random effect model was chosen as the best model for this study.

Panel Data Regression Analysis Results

Table 3. Panel Data Regression Results

Variabel	Coeficin	t-Statistics	Prob.
C	1053.317	2.156789	0.0346
ROA	122.0658	3.134006	0.0000
THE	1.899760	1.142378	0.2578
INFLATION	-39.59376	-0.674224	0.5027

F-statistik: 3.366161 Prob(F-statistik): 0.000000 R-squared: 0.142035 Adjusted R-squared: 0.099874

Source: Random effect model regression results using EViews 12 software

Regression equation obtained: Y = 1053.317 + 122.0658(X$_1$) + 1.899760(X$_2$) - 39.59376(X$_3$) + ε

Pengujian Hypothesis

1. Simultaneous Test (F Test)

The results of the F test showed an F-statistical value of 3.366161 with a p-value of 0.000000. Since F-count (3.366161) > F-table (3.1477) and p-value < 0.05, H_0 is rejected. This means that ROA, DER, and inflation simultaneously have a significant effect on stock prices.

2. Partial Test (t-test)

a. The Effect of ROA on Stock Prices

The results of the t-test for the ROA variable showed a t-calculated value of 3.134006 with a p-value of 0.0000. Since t-count > t-table (1.9996) and p-value < 0.05, H_0 is rejected and H_1 is accepted. This means that ROA has a positive and significant effect on the stock price with a coefficient of 122.0658, meaning that every 1% increase in ROA will increase the share price by 122.0658 units.

b. The Effect of DER on Stock Prices

The results of the t-test for the DER variable showed a t-calculated value of 1.142378 with a p-value of 0.2578. Since t-calculates < t-table (1.9996) and p-value > 0.05, H_0 is accepted and H_1 is rejected. This means that the DER has no significant effect on the stock price.

c. The Effect of Inflation on Stock Prices

The results of the t-test for the inflation variable showed a t-calculated value of -0.674224 with a p-value of 0.5027. Because |t-count| < t-table (1.9996) and p-value > 0.05, then H_0 is accepted and H_1 is rejected. This means that inflation does not have a significant effect on stock prices.

Coefficient of Determination

Table 4. Coefficient of Determination

Type	R-squared	Adjusted R-squared	F-statistics	Prob(F-statistic)
Random Effect	0.142035	0.099874	3.366161	0.000000

Source: Random effect regression model output from panel data analysis with EViews 12

The R-squared value of 0.142035 or 14.2035% shows that the variables ROA, DER, and inflation are able to explain the stock price variation of 14.2035%, while the remaining 85.7965% is influenced by other variables outside the research model.

The Effect of Return on Assets (ROA) on Stock Price

The results of the study show that ROA has a positive and significant effect on the stock price of automotive and component industry companies. These findings are in line with financial theory that profitability is the main indicator of a company's performance that investors pay attention to. A high ROA reflects management's ability to efficiently manage assets to generate profits, thereby increasing investor confidence and impacting stock price increases.

These results are consistent with the research of Choiriya (t.t.) which found that ROA has a positive effect on stock prices in banking companies, as well as Astuti (2020) research which confirms the positive influence of profitability on stock prices. In the context of the automotive industry, high ROA indicates the company's ability to optimize the use of

productive assets, such as machinery, equipment, and production facilities, to generate maximum revenue.

The Effect of Debt to Equity Ratio (DER) on Stock Prices

The results of the study show that DER does not have a significant effect on stock prices. This finding is in line with research by Indradinata (2019) who found that DER does not always have a significant effect on stock prices, depending on the industry context and economic conditions. This can be explained because investors in the automotive industry consider other fundamental factors such as profitability, sales growth, and business prospects more than capital structures.

In addition, the automotive industry has a special characteristic where the use of debt for expansion and working capital investment is common, so investors have taken into account a reasonable level of leverage for this industry. This study supports the findings of Kemalasari & Norita (2019) which show that the influence of DER is conditional and influenced by other factors in the company.

The Effect of Inflation on Stock Prices

The results of the study show that inflation does not have a significant effect on the stock prices of companies in the automotive and component industries. This finding is different from several previous studies that found a significant effect of inflation on stock prices. However, these results can be explained through several perspectives.

First, automotive companies have the ability to adjust product prices in line with the increase in inflation, so that the impact of inflation can be minimized through an adaptive pricing strategy. Second, Indonesia's automotive industry is dominated by large companies with extensive product diversification, so it has good resilience to inflation fluctuations. Third, the research period (2020-2024) covers the pandemic era and economic recovery where other factors such as supply chain disruptions and changes in consumption patterns have a more dominant influence than inflation.

Simultaneous Effect of ROA, DER, and Inflation on Stock Prices

The results of the simultaneous test show that ROA, DER, and inflation together have a significant effect on stock prices. This indicates that although individually DER and inflation do not have a significant effect, the combination of these three variables provides relevant information for investors in assessing stock prices.

These findings are in line with modern portfolio theory which states that investors consider multiple factors in their investment decision-making. Although ROA is the dominant factor, the combination with capital structure information (DER) and macroeconomic conditions (inflation) provides a more comprehensive picture of the company's condition and its business environment.

Managerial Implications

Based on the results of the study, there are several important managerial implications: (1) Focus on Increasing ROA: Automotive company management must prioritize improving the efficiency of asset use through operational optimization, cost management, and revenue increase strategies; (2) Capital Structure Management: Although DER does not have a significant effect, companies still need to maintain a sound financial structure to avoid long-term financial risks; (3) Inflation Adaptation Strategy: Companies need to develop price adjustment mechanisms and operational efficiency to anticipate the impact of inflation; (4)

Focus on Fundamental Factors: Given the low R-squared value (14.2035%), management needs to identify and manage other factors that affect stock prices, such as product innovation, market expansion, and competitive strategies.

Research Limitations

This study has several limitations that need to be considered: (1) Model Predictability: The relatively low R-squared value (14.2035%) indicates that there are still many other factors that affect stock prices but are not included in the model; (2) Research Period: The 2020-2024 period covers the era of the COVID-19 pandemic which may create anomalies in the pattern of relationships between variables; (3) Macroeconomic Variables: This study only uses inflation as a proxy for macroeconomic conditions, even though there are other relevant macroeconomic factors such as interest rates, exchange rates, and economic growth; (4) Industry-Specific Factors: The model has not included automotive industry-specific factors such as government policies on the automotive industry, technological changes, and vehicle electrification trends.

CONCLUSION

Based on the results of the analysis of 65 observations from 13 automotive and component industry companies listed on the IDX for the 2020-2024 period, it can be concluded that simultaneously Return on Assets (ROA), Debt to Equity Ratio (DER), and inflation have a significant effect on stock prices with an F-value of 3.366161 and a p-value of 0.000. Partially, ROA was proven to have a positive and significant effect on the stock price with a coefficient of 122.0658, which indicates that any increase in ROA of 1% will increase the share price by 122.0658 units. In contrast, DER and inflation did not show a significant influence on the stock price with p-values of 0.2578 and 0.5027, respectively. The determination coefficient of 14.2035% indicates that the variables in the model are only able to explain a small fraction of the variation in stock prices, indicating the need for further research with additional variables that are more comprehensive. The managerial implication of this study is that automotive companies need to focus on improving asset use efficiency to optimize ROA, maintain a healthy financial structure even though DER has no significant effect, and develop adaptation strategies to macroeconomic conditions. For further research, it is recommended to add other independent variables such as company size, liquidity, sales growth, interest rates, exchange rates, and automotive industry-specific factors, extend the study period to capture long-term dynamics, as well as use more advanced analytical methodologies such as Vector Autoregression (VAR) or Structural Equation Modeling (SEM) to analyze the more complex relationships between variables.

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