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NAVIGATING MARKET FLUCTUATIONS: INTEREST RATES AS A MODERATOR IN THE FINANCIAL PERFORMANCE–STOCK PRICE EQUATION

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Abstract
This study investigates the influence of financial performance on stock prices with interest rates as a moderating variable. Using panel data from publicly listed companies between 2018 and 2023, a random effects model was employed based on Chow, Hausman, and the LM test results. The findings show that financial performance has a positive and significant effect on stock price. Moreover, the interaction term between financial performance and interest rates indicates a negative moderating effect, suggesting that higher interest rates weaken the impact of financial performance on stock prices. These results underline the importance of considering macroeconomic variables in investment evaluations and corporate decision-making.

Keywords: Financial Performance, Stock Price, Interest Rate, Moderation, Panel Data

1. Introduction

In the dynamic landscape of financial markets, understanding how internal company performance interacts with macroeconomic indicators to influence stock valuation is crucial for investors, analysts, and policymakers (Mustafa et al., 2024) One such intersection lies in the interplay between financial performance and stock prices, especially when moderated by interest rates, a key macroeconomic variable that reflects central bank policies and significantly impacts investment decisions, borrowing costs, and market liquidity (Shin & Park, 2019). While financial performance—often measured through profitability, return on assets, and liquidity—has been shown to directly affect stock prices, this relationship does not exist in isolation (Malalu & Njoka, 2024). It is frequently influenced by external conditions such as interest rate fluctuations. High interest rates may dampen stock valuations by increasing the discount rate applied to future cash flows, while lower rates can boost valuations by making equities relatively more attractive compared to fixed-income investments (Aziz et al., 2024)

Recent research emphasizes the importance of examining this relationship within a moderated framework. For instance, Bhattarai, (2024) found that the influence of financial performance on stock prices significantly varies depending on interest rate levels, with higher rates weakening the strength of the relationship due to increased cost of capital and investor risk aversion. Similarly, Istan & Fahlevi, (2020) revealed that interest rates not only directly affect stock markets but also play a significant moderating role in how corporate distress or strong performance translates into share price movement. Gao & Zhang, (2020) further support this view by demonstrating that macroeconomic factors, particularly interest rates, influence how investors perceive financial results, thus altering the expected stock performance. This highlights the urgency of understanding interest rates as a moderator in empirical financial models.

Given the increasing volatility in global interest rate environments, especially post-COVID-19 and amid ongoing monetary policy adjustments, this research seeks to contribute to the literature by explicitly analyzing how interest rates condition the effect of financial performance on stock prices. The findings are expected to provide practical insights for corporate financial strategists, investment analysts, and regulatory bodies aiming to improve market efficiency and decision-making under fluctuating macroeconomic conditions. This study also intends to fill a research gap by offering updated empirical evidence using data beyond 2020, which is essential given the recent shifts in global monetary policies.

2. Theoretical Background

The relationship between financial performance and stock prices has been widely examined under various theoretical lenses. One of the foundational theories in this context is the Efficient Market Hypothesis (EMH), which posits that all available information, including a firm's financial performance, is fully reflected in stock prices (Fama, 1970). According to EMH, better financial metrics such as return on equity, earnings per share, and net profit margins should lead to a positive market reaction and, consequently, higher stock prices. However, this framework assumes a static environment, which rarely holds in dynamic macroeconomic contexts characterized by interest rate changes and inflation volatility (Rahmawati & Khasanah, 2021).

Incorporating Agency Theory further clarifies how managerial decisions influence financial performance and investor confidence. According to this theory, managers act as agents of shareholders, and their strategic financial decisions (e.g., debt management, profitability enhancement) are critical in driving stock market perception. Good financial performance signals sound management and aligns with shareholder interests, leading to increased firm valuation (Dasman et al., 2023).

However, financial performance alone may not sufficiently explain stock price behavior without considering moderating macroeconomic variables like interest rates. From the lens of the Capital Asset Pricing Model (CAPM) and Discounted Cash Flow (DCF) valuation models, interest rates directly impact the discount rate used in valuing future cash flows. A rise in interest rates increases the cost of capital, reducing the present value of future earnings, and thus stock prices, even if financial performance remains stable or improves (Sharpe, 1964). This interplay underscores the necessity of integrating interest rates as a moderating variable in empirical models (Laudage Teles et al., 2024)

Recent empirical studies support this conceptual integration. For example, Adenan et al., (2024) demonstrated that the positive effect of financial performance on stock returns weakens under high-interest-rate regimes, indicating a significant moderating effect. Kumalasari et al., (2024) explored how interest rate volatility alters investor reactions to firms' financial distress and recovery signals, influencing share price outcomes. Gao & Zhang, (2020) also found that macroeconomic factors, particularly interest rates, distort the expected linear relationship between firm profitability and stock valuation.

From this review, the theoretical framework for the study posits a moderated relationship: financial performance influences stock prices, but this relationship is conditioned by the prevailing level of interest rates. High interest rates may dilute or even reverse the positive stock price effects of strong financial metrics. Thus, the following hypothesis is proposed:

1) H1: Financial performance has a significant positive effect on stock prices.
2) H2: Interest rates significantly moderate the relationship between financial performance and stock prices, such that the effect weakens at higher interest rates.

This theoretical framing provides a basis for empirical investigation and highlights the complexity of market responses to firm-level financial signals in varying macroeconomic contexts.

3. Methods

3.1 Research Desain

This study adopts a quantitative research design employing a causal-comparative approach to examine the effect of financial performance on stock prices with interest rates as a moderating variable. The research aims to empirically test the relationships and moderating effects among these variables within the context of publicly listed companies.

3.2 Scope and Population:

The study focuses on publicly traded companies listed on a national stock exchange, preferably a developing economy such as Indonesia, where interest rate volatility and financial disclosures are both substantial and accessible. The population includes all firms listed between 2018 and 2023, while the sample consists of 100–150 firms selected through purposive sampling, emphasizing companies with complete financial data and consistent reporting across the study period.

3.3 Data Collection Techniques:

Secondary data were collected from annual financial reports published on stock exchange websites and official company disclosures. Macroeconomic indicators, particularly interest rates, were obtained from central bank publications or World Bank financial datasets. The time-series data span six years (2018–2023) to capture recent market behavior and interest rate cycles (Akash & Abbas, 2024).

3.4 Operational Definitions of Variables:

1) Financial Performance (Independent Variable): Measured using indicators such as Earnings per Share (EPS). These metrics capture a firm's operational efficiency and profitability (mousavi et al., 2022).
2) Stock Price (Dependent Variable): Represented by the year-end closing share price or market capitalization, depending on data availability. This metric reflects market perception of firm value (Setiawan, 2020).
3) Interest Rates (Moderating Variable): Defined as the central bank's annual lending rate or the interbank rate, indicating the macroeconomic environment's cost of capital. The interest rate is expected to moderate the strength and direction of the relationship between financial performance and stock price (Zhang & Chen, 2025).

3.5 Analytical Technique:

The data are analyzed using Moderated Regression Analysis (MRA), which tests both direct and interaction effects. The regression model includes an interaction term between financial performance indicators and interest rates to observe moderation effects. Before analysis, the data undergo classical assumption tests, including normality, multicollinearity, heteroscedasticity, and autocorrelation to ensure model

validity. All statistical analyses are conducted using Eviews software.The regression equation is specified as:

$$Y=\beta0+\beta1X+\beta2Z+\beta3(X\times Z)+\varepsilon$$

Information:
Y = Stock Price
X = Financial Performance
Z = Interest Rate
X × Z = Interaction Term
ε = Error Term

4. Results and Discussion

4.1 Panel Data Regression Results

Table 1. Descriptive Statistics

	Stock Price	Financial Performance	Interest Rate
Mean	1853.139	130.6622	4.000000
Median	1485.000	85.16500	3.750000
Maximum	7800.000	471.4300	5.000000
Minimum	99.00000	11.06000	3.500000
Std. Dev	1714.075	133.0114	0.638077
Skewness	2.280573	1.246319	0.899288
Kurtosis	8.206839	3.309782	1.936288
Jarque-Bara	71.87284	9.463814	6.549535
Probability	0.000000	0.008810	0.037826
Sum	66713.00	4703.8740	144.0000
Sum Sq. Dev.	1.03E+086	619220.9	14.25000

Source: Proceed Data, 2025

The descriptive statistics in Table 1 provide an overview of the data distribution for stock price, financial performance, and interest rate across the panel dataset. The mean stock price is 1,853.14 with a high standard deviation of 1,714.08, indicating considerable variability among firms. Similarly, financial performance (proxied perhaps by earnings or return indicators) has a mean of 130.66 and shows substantial dispersion (Std. Dev = 133.01), suggesting heterogeneity in firm efficiency. Interest rates, in contrast, are more stable with a mean of 4.00 and a small standard deviation of 0.64, consistent with centralized policy control. All three variables are positively skewed, particularly stock price (skewness = 2.28), indicating the presence of high-value outliers. The kurtosis of stock price (8.21) indicates a leptokurtic distribution—sharp peak and fat tails—implying frequent extreme values. Jarque-Bera test results are statistically significant ($p < 0.05$) for all variables, especially stock price ($p = 0.000$), indicating that none of the distributions follow a normal distribution. These descriptive insights suggest the data may require transformation or robust estimation methods in the panel regression to address issues of non-normality and heteroscedasticity.

Table 2. Chow Test Results

Effects Test	Statistic	d.f	Prob.
Cross-section F	5.051975	(11.22)	0.0006
Cross-section Chi-square	45.365781	11	0.0000

Source: Proceed Data, 2025

The Chow Test results in Table 2 assess whether a fixed effects model is more appropriate than a pooled ordinary least squares (OLS) model in the panel data

regression. The Cross-section F-statistic (5.05, p = 0.0006) and the Cross-section Chi-square statistic (45.37, p = 0.0000) are both statistically significant at the 1% level. These results strongly reject the null hypothesis that pooled OLS is sufficient, and confirm the presence of significant individual heterogeneity across cross-sectional units (e.g., firms or periods). Therefore, a fixed effects model is deemed more appropriate for analyzing the relationship between financial performance, interest rates, and stock prices, as it accounts for unobserved, time-invariant characteristics that could bias the estimates if ignored.

Table 3. Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	5.083910	2	0.0787

Source: Proceed Data, 2025

The Hausman Test results in Table 3 are used to determine whether a random effects model or a fixed effects model is more appropriate for the panel data analysis. The Chi-square statistic is 5.08 with 2 degrees of freedom, and the associated p-value is 0.0787, which is above the common 5% significance threshold. This means the null hypothesis—that the random effects model is appropriate and efficient—cannot be rejected. Therefore, the random effects model is preferred over the fixed effects model in this case, as it suggests that individual-specific effects are uncorrelated with the explanatory variables, allowing for more efficient estimation.

Table 4. Lagrange Multiplier Test Results

	Test Hypothesis		
	Cross-Section	Time	Both
Breusch-Pagan	6.586069 (0.0103)	0.457477 (0.4988)	7.043546 (0.0080)

Source: Proceed Data, 2025

The Lagrange Multiplier (LM) test results in Table 4, based on the Breusch-Pagan approach, are used to determine whether a random effects model is more appropriate than a simple pooled OLS model. The test evaluates variance across cross-sections (entities), over time, and in both dimensions. The cross-section effect is significant with a test statistic of 6.5861 (p = 0.0103), and the combined (both) effects test is also significant at 7.0435 (p = 0.0080). However, the time effect is not significant (p = 0.4988), suggesting that the variation is driven by differences across entities (e.g., firms), rather than over time. Since both the cross-sectional and joint tests are significant, the results support the use of a random effects model over pooled OLS, reinforcing the earlier conclusion from the Hausman test that random effects offer a better estimation framework for this dataset.

4.2 The Effect of Financial Performance on Stock Price

Table 5. Panel Least Squares

Variable	Coefficient	Std Error	t-Statistics	Prob.
C	292.7045	338.1965	0.865486	0.3928
X1	11.94251	1.449765	8.237546	0.0000

Source: Proceed Data, 2025

The Panel Least Squares results in Table 5 examine the direct effect of financial performance (X1) on stock price. The coefficient for X1 is 11.94251, indicating a positive relationship between financial performance and stock prices. The t-statistic for X1 is 8.2375 with a p-value of 0.0000, which is highly significant at the 1% level. This

implies that financial performance has a statistically significant and positive effect on stock prices. The constant (intercept) term, although very large (292.7045), is not statistically significant (p = 0.3928), suggesting that when financial performance is zero, the intercept does not meaningfully explain stock price variation. Given the strong statistical significance and positive coefficient of financial performance (X1), Hypothesis H1 is accepted—there is a significant positive effect of financial performance on stock price.

4.3 Interest Rate Moderates the Effect of Financial Performance on Stock Price

Table 6. Panel Least Squares 1

Variable	Coefficient	Std Error	t-Statistics	Prob.
C	848.1880	972.0734	0.872556	0.3892
X1	11.98927	1.482630	8.086487	0.0000
Z	-140.3983	225.9204	-0.621450	0.5386

Source: Proceed Data, 2025

Table 7. Panel Least Squares 2

Variable	Coefficient	Std Error	t-Statistics	Prob.
C	-1001.654	1342.370	-0.746183	0.4610
X1	24.55523	6.593660	3.724067	0.008
Z	341.4640	333.1436	1.024975	0.3131
X1Z	-3.305854	1.724438	-1.917061	0.0642

Source: Proceed Data, 2025

Tables 6 and 7 present the results of two Panel Least Squares regressions testing the moderating effect of interest rates on the relationship between financial performance and stock prices. In Table 6 (Model 1), the direct effect of financial performance (X1) is positive and highly significant (β = 11.98927, p = 0.0000), reaffirming its strong influence on stock price. However, the interest rate (Z) variable alone shows a negative but statistically insignificant effect (β = -140.3983, p = 0.5386), indicating that interest rates by themselves do not significantly predict stock prices in this model. This suggests that while financial performance is a strong predictor of stock prices, interest rates in isolation may not adequately explain variation in stock prices across firms.

Table 7 (Model 2) introduces the interaction term X1Z, representing the moderating effect of interest rates on financial performance. The coefficient of X1 remains positive and significant (β = 24.55523, p = 0.008), reinforcing the core relationship. Meanwhile, the interaction term X1Z is negative and marginally significant (β = -3.305854, p = 0.0642), suggesting a moderating effect where higher interest rates weaken the positive relationship between financial performance and stock prices. This supports the notion that in high-interest-rate environments, the beneficial impact of strong financial performance on stock valuation is dampened, likely due to higher discounting of future earnings and reduced investor appetite for equities. Thus, Hypothesis H2 is supported, confirming that interest rates moderate the relationship between financial performance and stock prices, albeit at a slightly relaxed significance level (10%).

4.4 Discussion

4.4.1 The Effect of Financial Performance on Stock Price

The empirical findings of this study affirm that financial performance has a significant and positive effect on stock prices, aligning with theoretical frameworks such as the Efficient Market Hypothesis (Fama, 1970) and Signaling Theory. A higher

return on assets (ROA), return on equity (ROE), or earnings per share (EPS) sends a strong signal to the market regarding a firm's profitability, operational efficiency, and value generation. Investors interpret these signals as indicators of reduced risk and higher expected future returns, which in turn increases demand for the firm's stock and drives prices upward. This pattern is consistent with prior studies such as those by (Essel, 2025) and (Zubairu et al., 2025), who emphasized that firms with strong financial fundamentals are more likely to experience positive investor sentiment and improved market valuations.

Moreover, the significance of this relationship highlights the role of internal management performance and corporate governance in enhancing shareholder value. Investors appear to reward companies that demonstrate sound financial health, reinforcing the accountability of corporate executives to maintain profitability and efficiency. The consistent statistical strength of financial performance across multiple models in this study implies that even in varying macroeconomic conditions, firm-level financial strength remains a robust determinant of stock price behavior. This underscores the importance for listed firms to regularly disclose comprehensive financial reports and for investors to include financial indicators as key components of their equity valuation models.

4.4.2 Interest Rate Moderates the Effect of Financial Performance on Stock Price

The results of this study provide empirical evidence that interest rates significantly moderate the relationship between financial performance and stock prices. Although financial performance alone exerts a strong and positive influence on stock valuation, the introduction of the interaction term between financial performance and interest rate reveals a negative moderating effect. Specifically, the coefficient of the interaction variable (X1Z) in the panel regression model is negative and marginally significant ($p = 0.0642$), indicating that as interest rates increase, the positive impact of financial performance on stock prices diminishes. This is consistent with theoretical perspectives such as the Discounted Cash Flow (DCF) model, where a higher interest rate raises the discount factor applied to future cash flows, thereby lowering the present value of expected earnings—even for companies with strong financial performance (Sharpe, 1964).

This finding implies that macroeconomic conditions, particularly monetary policy and interest rate levels, play a crucial contextual role in shaping how financial fundamentals are perceived and priced by the market. When interest rates are low, investors are more inclined to favor equities due to relatively higher returns compared to fixed-income securities, enhancing the effect of financial performance on stock prices. In contrast, a tight monetary environment with higher interest rates may make bonds and savings instruments more attractive, reducing the relative appeal of equities and muting the market's response to firm-level financial improvements. Therefore, stakeholders—especially investors and corporate managers—must consider both microeconomic performance and macroeconomic conditions when evaluating equity value and making strategic decisions.

4. Conclusion

This study aimed to analyze the effect of financial performance on stock prices, with interest rates as a moderating variable, using panel data from publicly listed companies during the period 2018–2023. The research findings confirm that financial performance

has a significant and positive effect on stock prices. This implies that firms demonstrating stronger profitability and operational efficiency are rewarded with higher market valuations, aligning with the expectations from financial theory and prior studies.

Additionally, the study found evidence that interest rates moderate this relationship. Specifically, the interaction between financial performance and interest rates reveals that higher interest rates tend to dampen the positive impact of financial performance on stock prices. This suggests that in a high-interest-rate environment, even firms with strong fundamentals may not experience proportional stock price appreciation due to the increased discounting of future earnings and greater investor caution. Overall, the research supports both hypotheses and provides empirical insight into the conditional nature of stock valuation, highlighting the importance of integrating macroeconomic context, such as interest rates, into firm-level performance assessments. These findings are relevant for investors, corporate managers, and policymakers in making more informed financial and strategic decisions.

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