The Impact of Macroeconomic Factors

and Financial Performance on Stock Prices: Evidence from Indonesia

Muhammad Fikri Irsyadillah¹, Yusnaini Yusnaini, Ph.D.², Ika Sasti Ferina, Ph.D.³

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Abstract

This study aims to test and analyze the effect of inflation, interest rates, and Earnings Per Share (EPS) on the stock prices of companies listed on the Small-Mid Cap Liquid Index of the Indonesia Stock Exchange (IDX). Utilizing annual data from 2020 to 2023, obtained from company annual reports and official economic indicators, the study employs purposive sampling to select 192 companies meeting specific criteria from an initial population of 252. Panel data regression analysis is conducted using the Random Effect Model (REM), incorporating control variables such as Return on Assets (ROA), Firm Size (FS), and Debt to Equity Ratio (DER). Guided by Signaling Theory, the results indicate that inflation has a significant negative effect on stock prices, interest rates have no significant effect, and EPS has a significant positive effect. The model explains 56.54% of the variation in stock prices (R² = 0.5654). These findings contribute to the understanding of how macroeconomic factors and company performance influence stock valuations in emerging markets, providing valuable insights for investors and policymakers.

Keyword: earning per share (EPS), inflation, interest rate, signaling theory, stock price, Small-Mid Cap Liquid Index

JEL: D04, C2, E4, P44

¹ MA student in Economics, Sriwijaya University, Indonesia; e-mail address: 01022682226013@ student.unsri.ac.id

² Corresponding author, Lecturer, Department of Accounting, Sriwijaya University, Indonesia; e-mail address: yusnaini@fe.unsri.ac.id

³ Lecturer, Department of Accounting, Sriwijaya University, Indonesia; e-mail address: ikasastiferina@fe.unsri.ac.id

Introduction

Over time, the trend of increasing the number of investors in Indonesia continues every year. The Indonesian Central Securities Depository (KSEI) recorded the addition of 158,639 Single Investor Identification (SID) in the Indonesian capital market in January 2024, bringing the total to 12.32 million SID. This number includes stock investors, other securities, government securities (SBN) investors, and mutual fund investors. The increase in January 2024 reflects a growth of 1.30% compared to December 2023, which was recorded at 12.17 SID. The largest increase occurred in stock and other securities investors, which amounted to 1.37% to 11.57 million SID. They were followed by mutual fund investors who grew by 1.76% to 5.35 SID, and SBN investors increased by 1.28% to 1.02 SID. The increase in the number of investors can be seen in Figure 1.

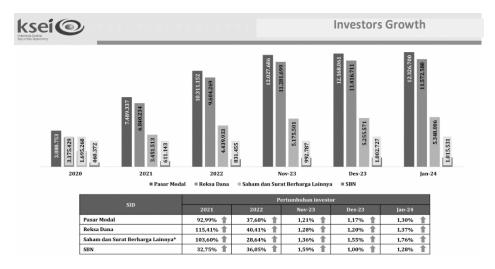


Figure 1. Investor Growth on the Indonesia Stock Exchange (IDX)
Source: KSEI (2024)

Figure 1 shows that investment in the capital market dominates investment activity. The capital market plays an important role in mobilizing long-term capital for listed companies in Indonesia. This is done by raising funds from various investors, which provides an opportunity for companies to expand their business, as well as for offering diverse investment options for investors to earn more profits. The capital market is generally considered as one of the most important components of the economy and is the most volatile sector. One of the main reasons investors invest in the capital market is the stock price, because the stock price reflects the rate of return on capital (Yuniarti and Litriani, 2018). Go-public companies usually utilize the capital market as a source of funding or alternative financing. The capital market also serves as a reflection of the company's financial condition and performance.

If the company's financial condition and performance are good, the stock price tends to increase, and the capital market will respond positively.

Stock prices listed on the stock exchange always fluctuate. These fluctuations are caused by various factors that affect stock price movements, one of which is inflation and interest rates. Inflation is a monetary phenomenon that is often feared and can be found in almost all countries (Ratnasari et al., 2019). An increase in inflation is expected to cause companies to face difficulties in financing their operations through the issuance of shares, because inflation reduces people's purchasing power, reduces company sales, and increases the unemployment rate. This condition leads to a decrease in individual income and welfare, which in turn can cause stock prices to fall (Arhenful et al., 2022).

Apart from inflation, another macroeconomic factor that can affect the stock development index is interest rates (Tripuspitoroni, 2021). Interest rates are one of the economic variables that are always closely observed because of their broad impact. Changes in Bank Indonesia interest rates affect stock prices (Hernadi Moorcy et al., 2021). Interest rates influence companies' cost of capital and can affect their financing decisions, but the debt-equity ratio is primarily a company-specific metric, not directly influenced by investors. Changes in interest rates are expected to affect the value of currencies and therefore impact both international competitiveness and the competitiveness of businesses (Camilleri et al., 2019)). Until now, the relationship between inflation and interest rates and stock prices has been debated among researchers. Some researchers argue that inflation and interest rates have a negative impact on stock prices, while others argue the opposite.

The share price of a company is strongly influenced by its financial statements and macroeconomics. To attract investors' interest in investing capital, companies need to improve company performance (Chandra, 2021). One indicator of company performance is earnings per share (EPS), which provides significant information for investors because it reflects the company's future prospects (Tristanti and Marliani, 2019). Companies with weak financial performance are often ignored by investors, which results in a decrease in stock prices. Therefore, investors usually conduct fundamental analysis before deciding whether to invest in a company or not, based on the results of the analysis.

This piece of research will focus on the effect of inflation, interest rates, and EPS on the stock prices of companies listed in the Small-Mid Cap Liquid Index on the Indonesia Stock Exchange. The Small-Mid Cap Liquid Index is a relatively new index and has not been widely researched. This index consists of companies with small to medium market capitalization that have promising fundamentals and a high level of stock liquidity. Comparing the impact of macroeconomic factors like inflation, interest rates, and EPS on stock prices within the Small-Mid Cap Liquid Index to similar indices in emerging markets would help identify whether these factors affect Indonesian stocks uniquely or reflect a broader trend across emerging economies. This could involve examining studies from these markets and discussing the similarities or contrasts with the findings in Indonesia. Analyzing how inflation, interest rates, and EPS affect stock prices on different indices within Indonesia, such as the LQ45 or IDX30, could illustrate whether the Small-Mid Cap Liquid Index behaves

differently due to its unique composition or liquidity characteristics. This comparison could offer insights into investor behavior and market dynamics within Indonesia itself. Therefore, this research is expected to contribute to enriching the literature related to this index and provide insight for investors regarding the factors that influence stock prices in companies with small to medium market capitalization in Indonesia. Within the Small-Mid Cap Liquid Index, further segmenting by industry could reveal if macroeconomic factors impact specific sectors differently, which can expose industry resilience or sensitivity to these variables.

The research questions, therefore, are: how does inflation affect the stock prices of companies in the Small-mid cap liquid index?; what is the relationship between interest rates and these stock prices?; in what way does EPS influence stock prices in this segment of the market?

Thus, the research objectives are:

- To analyze the effect of inflation on stock prices of companies listed in the Small-mid cap liquid index.
- To examine the impact of interest rates on these stock prices.
- To assess how EPS influences stock prices in this context.
- To determine the role of control variables (ROA, FS, DER) in these relationships.

The results of this study are expected to provide guidance for investors and stakeholders in making investment decisions in the Indonesian capital market, especially in stocks that are members of the Small-Mid Cap Liquid Index.

Literature review

Signaling theory

Signal theory or signaling theory is based on the assumption that the information received by each party is not the same. Signaling theory was first introduced by Spence, (1978) which suggests that a signal or signal provides a signal, the sender (owner of information) tries to provide relevant pieces of information that can be utilized by the recipient. High inflation and interest rates typically signal an environment with increased costs and potential economic instability. Investors interpret these signals as risks to company profitability and the overall market environment, potentially reducing their investment in affected firms or indices. For example, an increase in inflation may signal to investors that consumer purchasing power is weakening, which could reduce corporate earnings and, in turn, stock prices. By explicitly relating these macroeconomic indicators to signaling, the study can emphasize how investors adjust their behaviors in response to anticipated impacts on company performance and economic health. In Signaling Theory, a firm's financial performance metrics, like EPS, provide insights into its profitability and growth potential. High EPS values signal a company's ability to generate returns for shareholders, which attracts investor interest and often leads to higher stock prices. This aligns with the study's objective of examining how EPS influences investor decisions within

the Small-Mid Cap Liquid Index, as positive signals about financial health typically increase demand for a company's stock. According to Signaling Theory, high ROA, manageable DER, and a substantial firm size may signal stability and lower risk, encouraging investment and supporting stock price appreciation. Signaling Theory posits that positive financial signals (like high EPS or low inflation rates) increase investor confidence, potentially raising demand for stocks and driving up prices. Conversely, signals of economic or financial stress (e.g., rising inflation or unfavorable ROA) might deter investors, leading to a decline in stock prices. Thus, the purpose of the study—to analyze the influence of these signals on stock prices in the Small-Mid Cap Liquid Index—aligns with Signaling Theory, as it examines how these signals impact investor perceptions and decisions in the market.

Financial statement analysis

According to Thian (2022), there are two methods of analyzing financial statements that are commonly used in practice, namely vertical analysis (static) and horizontal analysis (dynamic). Vertical/static analysis is an analysis carried out only on one period of financial statements. The information obtained only describes the key relationships between financial statement items or conditions for one period only so that it cannot determine the development of the company's condition from one period to the next. Meanwhile, horizontal (Dynamic) analysis is an analysis carried out by comparing financial statements from several periods. In other words, comparisons are made with similar information from the same company but for different time periods. Through the results of this analysis, what can be seen is the progress or decline of the company's performance from one period to the next.

Inflation

Inflation is a state of weakening purchasing power followed by a decline in the real value of a country's currency. Inflation is also a situation where there is a sharp increase in prices that continues over a long period of time. That means that in line with the increase in prices, the value of money falls sharply, proportional to the increase in prices (Aji and Mukri, 2020). Thus, inflation can also be interpreted as a decline in the value of money against the value of goods and services in general. Inflation measurement is taken from the monthly average inflation rate in the study period (Magweya and Sibanda, 2020).

Interest rate

Interest rates are something that can affect various banking activities, such as spending, saving, investing, and buying a house (Hendrayanti et al., 2023). In theory, the correlation between interest rates and stock prices is a negative correlation, meaning that when interest rates rise, capital market players will seek hedging and switch to deposit investment. High interest rates can cause stock prices to decline because investors are not interested in investing their funds in the form of shares in the capital market so that the demand for shares decreases and the stock returns received by investors decrease and applies otherwise (Maulani and Riani, 2021). The benchmark interest rate taken in this study is the monthly average open rate during the observation year period (Demir, 2019).

Earning per share (EPS)

Earning per Share is the company's ability to achieve net income for shareholders on the shares invested. EPS is a comparison between the income generated (net income) and the number of shares outstanding (Udjali et al., 2021). It has a positive correlation with stock price movements (Sharma et al., 2023). The higher the profit from each share owned by the owner, the greater the investor's interest in a company's shares (Rahmawati and Hadian, 2022).

<u>EPS = Net Profit after Interest and Tax / Number of Shares Outstanding</u> (Ibidem.).

Return on asset (ROA)

Return on Asset shows how effective the company is in utilizing its assets to get maximum profit. ROA is measured by the ratio of net income to company assets. A high ROA means the business is able to utilize its resources well in generating revenue. In other words, return on assets (ROA) is a measure of how well the management of a company generates income from the assets or economic resources on its balance sheet (Puspitasari et al., 2021).

<u>ROA = Net Profit after Interest and Tax / Total Assets</u> (Nguyen and Nguyen, 2020).

Firm Size

Basically, firm size can be divided into 3 categories, namely large firms, medium-size firms, and small firms. Measurement of these 3 categories is based on the company's total assets (Yadav et al., 2022). In this study, the natural logarithm of the company's total assets was chosen to proxy for company size (Luo et al., 2023).

Debt to equity ratio (DER)

Debt to Equity Ratio is a type of financial ratio that measures the composition of corporate debt. The use of debt by companies is not a bad thing, but if it is excessive it will not have a good impact on the company (Wulandari and Thamrin, 2019). DER measurement uses total debt to total equity.

DER = Total Liabilities / Total Equity (Egbunike and Okerekeoti, 2018).

Hypothesis development

The effect of inflation on the share price of the small-mid cap liquid index

According to signaling theory, changes in the inflation rate can provide important signals to investors about underlying economic conditions (Sreenu, 2023). inflation serves as a macroeconomic indicator that communicates important information to investors about the economic environment and the potential risks facing companies. For companies listed on the Small-Mid Cap Liquid Index, inflation can have a pronounced effect on share prices, as these companies are often more sensitive to macroeconomic conditions than large-cap firms. Rising inflation is generally perceived as a signal of increased costs for businesses and reduced purchasing power for consumers. Higher inflation indicates that prices of goods and services are increasing, which may lead to increased production costs and decreased consumer spending. This situation often signals a potential slowdown in economic growth,

which investors interpret as a risk to corporate profitability, especially for companies that may lack substantial pricing power or market dominance—traits common among small- to mid-cap firms. For companies in the Small-Mid Cap Liquid Index, inflationary pressures can erode profit margins if they cannot pass the higher costs onto consumers. This reduced profitability potential serves as a warning signal to investors, who may then expect lower returns from these stocks, leading to decreased demand and, subsequently, lower stock prices. According to Signaling Theory, investors rely on macroeconomic indicators like inflation to gauge the health and stability of the market. In periods of high inflation, investors may interpret the signal as indicative of an unstable economic environment and uncertain future growth. This perception can drive investors to seek safer assets or move to cash, reducing the appeal of small- and mid-cap stocks, which are often more volatile and viewed as higher-risk investments. For investors in the Small-Mid Cap Liquid Index, high inflation may lead to decreased confidence in the ability of these companies to generate stable earnings. This loss of confidence is then reflected in lower demand for these stocks, pressuring their prices downward. High inflation can also lead investors to reallocate their portfolios, moving away from riskier assets like small- to mid-cap stocks toward more inflation-resistant or defensive investments. As Signaling Theory posits, this behavioral shift reflects the way investors interpret inflation as a risk signal. Lower demand for the Small-Mid Cap Liquid Index stocks results in downward pressure on share prices. When inflation increases, it can be interpreted as a sign of worsening economic performance, which can lead to a decrease in investor confidence and a subsequent decline in stock prices. So the first hypothesis in this study is:

H1: Inflation has a negative and significant effect on the share price of the Small-Mid Cap Liquid Index.

The effect of interest rates on the share price of the small-mid cap liquid index

Based on Signaling Theory, interest rates serve as a powerful economic signal that influences investor perception and behavior, which in turn affects the share prices of companies, especially in the Small-Mid Cap Liquid Index. Rising interest rates are often seen as a signal of tightening monetary policy, which is generally aimed at controlling inflation or slowing down an overheated economy. For investors, higher interest rates indicate an economic environment with increased borrowing costs, which can negatively impact business growth and profitability, particularly for small- and mid-cap companies that often rely on external financing for expansion. In the context of Signaling Theory, the increase in interest rates may signal a potential risk to the future earnings of these companies, as higher borrowing costs can erode profitability. Investors may interpret this signal as an indication that small- to mid-cap companies could face cash flow constraints or reduced margins, leading to lower stock prices. Interest rates also serve as a signal affecting investor confidence. When rates rise, investors may perceive the financial environment as riskier for businesses, especially for smaller companies that might have less financial resilience. Rising interest rates can discourage investment in small- and mid-cap stocks, which are often seen as higher-risk and more sensitive to changes in the economic landscape than large-cap

stocks. This shift in investor confidence, driven by the signal of increased interest rates, can lead to lower demand for stocks in the Small-Mid Cap Liquid Index. As a result, the decreased demand for these stocks may push their prices downward. under Signaling Theory, interest rates serve as a key signal that affects investor expectations about economic conditions, financial stability, and future growth prospects. For the Small-Mid Cap Liquid Index, which comprises companies often more vulnerable to changes in financing costs and market conditions, higher interest rates signal a riskier environment, leading investors to adjust their expectations and reduce their investment in these stocks. This results in lower share prices within the index, as investors react to the implications of the interest rate signals.

Based on the literature study of Yasar et al. (2020), when interest rates rise, borrowing costs for companies also increase which will reduce the company's capacity to invest and develop its business. This will be a negative signal for investors in assessing the company's financial health. In addition, Yasar et al. (2020) explain that high interest rates often create the perception that economic conditions are deteriorating. Thus, investors tend to respond more strongly to negative signals than positive signals. When interest rates increase, investors will become more cautious and reduce their exposure to stocks, causing a decrease in stock prices. Hence, the second hypothesis in this study is:

H2: Interest rates have a significant negative effect on the share price of the Small-Mid Cap Liquid Index.

The effect of Earning Per Share on the share price of the small-mid cap liquid index

Based on Signaling Theory, Earning Per Share (EPS) is a critical financial indicator that sends important signals to investors about a company's financial health and future profitability. In the context of the Small-Mid Cap Liquid Index, EPS has a significant effect on share prices as it directly influences investor perceptions and confidence. EPS represents the portion of a company's profit allocated to each outstanding share, effectively communicating the company's profitability to investors. Higher EPS values signal to the market that the company is performing well financially, which investors interpret as a sign of stability and growth potential. This is especially important for small- and mid-cap companies, which may be more vulnerable to economic fluctuations but can use strong EPS performance to attract investor interest. According to Signaling Theory, a high EPS indicates that the company is generating sufficient profits, suggesting effective management and a sound business model. This positive signal can increase investor demand for the stock, driving up its price in the Small-Mid Cap Liquid Index. Investors often view EPS growth as an indicator of a company's potential to deliver returns in the future. For small- and midcap stocks, which may carry higher growth expectations, a rising EPS signals to investors that the company is expanding and capable of providing attractive returns. This aligns with Signaling Theory, where investors look to EPS as a credible signal of future performance and earnings potential. When a company in the Small-Mid Cap Liquid Index reports a high or increasing EPS, investors may interpret this as a signal of strong future cash flows, thereby enhancing the stock's attractiveness and leading to an increase in share price. Signaling Theory also addresses the information asymmetry between a company's management and outside investors. Management has more detailed knowledge of the company's internal operations, and through financial indicators like EPS, they signal the company's true value to the market. A high EPS can help reduce this asymmetry, providing investors with clear evidence of the company's profitability and growth trajectory. For companies within the Small-Mid Cap Liquid Index, where investors may have less information compared to larger firms, EPS serves as a transparent measure that boosts investor confidence and prompts positive reactions in stock price.

The link between signal theory and earning per share is that the company's profit is of concern to investors because the profit illustrates the success of the company which is considered to be the increasing ability of the company to distribute profits to investors (Pratama and Marsono, 2021). Increased profits have an impact on increasing stock prices because investors have an increased interest in the company's shares. The higher EPS value encourages investors to invest more because the returns delivered to shareholders are also increasing (Fathihani, 2020). Thus, the third hypothesis in this study is:

H3: Earning per share has a positive and significant effect on the share price of the Small-Mid Cap Liquid Index.

Framework

The high and low share price of a company will be influenced by various factors. These are both macroeconomic factors and factors originating from the company itself. Macroeconomics is a factor that cannot be controlled by the company, besides that investors will analyze the company by using information contained in the company, such as earnings per share, company size, the level of the company's ability to pay its obligations and the amount of assets owned by a company in generating profits for the company. Investors may buy more shares when they already believe that the company they invest in can provide more benefits so that this can have an impact on stock prices.

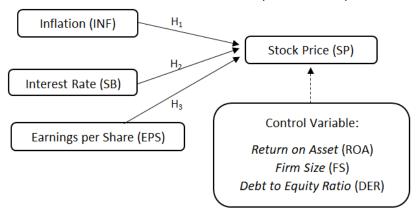


Figure 2. FrameworkSource: Created by the authors

Research Methods

Scope of Research

This research focuses on analyzing the effect of inflation, interest rates and Earning Per Share (EPS) on stock prices on the Small-Mid Cap Liquid Index listed on the Indonesia Stock Exchange (IDX) during the period 2020-2023. The control variables used in this study are Return on Asset (ROA), Firm Size, and Debt to Equity Ratio (DER). These control variables are included to reduce bias in the relationship between the independent variable and the dependent variable. The Small-Mid Cap Liquid Index was chosen as in the sample it covers various business sectors and is a relatively new index, so it is still rarely used as a research object. The method used for data analysis is panel data regression.

Data collection

The data used in this study are secondary data collected through documentation techniques. The data is taken from the company's annual financial statements that have been audited and published on the Indonesia Stock Exchange (IDX), inflation statistics obtained from the official website of the Central Statistics Agency (BPS), and interest rate data obtained from the official website of Bank Indonesia (BI). The data used covers the observation period from 2020 to 2023.

Population and sample

Population in this study consists of companies listed in the Small-Mid Cap Liquid Index on the IDX in 2023. The total population includes 63 companies with an observation period of 4 years, resulting in 252 observation data. The purposive sampling technique was used for sample selection. Sample criteria include companies that are consistently listed in the index during the period 2020 to 2023 and that meet the requirements for major evaluation. Of the total population, 48 companies met the criteria, resulting in 192 observations.

Data analysis

The data used in this study are secondary data in the form of inflation, interest rates, EPS, ROA, company size, and DER. Data sources are taken from audited annual financial reports, as well as macroeconomic data from the official websites of BPS and BI. The statistical analysis used is Panel Data Regression, which combines cross-section and time series data. Panel data regression was chosen because it can handle data that has individual and time dimensions simultaneously. Before conducting the regression analysis, descriptive statistical analysis was first conducted to describe the characteristics of the research data and clarify the variables studied. Panel data regression involves several tests, including Chow test, Hausman test, and Lagrange Multiplier test, to determine the best model between Fixed Effect Model (FEM) and Random Effect Model (REM). Once the best model is selected, classical assumption tests such as normality, heteroscedasticity, multicollinearity, and autocorrelation tests are performed to ensure the validity of the regression analysis results. The Random Effects Model (REM) assumes specific characteristics about the data and error components, making it suitable for particular types of panel data analysis such as this study, which examines the effects of inflation, interest rates, and Earning Per

Share (EPS) on the stock prices of companies in the Small-Mid Cap Liquid Index. The REM assumptions fit this study because they allow for random firm-specific variations while focusing on the broader relationship between macroeconomic indicators and stock prices. This approach is efficient, provides generalizable insights, and captures the common impact of macroeconomic factors on companies within the Small-Mid Cap Liquid Index.

Results and discussion

Descriptive statistical analysis

Table 1 presents a descriptive analysis of the research data. The data used are 192 observations studied on the Small-Mid Cap Liquid stock index companies listed on the Indonesia Stock Exchange from 2020 - 2023. The variables used in this study are INF, SB, EPS, ROA, FZ, DER, and SP. Table 1 shows that Stock Price has a minimum value of 113 and a maximum value of 41075. This shows that the SP value of the Small-Mid Cap Liquid stock index companies that are samples in the study ranges from 113 to 41075 with an average value of 5869.328 at a standard deviation of 3676.706. The average value is greater than the standard deviation, indicating that Stock Price has a good or normal data distribution. From table 1, it is known that Inflation has a minimum value of 1.56 and a maximum value of 4.21.

Table 1. Descriptive Analysis

	SP	INF	SB	EPS	ROA	FZ	DER
Mean	5869.328	2.867500	4.402760	76.40333	0.199948	28.75109	1.761042
Median	1642.500	2.850000	4.250000	38.81500	0.060000	30.25500	0.895000
Maximum	41075.00	4.210000	5.810000	392.6200	1.260000	39.01000	8.130000
Minimum	113.0000	1.560000	3.520000	-232.4900	-0.140000	10.25000	0.040000
Std. Dev.	3676.706	1.101128	0.859064	44.77063	0.107013	4.796449	1.260744
Observation	192	192	192	192	192	192	192

Source: Data Analysis by the authors using Eviews 12 (2024)

Return on Asset has a minimum value of -0.14 and a maximum value of 1.26. This shows that the value of ROA in the Index Small-Mid Cap Liquid stock index companies that are samples in the study ranges from -0.14 to 1.26 with an average value of 0.199 at a standard deviation of 0.10. The average value is greater than the standard deviation, indicating that Return on Asset has a good or normal data distribution. Firm Size has a minimum value of 10.25 and a maximum value of 39.01, i.e. the value of FZ in the Index Small-Mid Cap Liquid stock index companies that are samples in the study ranges from 10.25 to 39.01 with an average value of 28.751 at a standard deviation of 30.255. The average value is greater than the standard deviation, indicating that Firm Size has a good or normal data distribution.

Chow test

The Chow test (Table 2) is used to determine the most appropriate panel data regression model between Pooled Least Square (PLS) and Fixed Effect Model (FEM) in panel data analysis. The results of the Chow test help decide whether to consider differences between

cross-section units that cause different variables for each unit. Table 2 reveals that the Chisquare probability is 0.0000. Where the Chi-square probability value is < 0.05 (0.0000 < 0.05), so it can be concluded that H0 is rejected and the selected model is the Fixed Effect Model. Because the Fixed Effect Model was selected, it was continued with the Hausman test.

Table 2. Chow Test Output

Effects Test	Statistic	d.f.	Prob.
Cross-section F	18.525610	(47,138)	0.0000
Cross-section Chi-square	381.920178	47	0.0000

Source: Data Analysis by the authors using Eviews 12 (2024)

Hausman test

The Hausman Test (Table 3) is used in statistics and economics to determine whether the model used in panel data analysis should use fixed effects or random effects. Table 3 shows that the probability of random cross-section is 0.8279. Where the probability value of random cross-section> 0.05 (0.8279> 0.05), so it can be concluded that H0 is accepted and the selected model is the Random Effect Model. Because H0 is accepted, it is continued to the Lagrange Multiplier test.

Table 3. Hausman Test Output

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.845803	6	0.8279

Source: Data Analysis by the authors using Eviews 12 (2024)

Lagrange multiplier test

Table 4 presents the Lagrange Multiplier (LM) Test, a statistical method used to test for mismatch in statistical models, especially in the context of panel data models and regression models. This test is often used to identify the presence of unobserved effects or variables that may affect the results of model estimation.

Table 4. Lagrange Multiplier Output

	Test Hypothesis Cross-section	Time	Both	
Breusch-Pagan	189.0378 (0.0000)	1.889047 (0.1693)	190.9268 (0.0000)	

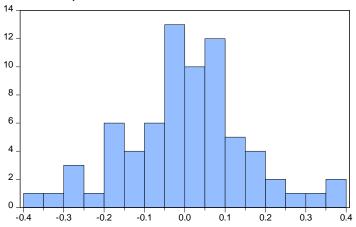
Source: Data Analysis by the authors using Eviews 12 (2024)

Table 4 indicates that the Lagrange multiplier test produces a Breusch-Pagan probability value of 0.0000. Therefore, the Breusch-Pagan probability value of 0.0000 <0.05 shows that the model used in this study is the Random Effect Model (REM). Based on these results

one can conclude that the appropriate model for panel data regression is the Random Effect Model.

Normality test

Figure 3 presents the results of the normality test. Based on the histogram of the normality test in Figure 3, the Jarque-Bera probability value is 0.513014, where the Jarque-Bera probability value is > 0.05. So it can be concluded that the data in this study are normally distributed.



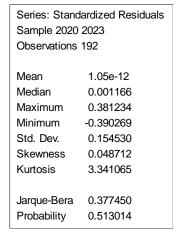


Figure 3. Normality Test Output

Source: Data Analysis by the authors using Eviews 12 (2024)

Multicollinearity test

Table 5 presents the results of the multicollinearity test. It reveals that the correlation coefficient value between Inflation and Interest Rate is 0.4820, Inflation and EPS is 0.0458, Inflation and ROA is -0.01567, Inflation and Firm Size is -0.0948, Inflation and DER is -0.0767. From the results of this multicollinearity test, it can be concluded that there is no multicollinearity problem in the regression model. This is because the relationship between independent variables has a correlation coefficient value < 0.85.

INF SB **EPS** ROA FΖ DER -0.1567 INF 0.4820 0.0458 -0.0948 -0.0767 1 SB 0.4820 0.0622 -0.0667 -0.0240 -0.0199 1 **EPS** 0.0458 0.0622 1 0.3876 0.1349 -0.0763 0.3876 ROA -0.1567-0.0667 0.1223 0.0973 FΖ -0.0948 -0.0240 0.1349 0.1223 1 0.1016 DER -0.0767 -0.0199 -0.0763 0.0973 0.1016 1

Table 5. Multicollinearity Test Output

Source: Data Analysis by the authors using Eviews 12 (2024)

Heteroscedasticity test

The heteroscedasticity test (see Table 6) shows that the probability value of all variables is more than 0.05 where the INF probability value is 0.0589, the SB probability value is 0.6745, the EPS probability value is 0.0903, the ROA probability value is 0.2733, the FZ probability value is 0.0985, and the DER probability value is 0.0577 which means that the variables INF, SB, EPS, ROA, FZ and DER are free from heteroscedasticity.

Table 6. Heteroscedasticity Test Output

Variable	Coefficient	Std. Error	t-Statistic	Prob.
С	52.57915	2014.255	0.026104	0.9792
INF	-414.2244	156.6233	-2.644717	0.0589
SB	80.70368	191.8302	0.420704	0.6745
EPS	6.217027	3.651612	1.702543	0.0903
ROA	1169.327	1064.114	1.098874	0.2733
FZ	102.9829	62.01139	1.660710	0.0985
DER	414.5053	186.8269	2.218660	0.0577

Source: Data Analysis by the authors using Eviews 12 (2024)

Panel data regression analysis

Table 7 presents the results of the panel data regression test of the random effect model.

Table 7. Panel Data Regression Output

Variable	Coefficient	Std. Error	t-Statistic	Prob.
С	-915.7475	401.0813	-0.381389	0.7034
INF	-682.4445	177.0136	-3.855322	0.0002
SB	158.5667	216.1049	0.733749	0.4640
EPS	9.417185	4.250802	2.215390	0.0280
ROA	3316.039	1211.990	2.736029	0.0068
FZ	151.7807	73.45576	2.066287	0.0402
DER	-562.7100	222.9271	-2.524188	0.0124

Source: Data Analysis by the authors using Eviews 12 (2024)

Based on table 7, the panel data regression equation can be explained as follows:

SPit = -915.7475 - 682.4445INFit + 158.5667SBit + 9.417185EPSit + 3316.039ROAit + 151.7807FZit - 562.7100DERit + eit

Based on this equation, it shows that the constant value of -915.7475 is negative, meaning that if the independent variables, namely INF, SB, EPS, ROA, FZ and DER are constant (0), then the SP variable value is -915.7475 which shows that SP tends to decrease when all independent variables are constant. The INF regression coefficient is -682.4445 with a negative value, meaning that every 1% increase in INF will also be followed by a decrease

in Stock Price of -682.4445 assuming that other independent variables are constant. The SB regression coefficient is 158.5667 with a positive value, meaning that every 1% increase in SB will also be followed by an increase in Stock Price of 158.5667 assuming that other independent variables are constant. The EPS regression coefficient is 9.417185 with a positive value, meaning that every 1% increase in EPS will also be followed by an increase in Stock Price of 9.417185 assuming that other independent variables are constant.

Partial test (t-Test)

Table 8 presents the results of partial hypothesis testing.

Table 8. t-Test Output

Variable	Coefficient	Std. Error	t-Statistic	Prob.
С	-915.7475	401.0813	-0.381389	0.7034
INF	-682.4445	177.0136	-3.855322	0.0002
SB	158.5667	216.1049	0.733749	0.4640
EPS	9.417185	4.250802	2.215390	0.0280
ROA	3316.039	1211.990	2.736029	0.0068
FZ	151.7807	73.45576	2.066287	0.0402
DER	-562.7100	222.9271	-2.524188	0.0124

Source: Data Analysis by the authors using Eviews 12 (2024)

Table 8 shows the results of the t-test which can be seen that the regression coefficient value of the inflation variable is -682.4445 with a t-statistic value of -3.855322 and a probability value of 0.0002. The probability value <0.05 so it can be concluded partially that inflation has a significant negative effect on stock prices. The regression coefficient value of the interest rate variable is 158.5667 with a t-statistic value of 0.733749 and a probability value of 0.4640. The probability value > 0.05 so it can be concluded partially that interest rates do not have a significant negative effect on stock prices. The regression coefficient value of the EPS variable is 9.417185 with a t-statistic value of 2.215390 and a probability value of 0.0280. The probability value <0.05 so it can be concluded partially that EPS has a significant positive effect on stock prices.

Simultaneous test

Table 9 shows the results of the coefficient of determination. It can be seen that the R-squared value is 0.565391, indicating that the INF, SB, EPS, ROA, FZ and DER variables can explain the Stock Price variable by 56.5391% while the remaining 43.4609% is explained by other variables outside the regression model of this study.

Table 9. Simultaneous Test Output

Root MSE	2182.124	R-squared	0.565391
Mean dependent var	868.0900	Adjusted R-squared	0.441566

Source: Data Analysis by the authors using Eviews 12 (2024)

Discussion

The researcher hypothesizes in this study that inflation has a negative effect on Stock Prices. The t-test results show that inflation has a negative effect on Stock Prices. During periods of high inflation, there is sometimes a sharp decline in people's purchasing power, resulting in a shift in consumer preferences towards more affordable products or services (Rizani et al., 2023). This situation signals potential risks to investors and shareholders, leading to a decline in stock prices (Rathnayaka and Seneviranta, 2018). The findings of this study are in line with (Eldomiaty et al., 2020; Sia et al., 2023; Yusuf et al., 2021). Furthermore, control variables have the role of isolating the effects of independent variables, ensuring valid relationships, reducing bias and increasing validity, clarifying the relationship between independent variables and dependent variables (Anaima and Trisnaningsih, 2021).

The researcher hypothesizes in this study is that interest rates have a negative effect on Stock Prices. Based on the literature study of Yasar et al. (2020), when interest rates rise, borrowing costs for companies also increase, which will reduce the company's capacity to invest and develop its business. The t-test results show that interest rates have no effect on Stock Prices. This study is in line with research (Agustin et al., 2023; Octovian and Mardiati, 2021). However, it is not in line with some other research (Camilleri et al., 2019; Demir, 2019; Eldomiaty et al., 2020). The partial test results show that the conclusion about the absence of interest rates on stock prices is not influenced by other variables such as financial performance (ROA), firm size, or capital structure (DER). This means that this conclusion is more reliable because it has been tested by considering other factors that may be relevant. The addition of these control variables will make it clearer that interest rates have no effect on stock prices. The t-test results show that EPS has a positive effect on Stock Prices. This means that H3 is accepted and H0 is rejected. The higher the EPS, the higher the stock price of the Small-Mid Cap Liquid Index company. This positive financial information can increase investor confidence and increase the company's stock price (Ardiana and Ulfah, 2022). Conversely, if the company's EPS does not meet market expectations, it can result in a decrease in stock prices because investors become less optimistic about the company's future prospects (Araoye et al., 2019). This study is in line with research (Fitriyana et al., 2020; Kartiko and Rachmi, 2021; Udjali et al., 2021). The addition of control variables in the study can help reduce the potential bias that may occur if other variables such as ROA, FZ or DER are not taken into account.

Conclusion

Based on the results of the research and discussion, it can be concluded that inflation partially has a significant negative effect on stock prices. Interest rates partially do not have a significant negative effect on Stock Prices. *Earning per Share* partially has a positive effect on stock prices. ROA, Firm Size, and DER can be control variables in the relationship between independent variables and dependent variables which can reduce bias in the relationship. Control variables can also increase the value of the coefficient of determination so that the

model has better predictive ability after being tested with control variables. The limitations of this study include the limited number of companies listed on the Small Mid-Cap Liquid Index so that the results of the study cannot be generalized to companies outside this index. The scope during the observation period 2020–2023 there was a pandemic period that could affect the financial performance of companies listed on the Small-Mid Cap Liquid Index. The study is restricted to companies listed in the Small-Mid Cap Liquid Index on the Indonesia Stock Exchange (IDX) from 2020 to 2023, with a sample size of 48 companies. This sample may not represent all Indonesian companies, especially large-cap or less-liquid firms, nor is it necessarily generalizable to other emerging markets. Using a purposive sampling technique ensures that only companies consistently listed in the Small-Mid Cap Liquid Index during the study period are included, which enhances reliability. Future studies could expand the sample by including additional indices or extending the observation period to capture more data points. This would improve the generalizability of the findings across a broader set of Indonesian companies. The data covers only a four-year period (2020–2023), which includes unusual market conditions due to the COVID-19 pandemic. This may limit the ability to draw conclusions about the long-term relationship between macroeconomic variables and stock prices under more stable economic conditions. To account for potential pandemic-induced volatility, the study incorporates control variables (ROA, Firm Size, and DER) to reduce bias and ensure that variations in stock price are not solely attributed to macroeconomic factors. Panel data regression, especially the Random Effects Model (REM), also helps manage variations within this short time period by capturing random effects across companies. Emphasize that findings may reflect the unique economic circumstances of the pandemic period, and future studies should consider longer observation windows to capture post-pandemic trends for more robust conclusions.

Thus, suggestions for further research are expected to be able to examine other sectors listed on the Indonesia Stock Exchange so that data distribution can increase and can strengthen the results of previous research. In addition, further research is expected to extend the observation period in order to increase the number of samples so that it can provide better and more accurate research results and it is hoped that the research results can be generalized.

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