



Research article

Analysis of stock trading volume, leverage, earning volatility, firm size, and dividend yield as determinants of stock price volatility

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ABSTRACT

This study aims to analyze the effect of stock trading volume, leverage, earnings volatility, firm size, and dividend yield on stock price volatility in companies listed in the consumer goods industry sector on the Indonesia Stock Exchange (IDX). The period in this study is 5 years from 2018 to 2022. Samples were taken using a purposive sampling method with the criteria that they were registered in the consumer goods industry sector from 2016, continuously published annual financial reports, and did not perform stock splits during the study period. Thirty-five companies met these criteria. The data in this study are secondary, obtained from the company's financial statements. Multiple linear regression is used as a data analysis method. The results of this study indicate that stock trading volume, earnings volatility, and firm size have a significant positive effect on stock price volatility. The higher the value of stock trading volume, earnings volatility, and firm size, the higher the stock price volatility. Conversely, leverage has a negative and significant effect on stock price volatility. The higher the leverage, the lower the stock price volatility. Meanwhile, dividend yield has no impact on stock price volatility.

Keywords: stock price volatility, stock trading volume, leverage, earning volatility, firm size, and dividend yield

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Abstrak

Penelitian ini bertujuan untuk menganalisis pengaruh volume perdagangan saham, leverage, volatilitas laba, ukuran perusahaan, dan yield dividen terhadap volatilitas harga saham pada perusahaan-perusahaan yang terdaftar di sektor industri barang konsumen di Bursa Efek Indonesia (IDX). Periode penelitian ini adalah 5 tahun, dari 2018 hingga 2022. Sampel diambil menggunakan metode sampling purposif dengan kriteria bahwa perusahaan terdaftar di sektor industri barang konsumen sejak 2016, secara terus-menerus menerbitkan laporan keuangan tahunan, dan tidak melakukan pemecahan saham selama periode studi. Tiga puluh lima perusahaan memenuhi kriteria tersebut. Data dalam studi ini bersifat sekunder, diperoleh dari laporan keuangan perusahaan. Regresi linier berganda digunakan sebagai metode analisis data. Hasil penelitian ini menunjukkan bahwa volume perdagangan saham, volatilitas laba, dan ukuran perusahaan memiliki efek positif yang signifikan terhadap volatilitas harga saham. Semakin tinggi nilai volume perdagangan saham, volatilitas laba, dan ukuran perusahaan, semakin tinggi pula volatilitas harga saham. Sebaliknya, leverage memiliki efek negatif dan signifikan terhadap volatilitas harga saham. Semakin tinggi leverage, semakin rendah volatilitas harga saham. Sementara itu, yield dividen tidak memiliki dampak terhadap volatilitas harga saham.

Kata Kunci: *volatilitas harga saham, volume perdagangan saham, leverage, earning volatility, ukuran perusahaan, dan dividend yield*

1. Introduction

An Initial Public Offering (IPO) is considered the first critical stage in a company's evolution because it provides the necessary funds for operations (Hotami & Maulani, 2023). The funds can come from the company owner or from parties outside the company, such as through bank loans, issuance of securities, or IPOs in the capital market. Through going public, companies not only gain wider exposure but also significant funds (Sulaksana & Supriatna, 2019). The capital market is a place where companies seeking funds can meet with investors who have extra funds to invest. To invest in the capital market, investors need extensive information on both micro and macro factors. Factors such as expansion, exchange rates, and Indonesia's trade balance fall into the macro category. In contrast, micro factors, including debt levels, dividend policy, earnings, and asset growth, directly affect company performance. Stock prices are also affected by market interest, which can cause stock price fluctuations (Sirait et al., 2021).

Stock investors usually expect to get high returns from the shares they own, but this expectation aligns with the risks that must be accepted. The opportunity to get high returns correlates with high risk as well, and depends on the investment appetite of each investor (Tandelilin, 2017). The decision on dividend policy also has an important role in corporate funding, as it determines the division of profits between dividends for shareholders and future investments (Martono & Harjito, 2014). Dividend yield, as a ratio that relates dividends paid to the price of common stock, is used by some investors to measure risk and direct their investment decisions (Pasya et al, 2022).

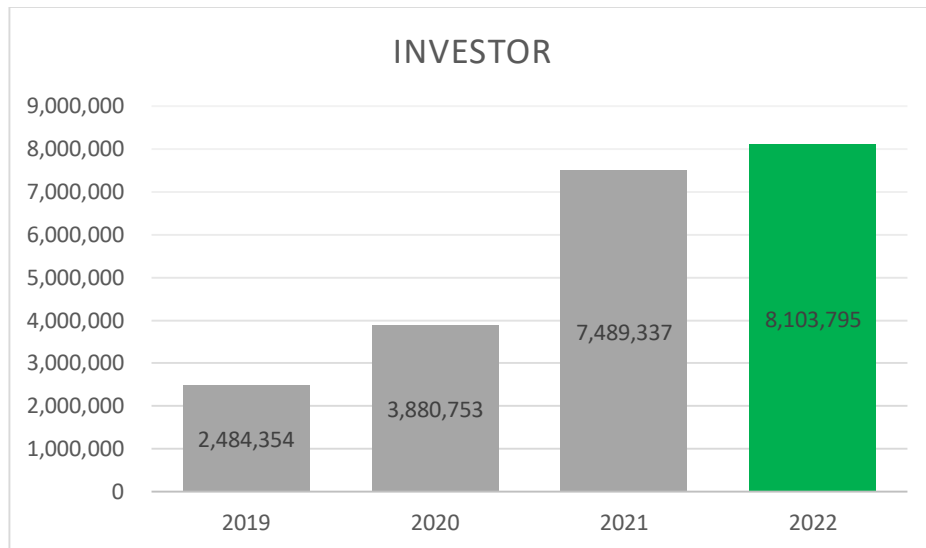


Figure 1. Number of capital market investors

Source: www.ksei.co.id (Data processed 2024)

For some investors, capital markets offer more secure investment returns in the future, but it is essential to understand stock price volatility and the factors that influence it. Investment risk is understood as the potential mismatch between expected and earned returns, while rapidly changing capital market information affects investors' investment decisions (Cahyawati, 2022). Stock price volatility, which refers to fluctuations in stock prices, can benefit investors but also pose systemic risks. High risk is offset by high profit opportunities for investors who apply the right strategy (Azam & Kumar, 2011).



Figure 2. IDX30 stock volatility

Source: www.id.investing.com (Data processed 2024)

Investors' preferences for risk and return greatly influence investment decisions in the capital market. High stock price fluctuations are suitable for investors with a high risk appetite who seek significant returns, while low price fluctuations are suitable for more conservative investors. Factors such as trading volume, leverage, earnings volatility, firm size, and dividend yield also affect stock price volatility, making it important for investors to understand and manage investment risk wisely (Hernoyo, 2013). Dividends paid by companies also play an important role in determining firm value and stock value (Reysa et al., 2022).

2. Theory and hypothesis

Stock price volatility

Stock price volatility refers to fluctuations or changes in stock prices over time (Warsito, 2020). It reflects the level of uncertainty or significant price movements within a specific period of time. Stock price volatility is measured by looking at daily or periodic price variations or changes. Stock price volatility is important in risk analysis and investment decision-making (Artikanaya & Gayatri, 2020). Investing in stocks that have high volatility can provide high profit opportunities, but also increase the risk of loss (Marini & Dewi, 2019). Stock price volatility can be measured by calculating the standard deviation of the closing price (Markowitz, 1952).

Stock trading volume

Stock trading volume is important for an investor because it affects the company's stock price. For investors, the volume of stock trading reflects the condition of securities in the capital market, which can impact stock prices (Iswanti & Susandini, 2021). Rachmawati (2019) says that stock trading volume is the ratio between the number of shares traded (transaction volume) and the number of shares outstanding. The calculation of stock trading volume (Trading Volume Activity) is carried out by comparing the number of shares traded in a specific period with the total number of outstanding shares of the company in the same period (Reny, 2019).

Leverage

Leverage refers to the funds obtained by the company from financiers to carry out its operational activities (Nazir, 2022). If the company has a large debt, interest will be a financial burden. One popular method for calculating a company's debt or leverage is the debt-to-equity ratio (DER) technique. The company's debt-to-equity ratio shows how much of its capital structure consists of debt compared to its own capital (Maronrong & Setiani, 2017).

Earning volatility

Revenue volatility refers to significant fluctuations or changes in a business entity's revenue from period to period (Bryan & Mason, 2020). Companies with high revenue volatility may face higher risks, such as fluctuations in raw material prices, changes in market demand, or economic instability (Damayanty & Murwaningsari, 2020). The measurement of earnings volatility is usually conducted to assess fluctuations in the income of a company or business entity over a specific period of time (Susanto et al., 2021). Earning volatility (σ) can be calculated using the formula: the standard deviation of projected earnings divided by return on assets (ROA).

Firm size

According to Krisnando and Sakti (2019), company size reflects the complexity and capacity of the company to manage available resources and opportunities. Company size is a measure of how large or small a company is, which can be seen through the amount of total assets, total sales, and stock market value (Asmawi, 2018). The use of natural logarithm (LN) transformation on total assets is a commonly used approach in econometric analysis to handle large-scale data and mitigate the effects of heteroscedasticity (Penrose, 1959). According to Gujarati (2003), the use of LN on total assets helps respond to the diversity that may exist among firms with significantly different sizes.

Dividend yield

Dividend Yield measures the ratio between dividends paid by a company and its share price. According to Graham and Dodd (1934), Dividend Yield provides an overview of the cash income investors receive from investments in the form of dividends. The company's dividend policy can affect stock prices and investment returns. Investments with high dividend yields tend to be attractive to investors seeking stable cash income, while companies with low dividend yields may focus more on growth (Miller & Modigliani, 1961). The amount of dividends paid is the amount of dividends issued by the company to shareholders in a specific period (Affandi et al., 2019).

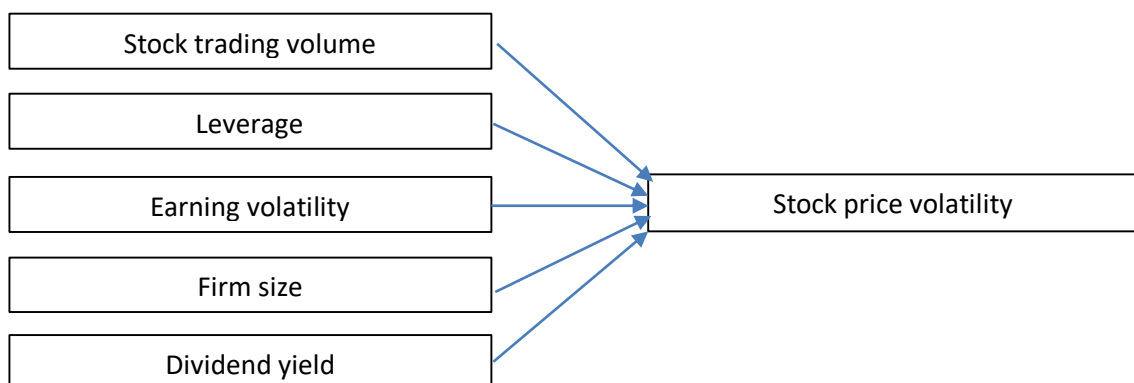


Figure 3. Research model

3. Methods

This research belongs to the category of quantitative research because it uses empirical quantitative approaches to collect, analyze, and present data and research results. In this study, researchers used a research strategy with an associative approach. According to Ramdhan (2021), associative research aims to understand the relationship between two or more variables, such as identifying roles, influences, and causal relationships between independent and dependent variables.

Sample and procedures

Selection of an appropriate and representative sample is essential in stock research. This allows the researcher to generalize the findings from that sample to the population as a whole with the

relevant level of confidence. In addition, it is also important to note the limitations and resources available in determining an adequate sample size for research. In this study, the sample was determined using a purposive sampling method. The sampling criteria in this study are as follows: (1) The companies used as samples are companies whose shares are included in the consumer goods industry sector listed on the Indonesia Stock Exchange, as of 2016; (2) Companies that are sampled consistently publish annual financial reports for the period 2016 – 2022; (3) The companies sampled did not conduct a stock split during the research period. A stock split involves dividing the number of shares into a larger number with a proportionally lower nominal value per share. Companies that do stock splits are excluded from the sample because their stock prices will decrease drastically and cause extreme volatility.

Measurement

The variables used in this study are stated in the following table, which contains definitions, indicators, and measurement scales.

Table 1. Measurement of Variables

Variable	Indicator	Scale
Stock price volatility	$\sigma = \sqrt{\frac{\sum (PRICE_{it} - \overline{PRICE})^2}{N}}$	Ratio
Stock trading volume	$TVA_{i,t} = \frac{\sum Tradeable\ Shares}{\sum Listed\ Share}$	Ratio
Leverage	$Debt\ to\ Equity\ Ratio = \frac{Total\ debt}{Total\ Equity}$	Ratio
Earning volatility	$\sigma = \sqrt{\frac{\sum (ROA_{it} - \overline{ROA})^2}{N}}$	Ratio
Firm size	$Firm\ Size = Ln (Total\ Assets)$	Ratio
Dividend yield	$DY = \left(\frac{Dividend\ per\ share}{Price\ per\ share} \right)$	Ratio

Data analysis technique

This research applies a quantitative method using panel data from 35 companies in the consumer goods sector listed on the Indonesia Stock Exchange over a period of five years. Data analysis was performed using panel data regression with EViews 13 software, following classical assumption tests for multicollinearity, heteroscedasticity, and autocorrelation. The best model selection between the Common Effect Model, the Fixed Effect Model, and the Random Effect Model was determined using the Chow Test, the Hausman Test, and the Lagrange Multiplier Test. Hypothesis testing was conducted partially using a t-test at a five percent significance level and simultaneously using the adjusted R-squared coefficient of determination to assess the model's ability to explain variations in the dependent variable.

4. Results and discussion

Descriptive statistics

Descriptive statistical analysis was employed to summarize the fundamental characteristics of the research dataset, providing a clear overview of the data distribution, central tendency, and dispersion. The study focused on key measures of central tendency, including the mean (average), median (middle value), and mode (most frequent value). This study observed 175 data points, encompassing 35 companies in the consumer goods sector listed on the Indonesia Stock Exchange from 2018 to 2022. The following table presents the descriptive statistics for all research variables, offering a concise summary of the dataset's essential features.

Table 2. Descriptive statistics

	VHS	VPS	DY	EV	FS (Rp Milyar)	LVG
Mean	956.4008	0.802741	0.152732	0.039061	14,289.310	0.830509
Maximum	21980.22	33.03776	14.92063	0.484369	180,433.30	3.824769
Minimum	5.530220	3.33E-06	0.000000	0.000934	100,382.98	0.121670
Std. Dev.	2612.996	3.472891	1.163119	0.064551	31,312.704	0.689482
Jarque-Bera	10113.44	20182.66	162744.2	6479.896	202.1678	208.9263
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Observations	175	175	175	175	175	175

Source: Processed data, 2024

The results of the descriptive statistical analysis indicate that stock price volatility ranges from a minimum of 5.5302 to a maximum of 21,980.22, with an average of 956.40 and a standard deviation of 2,612.67. The average value is smaller than the standard deviation, indicating an uneven distribution of data. The highest volatility was found in PT Gudang Garam Tbk, while the lowest was in PT Sekar Laut Tbk.

The stock trading volume variable has a minimum value of 3.33 and a maximum of 33.04, with an average of 0.80 and a standard deviation of 3.47. This indicates that the distribution of trading volume data is also uneven. The highest trading volume occurred at PT Sekar Bumi Tbk in 2020, while the lowest was at PT Sekar Laut Tbk in 2019.

For leverage, the minimum value measured using the Debt to Equity Ratio (DER) is 0.12 and the maximum is 3.82, with an average of 0.83 and a standard deviation of 0.69. Since the average is greater than the standard deviation, the distribution of leverage data is relatively good. The highest leverage value was held by PT Pyridam Farma Tbk in 2021, while PT Campina Ice Cream Industry Tbk held the lowest in the same year.

Furthermore, earning volatility showed a minimum value of 0.0009 (0.09%) and a maximum of 0.4843 (48.43%), with an average of 0.0391 (3.91%) and a standard deviation of 0.0646 (6.46%). An average that is smaller than the standard deviation indicates poor data distribution. The highest earnings volatility occurred at PT Merck Tbk in 2020, and the lowest at PT Kalbe Farma Tbk in 2021.

The firm size variable has a minimum value of IDR 100,382.98 billion, a maximum of IDR 180,433.30 billion, an average of IDR 14,289.31 billion, and a standard deviation of IDR 31,312.70 billion. Due to the significant differences in scale between companies, the company size data was then transformed using natural logarithms (Ln). The largest company in terms of size was PT Indofood Sukses Makmur Tbk in 2022, while the smallest was PT Goodyear Indonesia Tbk in 2020.

Finally, the dividend yield variable has a minimum value of 0.00 and a maximum of 14.92, with an average of 0.15 and a standard deviation of 1.16. This indicates that the distribution of dividend data is uneven. The highest value was recorded by PT Merck Tbk in 2018, while the lowest values were recorded by several companies that did not distribute dividends, such as PT Mandom Indonesia Tbk, PT Martina Berto Tbk, and PT Mustika Ratu Tbk in the 2018–2022 period.

Hypothesis test

Based on the results of the multiple linear regression analysis, the regression equation obtained is as follows:

$$\text{SPV} = -8,799.678 + 11.56080 \text{ STV} + 25.45359 \text{ DY} + 2,935.416 \text{ EV} + 342.9026 \text{ FS} - 104.8641 \text{ LVG} + e.$$

Table 4. Multiple linear regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-8799.678	3317.681	-2.652358	0.0121
VPS	11.56080	1.436871	8.045811	0.0000
DY	25.45359	50.65359	0.502503	0.6186
EV	2935.416	505.3670	5.808484	0.0000
FS	342.9026	118.3068	2.898419	0.0065
LVG	-104.8641	60.84681	-1.723411	0.0939
F-statistic	2.047158			
Obs*R-squared	36.75458			

Source: Processed data, 2024

The constant value of -8,799.678 indicates that if all independent variables are equal to zero, the stock price volatility will be -8,799.678 units. The stock trading volume (STV) variable has a positive coefficient of 11.56080 with a significance value of $0.000 < 0.05$, which means that trading volume has a positive and significant effect on stock price volatility. The dividend yield (DY) variable has a positive coefficient of 25.45359 with a significance value of $0.619 > 0.05$, indicating that dividend yield has no significant effect on stock price volatility. The earning volatility (EV) variable has a positive coefficient of 2,935.416 with a significance value of $0.000 < 0.05$, indicating a significant effect on stock price volatility. The firm size (FS) variable has a positive coefficient of 342.9026 with a significance value of $0.007 < 0.05$, meaning that firm size has a positive and significant effect on stock price volatility. Meanwhile, the leverage (LVG) variable has a negative coefficient of -104.8641 with a significance value of 0.094, which is greater than 0.05, indicating that leverage does not have a significant effect on stock price volatility.

The Adjusted R^2 value of 0.761 shows that 76.1% of the variation in stock price volatility can be explained by stock trading volume, dividend yield, earnings volatility, firm size, and leverage. The remaining 23.9% is influenced by other factors not included in this study. Thus, the regression model used can be considered to have a good ability to explain the changes in stock price volatility.

Discussion

The effect of stock trading volume on stock price volatility

Based on the test results, it can be concluded that stock trading volume has a positive and significant effect on the stock price volatility of consumer goods industry sector companies listed on the Indonesia Stock Exchange (IDX) from 2018 to 2022, with a significance level of 1%. This means that the greater the volume of stock trading, the higher the value of stock price volatility. According to, stock trading volume is the market's response to signals or information provided by the company to investors. Asymmetric information is generated because this knowledge is not evenly distributed. Investors will interpret information differently due to this asymmetric information. The various interpretations of these investors can lead to different investment decisions, impacting the supply and demand for shares in the market.

The effect of leverage on stock price volatility

The results of statistical analysis for the leverage variable show an insignificant adverse effect on the volatility of the share prices of consumer goods industry sector companies listed on the Indonesia Stock Exchange (IDX) in 2018-2022, with a significance level of 10%. This means that the greater the leverage value, the smaller the level of stock price volatility will be, but the effect is negligible. This shows that an increase in the company's debt ratio will not prevent investors from investing in the business, thus reducing the possibility of stock prices falling dramatically in a short time (volatile). This conclusion can be explained because companies can use debt capital to maximize operational activities, and there is little evidence that leverage impacts stock price volatility. A firm can increase its productivity when it has a high debt-to-equity ratio. Therefore, high or low leverage does not affect stock price volatility.

The effect of earning volatility on stock price volatility

The test data shows that earning volatility has a positive and significant effect on the stock price volatility of consumer goods industry sector companies listed on the Indonesia Stock Exchange (IDX) from 2018 to 2022, with a significance level of 1%. This means that the greater the earning volatility, the higher the stock price volatility value will be. The findings of the analysis show that an increase in earning volatility will cause the company's stock price to fluctuate more. The uncertainty surrounding the company's earnings can directly affect its stock price, even though several factors beyond the company's control, such as interest rates and the political stability of the region where it operates, influence it. If the company cannot predict the revenue or profit it will earn, this increases the possibility of earning lower earnings than the previous year.

The effect of firm size on stock price volatility

Statistical analysis shows that firm size has a positive and significant effect on the stock price volatility of consumer goods industry sector companies listed on the Indonesia Stock Exchange

(IDX) from 2018 to 2022, with a significance level of 1%. This means that the larger the firm size, the higher the stock price volatility value will be. Through several processes, including liquidity, investor portfolio diversification, risk perception, and growth expectations, firm size can have a significant impact on stock price volatility. Managerial actions are more likely to be aligned with shareholder interests as firm size increases (Suriawinata and Nuralita, 2022). A larger firm size will have a greater impact on the overall portfolio of investors. As a result, movements in the share price of large companies can significantly impact the total value of investors' portfolios, leading to stronger reactions to new information or events affecting these companies. This reaction may result in increased stock price volatility.

The effect of dividend yield on stock price volatility

The results of the statistical analysis of the dividend yield variable show that there is no influence either positively or negatively on the volatility of the share prices of consumer goods industry sector companies listed on the Indonesia Stock Exchange (IDX) in 2018-2022, with a significance level of more than 10%. This means that an increase or decrease in dividend yield will not affect the value of stock price volatility. Dividend yields can play an essential role in the investor decision-making process, especially for individuals who have lower risk tolerance. However, dividend yields do not significantly impact the investment decisions of investors who are more concerned with capital growth or those with a greater appetite for risk. This is why an increase or decrease in dividend yield does not influence stock price volatility.

5. Conclusion

Based on the results of testing and data analysis regarding the influence of stock trading volume, leverage, earnings volatility, firm size, and dividend yield on stock price volatility in consumer goods sector companies listed on the Indonesia Stock Exchange (IDX) for the 2018-2022 period, it can be concluded that stock trading volume, earnings volatility, and firm size have a significant positive effect on stock price volatility. This indicates that an increase in these three variables will lead to a rise in stock price volatility. Conversely, leverage shows a negative though insignificant influence, while dividend yield proves to have no significant effect on stock price volatility. These findings reflect the specific characteristics of the consumer goods sector in Indonesia, where trading activity, performance fluctuations, and company scale play a greater role in determining stock price volatility compared to dividend policies and capital structure.

Limitations

This study acknowledges several limitations that warrant consideration. The research timeframe covers the pre- to post-pandemic period without clearly isolating the distinct effects of the COVID-19 pandemic on the examined variables. A methodological constraint lies in the measurement of stock price volatility and trading volume, which relies on annual data and thus may not fully capture the nuances of daily market fluctuations. Furthermore, the analytical approach, focusing on the influence of only five independent variables over five years, offers a relatively simplified perspective. The generalizability of the findings is also limited, as the sample consisted of only 35 companies, making it difficult to extrapolate the results to the entire consumer goods sector. Finally, the Adjusted R^2 value of 76.1% indicates that while the model has explanatory power, a significant portion (23.9%) of stock price volatility is driven by factors not included in this study.

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