The Effect of Corporate Social Responsibility, Debt to Equity Ratio, and Asset Growth on Stock Price Volatility with Firm Size as a Moderating Variable in Construction Companies Listed on the Indonesian Stock Exchange

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Abstract
Stock price volatility is an important indicator for investors in assessing market risk, and it can be influenced by various internal and external factors. Previous studies on the effects of *corporate social responsibility* (CSR), *debt to equity ratio* (DER), and asset growth on stock price volatility have produced inconsistent findings, particularly when firm size is considered as a moderating variable. This study aims to analyze the influence of CSR, DER, and asset growth on stock price volatility, with firm size as a moderating variable, in construction companies listed on the Indonesia Stock Exchange. A quantitative approach was employed using secondary data from annual reports and financial statements of 15 construction companies for the 2018–2022 period. The data were analyzed using multiple linear regression with interaction terms to test the moderating effect. The results indicate that CSR and asset growth have a positive but insignificant effect on stock price volatility, while DER has a positive and significant effect. Firm size does not moderate the relationship between CSR and asset growth with stock price volatility but moderates and weakens the influence of DER. These findings suggest that, in the construction sector, leverage is a stronger driver of stock price volatility than CSR or asset growth, and that larger firms can mitigate the risk impact of high DER. The implications of this study highlight the need for effective debt management, strategic CSR implementation, and optimal asset utilization to reduce market risk and enhance investor confidence.
Keywords: corporate social responsibility, debt to equity ratio, asset growth, firm size, stock price volatility

Introduction

In today's era of globalization, more and more countries are paying attention to capital markets because they play an important role in strengthening a country's economic resilience. As a result, capital markets are used as a means for investors to allocate funds efficiently in the form of investments aimed at generating future returns. One of the sectors that investors are interested in and choose in the capital market is listed construction companies on the Indonesia Stock Exchange (IDX), as they are considered long-term investments with growth potential in line with economic expansion, thereby offering higher returns (Ningrum and Nurdina, 2021).

This is supported by data from the Central Statistics Agency (2024), which states that infrastructure development has a significant impact on economic growth and national competitiveness, with the construction sector contributing 9.9% to the Gross Domestic Product in 2023—ranking fifth after manufacturing, trade, agriculture, and mining. This indicates that a country's economic growth cannot be separated from the availability of infrastructure produced by construction companies, which in turn attracts investor interest in construction company stocks.

According to a study by Nafisa et al. (2024), high stock price volatility indicates rapid changes in stock prices in both positive and negative directions, whereas low stock price volatility indicates stock price stability. High volatility can also reflect unusual supply and demand characteristics in the capital market, as greater volatility increases the likelihood of rapid price movements, thereby heightening the risks faced by investors due to unpredictable fluctuations that create uncertainty (Ramadhon et al., 2022). Therefore, investors generally

consider stock price volatility as one of the key risk factors when deciding to invest in a company's stocks (Riski, 2021).

High stock price volatility is generally preferred by short-term traders seeking high returns despite the higher risks, while low volatility is generally preferred by long-term traders who prioritize stable returns. However, this preference is influenced by differences in investor responses to market signals (Larasati et al., 2021). This aligns with the investment concept that higher risk increases potential returns, commonly referred to as *high risk, high return* (Qatrunnada, 2024).

Information related to environmental and social aspects can take the form of *Corporate Social Responsibility* (CSR) disclosures (Riski, 2021). *Corporate Social Responsibility* (CSR) is a company's social responsibility to the community and the environment, carried out through various activities or programs aimed at making a positive contribution to social and environmental sustainability (Nadirah, 2020). CSR can be implemented as a committed business approach that not only seeks to increase financial profits but also contributes to sustainable economic development by prioritizing social responsibility, emphasizing balance between economic, social, and environmental aspects (Rahmawati et al., 2023; Syaifudin and Silvia, 2023).

In 2020, it was observed that although CSR increased, stock price volatility also rose, possibly due to the impact of the COVID-19 pandemic (Riski, 2021). This phenomenon indicates that an increase in CSR does not always offset the negative impacts of a global crisis; however, a strong CSR commitment can contribute to stock price stability (Uyun et al., 2024). Furthermore, in 2023, CSR once again experienced growth, yet stock price volatility also increased due to external factors such as economic and political conditions affecting market sentiment (Santioso and Angesti, 2019). According to Estuti and Hendrayanti (2020), information entering the capital market—particularly economic and political news—can trigger new stock price adjustments, thereby increasing volatility.

Previous research by Tasnia et al. (2020) found that CSR has a positive and significant effect on stock price volatility. However, in contrast, Amri and Chaibi (2023), Chen et al. (2022), Shakil (2020), and Riski (2021) found that CSR has a negative and significant effect on stock price volatility.

Meanwhile, a high *Debt to Equity Ratio* (DER) also indicates that the financial condition of construction companies is less healthy due to reliance on debt for project funding. This can make investors cautious, as a high DER signifies liquidity risk, which in turn can increase stock price volatility (Hariyanti and Pangestuti, 2021). This condition is evident in Figure 1.3, where the DER in 2023 shows a significant increase, accompanied by heightened stock price volatility as illustrated in Figure 1. This occurs because construction companies require substantial capital to execute their projects (Wahyuni and Yulazri, 2024).

Stock price volatility is influenced not only by DER but also by *Asset Growth*, which serves as a fundamental factor in investment decisions (Artikanaya and Gayatri, 2020). *Asset Growth* reflects how much a company uses its funds for development, operational activities, and investments (Rosyida et al., 2020). According to *Signaling Theory*, management's perception of the company's future asset growth can influence potential investor responses in making investment decisions (Rossa et al., 2023).

Asset Growth is often viewed positively by investors as it indicates company performance stability, where higher asset growth can lead to greater profitability (Holifah et al., 2020). Thus, it can send a positive signal to investors regarding potential returns, thereby attracting investment interest (Alamsyah et al., 2022). However, research findings vary: Ovami et al. (2022), Hilalia and Margaretha (2022), and Rosyida et al. (2020) found that *Asset Growth* has a negative and insignificant effect on stock price volatility, whereas Sirullah and

Hanafi (2023), Thomas and Ilat (2021), and Alamsyah et al. (2022) reported a positive and significant effect.

Given these inconsistent results, a moderating variable is required. In this study, *Firm Size* acts as a moderating variable in the influence of CSR, DER, and *Asset Growth* on stock price volatility because it reflects resource capacity, risk management ability, and financial stability—all of which can affect investor perceptions. *Firm Size* is typically measured using total assets, sales, and profits (Mardiana and Wijaya, 2024) and is considered an important factor because it can influence investor behavior and market dynamics (Dahlia et al., 2025).

The larger the company, the greater its assets and financial resources for operations, allowing for improved performance and higher potential returns, thus attracting investors (Arrizqi, 2021; Chabachib et al., 2020). As such, firm size plays an important role in investment decisions because it can enhance investor confidence (Fitriani and Desmiza, 2024). Larger companies are generally considered more stable, with better revenue diversification, higher resilience, and stronger risk management capabilities—qualities that contribute to stock price stability (Khairunisa and Nazir, 2022).

Moreover, *Firm Size* can play a strategic role in fostering market confidence because large companies tend to have greater access to financing, better operational efficiency, and more structured risk management (Irawan and Kusuma, 2019). Chen and Zhang (2023) also state that *Firm Size* can moderate stock price volatility, as larger firms tend to maintain stability, which appeals to long-term investors. In addition, *Signaling Theory* explains that *Firm Size* can reduce information asymmetry by reinforcing the effectiveness of signals given to investors, since large companies typically have greater operational stability, stronger funding access, and lower financial risk, making them more credible in the eyes of the market (Manggale and Widyawati, 2021).

Previous research by Bukhori and Sisdianto (2024) found that *Firm Size* can moderate the effect of CSR on stock price volatility because large companies have better resources to implement effective CSR programs, influencing investor interest. However, Shakil (2020) found that *Firm Size* does not moderate the CSR–volatility relationship. Chen et al. (2023) found that *Firm Size* can moderate the effect of DER on volatility due to greater financial stability in large companies, while other studies (Darmayanti and Yadnyana, 2023; Cahyadi, 2022) reported otherwise. Similarly, Jumadi (2025) and Samsiar and Haryono (2023) found that *Firm Size* was unable to moderate the *Asset Growth*–volatility relationship, whereas Chen et al. (2023) showed that it could, as large companies are more capable of sustaining stable and measurable *Asset Growth*, positively shaping investor perceptions.

Based on these mixed findings regarding CSR, DER, and *Asset Growth* with *Firm Size* as a moderator, a research gap arises. This gap prompts the present study, entitled "The Influence of Corporate Social Responsibility, Debt to Equity Ratio, and Asset Growth on Stock Price Volatility with Firm Size as a Moderating Variable in Construction Companies Listed on the Indonesia Stock Exchange." The novelty of this study lies in combining the independent variables CSR, DER, and *Asset Growth* with *Firm Size* as a moderating factor. The objective is to empirically examine and analyze the influence of these independent variables on stock price volatility, and to evaluate whether *Firm Size* strengthens or weakens these relationships. The study is expected to contribute theoretically to the literature on financial management and capital market behavior, provide practical implications for corporate policy-making in CSR, capital structure, and asset management, and offer valuable insights for investors in assessing key risk factors affecting stock price movements in the construction sector.

Method

This study employs quantitative research with a *causal research design*. Quantitative research is a method that uses concrete data in the form of numbers—either as ratios or scales—

measured through statistical tests relevant to the research problem, in order to generate valid conclusions (Sugiyono, 2018). The purpose of quantitative research is to understand social phenomena through empirical testing using objective, factual events (Cooper and Schindler, 2014). Meanwhile, a *causal research design* is a research model used to determine cause-and-effect relationships between dependent and independent variables within a specific research context (Paramita and Rizal, 2019).

Research Population

The population is the entire group or set of entities with specific characteristics defined by the researcher for the purpose of study and subsequent conclusion drawing (Sekaran and Bougie, 2016). The population in this study consists of construction companies listed on the Indonesia Stock Exchange (IDX) under the heavy construction and civil engineering sub-sector for the 2019–2023 period, totaling 27 (twenty-seven) companies.

Research Sample

A sample is a subset of the population consisting of several units or items selected through a specific process so that it can represent the population for the purpose of generalizing research findings (Sekaran and Bougie, 2016). In this study, the sample was determined using *purposive sampling*—a method in which the researcher applies predefined criteria to select the research sample (Sugiyono, 2018).

Data Collection Methods

Data collection methods refer to the techniques used by researchers to gather the data required for their study (Sekaran and Bougie, 2016). The data in this study are secondary data obtained using the documentation method. Secondary data are sources that do not provide information directly to the data collector, while the documentation method involves gathering data and information in the form of books, archives, documents, numerical records, and images, including reports and explanations relevant to the research (Sugiyono, 2018).

The secondary data in this study consist of audited financial statements, annual reports, and sustainability reports of construction companies listed on the Indonesia Stock Exchange (IDX) that were fully published during the observation period of five years (2019–2023). These were obtained from the official IDX website (*idx.co.id*) and the official websites of each listed construction company. Additionally, data on the highest and lowest monthly stock prices were obtained from *finance.yahoo.com*, while CSR disclosure indicators were derived from the GRI Standards 2021, as published on the Global Reporting Initiative (GRI) website (*globalreporting.org*).

Data Analysis Methods

According to Sugiyono (2018), data analysis methods involve calculations aimed at answering research problems and testing hypotheses. This study uses a confidence level of 95% or a significance level of 5% (0.05), which is generally applied to balance potential errors and is considered a sufficiently strong standard for determining whether relationships between variables are statistically significant in a regression model. If results are significant, the independent variable is deemed to have an important influence on the dependent variable. Conversely, if results are not significant, it suggests that the independent variable does not have a strong influence on the dependent variable (Ghozali, 2018). Data analysis in this study was conducted using *EViews 12* software, following the analytical steps described in the subsequent section.

Results and discussion

Descriptive Statistical Analysis

Descriptive statistics provide an overview of the data used as variables in the study. The results of the descriptive statistical analysis can be seen in Table 1 below as follows:

Table 1. Descriptive Statistics Results

	Stock Price Volatility	Corporate Social Responsibility	Debt to Equity Ratio	Asset Growth	Firm Size
Mean	0,165793	0,422222	4,273998	-0,012319	30,57735
Maximum	1,078010	0,752137	35,46560	0,235790	32,43986
Minimum	0,040260	0,170940	1,135596	-0,707548	28,37819
Std. Dev.	0,190927	0,182281	5,762393	0,153968	1,458212

Source: Processed EViews 12 data, 2025.

Table 2. List of Companies with the Highest and Lowest Values in Descriptive Statistics Results

	Stock Price Volatility	Corporate Social Responsibility	Debt to Equity Ratio	Asset Growth	Firm Size
Year	2020	2023	2020	2023	2019
Maximum	Acset Indonusa	Adhi Karya	Acset Indonusa	Acset Indonusa	Waskita Karya
Year	2019	2019	2022	2020	2022
Minimum	Total Bangun Persada	Adhi Karya	Wijaya Karya Bangunan Gedung	Acset Indonusa	Acset Indonusa

Source: Data compiled by the author, 2025.

Based on Table 1 above, it shows that the average (mean) volatility of construction company stock prices listed on the IDX is 0.165793, which indicates stock price stability because the volatility level is classified as low. Tables 1 and 2 above show that the highest stock price volatility occurred in 2020, belonging to PT. Acset Indonusa, at 1.078010, indicating that PT. Acset Indonesia has very high volatility due to the COVID-19 pandemic, which triggered significant uncertainty in the global economy.

However, Tables 1 and 2 above also show that the lowest value for stock price volatility in 2019 was 0.040260, which was held by PT. Total Bangun Persada, indicating that PT. Total Bangun Persada had low volatility, reflecting stock price stability. Additionally, the standard deviation of stock price volatility is 0.190927 (above the average value), indicating that the stock price volatility data has a high level of data variation, making the data heterogeneous.

The average value (mean) for Corporate Social Responsibility (CSR) is 0.422222, indicating that CSR disclosure among construction companies listed on the Indonesia Stock Exchange (IDX) remains relatively low. This is attributed to companies' insufficient efforts to optimize CSR implementation in generating positive impacts on the environment, society, and stakeholders. As shown in Tables 4.1 and 4.2 above, the highest CSR value occurred in 2023 at 0.752137, held by PT. Adhi Karya, which has consistently increased every year, indicating that PT. Adhi Karya is increasingly aware of the importance of CSR by prioritizing social responsibility toward society, the environment, and stakeholders, which can enhance investor confidence and the company's image.

However, Tables 1 and 2 above also show that the lowest CSR value occurred in 2019, which was held by PT. Adhi Karya at 0.170940, indicating that PT. Adhi Karya in that year was not yet fully aware of the importance of CSR, so the company's commitment to allocating resources to implement CSR programs was not yet effective. Additionally, the standard deviation value for CSR is 0.182281 (below the average value), indicating that the CSR data has a low level of variation, making the data homogeneous.

The average value (mean) of the Debt to Equity Ratio (DER) of 4.273998 indicates that the DER of construction companies listed on the IDX is relatively high, meaning that

companies tend to rely on debt rather than equity to finance their operational activities. This means that for every point of equity owned by a company, 4.273998 points of debt can be used to finance the company's operations. Tables 4.1 and 4.2 above show that the highest DER value occurred in 2020 at 35.46560, held by PT. Acset Indonusa, due to the company's high reliance on debt to finance its projects compared to other companies during the study period. A high DER also indicates high risk for the company because the company needs to pay interest on debt, which can affect profitability and increase stock price volatility.

However, Tables 1 and 2 above also show that the lowest DER value occurred in 2022 at 1. 135596, which is owned by PT. Wijaya Karya Bangunan Gedung, reflecting that the management of debt usage in the company is already quite effective and efficient, even though the DER value is still quite high. However, the company has made efforts to reduce its dependence on debt and improve financial stability. Additionally, the standard deviation of the DER is 5.762393 (above the average value), indicating that the DER data has a high level of variation, making the data heterogeneous.

The Asset Growth variable shows an average (mean) value of -0.012319, reflecting relatively low or even negative asset growth in recent years, particularly in 2020-2022, due to the poor global economic conditions caused by the impact of the Covid-19 pandemic, which affected the construction sector market. As shown in Tables 4.1 and 4.2 above, the highest value occurred in 2023 at 0.235790, held by PT. Acset Indonusa, indicating post-pandemic economic recovery that influenced asset growth due to more efficient asset management and more stable expansion plans.

However, Tables 1 and 2 above also show that the lowest value occurred in 2020 at -0.707548, which was recorded by PT. Acset Indonusa, indicating a decline in asset growth due to the impact of the Covid-19 pandemic, resulting in restructuring or project delays that hindered increases in the company's asset value. Additionally, the standard deviation of Asset Growth is 0.153968 (above the average value), indicating that the Asset Growth data has a high level of data variation, making the data heterogeneous.

The Firm Size variable has an average (mean) value of 30.57735, indicating that most construction companies listed on the IDX tend to be large in size. Tables 4.1 and 4.2 above show that the highest Firm Size value occurred in 2019 at 32.43986, held by PT. Waskita Karya; however, it is evident that the Firm Size of PT. Waskita Karya has also consistently declined each year due to the company's high debt interest burden and difficulty in restructuring its debt, which has significantly impacted the company's financial performance each year and resulted in a reduction in assets. This decline in Firm Size can be a negative signal for investors as it indicates financial instability, thereby increasing the risk involved.

However, Tables 1 and 2 above also show that the lowest Firm Size value in 2022 was 28.37819, owned by PT. Acset Indonusa, which experienced a decline from the previous year, indicating a reduction or decline in the value of assets owned by PT. Acset Indonusa due to depreciation. Additionally, the standard deviation value for Firm Size is 1.458212 (below the average value), indicating that the Firm Size data has a low level of variation, making the data homogeneous.

Inferential Statistical Analysis
Results of Panel Data Regression Model Selection
a. *Chow test*

The Chow test is used to compare between the Common Effect Model and the Fixed Effect Model. Table 3 below shows the results of the Chow test as follows:

Table 3. Chow Test Results

Test Criteria	Statistics	Probability
Cross-section Chi-square	6,278853	0,3927

Source: Processed EViews 12 data, 2025.

Based on the Chow test results in Table 3, the Cross-section Chi-square probability value of 0.3927 is greater than 0.05, so H0 is accepted and Ha is rejected, which means that the best model is the Common Effect Model (CEM).

b. *Hausman test*

The Hausman test aims to compare the Random Effect Model with the Fixed Effect Model. Table 4 below shows the results of the Hausman test as follows:

Table 4. Hausman Test Results

Test Criteria	Statistics	Probability
Cross-section Chi-square	0,739065	0,9464

Source: Processed EViews 12 data, 2025.

Based on the Hausman test results in Table 4, the Cross-section Chi-square probability value of 0.9464 is greater than 0.05, so H0 is accepted and Ha is rejected, which means that the best model is the Random Effect Model (REM).

c. *Lagrange Multiplier Test*

The Lagrange Multiplier test is used to compare the Common Effect Model and the Random Effect Model. Table 5 below shows the results of the Lagrange Multiplier test as follows:

Table 5. Lagrange Multiplier Test Results

Test Criteria	Statistics	Probability
Breusch-Pagan	1,512460	0,2188

Source: Processed EViews 12 data, 2025.

Based on the Lagrange Multiplier test results in Table 5, the probability value of 0.2188 is greater than 0.05, so H_0 is accepted and Ha is rejected, which means that the best model is the Common Effect Model (CEM).

Panel Data Regression Model Results

Based on the results of testing in selecting the panel data regression model, it was found that the Common Effect Model (CEM) was the selected estimation model approach and was most suitable for use in this study. Table 6 below shows the results of the Common Effect Model as follows:

Table 6. Results of the Joint Effects Model

Variable	Coefficient	*Std. Error*	t-Statistics	Probability
C	-3.702315	1.810284	-2.045156	0.0507
Corporate Social Responsibility	3.507840	2.895525	1.211469	0.2362
Debt to Equity Ratio	0.670548	0.276863	2.421949	0,0224
Asset Growth	1.480198	4.426157	0.334421	0.7406
Firm Size	0.130081	0.059946	2.169985	0.0390
CSR*Firm Size*	-0.119847	0.094883	-1.263106	0.2174
DER*Firm Size*	-0.022249	0.009240	-2.407971	0.0231
*Asset Growth*Firm Size*	-0.081990	0.150694	-0.544081	0.5909

Source: Processed EViews 12 data, 2025.

The regression equation obtained from the Common Effect Model (CEM) in Table 6 above is as follows:

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$$PV = -3{,}7023 + 3{,}5078CSRIj_{it} + 0{,}6705DER_{it} + 1{,}4801GROWTH_{it} - 0{,}1198CRIj_{it}*FS_{it} - 0{,}0222DER_{it}*FS_{it} - 0{,}0819GROWTH_{it}*FS_{it} + \varepsilon_{it}$$

Based on the results of the regression equation above, it can be seen that:

1. Stock Price Volatility (PV) has a negative constant value of -3.702315, so if the independent variables, namely Corporate Social Responsibility, Debt to Equity Ratio, and Asset Growth, are equal to 0 (zero), then the value of the dependent variable, namely Stock Price Volatility, will decrease by 3.702315.
2. Corporate Social Responsibility (CSR) has a positive regression coefficient of 3.507840, meaning that if the other independent variables remain constant and the CSR value increases by 1 (one) point, the Stock Price Volatility value will increase by 3.507840.
3. Debt to Equity Ratio (DER) has a positive regression coefficient value of 0.670548, meaning that if other independent variables remain constant and the DER value increases by 1 (one) point, the Stock Price Volatility value will increase by 0.670548.
4. Asset Growth has a positive regression coefficient value of 1.480198, meaning that if other independent variables remain constant and the value of Asset Growth increases by 1 (one) point, the value of Stock Price Volatility will increase by 1.480198.
5. The negative interaction coefficient between the CSR variable and Firm Size is -0.119847, meaning that if the moderator variable Firm Size increases by 1 (one) point, the effect of CSR on Stock Price Volatility will decrease by 0.119847.
6. The negative interaction coefficient between the DER variable and Firm Size is -0.022249, meaning that if the moderator variable Firm Size increases by 1 (one) point, the effect of DER on Stock Price Volatility will decrease by 0.022249.
7. The negative interaction coefficient value between the Asset Growth variable and Firm Size is -0.081990, meaning that if the moderator variable Firm Size increases by 1 (one) point, the effect of Asset Growth on Stock Price Volatility will decrease by 0.081990.

Classical Assumption Test
Normality Test
Normality test to determine whether the data from each variable is normally distributed using the Jarque-Bera test, the results of which are shown in Figure 1 below as follows:
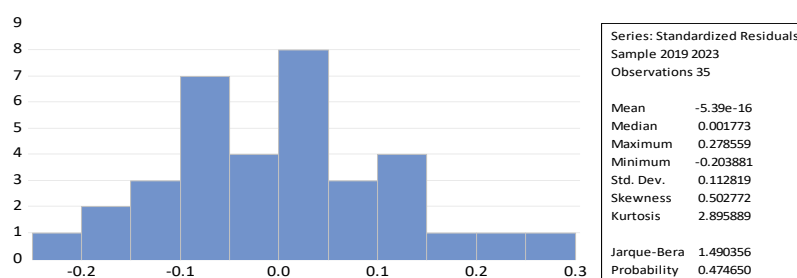

Figure 1. Normality Test Results
Source: Processed EViews 12 data, 2025.

Based on the normality test results in Figure 1 above, it shows that the probability value of 0.474650 > 0.05, so the data is normally distributed, indicating that the Common Effect Model can be used because it meets the normality assumption or there are no problems with normality.

Multicollinearity Test

Multicollinearity test to determine whether there is a correlation between independent variables in the regression model using the Correlation Matrix Test, the results of which are shown in Table 7 below as follows:

Table 7. Multicollinearity Test Results

	CSR	DER	Asset Growth	Firm Size (FS)	CSR*FS	DER*FS	Asset Growth*FS
CSR	1,000000	-0,232553	0,027650	-0,115739	0,992388	-0,236609	0,020190
DER	-0,232553	1,000000	0,096018	0,076764	-0,221999	0,999407	0,098085
Asset Growth	0,027650	0,096018	1,000000	0,210869	0,042582	0,103484	0,999294
Firm Size (Z)	-0,115739	0,076764	0,210869	1,000000	-0,000499	0,107229	0,205427
CSR*FS	0,992388	-0,221999	0,042582	-0,000499	1,000000	-0,222710	0,034566
DER*FS	-0,236609	0,999407	0,103484	0,107229	-0,222710	1,000000	0,105119
Asset Growth*FS	0,020190	0,098085	0,999294	0,205427	0,034566	0,105119	1,000000

Source: Processed EViews 12 data, 2025.

Based on the results of the multicollinearity test in Table 7 above, it shows that the correlation coefficient value between independent variables is less than 0.90, so there is no multicollinearity problem in the Common Effect Model.

Heteroscedasticity Test

Heteroscedasticity test to test whether there is inequality in residuals from one observation to another in the regression model using the Glejser test, the results of which are shown in Table 4.8 below as follows:

Table 8. Heteroscedasticity Test Results

Test Criteria	Test Results
Probability Chi-Square	0,897326

Source: Processed EViews 12 data, 2025.

Based on the results of the heteroscedasticity test in Table 4.8 above, it shows that the Chi-square probability value of 0.897326 > 0.05, so there is no heteroscedasticity problem in the Common Effect Model.

Hypothesis Testing
F Test (Simultaneous)

The F test is used to assess the suitability of the regression model to determine whether all independent variables included in the model have a simultaneous effect on the dependent variable. Table 9 below shows the results of the F test as follows:

Table 9. F Test Results

Test Criteria	Test Results
F-Statistic	7.189602
Prob (F-Statistic)	0,000069

Source: Processed EViews 12 data, 2025.

Based on the F-test results in Table 9 above, the probability value is 0.000069 < 0.05, so H0 is rejected and Ha is accepted, meaning that the variables of Corporate Social Responsibility, Debt to Equity Ratio, and Asset Growth together (simultaneously) have a significant effect on Stock Price Volatility, so the regression model is valid for use.

Coefficient of Determination (R^2)

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The coefficient of determination (R2) describes how much variation in the independent variable affects the dependent variable. Table 10 below shows the results of the coefficient of determination (R2) as follows:

Table 10. Determination Coefficient Results

Test Criteria	Test Results
R-Square	0,650834
Adjusted R-Squared	0,560310

Source: Processed EViews 12 data, 2025.

Based on the results of the coefficient of determination in Table 10 above, it shows that the Adjusted R-Squared value is 0.560310. This indicates that the independent variables Corporate Social Responsibility, Debt to Equity Ratio, and Asset Growth are able to explain the dependent variable Stock Price Volatility by 0.560310 or 56.03%, while the remaining 43.97% may be influenced by other variables not included in this regression model.

t-test (Partial)

The t-test was used to evaluate whether each independent variable had a significant effect on the dependent variable partially. Table 11 below shows the results of the t-test as follows:

Table 11. Results of the t-test

Variable	Coefficient	t-Statistics	Probability
Corporate Social Responsibility (X1)	3.507840	1.211469	0.2362
Debt to Equity Ratio (X2)	0.670548	2.421949	0,0224
Asset Growth (X3)	1.480198	0.334421	0.7406

Source: *Processed EViews* 12 data, 2025.

Table 11 above shows the results of the t-test on the Common Effect Model as follows:
1. Corporate Social Responsibility (CSR) (X1) has a coefficient value of 3.507840 and a probability value of 0.2362 > 0.05, so Ha is rejected and H0 is accepted, meaning that CSR has a positive but insignificant partial effect on Stock Price Volatility.
   H1: Corporate Social Responsibility (CSR) has a positive and insignificant effect on Stock Price Volatility.
2. The Debt to Equity Ratio (X2) has a coefficient value of 0.670548 and a probability value of 0.0224 < 0.05, so Ha is accepted and H0 is rejected, meaning that DER has a positive and significant partial effect on stock price volatility.
   H2: Debt to Equity Ratio (DER) has a positive and significant effect on Stock Price Volatility.
3. Asset Growth (X3) has a coefficient value of 1.480198 and a probability value of 0.7406 > 0.05, so Ha is rejected and H0 is accepted, meaning that Asset Growth has a positive but insignificant partial effect on stock price volatility.
   H3: Asset Growth has a positive and insignificant effect on Stock Price Volatility.

Moderation Test

Table 12. Results of Moderated Regression Analysis

Variable	Coefficient	t-Statistics	Probability
CSR*Firm Size	-0.119847	-1.263106	0.2174
DER*Firm Size	-0.022249	-2.407971	0.0231
Asset Growth*Firm Size	-0.081990	-0.544081	0.5909

Table 12 above shows the results of the moderation test as follows:

1. The probability value of the interaction between CSR and Firm Size is 0.2174 > 0.05, so Ha is rejected and H0 is accepted, meaning that Firm Size is unable to moderate the effect of CSR on Stock Price Volatility.
   H4: Firm Size cannot moderate the effect of Corporate Social Responsibility (CSR) on Stock Price Volatility.

2. The probability value of the interaction between DER and Firm Size is 0.0231 < 0.05 with a negative coefficient of -0.022249, so Ha is accepted and H0 is rejected, meaning that Firm Size can moderate but weaken the effect of DER on Stock Price Volatility.
   H5: Firm Size can moderate the effect of Debt to Equity Ratio (DER) on Stock Price Volatility.

3. The probability value of the interaction between Asset Growth and Firm Size is 0.5909 > 0.05, so Ha is rejected and H0 is accepted, meaning that Firm Size cannot moderate the effect of Asset Growth on Stock Price Volatility.
   H6: Firm Size cannot moderate the effect of Asset Growth on Stock Price Volatility.

The Effect of Corporate Social Responsibility (CSR) on Stock Price Volatility

Based on the results of hypothesis testing in Table 11, it can be seen that Corporate Social Responsibility (CSR) has a positive and insignificant effect on stock price volatility in construction companies listed on the IDX with an average CSR that is still relatively low, indicating that CSR disclosure is still not being carried out effectively. This also reflects that despite the CSR efforts undertaken by companies, they have not yet had a significant impact on stock price volatility. Additionally, the purpose of CSR is likely to play a greater role as a long-term reputation-building factor rather than as a direct influence on stock price volatility (Tasnia et al., 2020).

The Stakeholders Theory explains that transparent disclosure of CSR can significantly affect stock price volatility because it increases investor confidence (Afifah and Syafruddin, 2021). However, the results of this study indicate that CSR disclosure in construction companies is still ineffective and non-transparent, thus failing to increase investor confidence and having no significant impact on stock price volatility (Wang and Sarkis, 2021).

The phenomenon in Graph 1.2 shows that the increase in CSR in 2020 and 2023 was followed by an increase in stock price volatility due to the Covid-19 pandemic in 2020 and a decline in financial performance that triggered a negative response from investors in 2023 in Graph 1.1. However, in 2021 -2022, the increase in CSR can reduce stock price volatility, indicating that CSR alone is insufficient to reduce market uncertainty or provide a strong positive signal to investors due to other factors that have a greater impact on stock price volatility (Alimuary and Dermawan, 2024; Karagiannopoulou et al., 2023).

Signaling theory explains that effective and transparent CSR disclosure can be considered a positive signal for investors, thereby reducing uncertainty and stock price volatility because it reflects the company's commitment to corporate sustainability. However, ineffective and non-transparent CSR disclosure can be perceived as a negative signal by investors because the company is considered unaware of the importance of CSR in building a strong reputation, which can lead to a decline in investor confidence and increased stock price volatility (Hasanah et al., 2024; Garcia et al., 2021). investor confidence and an increase in stock price volatility (Hasanah et al., 2024; Garcia et al., 2021).

The results of this study are in line with the findings of Karagiannopoulou et al (2023), who found that CSR has a positive and insignificant effect on stock price volatility. Meanwhile, the findings of Tasnia et al (2020) found that CSR has a positive and significant effect on stock

price volatility. However, these two research findings contradict the previous research findings of Oktavia (2025), Amri and Chaibi (2022), Chen et al (2022), Shakil (2020), and Riski (2021), who found that CSR has a negative and significant effect on Stock Price Volatility.

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

Based on the results of hypothesis testing in Table 11, it shows that the Debt to Equity Ratio (DER) has a positive and significant effect on stock price volatility in construction companies listed on the IDX with a high average DER, reflecting that companies are heavily dependent on debt to finance projects, which has a significant impact on increasing company risk and stock price volatility. A high DER can also influence investors' perception of risk toward the company, thereby increasing stock price volatility (Marini and Dewi, 2019; Sandi, 2020).

In addition, investors view high DER as a signal of greater risk because the interest burden on debt that companies must bear is increasingly high, which impacts profitability and directly influences increased stock price volatility (Simatupang et al, 2023). Signaling theory also explains that stock price volatility often increases with rising DER because investors respond negatively to the potential for greater risk (Septyadi and Bwarleling, 2020). According to Brigham and Houston (2019), a high DER can increase bankruptcy risk and market uncertainty. A high DER also makes companies more vulnerable to external pressures such as interest rate changes and market fluctuations (Pramudena, 2016).

The phenomenon that is in line with the results of this study can be seen in Graph 1.3, which shows an increase in DER in 2023 followed by an increase in stock price volatility in Graph 1.1, reflecting that when a company has a high debt level, the financial risk is also higher, which then affects investor reactions and causes an increase in stock price volatility.

The above phenomenon reflects that construction companies listed on the IDX prefer external funding, namely debt, rather than equity because internal funds are insufficient to finance their business activities in accordance with the Pecking Order Theory (Husnan, 2016). In the study by Hariyanti and Pangestuti (2021), it is also emphasized that construction companies often have high DER because they require large amounts of capital to finance projects, which significantly impacts the increase in stock price volatility due to investor expectations regarding the ability of large companies to manage debt.

The results of this study are in line with the findings of Dahlia et al (2025), Kartawijaya and Hasibuan (2024), Artikanaya and Gayatri (2020), Karimi (2020), Putri (2020), Rosyida et al (2020), and Marini and Dewi (2019), who found that DER has a positive and significant effect on stock price volatility. However, this contradicts the findings of Sagala et al (2024), Alimuary and Dermawan (2024), Fitriani and Desmiza (2024), Kushermanto et al (2024), Juliani (2021), and Okvianti and Saryadi (2020) showed that DER has a negative and significant effect on Stock Price Volatility.

The Effect of Asset Growth on Stock Price Volatility

Based on the results of hypothesis testing in Table 11, it shows that Asset Growth has a positive and insignificant effect on stock price volatility with an average low average Asset Growth, reflecting that asset management in construction companies listed on the IDX is still ineffective and inefficient, resulting in insufficient Asset Growth to provide a strong signal to investors regarding the company's future growth prospects, thereby failing to have a significant impact on stock price volatility.

Signaling theory also explains that suboptimal asset management is perceived as a negative signal to investors because the company is considered incapable of managing its assets for expansion and innovation, which can hinder the company's future growth and progress

(Amanda et al, 2019; Mastan and Chrysanti, 2023). A significant increase in asset growth can be seen as a risk signal by investors because it allows for excessive asset expansion without focusing on efficiency, leading to increased costs and reduced profitability, thereby triggering uncertainty and increasing stock price volatility (Wati and Puspitaningtyas, 2023).

The phenomenon shows that although Asset Growth in 2023 has increased and been followed by an increase in stock price volatility in Figure 1, the increase in Asset Growth in 2021-2022 can reduce stock price volatility. This phenomenon reflects that despite efforts to recover and expand assets following the COVID-19 pandemic, Asset Growth does not have a significant impact on stock price volatility due to other factors that play a more dominant role in influencing stock price volatility, such as macroeconomic conditions and internal company policies (Rosyida et al., 2020).

The study by Khairunisa and Nazir (2022) also states that asset growth that does not meet expectations can reduce investor confidence, triggering stock price volatility. Additionally, an increase in asset growth accompanied by increased stock price volatility may also be attributed to companies tending to increase retained earnings and reduce dividend payments, thereby creating uncertainty regarding cash flow reporting due to fluctuating investment levels, which impacts investor interest (Andrea and Santioso, 2022).

The results of this study are in line with the findings of Rachmawaty and Afridayani (2023), Syed et al (2023), Andrea and Santioso (2022), and Putri (2020), who found that Asset Growth has a positive and insignificant effect on Stock Price Volatility. However, this differs from the findings of Khairiyah and Trisnaningsih (2024), Sirullah and Hanafi (2023), Alamsyah et al (2022), and Thomas and Ilat (2021), who found that Asset Growth has a positive and significant effect on Stock Price Volatility. However, both results contradict the studies by Pujiyanti et al (2024) and Artikanaya and Gayatri (2020), who found that Asset Growth has a negative and insignificant effect on Stock Price Volatility.

Firm Size in Moderating Corporate Social Responsibility (CSR) on Stock Price Volatility

Based on the results of the moderation test in Table 12, it shows that Firm Size is unable to moderate the effect of CSR on stock price volatility because the average CSR of construction companies is still relatively low. Therefore, even though there is an increase in CSR in large companies, the implementation of CSR is still not effective enough to create sufficient stability in stock prices. The results of this study are inconsistent with the Signaling Theory, which explains that effective disclosure of CSR in large companies can send a strong positive signal to investors because it reflects the company's commitment to long-term sustainability. As a result, large companies are perceived to have higher social responsibility, which can reduce uncertainty and create stock price stability (Rachmawati, 2024; Nopriyanto, 2024).

Furthermore, the results of this study also contradict Stakeholders' theory, which explains that investors have more confidence in the implementation of CSR by large companies because large companies have a high competitive advantage, enabling them to implement CSR effectively and reduce stock price volatility (Hasan et al., 2022). Large companies generally have greater resources and stronger financial capacity to maintain effective CSR implementation strategies, thereby reducing stock price volatility while also enhancing corporate image and loyalty (Bukhori and Sisdianto, 2024; Siswanti et al., 2021).

Investors also often believe that large companies are more active in CSR reporting, thereby reducing reputational risk and creating added value (Rahmawati and Susilo, 2025; Nopriyanto, 2024). However, the results of this study indicate that the implementation of CSR in construction companies is still not sufficiently effective, so investors have not yet seen the added value of CSR, even though it has been implemented by large companies. This

has resulted in Firm Size being unable to strengthen the influence of CSR, as the CSR itself has also failed to have a significant impact on investor perception and stock price volatility.

The phenomenon in 2021-2023 shows that although CSR disclosure in large companies has increased consistently, it has not been able to reduce market uncertainty. As shown in Figure 1, stock price volatility remains unstable, with a decline in 2021-2022 followed by an increase in 2023 due to a decline in financial performance, which triggered a negative response from investors. This reflects the presence of other factors that play a more significant role in influencing stock price volatility.

The above phenomenon reflects that although large companies have made efforts to implement CSR effectively, they have not yet provided a strong signal to investors regarding stability due to other factors that have a significant impact on stock price volatility. Therefore, the implementation of CSR in large companies is indeed considered more credible, but it is not sufficient to reduce stock price volatility without the support of conducive external and internal factors (Santioso and Angesti, 2019; Alimuary and Dermawan, 2024).

The results of this study are in line with the findings of Shakil (2020), who found that firm size cannot moderate the effect of CSR on stock price volatility, whereas they contradict the findings of Bukhori and Sisdianto (2024), who found that firm size can moderate and strengthen the effect of CSR on stock price volatility.

Firm Size in Moderating Debt to Equity Ratio (DER) on Stock Price Volatility

Based on the results of the moderation test in Table 12, it shows that Firm Size is able to moderate but weaken the effect of DER on stock price volatility, reflecting that the larger the company size, the smaller the effect of DER on stock price volatility because large Firm Size tends to show more stable volatility (Sandi, 2020).

The results of this study are not in line with the Pecking Order theory, which explains that large companies are able to strengthen the relationship between DER and stock price volatility because a high DER indicates that the company has a high dependence on debt, resulting in high financial risk, which can create uncertainty for investors and lead to increased stock price volatility (Lu'luatuwwafiroh et al., 2022). In addition, construction companies are generally large in size and have a high dependence on debt to finance projects, which often triggers negative sentiment from investors and has a significant impact on increased stock price volatility due to investor expectations regarding the ability of large companies to manage debt (Hariyanti and Pangestuti, 2021).

High DER is more vulnerable to external pressures such as market fluctuations, so stock price volatility often increases along with an increase in DER in large companies because investors will respond negatively to greater potential risks (Pramudena, 2016; Septyadi and Bwarleling, 2020). However, research findings indicate that while companies with high DER may have large cash reserves and stronger corporate governance, enabling them to manage debt burdens more effectively than smaller firms, this enhances investor confidence and mitigates the impact of high DER usage on stock prices (Dahlia et al., 2025).

The results of this study support the Signaling theory, which explains that large companies have a more open and standardized information structure, thereby having higher credibility in sending positive signals to investors compared to small companies, which tend to have higher financial risk levels (Manggale and Widyawati, 2021). Large companies generally have easier access to lower-cost funding sources, higher financial stability, and stronger reputations, so Firm Size can help reduce the impact of high DER on stock price volatility (Liadi et al, 2022).

The phenomena show that the Firm Size and DER values in 2019 were very high, but Figure 1 shows that stock price volatility had a low value because large Firm Size companies

have broader access to funding sources, high operational stability, and larger assets as collateral, enabling them to manage debt more effectively, which in turn creates stock price stability (Oktavianti and Saryadi, 2020; Septiana, 2021). This phenomenon reflects that large companies with high DER have stronger risk mitigation strategies, enabling them to withstand the impact of stock price volatility because investors expect that large companies have more stable financial management in the long term (Fitriani and Desmiza, 2024).

Large companies also have the ability to reduce the impact of financial risk due to high DER through greater resources, thereby keeping stock price volatility stable (Nguyen et al, 2020). Therefore, firm size can weaken the influence of DER on stock price volatility even with a high DER because large companies often utilize their capabilities in effectively managing corporate finances to maintain financial stability and investor confidence (Bahraini et al., 2021).

The results of this study are in line with the findings of Dahlia et al (2025) and Purwitajati and Putra (2016), who found that firm size can moderate but weaken the effect of DER on stock price volatility. Meanwhile, the findings of Chen et al (2023) found that DER can moderate in strengthening the effect of DER on stock price volatility. However, the results of this study contradict the findings of Darmayanti and Yadnyana (2023) and Cahyadi (2022), who found that Firm Size cannot moderate the influence of DER on Stock Price Volatility.

Firm Size in Moderating Asset Growth Against Stock Price Volatility

Based on the results of the moderation test in Table 12, it shows that Firm Size is unable to moderate the effect of Asset Growth on stock price volatility in construction companies listed on the IDX with an average Asset Growth that is still very low, indicating that even though Asset Growth in large companies has increased, if it is not accompanied by effective and efficient asset management, it cannot reduce stock price volatility.

The results of this study are not in line with the Signaling theory, which explains that large companies are able to send stronger and more credible positive signals to investors through increases in Asset Growth because it reflects that the company is expanding, has good performance prospects, and has the potential to generate long-term value, so that Firm Size is able to strengthen the positive impact of Asset Growth in reducing market uncertainty and reducing stock price volatility (Mahendra and Daljono, 2023; Manggale and Widyawati, 2021).

In addition, signals given by large companies are often considered more credible in the eyes of investors because large companies have greater resources, higher financial stability, stronger reputations, and better risk management, enabling them to create stable and measurable asset growth through continuous expansion and create stock price stability (Anggraini and Rusnaeni, 2024; Chen et al., 2023).

Asset growth in large companies is considered to be more controlled in allocating company assets because they have greater resources, broader access to financing, and more stable operational capacity (Sumarsono and Rahmawati, 2023; Samsiar and Haryono, 2023). However, research findings indicate that despite the increase in asset growth in large companies, it fails to provide a strong positive signal to investors regarding the company's future prospects and stock price stability. This is because asset growth management has not been implemented effectively and under control, leading investors to perceive it as a negative signal due to asset growth that falls short of expectations and investors not yet seeing a strong prospect of performance improvement (Tamsil and Esra, 2020).

In their study, Khairunisa and Nazir (2022) also stated that asset growth that does not meet expectations can reduce investor confidence, triggering stock price volatility. Increased asset growth in large companies that is not accompanied by effective asset management can lead to excessive asset expansion without focusing on efficiency, resulting in increased costs and reduced profitability that hinder the company's future growth and progress, thereby

triggering uncertainty and increasing stock price volatility (Wati and Puspitaningtyas, 2023; Mastan and Chrysanti, 2023).

The phenomena show that although Firm Size and Asset Growth in 2022-2023 tend to be stable, Figure 1 shows that stock price volatility remains unstable because when Firm Size and Asset Growth increase in 2022, it can reduce stock price volatility, while the increase in Firm Size and Asset Growth in 2023 can significantly increase stock price volatility because macroeconomic conditions and internal company policies play a more dominant role in influencing stock price volatility (Rosyida et al., 2020).

The above phenomenon also reflects that although asset growth is increasing in large companies, it is unable to reduce uncertainty due to other factors such as market sentiment, which plays a more dominant role in influencing stock price volatility (Andrea and Santioso, 2022). Large companies generally have greater resources and better risk mitigation capabilities, but they have not been able to reduce stock price volatility caused by dividend policy factors (Samsiar and Haryono, 2023). Therefore, an increase in Asset Growth in large companies alone is insufficient to stabilize stock price volatility unless it is accompanied by effective asset management and conducive external and internal conditions (Afani et al., 2025).

The results of this study are in line with the findings of Jumadi (2025) and Samsiar and Haryono (2023), who found that firm size cannot moderate the effect of asset growth on stock price volatility. However, the results of this study contradict the findings of Chen et al (2023), who found that Firm Size can moderate and strengthen the effect of Asset Growth on Stock Price Volatility.

Conclusion

Based on the results of the analysis, this study concludes that *Corporate Social Responsibility* (CSR) has a positive but insignificant effect on stock price volatility, indicating the need for construction companies to improve CSR management so that it becomes more strategic and measurable, particularly by aligning CSR programs with long-term business value. The *Debt to Equity Ratio* (DER) shows a positive and significant effect on stock price volatility, suggesting that companies should implement prudent debt management strategies to reduce investor-perceived risk. *Asset Growth* also exhibits a positive but insignificant impact, highlighting the importance of optimizing asset utilization through productive investments that can strengthen operational performance. *Firm Size* does not moderate the CSR–stock price volatility relationship, implying that large-scale resources alone are insufficient without effective CSR execution. However, *Firm Size* does moderate and weaken the DER–stock price volatility effect, indicating that financial stability in larger firms can mitigate the impact of leverage risk. Lastly, *Firm Size* fails to moderate the *Asset Growth*–stock price volatility relationship, suggesting that asset expansion strategies in construction companies remain suboptimal. Future research should incorporate macroeconomic indicators, market sentiment analysis, and industry-specific variables to better capture external influences. Practitioners are encouraged to integrate CSR, leverage, and asset management into a unified corporate strategy to stabilize stock performance and enhance investor confidence.

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