

The Effect of Environmental, Social, Governance (ESG) and Capital Structure on Firm Value: The Role of Firm Size as a Moderating Variable

Priska Wulandari¹⁾, Dyah Febriantina Istiqomah²⁾

¹⁾²⁾ S1 Accounting Study Program, Faculty of Economics, UIN Maulana Malik Ibrahim Malang
¹⁾ 200502110050@student.uin-malang.ac.id

Abstract

This research aims to examine the effect of Environmental, Social, and Governance (ESG) and capital structure on firm value moderated by firm size variables. Good ESG disclosure will attract investors to invest in a company so that it can increase the value of the company. The research sample of 47 mining companies listed on the Indonesia Stock Exchange was taken using a purposive sampling technique. The research observation period was 2021-2022, so the total observations were 94 subjects. This research uses a quantitative approach. The data collection method is documentation through secondary data collection on annual financial reports and sustainability reports, the data analysis technique is moderated regression analysis (MRA) using Eviews Enterprise 12 software. The results showed that ESG has no positive effect on firm value, but capital structure and firm size have a negative effect on firm value. Firm size is unable to moderate the effect of ESG on firm value but can moderate the effect of capital structure on firm value.

Keywords: Environmental, Social, and Governance (ESG), Capital Structure, Firm Size, Firm Value.

Abstrak

Penelitian ini bertujuan untuk menguji pengaruh Environmental, Social dan Governance (ESG) dan struktur modal terhadap nilai perusahaan dimoderasi variabel ukuran perusahaan. Pengungkapan ESG yang baik akan menarik investor untuk berinvestasi pada suatu perusahaan sehingga dapat meningkatkan nilai perusahaan tersebut. Sampel penelitian sebanyak 47 perusahaan tambang terdaftar di Bursa Efek Indonesia diambil dengan menggunakan teknik purposive sampling. Periode pengamatan penelitian tahun 2021-2022, sehingga total pengamatan sebanyak 94 subjek. Penelitian ini menggunakan pendekatan kuantitatif. Metode pengumpulan data adalah dokumentasi melalui pengumpulan data sekunder pada laporan keuangan tahunan dan sustainability report, teknik analisis datanya analisis regresi moderasi (MRA) dengan menggunakan software Eviews Enterprise 12. Hasil penelitian menunjukkan bahwa ESG tidak berpengaruh positif terhadap nilai perusahaan, namun struktur modal dan ukuran perusahaan berpengaruh negatif terhadap nilai perusahaan. Ukuran perusahaan tidak mampu memoderasi pengaruh ESG terhadap nilai perusahaan, namun mampu memoderasi pengaruh struktur modal terhadap nilai perusahaan.

Kata kunci: Environmental, Social dan Governance (ESG), Struktur Modal, Ukuran perusahaan, Nilai perusahaan.

1. INTRODUCTION

The issue of environmental pollution is important to discuss because it has a direct impact on human life. Environmental pollution is a condition that occurs due to changes in natural construction that adversely affect the existence of living things (humans, plants, and animals). This is caused by the presence of foreign objects such as waste, garbage, and hazardous materials. One of the areas that contributes to the largest environmental pollution is the mining area (Ramadhany, 2023). If the mining area is not managed properly, it will cause environmental damage by polluting water, air, and soil. Indonesia is one of the largest mining producers in

the world, especially coal mining, namely the United Tractors company which is part of PT Astra International Tbk, ranked sixth with a market capitalization value of US\$5.88 billion, or around Rp93.34 trillion. There are several mining companies whose mining processes do not follow the harmony of the ecosystem with the environment, resulting in a lot of environmental pollution from coal waste (Habibi, 2022).

The main problem that causes environmental pollution and damage is the behavior of mining company management that does not comply with company operational standards and a law enforcement system that does not provide a deterrent effect, resulting in environmental damage. Habibi (2022) states that around 70% of environmental damage in Indonesia is caused by mining. About 3.97 million hectares of protected areas in Indonesia are threatened by mining. The situation is exacerbated by the presence of companies that have 10,235 mineral and coal mining business licenses, covering almost 34% of Indonesia's territory.

Business activities are not only focused on large economic profits but also on environmental damage. The business world is now expected to apply sustainable business principles, which focus on the environment, social and governance, or ESG. The reason is that sustainable development that covers all aspects is one way to reduce various adverse effects of environmental damage, to promote prosperity. Companies that disclose Environmental, Social, and Governance (ESG) imply the goal of economic improvement. Environmental disclosure is a form of corporate transparency in securing and protecting the environment and the natural impacts it causes (Widyawati & Hardiningsih P., 2022). Social disclosure should be seen as a form of corporate obligation to society, employees, and partners. Meanwhile, governance disclosure is to see whether the company has implemented Good Corporate Governance (GCG). Based on previous studies that examine the effect of ESG on firm value, the results are different. According to Nurdianti et al (2023) in their research stated that ESG Score has a positive effect on firm value. Melinda & Wardhani (2020) also said the same thing, ESG implementation has a positive and significant relationship to firm value. Meanwhile, according to Suretno et al (2022), environmental and social disclosure has a positive and significant influence on firm value. However, governance disclosure has a negative and significant effect on firm value. Meanwhile, Irine et al (2020), Mahfuzhah & Hanan (2022), and Arofah & Khomsiyah (2023) state that Environmental, Social, and Governance (ESG) do not affect Firm Value.

Firm value is considered important in reflecting the company's performance which affects investors' perceptions of the company. Firm value is defined as market value because firm value can provide maximum investor growth if the share price in the company increases (Sondakh et al., 2019). The Price Book to Value (PBV) ratio is used to determine the value of the company because it shows how much the stock market value is at its book value. The higher the PBV value, the better for the company because investors can trust the company. Firm value can be influenced by several factors, such as in research by Valensiska & Nugroho (2021) which states that capital structure affects firm value. According to Mangondu & Diantimala (2021), capital structure is the harmony between the amount of permanent short-term debt, long-term debt, preferred stock, and common stock. Capital structure policy is the maintenance of risk and expected returns. As shown in Brigham & Houston (2019) research, the ideal capital structure for a company is characterized as a structure that will increase the company's share price.

D'Amato & Falivena (2020) and Abdi et al (2022) use moderating variables to better understand the relationship between ESG disclosure and firm value. Firm size is used as a moderating variable by both studies because firm size tends to be the main driver of ESG implementation so the relationship between ESG and firm value may differ between small and large companies. The results of their research indicate that firm size can moderate the relationship between ESG disclosure and firm value. Research by Fahri et al (2022) states that firm size can strengthen the relationship between capital structure and firm value by providing positive and significant results. The larger the size of a company, the higher the level of investor confidence in the company because it is considered to be able to manage a good capital structure and more easily obtain sources of funds from debt.

This research was conducted because of the inconsistency of the results of previous studies and the desire of researchers to re-examine from two different perspectives, namely financial

(capital structure) and non-financial (ESG) by adding firm size as a moderating variable because moderating variables are expected to strengthen or weaken the influence of independent variables on the dependent variable. Therefore, researchers are interested in researching "The Effect of Environmental, Social, Governance (ESG) and Capital Structure on Firm Value: The Role of Firm Size as a Moderating Variable". Mining companies are the research sample because there has been no research that measures this model in the mining sector in 2021-2022. The mining sector is a sector that processes natural resources directly so that it is close to complex environmental and social problems. Starting from environmental pollution due to mining activities can affect social relations between companies and the community. Mining sector companies must be responsible to society and their partners. Disclosure of corporate sustainability reports as corporate accountability and ESG is part of the sustainability report that must be disclosed.

2. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Signaling Theory

Signal theory was first coined in 1973 by Michael Spence in his research entitled Job Market Signaling. As explained by Brigham & Houston (2019) the signaling theory regarding management's view of the company's future development will have an impact on the expected reaction of potential investors to the company. ESG signals that the company is not only interested in increasing investor wealth but also in providing benefits to the communities in which they work. Therefore, ESG disclosure by companies can be a good sign for investors and other partners that can trigger changes in stock trading volume and have a positive impact on the firm (Safriani & Utomo, 2020). Signaling theory on capital structure associated with debt utilization is a signal to investors that the company's performance and future opportunities will be profitable. Investors will anticipate that companies with profitable opportunities should try not to sell shares and decide to increase debt to use new capital (Brigham & Houston, 2019).

2.1.2 Environmental, social, and governance (ESG)

ESG has become a trend in recent years in investing. ESG is a corporate standard on investment practices that coordinates and implements corporate strategies to fit environmental, social, and governance ideas. If a company wants its corporate value to increase, it must be able to improve the performance/implementation of environmental, social, and governance disclosures. Investors are more interested in companies that have a good image in the eyes of the public because this has an impact on the high consumer loyalty to the company's products. In addition, Bank Indonesia policy no: 7/2/PBI/2005 by facilitating the acquisition of bank credit for institutions that comply with environmental management is one of the factors that encourage investors to invest in institutions that have good environmental performance so that it has an impact on increasing firm value. Companies that have good social disclosure performance will get a positive reaction from investors through an increase in stock prices (Awaluddin et al., 2022). The company hopes that investors will respond positively to the goodwill that the company does to the surrounding environment, thereby increasing the company's value in the stock price (Awaluddin et al., 2022). According to Siswanto (2019), disclosure of governance has several objectives, namely: protect the rights and interests of investors; protect the rights and interests of non-investor partners; increase the value of the company and its investors; increase the efficiency and effectiveness of the work made by the board of management and company management; strive for the quality of the relationship between the board of management and the company's top management.

2.1.3 Capital Structure

Capital structure is a long-term support consisting of own capital and foreign capital, where own capital consists of various types of shares and retained (Yusintha & Suryandari, 2018). The utilization of foreign capital or long-term debt will give the right weight and how much capital utilization determines the amount of financial leverage used by the company. As a result, it tends to reason that the greater the level of foreign capital or long-term debt in the company's capital structure, the greater the risk of inability to pay long-term debt and interest on the due date (Irawan & Kusuma, 2019).

According to Kasmir (2019) Debt to Equity Ratio is a ratio used to assess debt and equity. This ratio is known by looking at all debt, including current debt with all equity. This ratio is useful for knowing the ability of each rupiah of its capital used as debt collateral. According to Sukarya & Baskara (2019), the debt-to-equity ratio is a ratio that can show the relationship between the amount of long-term credit provided by creditors and the amount of capital owned by company owners.

2.1.4 Firm Value

Firm value is the investor's impression of the manager's success rate in managing the company's assets which is associated with the stock price (Indrarini, 2021). Firm value is generally related to the company's share price, where investors make the share price one of the considerations in making investment decisions (Lestari & Suhardi, 2020). Price to Book Value (PBV) is one of the measurements used in research to determine company value. PBV shows the level of ability to create value about the amount of capital invested.

2.1.5 Firm Size

Firm size can moderate the influence of ESG and capital structure on firm value. According to D'Amato & Falivena (2020), small companies have a lower capacity to implement ESG disclosures compared to large companies. So for investors who are interested in ESG disclosure, this will certainly affect the value of the company. In addition, when viewed from the size of its capital structure, small companies usually receive less media attention, resulting in low investor interest in these companies. Therefore, there are differences in the effect of ESG and capital structure on firm value in large companies and small companies.

2.2 Research Hypothesis

2.2.1 The Effect of Environmental, Social, and Governance (ESG) on Firm Value

Companies tend to make disclosures that will encourage the support of their partners. Before investing in a company, investors will usually dig up information about the state of the company that is the investment destination. One of the information considered by investors is whether a company applies ESG standards in its business duties (Qodary & Tambun, 2021). ESG scores reflect good governance in a company. Good governance will increase the value of the company which is reflected in an increase in stock prices because investors expect that most of the company's profits will be returned to investors as dividends (Jensen & Meckling, 1976; Putri, 2021). This is in line with signaling theory, that when the company provides information about good performance, it will be a positive signal for investors which in turn will affect the company's value which is reflected in an increase in stock price. Signaling theory suggests that firms may implement ESG practices to send positive signals to investors' perceptions of the firm's value, which is reflected in an increase in share price. The same thing is also been explained in previous studies, namely Bashatweh et al (2023), Abdi et al (2022), Melinda & Wardhani (2020), Qureshi et al (2020), Handayati et al (2022), Fuadah et al (2022), and Yip & Lee (2018) which shows that there is a significant positive relationship between ESG disclosure and firm value. Based on this explanation, the researcher formulates the following hypothesis:

H1: ESG has a positive effect on firm value.

2.2.2 Effect of Capital Structure on Firm Value

The capital structure with the Debt to Equity Ratio (DER) measurement shows the ratio between the company's total debt and total capital used to fund its business or business. The greater the value of the debt-equity ratio (DER), the lower the solvency of the company, so the company's ability to pay its debts is lower. This indicates that the company's risk is relatively high. The existence of high risk makes interest in investing in a stock less attractive, especially for investors who are not risk-takers (Valensiska & Nugroho, 2021). A good capital structure can improve the balance of risk as well as return and increase stock prices (Nuswandari et al., 2023). Signaling theory on capital structure associated with debt utilization is a signal to investors that the firm's performance and future opportunities will be favorable which can affect firm value. Research conducted by Irawati et al (2022) and Dewi & Yani (2022) shows that capital structure has a negative effect on firm value. Based on this explanation, the researcher formulates the following hypothesis:

H2: Capital structure has a negative effect on firm value.

2.2.3 The Effect of Firm Size on Firm Value

According to Ramdhonah et al (2019) and Wulandari & Hidayat (2020) emphasize that the value of a firm tends to decrease as the size of the company increases. As a result of slow turnover, there will be a large amount of asset hoarding (Prastuti & Sudiartha, 2016). According to Driffield et al (2007), investors want effective and efficient management performance, and the amount of total assets owned also shows a lack of supervision of the firm's operational activities. Ownership of large total assets will increase the debt that should be invested in being unproductive and the firm will also be charged principal and interest for the firm (Ramdhonah et al., 2019), and (Wulandari & Hidayat, 2020). Signaling theory on firm size, namely the size of the firm that is too large as seen from the company's total assets, is seen as a negative signal by investors and potential investors because the large total assets indicate the hoarding of a large number of assets, this can show the lack of effect and efficient management in managing its asset turnover. In line with previous research which shows that firm size has a negative effect on firm value, as shown the research of (Clarinda et al., 2023) and (Fadhilah et al., 2021). Based on this explanation, the researcher formulates the following hypothesis:

H3: Firm size has a negative effect on firm value.

2.2.4 The Effect of Environmental, Social, and Governance (ESG) on Firm Value with the Moderating Variable of Firm Size

The larger the size of a company, the greater the tendency of investors to the company's shares so that the share price of a company can increase and the value of the company can also increase (Adhi & Cahyonowati, 2023). Large companies have more financial resources than small companies in carrying out ESG activities so good ESG disclosure can attract investors to invest in the company because they get trust from the public (Adhi & Cahyonowati, 2023). However, if a firm size is small, it will also have smaller financial resources in carrying out ESG activities so less ESG disclosure is unable to attract investors to invest in the company. The signaling theory shows that the larger the size of a firm with the firm displaying ESG disclosures can provide a positive signal to indicate the sustainability of the firm that can attract investors to invest. This is also supported by previous research by D'Amato & Falivena (2020) and Abdi et al (2022) explaining that firm size strengthens the relationship between ESG disclosure and firm value. Meanwhile, research by Handayati et al (2022) explains that firm size strengthens the relationship between CSR disclosure and firm value. Based on this explanation, the researcher formulates the following hypothesis:

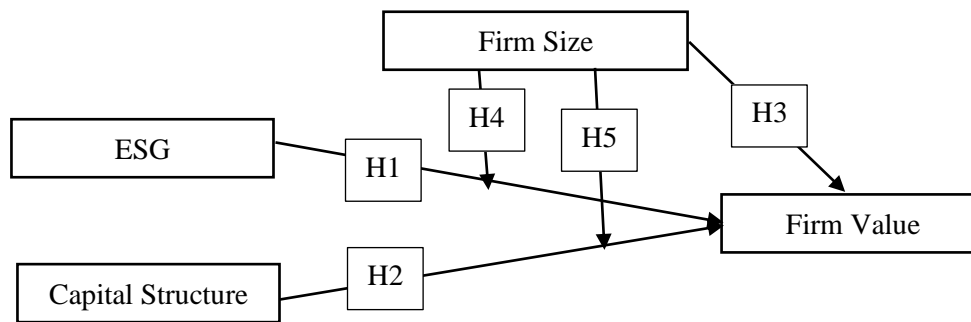
H4: Firm size moderates the effect of ESG disclosure on firm value.

2.2.5 The Effect of Capital Structure on Firm Value with Moderating Variables of Firm Size

Capital structure is the ratio of the firm's funding from debt compared to equity or stock issuance. Large firms will gain the trust of creditors and investors more easily. For creditors, large firms are known to have more assets than small firms, so there will be a great opportunity to get a source of funds for funding their business or business (Fahri et al., 2022). For investors, large companies have firm management that can manage their funds better than small firms, so it has an impact on increasing the value of the firm (Fahri et al., 2022). The signaling theory shows that the larger the size of a firm accompanied by a capital structure associated with debt utilization will send a positive signal to investors so that it will increase the share price and the firm's value will also increase. This is reinforced by research by Santoso & Susilowati (2019) and Ayem & Ina (2023) which shows the results that firm size can moderate the effect of capital structure on firm value. Based on this explanation, the researcher formulates the following hypothesis:

H5: Firm size moderates the effect of capital structure on firm value.

Based on the phenomena previously described in the background of this research, supported by the theoretical basis and the results of several previous studies, the conceptual framework of this research is presented as follows:



Source: Processed by researchers, 2024

Figure 1. Research Framework

Figure 1 shows that the framework in this research examines the effect of independent variables, namely Environmental, Social, and Governance (ESG) and capital structure on the dependent variable, namely firm value with the moderating variable of firm size.

3. RESEARCH METHOD

3.1 Type and Research Approach

This research is a quantitative study with an explanatory research method that intends to test a hypothesis by explaining the phenomena that occur in the form of relationships between variables that can provide answers to a formulated problem (Pakpahan et al., 2021). In this method, the relationships between variables in the research model are analyzed for their nature and ability to influence them so that they can strengthen or weaken each other (Zaluchu, 2020).

3.2 Population and Sample

The population in this research is mining sector companies that publish annual financial reports and sustainability reports listed on the Indonesia Stock Exchange (IDX) in 2021-2022. The research population was 82 mining companies listed on the Indonesia Stock Exchange (IDX). The sample was selected using the purposive sampling method as many as 47 samples of mining companies listed on the Indonesia Stock Exchange (IDX) during the two periods 2021-2022, bringing the total research observations to 94 subjects. The research sample selected using the purposive sampling method has the following criteria: a) Mining companies listed on the Indonesia Stock Exchange (IDX) in the 2021-2022 time span. b) Mining companies that publish annual financial reports and sustainability reports in the 2021-2022 time span. This sample selection was carried out due to the large population and limited research resources.

Table 1. Sample Selection Criteria

No	Criteria	Amount
1	Mining companies listed on the Indonesia Stock Exchange (IDX) in the 2021-2022 time span.	82
2	Mining companies that do not publish annual financial reports and sustainability reports in the 2021-2022 timeframe.	(35)
	Total mining companies that became research samples	47
	The total sample of mining companies for 2 periods 2021-2022 (47 × 2)	94

3.3 Data Collection Technique

The collection technique in this research uses the documentation method, where researchers take and collect the necessary data/documents through the official IDX website (www.idx.co.id). Documents taken in the form of annual financial reports and sustainability reports on mining companies for 2 periods from 2021-2022 listed on the IDX.

3.4 Variable Operational Definitions

Table 2 presents the operational definitions of Environmental, Social, and Governance (X1), capital structure (X2), firm value (Y), and firm size (Z) as follows:

Table 2. Variable Operational Definitions

<i>Variable</i>	<i>Measurement</i>	<i>Reference</i>
ESG (Standard GRI 2021) (X1)	ESG variables are proxied using GRI standards. GRI is an independent international company. GRI helps an organization or company to be responsible for the social and environmental impacts arising from its functional implementation by setting sustainability reporting standards. ESG variables proxied using GRI are calculated using the formula: $ESG_j = \frac{\text{Sum of company's disclosure item}}{\text{Total of GRI's disclosure standard item}}$	(Ghazali & Zulmaita, 2020)
Capital Structure (DER) (X2)	The capital structure variable is proxied using DER. The ratio used to evaluate debt to equity is Debt to Equity Ratio. This ratio is calculated by comparing all debt, including current debt with all equity. The capital structure variable proxied by DER is calculated using the formula: $DER = \frac{\text{Total liabilities}}{\text{Total equity}}$	(Brigham & Houston, 2019)
Company Value (Price to Book Value) (Y)	The firm value variable is proxied using PBV. Price to Book Value is a ratio that compares the market price per share with the book value per share. This ratio assesses the overvaluation or undervaluation of the stock price. The firm value variable proxied using PBV is calculated using the formula: $PBV = \frac{\text{Market Price Per Share}}{\text{Book Value Per Share}}$ $\text{Book Value Per Share} = \frac{\text{Total Equity}}{\text{Number of Outstanding Shares}}$	(Brigham & Houston, 2019)
Company Size (Z)	The indicator used in this study to measure firm size is total assets. This is because total assets should be more stable than total sales. The firm size variable is calculated by the formula: Firm Size = Ln (Total Assets)	(D'Amato & Falivena, 2020), (Abdi et al., 2022), and (Handayati et al., 2022)

3.5 Data Analysis

In this research, the authors conducted data processing with quantitative data analysis using Eviews Enterprise 12 Software. This application was chosen because it can simplify the process of calculating research data and reduce the possibility of errors. and provide accurate and reliable research results. Eviews Enterprise 12 software is also very good at dealing with time series and cross section data problems, especially with panel data which is a characteristic of the data in this research. The data analysis stage used is descriptive statistical analysis, chow test, Hausman test, Lagrange Multiplier (LM) test, normality test, multicollinearity test, heteroscedasticity test, autocorrelation test, F test, T-test, coefficient of determination (R^2), and Moderated Regression Analysis (MRA) test. The Moderated Regression Analysis (MRA) equation model can be formulated as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 Z + \beta_4 X_1 Z + \beta_5 X_2 Z + e$$

Description:

- Y = Firm Value
- α = Constant
- β_{1-5} = Regression Coefficient
- X1 = ESG
- X2 = Capital Structure
- Z = Firm Size
- X_1Z = Interaction between ESG and firm size
- X_2Z = Interaction between capital structure and firm size
- e = Error Item

4. DISCUSSION

4.1 Research Results

4.1.1 Overview of Research Objects

The mining sector is a sector that processes natural resources directly so that it is close to complex environmental and social problems. Indonesia's location in the "ring of fire" geological phenomenon area which indicates the presence of mineral resources, especially hydrothermal deposits, makes Indonesia one of the countries with the highest potential for minerals and mining materials. Mining sector companies listed on the Indonesia Stock Exchange have considerable economic potential. Abundant natural resources in Indonesia provide benefits for various industries, including mining. This research was conducted on 47 mining companies as research samples. Researchers analyzed and collected data from annual financial reports and sustainability reports to measure the variables studied in these companies for 2 years, namely from 2021 to 2022.

4.2 Descriptive Statistical Analysis

Descriptive statistical analysis in this research produces research variable data information which includes standard deviation, lowest value (minimum), highest value (maximum), median value, and average (mean). The results of descriptive statistical analysis that can provide a summary of this research are as follows:

Table 3. Statistical Analysis Results Description

	X1	X2	Y	Z
Mean	0.600372	0.564637	0.618200	1.205989
Median	0.652677	0.542647	0.529028	1.206485
Maximum	0.713189	1.414214	1.823203	1.228605
Minimum	0.115014	0.000000	0.113301	1.178929
Std. Dev.	0.141018	0.262882	0.384711	0.012421
Skewness	-1.939503	0.327482	1.360990	-0.435730
Kurtosis	6.140758	3.384986	4.513700	2.623884
Jarque-Bera	97.56826	2.260668	37.99348	3.528545
Probability	0.000000	0.322925	0.000000	0.171311
Sum	56.43499	53.07585	58.11075	113.3630
Sum Sq. Dev.	1.849405	6.426944	13.76424	0.014348
Observations	94	94	94	94

Source: Eviews Data Processing Results 12, 2024

Based on the results of descriptive statistical analysis Table 3, displays the mean value of variable X1 (ESG) of 0.60 and a median value of 0.06. The maximum value of 0.71 is in PT Bayan Resources Tbk (BYAN) in 2021, and the minimum value of 0.11 is in PT Timah Tbk (TINS) in 2022. In addition, the standard deviation value for variable X1 (ESG) is 0.14. The mean value of variable X2 (Capital Structure) is 0.56, while the median value is 0.54. The maximum value of 1.41 is found in PT Optima Prima Metal Sinergi Tbk (OPMS) in 2021, and the minimum value of 0.00 is found in PT Petrosea Tbk (PTRO) in 2022. The standard deviation value of the X2 (Capital Structure) variable is 0.26. The mean value of variable Y (Firm Value) is 0.61, while the median value is 0.52. The maximum value of 1.82 was found at PT Golden Energy Mines Tbk (GEMS) in 2021, and the minimum value of 0.11 was found at PT Resource Alam Indonesia Tbk (KKG) in 2022. The standard deviation value of variable Y (Firm Value) is 0.38. The mean value of variable Z (Firm Size) is 1.20, while the median value is 1.20. The maximum value of 1.22 contained in PT Medco Energi International Tbk (MEDC) in 2022, and the minimum value of 1.17 contained in PT Archi Indonesia Tbk (ARCI) in 2022. As well as the standard deviation value of the variable Z (Firm Size) of 0.01.

4.3 Model Analysis

4.3.1 Chow Test (Chow-test)

The Chow test is conducted to evaluate and determine the best model between the Common Effect Model and the Fixed Effect Model. The following are the Chow test results:

Table 4. Chow Test Results

Effects Test	Statistics	df	Prob.
Cross-section F	5.815880	(46.44)	0.0000
Chi-square cross-section	183.986911	46	0.0000

Source: Eviews Data Processing Results 12, 2024

Based on the chow test results in Table 4 above, show that the cross-section Chi-Square probability value of 0.0000 is less than 0.05. Then the selected model is the Fixed Effect Model following the Chow test decision-making provisions.

4.3.2 Hausman Test

The Fixed Effect Model and Random Effect Model are compared or the best model is determined, using the Hausman test. The results of the Hausman test are as follows:

Table 5. Hausman Test Results

Test Summary	Chi-Sq. Statistics	Chi-Sq. df	Prob.
Random cross-section	5.840541	3	0.1196

Source: Eviews Data Processing Results 12, 2024

Based on the results of the Hausman test in Table 5 above, shows that the random cross-section probability value of 0.1196 is more than 0.05. Thus, based on the decision-making provisions in the Hausman test, the selected model is the Random Effect Model.

4.3.3 Lagrange Multiplier Test (LM-test)

The LM (Lagrange Multiplier) test is conducted to determine whether the Random Effect Model is better than the Common Effect Model and can be used to ensure that the fixed effect and random effect models in the previous test are inconsistent. The following are the results of the LM (Lagrange Multiplier) test:

Table 6. LM (Lagrange Multiplier) Test Results

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	20.54119 (0.0000)	0.965638 (0.3258)	21.50682 (0.0000)
Honda	4.532239 (0.0000)	-0.982669 (0.8371)	2.509925 (0.0060)
King-Wu	4.532239 (0.0000)	-0.982669 (0.8371)	-0.311064 (0.6221)
Standardized Honda	4.746277 (0.0000)	-0.672978 (0.7495)	-3.106742 (0.9991)
Standardized King-Wu	4.746277 (0.0000)	-0.672978 (0.7495)	-2.799415 (0.9974)
Gourieroux, et al.	--	--	20.54119 (0.0000)

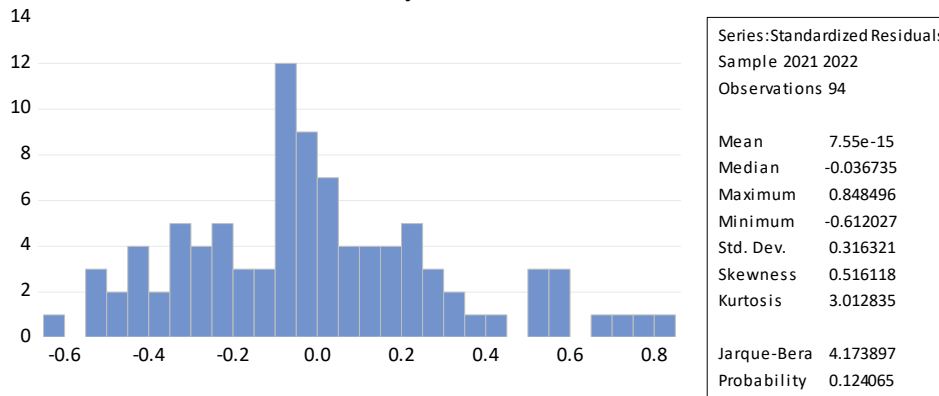
Source: Eviews Data Processing Results 12, 2024

Based on the LM (Lagrange Multiplier) test results in Table 6 above, shows that the Breusch-Pagan (BP) value of 0.0000 is less than 0.05. Thus, based on the decision-making provisions of the LM (Lagrange Multiplier) test, the Random Effect Model is selected. So it can be concluded that the Random Effect Model is the right panel data regression model in this research so a classical assumption test is needed.

4.4 Classical Assumption Test

4.4.1 Normality Test

The purpose of the normality test is to determine whether the research data is normally distributed or not. The results of the normality test in this research can be seen as follows:



Source: Eviews Data Processing Results 12, 2024

Figure 2. Normality Test Results

Based on the normality test results in Figure 2 above, shows that the probability value of 0.1240 is more than 0.05. Thus, based on the decision-making provisions in the normality test, it can be concluded that the data in this study are normally distributed.

4.4.2 Multicollinearity Test

The multicollinearity test aims to test for a correlation between the independent variables and the regression model. The multicollinearity test produces the following results:

Table 7. Multicollinearity Test Results

	X1 (ESG)	X2 (Capital Structure)	Z (Firm Size)
X1 (ESG)	1.000000	0.135495	-0.237636
X2 (Capital Structure)	0.135495	1.000000	-0.122901
Z (Firm Size)	-0.237636	-0.122901	1.000000

Source: Eviews Data Processing Results 12, 2024

The multicollinearity test results in Table 7 above, show that the correlation coefficient between independent variables is less than 0.85. Therefore, it can be said that multicollinearity between independent variables does not occur in the regression model used in this research based on the decision-making criteria in the multicollinearity test.

4.4.3 Heteroscedasticity Test

The purpose of the heteroscedasticity test is to determine whether there is an inequality of variance between the residues of different observations in the regression model. The Glejser test is used in the heteroscedasticity test in this research. In this Glejser Test, each variable is regressed on the absolute residual value which is used as the dependent variable (Mardiatmoko, 2020). The results of the heteroscedasticity test are as follows:

Table 8. Heteroscedasticity Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-26.87023	17.90461	-1.500744	0.1369
X1	-2.266420	1.293082	-1.752727	0.0831
X2	0.584586	0.678926	0.861045	0.3915
Z	24.52747	14.65625	1.673516	0.0977

Source: Eviews Data Processing Results 12, 2024

Table 8 above, displays the results of the heteroscedasticity test which shows that variable X1 (ESG) has a probability value of 0.0831, variable X2 (Capital Structure) has a probability value of 0.3915, and variable Z (Firm Size) has a probability value of 0.0977. Therefore, it can be said that the regression model in this research does not occur heteroscedasticity based on the decision-making provisions in the heteroscedasticity test. This happens because the probability value of the independent variable is greater than 0.05.

4.4.4 Autocorrelation Test

The purpose of the autocorrelation test is to determine whether there is a correlation of confounding errors in period t with errors in period t-1 correlated in the regression model. The autocorrelation test in this research provides the following results:

Table 9. Autocorrelation Test Results

Root MSE	0.169097	R-squared	0.204935
Mean dependent var	0.253338	Adjusted R-squared	0.178433
S.D. dependent var	0.190659	S.E. of regression	0.172814
Sum squared resid	2.687822	F-statistic	7.732784
Durbin-Watson stat	1.970376	Prob(F-statistic)	0.000119

Source: Eviews Data Processing Results 12, 2024

Based on the results of the autocorrelation test in Table 9 above, it can be seen that the total observations or observations are 94 subjects and there are 3 independent variables, the following results are obtained using the Durbin-Watson reference table with $\alpha = 5\%$, namely the DL value of 1.5991, the 4-DL value of 2.4009, the DU value of 1.7306, the 4-DU value of 2.2694, and the DW (Durbin Watson) value of 1.9703. Thus, $DU < DW < 4-DU = 1.7306 < 1.9703 < 2.2694$ is the value obtained. Because the Durbin-Watson Statistics value is between the DU and 4-DU values, it can be concluded that there are no symptoms of autocorrelation or pass the autocorrelation test.

4.5 Hypothesis Test

4.5.1 F Test

The F test is carried out to determine whether the estimated regression model is feasible or not. The results of the F test in this study are as follows:

Table 10. F Test Results

Root MSE	0.169097	R-squared	0.204935
Mean dependent var	0.253338	Adjusted R-squared	0.178433
S.D. dependent var	0.190659	S.E. of regression	0.172814
Sum squared resid	2.687822	F-statistic	7.732784
Durbin-Watson stat	1.970376	Prob(F-statistic)	0.000119

Source: Eviews Data Processing Results 12, 2024

Based on the results of the F test in Table 10 above, the F-statistic value is 7.73 with a probability value of 0.00 smaller than 0.05. Thus, variables X1 (ESG), X2 (Capital Structure), and Z (Firm Size) have an overall influence on Y (Firm Value), following the provisions of the F test decision-making. This also shows that the estimated regression model is feasible so that the t-test can be carried out.

4.5.2 T-test

The amount of contribution of each independent variable to the dependent variable is determined using the T-test. The T-test produces the following results:

Table 11. T Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	19.63491	4.239331	4.631606	0.0000
X1	-0.193389	0.185742	-1.041168	0.3006
X2	-0.294268	0.130673	-2.251939	0.0268
Z	-15.53451	3.494385	-4.445564	0.0000

Source: Eviews Data Processing Results 12, 2024

Based on the results of the t-test table 12 above, the variable X1 (ESG) produces a t-statistic of -1.04 with a probability value of 0.30 greater than 0.05. This shows that variable X1 (ESG) has no positive effect on Y (Firm Value), so hypothesis 1 of the research is not supported. The results of this research are in line with research conducted by Irine et al (2020), Mahfuzhah & Hanan (2022), and Arofah & Khomsiyah (2023), which shows that Environmental, Social, and Governance (ESG) has no positive effect on firm value. Variable X2 (Capital Structure) produces a t-statistic of -2.25 with a probability value of 0.02 smaller than 0.05. This shows that variable X2 (Capital Structure) has a negative effect on Y (Firm Value), so hypothesis 2 of the research is supported. The results of this research are in line with research conducted by Irawati et al (2022) and Dewi & Yani (2022) who found that capital structure has a negative effect on firm value. Variable Z (Firm Size) produces a t-statistic of -4.44 with a probability value of 0.00 smaller than 0.05. This shows that variable Z (Firm Size) has a negative effect on Y (Firm Value), so hypothesis 3 of the research is supported. The results of this research are in line with research conducted by Clarinda et al (2023) and Fadhilah et al (2021) which shows that firm size has a negative effect on firm value.

4.5.3 Determination Coefficient Test (R^2)

The coefficient of determination (R^2) test is carried out to determine how far the model's ability to explain the research dependent variable. The coefficient of determination (R^2) test in this research provides the following results:

Table 12. Test Results of the Coefficient of Determination (R^2)

Root MSE	0.169097	R-squared	0.204935
Mean dependent var	0.253338	Adjusted R-squared	0.178433
S.D. dependent var	0.190659	S.E. of regression	0.172814
Sum squared resid	2.687822	F-statistic	7.732784
Durbin-Watson stat	1.970376	Prob(F-statistic)	0.000119

Source: Eviews Data Processing Results 12, 2024

Based on Table 12 above, which presents the results of the coefficient of determination (R^2) test, it shows that the Adjusted R^2 value is 0.178433 or 17.8%. So, it can be concluded that the effect of variable Y (Firm Value) can be explained by the independent variables which include X1 (ESG), X2 (Capital Structure), and Z (Firm Size) by 17.8%, while the remaining 82.2% is influenced by other variables not included in this research model.

4.6 Moderated Regression Analysis (MRA) Test

The interaction test also called the moderated regression analysis (MRA) test, is used to test the relationship between the independent variable and the dependent variable in determining whether there are factors that strengthen or weaken these variables. The results of the moderation regression test in this research are as follows:

Table 13. Moderation Regression Test Results (MRA)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	20.70866	4.205044	4.924718	0.0000
X1	0.246815	0.755022	0.326898	0.7445
X2	-0.210708	0.133925	-1.573327	0.1192
Z	-18.18360	4.085338	-4.450941	0.0000
X1Z	1.241248	1.781389	0.696786	0.4878
X2Z	0.464399	0.168272	2.759807	0.0070

Source: Eviews Data Processing Results 12, 2024

Based on the results of the MRA test or moderation regression in Table 13 above, the X1Z variable (X1 Variable Interaction with Moderation) has a t-statistic value of 0.69 with a probability value of 0.48 greater than 0.05, it can be concluded that variable Z (Firm Size) is unable to moderate the effect of variable X1 on Y, so that hypothesis 4 of the research is not supported. The moderating variable Z (Firm Size) on the effect of X1 (ESG) on Y (Firm Value)

is a Predictor Variable, which means that this moderating variable only functions as a predictor/independent variable in the relationship model formed. The results of this research are in line with research conducted by Rumajar (2018), Junardi (2019), and Aurora L et al (2021). In the X2Z variable (X2 Variable Interaction with Moderation) has a t-statistic value of 2.75 with a probability value of 0.00 smaller than 0.05, it can be concluded that variable Z (Firm Size) can moderate the effect of variable X2 on Y, so that hypothesis 5 of the research is supported. The moderating variable Z (Firm Size) on the effect of X2 (Capital Structure) on Y (Firm Value) is a Quasi Moderation, which means that the variable that can moderate the relationship between the independent variable (Capital Structure) with the dependent variable (firm value) while also being a predictor variable. The results of this research are in line with research conducted by Santoso & Susilowati (2019), and Ayem & Ina (2023) which shows the results that firm size can moderate the effect of capital structure on firm value.

4.7 Discussion

4.7.1 Environmental, Social, Governance (ESG) on Firm Value

The results of this research indicate that ESG has no positive effect on firm value. This is because investors and stakeholders in developing countries are generally still fixated on the concept of investing that prioritizes financial aspects over non-financial aspects such as ESG disclosure. This is one of the reasons why ESG has little impact on changes in firm value (Prabawati & Rahmawati, 2022). The results of this research are not in line with signaling theory which explains that the delivery of positive information, for example, related to environmental, social, and governance by the firm, can bode well for investors and other partners who can trigger changes in stock trading volume and have a positive impact on firm value (Safriani & Utomo, 2020). The results of this research are in line with research conducted by Irine et al (2020), Mahfuzhah & Hanan (2022), and Arofah & Khomsiyah (2023), which shows that Environmental, Social, and Governance (ESG) do not positive affect firm value. So it can be concluded that the first hypothesis (H1) is not supported.

4.7.2 Capital Structure on Firm Value

The results of this research indicate that capital structure has a negative effect on firm value. This is because the firm's funding sources use more debt than equity, so this affects and can reduce the value of the firm. The potential for firm failure that leads to business bankruptcy is due to the increasing amount of debt in the firm. A good capital structure can improve the balance of risk as well as return and increase stock prices (Nuswandari et al., 2023). The results of this research are in line with signaling theory which states that the capital structure associated with debt utilization is a signal to investors that the firm's performance and future opportunities will be favorable which can affect firm value. The results of this research are in line with research conducted by Irawati et al (2022) and Dewi & Yani (2022) which found that capital structure has a negative effect on firm value. So it can be concluded that the second hypothesis (H2) is supported.

4.7.3 Firm Size on Firm Value

The results of this research indicate that firm size has a negative effect on firm value. This is because firms with a large number of assets will find it difficult to utilize assets effectively, thus causing hoarding of assets. After all, the turnover of the firm's assets will be longer. A decrease in the value of a firm has a less significant effect on firm performance. With the decrease in the value of the firm, it will affect the perception of investors to invest in the firm. The results of this research are in line with signaling theory where the size of the firm that is too large as seen from the firm's total assets is seen as a negative signal by investors and potential investors because the large total assets indicate hoarding of large amounts of assets, this can indicate less effect and efficient management in managing its asset turnover. The results of this research are in line with research conducted by Clarinda et al (2023) and Fadhilah et al (2021) which shows that firm size negative affects firm value. So it can be concluded that the third hypothesis (H3) is supported.

4.7.4 Environmental, Social, Governance (ESG) on Firm Value with Moderating Variable Firm Size

The results of this research indicate that firm size is not able to moderate the influence of ESG on firm value. This implies that the size of a firm does not guarantee that the firm will make better and more extensive ESG disclosures or vice versa. This can happen because companies not

only use their assets for ESG disclosure but are also used to make investments, pay debts, and purchase or maintain fixed assets in their operational activities. The results of this research are not in line with signaling theory, which is that the larger the size of a firm with the firm displaying ESG disclosures can provide a positive signal to indicate the sustainability of the firm that can attract investors to invest. The results of this research are in line with research conducted by (Rumajar, 2018), (Junardi, 2019), and (Aurora L et al., 2021). So it can be concluded that the fourth hypothesis (H4) is not supported.

4.7.5 Capital Structure on Firm Value with Moderating Variable Firm Size

The test result in this research shows that firm size includes quasi-moderation, which means the variable that moderates the relationship between the independent variable (capital structure) and the dependent variable (firm value) which is also a predictor variable. The result of this research shows that firm size can moderate the effect of capital structure on firm value. This implies that the better the capital structure of the firm, the easier it is for the firm to obtain funding as capital to advance its business so the greater the size of the firm. Both things are positive signals for the firm because they can attract investor interest in the firm so that the firm's value can increase. The results of this research are in line with signaling theory, namely the greater size of a firm accompanied by a capital structure associated with debt utilization will send a positive signal to investors so that it will increase the share price and the firm's value will also increase. The results of this research are in line with research conducted by Santoso & Susilowati (2019) and Ayem & Ina (2023) which shows the results that firm size can moderate the effect of capital structure on firm value. So it can be concluded that the fifth hypothesis (H5) is supported.

5. CONCLUSION

Based on the data analysis that has been done, the conclusions are obtained, namely Environmental, Social, and Governance (ESG) has no positive effect on firm value, capital structure, and firm size has a negative effect on firm value, firm size is unable to moderate the effect of Environmental, Social, and Governance (ESG) on firm value and firm size can moderate the effect of capital structure on firm value. The limitation of this research is that the sample studied is only in the mining company sector, during the two-year research period. So, the suggestion for further research is to expand the subject of observation by involving other types of companies and expanding the observation year so that the generalization of research can be wider. Future research can also add independent variables that have not been tested in this research to expand the coefficient of determination. This research can make a theoretical contribution to the field of accounting related to Environmental, Social, And Governance (ESG), capital structure, firm value, and firm size. This research can also be used as a consideration in making strategies to increase firm value by involving external aspects of the firm, namely ESG, and internal aspects of the firm, namely capital structure.

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Biodata Penulis

Priska Wulandari, lahir di Kota Tarakan pada tanggal 27 Mei 2002. Latar belakang pendidikan penulis, pada tahun 2014 lulus SD Negeri 027 Tarakan, pada tahun 2017 lulus SMP Negeri 3 Tarakan, pada tahun 2020 lulus SMK Negeri 1 Tarakan, dan selanjutnya menempuh S1 Akuntansi pada tahun 2020 di Universitas Islam Negeri Maulana Malik Ibrahim Malang.