

**AFFILIATION:**

1,2,3,4,5Institut Bisnis dan Teknologi Pelita Indonesia

**\*CORRESPONDENCE :**

yenny.wati@lecturer.pelitaindonesia.ac.id

**THIS ARTICLE IS AVAILABLE IN:** <https://e-journal.umc.ac.id/index.php/JPK>

**DOI:** [10.32534/jpk.v12i1.6823](https://doi.org/10.32534/jpk.v12i1.6823)

**CITATION:**

Wati, Y., Junaedi, A. T., Panjaitan, H. P. ., Nyoto, N., & Purwati, A. A. . (2025). ESG and Capital Structure: A Moderation Analysis of Firm Size. *Jurnal Proaksi*, 12(1), 18–34. <https://doi.org/10.32534/jpk.v12i1.6823>

**ARTICLE HISTORY:****Received:**

19 December 2024

**Reviewed:**

8 January 2025

**Revised:**

16 January 2025

**Accepted:**

12 February 2025

## ESG and Capital Structure: A Moderation Analysis of Firm Size

Yenny Wati<sup>1\*</sup>, Achmad Tavip Junaedi<sup>2</sup>, Harry Patuan Panjaitan<sup>3</sup>, Nyoto<sup>4</sup>, Astri Ayu Purwati<sup>5</sup>

**Abstract**

**Main Purpose** - This study aims to determine the effect of ESG practices on a firm's capital structure, using firm size as a moderating variable.

**Method** - This study utilizes moderated regression analysis conducted with Eviews. The research sample included businesses listed on the Indonesia Stock Exchange's IDXESGL index between 2020 and 2023.

**Main Findings** - Companies with higher ESG scores typically have lower debt-to-asset and debt-to-equity ratios. Firm size can influence the relationship between ESG and capital structure. The relationship between ESG and capital structure has piqued the interest of investors and other stakeholders that can influence corporate decisions regarding debt and equity composition.

**Theory and Practical Implications** - Companies increasingly recognize that sustainable business practices are not only ethically responsible but also financially profitable. Research can provide more precise policy suggestions to assist businesses in embracing strong ESG practices and enhancing their access to funding.

**Novelty** - This study examines companies listed in Indonesia's ESG index, making the research findings more relevant to the local context, with firm size as a moderating variable.

**Keywords:** ESG, Debt-to-Asset Ratio, Debt-to-Equity Ratio, Firm Size, Indonesian ESG Index

---

**Abstrak**

**Tujuan Utama** - Studi ini ingin melihat seberapa besar efek praktik ESG terhadap struktur modal perusahaan, dengan ukuran perusahaan sebagai variabel moderasi.

**Metode** - Studi ini menerapkan analisis regresi moderasi dengan Eviews. Sampel penelitian diambil dari perusahaan yang terdaftar dalam indeks IDXESGL di Bursa Efek Indonesia selama periode 2020-2023.

**Temuan Utama** - Perusahaan dengan skor ESG yang lebih tinggi cenderung memiliki debt-to-asset ratio dan debt-to-equity ratio yang lebih rendah. Ukuran perusahaan dapat memoderasi hubungan antara ESG dan struktur modal. Hubungan antara ESG dan struktur modal, telah menjadi topik yang semakin menarik perhatian para investor dan pemangku kepentingan lainnya dapat mempengaruhi keputusan perusahaan dalam menentukan komposisi utang dan ekuitas.

**Implikasi Teori dan Kebijakan** - Perusahaan semakin menyadari bahwa praktik bisnis berkelanjutan tidak hanya sebatas tanggung jawab sosial, melainkan juga merupakan investasi yang menguntungkan secara finansial. Penelitian dapat memberikan rekomendasi kebijakan yang lebih spesifik untuk mendorong perusahaan menerapkan praktik ESG yang baik dan meningkatkan akses perusahaan ke pendanaan.

**Kebaruan Penelitian** - Penelitian ini menganalisis perusahaan-perusahaan yang terdaftar dalam indeks ESG di Indonesia, sehingga hasil penelitian lebih relevan dengan konteks lokal dengan ukuran perusahaan sebagai variabel moderasi.

**Kata Kunci:** ESG, Rasio Utang terhadap Aset, Rasio Utang terhadap Ekuitas, Ukuran Perusahaan, Indeks ESG Indonesia.

## INTRODUCTION

Many Indonesian companies, particularly those in the expansion phase, employ more debt to fund new projects. This is because debt is typically easier and faster to obtain than own capital (Li et al., 2024). High debt levels can increase a company's financial risks, such as difficulty paying interest and principal, as well as exposure to interest rate swings (Zhao & Zhang, 2024). Capital structure is an important factor in managing firm finances (Feldhütter & Pedersen, 2024). A balanced capital structure can assist a corporation in lowering its financial risk (Gherghina, 2024). A robust capital structure gives organizations more flexibility in future investment and funding options (Asimakopoulos et al., 2023). A healthy and transparent capital structure can pique the interest of investors, whether institutional or individual (Khan et al., 2024). Investors are more interested in organizations with a strong and sustainable capital structure (Zahid et al., 2024). A suitable capital structure facilitates the company's growth (Amosh et al., 2024).

If a company lacks a strong capital structure, it will face several risks and obstacles that impede its growth and sustainability (Adeneye & Kammoun, 2022). An uneven capital structure might make it harder for a corporation to satisfy its short-term obligations, disrupting liquidity (Maaloul et al., 2023). Companies that lack a sufficient capital structure may struggle to fund operational activities and growth initiatives (Radhakrishna & Lappay, 2024). An unfavorable capital structure might substantially affect the business (Amosh et al., 2024). As a result, every company must actively manage its capital structure to ensure business survival and growth (Adeneye et al., 2023). According to capital structure theory, a company's financial policy sets its capital structure (debt and equity mix) to maximize its value (Abdi et al., 2022). A company's best mix of debt and equity helps boost its share price (Bahadori et al., 2021). At any given time, a company's management establishes a target capital structure, which may be the best, albeit the objective may alter over time (Lin et al., 2021). A variety of factors influence capital structure decisions for companies.

Various factors, including ESG practices, might influence the ideal capital structure. ESG is a framework businesses use to assess the environmental, social, and governance effects of their activities (Gregory et al., 2021). ESG enables enterprises to identify and manage environmental, social, and governance risks (Maji & Lohia, 2023). Businesses can improve their stability and sustainability by anticipating and managing these threats (Lin et al., 2021; Wati et al., 2024). Several cases in Indonesia have demonstrated that several firms have failed to comply completely with their social and environmental duties. One of the most well-known cases involves Freeport Indonesia. PT Freeport Indonesia, one of Papua's largest mining firms, dumps company waste into the surrounding environment without consent from communities or the local authorities. PT Freeport Indonesia's transgressions resulted in governmental losses of USD12.95 billion. Another incidence occurred in 2023, according to the Ministry of Environment and Forestry, when PT XLI's activities were halted owing to environmental contamination caused by metal smelting without a permit. This action has also damaged the surrounding environment, as evidenced by in-situ measurements of leachate from B3 trash dumping in rice fields with a pH of only 0.92 (extremely acidic).

To address this, the Indonesia Stock Exchange (IDX) will introduce a new index named IDX ESG Leaders (ESGL) in 2020. This index assesses the share price performance of companies with high Environmental, Social, and Governance (ESG) ratings that are not embroiled in controversy. This index's constituents also have a high level of transaction liquidity and outstanding financial performance, which boosts firm value (Priandhana, 2022). The establishment of this index demonstrates IDX's dedication to promoting long-term investment in Indonesia. Several Indonesian corporations have made a strong commitment to ESG practices. PT Unilever Indonesia Tbk has developed several programs aimed at reducing environmental impact and improving social welfare. PT Astra International Tbk has several sustainability programs, including environmental, social, and

corporate governance initiatives. These companies have shown a significant commitment to ESG principles in their operations (Priandhana, 2022). This makes them an intriguing research subject for determining the relationship between ESG practices and business capital structure. By evaluating the companies in this index, researchers can uncover best practices in ESG implementation and extend the findings to other firms.

In recent years, there has been a growing interest in researching the impact of Environmental, Social, and Governance (ESG) practices on company financial decisions, particularly capital structure. Previous research has yielded inconsistent results on the association between ESG practices and debt-to-asset and debt-to-equity ratios. Several studies suggest a link between good ESG practices and a conservative capital structure, with high ESG scores indicating lower debt ratios (Hampl & Linnertová, 2024; Mohammad et al., 2023; Yang et al., 2024). This is explained by the decreased risk perception of companies that follow solid ESG policies, which increases their access to low-cost finance sources (Jafar et al., 2024; Ramirez et al., 2022; Zhu et al., 2024). Previous studies show that the link between environmental, social, and governance (ESG) performance and capital structure is inconsistent. According to Adeneye et al. (2023) and Radhakrishna & Lappay (2024), companies with strong ESG performance may find it simpler to secure funding at reduced rates, thereby influencing their capital structure. In contrast, Wulandari & Istiqomah (2024) demonstrate that ESG performance has no substantial impact on capital structure. Uyar et al. (2024) investigated capital structure and corporate social responsibility, their study examined capital structure by including firm size as a proxy for the structure of assets owned by the company as a moderating variable and discovered that company size moderated negatively.

This study proves important for a variety of reasons. First, as worldwide awareness of sustainability issues has grown, corporations have been encouraged to improve their ESG policies. As a result, knowing how ESG practices affect business financial decisions, such as capital structure, is becoming increasingly important for investors, regulators, and stakeholders. Second, the function of firm size as a moderating element in the relationship between ESG practices and capital structure has not received much attention, even though firm size can influence a company's access to funding sources and investor preferences. This study is unique in that it investigates the impact of ESG practices on capital structure in a more specific context, namely by taking firm size into account as a moderating component. This will provide a more nuanced picture of how the impact of ESG policies varies with firm size.

While previous research has explored the effect of ESG on capital structure, there has been less focus on directly testing the moderating role of firm size. Larger enterprises find it easier to secure loans than small businesses (Bagh et al., 2024). As a result, receiving a loan will allow the company to grow even more effectively. Larger companies typically have greater access to capital markets and can select more optimal financing structures (Aksoy, 2022). This study will enhance the literature by examining how ESG factors influence capital structure in companies listed on the IDXESGL index in Indonesia, while also considering firm size as a moderating variable. These findings will also have practical ramifications for businesses and policymakers. This study is important because more investors and stakeholders care about environmental, social, and governance (ESG) issues. ESG is rapidly being integrated into organizations' business plans, rather than only as a supplementary activity. Understanding the impact of ESG on capital structure allows organizations to make better funding and business strategy decisions.

## LITERATURE REVIEW

### Agency Theory

Agency theory might assist with understanding the interaction between owners (shareholders) and managers (Alhajjeah & Besim, 2024). Owners aim to maximize profits, however managers may have alternative objectives (Adeneye & Kammoun, 2022). ESG can be viewed as a

method that reduces conflicts of interest between both parties (Radhakrishna & Lappay, 2024). Agency theory offers a valuable paradigm for analyzing the interaction between ESG and company capital structure (Adeneye et al., 2023). Good ESG procedures can help owners and management avoid conflicts of interest, promote responsibility, and decrease risks. This, in turn, can influence firm decisions on capital structure (Zahid et al., 2024). IDXESGL index firms that follow good ESG practices tend to have more conservative capital structures, as seen by lower debt-to-asset ratios and debt-to-equity ratios. This theory can complement signaling theory by explaining why corporate managers are motivated to disclose ESG information. Managers with aligned interests to shareholders are more driven to disclose positive ESG information, enhancing company value and reputation.

### Signal Theory

The signal theory explains how parties who have more information (in this case companies) can send signals to parties who have less information (investors) to reduce information asymmetry (Abdi et al., 2022). This signal can be an action or disclosure of reliable information (Li et al., 2024). According to signal theory, organizations that apply good ESG practices can send favorable signals to investors, indicating that they are properly managed and have promising prospects (Abdi et al., 2022; Maaloul et al., 2023). Companies that voluntarily disclose detailed and comprehensive ESG information signal that the company has good ESG performance (Amosh et al., 2024). This indicates that the company has managed environmental, social, and governance risks well. Consistent ESG disclosure shows that the company is serious about implementing sustainability principles (Singh & Bathla, 2023). Open ESG disclosure shows that the company has good corporate governance. Investors, as signal recipients, will interpret these ESG disclosures and make investment decisions based on these interpretations (Lin et al., 2021).

Investors who have a preference for sustainable investment tend to give a higher assessment to companies that have good ESG performance (Sun et al., 2022). Good ESG disclosure can help reduce the perception of this risk in the eyes of investors, allowing companies to obtain debt financing at lower costs (Bahadori et al., 2021). Companies that are members of the ESG index tend to be more active in disclosing ESG information (Priandhana, 2022). This indicates that these companies are trying to send a positive signal to investors that they have good ESG performance, long-term commitment, and good corporate governance. Better ESG disclosure can provide positive signals to investors, allowing companies to obtain funding at lower costs (Lemma et al., 2022). This is reflected in a lower debt-to-asset ratio and debt-to-equity ratio. Larger companies, which generally have more adequate resources, tend to be more effective in utilizing ESG disclosure to access funding at lower costs (Adeneye et al., 2023). The size of a firm can significantly shape the impact of ESG disclosure on its capital structure (Abdi et al., 2022). Large companies that disclose ESG information are more likely to gain investor trust than small companies (Aksoy, 2022).

### Stakeholder Theory

ESG issues are complex and multidimensional. Stakeholder theory helps researchers to view ESG issues from various perspectives and understand the interactions between various stakeholders. Stakeholder theory highlights the relevance of several stakeholders in a corporation (Adeneye et al., 2023). ESG embodies a company's commitment to fulfilling the expectations of its stakeholders, including investors, employees, customers, and society at large (Radhakrishna & Lappay, 2024). Companies in the ESG index must consider the interests of all stakeholders (Adeneye & Kammoun, 2022). Companies that apply ESG principles can improve their reputation and develop stronger ties with stakeholders (Abdi et al., 2022; Ahmad et al., 2021).

Companies in the ESG index have responded to the demands of various stakeholders, including investors, customers, employees, and society, to implement sustainable business practices (Priandhana, 2022). ESG disclosure is a form of company accountability to stakeholders (Gregory et

al., 2021). Companies with better ESG performance tend to have better relationships with stakeholders (Feldhütter & Pedersen, 2024). These good relationships can provide long-term benefits for the company, such as improved reputation, customer loyalty, and employee retention (Ahmad et al., 2021). The capital structure of companies included in the ESG index reflects a balance between the interests of various stakeholders (Priandhana, 2022). Investors who care about ESG tend to support companies with good ESG performance, influencing company decisions in determining capital structure (Radhakrishna & Lappay, 2024).

### **Capital Structure**

Capital structure is an important strategic decision for a company. By understanding the two main ratios, namely the debt-to-asset ratio and the debt-to-equity ratio, companies can make better decisions regarding the composition of their long-term funding (Adeneye et al., 2023). These two ratios provide different perspectives on capital structure. The debt-to-asset ratio provides an overall picture of how much a company relies on debt to finance its assets, while the debt-to-equity ratio focuses more on the comparison between debt and equity (Adeneye & Kammoun, 2022). Researchers can acquire a better grasp of the company's capital structure by combining both ratios. The higher the debt-to-asset ratio, the bigger the share of assets financed with debt, indicating that the company is more leveraged (Maji & Lohia, 2023). The higher the debt-to-equity ratio, the larger the company's financial risk, as it relies more on debt to fund operations (Khan et al., 2024).

### **Firm Size**

Larger companies typically have more resources to measure and disclose their ESG performance (Bagh et al., 2024). However, many mid-sized businesses have recognized the value of ESG and are beginning to embrace sustainable practices (Aksoy, 2022). Large institutional investors, such as pension and asset management funds, are increasingly considering ESG in their investing decisions (Ahmad et al., 2021). Investor pressure is driving firms of all sizes to enhance their ESG performance (Abdi et al., 2022). The Indonesian government has enacted various laws to encourage both large and small enterprises to adopt ESG principles (Priandhana, 2022). Companies in particular industries, such as banking, infrastructure, and consumer, are larger and more readily meet ESG standards.

Companies at various phases of development will have varied objectives for implementing ESG practices (Maaloul et al., 2023). Companies with better access to technology will have an easier time implementing sophisticated ESG practices (Alhajjeah & Besim, 2024). The IDX ESG Leaders Index has successfully accommodated enterprises of all sizes, demonstrating that ESG commitment is becoming more widespread in Indonesia's capital market (Priandhana, 2022). The diversity of firm sizes in this index has a significant impact on the development of sustainable capital markets in Indonesia. Variations in firm size in the IDX ESG Leaders index provide a more comprehensive view of the evolution of ESG practices in Indonesia.

### **ESG (Environmental, Social, and Governance)**

ESG companies operate by environmental, social, and governance standards (Priandhana, 2022). These companies consider not only financial earnings but also the social and environmental consequences of their operations (Khan et al., 2024). Indonesia, an archipelagic country with great biodiversity, is increasingly aware of the necessity of environmental protection. The worldwide trend toward sustainable business is gaining traction, and Indonesian companies must adapt to be competitive (Priandhana, 2022). Investors are becoming more interested in companies with strong ESG performance, which increases the company's funding opportunities (Maji & Lohia, 2023). The Indonesian government has recently begun to publish legislation encouraging corporations to adopt ESG concepts (Priandhana, 2022). ESG enterprises can pique the interest of investors concerned

about sustainability (Asimakopoulos et al., 2023). Effective ESG policies can boost a company's reputation and public trust (Zahid et al., 2024).

IDX ESG Leaders, or IDXESGL, is an index created by the Indonesia Stock Exchange (IDX) that includes stocks of companies with strong environmental, social, and governance (ESG) performance (Priandhana, 2022). This index serves as a benchmark for investors looking for companies that prioritize both profitability and sustainability (Lemma et al., 2022). The future of ESG enterprises in Indonesia is highly promising. With the assistance of governments, investors, and society, more and more businesses will adopt ESG practices (Zhao & Zhang, 2024). This may help ensure sustainable development and enhance the quality of life for Indonesians. ESG enterprises in Indonesia play a significant role in creating a brighter future. Companies that implement ESG practices not only contribute to the environment and society but can also boost their long-term financial performance (Bahadori et al., 2021).

### Hypothesis Development

#### ESG (Environmental, Social, and Governance) and Capital Structure

ESG (Environmental, Social, and Governance) and capital structure are interconnected concepts in modern companies (Adeneye & Kammoun, 2022; Li et al., 2024). Capital structure, which is commonly quantified using ratios like the debt-to-asset ratio, is heavily influenced by a variety of factors, including a company's ESG practices (Adeneye et al., 2023; Maaloul et al., 2023). Companies with strong ESG performance are often regarded as having lower risk by investors and creditors (Lin et al., 2021; Singh & Bathla, 2023). This enables businesses to acquire capital at a reduced cost and potentially with a more flexible loan structure (Amosh et al., 2024; Gherghina, 2024). Companies with poor ESG performance, on the other hand, may struggle to acquire loans or face higher interest rates (Bahadori et al., 2021; Lemma et al., 2022). There is a negative correlation between ESG scores and the debt-to-asset ratio (Asimakopoulos et al., 2023; Khan et al., 2024). This implies that the better a company's ESG score, the lower its debt-to-asset ratio (Alhajjeah & Besim, 2024; Maji & Lohia, 2023).

This is consistent with agency theory and signaling theory (Maaloul et al., 2023; Zahid et al., 2024). Companies with good ESG are deemed more stable and sustainable, resulting in decreased credit risk (Feldhütter & Pedersen, 2024). ESG investors are increasingly looking for companies that follow sustainable business practices (Gregory et al., 2021; Zhao & Zhang, 2024). Companies with strong ESG practices can often obtain funding at a lesser cost (Sun et al., 2022). Companies with strong ESG practices may be able to obtain more forgiving financial covenants (Gjergji et al., 2021; Lutfiani & Hidayah, 2022; Ramirez et al., 2022; Yang et al., 2024). This is also consistent with stakeholder theory as good ESG practices show that firms consider the interests of all stakeholders, not just shareholders (Hampl & Linnertová, 2024; La Rosa & Bernini, 2022; Tanjung, 2023; Zhu et al., 2024). This can improve the company's reputation and reduce reputational risk, impacting capital structure decisions (Atif & Ali, 2021; Jovita, 2023; Mohammad et al., 2023). There is a negative correlation between ESG scores and the debt-to-equity ratio (Jafar et al., 2024; Radhakrishna & Lappay, 2024). This implies that the greater a company's ESG score, the lower its debt-to-equity ratio (Khan et al., 2024; Lin et al., 2021).

H1: ESG (Environmental, Social, and Governance) has a significant negative impact on capital structure (debt-to-asset ratio and debt-to-equity ratio).

#### ESG (Environmental, Social, and Governance), Firm Size, and Capital Structure

Large companies typically have greater access to a variety of finance options, including debt and equity (Aksoy, 2022). This gives them greater flexibility in controlling their capital structure (Ahmad et al., 2021). Large organizations have stronger company diversity, resulting in decreased business risk (Abdi et al., 2022). This permits them to incur additional debt without raising financial

risk (Aksoy, 2022). Large organizations typically have reduced transaction costs for accessing capital markets, allowing them to more easily modify their capital structure (Bagh et al., 2024). The correlation between ESG (Environmental, Social, and Governance) and capital structure can be moderated by firm size (Abdi et al., 2022; Ahmad et al., 2021; Aksoy, 2022; Bagh et al., 2024). Both agency theory and signal theory see ESG activities as signals conveyed by firms to third parties. These signals can reduce knowledge asymmetry between corporations and other parties, enhancing trust and lowering transaction costs (Gartia & Panda, 2024). Stakeholder theory highlights the value of stakeholders in a business. Good ESG practices demonstrate that a corporation considers the interests of all stakeholders, including investors (Abdi et al., 2022; Ahmad et al., 2021). This is consistent with agency theory, which emphasizes the interests of shareholders.

Large enterprises with strong ESG performance might use their advantages in accessing financial markets to optimize their capital structure (Ahmad et al., 2021). Small businesses, on the other hand, must focus on improving their ESG performance to attract investors and gain access to cheaper capital (Aksoy, 2022). Investors can utilize firm size to assess investment risk in companies that have strong ESG performance (Aksoy, 2022). Policies that support ESG practices and allow small businesses access to finance markets can foster long-term economic growth (Bagh et al., 2024). Larger companies typically have more resources to apply ESG principles (Aksoy, 2022). ESG can be viewed as a positive indication to stakeholders that the company is managed effectively and responsibly (Bagh et al., 2024).

H2: Firm size can moderate the relationship between ESG (Environmental, Social, and Governance) and capital structure (debt-to-asset ratio and debt-to-equity ratio).

## RESEARCH METHODS

This study capitalizes on secondary data from 2020 to 2023, employing a purposive sampling method. The focus is on firms not only listed on the Indonesia Stock Exchange (IDX) but also included in the IDXESGL index, which signifies their adherence to environmental, social, and governance criteria. By analyzing four years of data across a sample of 20 companies, the research generates a comprehensive dataset comprising 80 distinct observations, enabling a thorough examination of the selected firms' performance and characteristics.

**Table 1. Research Sampling**

No	Criteria	Amount
1	Corporations traded on IDX from 2020 to 2023	903
2	Companies that were excluded from the IDXESGL index for the 2020-2023 period	(873)
3	Companies that have not been in the IDXESGL index for four consecutive periods	(10)
4	Companies with unavailable or incomplete financial data for the 2020-2023 period	(0)
	The number of companies that match the criteria for research samples	20
	Number of research years (2020–2023)	4
	Number of yearly reports handled (20 times four years)	80

Source: Processed Data (2024)

This study employs moderated regression analysis with Eviews, a multiple linear regression program designed to assess the impact of moderating variables on the connection between the independent and dependent variables. Moderated regression analysis, often known as this interaction test, includes an interaction element in the regression equation, which is the

multiplication of two or more independent variables. The hypothesis testing equation model is shown below.

$$CPS = \alpha + \beta_1 ESG \dots\dots\dots (1)$$

$$CPS = \alpha + \beta_1 ESG + \beta_2 FMS + \beta_3 ESG * FMS \dots\dots\dots (2)$$

Descriptive statistics describe the properties of the obtained data. In this study, descriptive statistics will provide a general description of the data distribution, mean, and spread size (standard deviation), including the lowest and greatest values (Wati et al., 2024). The data was analyzed using moderated regression using Eviews, therefore it must be evaluated to ensure that it is free of classical assumption flaws. Before performing the t-test, F-test, and coefficient of determination, these classical assumptions are verified to ensure normality, multicollinearity, autocorrelation, and heteroscedasticity.

Normality, multicollinearity, autocorrelation, and heteroscedasticity tests are common assumption tests in regression to assure model accuracy (Wati et al., 2024). The normality test examines the distribution of residuals, the multicollinearity test investigates the interaction between independent variables, and the heteroscedasticity test examines the equality of residual variances. A proper and ideal regression model should not exhibit symptoms of multicollinearity or autocorrelation. These four criteria are critical for ensuring a valid and accurate regression model. The t-test determines the impact of individual independent variables on the dependent variable, whereas the F-test evaluates the entire regression model. Both utilize a significance level of 5%. The coefficient of determination (R-squared) represents the fraction of variation explained by the model, with a value ranging from 0 to 1.

**Table 2. Variable Explanation**

Variables	Variables Name	Symbols	Measurements
Dependent	Capital Structure (Adeneye et al., 2023)	CPS	Debt-to-asset ratio = total debt/total assets
			Debt-to-equity ratio = total debt/equity
Moderating	Firm Size (Aksoy, 2022)	FMS	Ln (Total Assets)
Independent	Environmental, Social, and Governance (Priandhana, 2022)	ESG	The ESG category is as follows; a risk score of 0-10 is classed as negligible (category 5); a risk score of 10-20 is classified as low (category 4); a risk score of 20-30 is rated as medium (category 3); a risk score of 30-40 is classified as high (category 2); and a risk score more than 40 is classified as severe (category 1).

## RESULTS

According to Table 3, ESG performance provides valuable insight into a company's effectiveness in integrating environmental, social, and governance factors into its operations. A score of 3 reflects promising efforts with low impact and minimal risks, while a maximum score of 4 demonstrates a commitment to modest impact and risk management. With an average score of 3.14, it suggests that sample companies are actively engaged in good management practices and implementing effective risk mitigation strategies. This is a positive indicator of their progress towards sustainability and responsible governance.

The lowest capital structure (debt-to-asset ratio) is 0.169, indicating that the company's debt is 0.16 times larger than its assets. The greatest capital structure (debt-to-asset ratio) is 0.783,



indicating that the company owes 0.78 times more than it owns. On average, each sample firm has a capital structure (debt-to-asset ratio) of 0.497, indicating that each sample company's debt is 0.49 times bigger than its assets, with a deviation from the average of 0.138.

The lowest capital structure (debt-to-equity ratio) is 0.126, indicating that the company's debt is 0.12 times its equity. The capital structure (debt-to-equity ratio) is the highest, at 15.217, indicating that the company's debt exceeds its equity by 15.21 times. On average, each sample firm has a capital structure (debt-to-equity ratio) of 2.079, indicating that each sample company's debt is 2.07 times bigger than its equity, a deviation from the mean of 2.817.

Based on descriptive research, the firm size variable, represented by total company assets, has a mean of 30.757. This suggests that, on average, companies in Indonesia's ESG index have substantial asset scales. The minimal total asset value of 23.674 suggests that this research sample includes companies with smaller asset scales. On the other side, the maximum value of 33.473 indicates that the organization has a very significant asset size. The broad range of total asset values among ESG index members is due to significant differences in the firm's size. The standard deviation value of 2.086 indicates that the majority of the companies in the sample have total assets that are between 2.086 and the mean (30.757).

**Table 3. Descriptive Statistical Test Results**

Variable	N	Min	Max	Mean	Standard Deviation
Environmental, social, and governance	80	3	4	3.14	0.42
Debt-to-asset ratio	80	0.169	0.783	0.497	0.138
Debt-to-equity ratio	80	0.126	15.217	2.079	2.817
Firm size	80	23.674	33.473	30.757	2.086

Source: Data processed by EvIEWS, 2024

According to Table 4, the normality test using the Kolmogorov-Smirnov test reveals that the data has a significance level of 0.097, indicating that the number is greater than 0.05. This test compares the distribution of research sample data to the theoretical normal distribution. If the two distributions are not statistically different, the researcher might conclude that the research data follows a normal distribution. Therefore, based on the test criteria, we may conclude that the data in this study is normally distributed.

**Table 4. Kolmogorov-Smirnov Test**

N	Sig probability (Jarque-Bera)	Standard	Description
80	0.097119	>0.05	Normal data

Source: Data processed by EvIEWS, 2024

To determine if a regression model is free of multicollinearity, check if the tolerance value < 0.90 means the data is protected from multicollinearity. According to Table 5, there is no multicollinearity between variables because none of the tolerance values exceeds 0.90. Based on the test criteria, this study's independent variables do not exhibit multicollinearity.

**Table 5. Multicollinearity Test Results**

	ESG	DAR	DER	FMS
ESG	1	0.246337	0.171258	0.263461
DAR	0.246327	1	0.147842	0.253437
DER	0.161258	0.146861	1	0.176483
FMS	0.173126	0.253417	0.167352	1

Source: Data processed by EvIEWS, 2024

One of the key assumptions in linear regression is the lack of autocorrelation. If there is autocorrelation, statistical calculations like standard errors of regression coefficients will be distorted, leading to incorrect conclusions. According to Table 6, the Durbin-Watson (DW) value is 2.113, and when compared to the DW t-table value for 80 observations and two independent variables at a significance level of 0.05, the DL value is 1.58 and the DU value is 1.68. As a result, the regression data does not show any autocorrelation. These findings show that the regression model used by the researchers is fairly effective in describing the relationship between ESG, firm size, and capital structure.

**Table 6. Autocorrelation Test Results**

N	Durbin-Watson stat	Description
80	2.113749	Autocorrelation does not exist

Source: Data processed by Eviews, 2024

Heteroscedasticity occurs when the variance of the residuals is not constant along the values of the independent variables. In other words, the residual distribution is uneven. If there is a significant correlation, we can conclude that there is heteroscedasticity. Based on the test results in Table 7, all independent variables have a significance level greater than 0.05. This means that the regression model is free from heteroscedasticity. This is a beneficial finding because it satisfies one of the basic requirements of linear regression. These findings show that the regression model used by the researchers is effective in explaining data changes, and the heteroscedasticity condition is met. Researchers can have greater confidence in the model's predicted regression coefficients since their standard errors are not affected by heteroscedasticity.

**Table 7. Heteroscedasticity Test Results**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ESG	1.426562	1.123161	0.578411	0.5482
DAR	1.872871	1.533722	0.424786	0.6723
DER	1.231823	1.532651	0.681936	0.5884
FMS	1.185478	1.344675	0.734513	0.5316

Probability Chi-Square 0.5967 > 0.05

Source: Data processed by Eviews, 2024

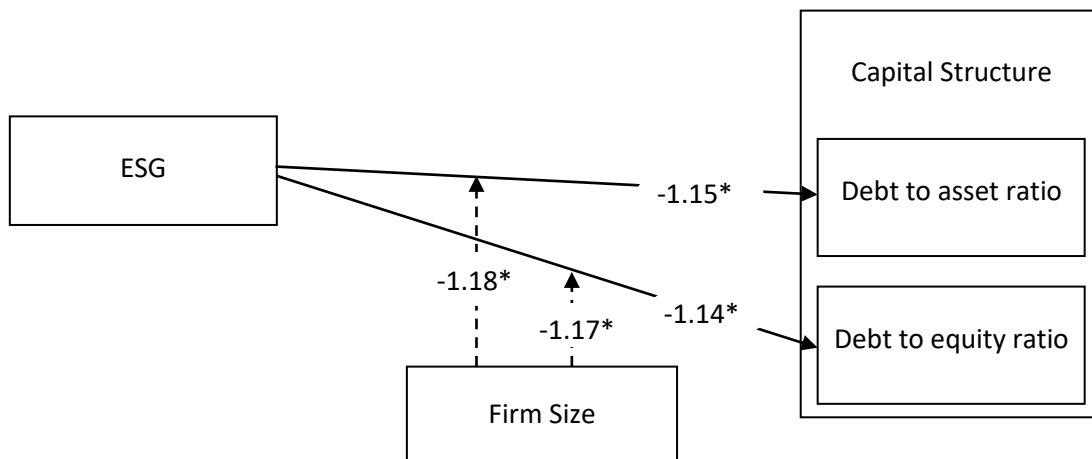
The Adjusted R<sup>2</sup> value for capital structure is 0.892, which implies that a significant 89.2% of the variability in capital structure can be attributed to environmental, social, and governance factors. This leaves a smaller portion of 10.8% explained by other variables not incorporated within the model. The F-test results in Table 8 reveal an F count of 4.957, with a significance level of 0.001. This demonstrates that the independent variables, namely environmental, social, and governance, are adequate, as the significance value is less than 0.05 or 5%. The R<sup>2</sup> value for the direct effect was 0.876, or 87.6%; after moderated regression analysis, it increased to 0.885, or 88.5%. It can be inferred that firm size (a moderating variable) can improve the relationship between environmental, social, and governance factors and capital structure. Table 8 supports hypothesis 1 (H1), demonstrating that environmental, social, and governance factors have a considerable negative impact on capital structure (DAR and DER). Hypothesis 2 (FMS\*ESG → CPS) is significant at p < 0.05, suggesting that firm size can moderate the impact of environmental, social, and governance on capital structure.

**Table 8. Hypothesis Testing**

Hypothesis	Variable Relations	$\beta$	t-stat	p-value	Description
<b>Direct Influence:</b>					
H1	ESG $\rightarrow$ DAR	-1.154	-4.235	0.001*	Accepted
H1	ESG $\rightarrow$ DER	-1.148	-3.968	0.001*	Accepted
R Square				0.876	
Adjusted R <sup>2</sup>				0.892	
F Statistics				4.957	
Prob(F-statistic)				0.001	
<b>Moderating Regression Test:</b>					
H2	FMS*ESG $\rightarrow$ DAR	-1.187	-3.124	0.001*	Moderation
H2	FMS*ESG $\rightarrow$ DER	-1.179	-3.512	0.002*	Moderation
R Square				0.885	
Adjusted R <sup>2</sup>				0.896	
F Statistics				4.929	
Prob(F-statistic)				0.001	

\*p<0.05

Source: Data processed by Eviews, 2024



**Picture 1. Research Model**

## DISCUSSION

### The Correlation between ESG (Environmental, Social, and Governance) and Capital Structure

ESG (Environmental, Social, and Governance) has a negative impact on capital structures (DAR and DER). The first hypothesis proposed in this study was confirmed. The results of this study line up with the findings of [Adeneye & Kammoun \(2022\)](#), [Adeneye et al. \(2023\)](#), [Alhajjeah & Besim \(2024\)](#), [Amosh et al. \(2024\)](#), [Asimakopoulos et al. \(2023\)](#), [Atif & Ali \(2021\)](#), [Bahadori et al. \(2021\)](#), [Feldhütter & Pedersen \(2024\)](#), [Gherghina \(2024\)](#), [Gjergji et al. \(2021\)](#), [Gregory et al. \(2021\)](#), [Hampl & Linnertová \(2024\)](#), [Jafar et al. \(2024\)](#), [Jovita \(2023\)](#), [Khan et al. \(2024\)](#), [La Rosa & Bernini \(2022\)](#), [Lemma et al. \(2022\)](#), [Li et al. \(2024\)](#), [Lin et al. \(2021\)](#), [Lutfiani & Hidayah \(2022\)](#), [Maaloul et al. \(2023\)](#), [Maji & Lohia \(2023\)](#), [Mohammad et al. \(2023\)](#), [Radhakrishna & Lappay \(2024\)](#), [Ramirez et al. \(2022\)](#), [Singh & Bathla \(2023\)](#), [Sun et al. \(2022\)](#), [Tanjung \(2023\)](#), [Yang et al. \(2024\)](#), [Zahid et al. \(2024\)](#), [Zhao & Zhang \(2024\)](#), and [Zhu et al. \(2024\)](#). Companies with solid ESG policies tend to have reduced capital costs ([Asimakopoulos et al., 2023](#)). This enables the corporation to optimize its

capital structure by incurring additional debt (Feldhütter & Pedersen, 2024). Companies with a strong ESG reputation have better access to a variety of funding sources, including debt (Gherghina, 2024). Companies with effective ESG procedures tend to have lower operational and financial risks (Amosh et al., 2024). Lowering risk might boost a company's ability to take on debt (Gregory et al., 2021).

Companies with solid ESG policies typically have lower debt-to-asset ratios (Adeneye et al., 2023). Good ESG procedures reassure creditors that the company is well-managed and has promising prospects (Singh & Bathla, 2023). This can help companies reduce borrowing costs and maintain a more conservative capital structure (Bahadori et al., 2021). Companies with effective ESG policies typically have fewer risks (Lemma et al., 2022). Lower risk boosts a company's ability to incur debt without considerably raising the cost of capital (Lin et al., 2021). Companies with solid ESG policies tend to have lower debt-to-equity ratios (Khan et al., 2024). Good ESG procedures show a company's commitment to preserving its investors' interests (Maji & Lohia, 2023). As a result, corporations will be more cautious about taking on debt, thereby increasing risks for shareholders (Sun et al., 2022). Companies with good ESG policies focus on organic expansion rather than growth through debt-financed acquisitions (Zhao & Zhang, 2024).

This finding is supported by agency theory, which asserts that transparent and measurable ESG practices can lessen knowledge asymmetry between owners and management (Radhakrishna & Lappay, 2024). This enables owners to more effectively monitor management performance and ensure that investment decisions align with the company's long-term goals (Alhajjeah & Besim, 2024). The implementation of ESG principles promotes manager accountability to stakeholders (Adeneye & Kammoun, 2022). Managers responsible for environmental, social, and governance factors are more likely to exercise caution in their judgments and avoid actions that could harm the company in the long term (Zahid et al., 2024). This finding is supported by signaling theory, which claims that companies with good ESG policies convey positive signals to investors about the company's management and sustainability (Maaloul et al., 2023). This favorable signal can improve investor confidence and lower the cost of financing, allowing enterprises to optimize their capital structure (Li et al., 2024).

Implementing good ESG standards demonstrates a commitment to principles beyond achieving shareholder returns (La Rosa & Bernini, 2022; Tanjung, 2023). This is consistent with the principles of stakeholder theory, which emphasize the significance of balancing the interests of several stakeholders (Gjergji et al., 2021; Jafar et al., 2024; Mohammad et al., 2023). ESG policies can improve a company's reputation and attract ESG-focused investors (Hampl & Linnertová, 2024; Jovita, 2023). These investors prioritize long-term performance and corporate sustainability. Companies that embrace ESG principles can strengthen their ties with a wide range of stakeholders (Atif & Ali, 2021; Ramirez et al., 2022; Zhu et al., 2024). Good stakeholder connections can give the organization long-term stability (Lutfiani & Hidayah, 2022; Yang et al., 2024).

Meanwhile, Wulandari & Istiqomah (2024) demonstrates no correlation between ESG practices and capital structure. Wulandari & Istiqomah (2024) findings are also inconsistent with signaling theory, which holds that ESG disclosure should be a positive signal for stakeholders, particularly investors. Because, by correctly fulfilling its environmental responsibilities, the company will project a positive and ecologically friendly corporate image to investors. In this study, ESG score disclosure cannot be utilized to infer a company's financial structure. This can be attributed to the fact that the ESG data sources used differ, such as data from rating companies, sustainability reports, or surveys. The quality and extent of this data can influence the study's outcomes. Sample variables such as industry and geography can influence the relationship between ESG and capital structure. Companies in some industries may be more sensitive to ESG issues. Changes in environmental, social, and governance rules can have an impact on ESG and capital structure. Various economic situations can influence a company's investment and financing decisions.

### **The Correlation among ESG (Environmental, Social, and Governance), Firm size, and capital structure**

Firm size can moderate the link between ESG (Environmental, Social, and Governance) and capital structure. The second hypothesis proposed in this study was confirmed. This research lines up with the findings of [Abdi et al. \(2022\)](#), [Ahmad et al. \(2021\)](#), [Aksoy \(2022\)](#), [Bagh et al. \(2024\)](#), and [Gartia & Panda \(2024\)](#). Large corporations that implement excellent ESG policies can send stronger signals to the market and foster better connections with stakeholders. This enables businesses to access funds at a lower cost while optimizing their capital structure. The appropriate capital structure for each firm varies depending on several criteria, including company size, business risk, and funding availability. However, companies with good ESG policies tend to have more conservative capital structures, with lower debt-to-equity ratios.

Agency theory can be used to examine how firm size influences the relationship between ESG practices and capital structure. Larger companies typically have more complex ownership structures and more substantial agency concerns ([Bagh et al., 2024](#)). As a result, major organizations may need to prioritize ESG policies to overcome these agency issues. This study's findings support agency theory. ESG measures can minimize the expense of owners monitoring management ([Abdi et al., 2022](#)). ESG principles allow owners to readily monitor firm performance and guarantee that managers operate in their best interests. ESG standards can improve a company's reputation and attract qualified investors ([Aksoy, 2022](#)). Quality investors appreciate the long-term worth of ESG standards and can provide more robust backing for the company ([Gartia & Panda, 2024](#)). Implementing ESG standards can help to lower the risk of litigation and regulatory consequences. This can protect shareholders' interests while lowering legal expenditures ([Ahmad et al., 2021](#)).

This finding is supported by signaling theory, which holds that companies that implement excellent ESG practices send favorable signals to investors indicating that they are effectively managed, sustainable, and have promising long-term prospects ([Abdi et al., 2022](#)). This good signal can boost investor confidence and lower the cost of capital. Larger companies typically have more resources to establish thorough and transparent ESG procedures ([Aksoy, 2022](#)). As a result, large corporations' ESG signals are perceived as more reputable and trusted by the market ([Bagh et al., 2024](#)). Companies that have good ESG signals can obtain capital at a lesser cost, whether through debt or equity ([Ahmad et al., 2021](#)). This enables businesses to optimize their capital structure and minimize financial risks.

This finding is reinforced by stakeholder theory, which claims that effective ESG practices demonstrate a company's commitment to numerous stakeholders such as employees, consumers, society, and the environment ([Abdi et al., 2022](#)). Meeting stakeholder expectations can help companies develop a positive reputation and boost stakeholder loyalty. Bigger corporations typically have more diversified stakeholders. As a result, large corporations tend to focus more on ESG principles while managing relationships with diverse stakeholders ([Aksoy, 2022](#)). Companies that consider shareholder interests are more diligent when making capital structure decisions. They will avoid decisions that may affect long-term stakeholders, such as incurring excessive debt.

According to [Uyar et al. \(2024\)](#), the association between ESG practices and capital structure is negatively moderated by firm size. This could be because the relationship between ESG and firm size is more nuanced than previously imagined. Small organizations may prioritize survival over ESG, but large companies may have greater resources to invest in ESG standards. Because different industries have distinct characteristics, the influence of ESG on capital structure may differ from one another. Companies in the energy sector may face more pressure to enhance ESG practices than those in the consumer sector.

## CONCLUSION

The study's findings indicate that ESG has a considerable negative impact on the capital structure (debt-to-asset ratio and debt-to-equity ratio) of Indonesian companies included in the ESG Index. Companies with superior ESG performance typically have more appropriate capital structures, including lower debt-to-asset and debt-to-equity ratios. A low debt-to-asset ratio shows that the majority of the company's assets are financed with equity (own capital). This is often deemed safer because the organization is less reliant on debt. A low debt-to-equity ratio shows that the company is financed mostly by equity rather than debt. This is often regarded as safer because businesses have a wider cushion to deal with unpredictable economic conditions. Firm size is a major moderating influence. Larger companies use ESG to access capital more affordably, benefiting from lower borrowing rates.

## SUGGESTIONS

The findings of a study into the relationship between ESG, firm size, and capital structure have significant practical implications for businesses, investors, and regulators. Companies can use the findings of this research to develop better financial strategies. Companies can use ESG principles to raise corporate value, cut the cost of capital, and improve competitiveness. Investors can use the findings of this study while making investing decisions. The findings of this study can help regulators establish rules that promote long-term capital market development. Policies that promote ESG disclosure and sustainable investment can motivate businesses to enhance their ESG performance and contribute to sustainable development.

Future academics can look into more specific influence mechanisms, such as lowering carbon emissions and increasing gender diversity, that affect capital structure. The development of more comprehensive and relevant ESG measures for local contexts has the potential to increase the quality of research in this field. It could be fascinating to examine the research results alongside organizations in different sectors to determine if any significant differences exist.

## REFERENCES

- Abdi, Y., Li, X., & Càmara-Turull, X. (2022). Exploring the impact of sustainability (ESG) disclosure on firm value and financial performance (FP) in airline industry: The moderating role of size and age. *Environment, Development and Sustainability*, 24(4), 5052–5079. <https://doi.org/10.1007/s10668-021-01649-w>
- Adeneye, Y. B., Kammoun, I., & Ab Wahab, S. N. A. (2023). Capital structure and speed of adjustment: The impact of environmental, social and governance (ESG) performance. *Sustainability Accounting, Management and Policy Journal*, 14(5), 945–977. <https://doi.org/10.1108/SAMPJ-01-2022-0060>
- Adeneye, Y., & Kammoun, I. (2022). Real earnings management and capital structure: Does environmental, social and governance (ESG) performance matter? *Cogent Business & Management*, 9(1), 1–22. <https://doi.org/10.1080/23311975.2022.2130134>
- Ahmad, N., Mobarek, A., & Roni, N. N. (2021). Revisiting the impact of ESG on financial performance of FTSE350 UK firms: Static and dynamic panel data analysis. *Cogent Business & Management*, 8(1), 1–18. <https://doi.org/10.1080/23311975.2021.1900500>
- Aksoy, M. (2022). *Does firm size influence the relationship between CSR and capital structure?* 1–13. <https://doi.org/10.15405/epsbs.2022.12.02.1>
- Alhajjeah, D., & Besim, M. (2024). Firms' capital structure during crises: Evidence from the United Kingdom. *Sustainability*, 16(13), 1–25. <https://doi.org/10.3390/su16135469>

- Amosh, H., Khatib, S. F. A., Alkurdi, A., & Bazhair, A. H. (2024). Capital structure decisions and environmental, social and governance performance: Insights from Jordan. *Journal of Financial Reporting and Accounting*, 22(4), 972–989. <https://doi.org/10.1108/JFRA-12-2021-0453>
- Asimakopoulos, P., Asimakopoulos, S., & Li, X. (2023). The role of environmental, social, and governance rating on corporate debt structure. *Journal of Corporate Finance*, 83, 1–12. <https://doi.org/10.1016/j.jcorpfin.2023.102488>
- Atif, M., & Ali, S. (2021). Environmental, social and governance disclosure and default risk. *Business Strategy and the Environment*, 30(8), 3937–3959. <https://doi.org/10.1002/bse.2850>
- Bagh, T., Hunjra, A. I., Guo, Y., & Bouri, E. (2024). Corporate capital structure in BRICS economies: An integrated analysis of ESG, firm, industry, and macroeconomic determinants. *International Journal of Finance & Economics*, 1–10. <https://doi.org/10.1002/ijfe.3036>
- Bahadori, N., Kaymak, T., & Seraj, M. (2021). Environmental, social, and governance factors in emerging markets: The impact on firm performance. *Business Strategy & Development*, 4(4), 411–422. <https://doi.org/10.1002/bsd2.167>
- Feldhütter, P., & Pedersen, L. H. (2024). Is capital structure irrelevant with ESG investors? *The Review of Financial Studies*, 37(12), 1–24. <https://doi.org/10.1093/rfs/hhae059>
- Gartia, U., & Panda, A. K. (2024). Do the firm characteristics moderate the nexus between the firm's sustainable practices and financial performance? *Business Strategy & Development*, 7(2), 1–15. <https://doi.org/10.1002/bsd2.376>
- Gherghina, Ștefan C. (2024). Corporate finance and environmental, social, and governance (ESG) practices. *Journal of Risk and Financial Management*, 17(7), 308. <https://doi.org/10.3390/jrfm17070308>
- Gjergji, R., Vena, L., Sciascia, S., & Cortesi, A. (2021). The effects of environmental, social and governance disclosure on the cost of capital in small and medium enterprises: The role of family business status. *Business Strategy and the Environment*, 30(1), 683–693. <https://doi.org/10.1002/bse.2647>
- Gregory, R. P., Stead, J. G., & Stead, E. (2021). The global pricing of environmental, social, and governance (ESG) criteria. *Journal of Sustainable Finance & Investment*, 11(4), 310–329. <https://doi.org/10.1080/20430795.2020.1731786>
- HAMPL, F., & Linnertová, D. V. (2024). How do ESG controversies moderate the nexus between ESG performance and cost of capital? Evidence from European listed companies. *Managerial Finance*, 50(10), 1727–1746. <https://doi.org/10.1108/MF-12-2023-0762>
- Jafar, R., Basuki, B., Windijarto, W., Setiawan, R., & Yaacob, Z. (2024). Environmental, social and governance (ESG) disclosure and cost of equity: The moderating effects of board structures. *Cogent Business & Management*, 11(1), 1–21. <https://doi.org/10.1080/23311975.2024.2429794>
- Jovita, G. A. (2023). Impact of ESG implementation on financial performance and capital structure. *Jurnal Informatika Ekonomi Bisnis*, 5(4), 1480–1486. <https://doi.org/10.37034/infeb.v5i4.778>
- Khan, M. A., Hassan, M. K., Maraghini, M. P., Paolo, B., & Valentinuz, G. (2024). Valuation effect of ESG and its impact on capital structure: Evidence from Europe. *International Review of Economics & Finance*, 91, 19–35. <https://doi.org/10.1016/j.iref.2024.01.002>
- La Rosa, F., & Bernini, F. (2022). ESG controversies and the cost of equity capital of European listed companies: The moderating effects of ESG performance and market securities regulation. *International Journal of Accounting & Information Management*, 30(5), 641–663. <https://doi.org/10.1108/IJAIM-03-2022-0047>
- Lemma, T. T., Muttakin, M., & Mihret, D. (2022). Environmental, social, and governance performance, national cultural values and corporate financing strategy. *Journal of Cleaner Production*, 373, 1–10. <https://doi.org/10.1016/j.jclepro.2022.133821>

- Li, W., Padmanabhan, P., & Huang, C. H. (2024). ESG and debt structure: Is the nature of this relationship nonlinear? *International Review of Financial Analysis*, 91, 1–10. <https://doi.org/10.1016/j.irfa.2023.103027>
- Lin, H. P., Pujiastuti, A., & Hsieh, T. Y. (2021). CSR, adjustment speed of capital structure, and firm performance: Evidence from ASEAN nations with ESG performance data. *International Review of Accounting, Banking and Finance*, 13(3), 1–27.
- Lutfiani, A. P., & Hidayah, R. (2022). ESG performance and ownership structure on cost of capital and research & development investment. *Fokus Bisnis Media Pengkajian Manajemen Dan Akuntansi*, 21(1), 25–42. <https://doi.org/10.32639/fokbis.v21i1.26>
- Maaloul, A., Zéghal, D., Ben Amar, W., & Mansour, S. (2023). The effect of environmental, social, and governance (ESG) performance and disclosure on cost of debt: The mediating effect of corporate reputation. *Corporate Reputation Review*, 26(1), 1–18. <https://doi.org/10.1057/s41299-021-00130-8>
- Maji, S. G., & Lohia, P. (2023). Environmental, social and governance (ESG) performance and firm performance in India. *Society and Business Review*, 18(1), 175–194. <https://doi.org/10.1108/SBR-06-2022-0162>
- Mohammad, W. M. W., Osman, M., & Rani, M. S. A. (2023). Corporate governance and environmental, social, and governance (ESG) disclosure and its effect on the cost of capital in emerging market. *Asian Journal of Business Ethics*, 12(2), 175–191. <https://doi.org/10.1007/s13520-023-00169-2>
- Priandhana, F. (2022). Pengaruh risiko environment social and governance terhadap kinerja keuangan perusahaan (studi pada perusahaan didalam indeks IDXESGL). *Business Economic, Communication, and Social Sciences (BECOSS) Journal*, 4(1), 59–63. <https://doi.org/10.21512/becossjournal.v4i1.7797>
- Radhakrishna, H., & Lappay, K. T. (2024). Capital structure decisions influencing non-financial performance of companies (ESG). *Advances in Business Information Systems and Analytics*, 143–163. <https://doi.org/10.4018/979-8-3693-1151-6.ch006>
- Ramirez, A. G., Monsalve, J., González-Ruiz, J. D., Almonacid, P., & Peña, A. (2022). Relationship between the cost of capital and environmental, social, and governance scores: Evidence from Latin America. *Sustainability*, 14(9), 1-15. <https://doi.org/10.3390/su14095012>
- Singh, A., & Bathla, G. (2023). Environmental, social, and governance (ESG) measures and their impact on insurance industry. In *The Impact of Climate Change and Sustainability Standards on the Insurance Market*, 417–427. <https://doi.org/10.1002/9781394167944.ch27>
- Sun, G., Guo, C., Ye, J., Ji, C., Xu, N., & Li, H. (2022). How ESG contribute to the high-quality development of state-owned enterprise in China: A multi-stage fsQCA method. *Sustainability*, 14(23), 1–18. <https://doi.org/10.3390/su142315993>
- Tanjung, M. (2023). Cost of capital and firm performance of ESG companies: What can we infer from COVID-19 pandemic? *Sustainability Accounting, Management and Policy Journal*, 14(6), 1242–1267. <https://doi.org/10.1108/SAMPJ-07-2022-0396>
- Uyar, A., Gerged, A. M., Kuzey, C., & Karaman, A. S. (2024). Do CSR performance and reporting facilitate access to debt financing in emerging markets? The role of asset structure and firm performance. *Review of Accounting and Finance*, 23(2), 157–185. <https://doi.org/10.1108/RAF-01-2023-0020>
- Wati, Y., Chandra, T., Irman, M., & Rahman, S. (2024). Green accounting, corporate governance, sustainable development: The moderating effect of corporate social responsibility. *The Indonesian Journal of Accounting Research*, 27(2), 211–240. <https://doi.org/10.33312/ijar.786>



- Wati, Y., Hafni, L., Hocky, A., Suryani, F., & Ginting, Y. M. (2024). Moderation of gender diversity in factors affecting firm value. *Jurnal Akademi Akuntansi*, 7(4), 493–507. <https://doi.org/10.22219/jaa.v7i4.35663>
- Wulandari, P., & Istiqomah, D. F. (2024). The effect of environmental, social, governance (ESG) and capital structure on firm value: The role of firm size as a moderating variable. *Jurnal Riset Akuntansi Politala*, 7(2), 307–324.
- Yang, X., Yang, T., Lv, J., & Luo, S. (2024). The impact of ESG on excessive corporate debt. *Sustainability*, 16(16), 1–22. <https://doi.org/10.3390/su16166920>
- Zahid, R. M. A., Saleem, A., Maqsood, U. S., & Sági, J. (2024). Moderating role of audit quality in ESG performance and capital financing dynamics: Insights in China. *Environment, Development and Sustainability*, 26(5), 12031–12060. <https://doi.org/10.1007/s10668-023-03636-9>
- Zhao, X., & Zhang, H. (2024). How does ESG performance determine the level of specific financing in capital structure? New insights from China. *International Review of Financial Analysis*, 95, 1–10. <https://doi.org/10.1016/j.irfa.2024.103508>
- Zhu, N., Aryee, E. N. T., Agyemang, A. O., Wiredu, I., Zakari, A., & Agbadzidah, S. Y. (2024). Addressing environment, social and governance (ESG) investment in China: Does board composition and financing decision matter? *Heliyon*, 10(10). <https://doi.org/10.1016/j.heliyon.2024.e30783>