

Analysis The Effect of Environmental, Social, Governance Disclosure Index, Board Diversity and Financial Performance on Firm Value with Size as a Moderating Variable

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Abstract—Efforts to enhance the company's value focus on ensuring its long-term viability by applying corporate governance principles outlined in Environmental, Social, and Governance (ESG) disclosures. This study aims to determine the impact of the ESG disclosure index, board diversity, and financial performance on firm value, with firm size as a moderating variable, in enterprises that are publicly traded on the Indonesia Stock Exchange. Out of a total of 79 companies in the population, 67 were chosen through purposive sampling. The data utilized consists of secondary data extracted from financial reports and annual reports spanning from 2018 to 2022. Data analysis involved multiple regression analysis and moderation to assess the effects of independent variables ESG, gender diversity (GENDER), and return on equity (ROE) on the dependent variable Tobin's Q, and to examine how firm size influences these relationships. The results indicate that the ESG disclosure index, board diversity, and financial performance positively influence company value. However, the inclusion of firm size as a moderating variable weakens the influence of the ESG disclosure index and board diversity on firm value. Moreover, firm size does not alter the relationship between financial performance (ROE) and firm value.

Keywords—Environmental, Social, Governance; Firm Size; Firm Value; Gender; Return on Equity

I. INTRODUCTION

In the age of globalization, Challenges to the global economy are posing growing risks to investor decisions. Successful companies can align the interests of all stakeholders to achieve better sustainability [1]. On average, companies invest in more environmentally friendly practices [2]. Maximizing firm value is a primary objective for many companies, benefiting not only shareholders but also various other stakeholders [3]. One important factor in the effort to maximize company value is maintaining the long-term sustainability of the company by applying the principles of corporate governance, as reflected in Environmental, Social, and Governance (ESG) disclosures. However, the average company in Indonesia has not fully recognized the importance of this factor. Currently, the value of a company is assessed based on both financial and non-financial factors, with sustainability being a prominent non-financial factor that has become a trend among most public companies and global organizations. Signaling theory suggests that information is communicated between parties to achieve a level of balance or equality [4]. Inspired by this theory, [5] also found that companies with a robust ESG profile generally achieve higher market valuation because of reduced cost of capital and lower risk. Consistent with the research conducted [6], The study discovered that the total composite score correlates positively and significantly with firm value.

Diversity assessment is crucial for investors because diversity is closely linked to good corporate governance. Companies that practice effective governance are perceived as capable of fulfilling their duties and responsibilities, thereby attracting investor interest. In several Asia Pacific countries, board diversity has become a focal point for investors. Currently, several European countries have enacted or are considering laws regarding gender quotas on boards of directors [7]. According to legitimacy and neo-institutional theories, increasing the number of female directors can enhance a company's reputation. These theories posit that diversity in leadership, including gender diversity, aligns with societal expectations and norms, thereby bolstering the company's legitimacy and perception of institutional alignment [8]. Research by [9] suggests that gender diversity positively influences both firm value and financial performance. The value of a

company greatly depends on the oversight provided by its board of directors. Therefore, companies need to carefully select the composition of their boards to maximize firm value. A balanced board, with members from diverse backgrounds, is believed to enhance overall company performance [10].

Good governance typically enhances a company's financial performance, which should be quantified and reflected in financial statements. When assessing performance, most companies favor financial metrics due to their practicality and relevance for short-term evaluations, helping to determine market value [11]. As companies grow larger, management shoulders greater responsibility to safeguard investor interests, with firm size often moderating these considerations and offering new insights. According to [12], companies consistently generating profits send positive signals to investors, indicating low bankruptcy risk and resulting in higher stock prices. In signal theory, this positive signal underscores the link between investment expenditure and firm value, signaling future growth prospects.

Company size indicates the scale of a business entity, influencing its ability to secure funds from investors. Larger companies generally have easier access to loans, external debt, and share capital due to their higher credit ratings [13]. Investors are attracted to large companies because of their access to the capital market and perceived stability, which encourages investment in their shares. Larger companies typically have substantial balance sheets and positive cash flows, making them promising investments over the long term. According to signal theory, a company's growth is seen positively by shareholders, enhancing investor confidence and interest [14]. Companies with larger scales are generally perceived to have stronger financial health compared to smaller firms.

This research contributes to the novelty of the data and acknowledges potential limitations arising from the ESG SCORE. Not every company listed on the Indonesia Stock Exchange had implemented ESG practices at the time of sample selection, which required a purposive sampling method based on specific criteria. The study seeks to examine how the ESG disclosure index, board diversity, and financial performance affect firm value, with particular attention to firm size as a moderating factor. This investigation focuses on companies listed on the Indonesia Stock Exchange that disclose information on ESG factors. The paper is structured into several sections: the introduction, research methods, data analysis and discussion, and conclusion.

II. RESEARCH METHODS

The population for this study consisted of 79 companies, from which 67 samples were obtained using a purposive sampling method. The criteria for sample selection included companies that had published audited annual reports from 2018 to 2022, were continuously active throughout the research period without suspension, and had an ESG score available on the Indonesia Stock Exchange website. This study employs a quantitative approach. The secondary data utilized were sourced from audited annual financial reports accessible on the Indonesia Stock Exchange website. The data analysis technique applied was multiple regression analysis with panel data processing. Panel data was chosen because the study incorporates both time series and cross-sectional data.

The focus of this study is on firm value, which is assessed using Tobin's Q as the measurement metric. This study employs three independent variables. Firstly, the ESG score is obtained from the Indonesia Stock Exchange website. Secondly, board diversity, represented by the GENDER variable, is assessed using a dummy variable. A value of 0 indicates the absence of female directors on the board, while 1 indicates their presence, expressed as a percentage relative to the total board members [15]. Company performance is assessed using Return on Equity (ROE), which reflects the company's profitability through metrics such as profit margin, asset productivity, and efficient debt management. ROE signifies the profitability of shareholders' equity [16]. The moderating variable in this study is firm size, which is represented by the natural logarithm of total assets: Firm size = $\ln(\text{Total Assets})$. This study employs two regression models. Model 1 assesses the impact of the independent variables on the dependent variable without incorporating the moderating variable. Model 2 incorporates all variables to investigate the moderating effects [17].

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 M.X_1 + \beta_5 M.X_2 + \beta_6 M.X_3 + e$$

Disclosure of environmental, social, and governance (ESG) practices that receive a positive response from society can enhance a company's access to capital investment. This increased capital can be utilized to expand production, sales, and ultimately profitability [18]. Research underscores that implementing ESG initiatives positively impacts firm value, suggesting that companies with higher ESG

scores tend to achieve superior performance. Based on empirical evidence from studies [19], [18], and [20], which consistently demonstrate a positive relationship between ESG practices and firm value, the hypothesis for this study is formulated as follows:

H₁: Environmental, Social, and Governance (ESG) practices positively and significantly impact firm value.

According to the Upper Echelons Theory, gender diversity has a positive impact on corporate financial performance. Despite varying results across studies on the impact of board gender diversity, the overarching theoretical implication is that it adds value to corporate governance. Previous research, such as [9], has found that women on boards contribute positively to corporate finance, suggesting that female representation among board members enhances firm value.

H₂: The presence of women on the board positively and significantly affects firm value.

ROE (Return on Equity) reflects a company's capacity to generate profits that can be distributed to shareholders. According to the Signal Hypothesis, investors perceive changes in dividend distribution as indicators of positive future financial performance [21]. This signaling effect not only pertains to investment opportunities but also to the company's profitability in managing its resources. ROE demonstrates how effectively a company utilizes its capital to generate profit. Studies [22] and [23] have consistently indicated that Return on Equity (ROE) positively and significantly influences firm value.

H₃: Return on Equity (ROE) positively and significantly affects firm value.

The company's commitment to environmental responsibility and societal impact, as demonstrated through the disclosure of environmental information, can enhance firm value, especially when such disclosures are made by large companies. This strengthens their reputation and credibility in promoting sustainable practices. Signal theory supports this notion, suggesting that larger companies are better positioned to optimize their environmental performance, as reflected in their environmental disclosures relative to total assets. Investors often view high levels of environmental disclosure positively, which increases investor interest and, consequently, enhances firm value. This assertion is supported by previous research, such as that conducted by [24].

H₄: Firm size strengthens the positive relationship between ESG practices and firm value.

Company size has the potential to influence diversity on the board of directors, particularly in terms of gender representation. Increasing diversity, including more women on boards, can positively impact efforts to maximize firm value. Women are often noted for their cautious approach, risk aversion, and thorough decision-making compared to men. These traits contribute to a deliberative decision-making process, where decisions are made with precision and lower risk-taking tendencies. The presence of women on boards can therefore enhance the quality of decision-making. Discussions about gender have recently intensified regarding women's advancement, equality, and their status relative to men in various sectors. Despite these discussions, women remain underrepresented as board members in the corporate world, possibly due to differing perspectives and biases. This observation is supported by [25] which highlights differences between men and women in their risk preferences. Women, known for their risk-averse nature compared to men who are often risk-takers, tend to make more prudent and low-risk decisions. The presence of female board members is believed to enhance the company's value by providing opportunities to individuals without discrimination, thereby signaling inclusivity to investors and enhancing the company's reputation.

H₅: Firm size strengthens the positive relationship between gender diversity and firm value.

Return on Equity (ROE) significantly influences firm value. The size of a company plays a crucial role in its development, as larger companies typically enjoy greater trust in their marketed products and services [26]. Larger companies also find it easier to raise funds and increase sales, especially when achieving a high ROE. Therefore, company size is expected to positively impact ROE, thereby enhancing firm value.

H₆: Company size strengthens the positive relationship between ROE and firm value.

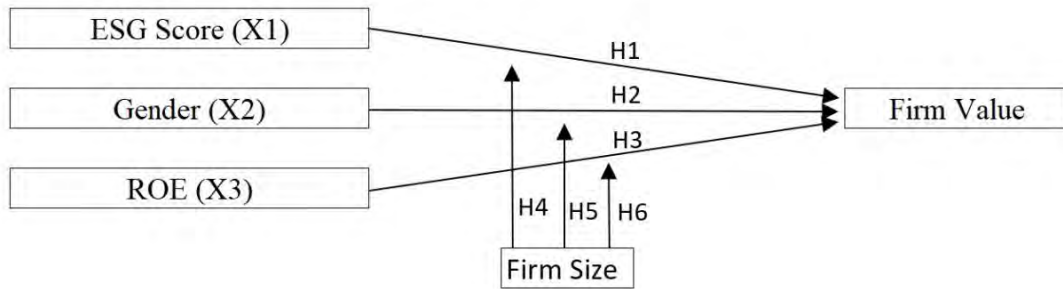


Figure 1 Conceptual Framework

III. RESULT AND DISCUSSION

This study employs panel data analysis, incorporating three models: the common effect model, the fixed effect model, and the random effect model. A panel data regression model selection test was conducted to determine the most appropriate method for regression estimation. Based on the findings presented in Table 1, it is clear that the Fixed Effect model is the most suitable choice for this study.

Tabel.1 Panel Data Regression Model

Testing	Prob	Results
Chow	0.0000	Fixed Effect is better than Common Effect
Housman	0.0016	Fixed Effect is better than Random Effect.

The results of the panel data analysis using multiple regression yield the following descriptive statistical tables:

Tabel.2 Descriptive Statistics

Variable	Count	Mean	Std.Dev.	Min	Max
ESG SCORE	335	28,793	9,775	11,920	52,760
GENDER	335	11,362	13,925	0,000	75,000
ROE	335	0,138	0,203	-0,449	1,451
MOD. ESG	335	896,722	297,194	361,150	1607,312
MOD. GENDER	335	353,270	427,466	0,000	2221,092
MOD. ROE	335	4,317	6,246	-14,416	44,474
TOBIN'S Q	335	2,276	2,977	0,001	21,850

Based on the descriptive analysis in Table 2, the ESG variable across 67 companies listed on IDX during the period 2018-2022 ranges from a minimum of 11.920 to a maximum of 52.760, with a mean of 28.793 and a standard deviation of 9.774. The GENDER variable ranges from 0 to 75, with a mean of 11.362 and a standard deviation of 113.925. For the ROE variable, values range from -0.448 to 1.450, with a mean of 0.138 and a standard deviation of 0.203. After moderating by FIRM SIZE, the ESG variable ranges from -361.150 to 1607.312, with a mean of 696.722 and a standard deviation of 297.194. The moderated GENDER variable ranges from 0 to 2221.092, with a mean of 353.270 and a standard deviation of 427.466. The moderated ROE variable ranges from -14.416 to 44.474, with a mean of 4.317 and a standard deviation of 6.246. In this study, for multiple regression analysis, the F-test table resulted in a Significance of 0.0000. Because the p-value <0.05, it is concluded that the multiple regression model is feasible to use in this study.

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Statistical Test F
Multiple Regression

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3	487,6890	162,5630	21,7640	0,0000
Residual	331	2472,3614	7,4694		
Total	334	2960,0504			

Statistical Test t
Multiple Regression

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	0,71289	0,52673	1,35341	0,17685
ESG SCORE (X1)	0,01674	0,01563	1,07122	0,28485
GENDER (X2)	0,02661	0,01095	2,42993	0,01563
ROE (X3)	5,63083	0,73937	7,61576	0,00000

Based on the results of the t-test, it was found that the p-value of the GENDER variable is 0.01563, which is <0.05. The regression coefficient associated with GENDER is 0.02661, indicating a positive and significant impact on firm value. Therefore, H₂ is accepted, affirming that having women on the board positively influences firm value. These findings are consistent with the first hypothesis of this study. For the ROE variable, the p-value is 0.00000, also <0.05, with a regression coefficient of 5.63083. This demonstrates that the ROE variable significantly influences firm value, supporting the acceptance of H₃. A higher ROE signifies greater efficiency in utilizing equity to generate profits. Meanwhile, the p-value of the ESG SCORE variable is 0.28485, which is >0.05. Therefore, the ESG SCORE variable does not significantly influence the company's value, leading to the rejection of H₁. The results of the multiple regression analysis equation are as follows: Tobin's Q = 0.71289 + 0.01674 ESG SCORE + 0.02661 GENDER + 5.63083 ROE + ε

In moderation regression analysis, the F-test table showed a significance value of 0.0000. Since the p-value is <0.05, it indicates that the moderation regression model is suitable for use in this study.

Statistical Test F
Regression Moderation

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	6	1094,1822	182,3637	32,0576	0,0000
Residual	328	1865,8682	5,6886		
Total	334	2960,0504			

Statistical Test t

Regression Moderation

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	1,6941	0,4742	3,5724	0,0004
ESG SCORE (X1)	0,5053	0,1331	3,7971	0,0002
GENDER (X2)	0,6476	0,1871	3,4619	0,0006
ROE (X3)	43,6646	20,8324	2,0960	0,0368
MOD. ESG SCORE	-0,0165	0,0044	-3,7693	0,0002
MOD. GENDER	-0,0205	0,0061	-3,3637	0,0009
MOD. ROE	-1,2325	0,6776	-1,8189	0,0698

Based on the results of the moderation regression t-test, the ESG variable demonstrated a p-value of 0.0002, which is < 0.05. This indicates a statistically significant positive effect on firm value, supported by its positive regression coefficient. Similarly, the GENDER and ROE variables also have p-values <0.05 with positive regression coefficients, suggesting they positively influence firm value. However, for the moderation effects, the p-value of FIRM SIZE in moderating the effect of the ESG variable on Tobin's Q is 0.0002, which is <0.05. This indicates that FIRM SIZE moderates the effect of the ESG variable on Tobin's Q with a negative coefficient. Therefore, H₄ is rejected, FIRM SIZE attenuates the impact of ESG on firm value. Similarly, the p-value of FIRM SIZE in moderating the effect of the GENDER variable on Tobin's Q is 0.0009, also <0.05. This suggests that FIRM SIZE moderates the effect of the GENDER variable on Tobin's Q with a negative coefficient. Hence, H₅ is rejected, Firm size diminishes the influence of gender diversity on firm value. However, the p-value of FIRM SIZE in moderating the effect of ROE variables on Tobin's Q is 0.0698, which is >0.05. This indicates that Firm size does not moderate the influence of ROE variables on Tobin's Q, leading to the rejection of H₆. Here are the results from the moderation regression equation: Tobin's Q = 1.6941 + 0.5053 ESG + 0.6476 GENDER + 43.6646 ROE – 0.0165 ESGSCORE*FS – 0.0205 GENDER*FS – 1.2325 ROE*FS + ε

IV. CONCLUSION

From the data processing conducted, it is evident that the F-test yielded a significance value of 0.0000, indicating that both the multiple regression and moderation models are appropriate for use in this study. The t-test results for the multiple regression models, it was found that the GENDER and ROE variables positively influence firm value. However, the analysis revealed that the ESG variable did not show a significant impact on the company's value. When applying the moderation regression model with the FIRM SIZE variable, it became evident that although ESG initially displayed a positive effect on firm value, the presence of FIRM SIZE as a moderating variable attenuated the impacts of both ESG and GENDER on firm value. Large companies that effectively implement and disclose ESG practices are capable of leading in the capital market and demonstrating high sustainability levels. They also tend to exhibit more developed markets, significantly improved financial performance, better profitability reflected in the ROE ratio, and robust corporate growth compared to smaller companies or those with inadequate ESG disclosures. Based on the calculation of R Square, the moderation regression model achieved an R Square value of 0.3696. This suggests that ESG, GENDER, ROE, FIRM SIZE, and their moderating effects collectively account for 36.96% of the variance in the valuation of companies listed on the Indonesia Stock Exchange. The remaining 63.04% of the variance is attributable to other factors not included in the study. This study provides new insights into the data while acknowledging potential limitations associated with ESG scores. It's important to note that not all companies listed on the Indonesia Stock Exchange had adopted ESG practices at the time of sample selection. Future research could update the sample to include the latest data and validate the findings of this study.

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