

# ESG Risk Rating, Financial Flexibility, and Investment Efficiency as Determinants of Firm Value in an Emerging Market: Evidence from IDXESGL Listed Companies

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## ABSTRAK

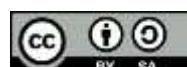
Penelitian ini bertujuan untuk menganalisis pengaruh ESG Risk Rating, financial flexibility, dan investment efficiency terhadap nilai perusahaan pada perusahaan yang tergabung dalam IDX ESG Leaders Index (IDXESGL) di Bursa Efek Indonesia. Penelitian menggunakan metode purposive sampling dengan kriteria tertentu sehingga diperoleh 30 perusahaan sebagai sampel penelitian selama periode 2021–2024, menghasilkan 120 observasi dengan data panel seimbang. Data diperoleh melalui studi dokumentasi yang bersumber dari laporan tahunan, laporan keberlanjutan, dan laporan keuangan perusahaan. Analisis data dilakukan menggunakan regresi data panel dengan bantuan perangkat lunak Stata. Pemilihan model terbaik dilakukan melalui uji Chow, uji Hausman, dan uji Lagrange Multiplier, yang menunjukkan bahwa model fixed effect merupakan model yang paling sesuai. Hasil penelitian menunjukkan bahwa ESG Risk Rating, financial flexibility, dan investment efficiency berpengaruh signifikan terhadap nilai perusahaan. Temuan ini mengindikasikan bahwa pengelolaan risiko ESG yang baik, fleksibilitas keuangan yang memadai, serta efisiensi keputusan investasi berperan penting dalam meningkatkan nilai perusahaan.

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## ABSTRACT

This study aims to analyze the effect of ESG Risk Rating, financial flexibility, and investment efficiency on company value in companies listed on the IDX ESG Leaders Index (IDXESGL) on the Indonesia Stock Exchange. The study used purposive sampling with specific criteria, resulting in 30 companies as research samples for the period 2021–2024, producing 120 observations with balanced panel data. The data was obtained through a documentation study sourced from annual reports, sustainability reports, and company financial reports. Data analysis was performed using panel data regression with the help of Stata software. The selection of the best model was done through the Chow test, Hausman test, and Lagrange Multiplier test, which showed that the fixed effect model was the most appropriate model. The results show that ESG Risk Rating, financial flexibility, and investment efficiency have a significant effect on firm value. These findings indicate that good ESG risk management, adequate financial flexibility, and efficient investment decisions play an important role in increasing firm value.

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## 1. INTRODUCTION

Shifts in the global business environment have encouraged companies to broaden their focus beyond financial performance to include sustainability and sound governance practices. Investor interest in environmental, social, and governance (ESG) factors has grown in tandem with rising global awareness of environmental risks and other non-financial considerations. This development has intensified pressure on firms to strengthen their attention to, and the management quality of, non-financial aspects within their operations (Aydoğmuş et al., 2022). At the same time, the worsening condition of the global climate has heightened systemic risks across the world economy (Huang et al., 2018). In response, socially responsible investment has expanded rapidly. The value of ESG-oriented investments increased dramatically from USD 6.5 trillion in 2006 to USD 121 trillion in 2021 (Zahid et al., 2023). This trend indicates that sustainability has evolved beyond an ethical concern to become a mainstream dimension of global investment strategies, shaping how firms are evaluated

A similar development is evident in the Indonesian capital market. The growing prominence of ESG in Indonesia is reflected in the launch of the SRI-KEHATI Index in 2009 and the IDXESG Leaders in 2021. According to the Indonesia Stock Exchange factsheet (2022), the SRI-KEHATI Index recorded a growth of 80.48% from 2013 to 2022, outperforming both the IHSG and LQ45. Meanwhile, the IDXESG Leaders generated a return of 37.28% between 2014 and early 2021, exceeding the performance of the IHSG (34.70%) and LQ45 (25.51%). These findings suggest that firms integrating ESG principles into their business strategies tend to exhibit greater resilience and stronger market performance (Rizaldy & Artiani, 2025). Thus, sustainability is no longer viewed as an optional add-on but has become a critical factor enhancing corporate competitiveness in the Indonesian capital market.

From a theoretical perspective, the relevance of ESG is reinforced by stakeholder theory. According to Freeman (1984), firms that effectively align the interests of their stakeholders are more likely to achieve long-term sustainability. One important issue in ESG implementation is the ESG Risk Rating, an indicator that measures the extent to which companies face risks related to environmental, social, and governance factors. Although this topic has begun to attract attention as reflected in disclosures by major corporations such as Sinarmas Land, PLN, and Pertamina regarding their declining scores the body of literature examining this variable in depth remains limited (Charlin et al., 2024; Kim et al., 2022; Liu et al., 2024). This scarcity of empirical studies highlights a research gap, particularly within the context of firms in emerging markets.

Beyond ESG considerations, another key internal factor that contributes significantly to firm value is financial flexibility. Financial flexibility refers to a firm's ability to proactively adapt to changes in a dynamic business environment (Rehman & Jajja, 2023). This capability allows firms to meet financing needs and seize unexpected investment opportunities an essential aspect of the financial flexibility concept (Ma & Appolloni, 2025). In today's economic landscape, financial flexibility functions as a strategic instrument that enables companies to withstand external pressures, manage internal transformation processes (Li et al., 2024), and establish a foundation for long-term growth (Al Omoush et al., 2025). Consequently, the degree of financial flexibility a firm possesses is likely to shape its ability to maintain or enhance firm value.

In addition to financial flexibility, a firm's capacity to manage its investments efficiently also plays a crucial role in determining its value. Poorly managed investments may reduce investment

efficiency and ultimately influence firm value from a managerial perspective (Chen & Lin, 2013). This issue has become increasingly relevant as investors today assess firms not only in terms of dividend payouts but also in terms of capital gains potential and ownership prospects. Investment efficiency is thus a critical component in evaluating a firm's value. Investors generally consider expected returns and overall firm valuation before committing capital (Salehi et al., 2022). Therefore, investment efficiency emerges as a significant variable to examine within the broader context of value creation.

Considering global developments, the dynamics of the Indonesian capital market, the underlying theoretical perspectives, and the empirical gaps associated with each variable, examining the influence of ESG Risk Rating, Financial Flexibility, and Investment Efficiency on firm value has become increasingly important. Companies listed in the IDXESGL Index selected based on specific sustainability criteria offer an ideal context for assessing whether sound sustainability practices, financial flexibility, and efficient investment allocation can meaningfully contribute to enhancing firm value. The limited number of studies that simultaneously investigate these three variables within the Indonesian capital market further underscores the urgency of this research.

The primary contribution of this study lies in integrating three critical factors ESG Risk Rating, Financial Flexibility, and Investment Efficiency to explain variations in firm value among IDXESGL listed companies. This combination of variables remains relatively underexplored in Indonesian financial literature, providing a fresh perspective on how sustainability performance, financial resilience, and capital allocation efficiency interact to create firm value. Moreover, the findings of this study are expected to enrich the theoretical framework of sustainable finance and open avenues for future research, while offering strategic implications for investors and other stakeholders in evaluating firms' fundamental quality.

## 2. LITERATURE REVIEW

### 2.1 The Effect of ESG Risk Rating on Firm Value

Firms with lower ESG Risk Ratings exhibit lower sustainability-related risks and demonstrate stronger managerial capability in addressing environmental, social, and governance issues. From the perspective of stakeholder theory, companies that effectively manage ESG risks are more likely to gain legitimacy and support from various stakeholders, including investors, consumers, regulators, and the broader community (Freeman, 1984). Such support contributes to operational stability and helps mitigate potential future costs arising from litigation, consumer boycotts, or increasingly stringent regulations. Investors also tend to view firms with lower ESG risks as more sustainable entities with more stable cash flows, thereby elevating market perceptions of firm value (Fatemi et al., 2018). Thus, the lower a firm's ESG Risk Rating, the higher its firm value, as it faces fewer non-financial risks and signals a strong commitment to responsible business practices.

Several studies report a positive influence of ESG management on firm value (Friede et al., 2015; Fatemi et al., 2018), while others find weak, insignificant, or even negative relationships depending on market and industry characteristics (Awaysheh et al., 2020; Velte, 2022). Moreover, most prior research relies on composite ESG indicators (ESG scores) and seldom focuses specifically on ESG Risk Ratings, which capture material ESG risks that may not yet be reflected in market valuations. Another gap arises from the limited research conducted in emerging markets, including Indonesia particularly among firms listed in sustainability indices such as IDXESGL. Therefore, this study seeks to address these gaps by examining the effect of ESG Risk Rating on firm value in the Indonesian Stock Exchange, offering findings that are more relevant to the context of emerging markets.

**H1: ESG Risk Rating has a significant impact on Firm Value.**

## 2.2 The Effect of Financial Flexibility on Firm Value

Financial flexibility provides firms with the ability to secure additional financing swiftly and adjust their financial structure when confronting growth opportunities or external shocks. From the perspective of stakeholder theory, companies that strategically maintain financial flexibility are perceived as more reliable by investors, creditors, and other stakeholders. Consequently, financial flexibility can serve as a strategic foundation that strengthens stakeholder confidence in a firm's long-term prospects.

Empirical evidence regarding the effect of financial flexibility on firm value remains inconsistent. Choi (2025) asserts that financial flexibility has a positive impact because it supplies capital for profitable investments and mitigates unexpected cash shortfalls a phenomenon often associated with the blue zero-leverage paradox. Conversely, Asghar et al. (2023), examining emerging markets, report a significant negative effect, despite the fact that financial flexibility enhances profitability and dividend payouts. This negative relationship may reflect strategies in which firms maintain debt levels below their optimal threshold. In the Indonesian context, Prameswari (2025) finds a positive association between financial flexibility and firm value; however, the study does not explore how financial flexibility interacts with other factors such as investment efficiency or ESG performance. These gaps underscore the need for further research into the effect of financial flexibility on firm value among sustainable firms, particularly those listed in the IDXESGL Index. Such analysis is essential to determine whether financial flexibility contributes on its own or whether it functions as a moderating variable influencing other value-creating factors.

**H2: Financial Flexibility has a significant impact on Firm Value.**

## 2.3 The Effect of Investment Efficiency on Firm Value

Several studies have examined the relationship between investment efficiency and firm value; however, the findings remain inconsistent. Chen and Lin (2013) report that inefficient investment can reduce firm value, as it reflects distortions in managerial decision making processes. Meanwhile, Salehi et al. (2022) highlight that investment efficiency is a critical factor for investors when assessing a firm's future prospects. Nevertheless, other studies present mixed results, particularly across different market contexts. A more recent study by Mehdi (2025) contributes significantly to understanding this relationship but also reveals gaps that warrant further exploration. Mehdi (2025) finds that investment effectiveness influences firm value, underscoring the need to revisit this issue in more specific corporate settings. Given the inconsistencies in prior research, differences in analytical contexts, and the limited number of studies that examine investment efficiency among ESG oriented firms, this study considers it essential to re-evaluate whether investment efficiency affects firm value in companies listed on the IDXESGL index.

**H3: Investment Efficiency has a significant impact on Firm Value.**

## 3. METHODS

The population in this study consists of all companies listed in the IDX ESG Leaders Index (IDXESGL) on the Indonesia Stock Exchange (IDX). The sampling technique used is purposive sampling. The sample selection criteria include: (1) companies listed in the IDXESGL index during the 2021–2024 observation period; (2) companies that publish complete financial statements, annual reports, and sustainability reports; and (3) companies with complete ESG Risk Rating data and other research variables for all years of observation. Based on these criteria, a total of 30 companies were selected as the final research sample, resulting in a balanced panel dataset of 120 firm year observations. Data were obtained through documentary study using annual reports, sustainability reports, and financial statements accessed from [www.idx.co.id](http://www.idx.co.id) and other publicly available corporate disclosures.

The data analysis techniques applied in this study include descriptive statistical analysis, panel-data diagnostic testing, and multiple linear regression analysis adapted for panel data.

Additional analyses include the coefficient of determination ( $R^2$ ), correlation analysis, and hypothesis testing using both the F-test and t-test. The study also employs model specification tests to determine the most appropriate panel regression model, including the Chow test (to compare pooled OLS versus fixed effects), the Hausman test (to select between fixed effects and random effects), and the Lagrange Multiplier (LM) test when applicable (to compare pooled OLS versus random effects). All statistical procedures are conducted using the STATA application.

The following is the formula used to calculate the research data:

**1. ESG risk rating (X1)**

According to Sustainalytics (commonly applied in ESG empirical research): The formula for ESG Risk Rating is:

$$\text{ESG Risk Rating} = \text{Exposure Score} - \text{Managed Score}$$

**2. Financial Flexibility (X2)**

According to Gamba & Triantis (2008, p. 224): The formula for calculating Financial Flexibility is:

$$\text{Financial Flexibility} = \frac{\text{Retained Earnings}}{\text{Total Assets}}$$

**3. Investment Efficiency (X3)**

According to Biddle, Hilary, & Verdi (2009, p. 113): The formula for calculating Investment Efficiency is:

$$\text{Investment Efficiency} = \frac{\text{Actual Investment} - \text{Expected Investment}}{\text{Total Assets}}$$

**4. Firm Value (Y)**

According to Tobin (1969): The formula for Firm Value (Tobin's Q) is:

$$\text{Firm Value (Tobin's Q)} = \frac{\text{Market Value of Equity} + \text{Book Value of Debt}}{\text{Total Assets}}$$

The regression model used in this study is formulated as follows:

$$\text{FirmValue}_{it} = \alpha + \beta_1 \text{ESGRisk}_{it} + \beta_2 \text{FinFlex}_{it} + \beta_3 \text{InvEff}_{it} + \varepsilon_{it}$$

- $\text{FirmValue}_{it}$  = Firm value of the company in period  $t$
- $\alpha$  = Constant
- $\beta_1, \beta_2, \beta_3$  = Regression coefficient for each independent variable
- $\text{ESGRisk}_{it}$  = ESG Risk Rating
- $\text{FinFlex}_{it}$  = Financial Flexibility
- $\text{InvEff}_{it}$  = Investment Efficiency
- $\varepsilon_{it}$  = Error term

## 4. RESULT AND DISCUSSION

### 4.1 Research Result

**Table 1. Descriptive Statistics**

Variable	Mean	Std.dev.	Min.	Max.
FV	1.469	0.924	0.18	6.53
ESG RR	21.240	4.760	9.26	30.26
FF	0.467	0.279	0.062	0.982
IE	78.368	68.724	13.910	289.549
Amount of Sample	120			

Source: Processed research data (2025)

Table 1 presents descriptive statistics of the research variables. Based on the table, it is known that the average value of Firm Value (FV) is 1.469. The average value of ESG Risk Rating (ESG RR) is 21.240. The average value of financial flexibility (FF) is 0.467 and the average value of Investment Efficiency (IE) is 78.368.

**Table 2. Pearson Correlation Matrix**

	FV	ESG RR	FF	IE
<b>FV</b>	1.0000			
<b>ESG RR</b>	-0.0289	1		
<b>FF</b>	0.0300	0.1284	1	
<b>IE</b>	0.1637	-0.8079	-0.1116	1

Source: Processed research data (2025)

Table 2 presents the pearson correlation matrix between the variables used in the study. If the correlation coefficient value of the independent variable is less than 0.8, it means that there is no multicollinearity problem (Khidmat et al., 2020). Table 3 shows that the correlation between the research variables is low, with the highest value being 0.1284, indicating that there is no multicollinearity problem in this study.

**Table 3. Regression Analysis (Fixed Effect Model)**

Variable	Coefficient	T	Sig.
<i>Part A (Coefficient analysis)</i>			
<i>Dependent Variable: FV</i>			
ESG RR	0.5423	2.77	0.000**
FF	0.2340	3.62	0.006
IE	0.1265	1.48	0.019
Constant	15.499	8.10	0.000
<i>Part B (Model estimates)</i>			
F test	1804.86		0.000
R-Squared	0.3002		
Chow test	0.0174		
Hausman test	0.3446		
Breush-Pagan test	0.0000		
Wald test for heteroskedasticity	0.0000		

Notes: \*\* significance at 5% level

Source: Processed research data (2025)

The determination of the panel data regression model in this study was conducted through a series of model specification tests to obtain the most appropriate and consistent estimator. The Chow Test results showed a probability value of 0.0174, which was smaller than the 5 percent significance level. This finding indicates that the Fixed Effect Model (FEM) is more appropriate to use than the Common Effect Model (CEM), because there are differences in individual characteristics between companies that cannot be ignored.

Furthermore, the Hausman Test results show a probability value of 0.3446, which statistically indicates that the Random Effect Model (REM) can be used. However, considering the Chow Test results that significantly support the use of FEM and the research objective of controlling for unobserved heterogeneity specific to each company, the Fixed Effect Model is determined to be the best model in this study.

The ESG Risk Rating (ESG RR) variable shows a regression coefficient of 0.5423 with a significance level of 0.000. This result indicates that ESG RR has a positive and significant effect on Firm Value. Economically, a one-unit increase in ESG Risk Rating will increase company value by 0.5423 units, assuming other variables remain constant. This finding shows that better ESG performance reflects sustainable business practices that can increase investor confidence and strengthen market perceptions of company value.

The financial flexibility variable has a regression coefficient of 0.2340 with a significance value of 0.006, indicating that financial flexibility has a positive and significant effect on Firm Value. This result indicates that an increase in financial flexibility contributes to an increase in company value, reflecting that internal company factors play an important role in shaping market assessments and investor expectations regarding the company's future prospects.

Meanwhile, the Investment efficiency variable shows a regression coefficient of 0.1265 with a significance level of 0.019, which means that Investment efficiency has a positive and significant effect on Firm Value. Although the investment efficiency coefficient is relatively smaller than ESG Risk rating and financial flexibility, this result still confirms that investment efficiency is one of the determinants that significantly affects firm value.

The constant value of 15.499, which is significant at the 5 percent level, indicates that when all independent variables are at zero, Firm Value still has a base value of 15.499. This constant represents the influence of other factors outside the model that inherently affect firm value. The modified Wald test is used to detect group heteroscedasticity in fixed effect panel data models. If the probability is greater than 0.05 ( $0.000 > 0.05$ ), then there is no heteroscedasticity (Bhimavarapu et al., 2022). The Wald test results in model 1 show a probability value smaller than the significance level of 0.05 ( $0.000 < 0.05$ ), indicating the presence of heteroscedasticity. Thus, robust estimation is used to overcome the problem of heteroscedasticity (Gerged et al., 2023; Wooldridge, 2020).

## 4.2 Discussion

This study provides empirical evidence that ESG risk rating, financial flexibility, and investment efficiency have a positive and significant effect on firm value. These findings indicate that firm value is not solely driven by traditional financial performance, but is also shaped by sustainability risk management, financial resilience, and the efficiency of corporate investment decisions.

The positive and significant effect of ESG risk rating on firm value supports stakeholder theory and signaling theory. Stakeholder theory posits that firms that effectively manage environmental, social, and governance risks are more likely to gain legitimacy and long-term support from stakeholders (Freeman, 1984). From a signaling perspective, a lower ESG risk rating conveys positive signals regarding managerial quality, transparency, and long-term sustainability orientation. As capital markets increasingly integrate ESG considerations into investment decisions, firms with better ESG risk management are perceived as less exposed to non-financial risks, resulting in higher firm value. This finding is consistent with prior empirical studies documenting a positive

relationship between ESG performance or ESG risk management and firm value (Eccles et al., 2014; Putri et al., 2024; Failasufa et al., 2025).

Furthermore, the results demonstrate that financial flexibility has a positive and significant effect on firm value, which can be explained by resource-based theory (RBV). RBV emphasizes that firm-specific resources and capabilities, including financial resources, are essential sources of sustainable competitive advantage (Barney, 1991). Firms with higher financial flexibility are better able to withstand economic uncertainty, reduce financial distress risk, and take advantage of profitable investment opportunities. Consequently, investors tend to assign higher valuations to financially flexible firms due to their stronger adaptability and growth potential. This result is consistent with prior studies showing that financial flexibility enhances firm value by improving firms' ability to manage financing constraints and respond to economic shocks (Almeida et al., 2014; Susilowati et al., 2025).

In addition, investment efficiency is found to positively and significantly influence firm value, supporting the predictions of agency theory. Agency theory argues that inefficient investment decisions such as overinvestment or underinvestment arise from conflicts of interest between managers and shareholders, leading to higher agency costs and lower firm value. Efficient investment reflects effective monitoring and alignment of managerial actions with shareholder interests, thereby reducing agency costs and enhancing firm value (Jensen & Meckling, 1976). Moreover, efficient investment decisions reduce information asymmetry and signal sound managerial judgment to the market, which is positively valued by investors. This finding is in line with previous empirical evidence showing that higher investment efficiency is associated with higher firm value and improved market performance (Biddle et al., 2009; Chen et al., 2018).

Overall, the findings suggest that firm value is determined by the interaction of ESG risk management, financial flexibility, and investment efficiency. Among these factors, ESG risk rating appears to play a particularly important role, reflecting the growing importance of sustainability-related risks in capital market evaluations. These results extend existing literature by demonstrating that sustainability considerations and corporate financial decision-making jointly contribute to firm value creation. From a managerial perspective, the findings imply that firms seeking to enhance firm value should integrate ESG risk management into corporate strategy, maintain adequate financial flexibility, and ensure efficient investment policies to support sustainable value creation.

## 5. CONCLUSION

This study examines the effects of ESG risk rating, financial flexibility, and investment efficiency on firm value using a fixed effects panel regression model. The model selection results confirm that the fixed effects approach is appropriate to control for firm-specific unobserved heterogeneity.

The empirical findings indicate that ESG risk rating has a positive and significant effect on firm value, suggesting that firms with better ESG risk management are more favorably valued by the market. In addition, financial flexibility positively influences firm value, highlighting the importance of maintaining adequate financial capacity to withstand uncertainty and support strategic decisions. Furthermore, investment efficiency is found to have a significant positive impact on firm value, implying that efficient investment decisions signal strong managerial capability and enhance market confidence.

Overall, this study demonstrates that sustainability-related risk management, financial resilience, and efficient investment practices are key determinants of firm value. These findings provide important implications for managers and investors in emphasizing long-term value creation through integrated ESG, financial, and investment strategies.

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