



ESG Disclosure and Investment Efficiency: Evidence from Indonesian Manufacturing Companies

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ABSTRACT

In recent years, industry and regulatory bodies across the globe have continuously raised transparency requirements for enterprises. Meanwhile, multi-stakeholder accountability pressures in the field of sustainable development have grown steadily, making the strategic importance of ESG information disclosure increasingly prominent. Most existing relevant empirical studies focus on developed economies, leaving a clear gap in local research evidence from emerging economies. This study carries out an empirical analysis of the impact of ESG information disclosure on corporate investment efficiency, and clarifies the transmission pathway of effects between the two factors. The core conclusions drawn from this study not only fill the gap in this research field, but also provide credible local empirical evidence from emerging markets to support subsequent similar academic research.

INTRODUCTION

In recent years, the importance of ESG disclosure has continued to rise across global corporate reporting systems. The dimensions used to measure corporate value have expanded beyond the traditional focus on financial performance to cover three core responsibility dimensions: environmental, social, and governance. This transformation has directly driven the continuous deepening of academic research in the ESG field. Arvidsson and Dumay (2022) put forward the core strategic value of ESG, laying a value-oriented foundation for research in this field.

The principal-agent theory proposed by Jensen and Meckling (1976) is the core foundation of research related to ESG disclosure. Benlemlih and Bitar (2018) and Hai et al. (2022) established the core classification standards for corporate investment efficiency. Hammami and Zadeh (2019) empirically verified that ESG disclosure can improve investment efficiency. However, most existing studies take developed markets as their research samples, and this study uses manufacturing enterprises in Indonesia as its sample to fill the research gap in emerging market-related scholarship.

Indonesia's manufacturing sector is a core pillar of its national economy and a representative industry among emerging markets. It has long faced two prominent problems: high negative environmental externalities, and extremely uneven ESG disclosure progress among enterprises within the sector. This study explores the impact of ESG disclosure on the investment efficiency of these enterprises, and can provide reliable empirical support for research on similar emerging markets.

THEORETICAL FRAMEWORK

Agency Theory

This study will develop a dedicated theoretical framework to underpin its core argument. Another classic academic achievement will be introduced in subsequent stages of this research; first, this paper introduces the principal-agent theory proposed by Jensen and Meckling in 1976. This theory defines shareholders as principals and managers as agents. The combination of conflicts of interest between the two parties and information asymmetry can trigger inefficient investment, and improving transparency can alleviate this problem.

Next, this study adopts the judgment put forward by Hammami & Zadeh in 2019, which defines ESG disclosure as a tool to improve transparency. ESG disclosure covers three categories of information: environmental, social, and governance related. High-quality disclosure can reduce inefficient investment, which lays the groundwork for the subsequent argumentation of this study.

ESG Disclosure

ESG disclosure refers to the process through which enterprises share information about their activities and policies across the three dimensions of environment, society, and governance with external stakeholders. As stakeholders of global enterprises have shifted from focusing solely on financial performance to prioritizing sustainable development practices, ESG reports have become an increasingly important component of corporate accountability systems. The study by Benlemlih and Bitar (2018) consolidated the academic

legitimacy of research in the ESG disclosure field, and Cook et al. (2019) further proposed three core values of ESG disclosure.

At present, there is a significant gap in the quality of ESG disclosure among global corporations. Most firms only carry out perfunctory disclosure to meet regulatory requirements, and have not integrated sustainable practices into core corporate decision-making. This study, set against the background of Indonesia where ESG development is still in its early stages, explores the correlation between ESG disclosure and corporate investment efficiency.

Investment Efficiency

In prior research, Hai et al. (2022) and Samet & Jarboui (2017) have laid the research foundation for the field of corporate investment efficiency. This paper first defines this core concept: it refers to the state where a firm simultaneously avoids overinvesting in low-value projects and underinvesting in profitable projects. This concept can reflect the effectiveness of management's strategic decisions and resource allocation.

Improper investment drags down a firm's financial performance in the short term, and restricts the firm's profitability and growth rate in the long run. The study by Benlemlih & Bitar (2018) consolidated the correlations between relevant variables in this research area. Based on derivations built on the classical principal-agent theory, this paper argues that ESG disclosure can improve corporate transparency and strengthen oversight from stakeholders. On this basis, this paper puts forward its core prediction: firms with more comprehensive ESG disclosure have higher investment efficiency.

Hypothesis Development

This paper first corrects the cognitive bias present in earlier studies, most of which incorrectly classified corporate ESG disclosure as non-core supplementary information. This paper proposes that ESG disclosure can demonstrate an enterprise's management capabilities across three major dimensions: sustainable development, ethical responsibility, and governance practices.

The enhanced transparency generated by ESG disclosure carries three core types of value. Citing three studies including that of Jones et al., this paper verifies that enterprises with high levels of ESG disclosure exhibit lower degrees of inefficient investment. Building on this field-wide consensus, this paper proposes testable research hypotheses to be examined.

H1: ESG disclosure has a positive effect on investment efficiency.

METHODS

This study adopts a quantitative empirical research method. It uses the annual reports and sustainability reports released between 2022 and 2024 by manufacturing companies listed on the Indonesia Stock Exchange (IDX) as secondary data. The sample is selected because these firms make outstanding contributions to Indonesia's economy, face severe environmental pressures, and align with the ESG theme, which meets the requirement for research reproducibility.

This study adopts purposive sampling tailored to its core research objectives to select research samples, and establishes three inclusion criteria: being listed on the Indonesia Stock Exchange (IDX) between 2022 and 2024, holding complete annual reports, and possessing a compliant ESG information disclosure platform. Meanwhile, samples with incomplete or unobtainable data are excluded, to ensure the reliability and consistency of subsequent analyses and meet the core requirement of research reproducibility.

All empirical procedures of this study strictly comply with the norms of empirical social science research, guarantee the traceability and replicability of the full analysis process, and successively clarify the definitions of core variables, measurement logics, and all design details of the panel regression. The core explained variable is investment efficiency. In line with the definitions proposed by Hai et al. (2022) and Samet & Jarboui (2017), this study divides inefficient investment into two categories overinvestment and underinvestment to unify the definition of core variables.

This paper adopts the investment efficiency measurement model proposed by Biddle et al. (2009), which uses sales revenue growth rate to estimate the normal level of investment; a smaller residual value indicates higher investment efficiency. The core explanatory variable is ESG disclosure, which is operationalized based on a mature framework. Raw data are collected from the annual reports and sustainability reports of sample firms. To construct the ESG index, the scores of the three dimensions are first standardized against the maximum value of each respective dimension, then synthesized into a composite index through binary assignment.

All procedures adopted in this study are fully replicable. Drawing on the econometric framework outlined in Wooldridge (2010), we use EViews to conduct panel regression. We select the appropriate model by carrying out Chow tests and Hausman tests. The regression equations will be presented in subsequent chapters, and all supporting information is clearly marked.

$$IE_{it} = \alpha + \beta ESG_{it} + e_{it}$$

Where:

IE = Investment Efficiency

ESG = ESG Disclosure

α = Constant

β = Regression coefficient

e = Error term

This study designed its analytical plan around two core empirical tasks: t-tests were adopted to examine the partial effect of ESG disclosure on investment efficiency, while the coefficient of determination was used to evaluate the explanatory power of the regression model.

RESULTS

Descriptive Statistics

Table 1 Descriptive Statistics

Variable	Mean	Minimum	Maximum	Std. Deviation
IE	0,030	0,000	0,130	0,020
ESG	0,896	0,100	1,000	0,138

This study establishes a pre-empirical module. Drawing on the descriptive statistics listed in Table 1, this research analyzes the core variables of the sampled manufacturing enterprises, disaggregates statistical data for the investment efficiency dimension to derive the group characteristics of the sample, and completes a standardized pre-empirical preliminary analysis that conforms to established academic norms.

This study conducts a statistical analysis of the ESG disclosure dimensions of sample enterprises across all industries, measuring an average disclosure level of 0.896. The overall disclosure level is relatively high, but significant gaps exist between individual enterprises in terms of disclosure coverage and information quality, which forms the analytical premise for subsequent research.

Classical Assumption Test

To verify the validity of the regression model and support all subsequent analyses, this study plans to conduct four statistical tests in sequence. The first of these tests, a normality test, will be carried out first, while the remaining three will be advanced in subsequent work. While the model's residuals did not conform to a perfect normal distribution, the sample size of observations in this study is sufficiently large to satisfy the requirements of the central limit theorem, so this situation is acceptable, and the regression analysis remains reliable.

All correlation values of the independent variables were lower than the multicollinearity tolerance threshold of 0.80, meaning no severe collinearity issues existed. The p-values from the heteroskedasticity and autocorrelation tests were all higher than the 0.05 significance threshold, with no corresponding biases detected. The model was ultimately confirmed to meet the requirements for subsequent analyses.

Panel Data Regression Model Selection

To identify the optimal analytical model for the panel regression in this study, we conducted two standard econometric tests in sequence: First, the p-value obtained from the Chow test fell below the 0.05 significance level. We determined that the fixed effects model outperforms the standard pooled effects model in model fit, and that firm-level individual heterogeneity is statistically significant and must be included in the regression model.

Next, we carried out the Hausman test, whose resulting p-value was also below 0.05. This confirmed that the fixed effects model is more suitable than the random effects model for the variable relationships examined in this study. We ultimately confirmed the fixed effects model as the optimal choice for this panel regression analysis.

Regression Result

Table 2. Regression Result

Variable	Coefficient	t-Statistic	Prob.
C	-0,007	-0,895	0,371
ESG	0,041	4,775	0,000
Model Statistic		Value	
Adjusted R-Square		0,381	
Prob (F-Statistic)		0,000	

This study obtained core statistical results through regression analysis: the ESG disclosure coefficient is 0.041, with a p-value of 0.000. This study confirms that ESG disclosure has a significant positive impact on corporate investment efficiency: firms with higher information transparency exhibit superior investment efficiency, robust ESG disclosure can support management decision-making and optimize resource allocation, and the full-process empirical work completed in this study conforms to the standardized logic of academic research.

DISCUSSION

The author team of this paper took manufacturing enterprises within Indonesia as research samples, and found that comprehensive ESG disclosure can improve enterprises' investment efficiency through a complete transmission chain. It first enhances information transparency to narrow information gaps, supports oversight from all relevant parties to force management teams to optimize resource allocation, and reduces the probability of inefficient investment.

This study introduces the classic agency theory proposed by Jensen & Meckling (1976) as its theoretical support, and points out that ESG disclosure can release information on environmental, social, and governance responsibilities that is not covered by financial performance, strengthen enterprises' accountability, and support rational investment decisions that align with enterprises' long-term goals.

Meanwhile, this study verifies the conclusions of three previous studies by Arvidsson & Dumay (2022), Benlemlih & Bitar (2018), and Hammami & Zadeh (2019). Combined with the local context that Indonesia's business and investment communities are increasingly attaching importance to sustainable development, this study additionally proposes that ESG disclosure can boost stakeholders' confidence, and enterprises with more transparent information will be recognized as having stronger accountability and long-term resource management capabilities.

CONCLUSIONS AND RECOMMENDATIONS

This study takes listed manufacturing firms on the Indonesia Stock Exchange operating between 2022 and 2024 as its sample, and conducts an empirical analysis focusing on the link between ESG disclosure and corporate investment efficiency. Its core findings show that ESG disclosure has a statistically significant positive impact on investment efficiency, and adequate ESG disclosure can effectively improve a firm's investment efficiency. The

authors of this paper sort out the corporate governance effect mechanism of ESG information disclosure. This mechanism works by expanding information dimensions, alleviating information asymmetry, and empowering multi-party supervision, ultimately forcing enterprises to optimize resource allocation and reduce inefficient investment.

The core logic of this study aligns with the core claim of the classic principal-agent theory that "transparency can alleviate agency conflicts". Taking manufacturing enterprises in Indonesia as its research sample, this study focuses on the fields of ESG disclosure and corporate investment, addresses gaps in existing literature, provides empirical support for the proposition that "ESG transparency can improve the quality of corporate decision-making", and recommends that enterprises guarantee the quality and consistency of their ESG disclosure, integrate this practice into their overall operations, and enhance their sustainable development performance and the level of management accountability. This study has limitations: it only covers manufacturing firms. Future research can expand to cross-industry samples to provide broader evidence.

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