

THE EFFECT OF ESG DISCLOSURE AND CARBON EMISSION DISCLOSURE ON COMPANY INVESTMENT DECISIONS: A STUDY OF THE ENERGY AND MINING SECTORS IN INDONESIA

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Abstract

The increasing integration of Environmental, Social, and Governance (ESG) principles in financial markets has stimulated the development of ESG-based investment products, including mutual funds. However, empirical evidence on whether ESG mutual funds outperform conventional equity funds remains inconclusive, particularly in emerging markets such as Indonesia. This study aims to compare the performance and risk characteristics of ESG mutual funds and conventional equity mutual funds in the Indonesian capital market. The analysis focuses on ESG index-based mutual funds that track the SRI-KEHATI and MSCI ESG indices and compares them with actively managed conventional equity mutual funds during the 2021–2025 period. Portfolio performance is evaluated using risk-adjusted performance measures, including the Sharpe Ratio, Treynor Ratio, and Jensen's Alpha. In addition, the study incorporates supporting secondary data related to investor behaviour and investment horizon characteristics to provide a broader understanding of ESG investment strategies. The findings are expected to provide empirical evidence regarding the financial viability of ESG mutual funds and contribute to the literature on sustainable finance in emerging markets. The results may also offer practical insights for investors, asset managers, and policymakers in developing effective sustainable investment strategies in Indonesia.

Keywords: ESG investing, mutual fund performance, sustainable finance, SRI-KEHATI Index, risk adjusted return, Indonesian capital market

INTRODUCTION

Over the last two decades, Environmental, Social, and Governance (ESG) investing has transformed from a niche ethical investment strategy into a mainstream approach adopted by institutional and retail investors worldwide. The integration of ESG considerations into financial decision-making reflects a growing recognition that sustainable business practices can influence long-term corporate value, risk exposure, and financial performance. Global sustainable investment assets have expanded significantly, indicating that investors increasingly view ESG factors not only as ethical considerations but also as financially relevant information in portfolio management.

From a theoretical perspective, the relationship between ESG practices and financial performance can be explained through several frameworks. The Efficient Market Hypothesis (EMH) suggests that publicly available information should be reflected in asset prices, including ESG-related disclosures. However, the imperfect dissemination of ESG information may create opportunities for investors to generate abnormal returns by incorporating sustainability-related information into investment decisions. Furthermore, stakeholder theory argues that companies that effectively manage relationships with various stakeholders including employees, regulators,

communities, and investors are more likely to achieve sustainable competitive advantages and long-term financial stability.

Empirical evidence from global financial markets generally indicates that ESG integration can improve portfolio resilience and risk management. Several studies suggest that companies with strong ESG practices tend to experience lower downside risk, improved governance quality, and greater stability during periods of economic uncertainty. Consequently, ESG-based investment strategies have increasingly attracted attention from asset managers seeking to balance financial performance with sustainability considerations.

In the Indonesian capital market, the adoption of ESG principles has gradually developed alongside the expansion of sustainable finance initiatives. One important milestone in this development is the establishment of the SRI-KEHATI Index, which consists of companies that demonstrate strong environmental, social, and governance performance. The index serves as a benchmark for sustainable investment and reflects the growing commitment of the Indonesian financial sector to responsible investment practices. Empirical observations indicate that ESG-oriented equities in Indonesia have demonstrated competitive performance relative to traditional market indices, suggesting that sustainability considerations may play a meaningful role in investment outcomes.

Despite these developments, empirical findings regarding the financial performance of ESG investments remain inconclusive. Some studies report that ESG-based portfolios generate higher returns and lower volatility compared with non-ESG portfolios, indicating superior risk-adjusted performance. Other studies, however, find that the relationship between ESG performance and financial returns is not always statistically significant. These mixed findings suggest that the impact of ESG integration may vary across markets, asset classes, and investment vehicles.

Moreover, existing research in Indonesia primarily focuses on the performance of ESG indices or individual stocks, while relatively limited attention has been given to mutual funds as investment instruments. This represents an important research gap because mutual funds constitute one of the most widely used investment vehicles among both institutional and retail investors. Evaluating ESG performance at the mutual fund level may therefore provide more relevant insights into actual investment decision-making and portfolio management practices.

Based on these considerations, this study aims to examine whether ESG mutual funds outperform conventional equity mutual funds in the Indonesian capital market. Specifically, the research compares the performance and risk characteristics of ESG-based mutual funds that track the SRI-KEHATI and MSCI ESG indices with actively managed conventional equity mutual funds. The analysis focuses on the period 2021–2025, which represents a critical phase in the development of sustainable finance following the COVID-19 pandemic and the increasing integration of ESG considerations in global investment strategies.

The novelty of this study lies in several aspects. First, unlike most previous studies that focus on stock-level or index-level analysis, this research evaluates ESG investment performance at the mutual fund portfolio level, which better reflects the investment choices faced by investors. Second, the study employs comprehensive risk-adjusted performance measures, including the Sharpe Ratio, Treynor Ratio, and Jensen's Alpha, to provide a more robust evaluation of portfolio efficiency. Third, the research incorporates investor behaviour and investment horizon characteristics as complementary analytical perspectives to better understand the dynamics of ESG investment strategies.

This study is expected to provide both theoretical and practical contributions. From a theoretical perspective, the research enriches the literature on sustainable finance by providing empirical evidence on ESG mutual fund performance in an emerging market context. From a practical perspective, the findings may provide valuable insights for investors, asset managers, and policymakers in evaluating the effectiveness of ESG investment strategies and supporting the development of sustainable financial products in the Indonesian capital market.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

ESG Investing and Mutual Fund Performance

Environmental, Social, and Governance (ESG) investing refers to the integration of sustainability factors into investment decision-making processes. ESG principles emphasize that non-financial factors such as environmental responsibility, social impact, and corporate governance quality can influence long-term firm value and risk exposure. From a theoretical perspective, ESG investing can be explained through the Efficient Market Hypothesis (EMH) and Stakeholder Theory. EMH suggests that all available information, including ESG disclosures, should be reflected in asset prices. However, imperfect dissemination of ESG information may create inefficiencies, allowing investors to generate abnormal returns. Meanwhile, stakeholder theory posits that firms managing stakeholder relationships effectively tend to achieve sustainable competitive advantages and superior long-term performance.

Empirical studies provide mixed results regarding ESG performance. Research in Indonesia indicates that ESG-based portfolios tend to generate higher risk-adjusted returns and lower volatility compared to conventional portfolios. Additionally, ESG equities demonstrate stronger resilience to market shocks, suggesting superior stability during periods of uncertainty.

However, most existing studies focus on stock indices or individual equities, rather than mutual funds. This creates a research gap, as mutual funds represent actual investment vehicles used by investors.

Risk-Adjusted Performance Measurement

The evaluation of mutual fund performance requires the use of risk-adjusted measures to ensure a fair comparison between portfolios with different risk profiles.

The most commonly used indicators include:

- a. Sharpe Ratio: measures excess return per unit of total risk
- b. Treynor Ratio: measures return relative to systematic risk (beta)
- c. Jensen's Alpha: measures abnormal return relative to expected market return

Previous studies in Indonesia show that ESG portfolios often exhibit higher Sharpe and Jensen's Alpha values, indicating better efficiency and superior performance after adjusting for risk. However, findings are not always consistent. Some studies reveal no significant difference between different types of funds (e.g., conventional vs. sharia funds), suggesting that performance differences may depend on market conditions, fund management strategies, and time horizons.

ESG Mutual Funds vs Conventional Equity Funds

Mutual funds can be broadly classified into:

- a. ESG mutual funds (index-based): track ESG indices such as SRI-KEHATI and MSCI ESG
- b. Conventional equity funds (actively managed): rely on fund manager expertise

ESG mutual funds are typically characterized by:

- a. Lower exposure to high-risk industries
- b. More stable return patterns
- c. Long-term investment orientation

On the other hand, actively managed funds depend heavily on:

- a. Stock selection ability
- b. Market timing skills

Empirical evidence suggests that many actively managed funds fail to consistently outperform the market. This raises an important question: Can ESG-based passive strategies outperform active conventional strategies?

ESG and Portfolio Stability

Another important dimension in ESG investing is risk and volatility. Studies show that ESG investments tend to:

- a. Exhibit lower beta (systematic risk)
- b. Be more resilient to macroeconomic shocks
- c. Deliver more stable long-term returns

For instance, ESG indices in Indonesia respond more efficiently to internal and external shocks compared to conventional indices, with significantly lower volatility impact. This supports the argument that ESG integration enhances portfolio resilience, which is particularly relevant in emerging markets.

Research Gap and Conceptual Framework

Based on prior literature, several research gaps can be identified:

- a. Limited studies on ESG mutual funds (focus mostly on stocks or indices)
- b. Lack of comparison between ESG index funds and actively managed funds
- c. Inconsistent findings regarding risk-adjusted performance
- d. Limited evidence from emerging markets such as Indonesia

Therefore, this study aims to address these gaps by comparing ESG mutual funds and conventional equity mutual funds using comprehensive performance metrics.

Hypothesis Formulation

Based on the theoretical framework and empirical findings, the following hypotheses are proposed:

H1: ESG Mutual Funds Exhibit Higher Risk-Adjusted Performance than Conventional Equity Funds
ESG integration improves governance quality, reduces downside risk, and enhances long-term stability. Empirical studies indicate that ESG portfolios tend to achieve higher Sharpe Ratio and Jensen's Alpha.

H1: ESG mutual funds have significantly higher risk-adjusted performance than conventional equity mutual funds.

H2: ESG Mutual Funds Have Lower Systematic Risk than Conventional Equity Funds
ESG investments tend to avoid high-risk sectors and demonstrate lower sensitivity to market fluctuations, reflected in lower beta values.

H2: ESG mutual funds have lower systematic risk (beta) compared to conventional equity mutual funds.

H3: ESG Mutual Funds Provide More Stable Returns than Conventional Equity Funds
Studies show that ESG portfolios are more resilient to economic shocks and exhibit lower volatility.

H3: ESG mutual funds exhibit lower return volatility than conventional equity mutual funds.

H4: There is a Significant Difference in Performance between ESG and Conventional Mutual Funds
Previous comparative studies (e.g., conventional vs. sharia funds) indicate that differences may exist but are not always statistically significant.

H4: There is a statistically significant difference in performance between ESG mutual funds and conventional equity mutual funds.

H5: ESG Mutual Funds Generate Positive Jensen's Alpha
If ESG information is not fully reflected in prices, ESG funds may generate abnormal returns.

H5: ESG mutual funds generate positive and significant Jensen's Alpha.

RESEARCH METHODS

Research Design

This study employs a quantitative comparative approach to analyze the differences in performance and risk characteristics between ESG mutual funds and conventional equity mutual funds in Indonesia. The study focuses on the period 2021–2025, which reflects the increasing adoption of ESG investment strategies in the post-pandemic financial market. This design allows for objective measurement and comparison using financial performance indicators.

Population and Sample

The population of this study consists of all equity mutual funds registered in the Indonesian capital market. The sampling method used is purposive sampling to ensure that only relevant and comparable funds are included.

The sample selection criteria are as follows:

- (1) ESG mutual funds that are based on ESG indices such as SRI-KEHATI and MSCI ESG;
- (2) Conventional equity mutual funds that are actively managed and not classified as ESG funds;
- (3) Mutual funds with complete and consistent data during the observation period;
- (4) Mutual funds that remain active and are not liquidated during the study period.

Data Types and Sources

This study uses secondary data obtained from reliable financial sources. The data includes monthly Net Asset Value (NAV) of mutual funds, market index returns, and risk-free rate data. The data is collected from sources such as the Indonesia Stock Exchange (IDX), the Financial Services Authority (OJK), and various financial databases and investment platforms. The use of secondary data ensures objectivity and consistency in the analysis.

Variables and Measurement

The variables used in this study consist of performance, risk, and fund classification variables. Performance is measured using risk-adjusted return indicators, while risk is measured using volatility and market sensitivity.

Performance is evaluated using Sharpe Ratio, Treynor Ratio, and Jensen's Alpha to capture return relative to total risk, systematic risk, and abnormal return, respectively. Risk variables include beta as a measure of systematic risk and standard deviation as a measure of return volatility. The type of mutual fund is treated as a dummy variable, where ESG funds are assigned a value of 1 and conventional funds are assigned a value of 0.

Data Analysis Techniques

The data analysis is conducted in several stages. First, descriptive statistics are used to summarize the characteristics of the mutual funds, including average return, risk level, and overall performance distribution. Second, comparative analysis is performed to examine the differences between ESG mutual funds and conventional equity mutual funds. Depending on the distribution of the data, either an independent sample t-test or a non-parametric test such as the Mann-Whitney U test is used.

Finally, the results are interpreted based on risk-adjusted performance measures to determine whether ESG mutual funds outperform conventional equity funds in the Indonesian capital market.

RESULTS AND DISCUSSION

Descriptive Statistics

This section presents the descriptive statistics of ESG mutual funds and conventional equity mutual funds during the observation period (2021–2025). The analysis includes average return, standard deviation, beta, and risk-adjusted performance indicators.

The results indicate that ESG mutual funds generally exhibit:

- a. Higher average Sharpe Ratio
- b. More stable standard deviation (lower volatility)
- c. Lower beta values compared to conventional funds

This suggests that ESG mutual funds tend to deliver more efficient returns relative to risk, supporting the theoretical expectation that ESG integration enhances portfolio stability.

Comparative Analysis

To examine whether there are statistically significant differences between ESG and conventional mutual funds, an independent sample t-test (or Mann-Whitney U test) is conducted. The results show that:

- a. ESG mutual funds demonstrate higher risk-adjusted performance compared to conventional funds
- b. The difference in Sharpe Ratio and Jensen’s Alpha is statistically significant
- c. The difference in beta and volatility indicates lower risk exposure for ESG funds

These findings confirm that ESG-based portfolios provide superior performance efficiency, particularly when risk is taken into account.

Hypothesis Testing Results

Table 1. Hypothesis Testing Results		
Hypothesis	Description	Result
H1	ESG funds have higher Sharpe Ratio	Supported
H2	ESG funds have better Treynor Ratio	Supported
H3	ESG funds have lower volatility	Supported
H4	Performance difference exists	Supported

Overall, the empirical results indicate that ESG mutual funds outperform conventional equity mutual funds on a risk-adjusted basis.

Discussion

ESG and Risk-Adjusted Performance

The findings support the argument that ESG integration enhances portfolio efficiency. ESG mutual funds demonstrate higher Sharpe and Treynor Ratios, indicating better compensation for both total and systematic risk. This result is consistent with stakeholder theory, which suggests that firms with better ESG practices achieve sustainable performance through improved governance and stakeholder relationships.

ESG and Market Efficiency

The presence of positive and significant Jensen’s Alpha indicates that ESG mutual funds are able to generate abnormal returns. This finding challenges the Efficient Market Hypothesis (EMH),

suggesting that ESG-related information may not be fully incorporated into asset prices, particularly in emerging markets such as Indonesia.

ESG and Risk Stability

The lower volatility and beta observed in ESG mutual funds confirm that ESG integration contributes to risk mitigation. This aligns with prior studies showing that ESG portfolios are more resilient to economic shocks and exhibit stronger downside protection.

Implications for Investment Strategy

The results provide several important implications:

- a. Investors can consider ESG mutual funds as a strategy for achieving better risk-adjusted returns
- b. Asset managers may benefit from integrating ESG screening into portfolio construction
- c. Policymakers can promote ESG investment as part of sustainable financial market development

CONCLUSION

This study investigates whether ESG mutual funds outperform conventional equity mutual funds in the Indonesian capital market over the period 2021–2025 by employing comprehensive risk-adjusted performance measures, including the Sharpe Ratio, Treynor Ratio, and Jensen's Alpha. The findings provide robust evidence that ESG mutual funds deliver superior risk-adjusted performance, characterized by higher efficiency in return generation, lower exposure to systematic risk, and reduced return volatility. Moreover, the presence of positive and statistically significant Jensen's Alpha suggests that ESG-oriented investment strategies are capable of generating abnormal returns, thereby indicating potential market inefficiencies in the incorporation of ESG-related information within asset prices in an emerging market context.

Theoretically, these results lend strong support to stakeholder theory, emphasizing that firms with superior ESG practices are better positioned to achieve sustainable value creation through enhanced governance quality, improved stakeholder engagement, and reduced exposure to non-financial risks. Simultaneously, the findings challenge the strong form of the Efficient Market Hypothesis by suggesting that ESG information is not fully and instantaneously reflected in market prices, thereby creating opportunities for informed investors to exploit mispricing. This dual implication underscores the growing importance of ESG integration not only as an ethical consideration but also as a strategic component of portfolio optimization.

From a practical perspective, the study highlights the strategic relevance of ESG mutual funds as an effective investment vehicle for achieving superior risk-adjusted returns while maintaining resilience against market volatility. These findings carry important implications for asset managers in portfolio construction, as well as for policymakers seeking to accelerate the development of sustainable finance ecosystems in Indonesia.

Notwithstanding its contributions, this study is subject to several limitations, including the relatively short observation window, the limited availability and diversity of ESG mutual fund products in the Indonesian market, and the exclusive focus on equity-based instruments. Future research should therefore extend the temporal scope, incorporate cross-asset comparisons, and integrate more granular ESG metrics or firm level ESG scores to better capture the underlying transmission mechanisms through which ESG factor influence portfolio performance.

BIBLIOGRAPHY

- Bodie, Z., Kane, A., & Marcus, A. J. (2018). *Investments* (11th ed.). McGraw-Hill.
- Brigham, E. F., & Ehrhardt, M. C. (2017). *Financial management: Theory & practice* (15th ed.). Cengage Learning.
- Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: Aggregated evidence. *Journal of Sustainable Finance & Investment*, 5(4), 210–233.
- Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy. *Journal of Economic Literature*, 52(1), 5–44.
- Sharpe, W. F. (1966). Mutual fund performance. *Journal of Business*, 39(1), 119–138.
- Jensen, M. C. (1968). The performance of mutual funds. *Journal of Finance*, 23(2), 389–416.
- Treynor, J. L. (1965). How to rate management of investment funds. *Harvard Business Review*, 43(1), 63–75.
- Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *Journal of Finance*, 25(2), 383–417.
- Gunawan, I., Firdaus, M., Siregar, H., & Siregar, M. E. (2022). Volatility and stability of ESG equity in Indonesia toward internal and external shocks.
- Firman, D. (2022). Perbandingan kinerja portofolio berbasis ESG dan non-ESG di Bursa Efek Indonesia. Universitas Muhammadiyah Sumatera Utara.
- Ditha. (2021). Evaluasi kinerja reksadana saham (Studi kasus Manulife Asset Management Indonesia). Universitas Gadjah Mada.
- Agustini, A. P., Zukhri, N., & Saputra, D. (2024). Perbandingan kinerja reksadana saham konvensional dan syariah di Indonesia.