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BOARD GENDER DIVERSITY AND ITS IMPACT ON THE PERFORMANCE OF RESPONSIBLE INVESTING MUTUAL FUND

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A B S T R A C T

The growth of assets under management of Responsible Investing mutual funds in Indonesia has increased rapidly, highlighting increased investor interest in non-financial factors. Despite its continuous growth, debate continues over its financial performance. Within the framework of responsible investing, the presence of women on the board is expected to contribute toward the balancing of financial and non-financial goals. However, empirical evidence related to the role of gender in investment manager governance remains scarce. In this study, we analyze 228 Indonesian equity mutual funds during period 2019 – 2023 and perform robustness check using Propensity Score Matching. It investigates two main questions (1) whether responsible investing mutual funds outperform conventional funds in both crisis and stable times; and (2) the impact of board gender diversity on responsible investing mutual fund performance. The results show that (1) responsible investing mutual funds generally underperform based on Jensen's alpha, but greater resilience during the COVID-19 crisis; and (2) gender diversity in the board of directors negatively influences performance, while positive effect is observed at the commissioner level. These findings offer insight for regulators in formulating governance policies in responsible investing mutual funds.

Keywords : *responsible mutual funds, ESG, SRI, COVID-19, board gender diversity*

Pertumbuhan dana kelolaan reksa dana berbasis *Responsible Investing* di Indonesia meningkat pesat, menunjukkan ketertarikan investor terhadap aspek nonkeuangan. Meski terus mengalami pertumbuhan, tetapi kinerjanya masih diperdebatkan. Dalam konteks investasi berbasis *responsible investing*, keterlibatan perempuan dalam dewan diharapkan berkontribusi pada keseimbangan antara tujuan keuangan dan nonkeuangan. Namun studi empiris terkait peran perempuan di tingkat manajer investasi masih terbatas. Penelitian ini menggunakan panel data 228 reksa dana saham di Indonesia selama periode lima tahun (2019-2023) dan menambahkan *robustness check* menggunakan *Propensity Score Matching*. Hipotesis yang diuji adalah (1) kinerja reksa dana *responsible investing* dibanding konvensional saat krisis dan nonkrisis, serta (2) pengaruh proporsi perempuan di anggota dewan terhadap kinerja reksa dana *responsible investing*. Hasil menunjukkan: (1) secara keseluruhan reksa dana *responsible investing* memiliki *Jensen's alpha* yang lebih rendah dibanding konvensional, tetapi selama krisis COVID-19 kinerjanya menunjukkan resiliensi yang lebih baik, dan (2) kami menemukan keberagaman *gender* dewan direksi berpengaruh negatif terhadap kinerja dana, tetapi tidak pada dewan komisaris. Temuan ini berkontribusi bagi regulator dalam menyusun regulasi terkait tata kelola reksa dana *responsible investing*.
Kata Kunci: *responsible mutual funds*, ESG, SRI, COVID-19, *board gender diversity*

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INTRODUCTION

In recent years, investment approaches have significantly shifted. Investment decisions that were previously focused on financial indicators, today non-financial variables such as ethical value and sustainability considerations has experienced huge growth. Socially Responsible Investment (SRI), an approach that seeks to align investment decisions with ecological, social, and ethical considerations. This approach has since evolved to integrate environmental, social, and governance (ESG) principles into the

investment process.

Globally, ESG focused funds expanded from US$31 trillion in 2018 to US$40 trillion in 2022. Meanwhile, the demand for sustainable investing in Indonesia has also increased. The number of ESG mutual fund products rose from one in 2015 to 42 in 2024. According to Otoritas Jasa Keuangan, 2021 by August 2024, the total AUM of ESG mutual funds in Indonesia reached IDR 10.16 trillion. In addition, the SRI-KEHATI product managed by the KEHATI Foundation also showed rapid growth. In 2017, the total AUM of SRI -KEHATI products at IDR 253 billion; by early 2023, this figure had increased to IDR 4.25 trillion. This shift suggest growing investor awareness regarding the importance of sustainability.

Stakeholder theory suggests companies that implement Corporate Social Responsibility (CSR) offer long-term added value for shareholders by minimizing reputational losses or costs arising from lawsuits (Renneboog et al., 2008; Shakil, 2021). However, empirical findings indicate that the performance of socially responsible mutual funds remains a subject of debate. Some studies that shown a positive effect (Omura et al., 2021; Henke, 2016), while others have reported underperformance (Bodhanwala & Bodhanwala, 2020; Jonwall et al., 2024), and several studies have found no significant difference (Renneboog et al., 2008; Leite & Cortez, 2014; Guimarães & Malaquias, 2023). The main reasons why socially responsible funds are deliver suboptiomal performance lies in the screening process and increased operational costs. Limitations in investment choices due to positive or negative screening can reduce potential returns through a less diversified portfolio (da Silva & Iquiapaza, 2017). Additionally, SRI mutual funds tend to incur higher operating costs, primarily because they must evaluate non-financial criteria in the investment process (Riedl & Smeets, 2017).

Although the investment returns of SRI mutual funds are not significantly different from conventional mutual funds and some even underperform relative to their benchmark index, this does not render socially responsible mutual funds irrelevant to investors. During periods of crisis, high-rated ESG funds experienced less outflow than low-rated ESG funds, even amid declining performance (Nofsinger & Varma, 2014; Papathanasiou & Koutsokostas, 2024). This finding highlights the loyalty of responsible fund investors, who do not respond to poor performance with large-scale withdrawals. Renneboog et al. (2008) argue that socially responsible investors are willing to accept a lower expected rate of return from companies that meet SRI criteria, as long as their ethical objectives are achieved.

The positive performance of SRI-based mutual funds during adverse economic conditions has been widely studied (Nofsinger & Varma, 2014; Guimarães & Malaquias, 2023; Papathanasiou & Koutsokostas, 2024). These favorable outcomes are attributed to the fact that companies with well-integrated ESG practices tend to be more resilient and stable during market turbulence. Sound ESG practices at the corporate level can help mitigate risk. As a result, a sustainable investment portfolio can significantly reduce risk, particularly at the company and industry sector levels where ESG implementation is strong (Maxfield & Wang, 2021).

The governance quality of Investment Managers also influences mutual fund performance. Investment Managers serve a stewardship role, being responsible for safeguarding investor interests regarding entrusted funds. Several previous studies have confirmed that the presence of an independent board and a smaller number of board members contribute to lower fees (Sirri & Peter Tufano, 1998). In the context of socially responsible equity mutual funds, Muñoz (2020) found that funds overseen by boards with fewer and more independent members are positively correlated with financial performance.

While various studies has explored governance characteristics within asset management (Wang et al., 2015; Adams et al., 2018; He et al., 2018; Muñoz, 2020; Naveed et al., 2021; Youssef, 2022).

Research on board diversity in asset management remains unexplored yet. Existing evidence suggest that investors tend place less confidence in female investment managers, as reflected in lower fund inflows compared to funds managed by male (Atkinson et al., 2003; Niessen-Ruenzi et al., 2017). In other words, investors are generally more reluctant to invest in mutual fund products managed by women.

In fact, the female representation on boards tends to promote greater transparency and stronger sustainability practices, including more robust ESG disclosures (Grossmass et al., 2019; Shakil, 2021). From a risk taking perspective, board gender diversity strengthens the link between ESG disclosure and risk reduction. This finding is relevant in the context of responsible investing mutual funds, where female directors in asset management can play a significant role in balancing financial performance with non-financial objectives. Omura et al. (2021) highlighted the variety of terms used to describe socially responsible investing, include ethical and values based investing. Although these terms differ, they share a common approach of emphasizing sustainability and social responsibility in investment decisions. Therefore, this study adopts the broader term "responsible investing" to capture various sustainable investment approaches without being limited to a single definition or method.

Although responsible investing is gaining popularity in the financial industry, its performance still no clear consensus. Several studies have shown that responsible investing mutual funds are more resilient during crises, partly due to good governance. In this governance context, gender diversity on boards can play a significant role in strategic decision-making and risk mitigation. This study aims to address a gap in the stakeholder theory literature by examining the direct influence of board gender diversity on responsible investing mutual fund performance. However, unlike previous research, which examine board gender diversity's moderating effect on the relationship between ESG and risk at firm level (Shakil, 2021), this study offers a novelty, by focusing the role of board gender diversity on ESG (responsible investing) mutual fund risk-adjusted return.

This study addresses the following research questions: (1) How do responsible investing mutual funds affect risk-adjusted excess returns? (2) Do responsible investing mutual funds perform better during the COVID-19 period? (3) How does board gender diversity (BGD) in investment managers affect the performance of responsible investing mutual funds?

This study uses a sample of 228 active equity mutual funds from 2019 to 2023, categorized as responsible investing funds based on classifications provided by Refinitiv Eikon. The period up to 2023 is selected where mutual fund performance reports and governance disclosures are available. While also capturing both pre pandemic and post pandemic recovery phase. It employs multiple panel linear regression and propensity score matching to address potential selection bias. The results indicate that responsible investing mutual funds generate lower risk-adjusted excess returns (Jensen's alpha) compared to conventional mutual funds. However, under market stress during the COVID-19 crisis, the performance of responsible investing mutual funds exhibit greater resilience. Further analysis of a sub-sample of responsible investing funds reveals that female boards directors have a significant negative effect on alpha, suggesting that female board members contribute to portfolio risk mitigation.

This study offer both theoretical and practical contributions. The findings of this research complement previous studies on mutual fund industry in Indonesia, which mainly focus on mutual fund performance. This study provide additional evidence regarding risk in responsible fund, i.e. that greater diversity on the boards of asset management firms enhances risk management effectiveness by reducing fund risk. Additionally, these findings are useful for both institutional and retail investors considering responsible investing

mutual funds as an option to diversify into more stable, risk-resistant portfolios, especially during market downturns. For players in the asset management industry, the results underscore the need to innovate and develop sustainable mutual fund products, particularly in emerging markets like Indonesia, where adoption remains limited. For regulators, the results highlight the need consider board gender diversity in formulating asset management governance policies.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The emergence of responsible investment is commonly linked to stakeholder theory, intoduced by R. Edward Freeman in 1984. This theory emphasizes that firms are responsible not only to shareholders but also to a broader stakeholders. The theory is relevant in the context of responsible mutual fund, in which investment managers are not only required to maximize returns for investors but are also expected to consider social and environmental aspects in making investment decisions (Renneboog et al., 2008). Firms that actively integrate sustainability into their business tend to experience fewer disruptions and reputational risk. Maxfield & Wang (2021) shows that the risk reduction benefits in sustainable funds are largely driven by a firm-level risk management mechanism. As a result, portfolios with lower risk exposure are likely generate a lower expected risk-adjusted return (alpha), this aligns with the modern portfolio theory.

In addition, Upper Echelon Theory (Hambrick, 2010), provides additional insight that the characteristics of decision makers shape organizational outcomes, including risk preferences. Empirical findings by Shakil (2021) indicates that gender diversity significantly moderates the relationship between ESG and both total and systematic risk. This implies that greater presence of woman on boards enhance the ESG impact on financial risk.

Responsible Investing Mutual Fund Performance

Investment approaches have evolved over time, from responsible investment and SRI to ESG. The concept of socially responsible investment prioritizes negative/positive screening, excluding sectors or companies deemed unethical, such as the tobacco and arms industries. The objectives of SRI aims to integrate social values into investment decisions without sacrificing profits (Renneboog et al., 2008; Oehmke & Opp, 2025). Meanwhile, the ESG concept expands this framework by adding governance, social, and environmental criteria into company operations. In 2004, the UN's article *Who Cares Wins* encouraged the integration of these three factors to mitigate risk while enhancing investment value (UN Global Compact, 2004).

Several studies report that the performance of SRI funds is broadly comparable to that of conventional mutual funds (Renneboog et al., 2008; Leite & Cortez, 2014; Guimarães & Malaquias, 2023). From the context of modern portfolio theory, investment constraints can limit diversification and lead to lower return compared to conventional portfolios. Therefore, excluding stocks based on ESG criteria can lead to a suboptimal portfolio. However, Riedl & Smeets (2017) suggest that investors are willing to accept to lower financial return as long as their social value preferences are achieved.

Responsible investing portfolios generally consist of stocks of companies that are sustainable and demonstrate good governance. Maxfield & Wang (2021) shows that sustainability plays a significant role in reducing total, systematic, and idiosyncratic risks at the company level. Thus, sustainable mutual fund portfolios typically have lower risk profiles because they consist of well-governed issuers. Consequently, companies with good governance may yield lower risk-adjusted returns (Aman & Nguyen, 2008).

Responsible investing mutual funds may produce lower risk-adjusted returns than conventional funds. However, this does not imply that the investment manager is underperforming. Rather, it

reflects the investment manager's strategy to target instruments with systematically lower-risk.

H1: Responsible investing mutual funds have lower risk-adjusted excess returns (Jensen's alpha) than conventional equity mutual funds

Performance of Responsible Investing Mutual Funds During the COVID-19 Crisis

Investors who are driven by non-financial motives, such as concern for ESG issues, tend to demonstrate greater loyalty. This group of investors tends to remain invested in responsible companies during periods of crisis, whereas others may opt to sell off investments (Becchetti et al., 2015; Nofsinger & Varma, 2014; Omura et al., 2021)

Companies that engage in social responsibility also tend to maintain more stable relationships with policymakers, regulators, and the public, making them less likely to face significant difficulties during crises (Nofsinger & Varma, 2014; Maradei, 2020). Guimarães & Malaquias (2023) found that while there were no significant differences in abnormal returns between ESG and conventional funds in Brazil, ESG funds performed better during crisis periods. Similarly, Omura et al. (2021) reported that the performance of the MSCI SRI Europe Index improved during the COVID-19 period.

In the context of sustainability ratings, during crises, investors were more selective. They reallocating funds from lower-rated to higher-rated groups under the assumption that higher-rated funds were safer (Alda, 2020; Madhavan et al., 2021; Bofinger et al., 2022; Papathanasiou & Koutsokostas, 2024). Another study by Steen et al. (2020) explains that responsible management practices increase a company's resilience and capacity to survive during crises. In their test, mutual funds with has high ESG ratings in European market delivered a higher alpha than lower-rated funds.

H2: Responsible investing mutual funds perform better during the COVID-19 crisis.

Board Gender Diversity and Responsible Investing Mutual Fund Performance

From a theoretical perspective, gender diversity on boards can be explained through Upper Echelon Theory (Hambrick, 2010). This theory suggest that the demographic backgrounds of top decision makers play an important role in the making process and outcomes of organizational decisions.

In general, women's leadership styles differ from men's. Female board members are often focus more on environmental and social welfare issues, whereas male board members are more profit oriented (He et al., 2018; Chen et al., 2020). Prior studies also have found that women on boards tend to encourage greater transparency and the adoption of stronger sustainability practices, including improved ESG disclosures (Grossmass et al., 2019; Shakil, 2021).

Talking about differences in risk taking perspective, women tend to have a more conservative approach than men when making financial decisions. Multiple studies have shown that women are more risk averse in investing, which leads to more cautious fund management strategies (Niessen-Ruenzi et al., 2017). At the firm level, gender diversity on boards acts as a moderator in the relationship between ESG disclosure and risk (Shakil, 2021). As a result, increased board gender diversity can lead to lower excess returns due to a more cautious risk profile (Wulandari, 2023).

Previous studies generally examined gender diversity at the corporate board and fund managers level (Lawrence, 2022). However, the female representation on board members also has potential to influence investment decisions and strategic policy in asset management firms. Despite, there has been no research in Indonesia that specifically explores board gender diversity within the socially responsible mutual fund industry. This gap needed to be addressed, gender diversity is believed to align with the core principles of responsible investing mutual funds, which emphasize sustainability. The following hypothesis is proposed:

H3: Gender diversity in the investment manager board negatively affects the risk-adjusted return of responsible investing mutual funds.

RESEARCH METHODOLOGY

Research Sample

This study uses data sourced from Refinitiv Eikon and the Financial Services Authority (OJK) database. The sampling technique used is purposive sampling, with the following criteria. First, the sample must be an equity mutual fund that remained actively traded during the observation period. Sample selection is limited to mutual funds listed in the database and officially classified under the Lipper Fund classification on the Refinitiv Eikon platform. Second, the mutual fund must have been active for at least two years. Third, Index mutual funds are excluded from the sample. Based on these criteria, a total number of 255 mutual funds, 1,091 observations were obtained for the 2019–2023 period.

To robustly assess the first and second hypotheses, we employ the nearest neighbor matching algorithm with a 0.05 caliper in the matching process. We find that our matching process is valid since the differences in the matching variables between the two groups (responsible fund and conventional) are not significant. The regression results for the matched samples are presented in Table 7.

Econometric Model

To test the three hypotheses above, this study employs multiple linear regression using panel data to examine the effects of asset management characteristics, responsible investing mutual funds, and the moderation of the COVID-19 crisis period on mutual fund performance. As in Guimarães & Malaquias (2023) the annual alpha for each individual mutual fund is calculated using the market model equation.

In this study, mutual fund performance is measured using Jensen's Alpha, calculated based on the Capital Asset Pricing Model (CAPM), as shown in Equation (1). This model estimates the excess return of the portfolio (Rpt) relative to market risk (Rmt), by controlling for the effect of market returns (IHSG) compared to the risk-free rate (rft).

$$R_{pt-}r_{ft} = \alpha_{pt} + \beta_{pt}(R_{mt} - r_{ft}) + e_{pt} \text{ ……...(1)}$$

After obtaining the Jensen's Alpha, it is used in the second regression model to test Hypotheses (1) and (2), with the following equation:

$$ALPHA_{it} = \beta_0 + \beta_1 SR_Fundit + \beta 1 SR_Fund_{it} * Covid_{it} + \sum^{1}{}_{4} X_{it} + e_{it} \text{ …. (2)}$$

In Model (2), ALPHA is the Jensen's Alpha value obtained from the market model equation. SR_Fund refers to a dummy variable indicating responsible investing mutual funds, and SR_Fund × Covid is the interaction term between the responsible investing dummy and the COVID-19 year dummy. X is a set of control variables, including Board Size, Board Independence, Fund Age, and Fund Size, while ε denotes the error term.

Hypothesis (3), which relates to board gender diversity, is tested using a third regression model. This model is applied only to the sub-sample of funds categorized as responsible investing mutual funds. The effect of board gender diversity on the performance of socially responsible mutual funds is measured using proxies for diversity on both the board of commissioners and the board of directors. This approach is consistent with the two-tier governance system, which is applied in Indonesia. The board of commissioners acts as a supervisory and advisory body to the board of directors, while the board of directors is responsible for strategic and investment decisions. This approach to measurement follows prior methodologies used in previous studies (Wulandari, 2023; Agus & Utama, 2023; Mukhibad et al., 2025).

$$ALPHA_{it} = \beta_0 + \beta_1 FDIR_{pt} + \beta_2 FCompt + \Sigma^{1}{}_{4}\beta_3 X_{it} + e_{pt} \text{ ……...……..…….. (3)}$$

Note: ALPHA: Jensen's Alpha of mutual fund *p* at time *t;* FDir: Proportion of women on the board of directors; FCom: Proportion of women on the board of commissioners; Board_Size: Total number of board members; Board_Ind: Proportion of independent commissioners to the total number of commissioners; Fund_Size: Size

of the mutual fund, measured by total assets under management (AUM); Fund_Age: Age of the mutual fund since its inception; and ε: Error term

ANALYSIS AND DISCUSSION

Descriptive Statistics and Correlation

The descriptive statistics are presented in two tables. Table 1 shows the regression variables used in Model 2, while Table 2 displays statistics for the sub-sample used in Model 3, specifically mutual funds categorized as responsible investing. Table 1 is divided into two panels: Panel A presents the characteristics of the sample categorized as responsible investing (SR_Fund), while Panel B shows descriptive statistics for conventional mutual funds.

Based on Table 1 Panel A, mutual fund performance in the SR Fund group shows a slightly lower average alpha than non-SR mutual funds during the non-COVID period, at -0.24% compared to -0.15%. However, during the COVID-19 period, both groups experienced improved performance. Notably, the SR Fund group saw a greater increase in average Alpha, rising to -0.01%, compared to non-SR Funds which improved to -0.09%. This suggests a preliminary indication that SR Funds tend to be more resilient under market stress.

SR Funds also tend to be younger and have smaller assets under management (AUM) compared to non-SR Funds. During the COVID-19 period, the average age of SR Funds was 5.43 years, younger than the 7.17 years for non-SR Funds. In the non-COVID period, SR Funds had an average age of 6.25 years versus 8.32 years for non-SR Funds. In terms of AUM, SR Funds averaged IDR 296 billion during COVID-19 and IDR 556 billion in the non-COVID period, while non-SR Funds had higher averages of IDR 329 billion and IDR 596 billion, respectively. This shows in general that SR Funds are newer products seen from smaller fund sizes compared to conventional funds.

Table 3 shows descriptive statistics for Model 3's sub-sample, those funds classified as responsible investing. The average Jensen's Alpha of this group is -0.0019 indicates that mutual fund performance in this group is generally below the market benchmark (IHSG). The average proportion of women on boards of directors was 26.1% and the median is 25%. While the average proportion of female commissioners was only 19.7% with a median of 0, this imply that more than half of the funds have no female commissioners. This highlights limited female representation, particularly at the commissioner level.

The organizational structure among responsible investing mutual funds quite

Table 1.
Descriptive Statistics Model 1

	Panel A SR_Fund					
	During Covid			Non Covid		
Variables	Mean	Median	Std Dev	Mean	Median	Std Dev
Alpha	-0.01%	0.08%	0.46%	-0.24%	-0.15%	0.53%
Board Size	2.74	3.00	0.77	2.82	3.00	0.88
Board Ind	0.35	0.33	0.22	0.40	0.33	0.22
Fund Age	5.43	4.00	3.79	6.25	5.00	4.05
AUM (Rp million)	296,000	67,600	733,000	329,000	98,200	707,000
Lipper Number		47			57	
Obs		47			208	
	Panel B Non SR_Fund					
	During Covid			Non Covid		
Variables	Mean	Median	Std Dev	Mean	Median	Std Dev
Alpha	-0.09%	0.00%	0.40%	-0.15%	-0.09%	0.40%
Board Size	2.73	3.00	0.73	2.77	3.00	0.82
Board Ind	0.34	0.33	0.21	0.37	0.33	0.20
Fund Age	7.17	5.00	5.46	8.32	7.00	5.65
AUM (Rp million)	596,000	131,000	1,300,000	556,000	126,000	1,170,000
Lipper Number		165			171	
Obs		165			671	

lean, can be seen from the number board size of 2.82 members and an average proportion of independent commissioners is 38.8%. This aligns with the requirements of POJK No. 10/POJK.04/2018, which mandates that at least 30% of board members be independent commissioners. Fund age statistics show a median of 5 years and an average of 6.04 years, suggesting most funds are relatively young. AUM distribution is positively skewed, with an average of IDR 323 billion and a median of IDR 95 billion. However, this skewness has been addressed using logarithmic transformation for regression analysis.

Correlation analysis shows that the SR_Covid variable has a moderately strong and statistically significant positive correlation with SR_Fund. This is expected, as SR_Covid is the interaction term between SR_Fund and the COVID-19 year. Although some correlation coefficients are

Table 2.
Definition of Research Variables

Variable	Operationalization
Variabel Independen	
Jensen's Alpha	This study uses Jensen's Alpha, derived from the Capital Asset Pricing Model (CAPM), as the measure of portfolio performance. Alpha represents the excess return after adjusting for market risk. A positive alpha indicates that the portfolio generates returns above what would be expected for its level of risk, while a negative alpha reflects returns below risk-adjusted expectations.
Variabel independen	
Responsible Investing (SR_Fund)	Responsible investing is identified based on Refinitiv Lipper classifications. Mutual funds that meet at least one of the following criteria—ESG, socially responsible investing, negative screening, positive screening, or impact investing—are classified as responsible investing funds. These funds are assigned a value of "1" (dummy variable),
COVID Year Moderation (SR_Covid)	This is an interaction variable between the SR_Fund dummy and the COVID-19 crisis year dummy (i.e., 2020). It tests whether the COVID -19 crisis amplified or reduced the performance effects of responsible investing mutual funds. (Guimarães & Malaquias, 2023)
Indikator of Gender Diversity	
Proportion woman Directors (FDir)	Measured as the number of female directors on the board of directors divided by the total number of board members (He et al., 2018).
Proportion Women Commissioners (FCom)	Measured as the number of female commissioners on the board of commissioners divided by the total number of commissioners (Juvita & Utama, 2024).
Control Variables	
Board Size	Total number of members on the board of directors (Haider & Fang, 2016).
Proportion of Independent Commissioners	Calculated as the number of independent commissioners divided by the total number of commissioners (Naveed & Zain Ul Abdin, 2020).
Mutual Fund Age	Measured as the natural logarithm of the mutual fund's age in years, calculated at the beginning of each observation year (Farid & Wahba, 2022).
Mutual Fund Size	Measured as the natural logarithm of the mutual fund's total assets under management (AUM), in Indonesian Rupiah (Othman et al.,

statistically significant, all Variance Inflation Factor (VIF) values are below 1.25. These low VIF values (well below the threshold of 5) indicate that multicollinearity is not a concern in this model.

Performance of Responsible Mutual Funds and the COVID-19 Crisis

To test the performance hypothesis of responsible investing equity mutual funds in both crisis and non-crisis periods, this study applies panel data regression as specified in Equation (2). Before conducting hypothesis testing, this study applies the Breusch Pagan LM test and the Hausman test to determine the most appropriate panel data regression model. The Breusch Pagan LM test (p-value = 0.0358) indicates that random effect model is preferable to pooled OLS, while the Hausman test (p-value = 0.000) supports the use fixed effects model. However, the key variable SR_Fund becomes omitted under FEM due to multicollinearity arising from its time-invariant nature, which causes its effect to be absorbed by the Least Squares Dummy Variable (LSDV) approach. Therefore, despite the Hausman result, this study adopts REM, consistent with Omura et al. (2021), who also employed REM for time-invariant SRI dummy variables, and robustness checks are conducted to strengthen the findings.

Table 5 presents estimation results for the full sample, which includes both conventional and responsible investing equity mutual funds. The SR_Fund variable has a negative coefficient of -0.00096, significant at the 1% level. This finding suggests that responsible investing mutual funds deliver significantly lower risk-adjusted returns than conventional mutual funds during non-crisis periods. This supports the first hypothesis and aligns with prior literature (Renneboog et al., 2008; Bollen, 2007; Bodhanwala & Bodhanwala, 2020). The result is also consistent with Omura et al. (2021), who found that ETF mutual funds in the U.S. underperformed their benchmark indices both before and during the COVID-19 pandemic.

There are two primary explanations

Table 3.
Descriptive Statistics Model 2

Variables	N	Mean	Median	Std	Min	Max
Alpha	255	-0.002	-0.001	0.005	-0.032	0.013
F_Dir	255	0.26	0.25	0.25	0	1
F_Comm	255	0.20	0	0.24	0	0.67
Board_Ind	255	0.39	0.33	0.22	0	1
Board Size	255	3.00	3	0.87	1	5
Fund_ Age	255	6.04	5	4.02	1	17
Fund Size	255	25.14	25.29	1.65	21.74	29.36

Table 4.
Correlation Table

	SR_Fund	SR_Covid	Fdir	Fcom	B_Size	B_Ind	F_Age	F_Size	VIF
SR_Fund	1.00								1.23
SR_Covid	0.384***	1.00							1.18
Fdir	0.063**	0.00	1.00						1.06
Fcom	0.03	0.05	-0.05	1.00					1.1
B_Size	0.02	-0.01	0.131***	0.179***	1.00				1.2
B_Ind	0.05	-0.02	0.073**	-0.110***	-0.152***	1.00			1.06
F_Age	-0.158***	-0.087***	0.160***	0.147***	0.220***	0.05	1.00		1.15
F_Size	-0.126***	-0.058*	0.02	0.219***	0.288***	0.04	0.209***	1.00	1.18

*** significant at the 1% ; ** significant at the 5% ; * significant at the 10%

for these results. First, responsible investing portfolios are typically composed of issuers with strong corporate governance, which tends to lower portfolio risk. As a result, Jensen's Alpha values are also lower. This is consistent with the study by Aman & Nguyen (2008), which finds that firms with better governance often generate lower returns due to being perceived as more stable and less risky. Similarly, other studies show that ESG disclosure mitigates risk, which in turn lowers excess returns (Wulandari, 2023).

Second, the characteristics of emerging markets like Indonesia also play a role. The number of ESG or SRI-compliant issuers in Indonesia remains low when compared to developed markets. Over the past five years, only about 9.7% of companies listed on the Indonesia Stock Exchange (IDX) disclosed ESG scores consistently. This reduces the portfolio selection options available to investment managers. ESG funds tend to underperform in some countries due to ethical screening constraints, which restrict diversification opportunities, a concept related to modern portfolio theory (Renneboog et al., 2008).

Meanwhile, during periods of financial stress, the SR_Fund variable shows a positive and significant effect on risk-adjusted performance, with a coefficient of 0.00237 (significant at the 1% level). This supports the second hypothesis, which states that responsible investing mutual funds perform better during the COVID-19 cris. Responsible investing funds outperform not only conventional funds during the same crisis period but also their own performance in non-crisis periods. The result is consistent with prior studies related to ESG fund performance during crises (Nofsinger & Varma, 2014; Guimarães & Malaquias, 2023; Omura et al., 2021).

This also supports the research of Papathanasiou (2024), which finds that that during the COVID-19 pandemic, funds with low ESG ratings experienced greater capital outflows, whereas funds with higher ESG ratings maintained stable inflows. This suggests that investors became more selective during the crisis, moving their investment towards funds that are perceived as more sustainable.

Table 5.
Model 1 Regression Result

Variable	Coefficient	p-value
C	-0.0046**	0.0240
SR_Fund	-0.00096***	0.0050
SR_Fund x Covid	0.00237***	0.0000
Board_Size	0.00883***	0.0000
Board_Ind	0.00013	0.8660
Fund_ Age	0.00009*	0.1720
Fund_ Size	0.00061	0.8190
Obs		1,091
Cross Section		228
R-squared		0.0138
Year FE		Yes
Fund Company FE		Yes
Prob > F		46.77***

*** significant at 1% ** significant at 5% * significant at 10%

Board Gender Diversity in Responsible Mutual Funds

The effect of gender diversity on the boards of asset management firms was tested using 57 responsible investing mutual funds. The results show that gender diversity on the board of directors (Female_Dirr) has a coefficient of -0.00067 with a p-value of 0.0005 (significant at the 1% level). This indicates that an increase in the proportion of female directors has a significant negative effect on the alpha of responsible investing mutual funds. In contrast, gender diversity on the board of commissioners (Female_Comm) has a positive and significant impact on alpha, with a coefficient of 0.0054 and a p-value of 0.028 (significant at the 5% level).

These findings are consistent with Shakil (2021), who finds that gender diversity on boards of directors in responsible funds is associated with lower total and systematic risk. In interaction models, gender diversity strengthens the relationship between ESG disclosure and financial risk. This suggests that female representation on boards of directors contributes to risk mitigation, therefore reducing excess returns. This aligns with the findings of other researchers that boards with high gender diversity are associated with lower returns due to more conservative decisions (Grossmass et al.,

2019; Chen et al., 2020; Raghavendra Rau et al., 2022; Wulandari, 2023).

The contrasting effects between gender diversity on the boards of directors and on the board of commissioners can be attributed to the differing roles that they play. Women on the board of directors are directly involved in decision-making, including investment selection, which may create bias toward conservative choices and underinvestment. Meanwhile, women on the board of commissioners take on a more supervisory role, focusing on governance. Within Indonesia's two-tier board system, commissioners monitor and act as advisors to directors. Female commissioners contribute unique perspectives, experiences, and competencies that enhance organizational effectiveness and performance (Mukhibad et al., 2025).

In a dual-board system, the board of commissioners represents stakeholders interest, enhance oversight function, ensure with good governance principles. Therefore, the impact of gender diversity on performance depends on the specific role—executive or non-executive. These findings support Hypothesis 3, which posits that board gender diversity negatively influences the risk-adjusted returns of responsible mutual funds.

For Financial Service Authority (OJK) must consider the implication of setting minimum female representation on boards but should be carefully balanced. For example an increased in females directors would lead to a decline portfolio risk adjusted return. Thus, a moderate level of gender diversity may achieve optimal governance and performance outcomes.

Robustness Test

To validate the baseline regression findings, a robustness check was conducted by including year fixed effects, while omitting fund company fixed effects, in line with the approach suggested by Agarwal et al. (2022). In this treatment, the effect of the SR_Fund dummy variable is absorbed by the fixed effects.

To address the potential for selection bias because the selection of responsible-investing mutual funds is not random, there is a possibility that differences in certain characteristics such as fund size, fund age, or board structure may influence the likelihood of becoming a responsible fund and subsequently affect its performance. Therefore, the use of Propensity Score Matching is expected to produce comparable groups based on these characteristics.

The procedure began by estimating the propensity score using fund characteristics such as board size (DSize), board independence (Bindependence), fund age (Age), and log of assets under management (log_AUM). The results show that the distribution of propensity scores between the treatment group (responsible funds) and the control group overlaps substantially, the kernel density graph of common support ranges from 0.0889 to 0.5991, covering all 1,017 observations. This indicates that matching can be conducted without excluding a large portion of the sample.

Table 6.
Model 2 Regression Result

Variable	Coefficient	P-value
Const	-0.0033	0.829
Female_Dir	-0.0067**	0.005
Female_Comm	0.0054**	0.028
Board Size	0.0005	0.943
Board_Ind	-0.0084***	0.000
Fund_ Age	0.0006**	0.048
Fund_ Size	0.0000	0.924
Obs		255
Cross Sections		57
R-squared		0.0732
Prob > F		4.50***

*** significant at 1% ** significant at 5% * significant at 10%

Furthermore, the balancing property test confirms that the covariates between the treatment and control groups are well balanced after matching. The mean differences between the treated and control units become much closer compared with the unmatched sample, with bias reductions ranging from 50% to 99%, and the overall mean bias dropping significantly from 22.1% to 1.9%. The chi-square value for the matched sample is not significant (p = 0.989), indicating that after matching, the covariates no longer predict treatment assignment. Therefore, both the common support requirement and the balancing requirement are satisfied. After confirming that the sample meets the balancing test, regression analysis was conducted on the matched sample, including control variables for SR_Covid, board size, board independence, fund age, and fund size.

The results—presented in Table 7—are consistent with the baseline model using REM. The SR_Fund variable has a coefficient of -0.00126, significant at the 1% level, while the SR_Covid interaction term has a coefficient of 0.00245, indicating that the performance of responsible investing mutual funds increased by 0.24% relative to conventional funds during the COVID-19 crisis.

These findings support Hypothesis 1, which states that responsible investing mutual funds yield lower risk-adjusted excess returns than conventional mutual funds. Additionally, they also support Hypothesis 2, which states that responsible investing mutual funds demonstrate better performance during periods of market stress such as the COVID-19 crisis.

According to Aman & Nguyen (2008), these results are consistent with the efficient market theory. In this context, responsible investing mutual funds are assumed to have strong governance because their investment process involves multiple layers of screening. In other words, investors cannot earn abnormal returns simply by choosing stocks based on their corporate governance scores. Therefore, low or negative alpha in the mutual fund context should not be interpreted as poor performance, but rather as evidence that the market anticipates risks and incorporates governance information into stock prices.

CONCLUSION

The purpose of this study is to examine the performance of responsible investing mutual funds compared to conventional mutual funds under both normal market conditions and periods of crisis, particularly during the COVID-19 pandemic. In addition, this study explores the role of gender diversity on the board and its effect on financial performance.

The results indicate that, on average, responsible investing mutual funds yield lower risk-adjusted excess returns compared to conventional mutual funds, thus supporting the first hypothesis. However, during the COVID-19 crisis, responsible investing mutual funds were more resilient and performed better when

Table 7.
Robustness Regression Result

Variable	Coefficient	p-value
C	-0.0059*	0.083
SR_Fund	**-0.0011****	**0.028**
SR_Fund x Covid	**0.00186***	**0.059**
Board_Size	0.00131***	0.000
Board_Ind	0.00003	0.980
Fund_ Age	0.00008**	0.090
Fund_ Size	0.00002	0.859
Obs		416
Cross Section		170
R-squared		0.0750
Fund Company Clustered SE		Yes
Year FE		Yes
Fund Company FE		No
Prob > F		3.58***

compared to their conventional counterparts. These findings support the second hypothesis and suggest that responsible investing mutual funds are a more stable investment alternative during market downturns.

Further analysis into responsible investing mutual funds reveals that the presence of women on the board of commissioners has a significant positive effect on mutual fund risk-adjusted returns. Conversely, gender diversity on the board of directors has a negative effect on said returns. This finding is consistent with prior studies indicating that women tend to be more risk-averse than men. In the context of mutual fund management, higher female presence on the board may lead to more conservative investment strategies, which in turn reduce portfolio risk and thus potentially lowering alpha.

LIMITATION AND SUGGESTION

Limitation

This study has several limitations that can be explored further in future research. First, performance measurement is limited to financial indicators. Future studies could expand the analysis to include non-financial performance indicators. Second, the study focuses on gender diversity within board composition. Future research could explore other dimensions of diversity, such as educational background, professional expertise, religion, or industry experience.

Suggestion

The following suggestions are proposed. For institutional and retail investors, responsible investing mutual funds should be considered as a viable option for portfolio diversification, especially during periods of financial turbulence. For industry players, particularly Investment Managers, there is an opportunity to innovate and expand product offerings in the responsible investing segment. Given the increasing global demand for sustainable financial products, and the relatively limited availability in emerging markets like Indonesia.

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