ESG Scores' Impact on Portfolio Performance, An Evidence from Indonesia

John Iwan Kusno, Fransisca Tharia Hartanto, Teddy Trilaksono

School of Business and Economics, Universitas Prasetiya Mulya, Jl. R. A. Kartini (TB Simatupang), Cilandak Barat, DKI Jakarta 12430, Indonesia

ARTICLE INFO

Corresponding author:
john.kusno@pmbs.ac.id

ABSTRACT

This study is to determine the effect of using the Refinitiv ESG score in stock picking and its impact on portfolio performance using the ESG Score. Methodology for this research using a two-sample t-test of Net asset value (NAV) price-return portfolios and the Sharpe ratio as a proxy for risk adjustment return for portfolio evaluation. The results of this study indicate that the use of a Refinitiv rating may serve as a suitable metric for stock selection strategy because companies with higher ESG scores tend to exhibit superior performance. Since ESG ratings in Indonesia are still difficult to obtain, those with access to ESG ratings will have more advantages. Greater return performance is followed by an increased level of risk. Given the assumption of a well-diversified portfolio, it is hypothesized that the increased risk can be attributed to a larger variance coefficient. So that the Sharpe ratio must be used for portfolio evaluation to measure risk-adjusted returns.

SARI PATI

Penelitian ini adalah untuk mengetahui pengaruh penggunaan skor Refinitiv ESG dalam pengambilan saham dan dampaknya terhadap kinerja portofolio ESG Score. Metodologi penelitian ini menggunakan uji two sample t-test terhadap harga return portofolio Net Asset Value (NAV) *dan menggunakan* Sharpe ratio *sebagai proksi return penyesuaian risiko untuk evaluasi portofolio. Hasil penelitian ini menunjukkan bahwa penggunaan peringkat Refinitiv dapat berfungsi sebagai metrik yang sesuai untuk tujuan strategi pemilihan saham karena perusahaan dengan skor ESG yang lebih tinggi cenderung menunjukkan kinerja yang unggul. Karena pemeringkatan ESG di Indonesia masih sulit diperoleh, maka pihak yang memiliki akses terhadap pemeringkatan ESG akan lebih diuntungkan. Penting untuk dicatat bahwa kinerja imbal hasil yang lebih besar diikuti oleh peningkatan tingkat risiko. Berdasarkan asumsi mengenai portofolio yang terdiversifikasi dengan baik, terdapat hipotesis bahwa peningkatan risiko dapat dikaitkan dengan koefisien varians yang lebih besar. Oleh karena itu,* Sharpe ratio *harus digunakan untuk evaluasi portofolio sebagai pengukuran pengembalian yang disesuaikan dengan risiko.*

INTRODUCTION

In the last decade, ESG (Environmental, Social, and Governance) issue has been trending in many life aspects, including investing. Investors have become more aware of ESG issues such as global warming, biodiversity damage, gender equality, and so on. Bell (2021) also stated that as the COVID-19 pandemic continues to be subsided, the investment landscape will place more value on ESG disclosures.

Now, when we talk about ESG disclosures, the demand for such disclosures is substantial. To be able to conduct ESG investing, we should have proper ESG disclosure. Morningstar, Inc. reported that total assets in ESG-designated funds in the US reached more than USD 3.9 trillion at the end of September 2021. In Indonesia, according to Hoesen, member of OJK Board Commissioner, as of May 2022, there were 25 mutual fund products with ESG underlying assets and its net asset value combined reached IDR 3.5 trillion. The growing number of ESG investors has been supported by exponential growth in the amount and type of data available for ESG investors to consider.

In the past, a significant amount of the ESG information accessible to investors was obtained through voluntary collaboration with public firms either responding to survey inquiries or releasing sustainability documents founded on one or more of the numerous frameworks and reporting criteria established by nonprofit organizations. The voluntary revelation of ESG data over the past three decades has resulted in the establishment of numerous key reporting standards and frameworks, such as SASB and GRI. In Indonesia, we have POJK 51 as a standard for ESG reporting. All publicly listed companies in Indonesia must provide a sustainability report by 2022.

Given that many factors are being discussed in the sustainability report, investors need someone to assess whether the company's practice in the areas of ESG are better than another publicly listed company or not. Thus, ESG ratings are designed to provide investors, stakeholders, and the public with insights into a company's efforts to be more sustainable and its commitment to responsible business practices. One of the well-known ESG rating agency is Refinitiv. In general, ESG ratings are usually available for a limited number of stocks only, and the published ratings are based on the last year company's performance. For example, we can only obtain the ESG score for 48 publicly listed companies in Indonesia in 2020. The ESG score published in 2020 was based on the company's performance in 2019. For 2021, 68 publicly listed companies in Indonesia were scored by Refinitiv for their 2020 ESG performance. In 2022, Refinitiv was able to publish ESG scores for 12 more publicly listed companies in Indonesia. In other words, a total of 80 companies were scored by Refinitiv regarding their ESG efforts.

The ability to obtain ESG score data has made it easier for investors to make investment decisions. Having access to Refinitiv data on the ESG Score, we searched for the 2021 ESG Score of publicly listed companies in Indonesia. 68 publicly listed companies' ESG Scores were obtained. Based on the Refinitiv score, we rank all ESG scores from highest to lowest. Due to the limited amount of data, we built a portfolio comprising only 10 companies with the highest ESG score. Compared with the Indonesian stock market (IHSG), the top 10 ESG-score portfolios outperformed the market in 2022 (Figure 1).

Numerous studies have documented the relationship between ESG performance and company stock performance. Syafrullah and Muharam (2017) found that social performance and corporate governance have a significant positive effect on abnormal stock returns in 192 Indonesian and Malaysian publicly listed companies that revealed the ESG score during 2010–2015. Khan (2019) developed a new governance score on the governance factor for companies from the MSCI All Country World Investable Market Index (ACWI IMI) from 2009–2017. Khan (2019) separated all available data into
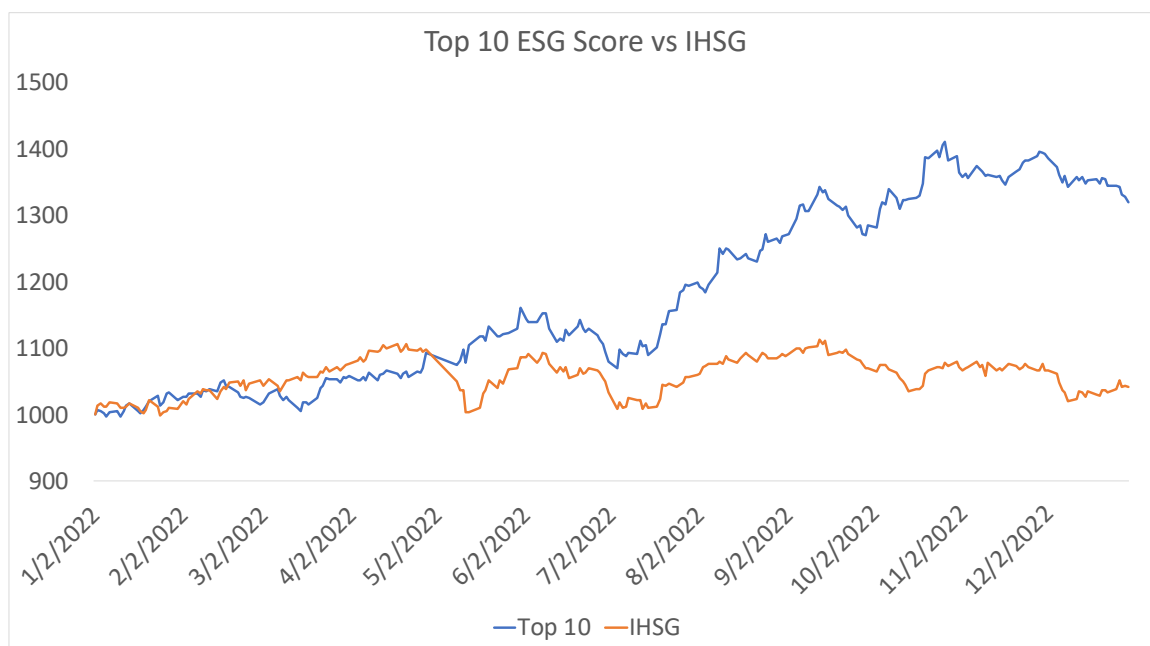
Figure 1. Portfolio performance of the top 10 companies with the highest ESG score vs. IHSG
Source: Refinitiv, Capital IQ, Team Analysis

quartiles and built a portfolio based on that. Based on his findings, Khan (2019) concluded that new governance and ESG metrics have a significant influence on stock return during the testing period.

Oppose findings regarding the negative relationship between ESG scores and stock performance have also been found in newer research. Breitz and Partapuoli (2020) analyzed the relationship between ESG and stock returns for US firms included in the S&P database from 2005 to 2018. Breitz and Partapuoli (2020) obtained the ESG scores from Refinitiv. They found that portfolios of stocks with low ESG scores outperformed the market and the portfolio of stocks with high ESG scores. Gavrilakis and Floros (2023) found that ESG performance and stock return on European Companies from 2010 to 2020 had a significant negative correlation. Moreover, the benefit of not investing in companies with high ESG scores could prompt investors to favor smaller companies with higher price-to-book and Sharpe ratios.

Limited literature regarding the relationship between ESG scores and stock performance make this topic worth investigating further. In addition, there is a variety of results between one paper to another. Since Indonesia is a country with significant environmental challenges, such as deforestation and pollution. Also given its diverse population and varying socio-economic status, this study seeks to determine whether Indonesian investors prefer companies that are more responsible. More responsible companies are indicated by high ESG scores provided by Refinitiv. We will make a portfolio of stocks having a high ESG score and another portfolio of stocks having a low ESG score. The period during which portfolio performance will be assessed is from June 2020 to May 2023 (yearly). If investors prefer more responsible stocks, a portfolio with a high ESG score should outperform the market and a portfolio with a low ESG score in a consistent basis. Thus, the first research question for this study is as follows: "Do stocks with high ESG score earn better return than the market and the portfolio with low ESG score on a consistent basis?" Since we believe that stocks having high ESG scores will appreciate, we are also interested in examining the potential underperformance of stocks having low ESG scores relative to the

benchmark. Therefore, the next research question is: "Do stocks with low ESG score earn lower return than the market on a consistent basis?"

Importance of ESG Score on Investment Decisions
The basic concept of ESG is based on the concept of Stakeholder theory by Freeman (1984). A stakeholder is defined as an individual or group that has the role of influencing a company's decision. According to Stakeholder theory, an organization or company must try to do ethical things and generate benefits for all stakeholders to prosper. Furthermore, Stakeholder theory underlines that a company's management should be able to take accountability or responsibility to stakeholders by engaging in activities that are deemed important by them.

The importance of sustainability for companies began with an initiative to save the environment during the "Earth Summit" in June 1992. The event is held by United Nations Conference on Environment and Development (UNCED) in the vibrant city of Rio de Janeiro, Brazil. Following this event, in 1994, John Elkington introduced the groundbreaking concept of the triple bottom line (people, planet, profit), which expanded the conventional business concept to focus not only on profitability but also on incorporating sustainable economics.

As time goes by, ESG has become a highlight in every aspect of life, including investment decisions. ESG investors use their assets to pursue non-financial purposes as opposed to typical investors who solely invest to pursue financial goals. Since ESG investment funds have been growing in number and value, investors and financial advisors will only be able to evaluate an ESG fund with proper information on (1) the ESG themes it focuses on, 2) its ESG intensity, and 3) its ESG investing method. Unfortunately, for various reasons, this information is often inadequate. First, no common guidelines exist for corporate reporting of ESG-related data. Second, regulators are still not enforcing portfolio managers to disclose their detailed ESG investment methods or demonstrate how their ESG funds are

managed differently from conventional funds. Third, many investors and their financial advisors claim that they need deeper education on non-financial subjects related to ESG. Due to these challenges, many portfolio managers and investors rely on independent ESG rating firms that offer public companies ESG scores (Horan et al., 2022).

Relationship between ESG Scores and Firm Performance
Natural resources, sustainable packaging, supply chain dynamics, labor reliability, and evolving governance regulation are important ESG factors that play a significant role in assessing investment risk (Hübel & Scholz, 2020). As such, since this risk affects company performance and its stock price, investors should take into account ESG risks when making an investment decision. Unfortunately, until now, it has been very hard to get access to quantitative ESG data or ESG scores (CFA Institute, 2017). Even if the data are accessible, only a limited number of stocks have an ESG score. Within empirical research concerning equity funds, it is common for 20%–40% of equity portfolios to lack ratings (El Ghoul & Karoui, 2017)

Although the amount of data on ESG scores is still limited, empirical studies on the relationship between ESG scores and stock or fund performance can still be found. Whelan et al. (2021) from Rockefeller Asset Management and the NYU Stern Center for Sustainable Business documented a literature review on the relationship between ESG and firm performance. They studied 1000 research papers that was published 2015 to 2020. Based on their analysis, 58% of study published a positive relationship between ESG and firm performance, 8% of the study reported a negative relationship between ESG and firm performance, 13 % of the study did not find a significant impact between ESG and firm performance, and the remaining studies found a mixed relationship, depending on the variables used.

Most of the studies focused on the relationship between an ESG score and a company's profitability.

There is a limited number of studies that focus on the relationship between ESG score and stock performance. Still, most studies available found a positive relationship between ESG score and stock or fund performance (Syafrullah & Muharam, 2017; Khan, 2019; Naffa & Fain, 2020; Xu et al., 2023). Syafrullah and Muharam (2017) attributed the significant positive abnormal stock returns in the Indonesian and Malaysian stock markets to social and governance aspects. In a more applied research paper, Xu et al. (2023) found that the effectiveness of ESG-based portfolios depends on the stock selection methodology used. Sector-specific traits should also be considered when interpreting ESG scores. Since the number of studies that focus on applied research related to ESG scores and fund performance are much more limited, we are interested to seek whether ESG scores impact portfolio performance in the Indonesian equity market.

Hypotheses Development

ESG is an acronym representing the three key factors of Environmental, Social, and Governance. There is a growing trend among investors to incorporate non-financial aspects into their analysis procedures to uncover significant dangers and potential avenues for growth (CFA Institute, 2024) When making a decision on an ESG investment, investors need access to ESG quantitative data or an ESG score. When the data are accessible, investors can rank the company based on its ESG score. The higher the ESG score, the higher the possibility that the stock is a potential investment.

Investors can obtain access to ESG scores through Refinitiv. Assuming that investors apply ESG investing based on their ESG scores, stock selection is based on stocks that have high ESG scores. If ESG investing is fruitful, the investor's portfolio should earn a significantly higher return than the market as its benchmark. In a portfolio, net asset value (NAV) is a fund's per share value that represents its valuation. Therefore, higher portfolio returns should translate to higher NAVs over the investment period. Based on the above assumptions, the first hypothesis of this study is as follows:

H1a. Portfolios with high ESG ratings tend to achieve greater net asset value (NAV) than the market

In contrast, funds that contain stocks with low ESG scores are typically associated with higher risk. Due to higher risk, fund managers or investors with a strong preference for ESG investing would not prefer these stocks, making the performance of this stock worse than the market and the funds with high ESG scores. Lower performance translates to lower NAV over the investment period. Based on this assumption, the second and third hypotheses of this study are as follows:

H1b. Portfolios with low ESG ratings tend to achieve lower net asset value (NAV) than the market
H1c. Portfolios with low ESG ratings tend to achieve lower net asset value (NAV) than the Portfolios with high ESG ratings
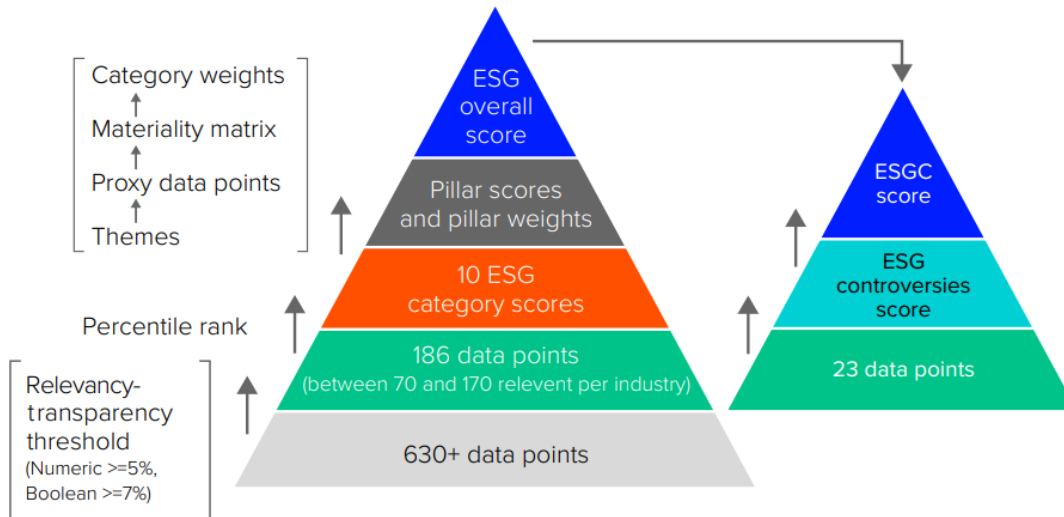
METHODS

The sample comprised a publicly traded corporation listed on the Indonesian Stock Exchange (BEI). The methodology used for sample selection is purposive sampling, applying the following criteria:

Sample selection criteria

No	Criteria	Remarks
1.	Public Companies on the Indonesian Stock Exchange, 2020	656 Companies
2.	Companies with Refinitiv ESG Score data from 2019 to 2021	68 Companies
3.	10 Companies with the best Refinitiv ESG performance scores during 2019-2021	14 Companies
4.	10 Companies with the worst Refinitiv ESG performance scores during 2019-2021	16 Companies
5.	Period of research years (June 2020–May 2023)	3 Years
6.	Observation period	732 working days

Explanation of Refinitiv ESG Scoring Methodology can be seen in below information:

The Refinitiv ESG scoring methodology can be summarised and illustrated by means of a five-step process flow.

Source: Refinitif (2022), ESG Overall Score Methodology
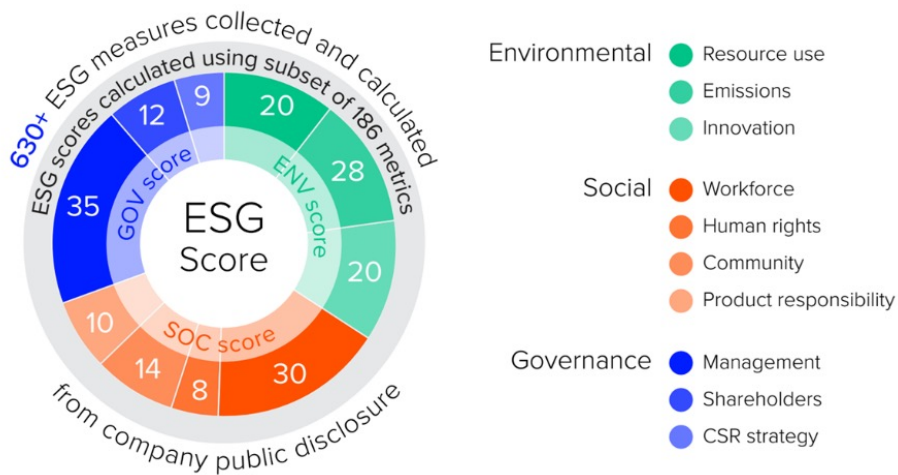
Source: Refinitif (2022), ESG Score Methodology

The data used in this study is derived from secondary sources, namely Refinitiv and Capital IQ terminal data. The secondary data used in this study comprise the following:

1. The company began trading on the Indonesian Stock Exchange in 2020.
2. The company has a Refinitiv Environmental, Social, and Governance (ESG) score from 2019 to 2021.
3. Returns from each company were obtained using daily stock price data during the study period.
4. Daily data for the Indonesian Stock Exchange Composite Index (IHSG) during the study period are used as a proxy to represent the market's return.

The research period is from June 2020 to May 2023. Zhao et al (2023) stated during COVID-19 pandemic period, there are unusual anomalies such as market

volatility, government interventions, sectoral impact, shift in consumer behavior, and global supply chain disruptions. The portfolio performance is measured annually from June to May. This is due to the deadline sustainability report issued by the company in May at the same time as the annual report. Thus, the company's availability with the complete ESG score data was at the beginning of June

Based on the available data on companies with a Refinitiv ESG score, two distinct portfolios will be formed. Each of these portfolios will comprise ten companies, with one portfolio comprised of ten companies with the highest ESG scores and the other consists of ten companies with the lowest ESG scores. The construction of a portfolio using an equal-weighted method ensures that each selected company has the same influence on the outcome's portfolio.

The data used in this study consisted of daily observations over 241 working days during the period from June 2020 to May 2021, 243 working days from June 2021 to May 2022, and 248 working days from June 2022 to May 2023. With a total observation period of 732 working days.

Table 1. List of sample companies

No	Company names with the highest Refinitiv ESG score in the period 2019-2021	Ticker
1	Vale Indonesia Tbk	INCO.JK
2	Bank Rakyat Indonesia (Persero) Tbk	BBRI.JK
3	Bank Central Asia Tbk	BBCA.JK
4	Indo Tambangraya Megah Tbk	ITMG.JK
5	Hanjaya Mandala Sampoerna Tbk	HMSP.JK
6	Jasa Marga (Persero) Tbk	JSMR.JK
7	Unilever Indonesia Tbk	UNVR.JK
8	Perusahaan Gas Negara Tbk	PGAS.JK
9	Bank Mandiri (Persero) Tbk	BMRI.JK
10	Aneka Tambang Tbk	ANTM.JK
11	Bumi Resources Tbk	BUMI.JK
12	Bank Negara Indonesia (Persero) Tbk	BBNI.JK
13	Bank Tabungan Negara (Persero) Tbk	BBTN.JK
14	Kalbe Farma Tbk	KLBF.JK

No	Company names with the lowest Refinitiv ESG score in the period 2019-2021	Ticker
1	Bumi Serpong Damai Tbk	BSDE.JK
2	PT. Indah Kiat Pulp & Paper Tbk	INKP.JK
3	Global Mediacom Tbk	BMTR.JK
4	Merdeka Copper Gold Tbk	MDKA.JK
5	Charoen Pokphand Indonesia Tbk	CPIN.JK
6	Pakuwon Jati Tbk	PWON.JK
7	Tower Bersama Infrastructure Tbk	TBIG.JK
8	Media Nusantara Citra Tbk	MNCN.JK
9	Gudang Garam Tbk	GGRM.JK
10	Barito Pacific Tbk	BRPT.JK
11	Summarecon Agung Tbk	SMRA.JK
12	Ace Hardware Indonesia Tbk	ACES.JK
13	Metrodata Electronics Tbk	MTDL.JK
14	Akasha Wira International Tbk	ADES.JK
15	Panin Financial Tbk	PNLF.JK
16	Link Net Tbk	LINK.JK

Source: Data processed (2023)

The portfolio performance analysis method involves several steps that are executed in the following sequence:

1. The daily price return of the selected sample is calculated using the following formula:

$$r_j = \frac{P_{t+1} - P_t}{P_t} \equiv \frac{P_{t+1}}{P_t} - 1 \qquad \text{.............. (1)}$$

Where:

r_j = Return on a stock j
P_t = Price of the stock at time t
P_{t+1} = Price of the stock at time $t+1$

2. Calculate daily portfolio price return using the equal-weight method

$$\text{Weighting (\%)} = \frac{1}{\text{Number of Stocks in Portfolio}} \qquad \text{...... (2)}$$

3. The change in net asset value (NAV) price return portfolio is calculated using the following formula: NAV starts with a value of 1000.

$$V_{PRIT} = V_{PRI0}(1 + PR_{I1})(1 + PR_{I2})...(1 + PR_{IT}) \qquad \text{......... (3)}$$

where

V_{PRI0} = the value of the price return index at inception

V_{PRIT} = the value of the price return index at time t

PR_{IT} = the price return (as a decimal number) on the index over period t, $t = 1, 2, ..., T$

4. Two-sample F-test for variances using Excel data analysis
   This step ensures that the variances from two samples whether the variance of Net Asset Value (NAV) price return portfolio is equal or unequal before continuing to the two samples t-test

5. Two-sample t-test of Net Asset Value (NAV) price return portfolio assuming unequal variances using Excel data analysis

6. If the NAV portfolio's price return differs, then proceed with the calculation of the sharpe ratio:

$$\text{Sharpe Ratio} = \frac{Rp - Rf}{\text{Stdev } Rp} \qquad \text{........................ (4)}$$

Where:
Rp = Portfolio return (annual)
Rf = Risk free rate of return (annual), Rf using 10 year Indonesia Government Bond
Stdev Rp = Standard Deviation from Portfolio return (annual)

Sharpe ratio is used to measure risk adjusted return and use for evaluation portfolio performance.

RESULTS AND DISCUSSION

Top 10 Sample vs. Bottom 10 Sample

In this study, we created two types of portfolios. The first is the portfolio comprising 10 stocks with the highest ESG score according to Refinitiv (top 10 ESG portfolio). The second portfolio consists of 10 stocks with the lowest ESG score (bottom 10 ESG portfolio). We selected only 10 stocks for two reasons. The first is the limited number of ESG score data available in Refinitiv. Second, there was a finding from Stotz and Lu (2014) found that a portfolio comprising 10 equally weighted stocks in Asia (including Indonesia) effectively mitigated 64% of unsystematic risk. However, subsequent portfolio additions resulted in a diminishing marginal benefit to risk reduction. The list of constituents from the top 10 and the bottom 10 ESG portfolio in 2019-2021 are presented in Table 2. The ESG score for the 2019 performance was published by Refinitiv in 2020, the ESG score for the 2020 performance was published in 2021, and the ESG score for the 2021 performance was published in 2022. The six stocks that consistently had the best ESG scores during 2019–2021 were INCO.JK, BBCA.JK, ITMG.JK, HMSP.JK, UNVR.JK, and BMRI.JK. On the other hand, five stocks that consistently had low ESG score during 2019–2021 is MDKA.JK, CPIN.JK, PWON.JK, MNCN.JK, and GGRM.JK.

Based on Table 2, we find that the top 10 ESG portfolios had an increasing average ESG score from 2019 to 2021. Meanwhile, the bottom 10 ESG portfolios' average ESG score increased from 2019 to 2020, but the average ESG score slightly declined from 2020 to 2021. According to Refinitiv, the median ESG score for publicly listed Indonesian companies was 45.74 in 2019, 48.2 in 2020, and 50.74 in 2021.

Table 2. Constituents list of the top 10 and bottom 10 portfolios

	2019		2020		2021	
	Top 10 ESG	Bottom 10 ESG	Top 10 ESG	Bottom 10 ESG	Top 10 ESG	Bottom 10 ESG
TICKER	INCO.JK	BSDE.JK	BBCA.JK	INKP.JK	BBCA.JK	MDKA.JK
	BBRI.JK	INKP.JK	BUMI.JK	SMRA.JK	BMRI.JK	PWON.JK
	BBCA.JK	BMTR.JK	INCO.JK	MDKA.JK	BUMI.JK	GGRM.JK
	ITMG.JK	MDKA.JK	BBNI.JK	GGRM.JK	UNVR.JK	MNCN.JK
	HMSP.JK	CPIN.JK	BMRI.JK	TBIG.JK	ITMG.JK	ADES.JK
	JSMR.JK	PWON.JK	ITMG.JK	CPIN.JK	INCO.JK	MTDL.JK
	UNVR.JK	TBIG.JK	UNVR.JK	PWON.JK	BBNI.JK	CPIN.JK
	PGAS.JK	MNCN.JK	BBRI.JK	ACES.JK	HMSP.JK	KREN.JK
	BMRI.JK	GGRM.JK	PGAS.JK	MNCN.JK	BBTN.JK	PNLF.JK
	ANTM.JK	BRPT.JK	HMSP.JK	MTDL.JK	KLBF.JK	LINK.JK
Average ESG Score	75.98	20.73	78.22	23.14	80.38	22.44

Table 3. Descriptive Statistic

	NAV Top 10	*NAV Bottom 10*	*NAV JCI*
Mean	1,627.14	1,382.72	1,298.91
Standard Error	14.18	5.37	4.84
Median	1,539.96	1,416.49	1,343.02
Standard Deviation	383.08	145.11	130.87
Sample Variance	146,749.05	21,056.06	17,126.71
Kurtosis	- 1.14	0.30	- 0.37
Skewness	0.29	- 1.10	- 0.81
Range	1,343.50	592.99	495.78
Minimum	988.59	1,000.00	993.57
Maximum	2,332.08	1,592.99	1,489.35

Descriptive Statistic

Table 3 presents a summary of the descriptive statistical information related to all variables in this study over the three years of 2020–2023. Out of the three funds, the top 10 ESG funds had the highest average NAV, while the Jakarta Composite Index (JCI) earned the lowest average NAV during the three-year period. On the other hand, the top 10 ESG funds also demonstrated the highest deviation compared to the bottom 10 ESG funds and JCI. Between the bottom 10 ESG funds and JCI, the one with the lowest risk (as indicated with its standard deviation) was JCI.

Fund Performance and Two Sample Test Results
Assuming that new ESG score data in Refinitiv are available every May, our portfolio starts from the beginning of June and ends on last May next period. For example, the top 10 and bottom 10 ESG data for the 2019 ESG score was published in May 2020. Thus, all portfolios were constructed on June 2, 2020. NAV started at IDR 1,000 for each of the three funds (Top 10 ESG fund, Bottom 10 ESG fund, and JCI). The daily NAV was recorded from June 2, 2020, to May 31, 2021. The same approaches are applied for 2020 and 2021 ESG scores, adjusting the year of portfolio construction.

Table 4 presents NAV performance for the three funds from 2021 to 2023. In all three periods, the top 10 ESG funds consistently earned higher NAV than its benchmark (JCI). On the other hand, the bottom 10 ESG funds had a more volatile performance than the benchmark (JCI). The NAV of the Bottom

Table 4. Fund performance during 2021–2023

Date/Ending NAV	31-May-21	31-May-22	31-May-23
Top 10 ESG	1,383	1,356	1,055
Bottom 10 ESG	1,391	1,089	836
JCI	1,227	1,185	928

10 ESG fund slightly outperformed the Top 10 ESG fund and the JCI at the end of May 2021. However, it was underperformed by the JCI based on its NAV at the end of May 2022 and May 2023.

Annual NAV performance for all three funds (Top 10 ESG, Bottom 10 ESG, and JCI) from each of the three periods is presented in Figures 2, 3, and 4. Most of the time, the top 10 ESG funds' NAV outperforms other funds. As shown in Figure 2, only at the beginning of 2021 did the NAV performance of the bottom 10 ESG funds start to catch up with

the NAV performance of the top 10 ESG funds. The top 10 ESG fund's NAV underperformed the JCI and bottom 10 ESG funds from June 2021 to October 2021 (Figure 3). After that, the top 10 ESG funds' NAV performance started to pick up, and it outperformed its peers in June 2022. To make sure that our hypothesis is correct, we will run a statistical test to prove whether the top 10 ESG fund has significantly better performance than its benchmark (JCI) and the bottom 10 ESG fund. Independent sample t-tests to compare performance between specific funds are provided below each graph (Table 5–Table 7).
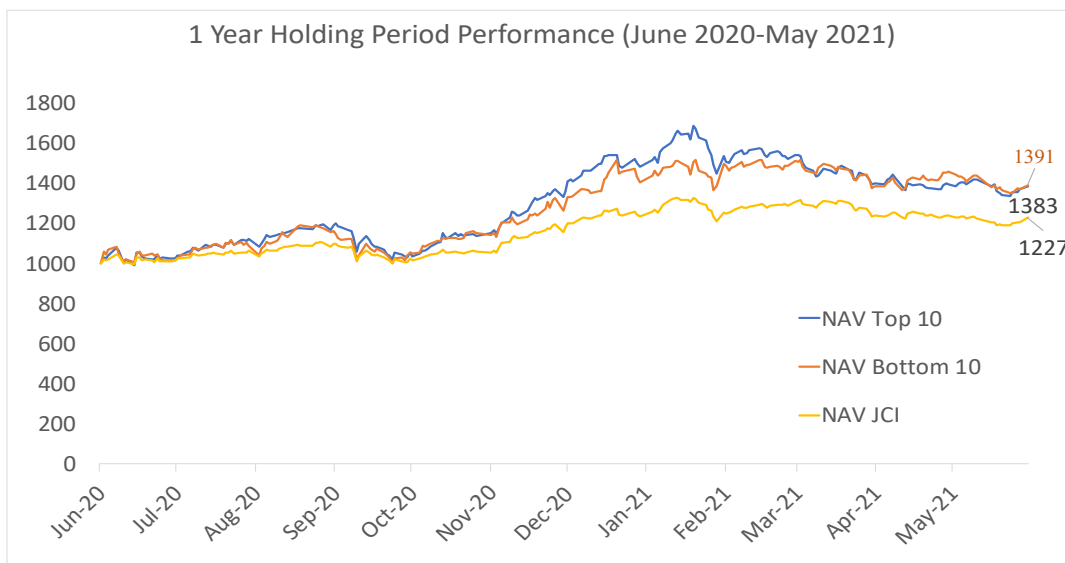

Figure 2. NAV performance on top-10 and bottom-10 funds from 2020 to 2021
Source: Refinitiv, Capital IQ, Team Analysis

Table 5. Statistical differences between funds in 2020 and 2021

	Difference Between					
	NAV Top 10	*NAV Bottom 10*	*NAV Top 10*	*NAV JCI*	*NAV Bottom 10*	*NAV JCI*
Mean	1,294.44	1,269.14	1,294.44	1,157.19	1,269.14	1,157.19
Variance	38,349.65	31,098.47	38,349.65	11,613.11	31,098.47	11,613.11
P(F<=f) one-tail	0.053*		1.24E-19***		3.83E-14***	
P(T<=t) one-tail	0.068*		1.01E-19***		7.49E-16***	

Note: * significant at 10%, ** significant at 5%, *** significant at 1%

Based on Table 4, the NAV Top 10 outperformed the NAV Bottom 10 and NAV JCI significantly during our performance period from 2020 to 2021. NAV Bottom 10 outperformed NAV JCI. The somewhat similar performance observed between the top 10 and bottom 10 NAVs can be primarily ascribed to individual stock selection. The top performer for the NAV Top 10 was ANTM with an upside of 173%, while the NAV Bottom 10 had TBIG with an upside of 102% and MDKA with an upside of 83% as the highest contributors. Because we assume a buy/hold strategy for the portfolio, it is observed that ANTM, TBIG, and MDKA exhibit an overweight position relative to their real proportions in JCI as these companies appreciate in value.

Table 4 also shows that even though JCI had the lowest NAV during the June 2020–May 2021 period,

its variance was significantly lower than the NAV Top 10 and NAV Bottom 10. To measure return and risk performance, we calculated Sharpe ratios for all three funds. The Sharpe Ratios for the top 10, JCI, and bottom 10 NAVs were 1.57, 0.97, and 1.21, respectively. Although the NAV Top 10 was the most volatile, its Sharpe Ratio still outperformed the JCI and Bottom 10 funds.

Based on Table 5, JCI average performance from June 2, 2021, to May 31, 2022, was slightly higher than the NAV from the Top 10 ESG fund and Bottom 10 ESG fund. Thus, the statistical test still shows that the NAV Top 10 ESG fund underperformed the NAV of the JCI and outperformed the Bottom 10 ESG fund. The superior performance of the top 10 NAV compared to the JCI and Bottom 10 funds was significant only for a short-term period (Oct – Nov
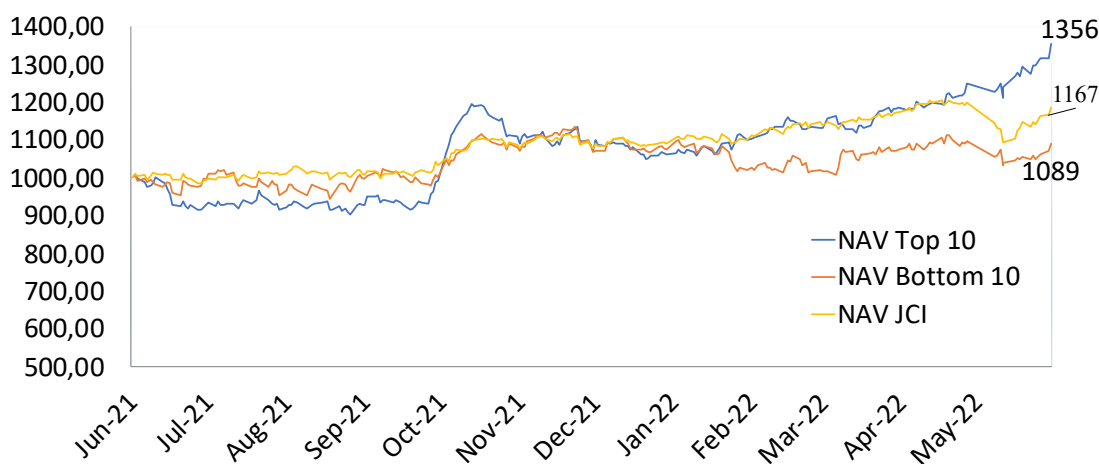

Figure 3. NAV Performance on Top-10 and Bottom-10 Funds from 2021 to 2022
Source: Refinitiv, Capital IQ, Team Analysis

Table 6. Statistical differences between funds in 2021 and 2022

	Difference Between					
	NAV Top 10	*NAV Bottom 10*	*NAV Top 10*	*NAV JCI*	*NAV Bottom 10*	*NAV JCI*
Mean	1,069.87	1,042.82	1,069.87	1,082.79	1,042.82	1,082.79
Variance	11,996.83	2,221.02	11,996.83	3,916.20	2,221.02	3,916.20
P(F<=f) one-tail	8.56E-36***		1.06E-17***		5.99E-06***	
P(T<=t) one-tail	0.0002***		0.056*		7.45E-15***	

Note: * significant at 10%, ** significant at 5%, *** significant at 1%

2021 and April–May 2022). On average, both the NAV top-10 and bottom-10 funds cannot beat the market.

Upon careful examination, it was observed that the NAV Top 10 fund had the highest risk compared to the other funds. Thus, we calculate the Sharpe ratio to obtain return and risk performance. The Sharpe Ratios for the top 10, JCI, and bottom 10 NAVs were 0.72, 0.22, and -0.12, respectively. Based on this finding, the NAV Top 10 funds outperformed the market despite being the most volatile.

Table 7 shows that, on average, the NAV Top 10 was the highest during the portfolio period from June 2, 2022, to May 31, 2023. Similar to the previous two periods, the NAV Top 10 portfolio exhibited the most

variation. The increased returns are accompanied by a corresponding increase in risk. Therefore, the Sharpe ratio was tested to assess both return and risk measurements.

From mid-2022 to early 2023, the risk-free rate in Indonesia experienced an increase after the Federal Reserve's decision to raise interest rates. Consequently, the yield on Indonesian bonds exceeds that of funds and the Jakarta Composite Index (JCI), resulting in a negative Sharpe ratio. The Sharpe Ratios for the top 10, JCI, and bottom 10 NAVs were -0.173, -1.279, and -1.66, respectively. Even though the Sharpe ratio was negative, The Top 10 ESG funds outperformed the market and Bottom 10 ESG funds

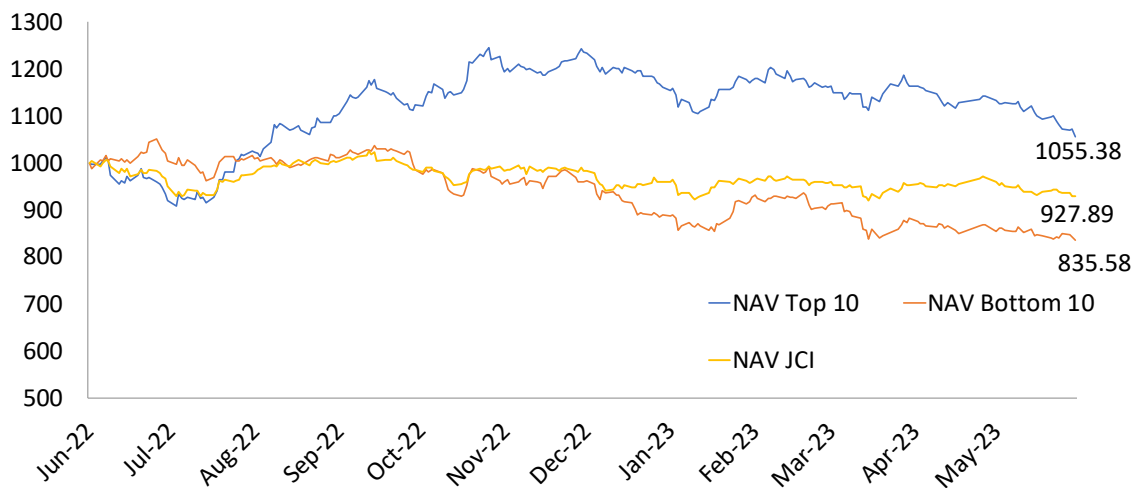## 1 Year Holding Period Performance (June 2022 - May 2023)

Figure 4. NAV performance on top-10 and bottom-10 funds from 2022 to 2023
Source: Refinitiv, Capital IQ, Team Analysis

Table 7. Statistical differences between funds in 2022 and 2023

	Difference Between					
	NAV Top 10	*NAV Bottom 10*	*NAV Top 10*	*NAV JCI*	*NAV Bottom 10*	*NAV JCI*
Mean	1,117.82	942.40	1,117.82	967.75	942.40	967.75
Variance	6,998.39	3,804.69	6,998.39	570.93	3,804.69	570.93
P(F<=f) on	1.027E-06***		9.929E-71***		1.442E-44***	
P(T<=t) on	7.38E-95***		1.308E-81***		2.225E-09***	

Note: * significant at 10%, ** significant at 5%, *** significant at 1%

MANAGERIAL IMPLICATIONS

This study offers significant advancements for academia, companies, and investors in investing in ESG and its impact on portfolio performance. This study breaks new ground for academia by addressing a critical gap in existing research on ESG investing and by better understanding the relationship between ESG factors and portfolio performance. Companies, particularly asset management companies, will benefit from this study as it equips fund managers with valuable tools to identify more effective metrics for evaluating the ESG factors of potential investments. By examining ESG rating provider methodology such as Refinitiv, they can also develop portfolio construction strategies that optimize returns while adhering to ESG principles. This study highlights the historical outperformance of ESG funds and stocks, providing investors with a clear benchmark for their investment decisions. It also gives investors more information about the risk-return profile associated with ESG investing than traditional investment approaches, allowing them to make more informed decisions based on their risk tolerance and ESG priorities.

CONCLUSION

The incorporation of Environmental, Social, and Governance (ESG) factors is increasingly recognized as a significant consideration within the global investment landscape, including Indonesia. Since ESG ratings in Indonesia is still difficult to obtain, those with access to ESG ratings will have more advantages. The results of our study indicate that the use of a Refinitiv rating may serve as a suitable metric for stock selection strategy because companies with higher ESG scores tend to exhibit superior performance. Greater return performance is followed by an increased level of risk. Given our assumption of a well-diversified portfolio, it is hypothesized that the increased risk can be attributed to a larger variance coefficient. It may be worthwhile to conduct future research on the factors that influence increased risk in the top 10 ESG funds. Next, we recognized that the Refinitiv rating remains constrained to a range of 10%–20% of companies in the JCI. Thus, the constituents of the Bottom 10 ESG fund may not necessarily represent a bad reputation company. Despite the limitation of availability ESG rating data, Indonesia's government is increasingly prioritizing sustainable finance, aligning with both domestic and international development goals. Initiatives like the Sustainable Finance Roadmap is expected to continue, providing a robust framework for ESG development in Indonesia. We can expect positive trend in the future of ESG investing in Indonesia, with strong government support. ■

REFERENCES

Bell. (2021). *Why ESG performance is important for investors | EY - US*. EY. https://www.ey.com/en_us/assurance/why-esg-performance-is-growing-in-importance-for-investors

Breitz, C., & Partapuoli, P. J. (2020). *How is ESG Affecting Stock Returns? A Portfolio-and Panel Data Analysis of US Firms in the S&P 500*. Thesis, Lund University. From https://lup.lub.lu.se/luur/download?func=downloadFile&recordOId=9022586&fileOId=9022590

CFA Institute (2024). *What Is ESG Investing?* Retrieved October 10, 2023, from https://www.cfainstitute.org/insights/articles/what-is-esg-investing

CFA Institute (2017). *Global Perceptions of Environmental, Social, and Governance (ESG) Investing 2017*. www.cfainstitute.org/ESG

Cifrino, D.A. (2023, June 29). The Rise of International ESG Disclosure Standards. Harvard Law School Forum on Corporate Governance. https://corpgov.law.harvard.edu/2023/06/29/the-rise-of-international-esg-disclosure-standards/

El Ghoul, S., & Karoui, A. (2017). Does corporate social responsibility affect mutual fund performance and flows? *Journal of Banking and Finance*, *77*, 53–63. https://doi.org/10.1016/j.jbankfin.2016.10.009

Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*. Pitman.

Gavrilakis, N., & Floros, C. (2023). ESG performance, herding behavior and stock market returns: evidence from Europe. *Operational Research*, *23*(1). https://doi.org/10.1007/S12351-023-00745-1

Horan, S. M., Dimson, E., Emery, C., Blay, K., Yelton, G., & Agarwal, A. (2022). *ESG Investment Outcomes, Performance Evaluation, and Attribution CFA Institute Research Foundation / Brief.*

Hübel, B., & Scholz, H. (2020). Integrating sustainability risks in asset management: the role of ESG exposures and ESG ratings. *Journal of Asset Management*, *21*. https://doi.org/10.1057/s41260-019-00139-z

Khan, M. (2019). Corporate Governance, ESG, and Stock Returns around the World. *Https://Doi.Org/10.1080/0015198X.2019.1654299*, *75*(4), 103–123. https://doi.org/10.1080/0015198X.2019.1654299

Naffa, H., & Fain, M. (2020). Performance measurement of ESG-themed megatrend investments in global equity markets using pure factor portfolios methodology. *PLOS ONE*, *15*(12), e0244225. https://doi.org/10.1371/journal.pone.0244225

OECD (2022), Policy guidance on market practices to strengthen ESG investing and finance a climate transition, OECD Business and Finance Policy Papers, OECD Publishing, Paris, https://doi.org/10.1787/2c5b535c-en.

Ramadhansari, I. F. (2022, May 20). Tren Investasi Berbasis ESG Di Indonesia Terus Bertumbuh. Bisnis.com https://market.bisnis.com/read/20220520/7/1535017/tren-investasi-berbasis-esg-di-indonesia-terus-bertumbuh.

Refinitif. (2022). *Environmental, Social and Governance (ESG) Scores from Refinitiv - May 2022*. Refinitif. https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/refinitiv-esg-scores-methodology.pdf

Stotz, A., & Lu, W. (2014). Ten Stocks are Enough in Asia. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2461115

Syafrullah, S. , & Muharam, H. (2017). Analisis Pengaruh Kinerja Environmental, Social, Dan Governance (ESG) Terhadap Abnormal Return (Studi pada Perusahaan Indonesia dan Malaysia yang mengungkapkan ESG score dan terdaftar pada Bursa Efek Indonesia dan Bursa Malaysia Tahun 2010-2015). *Diponegoro Journal of Management*, *6*(2), 222–235. https://doi.org/10.2/JQUERY.MIN.JS

Whelan, T., Atz, U., Holt, T. Van, & Clark, C. (2021). *ESG AND FINANCIAL PERFORMANCE: Uncovering the Relationship by Aggregating Evidence from 1,000 Plus Studies.*

Xu, N., Chen, J., Zhou, F., Dong, Q., & He, Z. (2023). Corporate ESG and resilience of stock prices in the context of the COVID-19 pandemic in China. *Pacific Basin Finance Journal*, *79*. https://doi.org/10.1016/j.pacfin.2023.102040

Zhao, L., Rasoulinezhad, E., Sarker, T. *et al.* Effects of COVID-19 on Global Financial Markets: Evidence from Qualitative Research for Developed and Developing Economies. *Eur J Dev Res* 35, 148–166 (2023). https://doi.org/10.1057/s41287-021-00494-x