

---

## **Performance of ESG Index: An Empirical comparison of S&P BSE 100 ESG Index with selected BSE Stock Indexes**

---

**Dr. Amruthavarshini. V<sup>1</sup> and Harsha. B<sup>2</sup>**

<sup>1</sup>Assistant Professor and Research Guide, P.E.S College of Science, Arts and  
Commerce College, Mandya-571401

<sup>2</sup>Assistant Professor and Research Scholar, Govt. First Grade College,  
Hunasagi, Yadgir-585215

---

### **Abstract**

Environmental, Social and Governance (ESG) are the three central factors in measuring sustainability of an investment. Investors are increasingly applying these non-financial factors as a part of their analysis process to identify material risks and growth opportunities. Therefore, there is a need to study the performance of ESG stocks for better investment decisions. The objective of the paper is to empirically examine the performance of S&P BSE 100 ESG Index with other selected BSE stock indexes.

For the study, Daily and monthly adjusted closing prices of respective index during the period from 1<sup>st</sup> Jan 2018 to 31<sup>st</sup> Dec 2021 have been collected from BSE and Yahoo finance.. Then index prices have been converted into simple percentage returns. The risk-free rate is calculated as the daily average implicit yield on 364 days treasury bills over the study period. Next Karl Pearson's Co-efficient of correlation is used to study the relationship among these portfolios. For the performance evaluation, portfolio beta and risk adjusted measures like Sharpe ratio, Treynor ratio and Jensen measure have been used. T-test is used to check whether the mean returns of the portfolios are significantly different or not.

The study reveals that Performance of the ESG stock portfolio has outperformed when compared to Blue chip and Large cap stock portfolio as the Sharpe, Treynor and Jensen ratios are highest compare to rest of the portfolios. It is found that daily returns of the ESG stock portfolio are consistent with the monthly returns. During this study period, ESG stocks have performed better and there is no significant difference among the portfolios in terms of daily returns.

***Keywords: ESG, S&P BSE 100 ESG Index, Market Portfolio, Stock Indexes, Performance evaluation, socially responsible investing***

---

## **Introduction**

Socially responsible investing provides a platform for the investor one who can meet his personal values with investment objectives. Environmental, Social and Governance(ESG) factors can be a keyway to assess to sustainability and social impact of an investment in a company or business. Investors can invest their money in the companies and funds that have possible social impacts through socially responsible investing. Environmental, Social and Governance (ESG) are the three central factors in measuring sustainability of an investment. Investors are increasingly applying these non-financial factors as a part of their analysis process to identify material risks and growth opportunities. Environmental criteria consider how a company performs steward in nature. Social criteria examine how companies manage relationships with stakeholders like employees, suppliers, customers and communities where it operates and Governance deals with a company's leadership, executive pay, audits, internal controls and shareholders rights.

There are many ESG indexes are available in the Global market. Eg. DJSI Indices, EcoVadis, FTSE4Good Index, ISS ESG etc. In India, NIFTY 100 ESG index is designed in NSE to reflect the performance of companies within NIFTY 100 Index, based on Environmental, Social and Governance scores. The weight of each constituent in the index is titled based on ESG score assigned to the company i.e the constituent weight is derived from its free float market capitalization and ESG score. The S&P BSE 100 ESG Index is designed to measure securities that meet sustainability investing criteria while maintaining a risk and performance profile similar to the S&P BSE 100. While selecting a stock for investment, an ESG fund shortlist companies that score high on environment, social responsibility and corporate governance along with the financial factors. With the overall increase in awareness and with regulations moving in this direction, investors are re-evaluating traditional approaches and considering the impact on their decisions.

ESG funds are gaining momentum in India, companies will be forced to improve governance and ethical practices and act with greater social and environmental responsibility. As the policy framework changes, companies will become more environmentally sustainable, could have their revenue and profits impacted in the long term, globally many investors do not

invest in companies that are seen as polluting or socially not responsible. Therefore, investors are looking into ESG stocks as their investment avenues for meeting their financial goals along with personal values. In this study, the performance of BSE ESG portfolio has been evaluated with the objective of suggesting the investors for their investment decisions.

### **Review of Literature**

**Bruno Getal (2021)** assessed that performance benefits to investors when accounting for sector and factor exposures. The study found that most of the outperformance of these strategies can be explained by their exposure to equity style factors that are mechanically constructed from balance sheet information. This result is robust across different multifactor models. Furthermore, the ESG strategies tested show large sector biases. Removing these biases also removes outperformance. The study concluded that claims on ESG outperformance in popular articles are not valid.

**Mandal R (2021)** evaluated ESG relevance in the post-coronavirus era. The business and legal fraternities have been provided an opportunity to re-examine the role of companies in society, at a time when supply chains are being dismantled and distrust in capitalism has increased. It was observed that the manner in which CSR is understood and implemented in India is insufficient, due to a myriad of factors including vested political interests. Thereafter, the study highlighted how market-driven measures such as ESG investing, uniform ESG reporting and an effective investor stewardship model can be the next pieces of the “desirable” CSR puzzle in India.

**Moinak Maiti (2020)** examined whether ESG is a succeeding factor or not. This study found that three-factor models with market, size and ESG factors perform better than the Fama–French three-factor model. Higher Sharpe ratios for ESG, environment, social and governance factors indicate that portfolios formed on these factors show better investment performance over traditional size and value-based portfolios for all cases. The main message of the study was that ESG, environment, social and governance factors play an important role in predicting returns hence they should not be ignored while considering investment decision.

**Freiberg D (2019)** studied the framework of how ESG issues become financially material, affecting corporate profitability and valuation. The study argued that understanding this process is important both for actors driven by financial or societal motives. The former group, which includes companies and return-first investors, could use the framework to make resource allocation decisions based on expectations about future materiality thereby

enhancing risk-adjusted returns. The latter group, which includes regulators, NGOs, and impact-first investors, can use the framework to design and implement interventions that create market-based incentives for companies and investors to align their behaviour with social and environmental outcomes.

### **Need for the study**

Environmental, Social and Governance (ESG) are the three central factors in measuring sustainability of an investment. Investors are increasingly applying these non-financial factors as a part of their analysis process to identify material risks and growth opportunities. Therefore, there is a need to study the performance of ESG stocks for better investment decisions.

### **Objectives of the study**

1. To empirically examine the performance of S&P BSE 100 ESG Index with other selected BSE stock indexes
2. To study whether mean returns of the selected portfolios are significantly different
3. To suggest whether Socially responsible investors can invest in ESG stocks

### **Research Hypothesis**

H<sub>0</sub>: Mean returns of ESG stock, Blue chip stock, large cap stock and market portfolios are not significantly different

H<sub>1</sub>: Mean returns of ESG stock, Blue chip stock, large cap stock and market portfolios are significantly different

### **Data and Methodology**

Research Design	Empirical Research
Sampling Technique	Judgement Sampling
Sampling Units	S&P BSE 100 ESG Index, S & P BSE 100 Index, S&P BSE 250 LargeMidCap Index and BSE Sensex
Sources of Data	Secondary Sources (Time Series Data)
Data Collection	Daily and monthly adjusted closing prices of respective index during the period from 1 <sup>st</sup> Jan 2018 to 31 <sup>st</sup> Dec 2021 have been

	collected from BSE and Yahoo finance.
Data Analysis Tools	Simple Percentage, Karl Pearson's Co-efficient of Correlation, Sharpe ratio, Treynor Ratio, Jensen Ratio and T-test

## Empirical Results

**Table 1: The operational definitions of different stock portfolios are shown below**

Sl. No	Portfolio	Operational Definition
1	ESG Stock Portfolio	<b>S&amp;P BSE 100 ESG Index:</b> It is designed to measure securities that meet sustainability investing criteria.
2	Blue Chip Stock Portfolio	<b>S &amp; P BSE 100 Index:</b> It is designed to measure the performance of the 100 largest and most liquid Indian companies within the S&P BSE LargeMidCap.
3	Large Cap Stock Portfolio	<b>S&amp;P BSE 250 LargeMidCap Index:</b> It is designed to track the performance of the 250 companies that are part of S&P BSE 100 and S&P BSE 150 MidCap.
4	Market Portfolio	<b>BSE Sensex:</b> It is a free-float market-weighted stock market index of 30 well-established and financially sound companies listed on the Bombay Stock Exchange.

Sources: Secondary Sources

**Table 2: Cross Correlation Matrix of different Portfolio Returns**

Portfolios	ESG	Blue Chip	Large Cap	Market
ESG	1	0.992	0.989	0.987
Blue Chip	0.992	1	0.998	0.991
Large Cap	0.989	0.998	1	0.984
Market	0.987	0.991	0.984	1

Table 2 shows the results of the co-efficient of correlation between different portfolios. ESG portfolio shows the higher degree of correlation with the Blue-chip stocks (0.992), Large cap (0.989) and the Market (0.987). It clearly indicates that ESG stocks have a strong relationship with blue chip and large cap stocks.

**Table 3: Return, Risk, Sharpe, Treynor and Jensen Ratios of different portfolios (Based on Monthly Returns)**

Portfolio	Average	Standard Deviation	Coeff. of Variation	Variance	Beta	Sharpe	Treynor	Jensen
ESG	1.26%	5.89%	4.67	0.0035	1	0.142445	0.839	0.0008
Blue Chip	1.08%	5.75%	5.32	0.0033	0.99	0.114609	0.654	-0.00092
Large Cap	1.10%	5.73%	5.21	0.0033	0.98	0.118499	0.67	-0.00065
Market	1.18%	5.80%	4.93	0.0034	1	0.130862	0.75	0

In the Table 3, Return, Total Risk, Sharpe, Treynor and Jensen ratios of different portfolios based on monthly returns are shown. It shows that ESG stock portfolio has significantly higher average monthly return (1.26%) when compare to Market return, Large cap portfolio return and Blue-chip portfolio return which are 1.18%, 1.10% and 1.08% respectively.

ESG stock portfolio has highest risk of 5.89% when compare to Market portfolio, Blue chip stock portfolio and Large cap stock portfolio which are 5.80%, 5.75% and 5.73% respectively. Beta of ESG stock portfolio is highest compare to Blue chip and Large cap stock portfolio. It clearly indicates that ESG stock portfolio is more aggressive portfolio among all the portfolios. Large cap stock portfolio is the conservative portfolio among all as the beta is less than other portfolios and consists of the lowest amount of systematic risk.

The Performance of the ESG stock portfolio has outperformed when compared to Blue chip and Large cap stock portfolio as the Sharpe, Treynor and Jensen ratios are highest compare to rest of the portfolios.

**Table 4: Return, Risk, Sharpe, Treynor and Jensen Ratios of different portfolios(Based on Daily Returns)**

Portfolio	Average	Standard Deviation	Coeff. of Variation	Variance	Beta	Sharpe	Treynor	Jensen
ESG	0.064%	1.26%	19.62	0.000159	0.98	0.040	0.00051	0.0021
Blue Chip	0.056%	1.24%	22.22	0.000154	0.97	0.034	0.00043	-0.0057
Large Cap	0.056%	1.22%	21.66	0.000148	0.94	0.035	0.00045	-0.0041
Market	0.063%	1.27%	20.11	0.000161	1.00	0.039	0.00049	0.0000

In the Table 4, Return, Total Risk, Sharpe, Treynor and Jensen ratios of different portfolios based on daily returns are shown. It is found that daily returns of the ESG stock portfolio are

consistent with the monthly returns. Overall ESG stock portfolio has outperformed than Blue Chip and Large Cap portfolio.

**Table 5: Result of T-test**

H<sub>0</sub>: Mean returns of ESG stock, Blue chip stock, large cap stock and market portfolios are not significantly different

H<sub>1</sub>: Mean returns of ESG stock, Blue chip stock, large cap stock and market portfolios are significantly different

Sl.No.	Pairs	T-Value
1	ESG & Blue Chip	0.879
2	ESG and Large Cap	0.883
3	ESG and Market	0.983
4	Blue Chip and Large Cap	0.994
5	Blue Chip and Market	0.896
6	Large Cap and Market	0.901

Table 5 shows the result of the t-test to check whether the average daily returns of ESG stock, Blue chip stock, Large cap stock and market portfolios are significantly different or not. During this study period, ESG stocks have performed better and there is no significant difference among the portfolios in terms of daily returns. Hence, the null hypothesis is accepted and alternative hypothesis is rejected.

**Conclusion**

In the past few years, socially responsible investing is gaining importance among the investors either institutional or retail investors in India. In the current study analyzed the performance of BSE 100 ESG stocks with Blue chip stocks, Large cap stocks and market portfolio. The study reveals that ESG stocks are performing better in the market providing good returns when compare to Blue chip stocks and large cap stocks. ESG stocks are more aggressive in the market as the systematic risk is high compare to rest of the selected portfolios. The study suggests that the investors who are socially responsible as they can start making an investment in ESG stock to get higher returns along with fulfilling their personal values.

**References**

1. Mandal, R., & Murthy, A. (2021). CSR in the post pandemic era: the dual promise of ESG investment and investor stewardship. *Indian Law Review*, 1-21.

2. Bruno, G., Esakia, M., & Goltz, F. (2022). "Honey, I Shrunk the ESG Alpha": Risk-Adjusting ESG Portfolio Returns. *The Journal of Investing*.
3. Maiti, M. (2021). Is ESG the succeeding risk factor? *Journal of Sustainable Finance & Investment*, 11(3), 199-213.
4. Freiberg, D., Rogers, J., & Serafeim, G. (2020). How ESG Issues Become Financially Material to Corporations and Their Investors. *Harvard Business School Accounting & Management Unit Working Paper*, (20-056).
5. Nugent, T., Stelea, N., & Leidner, J. L. (2020). Detecting ESG topics using domain-specific language models and data augmentation approaches. *arXiv preprint arXiv:2010.08319*.
6. Folger-Laronde, Z., Pashang, S., Feor, L., & ElAlfy, A. (2020). ESG ratings and financial performance of exchange-traded funds during the COVID-19 pandemic. *Journal of Sustainable Finance & Investment*, 1-7.
7. Cardenas, M. A. U. R. I. C. I. O., Ayala, J. J. G., & Hernandez-Aguilera, J. H. (2020). Boosting ESG finance for the Post-COVID19 world. *Commentary. Center on Global Energy Policy*.
8. Ayesha, S., & Prakasam, K. (2021). ESG investing factors and constituents-A tool for socially responsible investment in a rising populism environment. *EFFLATOUNIA-Multidisciplinary Journal*, 5(3), 74-82.
9. Jasuja, D., Prosad, J. M., & Nautiyal, N. (2021). A Comparative Performance Analysis of Sustainability Themed Indices in India: Markov Regime Switching Approach. *FII Business Review*, 23197145211052805.
10. Kumar, D. (2019). Fooling Actively: Factor Exposure Analysis of Active ESG Managers. *Available at SSRN 3428358*.
11. Balasubramanian, A. M. D. P. (2019). A Study on Relationship between Corporate Financial Performance and Environmental Social & Governance Score (ESG Score). *FIFI-2019*.
12. Zhao, C., Guo, Y., Yuan, J., Wu, M., Li, D., Zhou, Y., & Kang, J. (2018). ESG and corporate financial performance: Empirical evidence from China's listed power generation companies. *Sustainability*, 10(8), 2607.
13. Martins, H. C. (2021). Competition and ESG practices in emerging markets: Evidence from a difference-in-differences model. *Finance Research Letters*, 102371.