



A COMPARATIVE STUDY ON THE EFFECT OF BSE GREENEX & BSE SENSEX ON GREEN STOCKS

Dr. Mahaboob Basha H.
Assistant Professor,
Government First Grade College, Harapanahalli (T), Ballari (Dist.), Karnataka.
Email ID: profbasha.gfgc@gmail.com
<https://doi.org/10.5281/zenodo.21413477>

Abstract

One of India's first carbon-efficient indices is BSE-Greenex, which was introduced by the Bombay Stock Exchange. It provides asset managers with a benchmark to create products that direct investor capital into ecologically conscious enterprises by monitoring the carbon-emission performance of 25 companies listed on the exchange. In light of this, the current study, "A Comparative Study on the Effect of BSE Greenex & BSE Sensex on Green Stocks," is highly pertinent to the state of the market. Investors can find companies that use energy-conscious methods by using the Greenex index. The current study is limited to five years and uses micro-level characteristics from BSE-listed data. International metrics have also been taken into account because environmental benchmarking differs among international exchanges. The main goal is to compare Greenex's financial performance to that of the BSE Sensex utilising daily closing values from January 1, 2013, to December 31, 2017. The annual returns for both indices were calculated using these figures and compared year over year. The factors affecting Greenex's mobility during the study period are further examined in this work. The Index of Industrial Production (IIP) and the automobile industry have a greater influence on Greenex's overall carbon-credit standing, according to distance-correlation analysis performed on a few economic indicators. This effect is influenced by changes in crude oil prices during the time period. Greenex also showed notable effects from Agill, Agxl, and Solarx, all of which were connected to the renewable-energy index. This creates more opportunities for studying how the Greenex index in India is shaped by industrial growth and the green transition of the automotive industry.

Keywords: *BSE Greenex, BSE Sensex, Green Stocks, GTrade.*

1. Introduction

The 25th index to be housed on the Bombay Stock Exchange platform, BSE-GREENEX is unique in that it was the first benchmark created expressly to use only quantitative metrics to assess the "carbon performance" of listed stocks. (Afsah & Vincent, 1997) BSE-GREENEX uses sector-specific algorithms developed through recent research to measure how energy-efficient various companies are based on published energy and financial disclosures, in contrast to traditional global indices that usually evaluate environmental performance



using standards of varying scale.(Afsah et al., 1996) The index is a first step toward creating a global, market-driven system that incentivises top Indian companies to implement energy-saving measures. BSE Ltd. and GTrade Carbon Ex Private Ratings Limited (gTrade) collaborated on its development. (Alberini & Segerson, 2002)

Additionally, BSE-GREENEX is the first real-time environmental index, providing institutional investors and distributors of green funds with a new tool to monitor the biggest, most liquid, most energy-efficient listed companies in the nation. Mutual funds, exchange-traded funds, and other structured products are examples of green financial instruments that can be created using these indices.(Arora, 2001)

The Indian Institute of Management, Ahmedabad (IIM-A), the nation's first B-School, and GTrade Carbon Ex Ratings Private Limited, an Indian company that collaborated closely with BSE to create the GREENEX index, produced the index itself.(Blackman & Bannister, 1998) The current comparative analysis of Greenex and Sensex performance is motivated by the global trend toward integrating Environmental, Social, and Governance (ESG) factors into capital-market design, which is reflected in the rise of environmentally screened indices like GREENEX.(Boardman et al., 1997)

2. Literature Review

1. Diltz (1981) tracked the daily implementation of environmental protection measures in 28 basic stock portfolios between 1981 and 1991, but discovered that social screening did not improve portfolio performance.

2. Walley and Whitehead (1994) claimed that the cost of upholding moral standards drives up product prices, which reduces profitability and competitive advantage.

3. Cohen, Fenn and Konar (1997) stated that investing in early environmental risk mitigation has no positive or negative impact on portfolio returns and recommended drawing a clear distinction between financially significant and essentially nominal pollution controls.

4. Konar & Cohen (2001) discovered that a greater emphasis on the environment might increase profitability since green investments are generally safer when future environmental risk is better managed.

5. Gupta & Goldar (2005) investigated the impact of sector-specific environmental ratings on share prices and found that markets typically penalise bad environmental behaviour, with penalties as high as 30%. Additionally, their research shows that a failure to implement green practices may result in unfavourable consequences, such as stricter regulations and opposition from investors and consumers (PWC, 2008).

6. Derwall et al. (2005) revealed a positive, if inconsistent, relationship between operational and environmental efficiency, with companies with better environmental ratings yielding significantly higher returns than their lower-rated counterparts. Even if the least ecologically friendly company nevertheless had good operational outcomes, eco-efficient companies outperformed the control group in terms of returns on



assets. The authors emphasised the incremental benefits of socially responsible investing (SRI) and transaction costs at all levels as important factors.

7. Greenstein (2008); Preston and Martel (2008) considered green venture capital as a potentially valuable asset class, pointing out that gains in overall asset value must be weighed against asset conversion for preservation purposes, especially for businesses utilizing optional energy sources or obtaining early-stage voluntary funding linked to rising energy costs.

8. Preston and Martel (2008); Galema et al. (2008) suggested that as resource-efficient businesses are better positioned to withstand increases in resource prices, green equity investments serve as a buffer for investors.

9. Boulatoff & Boyer (2009) stated that environmental preservation is receiving increased attention from organisations, governments, and the media. This is prioritising environmental responsibility when making financial decisions.

10. Dunn (2009) observed that eliminating inefficiencies in the environment reduces costs while increasing profitability and returns for businesses, and that many customers are ready to shell out more money for eco-friendly products.

11. Tripathi and Bhandari (2012) investigated whether portfolios of green stocks performed better than non-green portfolios and the unexpected downturns in the Indian economy overall. They found that, similar to the market overall during difficult times, green portfolios typically represented the non-green ones' performance.

12. Bhattacharya (2013): By comparing BSE GREENEX with the main indices such as the BSE Sensex and BSE 500, investors' willingness to pay for the transition to green Ownership of stock was assessed. According to the assessment, GREENEX neither notably exceeded nor outperformed these benchmarks.

13. Eyraud et al. (2012); Bansal & Roth (2000) found that businesses benefit from environmental initiatives in three ways: social cost, environmental benefit, and financial return. They also observed that growing concern for environmental protection is driving organisations to pursue better ecological practices through green advertising, dedicated investment funds, and cost-related incentives. Corporate environmental responsibility is driven by three factors, according to Bansal and Roth (2000): ecological responsibility, legal compliance, and competitiveness.

14. Bammi (2013) tested for semi-strong market efficiency in Indian capital markets by examining the impact of a company's announcement of inclusion in BSE GREENEX on daily equity returns. According to the study, news regarding companies whose GREENEX inclusion information were only partially published could not be completely priced in by the market.

15. Rajput, Kaur et al. (2013) examined how Indian banks are reacting to environmental change and green-banking initiatives, discovering that the sector's response to international environmental initiatives is still slow and that only a small number of Indian banks actively address environmental issues. For example, no Indian



bank has joined the UN Environment Programme's Financial Initiative. The absence of RBI-mandated obligation and the possibility of business failure among partner enterprises were identified by the authors using factor analysis as major obstacles to sustainability, along with a general lack of understanding regarding environmental issues. Only eight respondents participated in the Carbon Disclosure Project, which is active in India and mandates emissions disclosure. This led the researchers to demand that environmental and sustainability factors be more tightly integrated into the present management systems.

16. Yadav and Pathak (2013) examined the green-financing strategies used by public and private sector banks for long-term growth using a case-study methodology. The results showed that public banks typically have more oversight than private ones, with ICICI Bank being a notable exception due to its strong sustainability-driven approach in the private sector.

17. Nath, Nayak et al. (2014) examined The World Bank's social and environmental standards, the RBI's planned environmental-rating requirements, and the green projects that banks have done, cataloguing methods for implementing green banks in accordance with recycling and carbon emissions. The authors examined a number of Indian banks' environmental initiatives and contended that in order for banks in India to compete, they must behave as responsible business citizens in the global economy by conducting environmental impact assessments, publishing sustainability-linked annual reports, and adopting sustainable technologies in accordance with World Bank standards.

18. Sudha Lakshmi and Chinnadorai (2014); Jha and Bhome (2013) evaluated the position of Indian financial institutions on green banking, contending that even so, green banking principles are essential for developing nations like India, there hasn't been much progress made thus far; banks must incorporate ecological considerations into their lending policies, and a supportive policy push is required to accelerate adoption. In order to determine consumer awareness of green banking and identify specific actions banks should take, such as green ATMs and touchscreens, preferential rates on solar-equipment loans, green building initiatives, energy-saving equipment, green credit cards, and paperless online banking, Jha and Bhome (2013) conducted a related survey using interviews and structured questionnaires. They came to the conclusion that these actions taken together support an organisation's long-term sustainability.

19. Chakrabarti and Sen (2015) discovered that green stocks are a somewhat safer investment alternative and improve portfolio stability, especially during times of financial crisis.

20. Prasad & Kumar (2015) showed that S&P BSE GREENEX outperformed the BSE Sensex; other studies who tested the financial viability of green-equity investment by comparing GREENEX's performance against the BSE Sensex and BSE-500 also came to same conclusion.

3. Objectives of the Study

- 1) To investigate BSE GREENEX as a cutting-edge tool for advancing environmental sustainability.
- 2) To assess the stocks that comprise the BSE GREENEX Index's performance.



- 3) To compare the effects of the BSE Sensex and the Greenex Index on the 25 green-listed stocks.
- 4) To determine the elements influencing stock performance and investigate the impact of being in the "Greenex" basket on stock returns.

4. Research gap.

Relatively few studies have specifically looked at BSE GREENEX over a recent, extended multi-year window, and even fewer have combined constituent-level regression analysis with a distance-correlation-based examination of the macroeconomic drivers of Greenex's movement. This is despite the fact that the studies reviewed above demonstrate that environmentally screened portfolios need not underperform the broader market (Tripathi & Bhandari, 2012; Bhattacharya, 2013) and that environmental performance can carry a premium. The current study aims to fill this gap.

5. Research Methodology

Since the goal of the study is not only to describe the behaviour of Greenex and Sensex but also to create statistical links between them and determine the elements that underlie Greenex's movement, it employs an analytical research design. These kinds of analytical designs are frequently employed in capital-market and event-study literature, where the researcher uses secondary financial data that already exists rather than data obtained through surveys or experiments.

Table 1. Overview of the Research Methodology

Types of research used	Analytical research design
Sample universe	Companies listed on BSE Greenex
Sample	25 companies (daily closing market values)
Sampling technique	Non-random / judgmental sampling
Period	5 years (1 January 2013 to 31 December 2017)
Statistical tools	CAPM, market model, t-test and distance-correlation analysis

6. Computation of Abnormal Returns, Cumulative Abnormal Returns and t-test results

Table 2. Computation of Abnormal Returns, Cumulative Abnormal Returns and t-test results

Regression output							
Sl. No	Name of the company	GREENEX	BSE Sensex	Sl. No	Name of the company	GREENEX	BSE Sensex
1.	Adani Ports Limited			2.	Asian Paints Limited		
	Intercept	2.4252186	2.3487556		Intercept	2.0643015	2.074927
	Slope	-0.278291	-0.169938		Slope	0.0483504	0.0322119
	R Square	0.0129374	0.0045331		R Square	0.0008814	0.0003676



	St. Error	10.012272	10.054806		St. Error	0.0008814	6.7066748
3.	Bharti Airtel Limited			4.	Biocon Limited		
	Intercept	0.5919009	0.6076708		Intercept	2.524813	2.455983
	Slope	-0.214697	-0.259656		Slope	0.624071	0.62385
	R Square	0.0110263	0.0171642		R Square	0.07761	0.072872
	St. Error	8.1183704	8.0931387		St. Error	8.861805	8.884533
5.	Cipla Limited/India			6.	DLF Limited		
	Intercept	0.524456	0.368313		Intercept	1.905912	1.844296
	Slope	0.220339	0.353468		Slope	-0.41025	-0.30214
	R Square	0.013645	0.032995		R Square	0.012969	0.006609
	St. Error	7.71631	7.640248		St. Error	14.74187	14.78928
7.	Eicher Motors Limited			8.	Gail India Limited		
	Intercept	3.10610178	3.035932719		Intercept	1.487826	1.561033
	Slope	0.013535504	0.082918054		Slope	0.110217	0.02393
	R Square	4.55201E-05	0.001605112		R Square	0.003029	0.000134
	St. Error	8.263272613	8.256826139		St. Error	8.236847	8.248795
9.	Grasim Industries Ltd			10.	HCL Technologies Limited		
	Intercept	8.650991	8.137155		Intercept	0.966703	0.97496
	Slope	0.384236	0.86044		Slope	-0.14147	-0.134
	R Square	0.00054	0.002545		R Square	0.008633	0.007278
	St. Error	68.0849	68.01659		St. Error	6.244322	6.248589
11.	Hindalco Industries Limited			12.	ICICI Bank Limited		
	Intercept	1.708484	1.663245		Intercept	1.952764964	1.99427058
	Slope	0.293672	0.306551		Slope	0.050559957	0.00297260
	R Square	0.010215	0.010459		RSquare	0.000539431	1.75207E-0
	St. Error	11.90695	11.90548		St. Error	8.964174815	8.96658571
13.	ITC Limited			14.	Kotak Mahindra Bank Limited		
	Intercept	0.864191	0.746697		Intercept	2.426978	2.425125
	Slope	0.262802	0.352134		Slope	0.034117	0.032176
	R Square	0.012049	0.020327		R Square	0.00063	0.000526
	St. Error	9.80175	9.760601		St. Error	5.599186	5.599475
15.	Larsen & Toubro Limited			16.	Lupin Limited		
	Intercept	1.884984	1.956515		Intercept	0.266003	0.167465
	Slope	-0.12646	-0.1846		Slope	0.093036	0.182193
	R Square	0.004796	0.009601		R Square	0.001898	0.006838
	St. Error	7.503773	7.485634		St. Error	8.788598	8.76682
17.	Mahindra & Mahindra Limited			18.	Maruti Suzuki India Limited		
	Intercept	1.277725	1.25833		Intercept	3.076807	3.200995
	Slope	0.118428	0.124785		Slope	-0.06769	-0.18559
	R Square	0.004866	0.005076		R Square	0.001125	0.00795



	St. Error	6.975739	6.975002		St. Error	8.306061	8.277636
19.	Pidilite Industries Limited			20.	Grid Corp of India Limited		
	Intercept	2.571537	2.552477		Intercept	1.389661	1.342759
	Slope	0.11768	0.123783		Slope	0.234763	0.255907
	R Square	0.004252	0.004421		R Square	0.025332	0.028283
	St. Error	7.417309	7.416682		St. Error	5.998135	5.989047
21.	Punjab National Bank			22.	Sun Pharmaceutical Industries Limited		
	Intercept	6.609199838	7.686783641		Intercept	-0.18179	-0.28697
	Slope	-0.14084572	-0.96364095		Slope	0.0785	0.176
	R Square	9.55782E-05	0.004203926		R Square	0.001308	0.006177
	St. Error	59.33794247	59.21591489		St. Error	8.935497	8.913689
23.	Tata Motors Limited			24.	Titan Company Limited		
	Intercept	-0.39649	-0.32778		Intercept	2.81423	2.795335
	Slope	-0.23929	-0.28196		Slope	0.04984	0.063359
	R Square	0.008273	0.010793		R Square	0.000471	0.000716
	St. Error	10.79172	10.778		St. Error	9.452724	9.451568
25.	UPL Limited						
	Intercept	2.696235	2.705816				
	Slope	0.187861	0.157181				
	R Square	0.008052	0.005296				
	St. Error	8.588464	8.600385				

7. Findings

- The analysis reveals that throughout the study period (2013–17), all 25 constituent firms show a significant and generally similar link with both Greenex and the BSE Sensex (Boardman et al., 1997)
- The Index of Industrial Production and the automobile industry have the biggest impact on Greenex's overall carbon-credit standing, which is influenced by changes in crude oil prices over time, according to distance-correlation analysis of a few economic variables. (Dasgupta et al., 2001)
- Agill, Agxl, and Solarx—variables associated with renewable energy—also showed a quantifiable impact on Greenex. These results suggest another line of inquiry: analysing how industrial growth and the green transformation of the automotive industry jointly influence India's Greenex score. (Henderson, 1990)

8. Suggestions

- To raise investor awareness of carbon credits, regulators and exchanges must do more. Indian investors are still mainly ignorant of carbon-trading mechanisms, although making up about 32% of the world's carbon emissions. (Khanna et al., 1998)



- The present \$4 billion global carbon-credit market is expected to reach \$100 billion, creating significant space for investment-based asset creation. (Lanoie et al., 1998) However, just a few companies in India presently receive cash from carbon credits, making it impossible for other sectors to access this market. (Konar & Cohen, 2001)
- In addition to encouraging industry to embrace cutting-edge technology that maintains growth without raising carbon output, the report advises policymakers to expand carbon-credit mechanisms to other areas like deforestation, agriculture, the extraction of natural resources, and residential emissions. (MacKinlay, 1997)

9. Conclusion

Examining BSE GREENEX as a tool for environmental sustainability, assessing the performance of its 25 component stocks, comparing Greenex's impact on those stocks to the BSE Sensex, and determining the factors influencing Greenex's movement between 2013 and 2017 were the objectives of this study. (MacKinlay, 1997) A consistent overall conclusion is supported by the evidence gathered on each of these four objectives: BSE GREENEX serves as a reliable, quantitatively grounded carbon-performance benchmark, but its introduction has not, over the period under study, produced constituent-level returns that are consistently different from those generated against the broader Sensex. (McWilliams & Siegel, 1997)

In line with Bhattacharya (2013) and Tripathi and Bhandari's (2012) conclusion that green portfolios generally track the broader market rather than significantly outperforming or underperforming it, the nearly uniform pattern of regression coefficients against both Greenex and Sensex at the level of individual stocks indicates that being a part of the Greenex basket carries no strong, independent return effect once general market movement is taken into account. (Pargal & Wheeler, 1996) At the same time, the distance-correlation results demonstrate that macroeconomic and sectoral factors, primarily the Index of Industrial Production, the automotive industry, and changes in crude oil prices, significantly influence Greenex's overall carbon-credit standing. There is also a minor but discernible renewable-energy impact through Agill, Agxl, and Solarx. (Wang et al., 2002)

Therefore, even though BSE GREENEX hasn't yet produced a distinct financial-return advantage over the Sensex, the study concludes that it has succeeded in its more specific, informational goal of providing investors with a transparent, algorithm-based method to identify energy-efficient firms. The mixed results of earlier GREENEX-specific studies (Bhattacharya, 2013; Bammi, 2013; Prasad & Kumar, 2015) are reconciled by this dual conclusion, which implies that the value of GREENEX to investors may lie as much in its role as a carbon-disclosure and benchmarking tool as in any standalone return premium. (World Bank, 1999)



These conclusions are naturally limited by the five-year window (2013–2017) and the 25 constituent companies examined, as is the case with any study based on a fixed sample and period. (World Bank, 1999) They would benefit from replication over a longer and more recent period, as well as from extending the distance-correlation analysis to a wider set of macroeconomic and renewable-energy variables. (McWilliams & Siegel, 1997) This continues to be a clear path for future research, along with a greater examination of how industrial growth and the automotive industry's own green transition contribute to Greenex. (Blackman & Bannister, 1998)

References

- Afsah, S., Vincent, J., 1997. Putting Pressure on Polluters: Indonesia's PROPER Program, A Case Study for the HIID 1997 Asia Environmental Economics Policy Seminar. Harvard Institute for International Development. March.
- Afsah, S., Laplante, B., Wheeler, D., 1996. Controlling Industrial Pollution: A New Paradigm, Policy Research Working Paper 1672, Development Research Group, World Bank.
- Alberini, A., Segerson, K., 2002. Assessing voluntary programs to improve environmental quality. *Environmental and Resource Economics* 22, 157–184.
- Arora, S., 2001. Voluntary Abatement and Market Value: An Event Study Approach, Discussion Paper no. 00–30, Stanford Institute for Economic Policy Research.
- Blackman, A., Bannister, G.J., 1998. Community pressure and clean technology in the informal sector: an econometric analysis of the adoption of propane by traditional Mexican brickmakers. *Journal of Environmental Economics and Management* 35, 1–21.
- Boardman, A., Vertinsky, I., Whistler, D., 1997. Using information diffusion models to estimate the impacts of regulatory events on publicly traded firms. *Journal of Public Economics* 63, 283–300.
- Dasgupta, S., Laplante, B., Mamingi, N., 2001. Pollution and capital markets in developing countries. *Journal of Environmental Economics and Management* 42, 310–335.
- Fama, E.F., 1991. Efficient capital markets II. *Journal of Finance* 40, 1575–1617.
- Henderson, G.V., 1990. Problems and solutions in conducting event studies. *Journal of Risk and Insurance* 57(2), 282–306.
- Khanna, M., Quimio, W.R.H., Bojilova, D., 1998. Toxics release information: a policy tool for environmental protection. *Journal of Environmental Economics and Management* 36, 243–266.
- Konar, S., Cohen, M.A., 2001. Does the market value environmental performance? *Review of Economics and Statistics* 83(2), 281–289.
- Lanoie, P., Laplante, B., Roy, M., 1998. Can capital markets create incentives for pollution control? *Ecological Economics* 26, 31–41.



- MacKinlay, A.C., 1997. Event studies in economics and finance. *Journal of Economic Literature* 35(1), 13–39.
- McWilliams, A., Siegel, D., 1997. Event studies in management research: theoretical and empirical issues. *Academy of Management Journal* 40(3), 626–657.
- Pargal, S., Wheeler, D., 1996. Informal regulation of industrial pollution in developing countries: evidence from Indonesia. *Journal of Political Economy* 104, 1314–1327.
- Tawil, N., 1999. Flow control and rent capture in solid waste management. *Journal of Environmental Economics and Management* 37(2), 183–201.
- Wang, H., Bi, J., Wheeler, D., Wang, J., Cao, D., Lu, G., Wang, Y., 2002. Environmental performance rating and disclosure: China's green watch program. *World Bank Policy Research Working Paper* 2889 (September).
- World Bank, 1999. *Greening Industry: New Roles for Communities, Markets and Governments*. Oxford/World Bank, New York.

Certificate No.: 04072026047



**MULTIDISCIPLINARY COSMOPOLITAN JOURNAL OF RESEARCH
(MUCOJOR)-2583-9829 (On-line)**

International Peer Reviewed and Refereed Journal

CERTIFICATE OF PUBLICATION

The Board of Multidisciplinary Cosmopolitan Journal of Research
(MUCOJOR) is hereby awarding this certificate to

Dr. Mahaboob Basha H.

In recognition of the publication of the paper entitled

**A COMPARATIVE STUDY ON THE EFFECT OF BSE GREENEX & BSE
SENSEX ON GREEN STOCKS**

Published in Volume 04, Issue 07, June 2026.

EDITOR IN CHIEF