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EDITORIAL

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We also express our sincere thanks and gratitude to all the contributors to research papers/ articles who have taken pain in preparing manuscripts, incorporating reviewer(s) valuable suggestions and cooperating with uxs in every possible way.

We also express our heartfelt gratitude to all the esteemed members of the Editorial Board, Esteemed Reviewer(s) who despite their busy schedules have given their valuable time, suggestions and comments to enrich the quality of the contributory resears paper(s) in bringing to light this June issue.

Last, but not least, we revere the patronage and moral support extended by our parents and family members whose constant encouragement and cooperation made it possible for us to complete on time.

We would highly appreciate and look forward to your valuable suggestions, comments and feedback at **editorbr2022@gmail.com**

December, 2025
West Bengal, India

PEMA LAMA
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CONTENTS

▌RESEARCH ARTICLE

A Study on the Impact of Sustainable Eco-Finance and Asset Allocation Strategy

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ABSTRACT

The present study aimed to evaluate the return performance and variability of green finance investment stocks and conventional stocks over the past five financial years. The research sought to assess whether green finance stocks' investment offers competitive and stable returns compared to traditional equity investments. By means of data from the last five financial years, this study computed single-period Ex-post return, Arithmetic mean return, Geometric mean return, and multiple-period holding period of returns for both Green and Conventional stock groups. Despite the use of inferential statistical techniques, including single-factor ANOVA, F-test, and Student T-test, to test the significance of differences in mean return and variances.

The single-factor ANOVA-shaped F Calculated value, which was below the critical value with a P value of 0.0746 (approx.), indicates that the mean return in between the two groups was not statistically different. However, the F-test showed a one-tailed, F-calculated value and P value 0.0012 (approx), suggesting a significant difference in return variances. The Student T test was also applied to confirm that the returns were statistically comparable. The results provide an actionable insight for Investors considering Green Finance Instruments. The study enhanced limited empirical research on green finance by providing a five-year comparative analysis of green vs conventional stock returns comparable to risk using statistical methods.

1 INTRODUCTION

Nowadays, environmental deterioration is a serious matter. In many aspects, we are constantly witnessing a downward shift regarding this matter. So, from that point, the concept of sustainability is a crucial matter. It can be maintained by individuals at their personal level to make the environment more compatible for our future generation (Amardeep & Sardana, 2021). Besides, there is an immense role of institutions to invest in projects that have a main focus on sustainable development. Again, there are many companies which invest in various environmentally sustainable projects (Mitra & Motwani, 2017). This type of funding is known as green finance. In our research paper, we have attempted to maximise the gain of the investors by optimising the portfolio combination of investors by selecting investment options in green finance projects and other than green finance options. In this way, a clear view can be shown about these two investment options' earning comparability based on the data collected of the last five financial years.

2 SIGNIFICANCE OF THE STUDY

Consequently, we can see that at the time of making an optimum asset allocation strategy, investors can include green stocks or not in their portfolio. Fundamentally, it depends on their risk perception. So, our analysis can provide a clear view of whether investors should invest in green finance stocks or not. All the detailed calculations and hypothetical analysis will add value to the investors' Perception in this regard.

4   LITERATURE REVIEW

As per Mitra and Motwani (2017), the discussion was based on the matter of how the optimum portfolio is derived by using Sharpe's single index model. Here are a few companies listed under the BSE Green index that were taken into consideration. Now, by ranking assets included in a portfolio as per the excess return to beta ratio, the optimum portfolio has been derived. The result is not comparable, as those companies which are not included in such an index (Greenex) have not been taken into consideration. So, it will not show any consequences to the investors about the impact of the selection or non-selection of those particular securities on their portfolio performance. Shrimali (2019) showed the probable impact of the inclusion of green equity in investors' portfolios. The author focuses on whether this type of investment option can be treated as a separate asset class and if it can add value to the investors. Instead of taking the Ex-Post Return and risk of individual companies, here the analysis was done on the basis of different indices. And how this will impact mainly large institutional investors. Chaudhury (2020) discussed how various intermediaries at the National and international levels can help promote climate finance in various developing countries. It is shown that intermediaries play a crucial role in deciding which projects are being funded, how they are being funded, etc. Again, it is mentioned here how the Green Climate Fund (GCF) is offered for projects through Accredited entities in developing countries. Different models were discussed, focusing on how Accredited entities interact with the Green Climate Fund. Amardeep and Sardana (2021) show how green finance can be used as an effective means for Sustainable Development in a country. Green finance has investment options in various financial sectors and asset classes that integrate ESG criteria. Different data relating to the green finance market, multinational development banks and climate/green bonds were presented in this paper. Again, the opinion that green finance is an important or emergent option for Indian investors was given but how investors will benefit from this type of investment option, no clear views were shown by any suitable analysis.

Chakraborty and Nag (2023) discussed that investors' choice of investing in those companies which do not follow eco-friendly activities but provide high return (carbon premium) or investing in securities of companies that consider environmental issues (equity greenium) depends on the risk minimisation point of view. From the analysis, we can see that investors witness the highest return on a short-term period and face huge losses on a long-term period, depending on the selection of a particular green stock or other traditional investment options.

3   RESEARCH GAP

By reviewing the prevailing literature, it was found that each paper explores a different aspect of green finance stocks. While a few papers focus on how green finance can be useful in the economic development of a country, another shows how investors are affected by investment in green stock. Again, the role of Accredited entities in promoting green stocks was also discussed. Many models were being used for assessing the effectiveness of such entities. But no comparison of return and risk has been done from the viewpoint of investors investing in green stock or other stock by applying any significant descriptive analysis that can validate the sample value collected for hypothesis formulation and analysis.

From that point of view, we have made an effort to validate the sample taken of average return & Risk from green stocks and other than green stocks over the last five years by applying three distinct descriptive statistics. The analysis aims to show whether there is really any difference between the average return of these two types of investments, so that investors can think about whether to include green stocks in their portfolio or otherwise.

4   OBJECTIVES OF THE STUDY

The objectives of the study are as follows –

To Statistically Examine the inconsistency of the risk-return standpoint of any Investor across different financial years, Green Finance-focused companies and Traditional companies. Using several statistical approaches like ANOVA, F-Test with Unequal

variances, Student T Test with unequal variances in order to provide perceptions for Investors making portfolio allocation decisions.

To analyse the deviation in the Return viewpoint in Sustainable Eco-Finance and Conventional stock verticals to guide Investors on diversification and portfolio optimisation strategies.

5   RESEARCH METHODOLOGY

The present study may adopt a rigorous quantitative framework to analyse the differential behaviour of Risk-Return between Green Finance-oriented firms and conventional firms other than sustainable finance-oriented firms. The objective is to determine the understanding of the portfolio optimisation from the perspective of the Investor's Rationality.

- *Sample Design and Collection:* A total of sixteen publicly listed companies is statistically categorised into two Groups:

- *Green Finance Investing Groups:* Eight Companies have been identified that have actively engaged in Green Finance Initiatives and Other Investments.

- *Non-Green Bio-Friendly Conscious Group*: Eight companies that are not directly involved in Sustainable Finance Projects based on ESG (Environmental Sustainability Growth) disclosures & Sustainability Reporting.

- *Data Acquisition and Time Frame*: All the Financial data, including stock prices and dividend distributions, was collected from the official websites of the company, the Investors' relations portal, and the Annual Financial Reports of the selected firms. The dataset extends multiple financial years from 2020-21 to 2024-25.

- *Return Estimation Models:* To capture Investor-Relevant Performance, the return matrices were employed:

- *Single Period Ex-Post Return*: This method is useful for assessing realised historical returns.

$$\text{Return} = C_t / P_{t-1} + (Pt - P_{t-1}) / P_{t-1} \quad \text{.............. (1)}$$

Where P_{t-1} = Beginning Price or Purchasing Price of Securities

P_t = Closing Price of Securities

C_t = Income or Dividend (Interim + Final)

- *Arithmetic Return:* This method is beneficial for the simplified average return over a discrete period of return.

- *Geometric Return:* To reflect compounded multiple-period growth rates.

$$\text{Return} = \{(1+R_1)\,(1+R_2) \ldots\ldots\ldots\ldots\ldots(1+R_n)\}^{1/n} \quad \ldots\ldots (2)$$

N no. of Holding Period of Return: The Real-world Investing holding strategies over a number of years' time frame.

$$\text{Return} = \{(1+R_1)\,(1+R_2) \ldots\ldots\ldots\ldots(1+R_n)\} - 1 \quad \ldots\ldots. (3)$$

- *Risk Measurement Techniques:* Risk or uncertainty was quantified by using the standard deviation of returns, widely accepted as volatility. It's a relative measurement of volatility, uncertainty, and portfolio sensitivity.

- *Statistical Framework:* To access the statistical significance of the observed differences, this study examines multiple Inferential Tools:

- *Single Factor ANOVA:* To test for a significant difference in mean returns across multiple groups over a time frame.

- *F Test [Left Tailed, Right Tailed]:* This is beneficial for comparing the variances and assessing the relative stability between two groups.

- *Student T test with unequal variances:* This is useful to evaluate differences in mean returns, where the variances of similar stocks are not presumed.

5 | DATA ANALYSIS AND INTERPRETATION

A. Green Finance Investment Stocks

TABLE 1: CALCULATION OF AVG. RETURN (2024-25) OF GREEN FINANCE INVESTMENT SECURITIES

Company Name	Market Price 1.4.2025	Market Price 1.4.2024	Dividend	Income Component	Capital Component	Total Return
Adani Green	948.65	1797.65	0	0.0000	-0.4723	-0.47
Suzlon Energy	47.65	41.6	0	0.0000	0.1454	0.15
Praj Industries	554.85	547.75	6	0.0110	0.0130	0.02
Gravita India Ltd	1831.95	977.95	5.2	0.0053	0.8733	0.88
VA Tech Wabag	1454.65	966.05	0	0.0000	0.5058	0.51
ION Exchange India Ltd	469.45	568.4	1.5	0.0026	-0.1741	-0.17
Tata Power	375.4	449.5	2	0.0044	-0.1648	-0.16
Waaree Renewable Technologies	907.65	2480.5	2	0.0008	-0.6341	-0.63
TOTAL						0.12
AVG RETURN (2024-25) (R1)						0.01

Data Source: *investing.com/moneycontrol.com/livemint.com*

TABLE 2: CALCULATION OF AVG. RETURN (2023-24) OF GREEN FINANCE INVESTMENT SECURITIES

Company Name	Market Price 1.4.2024	Market Price 1.4.2023	Dividend	Income Component	Capital Component	Total Return
Adani Green	1797.65	951	0	0.0000	0.8903	0.89
Suzlon Energy	41.6	8.3	0	0.0000	4.0120	4.01
Praj Industries	547.75	355.45	4.5	0.0127	0.5410	0.55
Gravita India Ltd	977.95	508.4	4.35	0.0086	0.9236	0.93
VA tech Wabag	966.05	390.3	0	0.0000	1.4751	1.48
ION Exchange India Ltd	568.4	327.9	1.25	0.0038	0.7335	0.74
Tata Power	449.25	201.1	2	0.0099	1.2340	1.24
Waaree Renewable Technologies	2480.5	177.43	1	0.0056	12.9802	12.99
TOTAL						22.83
AVG RETURN (2023-24) (R2)						2.85

Data Source: *investing.com/moneycontrol.com/livemint.com*

TABLE 3: CALCULATION OF AVG. RETURN (2022-23) OF GREEN FINANCE INVESTMENT SECURITIES

Company Name	Market Price 1.4.2023	Market Price 1.4.2022	Dividend	Income Component	Capital Component	Total Return
Adani Green	951	2882.8	0	0.0000	-0.6701	-0.67
Suzlon Energy	8.3	9.18	0	0.0000	-0.0959	-0.10
Praj Industries	355.45	407.23	2.7	0.0066	-0.1272	-0.12
Gravita India Ltd	508.4	310.4	0	0.0000	0.6379	0.64
VA tech Wabag	390.3	291.15	0	0.0000	0.3405	0.34
ION Exchange India Ltd	327.9	170.83	10	0.0585	0.9195	0.98
Tata Power	201.1	242.35	1.75	0.0072	-0.1702	-0.16
Waaree Renewable Technologies	177.43	66.15	0.5	0.0076	1.6822	1.69
TOTAL						2.60
AVG RETURN (2022-23) (R3)						0.32

Data Source: *investing.com/moneycontrol.com/livemint.com*

TABLE 4: CALCULATION OF AVG. RETURN (2021-22) OF GREEN FINANCE INVESTMENT SECURITIES

Company Name	Market Price 1.4.2022	Market Price 1.4.2021	Dividend	Income Component	Capital Component	Total Return
Adani Green	2882.8	1018.95	0	0.0000	1.8292	1.83
Suzlon Energy	9.18	4.41	0	0.0000	1.0816	1.08
Praj Industries	407.23	233.75	3.66	0.0157	0.7422	0.76
Gravita India Ltd	310.4	95.4	3	0.0314	2.2537	2.29
VA tech Wabag	291.15	248.55	0	0.0000	0.1714	0.17
ION Exchange India Ltd	170.83	140.77	10	0.0710	0.2135	0.28
Tata Power	242.35	98.85	1.55	0.0157	1.4517	1.47
Waaree Renewable Technologies	66.15	13.3	0.5	0.0376	3.9737	4.01
TOTAL						11.89
AVG RETURN (2021-22) (R4)						1.49

Data Source: *investing.com/moneycontrol.com/livemint.com*

TABLE 5: CALCULATION OF AVG. RETURN (2020-21) OF GREEN FINANCE INVESTMENT SECURITIES

Company Name	Market Price 1.4.2021	Market Price 1.4.2020	Dividend	Income Component	Capital Component	Total Return
Adani Green	1018.95	210.45	0	0.0000	3.8418	3.84
Suzlon Energy	4.41	2.39	0	0.0000	0.8452	0.85
Praj Industries	233.75	61.12	0	0.0000	2.8244	2.82
Gravita India Ltd	95.4	36.8	1.1	0.0299	1.5924	1.62
VA tech Wabag	248.55	129.25	0	0.0000	0.9230	0.92
ION Exchange India Ltd	140.77	69.24	1.5	0.0217	1.0331	1.05
Tata Power	98.85	31.7	1.55	0.0489	2.1183	2.17
Waaree Renewable Technologies	13.3	2.38	0	0.0000	4.5882	4.59
TOTAL						17.87
AVG RETURN (2021-20) (R5)						2.23

Data Source: *investing.com/moneycontrol.com/livemint.com*

TABLE 6: CALCULATION OF ARITHMETIC RETURN (FIVE FINANCIAL YEARS), STANDARD DEVIATION FOR RISK AND UNCERTAINTY, GEOMETRIC RETURN, N NO. OF HOLDING PERIOD OF RETURN OF SUSTAINABLE FINANCE INVESTMENT SECURITIES

Year	AVG Return	Mean Deviation from Mean	Square of Mean Deviation
2024-25 (R1)	0.01	-1.37	1.8769
2023-24 (R2)	2.85	2.85	8.1225
2022-23 (R3)	0.32	0.32	0.1024
2021-22 (R4)	1.49	1.49	2.2201
2020-21 (R5)	2.23	2.23	4.9729
Total (R1+R2+R3+R4+R5)	6.9		17.2948
Average - (R1+R2+R3+R4+R5)/5)	1.38		
Std. Deviation	1.10	40.28	1.2141
Geometric Return			
N Number of Holding Periods of Return			

Source: Authors' Compilation

B. Other than Sustainable Finance Investment Stocks

TABLE 7: CALCULATION OF AVG. RETURN (2024-25) OF OTHER THAN GREEN FINANCE INVESTMENT SECURITIES

Company Name	Market Price 1.4.2025	Market Price 1.4.2024	Dividend	Income Component	Capital Component	Total Return
Reliance Industries Ltd.	1275.1	1467	10	0.0068	-0.13	-0.12
HDFC Bank	1828.2	1520.1	19.5	0.0128	0.20	0.22
Bharti Airtel	1733.4	1322.3	8	0.0061	0.31	0.32

Company Name	Market Price 1.4.2025	Market Price 1.4.2024	Dividend	Income Component	Capital Component	Total Return
ICICI Bank	1348.35	1150.4	10	0.0087	0.17	0.18
SBI	771.5	826.25	13.7	0.0166	-0.07	-0.05
Bajaj Finance	8945.6	6923.55	36	0.0052	0.29	0.30
ITC	409.75	435.65	14	0.0321	-0.06	-0.03
Cognizant	75.9	65.68	3.09	0.0470	0.16	0.20
TOTAL						1.01
AVG RETURN (2024-25) (R1)						0.13

Data Source: *investing.com/moneycontrol.com/livemint.com*

TABLE 8: CALCULATION OF AVG. RETURN (2023-24) OF OTHER THAN GREEN FINANCE INVESTMENT SECURITIES

Company Name	Market Price 1.4.2024	Market Price 1.4.2023	Dividend	Income Component	Capital Component	Total Return
Reliance Industries Ltd.	1467	1098.74	9	0.0082	0.3352	0.34
HDFC Bank	1520.1	1687.6	19	0.0113	-0.0993	-0.09
Bharti Airtel	1322.3	799.3	4	0.0050	0.6543	0.66
ICICI Bank	1150.4	877.25	8	0.0091	0.3114	0.32
SBI	826.25	578.3	11.3	0.0195	0.4288	0.45
Bajaj Finance	6923.55	6280.1	30	0.0048	0.1025	0.11
ITC	435.65	422.94	9	0.0213	0.0301	0.05
Cognizant	65.68	59.71	3.47	0.0581	0.1000	0.16
TOTAL						**2.00**
AVG RETURN (2023-24) (R2)						**0.25**

Data Source: *investing.com/moneycontrol.com/livemint.com*

TABLE 9: CALCULATION OF AVG. RETURN (2022-23) OF OTHER THAN GREEN FINANCE INVESTMENT SECURITIES

Company Name	Market Price 1.4.2023	Market Price 1.4.2022	Dividend	Income Component	Capital Component	Total Return
Reliance Industries Ltd.	1098.74	1266.58	8	0.0063	-0.1325	-0.13
HDFC Bank	1687.6	1384.6	15.5	0.0112	0.2188	0.23
Bharti Airtel	799.3	739	3	0.0041	0.0816	0.09
ICICI Bank	877.25	743.3	5	0.0067	0.1802	0.19
SBI	578.3	496.3	7.1	0.0143	0.1652	0.18
Bajaj Finance	6280.1	6671.8	20	0.0030	-0.0587	-0.06
ITC	422.94	318.54	12.25	0.0385	0.3277	0.37
Cognizant	59.71	80.9	2.5	0.0309	-0.2619	-0.23
TOTAL						0.64
AVG RETURN (2022-23) (R3)						0.08

Data Source: investing.com/moneycontrol.com/livemint.com

TABLE 10: CALCULATION OF AVG. RETURN (2021-22) OF OTHER THAN GREEN FINANCE INVESTMENT SECURITIES

Company Name	Market Price 1.4.2022	Market Price 1.4.2021	Dividend	Income Component	Capital Component	Total Return
Reliance Industries Ltd.	1266.58	905.36	7	0.0077	0.3990	0.41
HDFC Bank	1384.6	1412.3	6.5	0.0046	-0.0196	-0.02
Bharti Airtel	739	526.86	2	0.0038	0.4026	0.41
ICICI Bank	743.3	600.5	2	0.0033	0.2378	0.24
SBI	496.3	353.5	4	0.0113	0.4040	0.42
Bajaj Finance	6671.8	5451.9	10	0.0018	0.2238	0.23
ITC	318.54	201.36	11	0.0546	0.5819	0.64
Cognizant	80.9	80.4	2.78	0.0346	0.0062	0.04
TOTAL						2.36
AVG RETURN (2021-22) (R4)						0.29

Data Source: *investing.com/moneycontrol.com/livemint.com*

TABLE 11: CALCULATION OF AVG. RETURN (2020-21) OF OTHER THAN GREEN FINANCE INVESTMENT SECURITIES

| Company Name	Market Price 1.4.2021	Market Price 1.4.2020	Dividend	Income Component	Capital Component	Total Return
Reliance Industries Ltd.	905.36	659.21	6.5	0.0099	0.3734	0.38
HDFC Bank	1412.3	1001.8	0	0.0000	0.4098	0.41
Bharti Airtel	526.86	504.82	2	0.0040	0.0437	0.05
ICICI Bank	600.5	380.15	0	0.0000	0.5796	0.58
SBI	353.5	190.5	0	0.0000	0.8556	0.86
Bajaj Finance	5451.9	2318.1	0	0.0000	1.3519	1.35
ITC	201.36	180.93	15.15	0.0837	0.1129	0.20
Cognizant	80.4	58.02	2.53	0.0436	0.3857	0.43
TOTAL						4.25
AVG RETURN (2020-21) (R5)						0.53

Data Source: *investing.com/moneycontrol.com/livemint.com*

TABLE 12: CALCULATION OF ARITHMETIC RETURN (FIVE FINANCIAL YEARS), STANDARD DEVIATION FOR RISK & UNCERTAINTY, GEOMETRIC RETURN, NO. OF HOLDING PERIODS OF RETURN OF OTHER THAN SUSTAINABLE FINANCE INVESTMENT SECURITIES

Year	AVG Return	Mean Deviation from Mean	Square of Mean Deviation
2024-25 (R1)	0.13	-0.1260	0.0159
2023-24 (R2)	0.25	0.2500	0.0625
2022-23 (R3)	0.08	0.0800	0.0064
2021-22 (R4)	0.29	0.2900	0.0841

| 2020-21 (R5)	0.53	0.5300	0.2809
Total (R1+R2+R3+R4+R5)	1.28		0.45
Avg. (R1+R2+R3+R4+R5)/5)	0.256		
Std. Deviation			0.1754
Geometric Return			
N Number of Holding Periods of Return	0.25 2.01		

Source: *Authors' Compilation*

FIGURE 1: AVERAGE RETURN OF SUSTAINABLE FINANCE STOCKS
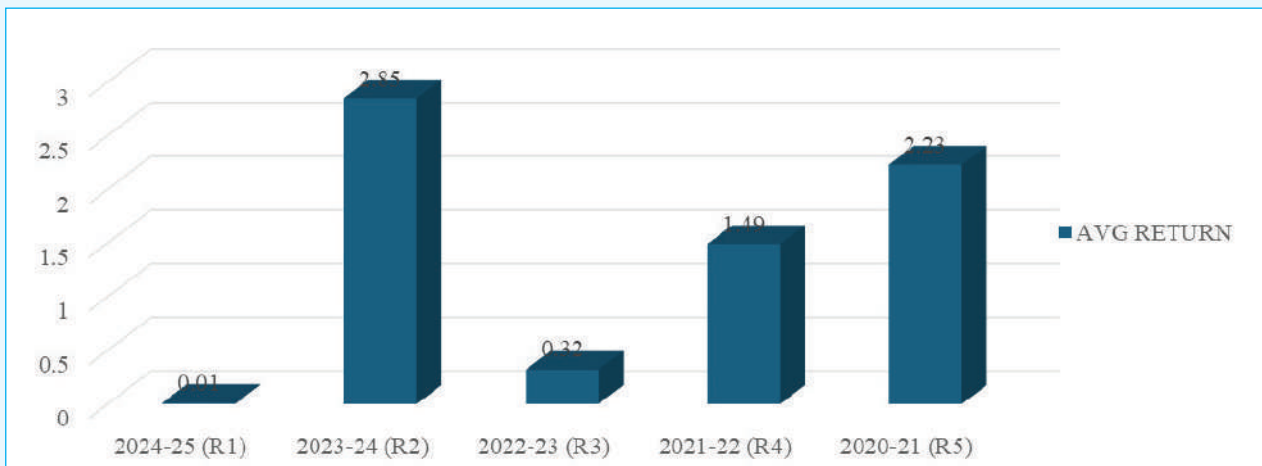
Interpretation: In Figure 1 above, the maximum average return is 2.85 in the financial year 2023-24 as compared to the next highest return in the financial year 2020-21. The average return will be comparatively higher in 2021-22 as compared to the average return in 2022-23 and 2024-25.

FIGURE 2: AVERAGE RETURN OF OTHER THAN SUSTAINABLE FINANCE STOCKS
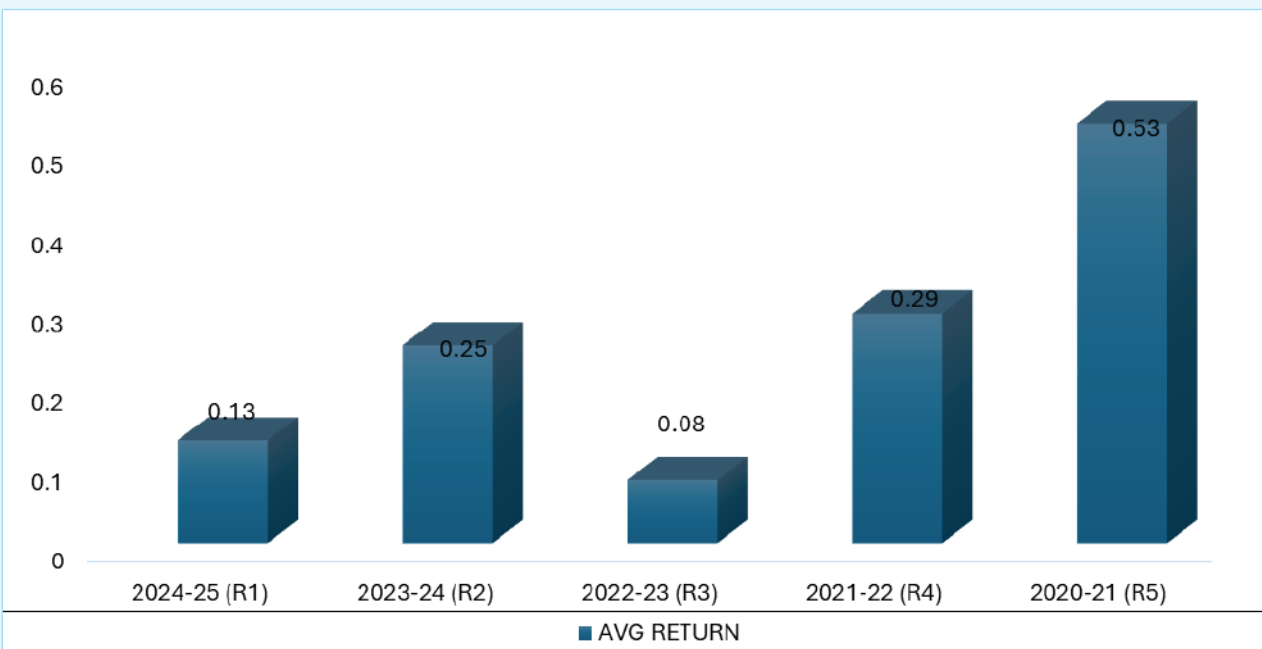
Interpretation: In Figure 2, the maximum average return is 0.53 in the financial year 2020-21 as compared to the next highest return in the financial year 2021-22. The average return will be comparatively higher in 2023-24 as compared to the average return in 2022-23 and 2024-25.

TABLE 13: STANDARD DEVIATION OF GREEN FINANCE AND OTHER THAN GREEN FINANCE INVESTMENT SECURITIES

Green Finance Investment Securities	1.2141
Other than Green Finance Investment Securities	0.1754

Interpretation: Table 13 shows that the standard deviation of green finance investment companies' stock is 1.2141, which is comparatively higher than that of other green finance investment companies' stocks, which is 0.1754. It denotes that the risk and uncertainty of eco finance stocks is higher, as the perception of relative return is also higher than that of conventional companies

TABLE 14: GEOMETRIC RETURN OF GREEN FINANCE AND OTHER THAN GREEN FINANCE INVESTMENT SECURITIES

Green Finance Investment Securities	1.1
Other than Green Finance Investment Securities	0.25

Interpretation: Table 14 shows the Geometric Return of green finance investment companies' stock is 1.1, which is comparatively higher than other green finance investment companies' stocks, which is 0.25.

TABLE 15: N NO. OF HOLDING PERIOD OF RETURN OF GREEN FINANCE AND OTHER THAN GREEN FINANCE INVESTMENT SECURITIES

Green Finance Investment Securities	40.28
Other than Green Finance Investment Securities	2.01

Interpretation: Table 14 shows that the holding period of green finance investment companies' stock is 40.28, which is comparatively higher than that of other green finance investment companies' stocks, which is 2.01.

6 DESCRIPTIVE STATISTICAL ANALYSIS

TABLE 16: AVERAGE RETURN FROM GREEN FINANCE STOCKS AND OTHER THAN GREEN FINANCE STOCKS

Year	Average Return from Green Finance Stocks	Average Return from Other than Green Finance Stocks
2024-25 (R1)	0.01	0.13
2023-24 (R2)	2.85	0.25
2022-23 (R3)	0.32	0.08
2021-22 (R4)	1.49	0.29
2020-21 (R5)	2.23	0.53

Source: Authors' Compilation

1. Single Factor ANOVA

H_0 **(N.H):** There is no noteworthy difference in the deviation in Return between Sustainable Finance Stocks and Conventional Stocks with respect to the Arithmetic Avg. Return of Single Period Ex-Post Return.

H_1 **(A.H):** There is a noteworthy difference in the deviation in Return between Sustainable Finance Stocks and Conventional Stocks with respect to the Arithmetic Avg. Return of Single Period Ex-Post Return.

TABLE 17: SINGLE FACTOR ANOVA OF RETURN VARIABILITY BETWEEN TWO GROUPS (STOCKS' RETURN)

Groups	Count	Sum	Average	Variance		
Col 1	5	6.9	1.38	1.474		
Col 2	5	1.28	0.256	0.03078		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	3.15844	1	3.15844	4.197876101	0.07463879	5.317655072
Within Groups	6.01912	8	0.75239			
Total	9.17756	9				

Source: *Authors' Compilation*

Interpretation: In the above ANOVA Table, F cal value is 4.1978 (approx.), which is < F crit value 5.317 (approx.), which signifies that the model is not significant. That is, we fail to reject the H_0 that there is no significant difference in the deviation in Return between Sustainable Finance Stocks and Conventional Stocks with respect to the Arithmetic Avg. Return of Single Period Ex-Post Return. As compared to the P value, which is 0.074 (approx.), is greater than the 0.05 significance level, that is, H_0 is accepted, indicating that there is no noteworthy difference in the average. return in between two stocks vertically.

2. F-Test Two-Sample for Variances

H_0 (N.H): There is no Momentous difference in the variability of Risk and Return between Green finance companies and traditional companies over different Financial Years.

H_1 (A.H): There is a momentous difference in the variability of Risk and Return between Green finance companies and traditional companies over different Financial Years.

TABLE 18: F-TEST TWO-SAMPLE FOR VARIANCES

Particulars	Var 1	Var 2
Mean	1.38	0.256
Var	1.474	0.03078
Observations	5	5
Degree of freedom	4	4

Particulars	Var 1	Var 2
F	47.88823912	
P(F<=f) one-tailed	0.001238082	
F Critical one-tailed	6.388232909	

Source: Authors' Compilation

Interpretation: In the above table, F cal value is 47.89 (approx.), which is > F crit value 6.3882 (approx.), which signifies that the model is significant. That is, we are to reject the H_0 that there is a significant difference in the variance between Sustainable Finance Stocks and Conventional Stocks with respect to standard deviation. As compared to the P value, that is 0.0012 (approx.), it is less than the 0.05 significance level, that is, H_0 is rejected, indicating a noteworthy difference in variance between the two stocks vertically. In this test, we have considered a one-tailed right-tailed test as the observed variance of variable one is 1.474, which is greater than the observed variance of variable two, that is, 0.03078.

3. Student T-Test: Two-Sample Presuming Unequal Variances

H_0 (N.H): There is no remarkable difference in the deviation in Return and Risk between Sustainable Finance Stocks and Traditional Stocks with respect to Portfolio Outcome.

H_1 (A.H): There is a remarkable difference in the deviation in Return and Risk between Sustainable Finance Stocks and Traditional Stocks with respect to Portfolio Outcome.

TABLE 19: STUDENT T-TEST: TWO-SAMPLE PRESUMING UNEQUAL VARIANCES

Particulars	Variable 1	Variable 2
Mean	1.38	0.256
Variance	1.474	0.03078
Observations	5	5
Hypothesised Mean Difference	0	
Df	4	
t Stat	2.048871909	
P(T<=t) one-tail	0.054915451	
t Critical one-tailed	2.131846786	
P(T<=t) two-tail	0.109830902	
t Critical two-tailed	2.776445105	

Source: Authors' Calculation

Interpretation: In the ANOVA table, the t-calculated value is 2.04887 (approx.), which is less than the t-critical value for a two-tailed test, 2.7764 (approx), which signifies that the model is not significant. That is, we fail to reject the H_0 that there is no significant difference in the deviation in observed variances between Sustainable Finance Stocks and Conventional Stocks. Also, the t-stat value 2.04887, which is less than the t-critical value of a tail test, 2.13, supports the null hypothesis. As compared to the P value in both cases is greater than 0.05, which signifies that they fail to reject H_0 and reject H_1. Thus, we can say that there is no remarkable difference in the deviation in Return and Risk between Sustainable Finance Stocks and Traditional Stocks with respect to Portfolio Outcome.

7 CONCLUDING OBSERVATIONS

From the above analysis section, we can make some observations about the average return, standard deviation, geometric mean, and N No. of holding period return, etc., for both the investment verticals. We can see that in the case of green finance stocks, all three types of return are much higher than that of the other option selected in our study. But it must be noted that in spite of having a higher return, green finance stocks are associated with a higher degree of risk, i.e. standard deviation in comparison to traditional stocks. Then, in

the descriptive analysis part as we intended to validate the collected data sample in terms of both the return and risk, we have used three types of test statistics, such as single-factor ANOVA, F-test and T-test. As we know, single-factor ANOVA is used to assess any noteworthy alteration or not in the average return between two groups. And we can see that, as per this statistical test, no significant difference is being observed in the average return between green stock and conventional stocks. Then, from the F-test calculation, we can witness a noteworthy difference in the variability of risk and return between these two investment options. It is quite obvious that if there is a higher return, there must be a higher risk.

This denotation is satisfied in our test. But contradictorily, we can see that, as per the student's T-test, no remarkable difference in the mean deviation is observed between these investment choices. Finally, we may conclude that investors are of three natures: risk averse, risk neutral and risk seeker. So, it depends on the investors with their risk perception, whether they will choose to include green stocks in their investment portfolio or not. But we may suggest that if an investor is a risk seeker or risk neutral, then green stock may be a better investment option for them, providing much higher returns than others, as they don't worry about risk. But for risk-averse investors, decisions may be taken carefully after making an effective risk-return trade-off measure by considering all the aspects of such investment verticals.

8 FURTHER SCOPE OF THE STUDY

For future research, it would be helpful to use a larger sample size, including companies from different regions to make the results more consistent. Also, using data over a longer period of time could provide a better understanding of how green finance stocks perform in the long run. The study used ANOVA, T-test and F-test to analyse risk and return for sixteen companies.

However, future studies could apply more advanced methods like machine learning to explore the connections between sustainability and financial performance in greater detail. Including Environmental,

Social and Governance (ESG) factors in the analysis could help understand how these elements impact investment decisions. Finally, future research could also look at how sustainable finance supports global goals, like the Sustainable Development Goals and its broader effects on society and the environment.

9 LIMITATIONS OF THE STUDY

The study focuses on 16 companies, of which 8 are from sustainable eco finance and eight from traditional finance companies. The small sample size search may limit how the results will apply to a wider range of companies. The data used in this study are from the last five financial years only. A longer period of data could provide more insight into long-term trends and the evolution of green finance

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