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Ethics In The Numbers: A Quantitative Exploration Of Herding Behavior Among Socially Responsible Investors

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Abstract

The current study seeks to conduct a comparative analysis of Nifty 100 index with its enhanced ESG index by analysing their respective returns and testing the herding behaviour. The analysis includes daily trade data for both the indexes and their component equities from April 1, 2018 to March 31, 2019. Nifty 100 enhanced ESG index was launched only in 27th March 2018. The study used CCK model for testing the herd behaviour. The result of the study indicates that Nifty Enhanced ESG 100 performs much better in terms of return and the herding behaviour is more visible in Nifty 100 index caused by December Effect in the stock market and the presence of FII's increase. The present study excludes the period influenced by Covid-19 to study the behaviour of investors during the white swan phase. This study highlighted that investors who are socially responsible in their investment may profit from Nifty Enhanced ESG 100 index by outperforming Nifty 100 index.

Keywords: ***Herding, CCK model, December Effect, FII, White Swan, Nifty 100 Enhanced ESG.***

1. INTRODUCTION

Investors' money stimulates industry development, which drives economic growth in any nation. Naturally, investors want profit maximization. Any investment without a solid return will be ignored. When investors solely care about profit, they won't consider social responsibility or ethical investing. They argue that social work is the government's obligation, not business's. Another view is that only socially responsible companies can thrive and survive. SRI investors invest with social responsibility in mind. Socially responsible investors go beyond earnings to see whether their investment is ethical by assessing the firm's social responsibility. SRI investors are ethical investors since they research the company's ethics before investing. Thus, ethical or unethical investors would do fundamental or technical research before investing in high-return equities. However, the time frame for an investor to decide is so short since the share price may change in a minute. Investors may use cognitive shortcuts that bias judgments to reduce risk. Herding is a typical investing prejudice and this could be due to the loss aversion bias in the investor or may be the overconfidence bias on the investor he/ she mimic (Ganesh et al. 2020). Herding is copying others' investing decisions. Many investors feel that mimicking experts reduces their risk of making a bad investment selection. They should not copy the crowd since it will create a market bubble that might bust at any moment. This will cause a market meltdown and investment losses. One of the finest instances is Tulip Mania, a classic investment bubble. The current research compares ethical investors with investors that simply look at financial return to see how their investment returns vary. The research contrasts both forms of investors' herding.

Below are some prior research on ethical and non-ethical investors and herding behaviour: Entine (1997) studied socially responsible investors' investing conduct and found various hidden agendas. However, Knowles (1997) found that socially conscious investors enhance society within the same time. Benson and Humphrey (2008) discovered that socially responsible investors were less impacted by investment returns than non-socially responsible investors. According to Nilsson (2008), equity investors (SR and non-SR) simply vary in that SR investors examine corporate ethics before investing.Chang et al. (2000) used CCK model to analyze daily data from five worldwide stock markets from 1976 to 1995 and found herding in just two nations. Tan et al. (2008) examined Shanghai and Shenzhen stock markets from 1994 to 2003 using daily data and the CCK model. The research found evidence of herd behaviour in two chosen markets. Cajueiro & Tabak (2009) used CCK model to study daily Nikkei index trading data from 2000 to 2006 and found that investors mimicked each other. Goodfellow et al. (2009) used daily trading data from 1996 to 2000 in Poland to analyze share market

investors' copying behaviour and found that it strongly influences the market. Gopal (2018) found that institutional investors mimicked industry vise selection in most industrial sectors, while the effect was small. Cakan et al. (2014) used CCK model to analyze daily trading data from 2007 to 2012 to find strong herding behaviour in banking stocks among Turkish stock market investors.

Previous investor social responsibility research mostly utilized surveys. However, accurate secondary data is needed to understand investors' mindsets and investment practices. Comparing Nifty 100 with its improved 100 ESG may help academics understand Indian stock market investors' morality. This research is the first to compare ethical and unethical investors' herding tendency. The research aims to determine:

1.To determine the return difference between Nifty 100 and its enhanced 100 ESG indexes.
2. To see whether the Nifty 100 and improved ESG indexes herd.

The hypotheses of the study is as follows:

H_{01}**:** The returns of the Nifty 100 & its enhanced ESG indices are not significantly different.
H_{02}: There is no visible herding in Nifty 100 index
H_{03}: There is no visible herding in Nifty 100 Enhanced ESG index.

2. Materials and Methods

Current research focused on Indian investors' genuine trading using daily trade data. Nifty 100 and its improved ESG index are used in the research. The 101 biggest Indian enterprises by market capitalization across 10 economic sectors are tracked by Nifty 100. This index measures large-capitalization corporations' performance. Nifty 100 Enhanced ESG excludes firms with an ESG score of 50% and businesses in categories 4 and 5 (very contentious) from the Nifty 100 index. This implies the Nifty 100 improved ESG index only covers firms with at least 50% ESG score and low controversy (categories 1, 2, and 3). Companies selling tobacco, alcohol, and guns are excluded from this ranking. This study examines the daily trading data of the nifty 100, its improved ESG, and their component companies from April 1, 2018, to March 31, 2019. Because Nifty 100 Enhanced ESG was released on March 27, 2018, and the trade data was confined to 2018-19, this timeframe was used. Data was acquired from NSE and CMIE Prowess. Using daily trade data, the research calculates the average return of both indexes and if they vary. They were also tested for significance using independent sample t-test.Chang et al. (2010)'s CCK model examines herd behaviour in both indices.

$$CSAD_t = \frac{1}{N} \sum_{i=1}^{N} | R_{i,t} - R_{m,t} | \quad \text{.....(1)}$$

Where:

N- Number of stocks

$R_{i,t}$ – observed stock return on firm i at time t

$R_{m,t}$ – Cross section of average of N returns in the aggregate market portfolio at time t

The model is based on general quadratic relationship between $CSAD_t$ and $R_{m,t}$ of the form:

$$CSAD_t = \propto + \gamma_1 |R_{m,t}| + \gamma_2 R_{m,t}^2 + \varepsilon_t \quad \text{..... (2)}$$

Where:

$\propto$ - Average dispersion of the sample

γ - is a prediction created to capture variations in trading conduct during times of market stress.

A negatively significant coefficient γ_2 indicates market players are herding. Variable stationarity must be determined before using regression. Augmented-Dickey Fuller and Philip-Perron tests are used to determine whether market return, CSAD, and the square of market return have a unit root.

3. Result and Discussion

The research first compares the financial returns of Nifty 100 and its upgraded ESG index against ethical and non-ethical enterprises. The Nifty 100 index lists the top 101 financial performing and market capitalization corporations, whereas the other index lists the top 81 ethically aware enterprises. If the Nifty 100 index returns more than the Nifty 100 Enhanced

ESG, socially responsible firms cannot earn more return to investors. If the Nifty 100 Enhanced ESG returns more, only socially responsible firms can grow sustainably and give shareholders more return. Table-1 shows the return comparison between two indices.

Table-1

Comparison of Return of Nifty 100 and Nifty 100 Enhanc ed ESG Index

Quarter	**Return**		**t-stats**	**P-Value**
	Nifty 100	**Nifty 100 Enhanced ESG**		
April-June	0.002	0.001	-0.447	0.670
July-September	0.001	0.002		
October-December	-0.002	-0.001		
January-March	0.001	0.002		
Average Return	**0.0005**	**0.001**		

Source: Computed Data

The first quarter showed greater return in Nifty 100 index, while all subsequent quarters showed better return for Nifty 100 Enhanced ESG index, and the average return of all quarters revealed higher return for socially responsible enterprises. The difference was not significant at 5% using an independent sample t-test, which yielded a p-value of 0.670.CCK model is used to analyze market herding. The CCK model is used to observe herding throughout the time. CCK model tests investor mimicry using CSAD. The descriptive measure of CSAD of both indices throughout each quarter is shown in table-2.

Table-2

CSAD-Descriptive Results

Quarter	Extreme		Least		Normal		Median		Std. Deviation		Skewness		Kurtosis	
	Nifty 100	Nifty 100 Enhanced ESG	Nifty 100	Nifty 100 Enhanced ESG	Nifty 100	Nifty 100 Enhanced ESG	Nifty 100	Nifty 100 Enhanced ESG	Nifty 100	Nifty 100 Enhanced ESG	Nifty 100	Nifty 100 Enhanced ESG	Nifty 100	Nifty 100 Enhanced ESG
Apr-June	0.972	0.781	0.949	0.764	0.962	0.774	0.962	0.774	0.004	0.003	-0.535	-0.622	1.613	1.539
Jul-Sep	0.973	0.783	0.950	0.768	0.963	0.775	0.964	0.775	0.005	0.003	-0.374	-0.134	-0.269	-0.325
Oct-Dec	0.977	0.787	0.951	0.767	0.964	0.776	0.963	0.775	0.005	0.004	0.081	0.372	0.340	0.807
Jan-Mar	0.972	0.782	0.952	0.766	0.963	0.775	0.962	0.774	0.004	0.003	0.052	0.116	-0.160	0.395

Source: Computed Data

Herding cannot be determined using CSAD descriptive statistics. It simply indicates if stock returns track market returns. If the CSAD increases, the index's component stocks' return is different from the market return; if it decreases, it matches the market return. CCK model theory suggests that herding behaviour only appears in non-linear relationships (Chang et al. 2000 & Economou et al. 2000).

Before utilizing model variables, check stationarity. Thus, the ADF and PP tests were used to examine CSAD, market return absolute value, and squared value for stationarity or unit root. Table 3 displays analysis results.

Table-3

Showing the result of Unit Root Test

Quarter	Market	Variable	Type of Test	t-stats	P-value
Apr-June	Nifty 100	CSAD	ADF	-6.977	0.000
			PP	-7.025	0.000
		|Rmt|	ADF	-6.387	0.000
			PP	-6.317	0.000
		Rmt^2	ADF	-5.941	0.000
			PP	-5.940	0.000
	Nifty 100 Enhanced ESG	CSAD	ADF	-7.212	0.000
			PP	-7.210	0.000
		|Rmt|	ADF	-6.387	0.000
			PP	-6.317	0.000
		Rmt^2	ADF	-6.132	0.000
			PP	-6.079	0.000
Jul-Sep	Nifty 100	CSAD	ADF	-7.000	0.000
			PP	-6.995	0.000
		|Rmt|	ADF	-5.804	0.000
			PP	-5.705	0.000
		Rmt^2	ADF	-5.657	0.000
			PP	-5.657	0.000
	Nifty 100 Enhanced ESG	CSAD	ADF	-6.722	0.000
			PP	-6.720	0.000
		|Rmt|	ADF	-5.995	0.000
			PP	-5.993	0.000
		Rmt^2	ADF	-5.396	0.000
			PP	-5.322	0.000
Oct-Dec	Nifty 100	CSAD	ADF	-6.193	0.000
			PP	-6.165	0.000
		|Rmt|	ADF	-4.378	0.000
			PP	-6.783	0.000
		Rmt^2	ADF	-4.369	0.000
			PP	-6.328	0.000
	Nifty 100 Enhanced ESG	CSAD	ADF	-6.176	0.000
			PP	-6.058	0.000
		|Rmt|	ADF	-4.085	0.000
			PP	-6.350	0.000
		Rmt^2	ADF	-4.242	0.000
			PP	-6.230	0.000
Jan-Mar	Nifty 100	CSAD	ADF	-7.123	0.000
			PP	-7.096	0.000
		|Rmt|	ADF	-7.740	0.000
			PP	-9.928	0.000
		Rmt^2	ADF	-8.288	0.000
			PP	-9.183	0.000
	Nifty 100 Enhanced ESG	CSAD	ADF	-6.957	0.000
			PP	-6.920	0.000

		|Rmt|	ADF	-7.143	0.000
			PP	-9.400	0.000
		Rmt^2	ADF	-8.231	0.000
			PP	-8.889	0.000

Source: Computed Data

All variables in all quarters have p-values less than 0.05 for both ADF and PP tests, indicating that they are stable and may be directly included in the model. The model uses squared and absolute market returns as independent variables and the CSAD as the dependent variable. Regression results are in Table-4.

TABLE-4

RESULT OF CCK MODEL

Sl. No	Quarter	Nifty 100					Nifty Enhanced ESG 100				
		Coefficient of Rmt^2	t-stats	P-value	R^2	Adjst R^2	Coefficient of Rmt^2	t-stats	P-value	R^2	Adjst R^2
1	Apr-June	-8.941	-0.497	0.621	0.039	0.007	4.227	0.169	0.867	0.003	0.001
2	Jul-Sep	-0.180	-0.975	0.334	0.030	0.003	10.378	0.313	0.755	0.017	0.016
3	Oct-Dec	**-20.568**	**-4.859**	**0.000**	**0.043**	**0.010**	**-27.563**	-1.00	0.321	0.040	0.007
4	Jan-Mar	-10.232	-0.396	0.693	0.004	0.003	16.752	1.094	0.279	0.030	0.003

Source: Computed Data

Herding is identified by looking at the coefficient value of the squared market return. If the co-efficient of Rmt^2 is less than zero with a 5% level of significance indicating a strong herding tendency during period. If the coefficient is negative but not significant then it indicates that some sort of herding is present but the significance of herding is not significant. If the coefficient is positive then there is no herding in the market.

Table-4 explains that the Nifty 100 index is influenced by the herding behaviour during all the quarters but the herding is significant during the third quarter alone. Nifty Enhanced ESG 100 index is free from the mimicking tendency of the investors except during the third quarter of the period. During the third quarter, though some sort of herding took place during the period, it was not significant at a 5% level because the p-value (0.321) > 0.05. The Nifty 100 index saw considerable herding during the third quarter, which may have been caused by the "December effect" on stock markets throughout the globe. Since US corporations record their profits in December, this month is considered as the one which has a more probable to have a great performance. It is the month when Christmas is celebrated in US, Europe and to some extent in India and the period in which investors buy, sell and earn more. The reason for the presence of the December effect may be attributed to the presence of FII's influence. Ganesh et al. (2017) in the study proved that the presence of FII's is increased from the period of 2013 and the presence of December effect is proved. This assertion about the existence of the December impact on the stock market is also supported by Ganesh et al. (2016). Investors herd or mimic the crowd when they are not so sure in taking their investment decisions and to hedge the risk in covering the possibility of loss.

CONCLUSION

The current study compares the economic health of ethical and unethical investors by examining the comparative return analyses of the Nifty 100 index, which includes the best-performing high-market-cap stocks, and the Nifty Enhanced 100 ESG index, which only includes ethical companies that are included in the Nifty 100 index. The period of the study covers from the first financial year wef. from the launch of ESG 100 index. The study analyses in quarterly. The result shows that Nifty 100 Enhanced ESG index is having high return when compared to nifty 100 index but the difference is not significant at 5% level. This proved that ethical firms produce more sustainable profit and longer life than others. The mimicking tendency of the investors in two indices is also compared in the study and the result indicates that some sort of herding is in Nifty 100 index but the significant herding was only for the period October to December because of December effect in stock market and the reason for the December effect is due to the increase of FII's during the period. The presence of herding during the third quarter was also visible in Nifty Enhanced ESG 100 index but the intensity of herding was not so significant. Investors mimic their decisions or follow the crowd when they are not so sure in their decision-making skill or to hedge the risk in covering the possibility of loss. Thus the present study gives an insight into both indices which will be a guideline to others to know the Indian stock market in a much more better way.

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