

Enhancing Portfolio Returns through Core Satellite Investing strategy***Dr. Sanjay Kumar Singh******Associate Professor in Department of Commerce at Dyal Singh College (E) (A full fledged day college) , University of Delhi.*****Abstract**

Portfolio fund managers in the recent era are available with different investment alternatives which can be useful for adopting active as well as passive investment strategy under different situations. This has resulted in paradigm change in the portfolio management strategies. The present study has been conducted to explain the significance of core and satellite portfolio management and its relevance in Indian stock market. Statistical test such as Kolmogorov Smirnov test, t-test, Levene's statistic, etc. have been employed using SPSS (Statistical Package for Social Sciences) and meaningful interpretations have been drawn from the output of various tests.

Keywords: *Portfolio Management, Core and satellite portfolio, K-S test, t-test, Nifty 50 , Nifty energy Index .*

Introduction

At times when market index is not expected to witness significant movement in either direction and continues to trade in a narrow range, the investors and portfolio managers prefer to shift part of their funds in the sector or stocks which are expected to witness relatively higher movement than the market index. This kind of strategy can be referred as 'core and satellite investing'. The core component of the portfolio comprises on blue chip stocks, highly rated debt instruments, investment alternatives ensuring safety of capital whereas satellite component comprises of specific sector or stock which draws relative higher proportion of funds of the total portfolio and likely to outperform the broader market index. This kind of investing strategy enables a portfolio manager and investors to earn rate of return higher than the market index return. The objective of core portfolio is to meet long-term financial goals of investors . Therefore, the time horizon should be at least seven years and above. The satellite portion are meant for shorter-term financial objectives. The return expectations will vary according to fund selection. Mid- and small-cap funds, thematic funds, and sectoral funds are generally used for constituting satellite portion as it can give much higher returns at greater risk. According to fund managers, for an all-equity strategy, the core portfolio may consist of passive index fund and a few large-cap diversified funds. In contrast to this, the satellite portfolio may consist of a combination of mid-cap/ small-cap and sector-specific/thematic funds . The percentages of allocation shall depend on the age/ risk-appetite/goals of the investor. Generally, the core should be 50-70% and the satellite portion can be 30-50%. In order to constitute the core portfolio, one can have three large-cap schemes (active funds and index/passive funds) and allocate 75% of portfolio funds by allocating 25% in each. The satellite portion can comprise of three thematic funds - such as banking and financial services fund or, small and mid-cap funds . One can also use aggressive hybrid funds as the core portion.

Review of existing Literature

Girija Gadre, Arti Bhargava and Labdhi Mehta. (2019) in their paper on core and satellite investing published in www.economictimes.com highlighted that under this approach , investors differentiate between two segments in their portfolio, core and satellite. Core portfolio provides stability and long term appreciation. The satellite portfolio offers an extra risk-adjusted return that pushes up overall returns. Core portfolio is geared to meet the long-term goals. It forms about 60-70% of the portfolio. Index, diversified equity or large cap equity and short-term debt funds make up this portfolio. The satellite portfolio forms a smaller part of the portfolio and is tactically managed to benefit from economic and market conditions. Long-term gilt funds, sector specific funds are some examples. Transaction cost is low as core portfolio is not churned frequently and so is volatility of the overall portfolio. The liquidity needs can be met through the satellite portfolio. According to Prasanna Pathak (2019) fund manager-equity, Taurus Asset Management, core and satellite portfolio management is an investment strategy that incorporates a 'core' portfolio of fixed-income and equity-linked funds which can give relatively better stability, lesser volatility and market-linked returns. This is then topped up with a combination of other 'satellite' funds in search of higher/excess returns and alpha. Donald J. Mulvihill (2005) in his study entitled, "Core and Satellite Portfolio Structure - Investment and Tax Considerations" observed that there are three primary sources of investment risk and return: interest rate risk,

equity market risk, and active risk. In case of core and satellite approach, active management is separated from ownership of an asset class after examining the investment and tax considerations relevant to the choice of portfolio structure. N. Amenc, Philippe Malaise and Lionel Martellini (2004) in their study, "Revisiting Core Satellite Investing" explained methodology based on an optimal dynamic adjustment of the fractions invested in a passive core versus an active satellite portfolio allows investors to gain full access to good tracking error, while keeping bad tracking error below a given threshold.

Objective of the study

The study has been conducted to highlight the relative outperformance of certain sectoral indices in Indian Stock Market despite the movement of the broader market index in a narrow range. The portfolio can identify such indices and make use of core and satellite investing to generate higher return for their clients and investors. Under this study, relative outperformance of Nifty Energy index has been observed against the Nifty Index during the period January 1, 2019 to December 15, 2019. It has been noticed that Nifty Energy index has offered three times more than Nifty Index at various occasions. The study, in view of the same, aims to examine the following:

- i. Testing statistically the difference between the returns offered by Nifty Index and Nifty Energy Index.
- ii. Testing variability of the returns (i.e. Risk associated with investment in these indices)

Research Methodology

The return offered by Nifty Index and Nifty Energy Index at different point of time with reference to January 1, 2019 has been observed and summarized in table 1 below:

S.No.	Trading Date (Year 2019)	Nifty	Nifty energy
1	1-Mar	0.6	5.9
2	3-Apr	3.8	11.68
3	22-Apr	4.4	12.5
4	30-May	5.08	14.1
5	14-Jun	0.84	6.84
6	3-Jul	8.6	15.8
7	23-Aug	1.3	6.7
8	4-Nov	0.14	7.9
9	22-Nov	4.6	12.5
10	1-Dec	7.3	13.27

Table 1: Return (in percentage) offered by Nifty and Nifty energy indices at different dates from January 1, 2019

It can be observed from the above table that significant difference occurred in the returns offered by these indices on the same trading day. In order to examine, if these differences, are statistically significant or not, t-test has been used. Therefore, the study tests the null hypothesis that there is no significant difference between the returns offered by these indices.

$$H_0 : \text{Mean Return on Nifty} = \text{Mean Return on Nifty energy} \text{ (Null Hypothesis)}$$

$$H_a : \text{Mean Return on Nifty} \neq \text{Mean Return on NIFTY energy} \text{ (Alternative Hypothesis)}$$

Before employing the data under study for t-test, it has been ensured that various conditions of the test are complied by the data. It has been ensured that the samples are independent of each other because majority of the stocks of these indices are not existing simultaneously in these indices. The conditions with regard to independence of the samples under the study has been met. The other conditions such as normality of the data and homogeneity of variance have been examined using Kolmogorov Smirnov test and Levene's test

respectively. The presence of outliers has been examined using Q-Q plot. Finally, t- test has been conducted on the sample and meaningful interpretations were made.

Analysis and Interpretation of Data under study

All the test have been conducted using 5% level of significance. For the purpose of inferring on the basis of t-test, the assumption of normality of data has been assessed using K-S test and Q-Q plot. The group statistic for the above values are summarized below in table 2

Group Statistics

	Index	N	Mean	Std. Deviation	Std. Error Mean
Return	Nifty	10	3.6660	2.91349	.92133
	Nifty energy	10	10.7190	3.54951	1.12245

Table 2: Group Statistics of Nifty and Nifty energy index

As can be observed from the above data , the mean return of the indices appears to be significantly different but the variability of the returns do not differ very significantly. The assumption of normality of data has been examined using one sample Kolmogorov-Smirnov test (K-S test) using SPSS. The result of the output are summarized below in table 3.

One-Sample Kolmogorov-Smirnov Test		
		Return
N		20
Normal Parameters ^{a,b}	Mean	7.1925
	Std. Deviation	4.80412
Most Extreme Differences	Absolute	.125
	Positive	.091
	Negative	-.125
Kolmogorov-Smirnov Z		.558
Asymp. Sig. (2-tailed)		.914
a. Test distribution is Normal.		
b. Calculated from data.		

Table 3: SPSS output of One sample Kolmogorov – Smirnov Test

As can be observed from above calculation , p-value (Asymp. Sig) is greater than .05 , therefore, we can concluded that our data complies with the condition of normality .

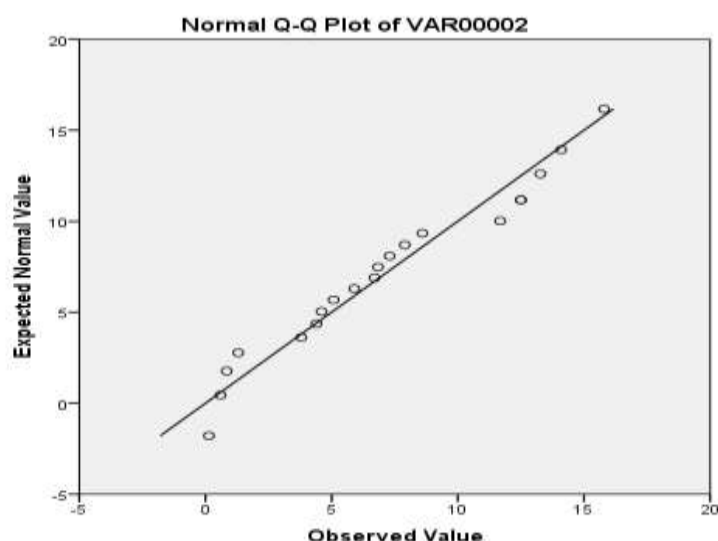


Figure 1: Normal Q-Q plot of observed values

The normality of data can also be observed from the figure 1. It can be observed that there are no significant outliers. Outliers are simply single data points within our data which do not follow the usual pattern . Presence of outliers can have a negative effect on the independent t-test which can reduce the validity of results. The output of t-test obtained by using SPSS on the data given in table 1 is summarized in table 4 .

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Return	Equal variances assumed	1.344	.261	-4.857	18	.000	-7.05300	1.45215	10.10386	-4.00214
	Equal variances not assumed			-4.857	17.341	.000	-7.05300	1.45215	10.11219	-3.99381

Table 4: SPSS output of t test and Levene's test

In order to interpret the above table , the significance value of Levene's test has been observed which is 0.261 in this case . A value greater than .05 means that the variability of returns of the two indices is about the same. In other words , the variability of the two samples is not significantly different. Therefore , the values mentioned in the first row needs to be interpreted. As the significance value (p value) is 0.00 which is less than 0.05 , the null hypothesis is rejected and alternative hypothesis is accepted. This implies , there is significant difference in the mean returns of the two indices during the period under study.

Conclusion of the Study

The returns offered by Nifty index and Nifty Energy index on certain days during the period January 1,2019 to December 15, 2019 were observed and found to be statistically significantly different . However, the variability of the returns were not significantly different which implies risk associated with returns on these indices were not different. This implies investors as well as portfolio managers have opportunity to earn higher return

without subjecting themselves to higher risk. The core satellite investing strategy under such situations performs exceedingly well. With the availability of different investment alternatives, the concept of core satellite investing is expected to pick up and the fund managers need to focus on such strategies for improving their performance.

REFERENCES

- i. Donald J Mulvihill (2005). *Core and Satellite Portfolio Structure - Investment and Tax Considerations*, *The Journal of Wealth Management Summer 2005*, 8 (1) 14-28
- ii. Noël Amenc, Philippe Malaise and Lionel Martellini (2004). *Revisiting Core-Satellite Investing*, *The Journal of Portfolio Management Fall 2004*, 31 (1) 64-75
- iii. Girija Gadre, Arti Bhargava and Labdhi Mehta.(2019), "What are the core and satellite strategy of building a portfolio?" *Economics Times dated 14 October, 2019*
- iv. www.nseindia.com