



Modern Portfolio Theories Give Higher Return then NSE Nifty

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Abstract:

In Indian economy it is considered as NSE Nifty represents optimum portfolio and it is represents market condition. As NSE Nifty considered as barometer of Indian economy here Author would like to compare return of NSE Nifty with self constructed optimum portfolio using modern portfolio theories. To test null hypothesis here all the Indexes return are taken and then different parameters are obtained like standard deviation, beta value, correlation etc.. Using single index model specific cut of rate would be obtained and then selected Indexes included in the optimum portfolio and then return of optimum portfolio and return of NSE Nifty is compared.

Keywords: NSE Nifty, Optimum portfolio, Single index model

1. Introduction

A first criterion for the selection of the appropriate market index can be a high Value of R² when running a regression of one or more stocks with it, as in such case means that the fluctuations in the returns of the index explain quite well the variation in the returns of the stocks. In the case of the national Stock Exchange (NSE), which we are going to select for this study I have to choose amongst the following indices:

1.1 S&P CNX Nifty

The CNX Nifty is a well-diversified 50 stock index accurately reflecting overall market conditions. The reward-to-risk ratio of CNX Nifty is higher than other leading indices, making it a more attractive portfolio hence offering similar returns, but at lesser risk.

1.2 CNX Nifty Junior

The CNX Nifty Junior Index comprises of the next rung of liquid securities after those forming part of CNX Nifty. It may be useful to think of the CNX Nifty and the CNX Nifty Junior as making up the 100 most liquid stocks in India.

1.3 CNX 100

The CNX 100 tracks the behavior of combined portfolio of two indices viz. CNX Nifty and CNX Nifty Junior. It is a diversified 100 stock index. The maintenance of the CNX Nifty and the CNX Nifty Junior are synchronized so that the two indices will always be disjoint sets; i.e. a stock will never appear in both indices at the same time

1.4 CNX 200

The CNX 200 Index is designed to reflect the behaviour and performance of the top 200 companies measured by free float market capitalization. The index comprises of 200 such companies that are listed on the National Stock Exchange (NSE).

1.5 S&P CNX 500

The CNX 500 is India's first broad-based benchmark of the Indian capital market for comparing portfolio returns vis-à-vis market returns.

1.6 NIFTY Midcap 50

The primary objective of the Nifty Midcap 50 Index is to capture the movement of the midcap segment of the market. The index comprises of 50 stocks listed and is also available for trading in F&O segment at National Stock Exchange (NSE).

1.7 CNX Midcap

The mid cap segment of the stock market is being increasingly perceived as an attractive investment segment with high growth potential. The primary objective of the CNX Midcap Index is to capture the movement of the midcap segment of the market. The CNX Midcap Index comprises 100 tradable stocks listed on the National Stock Exchange (NSE).

1.8 CNX Smallcap

The CNX Smallcap Index is designed to reflect the behaviour and performance of the small cap segment of the financial market. The CNX Smallcap Index comprises 100 tradable stocks listed at the National Stock Exchange (NSE).

1.9 LIX 15

LIX 15 Index is designed to provide exposure to the liquid stocks while making the index easily replicable and tradable. In order to make the index easily replicable and tradable, criteria's such as minimum turnover ratio and free float market capitalization are applied while stock selection.

1.10 CNX Auto

The CNX Auto Index is designed to reflect the behaviour and performance of the Automobiles segment of the financial market. The CNX Auto Index comprises 15 tradable, exchange listed companies. The index represents auto related sectors like Automobiles 4 wheelers, Automobiles 2 & 3 wheelers, Auto Ancillaries and Tyres.

1.11 CNX Bank

The CNX Bank Index is an index comprised of the most liquid and large capitalized Indian Banking stocks. It provides investors and market intermediaries with a benchmark that captures the capital market performance of the Indian banks. The Index has 12 stocks from the banking sector, which trade on the National Stock Exchange (NSE).

1.12 CNX Energy

CNX Energy sector Index includes companies belonging to Petroleum, Gas and Power sectors. The Index comprises of 10 companies listed on National Stock Exchange of India (NSE).

1.13 CNX Finance

The CNX Finance Index is designed to reflect the behavior and performance of the Indian financial market which includes banks, financial institutions, housing finance and other financial services companies. The CNX Finance Index comprises of 15 stocks that are listed on the National Stock Exchange (NSE).

1.14 CNX FMCG

The CNX FMCG Index is designed to reflect the behaviour and performance of FMCGs (Fast Moving Consumer Goods) which are non-durable, mass consumption products and available off the

shelf. The CNX FMCG Index comprises of 15 stocks from FMCG sector listed on the National Stock Exchange (NSE).

1.15 CNX IT

The CNX IT index provides investors and market intermediaries with an appropriate benchmark that captures the performance of the Indian IT companies. The CNX IT Index comprises of 20 companies listed on the National Stock Exchange (NSE).

1.16 CNX Media

The CNX Media Index is designed to reflect the behaviour and performance of the Media & Entertainment sector including printing and publishing. The CNX Media Index comprises of 15 stocks from Media & Entertainment sector that are listed on the National Stock Exchange (NSE).

1.17 CNX Metal

The CNX Metal Index is designed to reflect the behaviour and performance of the Metals sector (including mining). The CNX Metal Index comprises of 15 stocks that are listed on the National Stock Exchange (NSE).

1.18 CNX Pharma

CNX Pharma Index captures the performance of the pharmaceutical sector. The Index comprises of 10 companies listed on National Stock Exchange of India (NSE).

1.19 CNX PSU Bank

The CNX PSU Bank Index captures the performance of the PSU Banks. The Index comprises of 12 companies listed on National Stock Exchange (NSE).

1.20 CNX Realty

CNX Realty Index is designed to reflect the behaviour and performance of Real Estate companies. The Index comprises of 10 companies listed on National Stock Exchange of India (NSE).

2. Research Methodology

2.1 Research Problem

We might have different theories and models but we need to identify in Indian market up to which extent we can use it.

2.2 Data Collection

This study is completely based on the secondary data. Secondary research can be described as the most widely used method for data collection.

2.3 Hypothesis

Modern portfolio theories give higher return

2.4 Statistical tools

Excess Return-Beta Ratio = $(R_i - R_f) / \beta_i$

Where,

R_i = the expected return on stock

R_f = the return on a riskless asset

β_i = the expected change in the rate of return on stock associated with one unit change in the market return.

Beta value

Beta coefficient is the relative measure of non-diversifiable risk. It is an index of the degree of movement of an asset's return in response to a change in the market's return.

The beta coefficient is defined by the following formula:

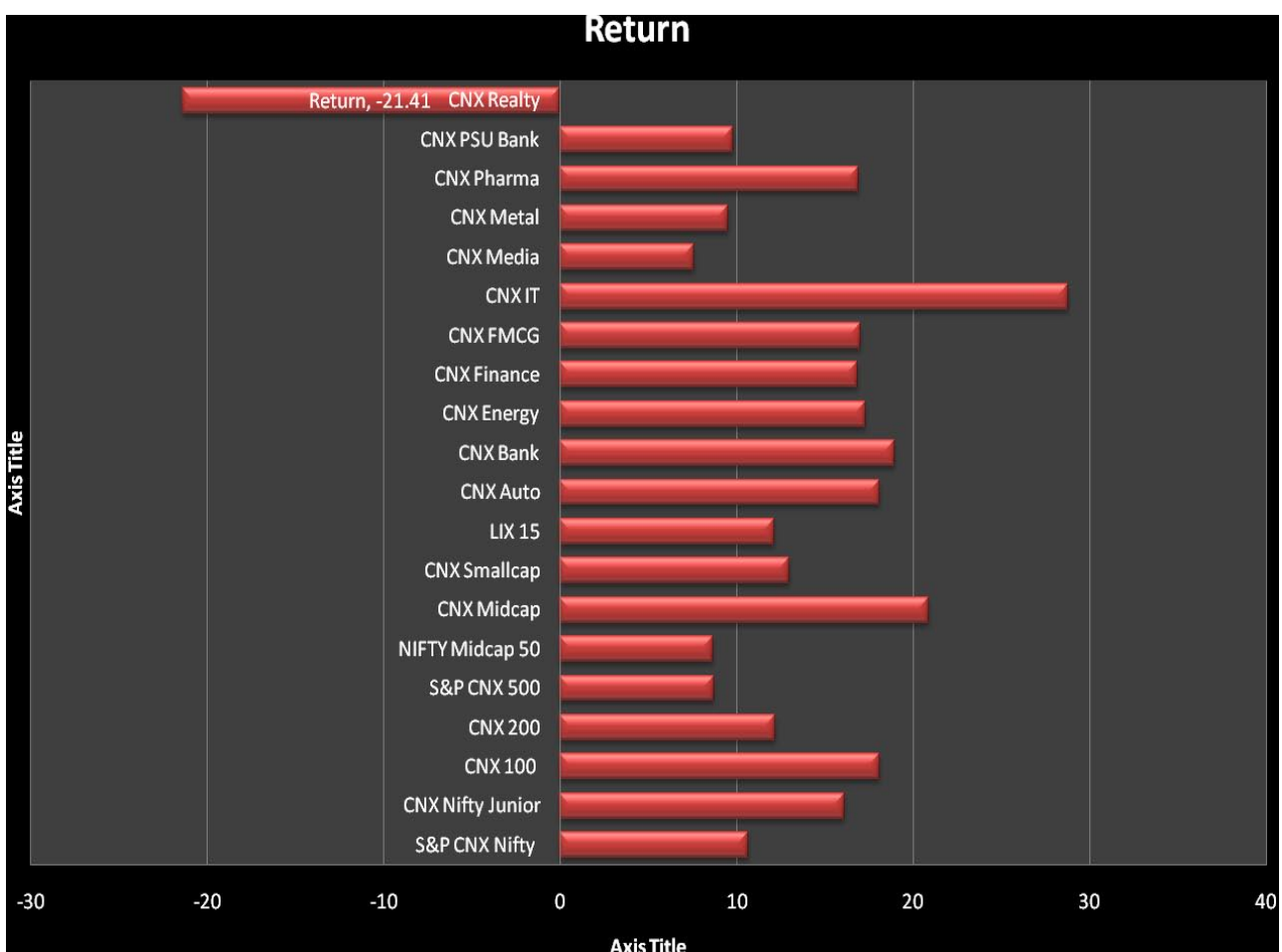
$$\beta_i = \frac{Cov(R_i, R_M)}{\sigma_M^2}$$

Cut-off point

$$C_i = \frac{\sigma_m^2 \sum (R_i - R_f) \beta_i}{1 + \sigma_m^2 \sum \beta_i^2 / \sigma_{ei}^2}$$

Table 1: Statistical Parameters of all the index of combined 10 years

Index	Return	Standard Deviation	Beta	Correlation with nifty
S&P CNX Nifty	10.66	1.64	1	1
CNX Nifty Junior	16.14	1.86	0.96	0.85
CNX 100	18.08	1.61	0.99	1
CNX 200	12.19	1.65	0.96	0.95
S&P CNX 500	8.74	1.58	0.93	0.95
NIFTY Midcap 50	8.69	1.85	0.98	0.86
CNX Midcap	20.9	1.54	1.82	0.86
CNX Smallcap	13.02	1.59	0.79	0.82
LIX 15	12.12	1.78	1.21	0.95
CNX Auto	18.1	1.61	0.81	0.83
CNX Bank	18.96	2.06	1.05	0.82
CNX Energy	17.29	1.75	0.96	0.86
CNX Finance	16.83	2.08	1.14	0.90
CNX FMCG	17.04	1.52	0.69	0.74
CNX IT	28.78	2.46	1.02	0.68
CNX Media	7.57	1.89	0.8	0.71
CNX Metal	9.53	2.49	1.25	0.83
CNX Pharma	16.92	1.27	0.55	0.68
CNX PSU Bank	9.83	2.28	1.1	0.79
CNX Realty	-21.41	3.17	1.48	0.79



(Source: self constructed)

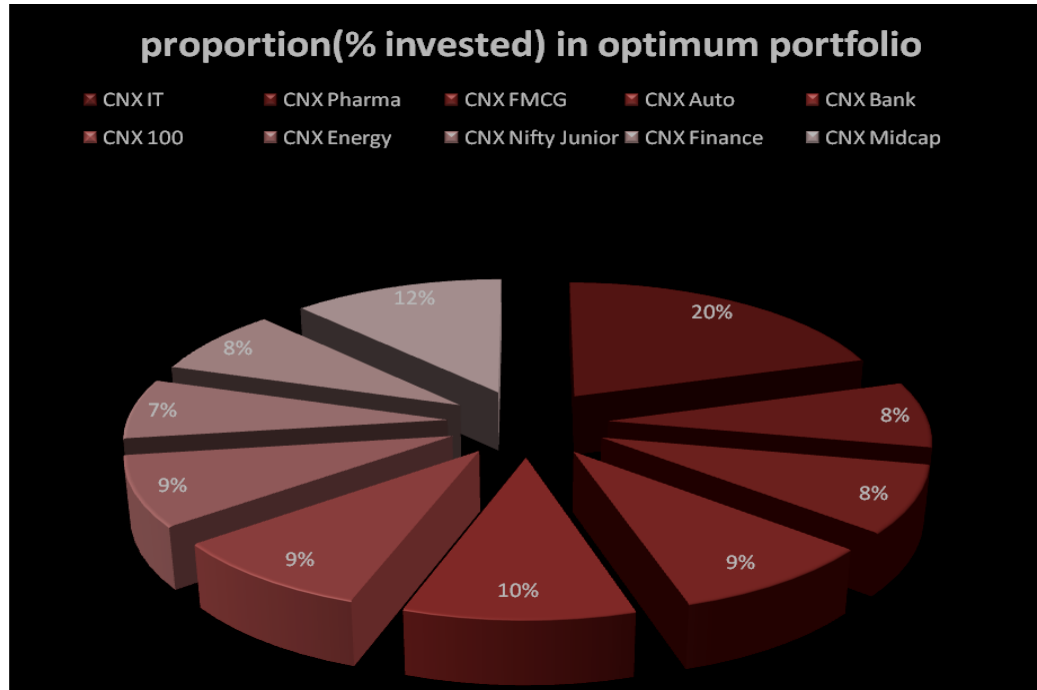
Table 2: Calculation of cut off rate for optimum portfolio

Index	Return	Standard deviation	Cut off rate
CNX IT	28.78	2.46	0.302678
CNX Pharma	16.92	1.27	0.22057
CNX FMCG	17.04	1.52	0.178512
CNX Auto	18.1	1.61	0.172603
CNX Bank	18.96	2.06	0.14606
CNX 100	18.08	1.61	0.140624
CNX Energy	17.29	1.75	0.13222
CNX Nifty Junior	16.14	1.86	0.113393
CNX Finance	16.83	2.08	0.104981
CNX Midcap	20.9	1.54	0.099302

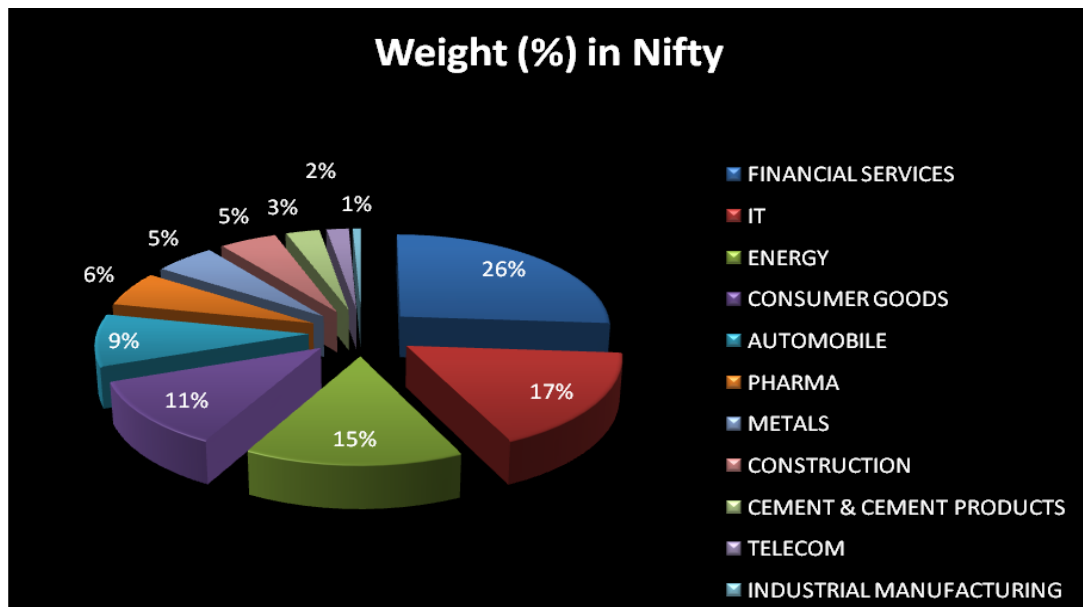
Table 3: Proportion invested in each index

Index	Cut off rate	RI-RF	RI-C*	% Invested Proportion
CNX IT	0.302678	19.54	19.23732	20.24362
CNX Pharma	0.22057	7.68	7.45943	7.84963
CNX FMCG	0.178512	7.8	7.621488	8.020166
CNX Auto	0.172603	8.86	8.687397	9.141832
CNX Bank	0.14606	9.72	9.57394	10.07475
CNX 100	0.140624	8.84	8.699376	9.154438

CNX Energy	0.13222	8.05	7.91778	8.331957
CNX Nifty Junior	0.113393	6.9	6.786607	7.141613
CNX Finance	0.104981	7.59	7.485019	7.876558
CNX Midcap	0.099302	11.66	11.5607	12.16543
			95.02906	100



(Source: self constructed)



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Optimum portfolio return	20.20233
Optimum portfolio NIFTY return	10.66

3. Analysis and Interpretation

From the above calculation, return of Nifty and return of optimum portfolio is obtained. Nifty return is only 10.66% whereas return on optimum portfolio is 20.2033 which is almost double than return of Nifty.

So, here null hypothesis accepted i.e. optimum portfolio return is higher than optimum Nifty return.

Again here it is proved that portfolio theory, Markowitz and single index model gives more return than nifty.

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