

Empirical Study of Optimum Portfolio Construction – Selected NSE Stocks

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Abstract: This research paper makes a more detailed specification respect to incorporating optimum portfolio construction using Sharpe's Single Index model as well as CAPM approach. This paper carefully evaluates and comparing the results of Sharpe's single index model with CAPM to evaluating the accuracy and acceptability. This research papers consist of the calculation process based on variable in connection to risk, return, beta and cut off rate. This paper also helps to identifies positive significant relationship between share prices and expected returns through empirical testing.

Key Words: Portfolio construction, Sharpes Model, CAPM, Cut-off Point, Correlation.

1. INTRODUCTION:

Portfolio is a bundle of a mix of individual securities. The portfolio theory gives regularizing way to deal with investors to settle on choice to put their wealth in assets or securities under hazard. It depends on the assumption that speculators are risk averse and rational. This suggests that investors hold well diversified portfolios as opposed to putting their whole wealth in a single or few assets. Risk averse investors will consider risky assets in their portfolio just when they are remunerated with additional risk premium. The assumption of rationality infers that a man dependably wants to boost his return with minimum risk or minimize his risk at a given level of return. This reason investors looks to build an ideal portfolio with various classes of assets. The fundamental aim is to give an additional contribution in the area of portfolio construction. Distinguish the ideal way to construct portfolio of stocks for investors as inclination in their investment from the money market.

2. OBJECTIVES:

- To analyze the risk and return of various investment avenues.
- Portfolio by considering both Sharpe single index model and CAPM approach.

3. BACKGROUND OF THE STUDY:

Portfolio is a group of different types of securities which are traded in security market like shares, debentures, bonds, gold certificate and money market instruments. The process of blending together the large assets classes so as to obtain optimum return with low risk is called as portfolio construction. Syed Mohammad Faisal and Omar Abdulla Al Aboud (2017) the portfolio construction with the help of systematic risk, expected return, variance and many other mathematical tools has use to explore different level of risk and return of share market indexes, individual stocks and interrelated equations. This comprises of distinguishing the particular securities in which to invest and determining the proportion of the investor's wealth to be invested in each.

4. LITERATURE REVIEW:

S. Subashree and Dr. M. Bhoopal (2017) considers monthly closing prices of 5 companies from banking sector and five from Automobile sector which are making an exchanges under Bombay Stock Exchange. Dr.G.Brindha (2013) to manage portfolio in an effective way by using RSI (relative strength index) and ROC (rate of change).Dr. S Poornima and Aruna P Ramesh (2015)found highest return along with highest beta value, which means it is highly volatile. Pavan Kumar Mantha and Srinivasa Rao M (2015) used the Markowitz model for calculations between the different securities. J Francis Mary and G Rathika (2015), considered cut off rate which serves as a bench mark to select stocks and select which are higher cut off value. Finally from the empirical analysis concluded that out of ten companies only one company was selected for the purpose of investment. Dr. S Poornima and Aruna P Ramesh (2015) selected 3 companies for portfolio construction. From banking sector two companies and IT sector one company out of 20 different companies.

Joiceswarnalatha R et.al(2017) suggested that the investors who expects returns its depends on risk associated withbehavioural investment of investors. Chintan A Shah (2015), Sharpe model suggest in this study if investors getting portfolio return 1.89% against it he is bearing 8.86% portfolio risk.. Dr. Sathya Swaroop Debasish and Jakki Samir Khan (2012), They finds out of 14 companies 11 are showing positive returns and beta value more than 1.

Tanuj Nandan and Nivedita Srivastava (2017) sample size consist of 50 companies stocks and Nift-50 index as a bench mark. Dr. S Poornima and Aruna P Ramesh (2016) performance of stock decides on the basis of cut-off point values which are highly well and low. M Sathyapriya (2016), it found that pharmaceutical sector performance 80% better than infrastructure sector Laxmi Kanta Giri and Dr. Gayadhar Parhi (2017) daily closing prices considered for the period of one year from 1st January 2015 to 31st December 2015. Dr. S Poornima and Aruna P Ramesh (2017) the study results investors to go for scientific diversification and have more utility value to the fund manager of emerging economies. Dr. Saroj Kanta Biswal (2015), it said that if the investors want to get a maximum return without considering risk aspect, they invest on the companies’ stocks which are took a place under portfolio. Dr. K.V. Ramanathan & K.N. Jahnvi (2014) stocks generate high return with minimum risk and said that share market is challenging, fulfilling and rewarding to investors. Dr. Kavitha Lal and Dr.S.R. Subba Rao (2016) selecting an optimum portfolio for investment on equity stocks belonging to specific economic sectors. Dhea Ayu Pratiwi and Irni Yunita (2015) 22 stocks has been selected for the study which are listed in LQ45 index. Dr. R. Nalini (2014) aims to creating awareness in the minds of speculators about the utility of Sharpe single index model in portfolio construction.

5. RESEARCH METHODOLOGY:

Research Method – Descriptive: The research which is tries to describe the respondent with respect to particular product is called descriptive research.

Sources of Data- The selected company’s historical prices are collected with help of official websites such as Money control.com, Investing.com, Yahoo finance.com and other sources are collected through reference books and Journals.

Hypothesis - H₀: there is no positive significant relationship between share prices and expected returns.

Sampling Technique - Convenience Sample: sample is select from a group of people easy to contact or to reach. The selection of data from population is based on their availability and assessable to the research.

Sample Size: study considers 20 companies are taken from 5 various sectors, in each sector 4 companies are chosen.

Samples

Information Technology sector	Energy sector	Cement sector
Infosys Ltd	GAIL Ltd	ACC cements
Tech Mahindra Ltd	NTPC Ltd	Dalmia Bharat Ltd
TCS Ltd	BPCL	Ambuja cements
HCL Technologies Ltd	IOCL	Ultratech cements
Pharmaceutical sector	Real estate sector	
Sun Pharmaceutical Ltd	Godrej properties	
Dr. Reddy Laboratories Ltd	Oberai Realty Ltd	
Cipla Ltd	DLF Ltd	
Lupin Ltd	Prestige Estates Ltd	

Tools Used for Analysis

Financial Tool	Statistical Tool
Sharpe’s index model	Mean
Capital asset pricing model	Standard Deviation
	Correlation coefficient

Sharpe’s Single Index Model

Sharpe’s model recommends that the relationship between each pair securities can indirectly be estimated by contrasting every security with a typical factor, market performance index “that is shared among every one of the securities”. These aides in reducing the burden of huge input requirement and difficult computations required in Markowitz’s Mean-Variance approach. While Markowitz model requires n(n-1)/2 information inputs, the Sharpe’s models requires just (3n+2) information inputs. In particularly, this estimates of returns for individual security. Estimates for expected return on market index and estimates of variance of return. This structures the essence of Sharpe’s model which has made financial analysts and researcher to think of it as better than the Markowitz model.

$$R_i = \alpha_i + \beta_i R_m + e_i$$

Where, R_i= Individual stock return, α_i = Independent of the market performance, β_i = Slope of straight line or beta coefficient, R_m= Market return, e_i = Error term.

Sharpe's Optimum Portfolio

In spite of the fact that there is a mathematical model to determine optimal portfolio yet it is essential to first know the pertinence of Sharpe's excess return to beta ratio that measures the disability of any stock to be included in the optimal portfolio.

The following procedure have been followed in this analysis:

Step 01: Return, risk & beta of selected companies has been calculated.

Step 02: Calculate the excess return to beta ratio for each stock.

Step 03: Rank them from highest to lowest.

Step 04: Proceed to calculate Ci by using the following formula according to the rank order.

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

Where: σ_m^2 = Variance of the market index, σ_{ei}^2 = Variance of a stock movement.

Step 05: The Ci values go on increasing up to a certain point and then start decreasing. That point is taken as the cut-off point. The stocks which are above C* point are chosen to the portfolio.

Step 06: Once the securities for portfolio are chosen, the proportion in which they should be invested is to be determined by using the following formula.

$$X_i = \frac{Z_i}{\sum Z_i}$$

$$Z_i = \frac{\beta_i}{\sigma_{ei}^2} [R_i - \frac{R_f}{\beta_i} - C^*]$$

Capital Asset Pricing Model (CAPM)

In the CAPM theory, the required rate of return of an asset is having a direct association with asset's beta value. Un-diversifiable or systematic risk in light of the fact that non market risk can be eliminated by diversification and systematic risk estimated by beta. Therefore, the relationship between an assets return and its systematic risk can be expressed by the CAPM. Which is likewise called the security market line.

$$R_i = R_f + \beta(R_m - R_f)$$

Analysis and Interpretation

Optimum Portfolio construction

Find out the ranking of stocks on the basis of excess return and beta

Companies	R _i	R _f	β	(R _i -R _f)/β	Rank
Infosys Ltd (a)	14.95	6.5	0.26	32.500	1
Sun Pharmaceutical (b)	3.45	6.5	0.67	-4.552	15
ACC Cements (c)	7.72	6.5	1.11	1.099	6
Gail Ltd (d)	5.82	6.5	1.08	-0.630	7
Godrej Properties Ltd (e)	4.36	6.5	1.18	-1.814	11
Tech Mahindra Ltd (f)	7.83	6.5	0.1	13.300	2
Dr Reddy Laboratories (g)	6.74	6.5	-0.32	-0.750	9
Dalmia Bharat Ltd (h)	17.75	6.5	3.4	3.309	4
NTPC Ltd (i)	1.98	6.5	0.81	-5.580	17
Oberai Realty Ltd (j)	2.89	6.5	1.67	-2.162	13
TCS Ltd (k)	14.02	6.5	-0.31	-24.258	20
Cipla Ltd (l)	2.85	6.5	0.71	-5.141	16
Ambuja Cements (m)	1.98	6.5	1.11	-4.072	14
BPCL (n)	13.32	6.5	1.08	6.315	3
DLF Ltd (o)	1.63	6.5	2.29	-2.127	12
HCL Technologies (p)	11.68	6.5	-0.31	-16.710	19
Lupin Ltd (q)	4.22	6.5	0.18	-12.667	18
Ultratech Cements (r)	5.73	6.5	1.15	-0.670	8
IOC Ltd (s)	8.46	6.5	1.13	1.735	5
Prestige Estates (t)	3.77	6.5	2.77	-0.986	10

Source: Author Calculation-money control database

In the above table depicts the calculation of excess return to beta ratio. Here R_i indicates to the individual stocks return and R_f indicates to the risk free return (which has been taken from the fixed deposit interest rates of the SBI bank) and beta is used for calculation. Among 20 different companies Infosys Ltd has highest return of 32.50 and TCS Ltd has lowest return is -24.258 when compared with each other's.

Calculation On The Basis Of Ranks And Unsystematic Risk

Companies	σ^2_{ei}	$(R_i - R_f) * \beta / \sigma^2_{ei}$	$\Sigma(R_i - R_f) * \beta / \sigma^2_{ei}$
Infosys Ltd (a)	217.77	0.0101	0.0101
Tech Mahindra Ltd (f)	347.79	0.0004	0.0105
BPCL (n)	155.37	0.0474	0.0579
Dalmia Bharat Ltd (h)	815.7	0.0469	0.1048
IOC Ltd (s)	205.17	0.0108	0.1156
ACC Cements (c)	179.19	0.0076	0.1231
Gail Ltd (d)	152.05	-0.0048	0.1183
Ultratech Cements (r)	109.21	-0.0081	0.1102
Dr Reddy Laboratories (g)	267.92	-0.0003	0.1099
Prestige Estates (t)	323.13	-0.0234	0.0865
Godrej Properties Ltd (e)	271.29	-0.0093	0.0772
DLF Ltd (f)	584.79	-0.0191	0.0581
Oberai Realty Ltd (j)	267.03	-0.0226	0.0355
Ambuja Cements (m)	98.07	-0.0512	-0.0156
Sun Pharmaceutical (b)	215.86	-0.0095	-0.0251
Cipla Ltd (l)	192.89	-0.0134	-0.0385
NTPC Ltd (i)	127.31	-0.0288	-0.0673
Lupin Ltd (q)	285.57	-0.0014	-0.0687
HCL Technologies (p)	151.32	-0.0106	-0.0793
TCS Ltd (k)	121.62	-0.0192	-0.0985

Source: Author Calculation-money control database

Calculation Of Cut-off Point

Companies	β^2 / σ^2_{ei}	$\Sigma \beta^2 / \sigma^2_{ei}$	*C
Infosys Ltd (a)	0.0003	0.0003	0.3178
Tech Mahindra Ltd (f)	0.0000	0.0003	0.3295
BPCL (n)	0.0075	0.0078	1.4734
Dalmia Bharat Ltd (h)	0.0142	0.0220	1.9600
IOC Ltd (s)	0.0062	0.0282	1.9365
ACC Cements (c)	0.0069	0.0351	1.8499
Gail Ltd (d)	0.0077	0.0428	1.5937
Ultratech Cements (r)	0.0121	0.0549	1.2762
Dr Reddy Laboratories (g)	0.0004	0.0553	1.2673
Prestige Estates (t)	0.0237	0.0790	0.7830
Godrej Properties Ltd (e)	0.0051	0.0842	0.6677
DLF Ltd (f)	0.0090	0.0931	0.4666
Oberai Realty Ltd (j)	0.0104	0.1036	0.2632
Ambuja Cements (m)	0.0126	0.1161	-0.1058
Sun Pharmaceutical (b)	0.0021	0.1182	-0.1676
Cipla Ltd (l)	0.0026	0.1208	-0.2530
NTPC Ltd (i)	0.0052	0.1260	-0.4274
Lupin Ltd (q)	0.0001	0.1261	-0.4362
HCL Technologies (p)	0.0006	0.1267	-0.5016
TCS Ltd (k)	0.0008	0.1275	-0.6197

Source: Author Calculation-money control database

Cutoff point is 1.9600 which belongs to Dalmia Bharat Ltd Company.

Calculation of Proportion

Companies	σ^2_{ei}	*C	Z _i	Percentage
Infosys Ltd (a)	217.77	0.3178	0.0384	0.34
Tech Mahindra Ltd (f)	347.79	0.3295	0.0372	0.32
BPCL (n)	155.37	1.4734	0.0337	0.29
Dalmia Bharat Ltd (h)	815.7	1.9600	0.0056	0.05
			0.1149	1.00

Source: Author Calculation-money control database

Calculation Of Under-price And Overprice by Using CAPM formula

Companies	R _i	R _f	β	R _{□i}	
Infosys Ltd (a)	14.95	6.5	0.26	5.4834	Over Price
Sun Pharmaceutical (b)	3.45	6.5	0.67	3.8803	Over Price
ACC Cements (c)	7.72	6.5	1.11	2.1599	Under Price
Gail Ltd (d)	5.82	6.5	1.08	2.2772	Under Price
Godrej Properties Ltd (e)	4.36	6.5	1.18	1.8862	Under Price
Tech Mahindra Ltd (f)	7.83	6.5	0.1	6.109	Over Price
Dr Reddy Laboratories (g)	6.74	6.5	-0.32	7.7512	Over Price
Dalmia Bharat Ltd (h)	17.75	6.5	3.4	-6.794	Under Price
NTPC Ltd (i)	1.98	6.5	0.81	3.3329	Over Price
Oberai Realty Ltd (j)	2.89	6.5	1.67	-0.0297	Under Price
TCS Ltd (k)	14.02	6.5	-0.31	7.7121	Over Price
Cipla Ltd (l)	2.85	6.5	0.71	3.7239	Over Price
Ambuja Cements (m)	1.98	6.5	1.11	2.1599	Under Price
BPCL (n)	13.32	6.5	1.08	2.2772	Under Price
DLF Ltd (o)	1.63	6.5	2.29	-2.4539	Under Price
HCL Technologies (p)	11.68	6.5	-0.31	7.7121	Over Price
Lupin Ltd (q)	4.22	6.5	0.18	5.7962	Over Price
Ultratech Cements (r)	5.73	6.5	1.15	2.0035	Under Price
IOC Ltd (s)	8.46	6.5	1.13	2.0817	Under Price
Prestige Estates (t)	3.77	6.5	2.77	-4.3307	Under Price

Source: Author Calculation-money control database

Calculation of Karl Pearson coefficient of correlation.

Companies	Mean		Standard deviation		R	P
	MP	Return	MP	Return		
Infosys Ltd (a)	873.63	7.06	924.34	16.27	0.114*	0.023
Sun Pharmaceutical (b)	694.18	3.45	160.02	14.69	0.025	0.916
ACC Cements (c)	1417.2	7.72	178.51	13.39	0.33	0.155
Gail Ltd (d)	309.65	5.82	68.05	12.33	0.482*	0.031
Godrej Properties Ltd (e)	323.62	4.36	139.78	16.47	0.516*	0.02
Tech Mahindra Ltd (f)	468.98	7.83	104.1	18.65	0.05	0.836
Dr Reddy Laboratories (g)	2873.56	6.74	563.83	16.37	0.292	0.211
Dalmia Bharat Ltd (h)	1006.39	17.75	930.36	28.56	0.125	0.599
NTPC Ltd (i)	143.9	1.98	17.4	11.28	0.521*	0.018
Oberai Realty Ltd (j)	283.09	2.89	75.07	16.34	0.462*	0.04
TCS Ltd (k)	2342.25	14.02	336.89	11.03	-0.142	0.549
Cipla Ltd (l)	539.88	2.85	102.58	13.89	0.301	0.197
Ambuja Cements (m)	222.64	1.98	29.5	9.9	0.416	0.068
BPCL (n)	282.62	13.32	129.07	12.46	0.009	0.969
DLF Ltd (o)	160.21	1.63	40.37	24.18	0.586**	0.007
HCL Technologies (p)	772.46	11.68	168.63	12.3	-0.311	0.183
Lupin Ltd (q)	1307.04	4.22	426.6	16.9	0.101	0.671
Ultratech Cements (r)	2929.59	5.73	794.59	10.45	0.264	0.26

IOC Ltd (s)	225.85	8.46	100.14	14.32	0.186	0.432
Prestige Estates (t)	208.1	3.77	49.02	17.98	0.365	0.114

Source: Author Calculation-SPSS database

6. FINDINGS:

- Among 20 different companies shares, Dalmia Baharat Ltd shares have the highest return of 17.75% and DLF Ltd shares has the lowest return of 1.63%.
- When compare to other company stock return, the Dalmia Bharat Ltd shares return has more beta value of 3.40. It clearly shows this company shares highly volatile with the market fluctuations.
- The study found that after considered the calculation of excess return to beta ratio Infosys Ltd stands first by resulting excess return (32.50) and TCS Ltd at least with -24.258.
- Under cutoff point can make out investment proportion on 4 companies which are Infosys Ltd (34%), Tech Mahindra (32%), BPCL (29%) and Dalmia Bharat Ltd (5%).
- CAPM has results among 20 companies 9 companies stocks overpriced and 11 companies stocks underpriced.
- H_0 is rejected and alternative is accepted. Because the relationship between market price and individual stock return are positively significant.

7. RECOMMENDATION:

- It is suggested to aggressive investors invest on Dalmia Bharat Ltd shares because of its shares generate high return of 17.75% and high risk of 28.56%.
- According to this study Infosys Ltd have moderate risk of 14.76 and return of 14.95%.
- As per this study TCS Ltd and BPCL generate high return and low risk. So these companies are best for secured and high expectation investors.
- Ambuja cement has lowest risk of 9.90 compare to other companies, investor one who has low risk tolerance then they can invest on this company.
- Over price means that individual company shares held high value more than its market value. So investors can give the preference to invest on these companies shares as per CAPM model.

8. CONCLUSION:

Optimum portfolio construction is one of the important and challenging task for institutional investors as well as individuals. This project tried to build the effective portfolio construction by using Sharpe's single index model and CAPM model. For this study 20 different companies are taken from 5 different sectors which are listed in NSE 50 index. Among them 4 companies are selected for investment which is comes under cutoff point rate. The result of this study on investment decision is considered various factors which are effects on the price movement of shares such as, general economic factors or macro-economic factors. It is helpful for individual and institutional investors to take a decision of investment and managing profitability with low risk.

REFERENCES:

Journals

1. Chintan A Shah, June 2015, construction of optimal portfolio using Sharpe index model & Camp for BSE top 15 securities, International Journal of Research and Analytical Reviews, volume 2, issue 2, pp-168-178.
2. Dhea Ayu Pratiwi and Irni Yunita, June 2015, optimal portfolio construction (A case study of LQ45 index in Indonesia stock exchange), International Journal of Research, volume 4, issue 6, pp-2525-2530.
3. Dr. G. Brindha, June 2013, Article on portfolio management, International Journal of Innovative Research in Science, Engineering and Technology, volume 2, issue 6, pp-2182-2186.
4. Dr. K.V. Ramanathan and K.N. Jahnavi, January-March 2014, construction of optimal equity portfolio using the Sharpe index model with reference to banking and information technology sectors in India from 2009-2013, International Journal of Business and Administration Research Review, volume 2, issue 3, pp-122-131.
5. Dr. Kavitha Lal & Dr. S.R. Subba Rao, March 2016, selecting an optimal portfolio for investment in stocks in India: A sectoral approach, Pacific Business Review International, volume 8, issue 9, pp-109-115.
6. Dr. Nalini, December, December 2014, optimal portfolio construction using Sharpe's single index model –A study of selected stocks from BSE, International Journal of Advanced Research in Management and Social Sciences, volume03, issue 12, pp-72-93.
7. Dr. S. Poornima and Aruna P Ramesh, 2015, construction of optimal portfolio using Sharpe's single index model – A study with reference to banking & IT sector, International Journal of Applied Research, volume 1, issue 13, pp-21-24.

8. Dr. S. Poornima and Aruna P Ramesh, December 2017, optimal portfolio construction of selected stocks from NSE using Sharpe's single index model, International Journal of Management, IT & Engineering, volume 7, issue 12, pp-283-298.
9. Dr. S. Poornima and Aruna P Ramesh, May 2016, a study on optimal portfolio construction using Sharpe's single index model with special preference to selected sectors listed in NSE, National Journal of Advanced Research, volume 2, issue 3, pp-28-31.
10. Dr. S. Poornima and Aruna P Ramesh, November 2015, Optimal portfolio construction using Sharpe's single index model – A study of selected stocks from BSE, International Journal of Informative & Futuristic Research, volume 3, issue 3, pp-691-697.
11. Dr. Saroj Kanta Biswal, October 2015, construction an optimal portfolio using Sharpe single index model, Intercontinental Journal of Banking, Insurance and Finance, volume 2, issue 10, pp-17-31.
12. Dr. Sathya Swaroop Debasish and Jakki Samir Khan, December 2012, optimal portfolio construction in stock market –An empirical study on selected stocks in manufacturing sectors in India, International Journal of Business Management, volume 2, issue 2, pp-37-44.
13. J. Francis Mary and G. Rathika, January 2015, the single index model and the construction of optimal portfolio with CNX pharma scrip, International Journal of Management, volume 6, issue 1, pp-87-96.
14. Joicewarnalatha R, Murulikrishna V and Chethan Raju, June 2017, portfolio selection through single index model – With special reference to trust line securities, International Journal of Recent Scientific Research, volume 8, issue 6, pp-17309-17314.
15. Laxmi Kanta Giri and Dr. Gayadhar Parhi, February 2017, optimum portfolio construction using single index model, International Journal of Finance Research Review, volume 5, issue 2, pp-62-69.
16. M Sathyapriya, August 2016, optimum portfolio construction using Sharpe index model with reference to infrastructure sector and pharmaceutical sector, International Journal of Scientific and Research Publications, volume 6, issue 8, pp-490-496.
17. Pavan Kumar Mantha and Srinivasa Rao M. 2015, Portfolio management, Journal of Accounting & Marketing, volume 4, issue 2, pp-1-6.
18. S. Subashree and Dr. M. Bhoopal, November 2017, Construction of optimal portfolio using Sharpe's single index model – A study with reference to banking and automobile sector, Asia Pacific Journal of Research, volume 1, issue L7, pp-232-237.
19. Syed Mohammad Faisal and Omar Abdullah Al Aboud , January 2017, Sharp index model and its utility in portfolio optimization and allocation of funds in stocks, International Journal of Economic, Commerce and Management, volume 5, issue 1, pp-176-182.
20. Tanuj Nandan & Nivedita Srivastava, April-June 2017, construction of optimal portfolio using Sharpe's single index model: An empirical study on Nifty 50 stocks, Journal of Management Research & Analysis, volume 4, issue 2, pp-74-83.

Book:

1. Security Analysis and Portfolio Management – Punithavathy Pandian.

WEB REFERENCES:

- www.yahoofinance.com
- www.investment.com
- www.nseindia.com
- www.moneycontrol.com