INTERNATIONAL JOURNAL OF RESEARCH IN COMPUTER APPLICATION AND MANAGEMENT

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- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio," Ohio State University.

CONTRIBUTIONS TO BOOKS
- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

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- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS
- Garg Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

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- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

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WEBSITE
- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Economic and Political Weekly, Viewed on July 05, 2011 http://epw.in/user/viewabstract.jsp

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A RISK RETURN PERCEPTION OF SENSEX AND NIFTY STOCKS

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ABSTRACT

Stock Exchanges are intricately interwoven in the fabric of a nation's economic life. Stock Market investments are preferred by most of the investors as, equity investment is perceived as the highest return potential avenue though it is considerably a risky venture. There are 23 recognized stock exchanges functioning in India, of which BSE and NSE are considered to be the most imperative exchanges as one can identify the booms and busts of the Indian stock Market through its indices SENSEX and NIFTY respectively. The stock markets witnessed sensitive activity in terms of various bulls and bear runs from early nineties especially during the financial year 2007-08. Stock markets touched the maximum levels and melt down to the least levels during this period. The collapse of the debt markets in 2007 was alarming in its speed and extent. SEBI's corrective measures in the months of July 07, October 07, November 07 and January 08 controlled the volatility. Though Risk and return are inseparable in stock market investments, it is vital to verify how much risk is appropriate to attain a required rate of return from investing in shares. This study is an attempt to educate the investors about the quantum of risk involved in attaining their desirable return. In this lines risk and return of stocks that are listed in BSE and NSE during the financial year 2007-08 were considered for analysis using CAPM and VaR. The study revealed that the proportion of losses exceeding computed VaR is the same for all the 30 BSE stocks but not the same for all the 50 NSE stocks.

KEYWORDS
Risk return, Sensex, Nifty, Stock, Exchange.

INTRODUCTION

Investment with handsome returns" is the mantra chanted by each and every one who is oriented towards their financial goals. Though there are myriad investment avenues available for an investor to invest, the investor has to be extremely precautious while deciding his portfolio. The key deciding factor to be considered with regard to any investment avenue is its risk. Risk may be of various kinds like Capital Risk, Inflationary Risk, Interest Rate Risk, Market Risk, Liquidity Risk, Financial Risk, Business Risk, Legislative Risk, etc. First the investor has to chart out the tolerable risk echelon, for which the investor has to decide about investment's time horizon and bankroll he can afford to lose. Based on the risk complexion the investor may prefer investment avenues like bank deposits, Commercial Papers, Certificate of deposits, Mutual funds, Shares, Bonds, Debentures Bullion, etc.

Stock Market investments are preferred by investors as Equity investment is perceived as the highest return potential avenue. Stock Exchanges are intricately interwoven in the fabric of a nation's economic life. Without a stock exchange, the savings of the community-the sinews of economic progress and productive efficiency – would remain underutilized. As stock exchanges are the exclusive centers for trading of securities, a free and active market in stock and shares has become a pre-requisite for the mobilization and distribution of the nation's savings on the scale needed to support modern business. The **stock market** is one of the most important sources for companies to raise money. This allows businesses to be publicly traded, or raise additional capital for expansion by selling shares of ownership of the company in a public market. The liquidity that an exchange provides affords investors the ability to quickly and easily sell securities. There are 23 stock exchanges in India, of which only 18 stock exchanges are currently in the operative mode. Among 18 exchanges BSE and NSE are considered to be the primary exchanges of India.

BSE was the first stock exchange in the country to be approved permanent recognition under the Securities Contract Regulation Act, 1956. Even today one can identify the booms and busts of the Indian stock Market through BSE's SENSEX. Sensex is an index of 30 stocks representing 12 major sectors. It represents all the major industrial groups and reflects the movement of market and investors' sentiments towards the state and perception of future economic activities. If the Sensex goes up, it means that the prices of the stocks of most of the major companies on the BSE have gone up. BSE provides an efficient and transparent market for trading in equity, debt instruments and derivatives. To maintain the stability of the sensex, they have to update the past base year average. The base year value adjustment ensures that replacement of stocks in Index, additional issue of capital and other corporate announcements like 'rights issue' etc. do not destroy the historical value of the index.

The trading scenario in India then underwent a paradigm shift in 1993, when NSE or National Stock Exchange was recognized as a Stock Exchange. Within just a few years, trading on both the exchanges shifted from an open outcry system to an automated trading environment. NSE has been able to take the stock market to the doorsteps of the investors. NSE is the leading index for large companies on the National Stock Exchange of India.

The Nifty is a well diversified 50 stock index accounting for 21 sectors of the economy. It is used for a variety of purposes such as benchmarking fund portfolios, index based derivatives and index funds. For this study I have taken the indices as S&P CNX Nifty and CNX Nifty Junior scrips. The S&P CNX Nifty Index is known as **Standard & Poor's CRISIL NSE Index.** The **CNX Nifty Junior** is an index for companies on the National Stock Exchange of India. It consists of 50 companies representing approximately 10% of the traded value of all stocks on the National Stock Exchange of India. The CNX Nifty Junior is owned and operated by India Index Services and Products Ltd.

Both these indices are calculated on the basis of market capitalization and contain the heavily traded shares from key sectors. An Index is a comprehensive measure of market trends, intended for investors who are concerned with general stock market price movements. An Index comprises stocks that have large liquidity and market capitalization. Each stock is given a weight age in the Index equivalent to its market capitalization.

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The Government of India established the Securities and Exchange Board of India, the regulatory body of stock markets in 1988. The basic objectives of the Board were identified as to protect the interests of investors in securities, to promote the development of Securities Market and to regulate the Securities Market. The SEBI has been inspecting the stock exchanges once every year since 1995-96.

Though the stock markets have witnessed sensitive activity in terms of various bulls and bear runs from early nineties, during the financial year 2007-08 Indian stock markets have witnessed utmost fluctuations. Stock Markets touched the maximum levels and melt down to the least levels during this period. The collapse of the debt markets in 2007 was alarming in its speed and extent. During July 2007 Sensex and Nifty touched a new pinnacle of around 16,000 points and 7000 points respectively due to intense buying activity of FII's.

During October Sensex for the first time in history stroked a mark of 20, 000 points. SEBI felt the need to urgently regulate the laws relating to Participatory Notes and on 16th October 2007 it issued a discussion paper suggesting an immediate ban on issue of PNs by FIIs against underlying derivatives (futures and options on shares) while also restricting issue of PNs in the cash segment. SEBI realized that FIIs bring in valuable capital and must be encouraged by suitable policy amendments. And on 14th November the market regulator SEBI based on the recommendations made by the SEBI Committee on Derivatives decided to introduce seven new derivative instruments like mini-contracts and long-tenure options for giving more choice to investors. The markets welcomed the decisions and history was created on 7th January 2008 when the Sensex leaped 20,861.83 points to cross the hallowed 23,000 mark for the first time.

In the third week of January 2008, the Sensex experienced huge falls along with other markets around the world. On 21 January 2008, the Sensex saw it's highest ever loss of 1,408 points at the end of the session. The Sensex recovered to close at 17,605.40 after it tumbled to the day's low of 16,963.96, on high volatility as investors panicked following weak global cues amid fears of a recession in the US.

This paper is an attempt to analyze the risk and return of stocks that are listed in BSE and NSE using CAPM and VaR during the financial year 2007-08.

OBJECTIVES

1. To analyze the probability of losses associated with the market risk.
2. To make out the degree of correlation between risk-free rate and market return.
3. To understand the application VaR as a risk measurement tool.

METHODOLOGY

The datum was collected from the secondary sources i.e. from Books, Magazines, and Journals and from Internet. The statistical data were collected from BSE and NSE websites.

EXPECTED RETURN

The expected return on a risky asset, given a probability distribution for the possible rates of return. Expected return equals some risk-free rate (generally the prevailing U.S. Treasury note or bond rate) plus a risk premium (the difference between the historic market return, based upon a well diversified index such as the S&P 500 and the historic U.S. Treasury bond) multiplied by the asset's beta.

BETA

The **beta coefficient**, in terms of finance and investing, describes how the expected return of a stock or portfolio is correlated to the return of the financial market as a whole. Measuring beta can give clues to volatility and liquidity in the marketplace.

RISK FREE RATE

The **risk-free interest rate** is the interest rate that it is assumed can be obtained by investing in financial instruments with no default risk.

RISK PREMIUM

The difference between the expected market rate of return and the risk-free rate of return is the risk premium.

TOOLS FOR RISK ANALYSIS

DEFINITION OF VAR

A general definition of VaR is: "Given a probability of c% and a holding period of t-days, an entity's VaR is a loss that is expected to be exceeded with a probability only p% on the t-day holding period".

Accordingly, VaR is the value for which

Prob [abs (loss)> VaR] < p

VaR is a technique used to estimate the probability of portfolio losses based on the statistical analysis of historical price trends and volatilities. VaR is able to measure risk while it happens and is an important consideration when firms make trading or hedging decisions. VaR has five main uses in finance: risk management, risk measurement, financial control, financial reporting and computing regulatory capital. VaR has become a standard measure of market risk embraced by banks, trading firms, mutual funds and others, including even the non-financial firms.

CHI-SQUARE TEST

Chi-square is a statistical test commonly used to compare observed data with data we would expect to obtain according to a specific hypothesis. Thus chi-square is the sum of the squared difference between observed (*o*) and the expected (*e*) data, divided by the expected data in all possible categories.

HYPOTHESIS

Hypothesis is an assumption or concession made for the sake of argument. Null Hypothesis is a statistical hypothesis to be tested and accepted or rejected in favor of an alternative.

Null Hypothesis   : H0: $p_1=p_2=p_3=\ldots\ldots\ldots=p_k$
Alternate Hypothesis   : H1: $p_1\neq p_2\neq p_3\neq\ldots\ldots\ldots\neq p_k$

Null Hypothesis in this paper: The proportion of losses exceeding computed VaR is same for all the 30 BSE stocks and 50 NSE stocks.

Chi- square test was computed by using the equation:

$$\chi^2= \sum ((f_o-f_e)^2/f_e) \qquad \text{where } (i=1, 2...n)$$

Where, f_o = observed frequency of losses beyond computed VaR
                           f_e = expected frequency of losses beyond computed VaR

Decision rule:

→   Accept the hypothesis if calculated value < tabulated value
→   Reject the hypothesis if calculated value > tabulated value

TOOLS FOR RETURN ANALYSIS

CAPITAL ASSET PRICING MODEL (CAPM):

This model concludes that the expected return of an asset equals the riskless return plus a measure of the assets non- diversifiable risk ("beta") times the market-wide risk premium. The formula to calculate the expected rate of return is:

Expected security return = riskless return + beta x (expected market risk premium)

The formula to find out the expected rate of return is:

$$E(R_i) = R_f + \beta_{im}(E(R_m) - R_f).$$

Where:

- $E(R_i)$ is the expected return on the capital asset

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- R_f is the risk-free rate of interest such as interest arising from government bonds

- β_i (the *beta coefficient*) is the sensitivity of the asset returns to market returns, or also $\beta_i = \dfrac{\mathrm{Cov}(R_i, R_m)}{\mathrm{Var}(R_m)}$,

- $E(R_m)$ is the expected return of the market

- $E(R_m) - R_f$ is sometimes known as the *market premium* or *risk premium* (the difference between the expected market rate of return and the risk-free rate of return)

ANALYSIS AND INTERPRETATION
EXPECTED RATE OF RETURN

TABLE: 1-BETA, MARKET RETURNS AND WEIGHTAGE OF SENSEX SCRIPS

S.No.	Company	Weightage (%)	Beta	Market Return
1	A.C.C.	0.64	0.79	-44.05
2	JAIPRAKASH ASSOCIATES	1.1	1.61	-2.9
3	BHARTI TELEVENTURES	5.2	0.79	-13.67
4	BHEL	2.57	1.09	-10.25
5	CIPLA LTD.	1.16	0.47	1.27
6	DLF LIMITED	1.1	1.37	-30.5
7	GRASIM IND.	1.38	0.73	-30
8	GUJARAT AMBUJA CEMENT	0.69	0.47	-39.22
9	HDFC	5.14	1.02	-3.34
10	HDFC BANK	3.08	1.02	-12.39
11	HINDALCO	1.32	1.24	-11.27
12	HINDUSTAN LEVER	2.44	0.54	9.13
13	ICICI BANK	7.61	1.27	-34.03
14	INFOSYS TECHNOLOGIES	9.15	0.73	-10.08
15	ITC LTD	5.35	0.68	20.88
16	LARSEN & TOUBSO	6.23	1.11	-0.59
17	MAHINDRA & MAHINDRA	1.03	0.73	-32.9
18	MARUTI UDYOG	0.97	0.68	-16.87
19	NATIONAL THERMAL POWER	2.04	1.15	-0.46
20	ONGC	3.78	1.02	-9.69
21	RANBAXY LAB.	1.48	0.59	47.36
22	RELIANCE	16.51	1.15	23.11
23	RELIANCE COMMUNICATIONS	3.47	1.15	-14.44
24	RELIANCE ENERGY	1.3	1.73	27.8
25	SATYAM COMPUTER	3.03	0.7	-6.45
26	STATE BANK OF INDIA	3.45	1.04	-22.77
27	TATA CONSULTANCY	2.28	0.74	-25.27
28	TATA MOTORS	1.07	0.8	-36.32
29	TATA STEEL	4.05	1.1	37.99
30	WIPRO LTD.	1.39	0.79	-15.54

Source: www.bseindia.com

TABLE: 2-EXPECTED RATE OF RETURN OF SENSEX SCRIPS

S.No.	Company	Risk free rate of return	Risk premium	Expected rate of return
1	A.C.C.	5	-49.05	-33.7495
2	JAIPRAKASH ASSOCIATES	5	-7.9	-7.719
3	BHARTI TELEVENTURES	5	-18.67	-9.7493
4	BHEL	5	-15.25	-11.6225
5	CIPLA LTD.	5	-3.73	3.2469
6	DLF LIMITED	5	-35.5	-43.635
7	GRASIM IND.	5	-35	-20.55
8	GUJARAT AMBUJA CEMENT	5	-44.22	-15.7834
9	HDFC	5	-8.34	-3.5068
10	HDFC BANK	5	-17.39	-12.7378
11	HINDALCO	5	-16.27	-15.1748
12	HINDUSTAN LEVER	5	4.13	7.2302
13	ICICI BANK	5	-39.03	-44.5681
14	INFOSYS TECHNOLOGIES	5	-15.08	-6.0084
15	ITC LTD.	5	15.88	15.7984
16	LARSEN & TOUBSO	5	-5.59	-1.2049
17	MAHINDRA & MAHINDRA	5	-37.9	-22.667
18	MARUTI UDYOG	5	-21.87	-9.8716
19	NATIONAL THERMAL POWER	5	-5.46	-1.279
20	ONGC	5	-14.69	-9.9838
21	RANBAXY LAB.	5	42.36	29.9924
22	RELIANCE	5	18.11	25.8265
23	RELIANCE COMMUNICATIONS	5	-19.44	-17.356
24	RELIANCE ENERGY	5	22.8	44.444
25	SATYAM COMPUTER	5	-11.45	-3.015
26	STATE BANK OF INDIA	5	-27.77	-23.8808
27	TATA CONSULTANCY	5	-30.27	-17.3998
28	TATA MOTORS	5	-41.32	-28.056
29	TATA STEEL	5	32.99	41.289
30	WIPRO LTD.	5	-20.54	-11.2266

Source: www.bseindia.com

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INTERPRETATION: The table 1 & 2 spells out the expected rate of return of stocks included in Sensex for one year period. From the table, it is clear that the company such as Cipla limited, Hindustan Unilever limited, ITC limited, Ranbaxy laboratory, Reliance, Reliance energy and Tata steel showed a positive value of expected rate of return

TABLE: 3-BETA, MARKET RETURNS AND WEIGHTAGE OF S&P CNX NIFTY SCRIPS

S. No	Security Symbol	Weightage (%)	Beta	Market Return	S. No	Security Symbol	Weightage (%)	Beta	Market Return
1	ABB	0.70	0.79	13.57	26	NATIONALUM	0.94	0.78	-8.87
2	ACC	0.40	0.73	-3.61	27	NTPC	5.46	1.12	2.67
3	AMBUJACEM	0.46	0.51	-1.41	28	ONGC	8.29	0.99	2.71
4	BHARTIARTL	6.02	0.78	4.86	29	PNB	0.57	1.08	6.41
5	BHEL	3.17	1.1	1.54	30	POWERGRID	1.48	1.14	-1.74
6	BPCL	0.41	0.82	-7.67	31	RANBAXY	0.74	0.53	4.18
7	CAIRN	1.78	0.74	2.77	32	RCOM	3.09	1.19	-21.06
8	CIPLA	0.71	0.47	9.66	33	RELINFRA	0.87	1.86	2.76
9	DLF	3.18	1.45	-3.6	34	RELIANCE	11.77	1.1	-3.23
10	DRREDDY	0.37	0.43	1.76	35	RPL	2.68	1.26	-4.58
11	GAIL	1.27	0.95	5.24	36	SAIL	2.44	1.38	10.98
12	GRASIM	0.67	0.71	7.24	37	SATYAMCOMP	1.07	0.62	10.09
13	HCLTECH	0.59	0.82	16.37	38	SBIN	3.38	1.07	-0.95
14	HDFC	2.52	1.11	2.9	39	SIEMENS	0.70	0.97	0.07
15	HDFCBANK	2.06	1.1	16.26	40	STER	1.68	1.03	-1.02
16	HEROHONDA	0.63	0.45	3.09	41	SUNPHARMA	1.16	0.37	4.34
17	HINDALCO	0.81	1.14	-4.38	42	SUZLON	1.24	1.08	-2.26
18	HINDUNILVR	2.03	0.52	2.4	43	TATACOMM	0.45	1.07	-8.01
19	ICICIBANK	2.83	1.31	5.43	44	TATAMOTORS	0.64	0.79	9.14
20	IDEA	0.82	0.79	-6.42	45	TATAPOWER	0.88	1.27	-9.23
21	INFOSYSTCH	3.79	0.65	10.46	46	TATASTEEL	1.66	1.04	-8.3
22	ITC	2.69	0.7	1.02	47	TCS	3.01	0.75	-2.58
23	LT	2.87	1.09	-0.45	48	UNITECH	0.98	1.61	-2.99
24	M&M	0.54	0.73	10.69	49	WIPRO	2.40	0.77	4.09
25	MARUTI	0.71	0.71	12.85	50	ZEEL	0.36	0.64	12.4

Source: www.nseindia.com

TABLE: 4-EXPECTED RATE OF RETURN OF S&P CNX NIFTY SCRIPS

S. No	Security Symbol	Risk free rate of return (%)	Risk premium	Expected rate of return	S. No	Security Symbol	Risk free rate of return (%)	Risk premium	Expected rate of return
1	ABB	5	8.57	11.7703	26	NATIONALUM	5	-13.87	-5.8186
2	ACC	5	-8.61	-1.2853	27	NTPC	5	-2.33	2.3904
3	AMBUJACEM	5	-6.41	1.7309	28	ONGC	5	-2.29	2.7329
4	BHARTIARTL	5	-0.14	4.8908	29	PNB	5	1.41	6.5228
5	BHEL	5	-3.46	1.194	30	POWERGRID	5	-6.74	-2.6836
6	BPCL	5	-12.67	-5.3894	31	RANBAXY	5	-0.82	4.5654
7	CAIRN	5	-2.23	3.3498	32	RCOM	5	-26.06	-26.0114
8	CIPLA	5	4.66	7.1902	33	RELINFRA	5	-2.24	0.8336
9	DLF	5	-8.6	-7.47	34	RELIANCE	5	-8.23	-4.053
10	DRREDDY	5	-3.24	3.6068	35	RPL	5	-9.58	-7.0708
11	GAIL	5	0.24	5.228	36	SAIL	5	5.98	13.2524
12	GRASIM	5	2.24	6.5904	37	SATYAMCOMP	5	5.09	8.1558
13	HCLTECH	5	11.37	14.3234	38	SBIN	5	-5.95	-1.3665
14	HDFC	5	-2.1	2.669	39	SIEMENS	5	-4.93	0.2179
15	HDFCBANK	5	11.26	17.386	40	STER	5	-6.02	-1.2006
16	HEROHONDA	5	-1.91	4.1405	41	SUNPHARMA	5	-0.66	4.7558
17	HINDALCO	5	-9.38	-5.6932	42	SUZLON	5	-7.26	-2.8408
18	HINDUNILVR	5	-2.6	3.648	43	TATACOMM	5	-13.01	-8.9207
19	ICICIBANK	5	0.43	5.5633	44	TATAMOTORS	5	4.14	8.2706
20	IDEA	5	-11.42	-4.0218	45	TATAPOWER	5	-14.23	-13.0721
21	INFOSYSTCH	5	5.46	8.549	46	TATASTEEL	5	-13.3	-8.832
22	ITC	5	-3.98	2.214	47	TCS	5	-7.58	-0.685
23	LT	5	-5.45	-0.9405	48	UNITECH	5	-7.99	-7.8639
24	M&M	5	5.69	9.1537	49	WIPRO	5	-0.91	4.2993
25	MARUTI	5	7.85	10.5735	50	ZEEL	5	7.4	9.736

Source: www.nseindia.com

INTERPRETATION: The tables: 3 & 4 shows the expected rate of return of stocks included in S&P CNX Nifty for one year period. From the table, it is clear that the company such as ABB, Ambuja cement, Bharati Airtel, BHEL, CAIRN, Cipla, Dr. Reddy, GAIL, Grasim, HCL Tech, HDFC Bank, Hero Honda, Hindustan Unilever, ICICI Bank, Infosys, ITC, M&M, Maruti, NTPC, ONGC, PNB, Ranbaxy, Reliance Infrastructure, SAIL, Satyam computers, Siemens, Sun Pharma, Tata motors, Wipro, Zeel have showed a positive expected rate of return.

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TABLE: 5-BETA, MARKET RETURNS AND WEIGHTAGE OF CNX NIFTY SCRIPS

S.No	Security Symbol	Weightage	Beta	Market Return	S. No	Security Symbol	Weightage (%)	Beta	Market Return
1	ANDHRABANK	0.63	0.94	5.54	26	MCDOWELL-N	3.13	0.67	6.23
2	APOLLOTYRE	0.46	0.75	29.65	27	IOB	1.13	0.97	7.89
3	ASHOKLEY	1.03	0.88	20.47	28	JPASSOCIAT	4.44	1.45	4.49
4	ASIANPAINT	2.72	0.21	2.06	29	KOTAKBANK	4.81	1.29	14.09
5	AUROPHARMA	0.39	0.63	13.3	30	LICHSGFIN	0.64	1.09	1.36
6	AVENTIS	0.43	0.41	3.86	31	LUPIN	1.39	0.39	-0.8
7	BANKBARODA	2.38	0.99	10.61	32	MOSERBAER	0.39	0.92	9.11
8	BANKINDIA	3.24	1.13	-1.83	33	MPHASIS	1.17	0.61	15.89
9	BEL	1.70	0.61	-4.95	34	JINDALSTEL	6.79	1.41	-8.16
10	BHARATFORG	1.37	0.57	4.56	35	NIRMA	0.49	0.56	-1.15
11	BIOCON	0.90	0.55	2.83	36	PATNI	0.74	0.59	8.6
12	PFC	3.55	1.01	0.45	37	HDIL	1.83	1.57	-17.64
13	CADILAHC	0.94	0.35	4.12	38	ABIRLANUVO	2.86	0.78	-1.68
14	CANBK	2.03	0.88	17.9	39	RNRL	3.56	1.64	-3.52
15	CHENNPETRO	0.88	0.86	-14.52	40	RAYMOND	0.27	0.55	-7.14
16	RELCAPITAL	7.78	1.61	5.59	41	IDFC	2.74	1.19	-0.22
17	ULTRACEMCO	1.69	0.65	2.43	42	TECHM	2.09	0.65	-1.5
18	CORPBANK	0.96	0.65	12.71	43	SYNDIBANK	0.71	1.01	11.55
19	CUMMINSIND	1.45	0.55	13.23	44	TTML	1.16	1.23	6.64
20	INDHOTEL	1.28	0.72	-11.05	45	JSWSTEEL	3.29	0.89	3.71
21	CONCOR	2.63	0.24	4.59	46	UNIONBANK	1.66	1.11	8.78
22	I-FLEX	2.33	0.85	-13.94	47	AXISBANK	5.98	1.05	10.63
23	GMRINFRA	4.32	1.27	11.04	48	VIJAYABANK	0.37	1.13	3.35
24	IDBI	1.40	1.22	11.89	49	INGVYSYABK	0.57	0.54	15.55
25	IFCI	0.78	1.53	-2.72	50	WOCKPHARMA	0.50	0.66	6.65

Source: www.nseindia.com

TABLE: 6-EXPECTED RATE OF RETURN OF CNX NIFTY SCRIPS

S. No	Security Symbol	Risk free rate of return (%)	Risk premium	Expected rate of return	S. No	Security Symbol	Risk free rate of return (%)	Risk premium	Expected rate of return
1	ANDHRABANK	5	0.54	5.5076	26	MCDOWELL-N	5	1.23	5.8241
2	APOLLOTYRE	5	24.65	23.4875	27	IOB	5	2.89	7.8033
3	ASHOKLEY	5	15.47	18.6136	28	JPASSOCIAT	5	-0.51	4.2605
4	ASIANPAINT	5	-2.94	4.3826	29	KOTAKBANK	5	9.09	16.7261
5	AUROPHARMA	5	8.3	10.229	30	LICHSGFIN	5	-3.64	1.0324
6	AVENTIS	5	-1.14	4.5326	31	LUPIN	5	-5.8	2.738
7	BANKBARODA	5	5.61	10.5539	32	MOSERBAER	5	4.11	8.7812
8	BANKINDIA	5	-6.83	-2.7179	33	MPHASIS	5	10.89	11.6429
9	BEL	5	-9.95	-1.0695	34	JINDALSTEL	5	-13.16	-13.5556
10	BHARATFORG	5	-0.44	4.7492	35	NIRMA	5	-6.15	1.556
11	BIOCON	5	-2.17	3.8065	36	PATNI	5	3.6	7.124
12	PFC	5	-4.55	0.4045	37	HDIL	5	-22.64	-30.5448
13	CADILAHC	5	-0.88	4.692	38	ABIRLANUVO	5	-6.68	-0.2104
14	CANBK	5	12.9	16.352	39	RNRL	5	-8.52	-8.9728
15	CHENNPETRO	5	-19.52	-11.7872	40	RAYMOND	5	-12.14	-1.677
16	RELCAPITAL	5	0.59	5.9499	41	IDFC	5	-5.22	-1.2118
17	ULTRACEMCO	5	-2.57	3.3295	42	TECHM	5	-6.5	0.775
18	CORPBANK	5	7.71	10.0115	43	SYNDIBANK	5	6.55	11.6155
19	CUMMINSIND	5	8.23	9.5265	44	TTML	5	1.64	7.0172
20	INDHOTEL	5	-16.05	-6.556	45	JSWSTEEL	5	-1.29	3.8519
21	CONCOR	5	-0.41	4.9016	46	UNIONBANK	5	3.78	9.1958
22	I-FLEX	5	-18.94	-11.099	47	AXISBANK	5	5.63	10.9115
23	GMRINFRA	5	6.04	12.6708	48	VIJAYABANK	5	-1.65	3.1355
24	IDBI	5	6.89	13.4058	49	INGVYSYABK	5	10.55	10.697
25	IFCI	5	-7.72	-6.8116	50	WOCKPHARMA	5	1.65	6.089

Source: www.nseindia.com

INTERPRETATION – TABLE 5 & 6: The table 5 data is directly collected from NSE websites. The table 6 shows the expected rate of return of stocks included in CNX Nifty Junior for one year period from April 2007 to March 2008. From the table 6, it is clear that the company such as Bank India, BEL, CHENNPETRO, INDHOTEL, I-FLEX, IFCI, JINDALSTEL, HDIL, ABIRLANUVO, RNRL, Raymond, and IDFC have showed a negative value of expected rate of return. All the other remaining 38 companies have showed a positive value of expected rate of return. In those 38 companies, Apollo tyre, Corporation Bank, Kotak Bank, Ashok Leyland, Canara Bank, IDBI Bank, Syndicate Bank, Axis Bank has given an expected rate of return more than 12%. Specifically Apollotyre (23.4875) rate of return is too high when compared to other companies those who showed the positive value of return.

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TABLE: 7 -VALUE AT RISK - SENSEX SCRIPS

S.No.	Company	f_o	f_e	f_o-f_e	$(f_o-f_e)^2$	$(f_o-f_e)^2/f_e$	S.No.	Company	f_o	f_e	f_o-f_e	$(f_o-f_e)^2$	$(f_o-f_e)^2/f_e$
1	A.C.C.	3	5	-2	4	0.8	16	LARSEN & TOUBSO	3	5	-2	4	0.8
		97	95	2	4	0.0421053			97	95	2	4	0.0421053
2	JAIPRAKASH ASSOCIATES	5	5	0	0	0	17	MAHINDRA & MAHINDRA	3	5	-2	4	0.8
		95	95	0	0	0			97	95	2	4	0.0421053
3	BHARTI TELE VENTURES	3	5	-2	4	0.8	18	MARUTI UDYOG	3	5	-2	4	0.8
		97	95	2	4	0.0421053			97	95	2	4	0.0421053
4	BHEL	3	5	-2	4	0.8	19	NATIONAL THERMAL POWER	3	5	-2	4	0.8
		97	95	2	4	0.0421053			97	95	2	4	0.0421053
5	CIPLA LTD.	2	5	-3	9	1.8	20	ONGC	3	5	-2	4	0.8
		98	95	3	9	0.0947368			97	95	2	4	0.0421053
6	DLF LIMITED	4	5	-1	1	0.2	21	RANBAXY LAB.	2	5	-3	9	1.8
		96	95	1	1	0.0105263			98	95	3	9	0.0947368
7	GRASIM IND.	2	5	-3	9	1.8	22	RELIANCE	3	5	-2	4	0.8
		98	95	3	9	0.0947368			97	95	2	4	0.0421053
8	GUJARAT AMBUJA CEMENT	2	5	-3	9	1.8	23	RELIANCE COMMUNICATIONS	3	5	-2	4	0.8
		98	95	3	9	0.0947368			97	95	2	4	0.0421053
9	HDFC	3	5	-2	4	0.8	24	RELIANCE ENERGY	5	5	0	0	0
		97	95	2	4	0.0421053			95	95	0	0	0
10	HDFC BANK	3	5	-2	4	0.8	25	SATYAM COMPUTER	3	5	-2	4	0.8
		97	95	2	4	0.0421053			97	95	2	4	0.0421053
11	HINDALCO	4	5	-1	1	0.2	26	STATE BANK OF INDIA	3	5	-2	4	0.8
		96	95	1	1	0.0105263			97	95	2	4	0.04210526
12	HINDUSTAN LEVER	3	5	-2	4	0.8	27	TATA CONSULTANCY	3	5	-2	4	0.8
		97	95	2	4	0.0421053			97	95	2	4	0.04210526
13	ICICI BANK	3	5	-2	4	0.8	28	TATA MOTORS	2	5	-3	9	1.8
		97	95	2	4	0.0421053			98	95	3	9	0.09473684
14	INFOSYS TECHNOLOGIES	3	5	-2	4	0.8	29	TATA STEEL	3	5	-2	4	0.8
		97	95	2	4	0.0421053			97	95	2	4	0.04210526
15	ITC LTD.	3	5	-2	4	0.8	30	WIPRO LTD.	3	5	-2	4	0.8
		97	95	2	4	0.0421053			97	95	2	4	0.04210526
	Chi-square test value												27.5789474

Source: www.bseindia.com

HYPOTHESIS TESTING FOR ASSESSING THE ACCURACY OF VAR FORECASTS OF 30 BSE SECURITIES

Null Hypothesis   :   H0: $p_1 = p_2 = p_3 = \ldots\ldots = p_k$

Alternate Hypothesis   :   H1: $p_1 \neq p_2 \neq p_3 \neq \ldots\ldots \neq p_k$

Chi- square test was computed by using the equation:

χ^2 = 27.57 (from the above table)

Level of significance i.e., α = 0.10

Degrees of freedom = (k-1)*(2-1)

= 29*1= 29

Tabulated value is **39.1**

Calculated value is **27.57**

DECISION

27.57 < 39.1

As per the decision rule the Hypothesis is accepted.

Current evidence is supporting our hypothesis and thus as per decision rule, our hypothesis that the proportion of losses exceeding computed VaR is same for all the 30 BSE stocks.

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TABLE: 8-VALUE AT RISK - S&P CNX NIFTY SCRIPS

S.No.	Security Symbol	f_o	f_e	f_o-f_e	$(f_o$-$f_e)^2$	$(f_o$-$f_e)^2/f_e$	S.No.	Security Symbol	f_o	f_e	f_o-f_e	$(f_o$-$f_e)^2$	$(f_o$-$f_e)^2/f_e$
1	ABB	2	5	-3	9	1.8	16	HEROHONDA	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
2	ACC	3	5	-2	4	0.8	17	HINDALCO	3	5	-2	4	0.8
		98	95	3	9	0.09473684			97	95	2	4	0.04210526
3	AMBUJACEM	3	5	-2	4	0.8	18	HINDUNILVR	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
4	BHARTIARTL	5	5	0	0	0	19	ICICIBANK	5	5	0	0	0
		95	95	0	0	0			95	95	0	0	0
5	BHEL	3	5	-2	4	0.8	20	IDEA	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
6	BPCL	3	5	-2	4	0.8	21	INFOSYSTCH	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
7	CAIRN	2	5	-3	9	1.8	22	ITC	5	5	0	0	0
		98	95	3	9	0.09473684			95	95	0	0	0
8	CIPLA	5	5	0	0	0	23	LT	2	5	-3	9	1.8
		95	95	0	0	0			98	95	3	9	0.09473684
9	DLF	4	5	-1	1	0.2	24	M&M	2	5	-3	9	1.8
		96	95	1	1	0.01052632			98	95	3	9	0.09473684
10	DRREDDY	2	5	-3	9	1.8	25	MARUTI	3	5	-2	4	0.8
		98	95	3	9	0.09473684			97	95	2	4	0.04210526
11	GAIL	2	5	-3	9	1.8	26	NATIONALUM	3	5	-2	4	0.8
		98	95	3	9	0.09473684			97	95	2	4	0.04210526
12	GRASIM	3	5	-2	4	0.8	27	NTPC	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
13	HCLTECH	4	5	-1	1	0.2	28	ONGC	2	5	-3	9	1.8
		96	95	1	1	0.01052632			98	95	3	9	0.09473684
14	HDFC	3	5	-2	4	0.8	29	PNB	3	5	-2	4	0.8
		97	95	2	4	0.04210526			97	95	2	4	0.04210526
15	HDFCBANK	5	5	0	0	0	30	POWERGRID	2	5	-3	9	1.8
		95	95	0	0	0			98	95	3	9	0.09473684

Source: www.nseindia.com

VALUE AT RISK - S&P CNX NIFTY SCRIPS

S.No.	Security Symbol	f_o	f_e	f_o-f_e	$(f_o$-$f_e)^2$	$(f_o$-$f_e)^2/f_e$	S.No.	Security Symbol	f_o	f_e	f_o-f_e	$(f_o$-$f_e)^2$	$(f_o$-$f_e)^2/f_e$
31	RANBAXY	1	5	-4	16	3.2	41	SUNPHARMA	2	5	-3	9	1.8
		99	95	4	16	0.16842105			98	95	3	9	0.09473684
32	RCOM	2	5	-3	9	1.8	42	SUZLON	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
33	RELINFRA	5	5	0	0	0	43	TATACOMM	3	5	-2	4	0.8
		95	95	0	0	0			97	95	2	4	0.04210526
34	RELIANCE	2	5	-3	9	1.8	44	TATAMOTORS	3	5	-2	4	0.8
		98	95	3	9	0.09473684			97	95	2	4	0.04210526
35	RPL	2	5	-3	9	1.8	45	TATAPOWER	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
36	SAIL	3	5	-2	4	0.8	46	TATASTEEL	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
37	SATYAMCOMP	2	5	-3	9	1.8	47	TCS	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
38	SBIN	5	5	0	0	0	48	UNITECH	5	5	0	0	0
		95	95	0	0	0			95	95	0	0	0
39	SIEMENS	2	5	-3	9	1.8	49	WIPRO	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
40	STER	3	5	-2	4	0.8	50	ZEEL	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
	Chi – square value												71.8421053

Source: www.nseindia.com

Hypothesis testing for assessing the accuracy of VaR forecasts of 50 S&P CNX Nifty securities:

Null Hypothesis   :   H0: $p_1=p_2=p_3=.........=p_k$

Alternate Hypothesis   :   H1: $p_1 \neq p_2 \neq p_3 \neq ....\neq p_k$

Chi- square test was computed by using the equation:

χ^2 = 71.84   (from the above table)

Level of significance i.e., α = 0.10

Degrees of freedom   = (50-1)*(2-1)

= 49*1= 49

Tabulated value is **65.54**

Calculated value is **71.84**

DECISION

71.84 > 65.54

As per the decision rule the Hypothesis is rejected.

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Current evidence is not supporting our hypothesis and thus as per decision rule, our hypothesis that the proportion of losses exceeding computed VaR is not the same for all the 50 NSE stocks.

TABLE: 9-VALUE AT RISK - CNX NIFTY SCRIPS

S.No.	Security Symbol	f_o	f_e	f_o-f_e	$(f_o-f_e)^2$	$(f_o-f_e)^2/f_e$	S.No.	Security Symbol	f_o	f_e	f_o-f_e	$(f_o-f_e)^2$	$(f_o-f_e)^2/f_e$
1	ANDHRABANK	3	5	-2	4	0.8	16	RELCAPITAL	3	5	-2	4	0.8
		97	95	2	4	0.04210526			97	95	2	4	0.04210526
2	APOLLOTYRE	3	5	-2	4	0.8	17	ULTRACEMCO	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
3	ASHOKLEY	3	5	-2	4	0.8	18	CORPBANK	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
4	ASIANPAINT	2	5	-3	9	1.8	19	CUMMINSIND	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
5	AUROPHARMA	2	5	-3	9	1.8	20	INDHOTEL	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
6	AVENTIS	2	5	-3	9	1.8	21	CONCOR	1	5	-4	16	3.2
		98	95	3	9	0.09473684			99	95	4	16	0.16842105
7	BANKBARODA	4	5	-1	1	0.2	22	I-FLEX	2	5	-3	9	1.8
		96	95	1	1	0.01052632			98	95	3	9	0.09473684
8	BANKINDIA	3	5	-2	4	0.8	23	GMRINFRA	3	5	-2	4	0.8
		97	95	2	4	0.04210526			97	95	2	4	0.04210526
9	BEL	1	5	-4	16	3.2	24	IDBI	4	5	-1	1	0.2
		99	95	4	16	0.16842105			96	95	1	1	0.01052632
10	BHARATFORG	2	5	-3	9	1.8	25	IFCI	3	5	-2	4	0.8
		98	95	3	9	0.09473684			97	95	2	4	0.04210526
11	BIOCON	2	5	-3	9	1.8	26	MCDOWELL-N	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
12	PFC	3	5	-2	4	0.8	27	IOB	3	5	-2	4	0.8
		97	95	2	4	0.04210526			97	95	2	4	0.04210526
13	CADILAHC	2	5	-3	9	1.8	28	JPASSOCIAT	4	5	-1	1	0.2
		98	95	3	9	0.09473684			96	95	1	1	0.01052632
14	CANBK	4	5	-1	1	0.2	29	KOTAKBANK	4	5	-1	1	0.2
		96	95	1	1	0.01052632			96	95	1	1	0.01052632
15	CHENNPETRO	3	5	-2	4	0.8	30	LICHSGFIN	1	5	-4	16	3.2
		97	95	2	4	0.04210526			99	95	4	16	0.16842105

Source: www.nseindia.com

VALUE AT RISK - CNX NIFTY SCRIPS

S.No.	Security Symbol	f_o	f_e	f_o-f_e	$(f_o-f_e)^2$	$(f_o-f_e)^2/f_e$	S.No.	Security Symbol	f_o	f_e	f_o-f_e	$(f_o-f_e)^2$	$(f_o-f_e)^2/f_e$
31	LUPIN	1	5	-4	16	3.2	41	IDFC	3	5	-2	4	0.8
		99	95	4	16	0.16842105			97	95	2	4	0.04210526
32	MOSERBAER	3	5	-2	4	0.8	42	TECHM	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
33	MPHASIS	2	5	-3	9	1.8	43	SYNDIBANK	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
34	JINDALSTEL	2	5	-3	9	1.8	44	TTML	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
35	NIRMA	1	5	-4	16	3.2	45	JSWSTEEL	3	5	-2	4	0.8
		99	95	4	16	0.16842105			97	95	2	4	0.04210526
36	PATNI	1	5	-4	16	3.2	46	UNIONBANK	4	5	-1	1	0.2
		99	95	4	16	0.16842105			96	95	1	1	0.01052632
37	HDIL	4	5	-1	1	0.2	47	AXISBANK	4	5	-1	1	0.2
		96	95	1	1	0.01052632			96	95	1	1	0.01052632
38	ABIRLANUVO	3	5	-2	4	0.8	48	VIJAYABANK	3	5	-2	4	0.8
		97	95	2	4	0.04210526			97	95	2	4	0.04210526
39	RNRL	3	5	-2	4	0.8	49	INGVYSYABK	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
40	RAYMOND	1	5	-4	16	3.2	50	WOCKPHARMA	2	5	-3	9	1.8
		99	95	4	16	0.16842105			98	95	3	9	0.09473684
	Chi – square value												74.7368421

Source: www.nseindia.com

HYPOTHESIS TESTING FOR ASSESSING THE ACCURACY OF VAR FORECASTS OF 50 CNX NIFTY JUNIOR SECURITIES

Null Hypothesis   :   H0: $p_1=p_2=p_3=\ldots\ldots=p_k$

Alternate Hypothesis :   H1: $p_1\neq p_2\neq p_3\neq\ldots\ldots\neq p_k$

Chi- square test was computed by using the equation:

χ^2 = 74.74   (from the above table)

Level of significance i.e.,   α = 0.10

Degrees of freedom   = (50-1)*(2-1)

= 49*1= 49

Tabulated value is **65.54**

Calculated value is **74.74**

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DECISION RULE

→   Accept the hypothesis if calculated value < tabulated value

→   Reject the hypothesis if calculated value > tabulated value

DECISION

74.74 > 65.54

Hypothesis rejected

Current evidence is not supporting our hypothesis and thus as per decision rule, our hypothesis that the proportion of losses exceeding computed VaR is not same for all the 50 NSE stocks.

CONCLUSION

This paper intended to analyze the risk and return of stocks included in Sensex and Nifty for one year period from 2007 to 2008. Out of 30 securities in BSE Sensex, 7 individual securities showed a positive value of expected rate of return. Out of 50 stocks in S&P CNX Nifty, 30 individual securities showed a positive value of expected rate of return. Two of the securities in BSE Sensex have no risk at 90% significance level and in S&P CNX Nifty 7 of the securities have no risk at 90% level of significance. As far Sensex is concerned proportion of losses exceeding computed VaR is same for all the stocks, which means that the risk complexion of all the 30 stocks is alike. But in case of S&P CNX Nifty, there were significant variances in the proportion of losses exceeding computed VaR, whereby one can understand that the risks associated with the NSE stocks differ. And also in case of CNX Nifty, there were significant variances in the proportion of losses exceeding computed VaR. Every investor should analyze the risk associated with expected return of his investment preferences. To the extent possible the investor should diversify his investment alternatives which will help him/her to maximize the associated return.

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