



Indian Streams Research Journal



RISK-RETURN ANALYSIS OF SELECTED BSE SENSEX STOCKS

K. Swapna

Faculty, Department of Business Administration , Indian Institute of Management & Commerce, Hyderabad.

ABSTRACT

Investment decisions are influenced by various motives. For earning returns, investors have to almost invariably bear some risk. While investors like returns they abhor risk. Investment decisions, therefore, involve a trade-off between risk and returns. Each of the investment has its own risk & return features. Investors would select investments that are consistent with their risk preferences.



Some will consider low risk investments while others prefer high risk investments. The main motive of the study is to find out the Mean return & Risk of 12 selected BSE SENSEX companies from 4 different sectors i.e., Information Technology (IT), Automobiles, Telecommunication and FMCG Sectors. For this study, data has been collected from secondary sources viz. books,

websites. To evaluate the performance of risk and return of these companies, statistical techniques like Mean & Standard Deviation have been used. The study also creates awareness about stocks among the investors to invest in the particular sectors. It has been found that among all the companies taken for the study, Wipro in IT sector has good returns with low risk.

KEY WORDS: BSE SENSEX stocks, Risk, Return, Standard Deviation

1.0 INTRODUCTION

One of the major objectives of investment is to earn and maximize the return. Return on investment may be because of income, capital appreciation or a positive hedge against inflation. The expected return may differ from

realized return. In security analysis, we are primarily concerned with returns from the investor perspective. Our main concern is to compute or estimate the returns for an investor on a particular investment.

1.1 Risk

According to the dictionary, Risk means existence of volatility in the occurrence of an expected incident. Higher the unpredictability greater is the risk. According to this definition risk may or may not involve money. All investments involve risk of one type or the other. Risk and return are of two sides of the investment coin. Risk is associated with the possibility of not realizing return or realizing less return than expected. The degree of risk varies on the basis of features of the assets, investment instruments, the mode of investment, the issuer of the securities etc. Thus, risk of an investment is the variance associated with its returns. The chance that an investment's actual return will be different than expected. Risk includes the possibility of losing some or all of the original investment. Different versions of risk are usually measured by calculating the standard deviation of the historical returns or average returns of a specific investment. A high standard deviation indicates a high degree of risk. We can distinguish between expected return and realized return from an investment. The expected return is uncertain future return that an investor expects to get from his investment. The realized return, on contrary, is the certain return that an investor makes the investment decision based on expected returns from the investment. The actual return realized from an investment may not correspond to expected return. This possibility of variation of the actual return from the expected return is termed as risk. Where realization corresponds to expectations exactly, there would be no risk.

Measurement of risk through standard deviation

It is the square root of squared deviations from the mean divided by number of observations

$$\text{Standard deviation} = \sqrt{\frac{\sum d^2}{n}}$$

Where

d - Stands for deviations

d^2 - stands for square of deviations

Deviation = $(R - R_{\bar{}})$

R - stands for returns

$R_{\bar{}}$ - stands for mean return

Where n stands for time period

1.2 Return

It is the primary motivating force that drives the investments. It represents the reward for undertaking investment. Since the game of investing is about return (after allowing for risk) measurement of returns is necessary to know how well the investment manager has done.

$$\text{Returns} = R_{\bar{}} = \frac{\sum R}{n}$$

Where

R - Stands for returns

$R_{\bar{}}$ - stands for mean return

Where n stands for time period

$$\text{Return} = \frac{\text{closing price} - \text{opening price}}{\text{opening price}} * 100$$

2.0 Review Literature

Preethi Singh (1986) disclosed the basic rules for selecting the company to invest in. She opined that understanding and measuring return and risk is fundamental to the investment process. According to her, most investors are 'risk averse'. To have a higher return the investor has to face greater risks.

Donald E Fischer and Ronald J. Jordan (1994) analyzed the relation between risk, investor preferences and investor behaviour. The risk return measures on portfolios are the main determinants of an investor's attitude towards them. Most investors seek more return for additional risk assumed. The conservative investor requires large increase in return for assuming small increases in risk. The more aggressive investor will accept smaller increases in return for large increases in risk. They concluded that the psychology of the stock market is based on how investors form judgments about uncertain future events and how they react to these judgments.

Charles.P.Jones (1996) reviewed how to estimate security return and risk. To estimate returns, the investors must estimate cash flows the securities are likely to provide. Also, investors must be able to quantify and measure risk using variance or standard deviation. Variance or standard deviation is the accepted measure of variability for both realized returns and expected returns. He suggested that the investors should use it as the situation dictates.

Aswath Damodaran (1996) reviewed the ingredients for a good risk and return model. According to him, a good risk and return model should come up with a measure for risk that is universal, which specify what types of risks are rewarded and what types are not.

He also stated that one of the objectives of measuring risk is to come up with an estimate of an expected return for an investment. This expected return would help to decide whether the investment is a 'good' or 'bad' one.

Arun Jethmalani (1999) reviewed the existence and measurement of risk involved in investing in corporate securities of shares and debentures. He commended that risk is usually determined, based on the likely variance of returns. It is more difficult to compare 80 risks within the same class of investments. He opined that the investors accept the risk measurement made by the credit rating agencies, but it was questioned after the Asian crisis. He revealed that the stocks have always outperformed bonds over the long term.

3.0 OBJECTIVES

1. To find out the risk & and mean return of the 12 companies of four sectors for a period of 5years i.e. from 2010-15.
2. To suggest the investors in selecting a particular sector for making investment.

4.0 RESEARCH METHODOLOGY

The secondary data is used to complete the study which has been collected from various sources like textbooks, websites. Return values are calculated by considering the closing and opening values of the company stocks.

5.0 SCOPE OF THE STUDY

The scope of the study is confined to only 4 sectors & 12 companies but not all other sectors and companies. Only risk and return have been taken into consideration for the present study leaving other qualitative factors of the companies.

6.0 LIMITATIONS

- 1.The study is limited to risk & returns only for a period of 5 years i.e. from 2011-15 but not for other periods.
2. The present study concentrated only on historical returns.

7.0 ANALYSIS AND INTERPRETATIONS

I. Calculation of Returns for Automobile Sector

1. Return for Hero Moto Corp, Maruti Suzuki India Ltd, Tata Motors

Return (R)	Hero moto corp	Maruti suzuki	Tata motors
2010-2011	- 0.18547	- 0.09143	0.60779
2011-2012	0.282158	0.058657	0.109087
2012-2013	- 0.25009	- 0.04275	- 0.02567
2013-2014	0.480057	0.536375	0.493086
2014-2015	0.175246	0.915568	0.329814
Avg Return	$\Sigma R = 0.50191$	$\Sigma R = 1.376423$	$\Sigma R = 1.514107$

Source: Author's computation

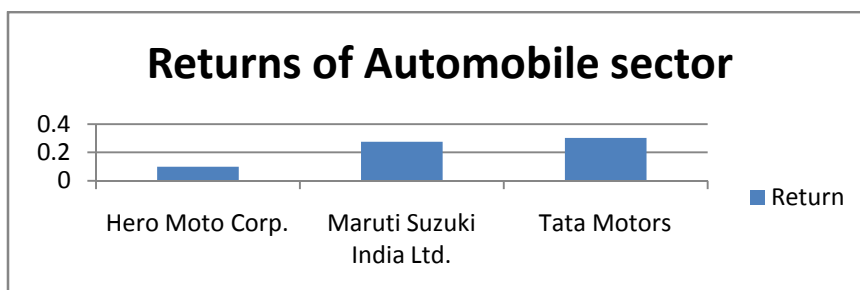
$$\text{Expected Return, } \bar{R} = \frac{\Sigma R}{N} = \frac{0.50191}{5} = 0.100382$$

$$\text{Expected Return, } \bar{R} = \frac{\Sigma R}{N} = \frac{1.376423}{5} = 0.275285$$

$$\text{Expected Return, } \bar{R} = \frac{\Sigma R}{N} = \frac{1.514107}{5} = 0.302821$$

I. Returns of Automobile Sector

Name of the Company	Mean Return
Hero Moto Corp.	0.1
Maruti Suzuki India Ltd.	0.28
Tata Motors	0.3



Inference: From the above graph, we can say that in the automobile sector, the returns of Tata Motors was high when compared to Maruti Suzuki India Ltd. and Hero Moto Corp.

II. Calculation of Returns for IT Sector

1. Return for Tata Consultancy Services, HCL, WIPRO

Return (R)	Tata consultancy	HCL	WIPRO
2010-2011	0.463943	0.335108	0.105564
2011-2012	- 0.01	0.032758	- 0.07744
2012-2013	0.319344	0.591602	- 0.01019
2013-2014	0.368694	0.760127	0.257911
2014-2015	0.172432	0.381579	0.120071
Avg Return	$\sum R = 1.314409$	$\sum R = 2.101173$	$\sum R = 0.395917$

Source: Author’s computation

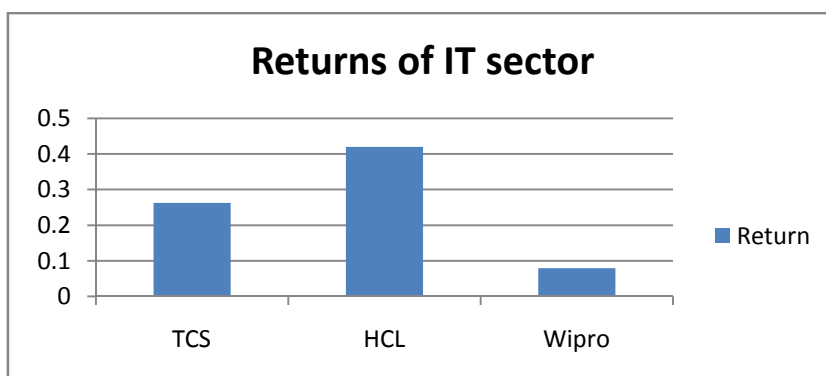
Expected Return, $\bar{R} = \frac{\sum R}{N} = \frac{1.314409}{5} = 0.262882$

Expected Return, $\bar{R} = \frac{\sum R}{N} = \frac{2.101173}{5} = 0.420235$

Expected Return, $\bar{R} = \frac{\sum R}{N} = \frac{0.395917}{5} = 0.079183$

II. Returns of IT Sector

Name of the Company	Mean Return
TCS	0.26
HCL	0.42
Wipro	0.08



Inference: From the above graph, it can be observed that the return of HCL was high when compared to TCS and Wipro in the IT sector.

III. Calculation of Returns for Telecommunication Sector

1. Calculation of Return for Bharti Airtel, Idea cellular, Tata communications

Return (R)	Bharati Airtel	Idea Cellular	Tata Communications
2010-2011	0.183187	0.044892	- 0.15178
2011-2012	- 0.05234	0.462278	- 0.08702
2012-2013	- 0.14164	0.138833	0.038632
2013-2014	0.086912	0.198257	0.345722
2014-2015	0.248297	0.335878	0.399235
Avg Return	$\sum R = 0.324415$	$\sum R = 1.180138$	$\sum R = 0.544788$

Source: Author’s computation

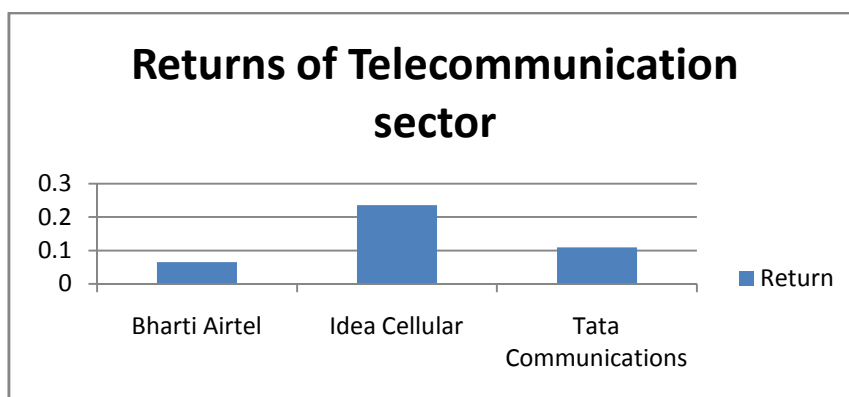
Expected Return, $\bar{R} = \frac{\sum R}{N} = \frac{0.324415}{5} = 0.064883$

Expected Return, $\bar{R} = \frac{\sum R}{N} = \frac{1.180138}{5} = 0.236028$

Expected Return, $\bar{R} = \frac{\sum R}{N} = \frac{0.544788}{5} = 0.108958$

III. Returns of Telecommunication Sector

Name of the company	Mean Return
Bharti Airtel	0.06
Idea Cellular	0.24
Tata Communications	0.11



Inference: From the above graph, it can be seen that the return of Idea cellular was high when compared to Bharti Airtel and Tata Communications in the Telecommunication sector.

IV. Calculation of Returns for FMCG Sector

1. Calculation of Return for Hindustan Unilever Limited, P & G, Colgate Palmolive

Return (R)	HUL	P & G	Colgate Palmolive
2010-2011	0.233637	- 0.21628	0.203012
2011-2012	0.443056	0.178549	0.353548
2012-2013	0.148312	0.147685	0.090707
2013-2014	0.28014	0.270157	0.073972
2014-2015	0.450964	1.25902	0.48687
Avg Return	ΣR = 1.556109	ΣR = 1.639131	ΣR =1.208109

Source: Author’s computation

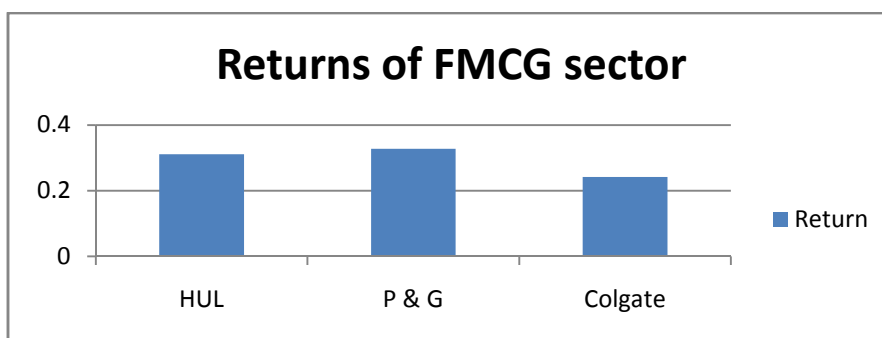
Expected Return, $\bar{R} = \frac{\sum R}{N} = \frac{1.556109}{5} = 0.311222$

Expected Return, $\bar{R} = \frac{\sum R}{N} = \frac{1.639131}{5} = 0.327826$

Expected Return, $\bar{R} = \frac{\sum R}{N} = \frac{1.208109}{5} = 0.241622$

IV. Returns of FMCG Sector

Name of the company	Mean Return
HUL	0.31
P&G	0.33
Colgate	0.24



Inference: From the above graph, it is observed that the return of Procter & Gamble was high when compared to Hindustan Unilever and Colgate & Palmolive in the FMCG sector.

I. Calculation of Risk for Automobile Sector

1. Calculation of Risk for Hero Moto Corp, Maruti Suzuki, Tata motors

Year	Hero Moto Corp	Maruti Suzuki	Tata motors
2010-11	0.081709	0.134479	0.093006
2011-12	0.033042	0.046927	0.037533
2012-13	0.122827	0.101146	0.107907
2013-14	0.144153	0.068168	0.036201
2014-15	0.005605	0.409964	0.000729
$\sum(R-\bar{R})^2$	0.387336	0.760684	0.275374

Source: Author's computation

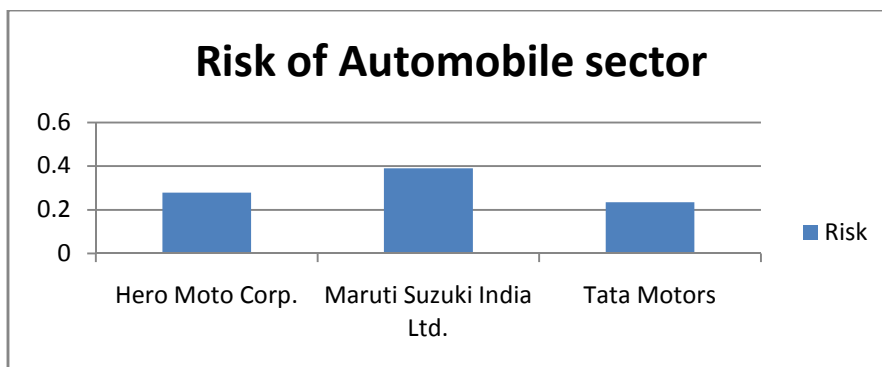
$$\text{Standard deviation} = \sqrt{\frac{\sum(R-\bar{R})^2}{N}} = \sqrt{\frac{0.387336}{5}} = 0.278329$$

$$\text{Standard deviation} = \sqrt{\frac{0.760684}{5}} = 0.390047$$

$$\text{Standard deviation} = \sqrt{\frac{0.275374}{5}} = 0.23468$$

I. Risk of Automobile Sector

Name of the company	Risk
Hero Moto Corp.	0.28
Maruti Suzuki India Ltd.	0.39
Tata Motors	0.23



Inference: From the above graph, it can be seen that the Risk in Maruti Suzuki India Ltd. was high than Hero Moto Corp. and Tata Motors in the automobile sector.

II. Calculation of Risk for IT Sector

1. Risk for Tata Consultancy Services, HCL, Wipro

Year	TCS	HCL	Wipro
2010-11	0.040426	0.007247	0.000696
2011-12	0.074466	0.150138	0.024531
2012-13	0.003188	0.029367	0.007987
2013-14	0.011196	0.115527	0.031944
2014-15	0.008181	0.001494	0.001672
$\sum(R-\bar{R})^2$	0.137457	0.303772	0.06683

Source: Author’s computation

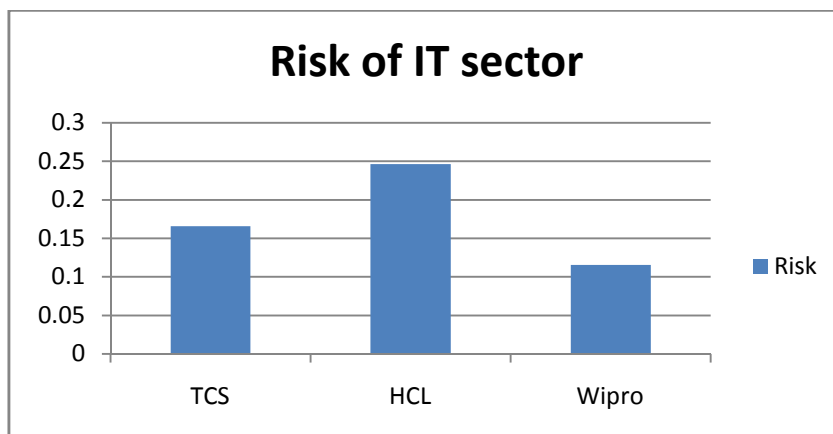
$$\text{Standard deviation} = \sqrt{\frac{0.137457}{5}} = 0.165805$$

$$\text{Standard deviation} = \sqrt{\frac{0.303772}{5}} = 0.246484$$

$$\text{Standard deviation} = \sqrt{\frac{0.06683}{5}} = 0.115611$$

II. Risk of IT Sector

Name of the company	Risk
TCS	0.16
HCL	0.25
Wipro	0.11



Inference: From the above graph it can be observed that the Risk in HCL was high than TCS and Wipro in the IT sector.

III. Calculation of Risk for Telecommunication Sector.

1. Risk for Idea Cellular, Bharati Airtel, Tata Communications

Year	Idea	Bharti Airtel	Tata communications
2010-11	0.036533	0.013996	0.067986
2011-12	0.051189	0.013742	0.038406
2012-13	0.009447	0.042651	0.004946
2013-14	0.039306	0.000485	0.056058
2014-15	0.00997	0.033641	0.084261
$\Sigma(R-\bar{R})^2$	0.146445	0.104515	0.251657

Source: Author’s computation

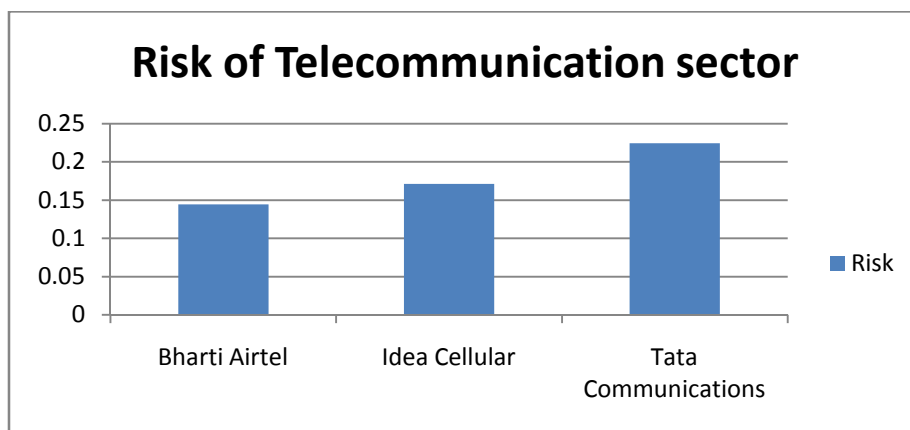
$$\text{Standard deviation} = \sqrt{\frac{0.146445}{5}} = 0.17114$$

$$\text{Standard deviation} = \sqrt{\frac{0.104515}{5}} = 0.144578$$

$$\text{Standard deviation} = \sqrt{\frac{0.251657}{5}} = 0.224347$$

III. Risk of Telecommunication Sector

Name of the company	Risk
Bharti Airtel	0.17
Idea Cellular	0.14
Tata Communications	0.22



Inference: From the above graph it can be seen that the Risk in Tata Communications was high than Bharti Airtel and Idea Cellular in the Telecommunication sector.

III. Calculation of Risk for FMCG Sector.

1. Risk for Hindustan Unilever, P & G, Colgate Palmolive

Year	Hindustan Unilever	P & G	Colgate Palmolive
2010-11	0.006019	0.29605	0.001491
2011-12	0.01738	0.022284	0.012527
2012-13	0.026539	0.032451	0.022775
2013-14	0.000966	0.003326	0.028106

2014-15	0.019528	0.867121	0.060147
$\Sigma(R-\bar{R})^2$	0.070433	1.221232	0.125047

Source: Author’s computation

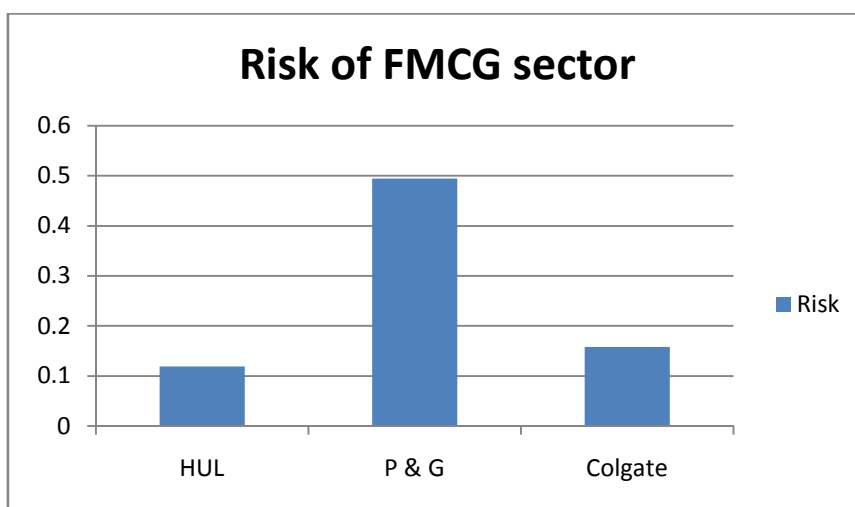
$$\text{Standard deviation} = \sqrt{\frac{0.070433}{5}} = 0.118687$$

$$\text{Standard deviation} = \sqrt{\frac{1.221232}{5}} = 0.494213$$

$$\text{Standard deviation} = \sqrt{\frac{0.125047}{5}} = 0.158143$$

IV. Risk of FMCG Sector

Name of the company	Risk
Hindustan Unilever	0.12
Procter & Gamble	0.49
Colgate & Palmolive	0.16

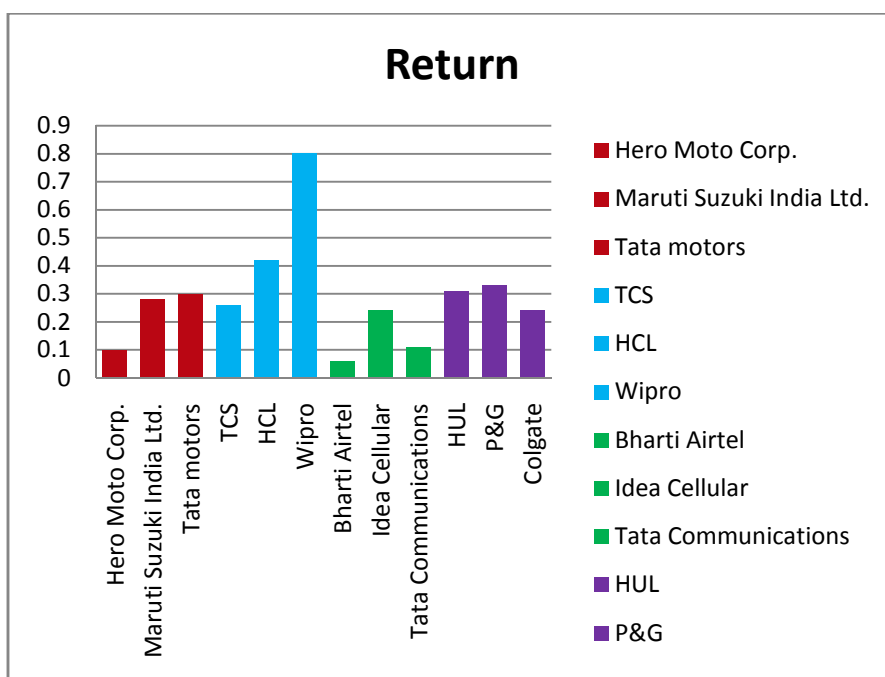


Inference: From the above graph, it can be observed that the Risk in Procter & Gamble was high than Hindustan Unilever and Colgate & Palmolive in the FMCG sector.

Returns of all the 4 sectors

Sector	Company Name	Returns
Automobile	Hero Moto Corp.	0.1
	Maruti Suzuki India Ltd.	0.28
	Tata motors	0.3
IT	TCS	0.26

	HCL	0.42
	Wipro	0.8
Telecommunication	Bharti Airtel	0.06
	Idea Cellular	0.24
	Tata Communications	0.11
FMCG	HUL	0.31
	P&G	0.33
	Colgate	0.24

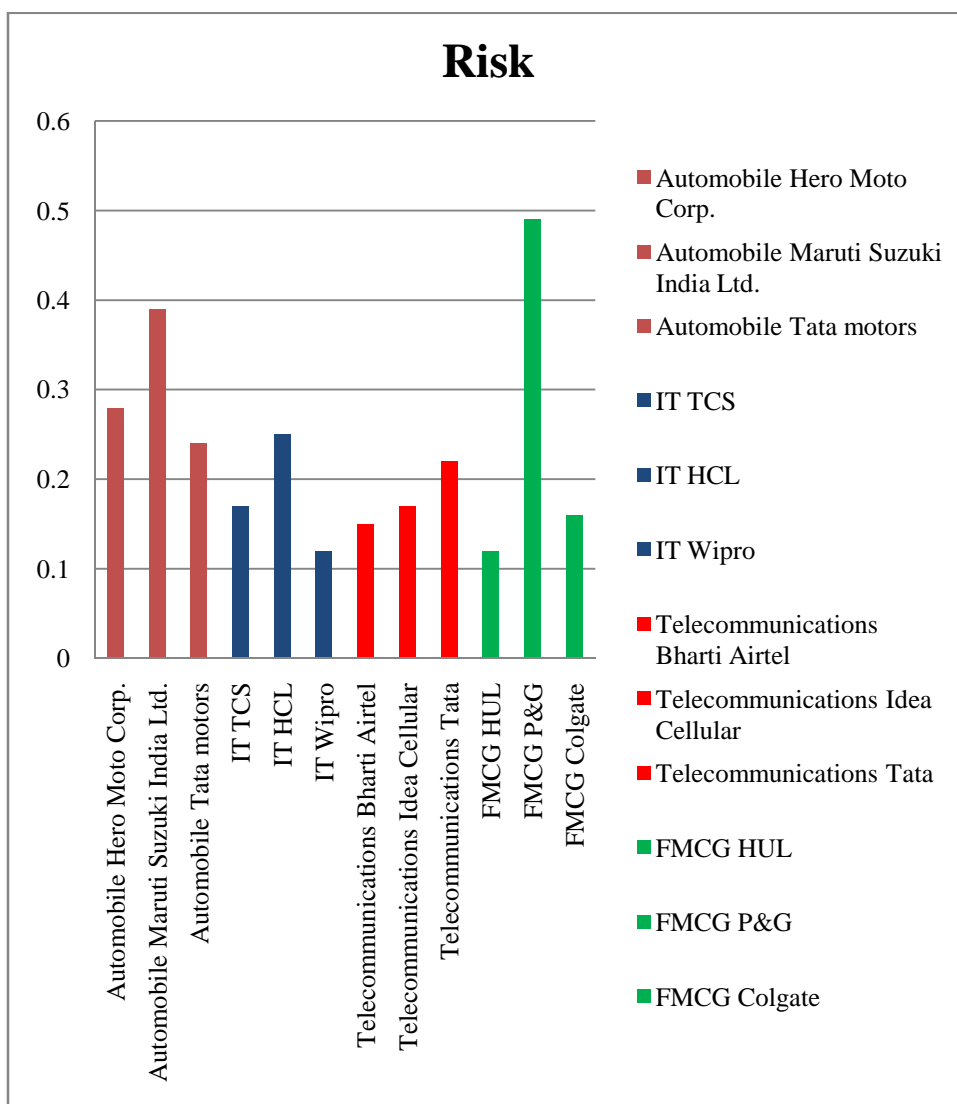


Inference: It can be observed from the graph that Wipro of IT sector is having highest returns and Hero Moto Corp. of the Automobile sector is having the lowest return among all the companies taken for comparison during the period 2011-15.

Risk of all the 4 sectors

Sector	Company Name	Risk
Automobile	Hero Moto Corp.	0.28
	Maruti Suzuki India Ltd.	0.39
	Tata motors	0.24
IT	TCS	0.17
	HCL	0.25
	Wipro	0.12

Telecommunication	Bharti Airtel	0.15
	Idea Cellular	0.17
	Tata Communications	0.22
FMCG	HUL	0.12
	P&G	0.49
	Colgate	0.16



Inference: It can be observed from the graph that Wipro and HUL of IT and FMCG sectors respectively are having a low risk and P&G of the FMCG sector is having substantially a high risk among all the companies taken for comparison during the period 2011-15.

8.0 OBSERVATIONS

1. It has been found that in the Automobile sector, Tata motors is giving high returns which is 0.3 and with a low risk of 0.24.
2. In the IT sector, it has been observed that Wipro is giving high returns and low risk at 0.8 and 0.12 respectively.

3. In the Telecommunication sector, it has been found that Idea cellular is giving high returns with moderate risk at 0.24 and 0.17 respectively.
4. In the FMCG sector, it has been noticed that Procter & Gamble is having high return of 0.33 with a risk of 0.49 whereas Hindustan Unilever is giving a return of 0.31 with low risk of 0.12.
5. It has been found out that among the 4 sectors taken for the study, IT sector is doing exceptionally well compared to the other 3 sectors as per both risk and return.
6. It is also found that in the IT sector, Wipro is the best company which is yielding highest return of 0.8 and the lowest risk of 0.12.

9.0 SUGGESTIONS

Among all the 12 companies which has been analyzed in the study,

1. It has been recommended that IT sector is the best sector to make an investment with regards to risk and return.
2. It has been suggested that, as investors would select investments that are consistent with their risk preferences. Therefore, Wipro is the best company to make an investment by the investor as it is having low risk and high returns.
3. It has been suggested that investors who are willing to take more risk with less returns they can make an investment in Procter & Gamble.

10.0 CONCLUSION

The relationship between risk and return is an essential factor in all human decision making. The risk/return trade-off is the balance between the desire for the lowest possible risk and the highest possible return. Higher risk equals greater possible return. Therefore, expected return on an investment directly depends on its risk. The present study helps in creating awareness among the investor community in choosing the best company as it calculated risk and return of 12 companies. On the whole, the study concludes that Wipro is the best company for the investor for making his/her investment for generating a high return with low risk.

REFERENCES

Books

1. S. Kevin (2006), Security Analysis and Portfolio Management, PH learning PVT limited, New Delhi.
2. Prasanna Chandra (2002), Investment Analysis and Portfolio Management, Tata Graw-Hill publishing company Ltd, New Delhi.
3. Punithavathy Pandian (2001), Security Analysis and Portfolio Management, Vikas Publishers Pvt Ltd, New Delhi.
4. V.K.Bhalla (1982), Investment Management Security Analysis and Portfolio Management, S.Chand and Company, New Delhi. 16th Edition.

Online sources

- www.bseindia.com
- http://shodhganga.inflibnet.ac.in/bitstream/10603/274/9/09_chapter%203.pdf
- www.moneycontrol.com