J. Technol. Manag. Grow. Econ., Vol. 15, No. 1 (2024), pp.41–61

CHITKARA

Journal of Technology Management for Growing Economies

Journal homepage: https://tmg.chitkara.edu.in/

Risk and Return Relationship: A Study of BSE Sensex Stocks in Indian Stock Market

Nitika Sharma[1*], Kshitij Bhargava[2] and Dixit Sunail[3]

[1]*LearnNGrow Pvt. Ltd., Chandigarh, India.*

[2]*ESCP Business School, Paris, France.*

[3]*Sunshine College of Management, Sunshine VIC, Australia.*

[*]nitika56.ps@gmail.com (Corresponding Author)

ARTICLE INFORMATION

Received: 06 September, 2023
Revised: 11 November, 2023
Accepted: 01 February, 2024
Published Online: 10 April, 2024

Keywords:
Bombay stock exchange, Sensex, Risk, Return, Stock market

DOI: 10.15415/jtmge/2024.151005

ABSTRACT

Background: The present study is based on risk and return analysis of BSE Sensex stocks, which is the index of the Bombay Stock Exchange, and is based on the secondary data from the past 5 years. The Sensex index is the Bombay Stock Exchange of India's benchmark that is broadly based on the stock market index of the Indian equity market.

Purpose: The main objective of the study was to investigate the risk and return of the stocks listed in Sensex and create a portfolio that reduces the unsystematic risk through diversification.

Methods: The study used secondary data from the past 5 years to analyze the risk and return of Sensex stocks and to construct a portfolio with reduced unsystematic risk.

Results: In this study it was found that the risk factor in the Sensex index was quite low and returns were quite moderate. Whereas the risk factor in the portfolio was quite low as well, the return-yielding capacity of the portfolio was high. It depends upon the investor's risk appetite whether to invest in the Sensex index or the created portfolio.

Conclusion: The study concludes that while the Sensex index offers low risk and moderate returns, a well-diversified portfolio can yield higher returns with similarly low risk. The choice between investing in the Sensex index or the portfolio depends on the investor's risk tolerance and return preferences.

1. Introduction

Investments in the financial market are primarily influenced by the risk and return analysis of a particular stock. Investors majorly want to avoid risk and maximize return (Bora & Adhikary, 2015). Risk and return are positively correlated; an increase in one is accompanied by an increase in the other. A stock exchange is a marketplace where financial securities issued by companies are bought and sold (Karthika & Karthikeyan, 2011). They are part of the broader capital market ecosystem. Securities issued by companies, such as shares and bonds, are traded on the stock exchanges after they have been issued in the primary market. In India there are two major stock exchanges: BSE – Bombay Stock Exchange and NSE – National Stock Exchange.

The BSE, or the Bombay Stock Exchange, is Asia's first stock exchange. With a trading speed of 6 microseconds, the BSE is the fastest stock exchange in the world (Bhat & Shetty, 2019). The BSE does have some interesting history. BSE contains various indices based on different tools, themes, and strategies.

BSE's index is known by the name Sensex (Sensitive Index), which comprises the top 30 trading stocks registered in the Bombay Stock Exchange. When it comes to investing, risk and return play a key role in the decision-making process of an investor. Risk is the chance of variations in actual return. Return is defined as the gain in the value of an investment. The return on an investment portfolio helps investors to evaluate the financial performance of the investment. An investor in general would like to analyze the risk factors, and a thorough knowledge of the risk helps him to plan his portfolio. In this study we are going to evaluate the performance of stocks included in Sensex so that the investors are able to understand the underlying risk and return associated with stocks listed on BSE and included in Sensex. In our research we will take historical data for the last five years to analyze risk and return, which gives an idea to investors at the time of making an investment. The study intends to address the following objective:

- To analyze the relationship between risk and returns of BSE

ISSN No.: 0976-545X(Print) ISSN No.: 2456-3226(Online); Registration No.: CHAENG/2016/68678

- To compare selected companies BSE Sensex stocks in respect to their risk and return.
- To find the optimal number of stocks for a well-diversified portfolio that reduces unsystematic risk.

2. Review of Literature

Literature on risk and return analysis of stocks has evolved over the years with a focus on studying the relationship it possesses. Sood and Bhushan (2022) studied the risks faced by banks and financial institutions along with the degree of risk faced by banks and financial institutions. The objective of the study was to minimize the risk in banking stocks. Stability of beta and standard deviation were used to analyze the data. Further, Raghavan (2004) examined the risk perceptions and the risk measure parameters. The study analyzed that risk measures are related to the return measurements. The study put forth that risks can only be contained and cannot be eliminated altogether, and returns can be increased or made quicker by taking more financial and operating risks. The environmental risks typically do not increase returns but serve as constraints on return and risk decisions. He concluded that the process of retaining the levels of risks within the desirable levels must be practiced in the daily operations. Sruthi *et al*. (2022) investigated the risk-return trade-off for investing in stocks that have the possibility of greater returns than that of a risk-free asset. The study focused on the trade-off between conditional variance and conditional mean of the stock market return. Covariance, beta, and P/E ratio were used for the analysis. The study concluded that there is a positive relation between risk and return, and this relation does not change even when covariance is applied to returns. Biswas (2007) compared the Indian stock market before and after the liberalization decade and pointed out that though the trading in the post-liberalization era of the country became more focused on the trading of specific sectors, the volatility has remained more or less unchanged. The study reported that the investors are at a higher risk of greater instability. The findings indicated that unless the Indian economy becomes more driven by news rather than noise, the progress of the stock market remains at stake.

Later, Zabiulla (2010) examined the investment performance of twelve selected sector funds from April 2006 to July 2009 using high-frequency data. The study revealed the performance measured in terms of downside and relative risk criteria showing that all the schemes posted poor performance. They concluded that time-tested models alone cannot give a fair view of the fund manager's competence skills in delivering abnormal returns; downside risk measures could definitely augment the performance evaluation framework of managed portfolios. Deb and Misra (2011) investigated that there was an evident proof regarding the instability of the Beta in the short time span, and it was reduced when the Beta estimation time increased. The paper concluded that the extreme Betas show higher stability than the intermediate range of Betas. Arora and Singh (2020) tried to examine the performance of NSE and BSE in India and suggestions to improve their performance. Several studies have compared the services being provided by depositories, to analyze the financial performance of NSE and BSE, and to offer suggestions for improving the performance of NSE and BSE in India. Naik and Padhi (2012) studied the relationship between the Indian stock market index (BSE Sensex) and various macroeconomic variables, such as industrial production index, wholesale price index, money supply, treasury bill rates, and exchange rates, from the time period 1994 to 2011. The analysis reveals that macroeconomic variables and the stock market index are cointegrated, and hence, a long-run equilibrium relationship exists between them. Bora and Adhikary (2015) investigated the risk and return relationship of securities listed in Sensex. They further tested the stability of Beta for 30 companies on the Bombay Stock Exchange. The analysis shows that the actual return that an investor expects from the stock varies from the expected return. So, it becomes essential to analyze the apparent magnitude of risk and return. The study suggests that the stability of Beta is an important aspect in taking investment decisions. The study concludes that the 99% variation in the stocks listed on the Bombay Stock Exchange is spotted through variation in the scrips. Paper suggests that there is a positive relationship between securities and market return. Authors propose that while making investment decisions, investors must select companies that have a positive influence on Sensex.

Prabhu (2018) analyzed the risk and return of the stocks listed in Nifty and studied the market return with the individual return. The study suggested that the stocks are volatile mainly due to the beta values that are less than the market beta. Subramanyam and Kalyan (2018) conducted a study on risk-return analysis of selected securities in India with an objective of providing investors with a basic idea of investing. The analysis was done in terms of mean returns, standard deviation, and coefficient of variation. Companies stock prices on BSE finance and BSE Sensex analyze the effect of fluctuations of stock prices of the Bombay Stock Trade Sensex and Bombay Stock Exchange Finance on the chosen companies of the financial sector.

3. Methodology

In the present study, the risks and returns have been examined by using the daily closing value of BSE Sensex. The risk and return centered on Sensex have been taken into consideration for the measurement of market risk and market return, correspondingly. BSE Sensex characterizes

the foremost market capitalization on BSE. For the present study, the data has been collected from secondary sources.

3.1. Secondary Data

The secondary data of this study has been collected from the official websites of the Bombay Stock Exchange, TradingView, Moneycontrol, and Investopedia.

3.2. Data Analysis

The data collected from different sources was classified and tabulated according to the requirements of the study. The analysis of the present study has been done through appropriate analytical tools. The tools used in the present study for calculating return, risk, and the creation of a portfolio are:

- Return: P/E Ratio, Dividend Yield
- Risk: Relative Strength Index

Risk and return analysis of the Sensex stocks was studied to analyze individual risk and return of the 30 stocks (Moneyworks4me 2021) present in the Sensex index. This was studied with the help of the financial tools that are price earnings ratio, dividend yield, and relative strength index for a better understanding of volatility and the returns.

The data collected was analyzed on the trading and investing stock analysis website TradingView. Companies for the portfolio are selected on the basis of the price-earnings ratio, dividend yield, and relative strength index from the Sensex index, which has 30 stocks. It was narrowed down to 10 stocks, and a portfolio was created of 10 stocks that were selected from different sectors as they had the highest return capability with minimization in risk as calculated with these financial tools to avoid capital loss among all 30 stocks.

4. Results and Discussion

The present investigation was conducted by acknowledging the trends of the stock prices of 5 years (2016-2021). Secondary data was used for the study (BSE 2021; TradingView 2021). The results obtained in the present investigation has been described and discussed under the following headings:

- Part – A. Risk and Return of the Sensex Stocks
- Part – B. Creation of Well-Diversified Portfolio

4.1. Part – A Risk and Return of the Sensex stocks

4.1.1. Return Capability of Sensex Stocks

Table 1 presents the P/E and Dividend Yield of the top 30 stocks of Sensex. P/E and Dividend Yield are the measures by which an investor is able to know about the level of returns in the stocks. P/E and Dividend Yield shows that how much a company pays out in dividend each year relative to its stock price. Table 1 clearly shows us that companies that have higher P/E and low dividend yield are Asian paints, Bajaj Finserv, Bajaj Finance, Nestle India and Titan Company. While the companies that have lower P/E and high dividend yield are Bajaj Auto, ITC Ltd., NTPC and Power Grid Corporation of India.

Table 1: Returns Capability through P/E and Dividend Yield

Sr. No.	Company Name	P/E (%)	Dividend Yield (%)
1	Asian Paints	84.21	0.58
2	Axis Bank	31.52	0
3	Bajaj Auto	19.76	3.64
4	Bajaj Finserv	52.66	0.02
5	Bajaj Finance	83.62	0.16
6	Bharti Airtel	NA	0.36
7	Dr Reddy	46.99	0.46
8	HCL Tech	23.76	0
9	HDFC	23.48	0.93
10	HDFC Bank	24.19	0.45
11	Hindustan Unilever	69.03	1.31
12	ICICI Bank	25.32	0.3
13	Indusind Bank	24.72	0.51
14	Infosys	33.57	1.7
15	ITC Ltd.	18.65	5.06
16	Kotak Mahindra Bank	34.5	0.05
17	Larsen & Toubro	14.66	1.12
18	M&M	46.71	0.62
19	Maruti Suzuki	49.78	1.15
20	Nestle India	80.55	1.1

21	NTPC	8.02	5.19
22	Power Grid Corporation of India	10.11	5.15
23	Reliance Industries	28.32	0.33
24	State Bank of India	16.86	0.93
25	Sun Pharmaceuticals Industries Ltd.	58.26	0.94
26	Tata Steel	19.95	1.88
27	TCS	34.63	1.25
28	Tech Mahindra Ltd.	22.26	1.33
29	Titan company Ltd.	157.17	0.24
30	Ultratech Cement Ltd.	36.96	0.49

4.1.2. Sector Financial Services

Table 2 and Figure 1 show stocks of Financial Services sector and their respective price earnings ratio and dividend yield.

Table 2: Companies in Financial Services Sector

Sr. No.	Company Name	P/E (%)	Dividend Yield (%)
1	Axis Bank	31.52	0
2	Bajaj Finserv	52.66	0.02
3	Bajaj Finance	83.62	0.16
4	HDFC	23.48	0.93
5	HDFC Bank	24.19	0.45
6	ICICI Bank	25.32	0.3
7	Indusind Bank	24.72	0.51
8	Kotak Mahindra Bank	34.5	0.05
9	State Bank of India	16.86	0.93

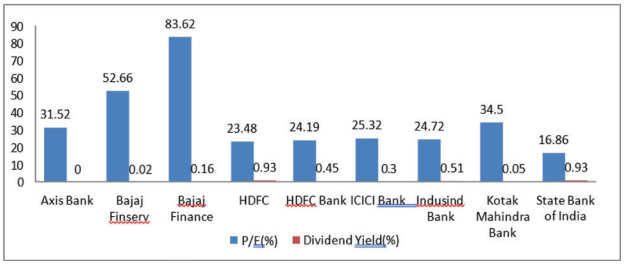

Figure 1: Companies in Financial Services Sector

4.1.3. Sector Information Technology

Table 3 and Figure 2 show stocks of the Information Technology sector and their respective price earnings ratio and dividend yield.

Table 3: Companies in Information Technology Sector

Sr. No.	Company Name	P/E (%)	Dividend Yield (%)
1	HCL Tech	23.76	0
2	Infosys	33.57	1.7
3	TCS	34.63	1.25
4	Tech Mahindra Ltd.	22.26	1.33

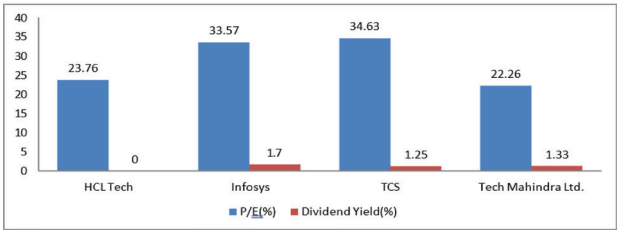

Figure 2: Companies in Information Technology Sector

4.1.4. Sector Pharmaceuticals

Table 4 and Figure 3 show stocks of Pharmaceuticals sector and their respective price earnings ratio and dividend yield.

Table 4: Companies in Pharmaceuticals Sector

Sr. No.	Company Name	P/E (%)	Dividend Yield (%)
1	Dr Reddy	46.99	0.46
2	Sun Pharmaceuticals Industries Ltd.	30.94	0.94

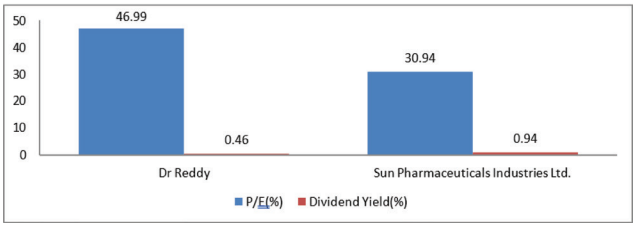

Figure 3: Companies in Pharmaceuticals Sector

4.1.5. Sector Consumer Goods

Table 5 and Figure 4 show stocks of consumer goods sector and their respective price earnings ratio and dividend yield.

Table 5: Companies in Consumer Goods Sector

Sr. No.	Company Name	P/E (%)	Dividend Yield (%)
1	Hindustan Unilever	69.03	1.31
2	ITC	18.65	5.06
3	Nestle India	80.55	1.1

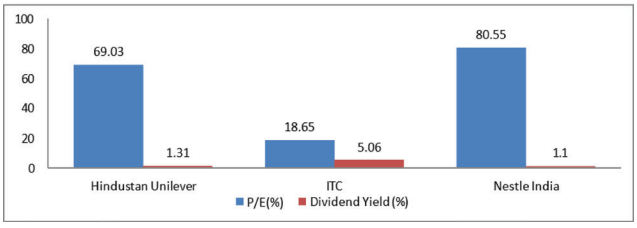

Figure 4: Companies in Consumer Goods Sector

4.1.6. Sector Automobile

Table 6 and Figure 5 show stocks of automobile sector and their respective price earnings ratio and dividend yield.

Table 6: Companies in Automobile Sector

Sr. No.	Company Name	P/E (%)	Dividend Yield (%)
1	Bajaj Auto	19.76	3.64
2	Larsen & Toubro	14.66	1.12
3	M&M	46.71	0.62
4	Maruti Suzuki	49.78	1.15

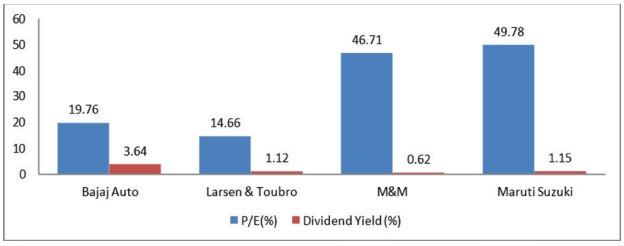

Figure 5: Companies in Automobile Sector

4.1.7. Sector Power and Energy

Table 7 and Figure 6 show stocks of Power and Energy sector and their respective price earnings ratio and dividend yield.

Table 7: Companies in Power and Energy Sector

Sr. No.	Company Name	P/E (%)	Dividend Yield (%)
1	NTPC	8.02	5.19
2	Power Grid Corporation of India	10.11	5.15

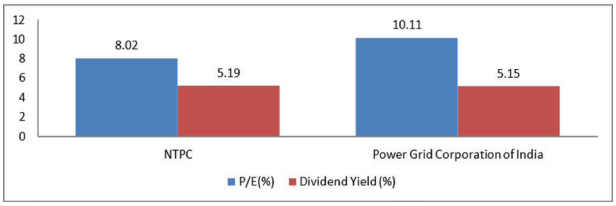

Figure 6: Companies in Power and Energy Sector

4.1.8. Sector Oil and Gas

Table 8 and Figure 7 show stocks of Oil and Gas sector and their respective price earnings ratio and dividend yield.

Table 8: Companies in Oil and Gas Sector

Sr. No.	Company Name	P/E (%)	Dividend Yield (%)
1	Reliance Industries	28.32	0.33

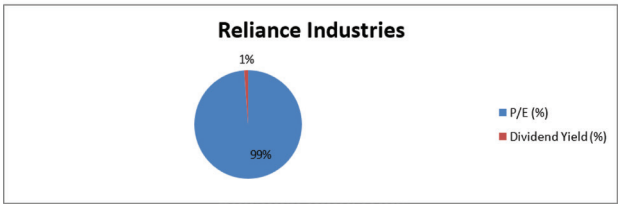

Figure 7: Companies in Oil and Gas Sector

4.1.9. Sector Telecommunication

Table 9 and Figure 8 show stocks of the Telecommunication sector and their respective price earnings ratio and dividend yield.

Table 9: Companies in Telecommunication Sector

Sr. No.	Company Name	P/E (%)	Dividend Yield (%)
1	Bharti Airtel	NA	0.36

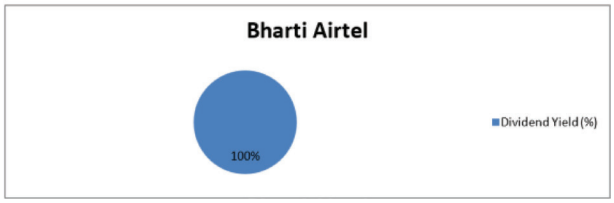

Figure 8: Companies in Telecommunication Sector

4.1.10. Sector Cement

Table 10 and Figure 9 show stocks of Cement sector and their respective price earnings ratio and dividend yield.

Table 10: Companies in Cement Sector

Sr. No.	Company Name	P/E (%)	Dividend Yield (%)
1	Ultratech Cement	36.96	0.49

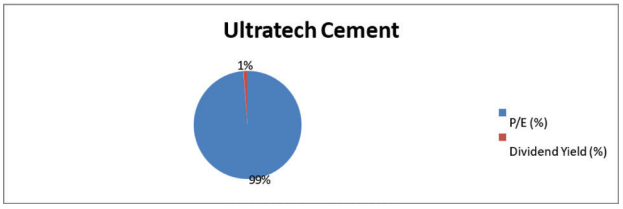

Figure 9: Companies in Cement Sector

4.1.11. Sector Paint

Table 11 and Figure 10 shows stocks of Paint sector and their respective price earnings ratio and dividend yield.

Table 11: Companies in Paint Sector

Sr. No.	Company Name	P/E (%)	Dividend Yield (%)
1	Asian Paints	84.21	0.58

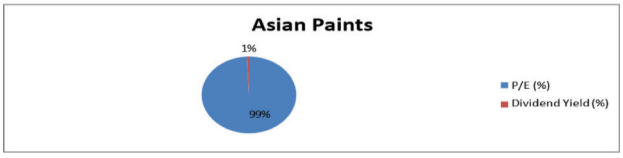

Figure 10: Companies in Paint Sector

4.1.12. Sector Iron and Steel

Table 12 and Figure 11 show stocks of Iron and Steel sector and their respective price earnings ratio and dividend yield.

Table 12: Companies in Iron and Steel Sector

Sr. No.	Company Name	P/E (%)	Dividend Yield (%)
1	Tata Steel	19.95	1.88

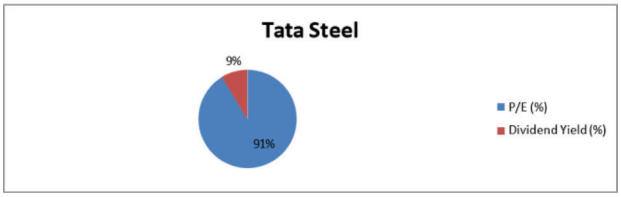

Figure 11: Companies in Iron and Steel Sector

4.1.13. Sector Diamond and Jewellery

Table 13 and Figure 12 show stocks of Diamond and Jewellery sector and their respective price earnings ratio and dividend yield.

Table 13: Companies in Diamond and Jewellery Sector

Sr. No.	Company Name	P/E (%)	Dividend Yield (%)
1	Titan company Ltd.	157.17	0.24

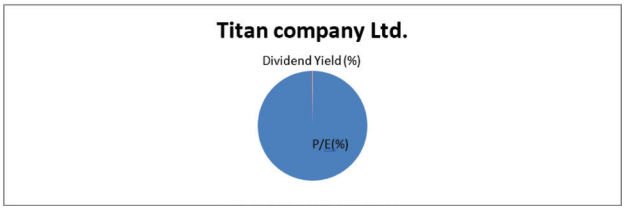

Figure 12: Companies in Diamond and Jewellery Sector

4.1.14. Risk Analysis of Sensex Stocks

Risk is analysed using relative strength index, which shows us the price speed that how fast or slow price of a stock

is moving. It shows us the risk when one can enter or exit market. By using relative strength index we can create a well-diversified portfolio with risk minimization to prevent capital loss and yield maximum returns from the created portfolio.

4.1.15. RSI of Sensex Index

Figure 13 shows relative strength index of sensex stocks.

Figure 13: RSI of Sensex Index

4.1.16. RSI of Asian Paints

Figure 14 shows relative strength index of Asian paints.

Figure 14: RSI of Asian Paints

4.1.17. RSI of Axis Bank

Figure 15 shows relative strength index of Axis Bank.

Figure 15: RSI of Axis Bank

4.1.18. RSI of Bajaj Auto

Figure 16 shows relative strength index of Bajaj Auto.

Figure 16: RSI of Bajaj Auto

4.1.19. RSI of Bajaj Finserv

Figure 17 shows relative strength index of Bajaj Finserv.

Figure 17: RSI of Bajaj Finserv

4.1.20. RSI of Bajaj Finance

Figure 18 shows relative strength index of Bajaj Finance.

Figure 18: RSI of Bajaj Finance

4.1.21. RSI of Bharti Airtel

Figure 19 shows relative strength index of Bharti Airtel.

Figure 19: RSI of Bharti Airtel

4.1.22. RSI of Dr. Reddy

Figure 20 shows relative strength index of Dr. Reddy.

Figure 20: RSI of Dr Reddy

4.1.23. RSI of HCL Tech

Figure 21 shows relative strength index of HCL Tech.

Figure 21: RSI of HCL Tech

4.1.24. RSI of HDFC

Figure 22 shows relative strength index of HDFC.

Figure 22: RSI of HDFC

4.1.25. RSI of HDFC Bank

Figure 23 shows relative strength index of HDFC bank.

Figure 23: RSI of HDFC Bank

4.1.26. RSI of Hindustan Unilever

Figure 24 shows relative strength index of Hindustan Unilever.

Figure 24: RSI of Hindustan Unilever

4.1.27. RSI of ICICI Bank

Figure 25 shows relative strength index of ICICI bank.

Figure 25: RSI of ICICI Bank

4.1.28. RSI of IndusInd Bank

Figure 26 shows relative strength of IndusInd bank.

Figure 26: RSI of IndusInd Bank

4.1.29. RSI of Infosys

Figure 27 shows relative strength index of Infosys.

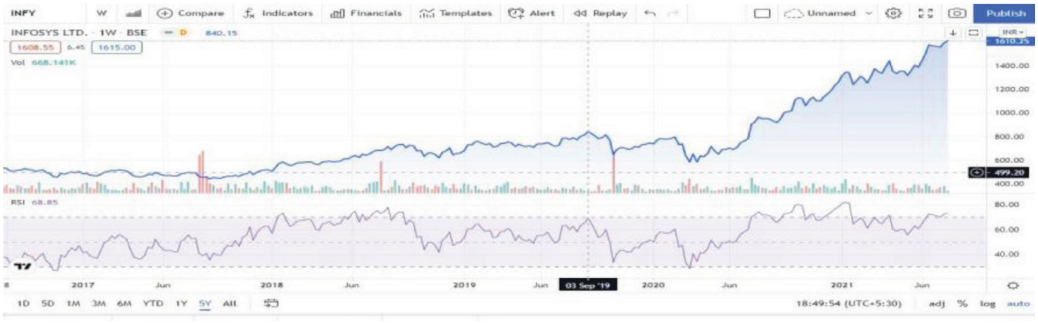

Figure 27: RSI of Infosys

4.1.30. RSI of ITC

Figure 28 shows relative strength index of ITC.

Figure 28: RSI of ITC

4.1.31. RSI of Kotak Mahindra Bank

Figure 29 shows relative strength index of Kotak Mahindra bank.

Figure 29: RSI of Kotak Mahindra Bank

4.1.32. RSI of Larsen and Toubro

Figure 30 shows relative strength index of Larsen and Toubro.

Figure 30: RSI of Larsen & Toubro

4.1.33. RSI of Mahindra and Mahindra

Figure 31 shows relative strength index of Mahindra and Mahindra.

Figure 31: RSI of Mahindra and Mahindra

4.1.34. RSI of Maruti Suzuki

Figure 32 shows relative strength index of Maruti Suzuki.

Figure 32: RSI of Maruti Suzuki

4.1.35. RSI of Nestle India

Figure 33 shows relative strength index of Nestle India.

Figure 33: RSI of Nestle India

4.1.36. RSI of NTPC

Figure 34 shows relative strength index of NTPC.

Figure 34: RSI of NTPC

4.1.37. RSI of Power Grid Corporation of India

Figure 35 shows relative strength index of Power Grid Corporation of India.

Figure 35: RSI of Power Grid Corporation of India

4.1.38. RSI of Reliance Industries Ltd.

Figure 36 shows relative strength index of Reliance Industries Ltd.

Figure 36: RSI of Reliance Industries Ltd.

4.1.39. RSI of State Bank of India

Figure 37 shows relative strength index of State Bank of India.

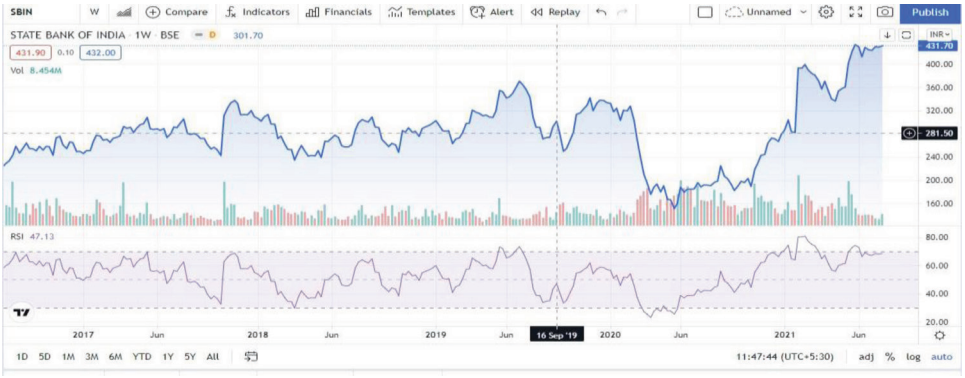

Figure 37: RSI of State Bank of India

4.1.40. RSI of Sun Pharmaceutical Industries Ltd.

Figure 38 shows relative strength index of Sun Pharmaceutical Industries Ltd.

Figure 38: RSI of Sun Pharmaceutical Industries Ltd.

4.1.41. RSI of Tata Steel Ltd.

Figure 39 shows relative strength index of Tata Steel Ltd.

Figure 39: RSI of Tata Steel Ltd.

4.1.42. RSI of TCS

Figure 40 shows relative strength index of TCS.

Figure 40: RSI of TCS

4.1.43. RSI of Tech Mahindra Ltd.

Figure 41 shows relative strength index of Tech Mahindra Ltd.

Figure 41: RSI of Tech Mahindra Ltd.

4.1.44. RSI of Titan Company Ltd.

Figure 42 shows relative strength index of Titan Company Ltd.

Figure 42: RSI of Titan Company Ltd.

4.1.45. RSI of Ultratech Cement Ltd.

Figure 43 shows relative strength index of Ultratech Cement Ltd.

Figure 43: RSI of Ultratech Cement Ltd.

4.1.46. Returns of Sensex Index

Table 14 shows the returns of the Sensex index. Year 2016 shows that the Sensex index has given a negative return in the months of January, February, September, November, and December (-4.77%, -7.51%, -2.06%, -4.57%, and -0.10%), respectively. In the year 2017, the index has given negative returns in the months of June, August, September, and November (-0.72%, -2.41%, -1.41%, and -0.19%, respectively). In the year 2018, the index has given negative returns in the months of February, March, September, October, and December (-4.95%, -3.56%, -6.26%, -4.93%, and -0.35%), respectively. In the year 2019, the index has given negative returns in the months of February, June, July, and August (-1.07%, -0.80%, -4.56%, and -0.40%, respectively). In the year 2020, the index has given negative returns in the months of January, February, March, and September (-1.29%, -5.96%, -23.05%, and -1.45%, respectively). In the year 2021, the index has given negative returns in the months of January and April (-3.07% and -1.47%), respectively.

Table 14: Returns of Sensex Index

Months	2016	2017	2018	2019	2020	2021
January	-4.77%	3.87%	5.60%	0.52%	-1.29%	-3.07%
February	-7.51%	3.93%	-4.95%	-1.07%	-5.96%	6.08%
March	10.17%	3.05%	-3.56%	7.82%	-23.05%	0.83%
April	1.04%	1.01%	6.65%	0.93%	14.42%	-1.47%
May	4.14%	4.10%	0.46%	1.75%	-3.84%	6.47%
June	1.24%	-0.72%	0.29%	-0.80%	7.68%	1.05%
July	3.90%	5.15%	6.16%	-4.56%	7.71%	0.20%
August	1.43%	-2.41%	2.76%	-0.40%	2.72%	1.36%
September	-2.06%	-1.41%	-6.26%	3.57%	-1.45%	-
October	0.23%	6.17%	-4.93%	3.78%	4.06%	-
November	-4.57%	-0.19%	5.09%	1.66%	11.45%	-
December	-0.10	2.74%	-0.35%	1.3%	8.16%	-

4.2. Part – B Creation of Well-Diversified Portfolio

4.2.1. Selection of Stocks

Companies for the portfolio are selected on the basis of the price-earnings ratio, dividend yield, and relative strength index from the Sensex index, which has 30 stocks, and was narrowed down to 10 stocks that had the highest return capability with minimization in risk to avoid capital loss among all 30 stocks.
The QGLP approach is used in the creation of a portfolio:

- Q – Quality: Quality of a business is reflected in its ability to derive superior returns on capital invested while treating stakeholders in a consistently fair way.
- G – Growth: Growth is simply an amplifier. Higher growth adds value for high-return businesses and detracts value for low-return businesses.
- L – Longevity: Longevity risk refers to the chance that life expectancies and actual survival rates exceed expectations or pricing assumptions.
- P – Price: Price of a stock has to be seen in conjunction with the value it

The companies that are selected in the portfolio are analyzed on the QGLP approach. Quality stocks that have the potential for growth and price valuation are less and can sustain for longer periods of time. Risk factor can be reduced by price valuation. The companies selected in the portfolio have minimum risk besides providing high returns.

Table 15: Portfolio of 10 stocks

Sr. No	Sector	Company Name
1.	Financial Services	HDFC Bank
2.	Information Technology	Tech Mahindra
3.	Pharmaceuticals	Sun Pharmaceutical Industries Ltd.
4.	Consumer Goods	ITC Ltd.
5.	Automobile	Bajaj Auto
6.	Power and Energy	Power Grid Corporation of India Ltd.
7.	Oil and Gas	Reliance Industries Ltd.
8.	Cement	Ultratech Cement Ltd.
9.	Paint	Asian Paints
10.	Iron and steel	Tata Steel

4.2.2. Average Returns of the Portfolio

In table 16 we can see the average returns of the stocks have been taken from 10 different sectors, and their average returns of the past 5 years have been taken. The stocks have been assigned with equal weightage and importance to all the stocks in the portfolio.

Table 16: Portfolio Returns

Sr. No	Company Name	Average Returns (%)	Weightage (%)
1.	HDFC Bank	17.9	10
2.	Tech Mahindra	8.1	10
3.	Sun Pharmaceutical Industries Ltd.	7.4	10
4.	ITC Ltd.	7.2	10
5.	Bajaj Auto	3.7	10
6.	Power Grid Corporation of India Ltd.	14.5	10
7.	Reliance Industries Ltd.	5.7	10
8.	Ultratech Cement Ltd.	16	10
9.	Asian Paints	12.4	10
10.	Tata Steel	40.9	10

Average returns of Portfolio: 12.96%

4.2.3. Risk and Return of the Portfolio

On the basis of the returns, we can see the rate of risk that is involved when it comes to investing in a portfolio of Sensex stocks. The interpretations of the above statement are:

- Risk Factor: In table 16 we can see that risk is minimal as stocks selected have not crossed relative strength index below 30 too many times. It means if the investor wants to invest in the portfolio of the 10 stocks of the Sensex index, then he would be encountered with less risk; that means the returns he will get are high. This portfolio is suitable for an investor that does not want to take more risk in consideration of receiving high returns over the years.
- Return Yielding Capacity: Investment in this portfolio will be able to yield high returns as the dividend yield of the selected stocks is higher than its peers. Dividend

yield suggests the returns that can be yielded with respect to risk undertaken, as the risk of the index is high. In table 16 we can see the return of the portfolio (12.96%). In a portfolio, the return is quite high due to lower-risk and growth-capable stocks. This sort of investment in a portfolio of 10 stocks is still suitable for the investors who are looking forward to more returns with minimization in risk.

- Suitability: Investment in the portfolio created from the Sensex index is suitable for an investor who is willing to invest in less risky yet high returnable securities. So for an investor who is looking forward to investing in securities that give him more returns (12.96%) and suit his risk appetite, then he should invest in the portfolio created from the stocks of the Sensex index, as it provides the advantage of diversification also because the investment is divided into 10 different sectors that are growing and contributing enough towards the economy. In this portfolio, the risk is diversified among 10 stocks of the Sensex index that basically increases the return with minimization in the risk factor of investment.

5. Conclusion

The present study is focused on finding the risk and return of BSE Sensex stocks and creating a portfolio of 10 stocks and analyzing its risk and return. The study is based on the performance of stocks in the Sensex index in the past 5 years (2016-2021). The stocks were diversified sector-wise for the selection of stocks in the portfolio creation. The study was entirely based on the secondary data. Data has been analyzed by applying price-earnings ratio, dividend yield, and relative strength index. Further suggestions that have emerged from the present study are proposed.

5.1. Risk and Return of the Sensex Index

The stocks of the Sensex index have been analyzed with the help of price-earnings ratio, dividend yield, and relative strength index. From that, the top 5 stocks that are Asian Paints, HDFC Bank, ITC, Bajaj Auto, Reliance Industries, and Tech Mahindra have RSI above 30; that means the stocks are less risky.

The stocks that have RSI between 70 and 30 were Dr Reddy, HCL Tech, HDFC, ICICI Bank, Power Grid Corporation of India and Sun Pharmaceuticals Ltd., Ultratech Cement, Tata steel that proves they are moderately risky and have aspect of getting overvalued over time.

The stocks were divided on the basis of sector, and the 12 sectors were Financial Services, Information Technology, Pharmaceuticals, Consumer Goods, Automobiles, Power & Energy, Oil and Gas, Telecommunication, Cement, Paint, Iron and Steel, and Diamond and Jewellery.

The returns of the Nifty index for the past 5 years have been positive as well as negative; that is, in the year 2016, returns were negative in the months of January, February, September, November, and December. In the year 2017, the index has given negative returns in the months of June, August, September, and November. . In the year 2018, the index has given negative returns in the months of February, March, September, October, and December. In the year 2019, the index has given negative returns in the months of February, June, July, and August. . In the year 2020, the index has given negative returns in the months of January, February, March, and September. In the year 2021, the index has given negative returns in the months of January and April. It is evident that in these months there was high volatility in these means.

Investment in an index is suitable for those investors who are looking for less risk and consistent returns, which means the investor is risk-averse and is not comfortable with high risk.

5.2. Risk and Return of the Portfolio

The portfolio was created of 10 stocks selected from 30 stocks of the Sensex index on the basis of sectors that are the highest contributors in the economy on the basis of their respective price-earnings ratio and dividend yield.

In the financial services sector, HDFC Bank was selected; from the information technology sector, Tech Mahindra was selected; from the pharmaceuticals sector, Sun Pharmaceutical was selected; from the consumer goods sector, ITC was selected; from the automobile sector, Bajaj Auto was selected; from the power and energy sector, Power Grid Corporation of India was selected; from the oil and gas sector, Reliance Industries was selected; from the cement sector, Ultratech Cement was selected; from the paint sector, Asian Paints was selected; from the iron and steel sector, Tata Steel was selected, as they had both value as well as growth capacity among their peers.

Equal weightage of 10.00% was given to all the stocks in the portfolio, as equal importance was given to all the stocks.

This portfolio is suitable for an investor who is ready to undertake risks in place of receiving some returns, as the risk in the portfolio was very low, but the return was 12.96 percent of the portfolio. If compared to the Nifty index, it is quite high and safe because of its risk minimization factor.

Both the investments are suitable for the investors, but selection depends on the risk appetites of the investors, whether they are risk averse or are ready to take challenges.

The present study made an attempt to analyze the risk and return of Sensex stocks and create a portfolio of the 10 stocks selected from the index. The returns were analyzed on the basis of price-earning ratio and dividend yield. Firstly, it was found that the Sensex index had low risk and provided consistent returns to the investors over a period of time. Whereas on the other hand, the portfolio that was created of 10 stocks taken from the Sensex index provided that the risk was even less of this portfolio compared to the other one but the return-yielding capacity of the portfolio was also quite high compared to the Sensex index. The selection of the right portfolio or investment depends on the investor and his risk appetite. Before selecting an investment, an investor must analyze it well and take into consideration that if it fits in his risk window.

6. Future Research Directions

The overall findings show that the type of investment that is to be done by the investor depends on his risk-taking capability and capacity. As both the portfolios of 30 stocks as well as 10 stocks provided returns to the investors, the risk and return varied between both the investment strategies. The investor must keep in mind his risk-taking capacity and only then must select the type of investment he wants to select.

Investors, before taking this crucial decision of investment, must keep in mind that the risk appetite as well as he must take some guidance from individuals that are more aware about the market and its volatility because then in place of earning large amounts of returns, the investor might encounter a higher degree of losses even though the portfolio created has taken consideration of less risky stocks.

Acknowledgements

The authors declare that there are no acknowledgements for this research paper.

Authorship Contribution

The authors confirm contribution to the paper as follows: study conception and design: Nitika Sharma; data collection: Nitika Sharma and Dixit Sunail; analysis and interpretation of results: Nitika Sharma and Kshitij Bhargava; draft manuscript preparation: Nitika Sharma, Kshitij Bhargava & Dixit Sunail. All authors reviewed the results and approved the final version of the manuscript.

Funding

The authors received no external funding to conduct this study.

Declaration

Authors hereby declare that this research paper is an original work conducted by the authors. All sources and references have been properly acknowledged, and the work has not been submitted or published elsewhere.

Conflict of Interest

The authors declare that they have no conflict of interest regarding the publication of this paper. No financial, personal, or professional relationships have influenced the outcomes of this research.

References

Arora, N., & Singh, B. (2020). The long-run performance of SME IPOs in India: empirical evidence from Indian stock market. *Journal of Asia Business Studies*, *15*(1), 88-109. https://doi.org/10.1108/jabs-10-2019-0305/

Bhat, M. S., & Shetty, M. S. R. (2019). A study on risk and return analysis of equity shares with special reference to stocks of bse sensex index. *IJRAR-International Journal of Research and Analytical Reviews (IJRAR)*, *6*(2), 581-587. http://ijrar.org/viewfull.php?&p_id=IJRAR19K5830

Biswas, J. (2007). Financial liberalisation and stock market behaviour: experiences of India and select Asian countries (Doctoral dissertation, University of North Bengal). https://ir.nbu.ac.in/server/api/core/bitstreams/e222ad6f-018e-4164-9b04-fefccfea826b/content

Bora, B., & Adhikary, A. (2015). Risk and Return Relationship-An Empirical Study of BSE Sensex Companies in India. *Universal Journal of Accounting and Finance*, *3*(2), 45-51. https://doi.org/10.13189/ujaf.2015.030203

BSE Market (2021). *Bombay Stock Exchange*. https://www.bseindia.com/sensex/code/16/

Deb, S. G., & Misra, S. (2011). Are Equity Betas Stable? Evidence from Indian Equity Market. *The IUP Journal of Applied Finance*, *17*(4).

Karthika, D. P., & Karthikeyan, P. (2011). A Study on Comparative Analysis of Risk and Return with reference to Selected stocks of BSE Sensex index, India. *The International Journal's Research Journal of*

Social Science and Research, *1*(04). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2942593

Moneyworks4Me. (2021). *Top BSE 30 companies*. Moneyworks4Me. https://www.moneyworks4me.com/best-index/bse-stocks/top-bse30-companies-list/

Naik, P. K., & Padhi, P. (2012). The impact of macroeconomic fundamentals on stock prices revisited: An evidence from Indian data. https://mpra.ub.uni-muenchen.de/38980/

Prabhu, R. N. (2018). Risk & return analysis of nifty stock in Indian capital market. *Risk*, *5*(3). https://www.researchgate.net/profile/Ruchi-Prabhu/publication/335526293_Risk_return_analysis_of_nifty_stock_in_Indian_capital_market/links/5d6ab32192851c8538837a9e/Risk-return-analysis-of-nifty-stock-in-Indian-capital-market.pdf

Raghavan, K. R. (2004). *The effects of stock repurchases on long-term operating performance in banking firms: An empirical study*. Cleveland State University. https://www.proquest.com/dissertations-theses/effects-stock-repurchases-on-long-term-operating/docview/305104979/se-2

Sood, P., & Bhushan, P. (2022). Factors impacting banking frauds in India: a conceptual framework. *International Journal of Business and Globalisation*, *31*(4), 500-519. https://doi.org/10.1504/IJBG.2022.127129

Sruthi, S., Fernandez, C. J., Vani, G., Rao, K. S., Abirami, M., & Reddy, K. S. (2022) Recent Advances in Commerce & Management, *4*. https://doi.org/10.25215/9394727316

Subramanyam, P., & Kalyan, N. B. (2018). A study of risk and return analysis of selected securities in India. *International journal of engineering technologies and management research, 5*(4), 79-86. https://doi.org/10.29121/ijetmr.v5.i4.2018.211

TradingView. (2021). *Sensex*. TradingView. https://in.tradingview.com/symbols/BSE-SENSEX/components/

Zabiulla. (2010). Measuring Risk - Adjusted Mutual Fund Performance: A Study of Select Sector Funds In India. *Prerana - Journal of Management Thought and Practice*, *2*(1), 21-34.

CHITKARA

Journal of Technology Management for Growing Economies

Chitkara University, Saraswati Kendra, SCO 160-161, Sector 9-C, Chandigarh, 160009, India

Volume 15, Issue 1 **April 2024** **ISSN 2456-3226**