Risk Return Analysis of the top Pharmaceutical Industries

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Abstract

This study analyzes the risk-return characteristics of the pharmaceutical industry, using data from NSE Finance Index and Moneycontrol.com. It focuses on five selected pharmaceutical companies over a decade, aiming to provide investors with a comprehensive understanding of their risk-return profile. The analysis uses financial ratios like ROI, ROE, and Beta to assess the unique risks and opportunities faced by pharmaceutical companies in the financial services sector. The study employs regression equations and average returns to determine the level of risk associated with each company and identify those with the highest returns. The anticipated outcome is valuable insights for investors seeking to maximize returns while effectively managing risks.

The ranking of sample pharmaceutical companies based on their returns will help identify companies with strong performance and potential for future success. This research contributes to existing literature on risk-return analysis in the pharmaceutical industry, providing useful information to investors, financial analysts, and stakeholders. By enhancing understanding of the risk and return characteristics of pharmaceutical companies, it supports stakeholders in making informed investment decisions in this sector.

Keywords: Risk-return Analysis, ROI, ROE, Pharmaceutical Companies, Stakeholders and Financial analysts.

Introduction

The pharmaceutical industry is crucial in healthcare, focusing on developing and manufacturing drugs that improve and save lives. **Perikala, n., & reddy, n.r. (2019)** Understanding the risk and return characteristics of pharmaceutical companies is essential for making informed investment decisions. This study aims to conduct a comprehensive risk-return analysis of selected companies, including Sun Pharmaceutical Industries Ltd., Divis Laboratories Ltd., Dr. Reddys

Laboratories Ltd., Cipla Ltd., and Apollo Hospitals Enterprise Ltd. The analysis will provide a holistic understanding of the companies' financial health and performance, allowing investors to assess potential rewards and risks associated with investing in them.

Kumar, V.L., & Jyothi, S.A. (2022) The study will use quantitative analysis, financial modeling, and statistical techniques to gather relevant financial data from reputable sources and employ established risk and return metrics to assess risk exposure and measure return efficiency. This will help identify companies that have delivered superior returns relative to the market and those that have lagged behind. This analysis will provide valuable insights for investors, financial analysts, and stakeholders in the pharmaceutical sector, enabling them to make informed investment decisions and develop strategies to optimize risk-adjusted returns.

Objectives of the study

To analyze the risk and return of chosen pharmaceutical companies covered by the NSE Finance Index.

To compare the performance and rank based on the returns yield of the selected companies with market returns for 10 financial years from 2013 to 2023.

Scope of the study

The analysis will focus on calculating the risk-return profile of these companies to identify which ones have provided the maximum returns. By analyzing financial ratios such as ROI, ROE, and Beta, investors can understand the calculation of risk-return for investing in any firm. The study will rank the sample companies' stock based on the returns yielded, helping to identify the companies that have delivered the highest returns and can potentially continue to do so in the future. Overall, the study will contribute to existing literature on risk-return analysis in the pharmaceutical industry and benefit investors, financial analysts, and other stakeholders interested in this sector.

Literature Review

Dolgaia, A.A., & Sorokina, V.V. (2023) This research aims to find out the peculiarities of information technology (IT) companies as an object of investment attractiveness assessment, and present and apply alternative approaches to the evaluation of the investment attractiveness of these companies based on internal and external factors. The paper examines the peculiarities of IT companies, their activities' results, and existing methods for evaluating investment attractiveness. Data was obtained from the analysis of external and internal factors of the

investment attractiveness of Yandex for the period from 2019 to 2022. The key conclusion is that to make investment decisions, a comprehensive assessment is required, including considering external and internal factors.

Agung, D., & Widodo, H. (2023)

This study aims to analyze the effect of the ex-date dividend on the market reaction. It used a descriptive method to select 6 companies in the manufacturing sector for 5 periods 2016-2020. The data analysis method used was the paired sample test for abnormal returns and the Wilcoxon signed rank test on trading volume activity. The results showed that there was a difference between before and after the ex-date dividend, with the Wilcoxon signed rank test showing a difference between before and after the dividend.

Kumar, V.L., & Jyothi, S.A. (2022)

This paper aims to evaluate the long-term performance of selected equity stocks of the Pharma industry on a long-term basis. It uses tools such as standard deviation, Beta and Average returns to calculate the risk and return of selected Pharma stocks. The Pharma Sector is important in the Indian Economy, and stock markets play a major role in the up-liftment of the Indian Economy. This paper evaluates the long-term performance of the Pharma industry by evaluating selected Pharma stocks on the basis of statistical tools. The time period for evaluation is 5 years.

Rahman, H., & Hussain, S. (2022)

This study aims to empirically explore the proper volatility models of five pharmaceutical companies listed in the DSE, Bangladesh. The data covers 667 days daily log returns calculated based on closing prices of these five companies from 28th January 2019 to 30th December 2021. Based on model selection criteria AIC, SBIC, Log-Likelihood, and residual diagnostics, GARCH(1,1) is considered to be more appropriate models for both Square Pharmaceuticals Ltd., and Beacon Pharmaceuticals Ltd., EGARCH(1,1) is best for both IBN SINA and Orion Pharmaceuticals Ltd., and any of the GARCH(1,1), and TGARCH(1,) can be applied for the volatility estimation of Beximco Pharmaceuticals Ltd.

Hidayana, R.A., Napitupulu, H., & Sukono, S. (2022)

This paper aims to predict the return and risk of stock asymmetry using a time series model approach. It is based on the Autoregressive Integrated Moving Average-Glosten Jagannatan Runkle-Generalized Autoregressive Conditional Heteroscedasticity (ARIMA-GJR-GARCH) model and the Value-at-Risk (VaR) model. The data analyzed are the best ten stocks according to

the criteria that apply on the IDX, the period between 17 December 2018 to 14 December 2021. The analysis results show that of the best ten stocks, those with relatively better performance are PTBA, TLKM, UNVR and BBCA stocks. Based on the results of this analysis, it can be used as a reference in making investment decisions for investors, specifically investing in the ten stocks analyzed.

Chandavar, V., Gadade, K., & Patil, S. (2022)

Portfolio construction is the process of choosing securities with the lowest risk in order to get the highest returns. This study aims to formulate portfolios based on assessment of volatility. Data from S&P BSE listed 30 companies was collected from secondary sources and all 30 companies were divided into three portfolios. The hypothesis was tested and Sharpe's, Treynor's and Jensen's Performance Measure were calculated and Portfolio's were ranked. It was concluded that when volatility 0.5, there is no significant impact of volatility on portfolio performance, whereas the portfolio with volatility more than one has reported significant impact of volatility on its performance.

Robbyah, & et al. (2021)

This study aims to determine the risk and return on investment in insurance companies and analyze the effect of macroeconomic variables on the level of risk and return on investment. The sampling technique used was purposive sampling. Data analysis showed that Asuransi Jasa Tania Tbk has the highest level of conclusion, 22.3%, and Asuransi Harta Aman Pratama Tbk. has the lowest rate of -3.3%. For three years, the value of Gross Domestic Product has increased successively, causing a stock return proportional to the level of risk. Changes in the inflation rate up and down for three consecutive years have a different effect every year, where when the inflation rate decreases, the rate of return on investment will be high. Additionally, the interest rate decreased from 4.75% in 2016 to 4.25% in 2017, then increased to 6.00% in 2018. The Rupiah exchange rate against the dollar is getting weaker, indicating an increase in the exchange rate. When the rupiah exchange rate weakens, people will choose to invest in foreign currencies because the value of these foreign currencies can determine the size of the risk.

Siagian, A.O., et al. (2021)

This research aims to determine the influence of Current Ratio (CR), Debt to Asset Ratio (DAR), and Return on Equity (ROE) on Stock Price of pharmaceutical companies listed on the Indonesia Stock Exchange (IDX) 2016-2019 period. Data was taken from the IDX website and analysis

prerequisite tests included normality test, multicollinearity, heteroscedasticity, and autocorrelation. Statistical results showed that current ratio (X1) and return on equity (X3) partially have a positive and significant effect on stock prices (Y). Debt to asset ratio (X2) partially does not have a significant effect on stock prices (Y). Simultaneously current ratio (X1), debt to asset ratio (X2), and return on equity (X3) have a positive and significant effect on stock prices (Y).

Sureshkumar, V., & Balasubramanian, P. (2021)

This study aims to determine the effect of risk profile variables measured by the Non-Performing Loan (NPL) and Loan to Deposit Ratio (LDR), variable earnings as measured by Return On Assets (ROA) and Cost Operational and Operating Income (BOPO) as well as the measured capital variables with Capital Adequacy Ratio (CAR) on profit growth. The population in the study includes 8 banking companies listed on the Indonesia Stock Exchange 2013-2017. Data was derived from financial statements obtained from Bank Indonesia (BI) which may be accessed through www.bi.go.id and www.idx.co.id. Data analysis used multiple linear regressions. The result of the research showed that there are variables that have positive effect to return of stock, CAR variable, ROE, and BOPO variable, while variable ROA andLDR have no effect on profit growth, and NPL has negative effect to Return of stock. Ability variable independent in explaining the variation of the dependent variable equal to 57.6%, whereas the remaining 41.5% is explained by other independent variables outside the model research.

Data analysis

The study aims to analyze the risk and return of five selected pharmaceutical companies using data collected from two sources, namely, NSE and Moneycontrol.com. The data collection tool includes stock market data of the decade for these companies. The study employs several analysis tools, namely, Regression equation, and average returns. The primary goal of the study is to determine which of the five selected pharmaceutical companies provide more returns, and the level of risk associated with each company.

The data analysis is made with the help of the data from the NSB website of the selected companies (Sun Pharmaceutical Industries Ltd, Divis Laboratories Ltd, Dr. Reddy's Laboratories Ltd, Cipla Ltd, Apollo Hospitals Enterprise Ltd) and for 10 financial years from 2013-2014 to 2022-2023. The opening stock of the company is considered as 1st April and the closing date is 31st of March.

List of companies

Sun Pharmaceutical Industries Ltd,

Divis Laboratories Ltd,

Dr. Reddy's Laboratories Ltd,

Cipla Ltd,

Apollo Hospitals Enterprise Ltd.

Table 1

NSB market return value

NSB NIFTY 50			
Years	**1st Apr**	**31st Mar**	**Returns**
2013-2014	5,704.40	6,704.20	17.527
2014-2015	6,721.05	8,491.00	26.334
2015-2016	8,586.25	7,738.40	-9.875
2016-2017	7,713.05	9,173.75	18.938
2017-2018	9,237.85	10,113.70	9.481
2018-2019	10,211.80	11,570.00	13.300

2019-2020	11,669.15	8,597.75	-26.321
2020-2021	8,253.80	14,690.70	77.987
2021-2022	14,867.35	17,464.75	17.470
2022-2023	17,670.45	17,464.75	-1.164

Calculation of Return Percentage

Return = ((Closing price- Beginning Price)/Beginning Price)*100

2013-2014 = ((6,704.20 - 5,704.40)/5,704.40) * 100 = 17.527

2014-2015 = ((8,491.00 - 6,721.05)/6,721.05) * 100 = 26.334

Table 2

Stock value of Sun Pharmaceutical Industries Ltd.

Sun Pharmaceutical Industries Ltd.			
Years	**1st Apr**	**31st Mar**	**Returns**
2013-2014	818.950	563.200	-31.229
2014-2015	574.750	1010.800	75.868
2015-2016	1023.900	811.700	-20.725
2016-2017	820.000	687.050	-16.213
2017-2018	688.150	505.100	-26.600
2018-2019	495.100	475.450	-3.969
2019-2020	478.850	332.700	-30.521
2020-2021	352.300	595.700	69.089
2021-2022	597.350	920.600	54.114
2022-2023	914.750	991.900	8.434

Calculation of Return Percentage

Return = ((Closing price- Beginning Price)/Beginning Price)*100

2013-2014 = ((563.200 - 818.950)/818.950) * 100 = -31.229

2014-2015 = ((1010.80 - 574.750)/574.750) * 100 = 75.868

The table below shows the financial performance of Sun Pharmaceutical Industries Ltd. over a period of ten years. The column "Returns" indicates the percentage change in the stock price of Sun Pharmaceutical Industries Ltd. during each fiscal year, with positive values indicating an increase in stock price, while negative values indicate a decrease.

The mean value of the returns is calculated to be 7.825%, and the standard deviation is 42.47729023%, indicating that the stock returns of Sun Pharmaceutical Industries Ltd. have experienced significant variability over the ten-year period. It is important to consider these factors when assessing the risk and potential return associated with investing in Sun Pharmaceutical Industries Ltd.

Table 3

Calculation of Beta value of Sun Pharmaceutical Industries Ltd.

Market Value and Sun Pharmaceutical Industries Ltd					
Years	**X**	**Y**	**X^2**	**Y^2**	**XY**
2013-2014	17.527	-31.229	307.189	975.251	-547.345
2014-2015	26.334	75.868	693.502	5755.918	1997.934
2015-2016	-9.875	-20.725	97.506	429.512	204.646
2016-2017	18.938	-16.213	358.649	262.875	-307.050
2017-2018	9.481	-26.600	89.891	707.576	-252.200
2018-2019	13.300	-3.969	176.898	15.752	-52.787

2019-2020	-26.321	-30.521	692.778	931.534	803.335
2020-2021	77.987	69.089	6081.989	4773.268	5388.039
2021-2022	17.470	54.114	305.218	2928.325	945.399
2022-2023	-1.164	8.434	1.355	71.132	-9.818
TOTAL	143.679	78.247	8804.977	16851.145	8170.152

Calculation for the regression coefficient (Beta)

$\beta = ((n\sum XY-((\sum X)(\sum Y)) / (n\sum X^2 – (\sum X)^2)$

$=((10(8170)) – (143.67x78))/((10x8805) -- (143^2))$

$=(81700 –11154)/(88040 – 20449)$

$= 70546/67591$

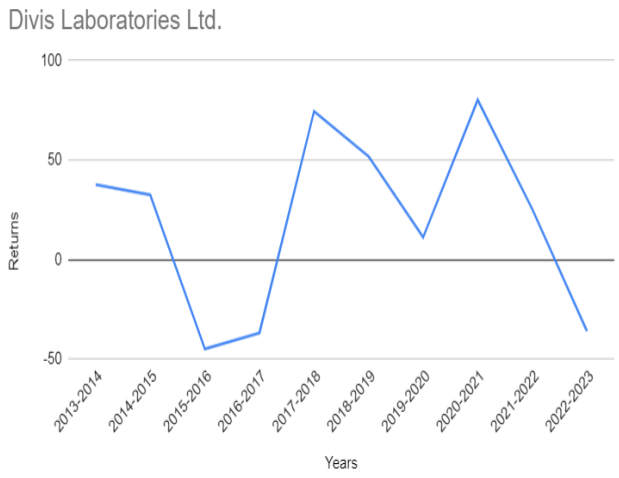
$\beta = 1.043$

Therefore, for Sun Pharmaceutical Industries Ltd., the calculated Beta value of 1.675 suggests that the stock is relatively more volatile than the market. Investors should consider this level of volatility when assessing the risk and potential returns associated with investing in this company.

Table 4

Stock value of Divis Laboratories Ltd.

Divis Laboratories Ltd.			
Years	**1st Apr**	**31st Mar**	**Returns**
2013-2014	987.500	1359.500	37.671
2014-2015	1365.900	1810.050	32.517
2015-2016	1785.450	982.250	-44.986
2016-2017	987.250	622.950	-36.900
2017-2018	623.850	1087.650	74.345



2018-2019	1090.200	1654.550	51.766
2019-2020	1703.100	1893.900	11.203
2020-2021	1989.050	3584.250	80.199
2021-2022	3622.800	4538.600	25.279
2022-2023	4402.050	2820.250	-35.933

Calculation of Return Percentage

Return = ((Closing price- Beginning Price)/Beginning Price)*100

2013-2014 = ((1359.500 - 987.500)/987.500) * 100 = 37.671

2014-2015 = ((1810.050 - 1365.90)/1365.90) * 100 = 32.517

The table represents the financial performance of Divis Laboratories Ltd. over a period of ten years. The column "Returns" indicates the percentage change in the stock price of Divis Laboratories Ltd. during each fiscal year. The Trend of Returns suggests that the stock price experienced fluctuations over the observed period. The mean value of the returns is 19.516%, which is the average annual return of the company's stock during the period under consideration. The standard deviation is 45.64056315%, which highlights the volatility in the company's stock performance. It is important to consider these factors when assessing the risk and potential return associated with investing in Divis Laboratories Ltd.

Table 5

Calculation of Beta value of Divis Laboratories Ltd.

Market Value and Divis Laboratories Ltd.					
Years	**X**	**Y**	**X^2**	**Y^2**	**XY**
2013-2014	17.527	37.671	307.189	1419.096	660.251
2014-2015	26.334	32.517	693.502	1057.357	856.317

2015-2016	-9.875	-44.986	97.506	2023.727	444.213
2016-2017	18.938	-36.900	358.649	1361.646	-698.823
2017-2018	9.481	74.345	89.891	5527.148	704.871
2018-2019	13.300	51.766	176.898	2679.691	688.500
2019-2020	-26.321	11.203	692.778	125.509	-294.873
2020-2021	77.987	80.199	6081.989	6431.894	6254.495
2021-2022	17.470	25.279	305.218	639.017	441.633
2022-2023	-1.164	-35.933	1.355	1291.199	41.830
TOTAL	143.679	195.160	8804.977	22556.284	9098.414

Calculation for the regression coefficient (Beta)

$\beta = ((n\sum XY-((\sum X)(\sum Y)) / (n\sum X^2 – (\sum X)^2)$

$=((10(9098)) – (143x195))/((10x8805) -- (143^2))$

$=(90980 –27885)/(88040 – 20449)$

$=63095 /67591$

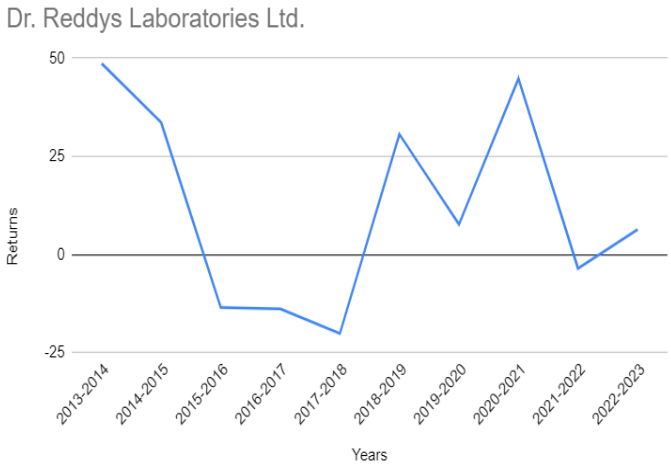
$\beta = 0.933$

Divis Laboratories Ltd.'s stock returns have a moderate positive correlation with the overall market, with a beta value of 0.933. This indicates that the stock tends to move in the same

direction as the market, but with less volatility. This suggests that the stock tends to move in the same direction as the market, but with less volatility.

Table 6 Stock value of Dr. Reddy's Laboratories Ltd.

Dr. Reddy's Laboratories Ltd.			
Years	**1st Apr**	**31st Mar**	**Returns**
2013-2014	1766.500	2625.800	48.644
2014-2015	2563.900	3425.300	33.597
2015-2016	3488.750	3015.650	-13.561
2016-2017	3035.200	2613.250	-13.902
2017-2018	2632.350	2102.450	-20.130
2018-2019	2080.550	2717.200	30.600
2019-2020	2780.250	2994.250	7.697
2020-2021	3120.750	4518.200	44.779
2021-2022	4516.000	4354.400	-3.578
2022-2023	4295.450	4567.800	6.340



Calculation of Return Percentage

Return = ((Closing price- Beginning Price)/Beginning Price)*100

2013-2014 = ((2625.800 - 1766.500)/1766.500) * 100 = 48.644

2014-2015 = ((3425.300 - 2563.900)/2563.90) * 100 = 33.597

The table represents the financial performance of Dr. Reddy's Laboratories Ltd. over a period of ten years. The column "Returns" indicates the percentage change in the stock price of Dr. Reddy's Laboratories Ltd. during each fiscal year. The Trend of Returns shows both positive and negative values across different years. The mean value of the returns is 12.049%, and the standard deviation is 25.55931611%. Overall, the table suggests that Dr. Reddy's Laboratories Ltd. has experienced fluctuations in stock price over the years, with both positive and negative returns. The mean return indicates a moderate average annual return, while the standard deviation highlights the volatility in the company's stock performance. It is important to consider

these factors when assessing the risk and potential return associated with investing in Dr. Reddy's Laboratories Ltd.

Table7

Calculation of Beta value of Dr. Reddy's Laboratories Ltd.

Market Value and Dr. Reddy's Laboratories Ltd.					
Years	**X**	**Y**	**X^2**	**Y^2**	**XY**
2013-2014	17.527	48.644	307.189	2366.259	852.578
2014-2015	26.334	33.597	693.502	1128.775	884.764
2015-2016	-9.875	-13.561	97.506	183.893	133.906
2016-2017	18.938	-13.902	358.649	193.262	-263.274
2017-2018	9.481	-20.130	89.891	405.229	-190.857
2018-2019	13.300	30.600	176.898	936.365	406.990
2019-2020	-26.321	7.697	692.778	59.246	-202.594
2020-2021	77.987	44.779	6081.989	2005.186	3492.208
2021-2022	17.470	-3.578	305.218	12.805	-62.516
2022-2023	-1.164	6.340	1.355	40.201	-7.381

TOTAL	143.67 9	120.48 7	8804.97 7	7331.22 2	5043.82 4

Calculation for the regression coefficient (Beta)

$\beta = ((n\sum XY-((\sum X)\ (\sum Y)) / (n\sum X^2 – (\sum X)^2)$

$= ((10(5044)) – (143x120))/((10x8805) -- (143^2))$

$= (50440 –17160)/(88040 – 20449)$

$= 33280/67591$

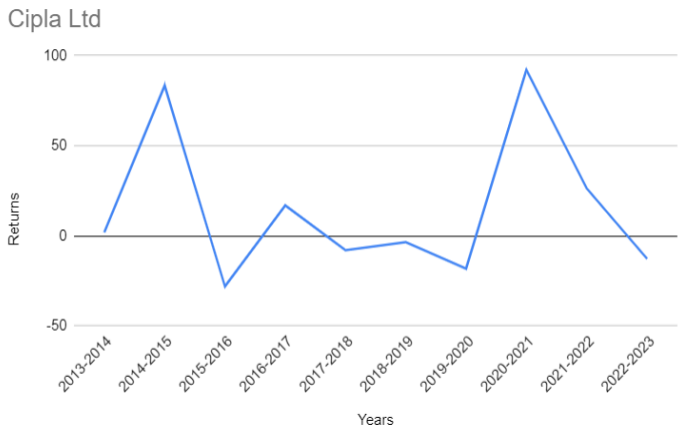
$\beta = 0.491$

The regression coefficient (Beta) of 0.491 indicates the sensitivity of the company's stock returns (Y) to the overall market returns (X). A Beta value less than 1 suggests that the stock is less volatile than the market. Other factors, such as company-specific risks and market conditions, should also be considered when evaluating investment decisions.

Table 8

Stock value of Cipla Ltd.

Cipla Ltd.			
Years	**1st Apr**	**31st Mar**	**Returns**
2013-2014	379.750	386.950	1.896
2014-2015	382.800	702.200	83.438



2015-2016	712.450	512.350	-28.086
2016-2017	511.950	598.350	16.877
2017-2018	592.950	545.050	-8.078
2018-2019	545.450	525.600	-3.639
2019-2020	528.900	431.750	-18.368
2020-2021	422.850	812.200	92.078
2021-2022	815.100	1028.950	26.236
2022-2023	1018.050	887.700	-12.804

Calculation of Return Percentage

Return = ((Closing price- Beginning Price)/Beginning Price)*100

2013-2014 = ((386.950 - 379.750)/379.750) * 100 = 1.896

2014-2015 = ((702.200 - 382.800)/382.800) * 100 = 83.438

The table below shows the financial performance of Cipla Ltd. over a period of ten years. The column "Returns" indicates the percentage change in the stock price of Cipla Ltd. during each fiscal year. The Trend of Returns suggests that the stock price experienced fluctuations over the observed period.

The mean value of the returns is 14.955%, which is the average annual return of the company's stock during the period under consideration. The standard deviation is 41.56534081%, which highlights the volatility in the company's stock performance. It is important to consider these factors when assessing the risk and potential return associated with investing in Cipla Ltd.

Table 9

Calculation of Beta value of Cipla Ltd.

Market Value and Cipla Ltd.					
Years	**X**	**Y**	**X^2**	**Y^2**	**XY**
2013-2014	17.527	1.896	307.189	3.595	33.231

2014-2015	26.334	83.438	693.502	6961.871	2197.287
2015-2016	-9.875	-28.086	97.506	788.834	277.337
2016-2017	18.938	16.877	358.649	284.821	319.611
2017-2018	9.481	-8.078	89.891	65.258	-76.591
2018-2019	13.300	-3.639	176.898	13.244	-48.402
2019-2020	-26.321	-18.368	692.778	337.395	483.467
2020-2021	77.987	92.078	6081.989	8478.279	7180.863
2021-2022	17.470	26.236	305.218	688.330	458.357
2022-2023	-1.164	-12.804	1.355	163.940	14.905
TOTAL	143.679	149.548	8804.977	17785.566	10840.064

Calculation for the regression coefficient (Beta)

$\beta = ((n\sum XY-((\sum X)(\sum Y)) / (n\sum X^2 – (\sum X)^2)$

$=((10(10840)) – (143x150))/((10x8805) -- (143^2))$

$=(108400 –21450)/(88040 – 20449)$

$= 86950/67591$

$\beta = 1.28$

The computed regression coefficient (Beta) is 1.28. The sensitivity of a stock's returns to changes in the general market returns is measured by its beta. When the beta value exceeds 1, the stock is

said to be more volatile than the market as a whole. In this instance, the computed beta value of 1.28 indicates that Cipla Ltd. is likely to experience more volatility than the market as a whole.

Table 10

Stock value of Apollo Hospitals Enterprise Ltd.

Apollo Hospitals Enterprise Ltd.			
Years	**1st Apr**	**31st Mar**	**Returns**
2013-2014	838.900	912.300	8.750
2014-2015	916.450	1340.550	46.276
2015-2016	1369.200	1320.850	-3.531
2016-2017	1329.300	1155.750	-13.056
2017-2018	1165.150	1029.850	-11.612
2018-2019	1064.650	1182.950	11.112
2019-2020	1227.600	1098.250	-10.537
2020-2021	1139.050	2925.600	156.846
2021-2022	2902.650	4614.800	58.986
2022-2023	4516.100	4363.000	-3.390

Calculation of Return Percentage

Return = ((Closing price- Beginning Price)/Beginning Price)*100

2013-2014 = ((912.300 - 838.900)/838.900) * 100 = 8.750

2014-2015 = ((1340.550 - 916.450)/916.450) * 100 = 46.276

2019-2020 = ((1098.250 - 1227.600)/ 1227.600) * 100 = -10.537

The table represents the financial performance of Apollo Hospitals Enterprise Ltd. over a period of ten years. The column "Returns" indicates the percentage change in the stock price of Apollo Hospitals Enterprise Ltd. during each fiscal year. The Trend of Returns suggests that the stock price experienced fluctuations over the observed period. The mean value of the returns is 23.984%, which is the average annual return of the company's stock during the period under consideration. The standard deviation is 52.8196316%, which highlights the volatility in the

company's stock performance. It is important to consider these factors when assessing the risk and potential return associated with investing in Apollo Hospitals Enterprise Ltd.

Table 11

Calculation of Beta value of Apollo Hospitals Enterprise Ltd.

Market Value and Apollo Hospitals Enterprise Ltd.					
Years	**X**	**Y**	**X^2**	**Y^2**	**XY**
2013-2014	17.527	8.750	307.189	76.555	153.352
2014-2015	26.334	46.276	693.502	2141.505	1218.662
2015-2016	-9.875	-3.531	97.506	12.470	34.869
2016-2017	18.938	-13.056	358.649	170.452	-247.250
2017-2018	9.481	-11.612	89.891	134.844	-110.097
2018-2019	13.300	11.112	176.898	123.468	147.788
2019-2020	-26.321	-10.537	692.778	111.025	277.336
2020-2021	77.987	156.846	6081.989	24600.548	12231.936
2021-2022	17.470	58.986	305.218	3479.319	1030.510
2022-2023	-1.164	-3.390	1.355	11.493	3.946

TOTAL	143.679	239.843	8804.977	30861.678	14741.054

Calculation for the regression coefficient (Beta)

$\beta = ((n\sum XY-((\sum X)(\sum Y)) / (n\sum X^2 – (\sum X)^2)$

$= ((10(14741)) – (143x240))/((10x8805) -- (143^2))$

$= (147410 –35607)/(88040 – 20449)$

$= 111803/67591$

$\beta = 1.675$

For Apollo Hospitals Enterprise Ltd., the computed regression coefficient (Beta) is roughly 1.675. This shows that the stock returns of the firm are forecast to fluctuate, on average, 1.675 times more than the market returns. If the stock's beta rating is higher than 1, it may be more volatile than the market as a whole.

Discussion

Table 12

Regression coefficient		
S.No	Company	Rank
1	Sun Pharmaceutical Industries Ltd.	3
2	Divis Laboratories Ltd.	4
3	Dr. Reddy’s Laboratories Ltd.	5
4	Cipla Ltd.	2
5	Apollo Hospitals Enterprise Ltd.	1

Based on the regression coefficients and ranking of the selected pharmaceutical companies, the following interpretations can be made:

1. Apollo Hospitals Enterprise Ltd. (Rank: 1, B value: 1.675): Apollo Hospitals Enterprise Ltd. has the highest regression coefficient among the selected companies, indicating a strong positive relationship between its stock returns and market returns. This suggests that the company's stock performance tends to be more sensitive to overall market movements. It has demonstrated the

highest stock return value among the companies, positioning it as the top performer in terms of returns.

2. Cipla Ltd. (Rank: 2, B value: 1.28): Cipla Ltd. has a relatively high regression coefficient, indicating a positive relationship between its stock returns and market returns. While not as strong as Apollo Hospitals Enterprise Ltd., Cipla has shown a significant impact of market movements on its stock performance. With a relatively high stock return value, Cipla secures the second rank among the selected companies.

3. Sun Pharmaceutical Industries Ltd. (Rank: 3, B value: 1.043): Sun Pharmaceutical Industries Ltd. exhibits a positive relationship between its stock returns and market returns, although slightly weaker compared to the top two companies. The company's regression coefficient suggests that market movements have a moderate influence on its stock performance. Sun Pharmaceutical Industries Ltd. secures the third rank based on its stock return value.

4. Divis Laboratories Ltd. (Rank: 4, B value: 0.933): Divis Laboratories Ltd. also demonstrates a positive relationship between its stock returns and market returns, but with a slightly lower regression coefficient. This indicates that market movements have a relatively lower impact on the company's stock performance compared to the top three companies. Divis Laboratories Ltd. secures the fourth rank based on its stock return value.

5. Dr. Reddy’s Laboratories Ltd. (Rank: 5, B value: 0.491): Dr. Reddy’s Laboratories Ltd. has the lowest regression coefficient among the selected companies, suggesting a relatively weaker relationship between its stock returns and market returns. The company's stock performance appears to be less influenced by market movements compared to the other companies in the study. Dr. Reddy’s Laboratories Ltd. secures the fifth rank based on its stock return value.

It is important to note that the interpretation of the ranking should consider additional factors and not rely solely on the regression coefficients. Factors such as financial health, business strategies, industry dynamics, and future growth prospects should be taken into account for a comprehensive evaluation of the companies.

The data provided in the tables for Sun Pharmaceutical Industries Ltd., Dr. Reddy’s Laboratories Ltd., Divis Laboratories Ltd., Cipla Ltd., and Apollo Hospitals Enterprise Ltd. showed that stock returns varied over the observed period, with both positive and negative values. The mean return was 7.825%, indicating an average annual return for the company's stock. The standard deviation of 42.47729023% suggests a relatively high level of volatility in the stock returns. The mean

return was 19.516%, indicating the average annual return for the stock. Cipla Ltd.'s stock returns exhibited fluctuations over the observed period, with the mean return being 14.955%, representing the average annual return for the stock.

Overall, the table suggests that Cipla Ltd. has shown fluctuations in stock price over the years, with both positive and negative returns. The mean return indicates an average annual return, while the high standard deviation highlights the volatility in the company's stock performance. Investors should consider these factors when assessing the risk and potential return associated with investing in Cipla Ltd.

Suggestions

Based on the findings from the analysis of the selected pharmaceutical companies, the following suggestions can be made for investors considering investment in the top 5 pharma companies in India.

Diversify Investments: Since each company has its own risk-return profile, it is advisable for investors to diversify their investments across multiple pharma companies.

Consider Long-Term Performance: Evaluate the long-term performance of the companies along with their stock returns.

Conduct Fundamental Analysis: Apart from analyzing stock returns, investors should conduct thorough fundamental analysis of the top 5 pharma companies.

Seek Professional Advice: Investors, especially those who are new to the pharma industry, should consider seeking advice from financial professionals or investment advisors who specialize in the healthcare or pharmaceutical sector.

Conclusion

The risk-return analysis of selected pharmaceutical companies offers valuable insights into their performance and ranking based on stock returns. Each company has its own unique risk-return profile, which investors should consider when making investment decisions in the pharma industry. Apollo Hospitals Enterprise Ltd. has the highest average returns, followed by Cipla Ltd., Divis Laboratories Ltd., Sun Pharmaceutical Industries Ltd., and Dr. Reddy’s Laboratories Ltd. However, past performance is not a guarantee of future returns, and investors should conduct thorough research before making any investment decisions. The analysis also reveals variations in the performance of these companies over the years, emphasizing the importance of considering long-term performance rather than relying solely on short-term trends.

Diversifying investments across multiple pharma companies can help mitigate risks and provide exposure to different segments of the industry. Fundamental analysis, including revenue growth, profitability, product pipeline, competitive advantage, and management expertise, is advised. Aligning investment decisions with risk tolerance and long-term financial goals is crucial. This study serves as a starting point for investors interested in the pharma industry, but additional research and analysis specific to individual investment objectives are crucial.

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