



IMPACT OF CAPITAL STRUCTURE ON LEVERAGE, COVERAGE RATIOS & MARKET RETURN: A STUDY ON LEADING INDIAN PHARMA COMPANIES

Sri Ayan Chakraborty

Faculty: Management, University Program (Techno India University), ICA Eduskills.

Abstract

Leverage means the Debt Equity ratio of a firm. It refers to the ability of a Firm to meet its Fixed Operating and Financial Charges. It is an investment strategy of using borrowed money, specifically using borrowed capital in order to increase the potential return of an investment. Though, Cost of Debt is cheaper than Cost of Equity but at the same time it increases the company's risk in terms of bankruptcy. Increase in Debt also increases the Interest cost which in turn affects EPS. The main objective of a Company is to maximise its Shareholders wealth which in turn relates to maximising EPS and P/E ratio. Higher the degrees of leverage, the higher the risk, at the same time higher the expected return.

This paper focuses on analysing the Leverage and Coverage ratios as well as the impact of Debt Equity ratio on Returns, EPS and P/E of the Leading Indian Pharma Companies.

Keywords: *Leverage, Profitability, Operating Leverage, Financial Leverage, Combined Leverage, ROCE, ROE, ROTA, EPS, P/E, Net Worth, Interest and Dividend Coverage, D/E ratio.*

I. India's Leading Pharma Companies

Sun Pharma: Sun Pharm is an international specialty pharma company manufacturing & marketing pharmaceuticals formulation in both India and abroad. Its business is divided into four segments: Indian Branded Generics, US Generics, International Branded Generics (ROW) and Active Pharmaceutical Ingredients (API).

Lupin: Headquartered in Mumbai, Lupin is an innovation led transnational pharma company producing a wide range of quality, affordable generic and branded Pharmaceutical Ingredients in Cardiovascular, Diabetology, Asthma, Pediatrics, Anti-Infectives, NSAIDs therapy segments, Anti-TB etc.

Cipla: Headquartered in Mumbai, Cipla is a leading global pharmaceutical company, dedicated to high-quality, branded and generic medicines. Cipla develops medicines to treat respiratory, cardiovascular disease, arthritis, diabetes, weight control, depression etc.

Dr Reddy's: Headquartered in Hyderabad, Dr. Reddy's Laboratories is an Indian multinational pharmaceutical company. It offers a portfolio of products and services including APIs, custom pharmaceutical services, generics, biosimilars and differentiated formulations. Its major therapeutic focus is on gastrointestinal, cardiovascular, diabetology, oncology, pain management and anti-infective. Its markets include India, USA, Russia and Europe etc.

Biocon: Biocon is an Indian biopharma company based in Bangalore. It is committed to reduce therapy costs of chronic diseases like diabetes, cancer and autoimmune disease etc. It manufactures generic active pharmaceutical ingredients which are sold across the globe. It also manufactures novel biologics, biosimilar insulins and antibodies, which are sold as branded formulations.

Aurobindo Pharma: Headquartered in Hyderabad, Aurobindo Pharma manufactures generic pharmaceuticals and active pharmaceutical ingredients. It manufactures generic active pharmaceutical ingredients in antibiotics, anti-retrovirals, cardiovascular products, central nervous system products etc.

Cadila: Headquartered in Ahmedabad, Cadila is of India's leading pharma company which has been developing and manufacturing pharmaceutical products in India as well as overseas. Its specialization area includes cardiovascular, gastrointestinal, analgesics, haematinics, anti-infectives and antibiotics, respiratory agents, antidiabetics and immunologicals.

Objective of the Study

1. To analysis the Financial, Operating & Combined Leverage of leading Pharma Companies like Sun Pharma, Lupin, Cipla, Dr Reddy's, Biocon, Aurobindo Pharma & Cadila.
2. To analysis the Interest and Dividend Coverage ratios of the leading Indian Pharma Companies.
3. To highlight the impact of Leverage on Shareholders wealth creation ie, EPS and P/E ratio.

Review of Literature

A number of researchers in finance and accounting have extensively researched on Leverage and its impact on profitability. These have motivated the corporate to identify and improve upon their financial performance. A brief review of some of these studies has been presented.

Bindiya Soni and Jigna Trivedi, analysed the impact of both financial leverage as well as operating leverage on the profitability through Earning Per Share on selected paint companies of India. Five listed paint companies of India were selected based upon the market capitalization for the research purpose. The study investigates the impact of degree of financial leverage and degree of operating leverage on EPS with the help of correlation analysis. Along with this analysis, the paper also investigates the impact of debt-equity ratio on the EPS of the said firms to see the impact of debt on the wealth of the firms. The findings suggest that financial leverage had no significant relationship on profitability while operating leverage had significant relationship on profitability with the exceptions of few.

Kumar Ramana, focussed on the relationship between profitability & leverage of Bata India Limited. The financial statements of Bata have been collected over a period of 7 years (2005-06 to 2012- 13). The data collected is analyzed by the percentages, averages, ratios and Correlation analysis tools reveals that the research evidence of the study indicates that, that degree of operating leverage is statistically significant positive correlation with the ROI. It is observed that degree of financial leverage is positively correlated with the ROI .It means that degree of financial leverage of Bata India was not at optimum level. It is suggested to Bata to revise its capital structure which should include the optimum blend of equity and borrowed funds so that it has positive impact on Return on Investment. More over degree of combined leverage is positively correlated with ROI of Bata India. The financial performance of the Bata India is satisfactory. The Bata India is employing less debt funds so it can't get the financial leverage benefits. Therefore the Bata India has to revise its capital structure so that financial leverage will help to maximize the shareholders wealth.

Sanjay J. Bhayani and Butalal Ajmera studied the theoretical approaches and practical application of financial leverage, EPS and DPS of Maruti Udyog Ltd. with data for the period of 2001-02 to 2008-09. For the purpose of analysis, researcher has used ratio techniques and to test hypothesis for correlation-co-efficient has been used. The result of the study indicates that there is a correlation between DFL and EPS and the difference is insignificant where as result of correlation coefficient at 5% level of significance showed that the diffidence is significant between DFL and DPS and EPS and DPS.

Khushbakht Tayyaba, studied the effect of leverage on the profitability of the oil and gas sector. The study shows the relationship between leverage (Financial, operating and combined) and Earning per Share (EPS) of this sector. It analyses how earning capacity of this sector is affected by operating costs and fixed financial charges. It also shows the relationship between the Debt equity ratio and Earning per Share (EPS) and how this sector does debt financing efficiently. In this paper, oil and gas companies are selected for analysis and hypotheses are examined with the balanced panel using descriptive statistics, correlation and estimate equation.

V. Kalpana, analysed the impact of leverage on profitability of the select firms and the relationship among financial leverage, operating leverage and Composite leverage with earning per share of the firms. In addition to this it focuses on how profitability is influenced by fixed financial charges and fixed operating cost. In this study, select steel companies which are traded in BSE are taken for analysis and the study is based on the secondary data. Hypotheses are examined with the help of correlation and test of significance and also analysis of variance

(ANOVA). From this study it is found out that there is a negative correlation between DOL and EPS, DFL and EPS, and DCL and EPS. The result shows that the use of debt and fixed cost expenses would reduce the profitability of the firms. It implies that in order to increase the earnings the firms need to reduce the use of debt in capital structure and fixed cost in operation of the firm.

Scope of Study

The financial statement is a mirror, which reflects the financial position and operational strength and weakness of concern. But a mere look at the financial statement will not reveal some crucial information. To bring out the hidden information, financial statements over a period are analysed.

This study is concerned with the analysis of Operating, Financial, Combined Leverage of the Leading Indian Pharma Companies and impact of DOL, DFL, EPS, ROCE, ROE on P/E ratio.

Period of Study: The study covers a period of 6 years from 2011-12 to 2016-17.

Methodology

Sources of Data

The study is based on secondary data. Information required for the study has been collected from the Annual Reports of Sun Pharma, Lupin, Cipla, Dr Reddy's, Biocon, Aurobindo Pharma & Cadila and different books, journal, magazines, and data collected from various websites.

Tools Applied: In this study various tools: Financial Tools – Ratio Analysis and Statistical Tools (i.e.) Mean and ANOVA, t-test has been used for data analysis.

MEAN = Sum of variable/N.

Standard Deviation is used to see how measurements for a group are spread out from Mean. A low Standard Deviation means that most of the numbers are very close to the average and vice-versa.

(SD) = $\sqrt{X^2/N - (X/N)^2}$.

Coefficient of Variation is a standardized measure of dispersion of a probability distribution or frequency distribution. It is the ratio of standard deviation to mean. Higher the coefficient of variation, the greater the level of dispersion around mean and vice-versa. **Coefficient of Variation (COV) = SD/MEAN* 100**

t-Test (Two-Sample Assuming Unequal Variances): t-test assesses whether the means of two groups are statistically different from each other.

Hypothesis

An ANOVA is statistical hypothesis in which the sampling distribution of test statistic when null hypotheses is true. Null hypotheses have been set and adopted for the analysis of data. The null hypotheses are represented by H_0 . It is a negative statement which avoids personal bias of investigator during data collection as well as the time of drawing conclusion.

Limitation of the Study

1. The study is related to a period of 6 years.
2. Data is secondary i.e. they are collected from the published Annual Reports.
3. Leverage, Structural, Coverage and Valuation ratios have been taken for the study.

Preface

Financial Decisions involve planning for procurement of funds from different sources, its utilisation as well as its management with the sole objective of maximising shareholders returns as well as P/E ratio. Capital Structure Decision refers to the Debt Equity ratio which has an impact on a firms Profitability as well as Liquidity. Increase in proportion of Debt in Capital Structure reduces Weighted Average Cost of Capital (WACC) but also increases the risk of insolvency. Increase in Interest amount reduces the Equity Earnings of a firm. Moreover, Debt are Fixed interest bearing securities on which interest has to be paid irrespective of the amount of Profit.

Therefore, the risk of the shareholders increase when there is a high proportion of borrowed funds which in turn increases their expected return on investments (K_E). Therefore, the objective of a firm is to mix its Debt and Equity in such as way which maximises its Profitability and Market Value.

Profitability & Growth

Profit is the prime motive of every business. It plays a pivotal role behind the success and growth of an enterprise. Profitability is the main base for liquidity as well as solvency. Analysing a company's profitability is an important part of financial statement analysis. Profitability of a company measures the ability to generate earnings.

Exhibit – 1: Sunpharma

(INR Millions)	2012	2013	2014	2015	2016	2017	CAGR
Revenue	80,195	112,999	160,804	273,920	281,086	313,081	
Revenue (Growth %)		40.9%	42.3%	70.3%	2.6%	11.4%	31.31%
PBIT	33,847	48,364	71,428	72,197	77,790	94,477	
PBIT (Growth %)		42.9%	47.7%	1.1%	7.7%	21.5%	22.79%
Earnings Per Share (Rs)	25.70	14.40	15.20	18.90	19.20	29.00	
EPS (Growth %)		-44.0%	5.6%	24.3%	1.6%	51%	2.45%

The above Exhibit depicts that Sun Pharma's Revenue has grown at a CAGR of 31.31% while, CAGR for PBIT and EPS has been 22.79% and 2.45% respectively. CAGR of EPS has fallen mainly due to increase in no of Equity Shares.

Exhibit – 2: Lupin

(INR Millions)	2012	2013	2014	2015	2016	2017	CAGR
Revenue	70,829	96,413	112,866	127,700	142,555	174,943	
Revenue (Growth %)		36.1%	17.1%	13.1%	11.6%	22.7%	19.82%
PBIT	12,315	19,656	28,583	34,246	33,834	36,874	
PBIT (Growth %)		59.6%	45.4%	19.8%	-1.2%	9.0%	24.52%
Earnings Per Share (Rs)	19.36	29.26	40.79	53.20	49.96	56.46	
EPS (Growth %)		51.1%	39.4%	30.4%	-6.1%	13.0%	23.87%

The above Exhibit depicts that Lupin's Revenue has grown at a CAGR of 19.82% while CAGR for PBIT and EPS has been 24.52% and 23.87% respectively.

Exhibit – 3: Cipla

(INR Millions)	2012	2013	2014	2015	2016	2017	CAGR
Revenue	70,207	82,793	101,734	113,454	134,942	142,809	
Revenue (Growth %)		17.9%	22.9%	11.5%	18.9%	5.8%	15.26%
PBIT	14,862	54,751	61,098	18,225	19,337	13,816	
PBIT (Growth %)		268.4%	11.6%	-70.2%	6.1%	-28.6%	-1.45%
Earnings Per Share (Rs)	14.25	19.24	17.27	14.66	16.89	12.50	
EPS (Growth %)		35.0%	-10.2%	-15.1%	15.2%	-26.0%	-2.59%

The above Exhibit depicts that Cipla's Revenue has grown at a CAGR of 15.26%. Profit have fallen over the years as a result of which, there has been a negative CAGR for PBIT and EPS of 1.45% and 2.59% respectively.

Exhibit – 4: Dr Reddy's

(INR Millions)	2012	2013	2014	2015	2016	2017	CAGR
Revenue	97,611	118,326	134,153	150,233	155,683	141,961	
Revenue (Growth %)		21.2%	13.4%	12.0%	3.6%	-8.8%	7.78%
PBIT	20,453	23,192	32,938	36,595	29,414	16,171	
PBIT (Growth %)		13.4%	42.0%	11.1%	-19.6%	-45.0%	-4.59%
Earnings Per Share (Rs)	76.37	89.48	114.90	136.59	124.54	77.37	
EPS (Growth %)		17.2%	28.4%	18.9%	-8.8%	-37.9%	0.26%

The above Exhibit depicts that Dr Reddy's Revenue has grown at a CAGR of 7.78%. Profits have fallen over the years which have made an impact on EPS. CAGR of PBIT has been -4.59% and EPS 0.26% respectively.

Exhibit – 5: Biocon

(INR Millions)	2012	2013	2014	2015	2016	2017	CAGR
Revenue	20,865	24,853	28,773	30,898	33,474	38,911	
Revenue (Growth %)		19.1%	15.8%	7.4%	8.3%	16.2%	13.27%
PBIT	8,867	9,851	10,756	11,235	4,663	7,311	
PBIT (Growth %)		11.1%	9.2%	4.5%	-58.5%	56.8%	-3.79%
Earnings Per Share (Rs)	17.11	25.75	20.82	24.87	28.01	30.97	
EPS (Growth %)		50.5%	-19.1%	19.5%	12.6%	10.6%	12.60%

The above Exhibit depicts that Biocon's Revenue has grown at a CAGR of 13.27%. Profits have fallen over the years which have made an impact on EPS. CAGR of PBIT has been -3.79% and EPS 12.6% respectively.

Exhibit – 6: Aurobindo Pharma

(INR Millions)	2012	2013	2014	2015	2016	2017	CAGR
Revenue	45,506	57,831	80,385	120,432	135,492	146,645	
Revenue (Growth %)		27.1%	39.0%	49.8%	12.5%	8.2%	26.37%
PBIT	3,855	6,408	18,444	23,277	56,447	63,291	
PBIT (Growth %)		66.2%	187.8%	26.2%	142.5%	12.1%	75.01%
Earnings Per Share (Rs)	17.61	10.09	40.22	27.00	34.66	39.33	
EPS (Growth %)		-42.7%	298.6%	-32.9%	28.4%	13.5%	17.43%

The above Exhibit depicts that Aurobindo Pharma's Revenue has grown at a CAGR of 26.37% while, CAGR for PBIT and EPS has been 75.01% and 17.43% respectively.

Exhibit – 7: Cadila

(INR Millions)	2012	2013	2014	2015	2016	2017	CAGR
Revenue	50,900	61,552	70,600	84,971	94,268	94,295	
Revenue (Growth %)		20.9%	14.7%	20.4%	10.9%	0.0%	13.12%
PBIT	9,769	9,774	10,496	15,238	21,540	16,572	
PBIT (Growth %)		0.1%	7.4%	45.2%	41.4%	-23.1%	11.15%
Earnings Per Share (Rs)	31.87	31.92	39.25	11.24	19.19	14.82	
EPS (Growth %)		0.2%	23.0%	-71.4%	70.7%	-22.8%	-14.20%

The above Exhibit depicts that Cadila's Revenue has grown at a CAGR of 13.12% while, CAGR for PBIT and EPS has been 11.15% and -14.20% respectively. The fall in EPS has mainly due to the fall in Profit in 2017.

Leverage refers to the usage of fund or employment of asset in the capital structure of the firm for which the firm has to pay fixed return. Employment of such fund helps a firm to increase its profitability. If the firm uses higher Leverage it will be riskier for the firm if it's earning gets decreased gradually because it has to pay fixed

interest for the amount borrowed. In other words the Leverage effect will be favourable for the firm if it is able to earn more than the amount borrowed.

Leverage Analysis is the methodical classification of the data given in the financial statement. It is the process of identifying the financial strength and weakness of a firm from the available accounting data and financial statements. Leverage can be viewed from both Income Statement and Balance Sheet angle. From Income Statement angle Leverage Analysis considers Operating, Financial and Combined Leverage.

Operating Leverage

Operating Leverage refers to the use of fixed cost in the operations of the firm. A firm has to bear the fixed cost expenses irrespective of output. Operating Leverage refers to a company's division between Fixed Operating Cost and Variable Cost. Fixed Costs remains constant or unchanged with the change in the level of production or sales while Variable Cost varies. Operating Leverage refers to a firm's share of Fixed Operating Cost in its production (Hillier et al., 2010). This means that, for a particular firm, the higher the Operating Leverage, the larger the sum they have to cover with sales, but the contribution margin will be relatively higher (Penman, 2012). **DOL = % Change in PBIT / % Change in Sales**

Exhibit – 8: Degree of Operating Leverage

Year	Sun Pharma	Lupin	Cipla	Dr Reddy's	Biocon	Aurobindo Pharma	Cadila
2011-12	0.87	1.323	11.455	0.78	0.65	1.85	0.00145
2012-13	1.049	1.650	14.972	0.631	0.581	2.445	0.002
2013-14	1.127	2.662	0.507	3.142	0.582	4.817	0.503
2014-15	0.015	1.508	-6.091	0.926	0.603	0.526	2.220
2015-16	2.961	-0.103	0.322	-5.409	-7.016	11.396	3.780
2016-17	1.885	0.395	-4.898	5.108	3.496	1.473	-805.261
Mean	1.32	1.2	2.7	0.86	-0.2	3.8	-133.1
SD	1.00	0.98	8.6	3.5	3.5	4.0	329.3
COV	0.76	0.79	3.18	4.10	-19.25	1.07	-2.47
CAGR (%)	16.7	-21.5	-184.4	45.6	40.0	-4.5	-1,509.0

Exhibit-8 depicts that Aurobindo Pharma reported the highest mean followed by Cipla, Sun Pharma, Lupin etc. Cadila reported the maximum SD of 329.3 which indicates the maximum deviation from the mean value. Dr Reddy's reported the highest CAGR of 45.6%. Lupin, Cipla, Aurobindo Pharma, Cadila reported negative CAGR.

Hypothesis

H₀: $\mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5 = \mu_6 = \mu_7$ (DOL of Pharma Companies doesn't differ over years).

H₁: $\mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4 \neq \mu_5 \neq \mu_6 \neq \mu_7$ (DOL of Pharma Companies differ over years).

Exhibit – 9: Degree of Operating Leverage: Anova
Anova: Single Factor

Groups	Count	Sum	Average	Variance
SUN PHARMA	6	7.906878	1.317813	1.005582
LUPIN	6	7.434174	1.239029	0.957147
CIPLA	6	16.26703	2.711172	74.54425
DR REDDY'S	6	5.177918	0.862986	12.52364
BIOCON	6	-1.10403	-0.184	12.54233
AUROBINDO PHARMA	6	22.50641	3.751068	16.09735
CADILA	6	-798.755	-133.126	108425.8

Anova: Variation

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	93,429.6	6	15,571.6	1.004217	0.438232	2.371781
Within Groups	542,717.5	35	15,506.2			
Total	636,147.1	41				

Above analysis shows that the F value (0.438232) is less than the table value (2.371781) so, null hypothesis is accepted. Therefore it is concluded that DOL of the Pharma Companies does not differ over the years.

Financial Leverage

Employment of fixed interest bearing securities like, debt and preference share in capital structure along with owner's equity is called financial Leverage or trading on equity. Financial Leverage may be favourable or unfavourable. Financial Leverage is concerned with the extent to which firms rely on debt, and is therefore directly concerned with the Capital Structure of a firm. A firm with debt must make interest payments regardless of the sales, which leads to an increased risk. The debt payments - in contrast to Equity dividends - have to be paid and debt-holders are thus prioritized over equity-holders in terms of cash-flow. The debt payments can therefore be seen as a Fixed Financial Cost. The priority remains in the case of a bankruptcy when the remaining assets are claimed. A benefit of Financial Leverage is that it can contribute to increased profits if the return on investment (ROI) exceeds the interest rate on the debt, hence, companies may have incentives to use debt-financing. **DFL = % Change in EPS / % Change in PBIT**

Exhibit – 10: Degree of Financial Leverage

Year	Sun Pharma	Lupin	Cipla	Dr Reddy's	Biocon	Aurobindo Pharma	Cadila
2011-12	1.33	0.812	0.145	0.97	0.14	0.54	1.23
2012-13	-1.03	0.86	0.13	1.28	4.55	-0.64	3.07
2013-14	0.12	0.87	-0.88	0.68	-2.08	1.59	3.11
2014-15	22.61	1.54	0.22	1.70	4.37	-1.25	-1.58
2015-16	0.20	5.06	2.49	0.45	-0.22	0.20	1.71
2016-17	2.38	1.45	0.91	0.84	0.19	1.11	0.99
Mean	4.27	1.8	0.5	0.99	1.2	0.3	1.4
SD	9.06	1.65	1.13	0.45	2.69	1.07	1.72
COV	2.12	0.93	2.25	0.45	2.32	4.15	1.21
CAGR (%)	12.3	12.3	44.4	-2.8	5.9	15.5	-4.3

Exhibit-10 depicts that Sun Pharma reported the highest mean followed by Lupin, Cipla etc. Sun Pharma reported the maximum SD of 9.06 which indicates the maximum deviation from the mean value. Aurobindo Pharma reported the highest CAGR of 15.5%. Only, Dr Reddy's and Cadila reported negative CAGR.

Hypothesis

H₀: $\mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5 = \mu_6 = \mu_7$ (DFL of Pharma Companies doesn't differ over years).

H₁: $\mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4 \neq \mu_5 \neq \mu_6 \neq \mu_7$ (DFL of Pharma Companies differ over years).

Exhibit – 11: Degree of Financial Leverage: Anova: Anova: Single Factor

Groups	Count	Sum	Average	Variance
Sun Pharma	6	25.58567	4.264279	82.11301
Lupin	6	10.57967	1.763279	2.707517
Cipla	6	3.012859	0.502143	1.280973
Dr Reddy's	6	5.918969	0.986495	0.200546
Biocon	6	6.94466	1.157443	7.238333
Aurobindo Pharma	6	1.541035	0.256839	1.137243
Cadila	6	8.521951	1.420325	2.972681

Anova: Variation

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	63.8	6	10.6	0.762429	0.604264	2.371781
Within Groups	488.3	35	14.0			
Total	552.1	41				

Above analysis shows that the F value (0.762429) is less than the table value (2.371781) so, null hypothesis is accepted. Therefore it is concluded that DFL of the Pharma Companies does not differ over the years.

Combined Leverage

Combined Leverage is a use of operating Leverage and financial Leverage in an appropriate proportion in the business. Operating Leverage affects the firm's operating profit and financial Leverage affects the earnings of the shareholder or EPS. Firm has to use a correct mixture of both the Leverages to take the fullest possible advantage of growing business opportunities. **DCL = % Change in EPS / % Change in Sales.**

Exhibit – 12: Degree of Combined Leverage

Year	Sun Pharma	Lupin	Cipla	Dr Reddy's	Biocon	Aurobindo Pharma	Cadila
2011-12	1.157	1.074	1.661	0.757	0.091	0.999	0.002
2012-13	-1.075	1.416	1.953	0.809	2.642	-1.577	0.007
2013-14	0.131	2.309	-0.448	2.124	-1.214	7.657	1.562
2014-15	0.346	2.315	-1.312	1.575	2.634	-0.660	-3.506
2015-16	0.607	-0.524	0.803	-2.432	1.514	2.269	6.464
2016-17	4.484	0.573	-4.459	4.297	0.651	1.637	-795.073
Mean	0.94	1.2	-0.3	1.19	1.1	1.7	-131.8
SD	1.89	1.09	2.39	2.20	1.51	3.24	324.97
COV	2.00	0.91	-7.95	1.85	1.44	1.88	-2.47
CAGR (%)	31.1	-11.8	-221.8	41.5	48.2	10.4	-1,448.4

Exhibit-12 depicts that Aurobindo Pharma reported the highest mean followed by Lupin, Dr Reddy's, Biocon etc. Cadila reported the maximum SD of 324.97 indicating the maximum deviation from the mean value. Biocon reported the highest CAGR of 48.2%. Lupin, Cipla and Cadila reported negative CAGR.

Hypothesis

H₀: $\mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5 = \mu_6 = \mu_7$ (DCL of Pharma Companies doesn't differ over years)

H₁: $\mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4 \neq \mu_5 \neq \mu_6 \neq \mu_7$ (DCL of Pharma Companies differ over years)

Exhibit – 13: Degree of Combined Leverage: Anova

Anova: Single Factor

Groups	Count	Sum	Average	Variance
SUN PHARMA	6	5.650431	0.941739	3.557121
LUPIN	6	7.163048	1.193841	1.179841
CIPLA	6	-1.80048	-0.30008	5.695797
DR REDDY'S	6	7.129589	1.188265	4.825111
BIOCON	6	6.318041	1.053007	2.292578
AUROBINDO PHARMA	6	10.32532	1.720886	10.52124
CADILA	6	-790.543	-131.757	105607.6

Anova: Variation

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	90,607.7	6	15,101.3	1.000695	0.440412	2.371781
Within Groups	528,178.2	35	15,090.8			
Total	618,786.0	41				

Above analysis shows that the F value (1.000695) is less than the table value (2.371781) so, null hypothesis is accepted. Therefore it is concluded that DFL of the Pharma Companies does not differ over the years.

Capital Structure refers the total amount of Capital Employed by a firm to finance its operations and assets. Leverage from Balance Sheet angle relates to Structural ie, Debt Equity or Debt-to-Capital Ratio.

Debt Equity Ratio: It measures the total Debt of a company as a percentage of Equity share holders fund. A high Debt Equity ratio indicates high amount of Interest expenses which has to be paid irrespective of the profit volume.

Debt Equity Ratio = Total Debt / Equity Share Holders Fund.

Exhibit – 14: Debt Equity Ratio (D/E)

Year	Sun Pharma	Lupin	Cipla	Dr Reddy's	Biocon	Aurobindo Pharma	Cadila
2011-12	0.012	0.108	0.0004	0.329	0.031	0.411	0.494
2012-13	0.007	0.047	0.0001	0.199	0.061	0.439	0.465
2013-14	0.002	0.022	0.032	0.264	0.200	0.339	0.380
2014-15	0.044	0.011	0.028	0.132	0.227	0.243	0.245
2015-16	0.084	0.481	0.019	0.085	0.482	0.102	0.154
2016-17	0.036	0.418	0.281	0.044	0.404	0.019	0.347
Mean	0.03	0.2	0.1	0.18	0.23	0.26	0.35
SD	0.03	0.21	0.11	0.11	0.18	0.17	0.13
COV	1.00	1.17	1.82	0.62	0.77	0.66	0.37
CAGR (%)	25.1	31.1	266.5	-33.0	67.4	-45.7	-6.8

Exhibit-14 depicts that Sun Pharma reported the minimum mean followed by Cipla, Lupin etc. Lupin reported the maximum SD of 0.2117 indicating the maximum deviation from the mean value.

Hypothesis

H₀: $\mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5 = \mu_6 = \mu_7$ (D/E Ratio of Pharma Companies doesn't differ over years)

H₁: $\mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4 \neq \mu_5 \neq \mu_6 \neq \mu_7$ (D/E Ratio of Pharma Companies differ over years)

Exhibit – 15: Debt Equity Ratio: Anova

Anova: Single Factor

Groups	Count	Sum	Average	Variance
SUN PHARMA	6	0.184359	0.030726	0.000953
LUPIN	6	1.088061	0.181344	0.044799
CIPLA	6	0.360187	0.060031	0.011919
DR REDDY'S	6	1.053251	0.175542	0.01184
BIOCON	6	1.405547	0.234258	0.032601
AUROBINDO PHARMA	6	1.552395	0.258733	0.028805
CADILA	6	2.085061	0.34751	0.016915

Anova: Variation

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.4	6	0.1	3.493852	0.008202	2.371781
Within Groups	0.7	35	0.0			
Total	1.2	41				

Above analysis shows that the F value (3.493852) is more than the table value (2.371781) therefore null hypothesis is rejected. Therefore it is concluded that Debt Equity Ratio (D/E) of the Pharma Companies differs over the years

Coverage Ratio is a measure about a company's ability to service its debt, ie, meeting its financial obligations as well as paying of Dividend. Higher the ratio it is better for the company. Leverage ratios are related to Coverage Ratios like Interest and Dividend Coverage.

Interest Coverage Ratio is expressed as the number of times Operating Profit is more than Interest.

$$\text{Interest Coverage Ratio} = \text{PBIT} / \text{Interest Expenses}$$

Exhibit – 16: Interest Coverage Ratio

Year	Sun Pharma	Lupin	Cipla	Dr Reddy's	Biocon	Aurobindo Pharma	Cadila
2011-12	120.02	34.72	38.76	19.37	2.88	1.39	5.35
2012-13	112.06	48.00	5.28	23.12	2.53	2.40	5.79
2013-14	161.64	107.25	3.96	5.09	1.52	5.95	11.64
2014-15	12.47	349.10	10.83	4.82	1.53	14.56	22.44
2015-16	14.87	56.89	9.36	35.61	15.91	1.84	40.80
2016-17	23.63	24.18	8.67	25.51	28.12	1.83	36.83
Mean	74.11	103.36	12.8	18.92	8.75	4.66	20.47
SD	64.91	123.78	12.97	12.08	10.99	5.13	15.54
COV	0.88	1.20	1.01	0.64	1.26	1.10	0.76
CAGR (%)	-27.7	-7.0	-25.9	5.7	57.7	5.7	47.1

Exhibit-16 depicts that Lupin reported the maximum mean followed by Sun Pharma. Lupin reported the maximum SD of 123.78 indicating the maximum deviation from the mean value. Biocon reported the highest CAGR of 57.7%

Hypothesis

H₀: $\mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5 = \mu_6 = \mu_7$ (Interest Coverage ratio of Pharma Companies doesn't differ over years).

H₁: $\mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4 \neq \mu_5 \neq \mu_6 \neq \mu_7$ (Interest Coverage ratio of Pharma Companies differ over years).

Exhibit – 17: Interest Coverage Ratio: Anova

Anova: Single Factor

Groups	Count	Sum	Average	Variance
SUN PHARMA	6	444.6871	74.11452	4213.343
LUPIN	6	620.1373	103.3562	15321.49
CIPLA	6	76.86301	12.8105	168.2947
DR REDDY'S	6	113.5102	18.91837	146.0174
BIOCON	6	52.49338	8.748896	120.8121
AUROBINDO PHARMA	6	27.97584	4.66264	26.27581
CADILA	6	122.841	20.47351	241.3367

Anova: Variation

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	52,640.9	6	8,773.5	3.034671	0.017008	2.371781
Within Groups	101,187.8	35	2,891.1			
Total	153,828.7	41				

Above analysis shows that the F value (3.034671) is more than the table value (2.371781) therefore null hypothesis is rejected. Therefore it is concluded that Interest Coverage Ratio of the Pharma Companies differs over the years

Dividend Coverage Ratio essentially calculates the capacity of the firm to pay the dividend. It is the relation between EPS and Dividend Declared. Higher the coverage ratio better for the firm and vice-versa. The amount that is not paid out as dividend is held by the company for growth. It is termed as Retained Earnings.

Dividend Coverage Ratio = Earnings per Share / Dividend per Share

Exhibit – 18: Dividend Coverage Ratio

Year	Sun Pharma	Lupin	Cipla	Dr Reddy's	Biocon	Aurobindo Pharma	Cadila
2011-12	7.343	6.05	7.125	5.091	3.422	17.61	6.374
2012-13	2.88	7.315	9.6200	4.971	3.433	6.727	4.256
2013-14	10.133	6.798	8.635	5.745	4.164	13.407	4.361
2014-15	6.300	7.093	7.330	6.83	4.974	6	0.937
2015-16	19.20	6.661	8.445	6.227	5.602	13.864	5.997
2016-17	8.286	7.528	6.250	3.869	30.970	15.732	4.631
Mean	9.02	6.91	7.90	5.46	8.76	12.22	4.43
SD	5.54	0.53	1.22	1.04	10.91	4.78	1.92
COV	0.61	0.08	0.15	0.19	1.25	0.39	0.43
CAGR (%)	2.4	4.5	-2.6	-5.3	55.4	-2.2	-6.2

Exhibit-18 depicts that Aurobindo Pharma reported the maximum mean followed by Sun Pharma. Biocon reported the maximum SD of 10.91 indicating the maximum deviation from the mean value. Biocon reported the highest CAGR of 55.4%

Hypothesis

H₀: $\mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5 = \mu_6 = \mu_7$ (Dividend Coverage ratio of Pharma Companies doesn't differ over years).

H₁: $\mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4 \neq \mu_5 \neq \mu_6 \neq \mu_7$ (Dividend Coverage ratio of Pharma Companies differ over years).

Exhibit – 19: Dividend Coverage Ratio: Anova

Anova: Single Factor

Groups	Count	Sum	Average	Variance
SUN PHARMA	6	54.1419	9.023651	30.66436
LUPIN	6	41.446	6.907667	0.278686
CIPLA	6	47.405	7.900833	1.488734
DR REDDY'S	6	32.73244	5.455407	1.090543
BIOCON	6	52.56533	8.760889	119.1163
AUROBINDO PHARMA	6	73.33933	12.22322	22.87244
CADILA	6	26.5559	4.425984	3.702608

Anova: Variation

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	238.0	6	39.7	1.549557	0.191252	2.371781
Within Groups	896.1	35	25.6			
Total	1,134.1	41				

Above analysis shows that the F value (1.549557) is less than the table value (2.371781) therefore null hypothesis is accepted. Therefore it is concluded that Dividend Coverage and Dividend Policy of the Pharma Companies does not differs over the years.

T-Test: It is used to determine the difference between two sample means from two normally distributed populations with unknown variances. It uses small sample size in order to test the difference between the samples when two normal distributions are unknown. If t Stat value lies between - t Critical two tail and + t Critical two test we don't reject Null Hypothesis.

Here, T test has been done to show the relationship between D/E ratio and Returns as well as EPS and P/E of Pharma Companies.

Exhibit – 20: T-Test: Two-Sample Assuming Unequal Variances: Sun Pharma

	Roce	Roe	Rota	Eps	P/E	D/E Ratio
Mean	25.504945	18.943546	13.517489	20.350000	36.507460	0.030726
Variance	31.045115	4.752623	7.658684	33.915000	206.397527	0.000953
Observations	6	6	6	6	6	6
Hypothesized Mean Difference	0	0	0	0	0	
df	5	5	5	5	5	
t Stat	11.198844	21.248178	11.936562	8.546372	6.219254	
P(T<=t) one-tail	0.000050	0.000002	0.000036	0.000181	0.000786	
t Critical one-tail	2.015048	2.015048	2.015048	2.015048	2.015048	
P(T<=t) two-tail	0.000099	0.000004	0.000073	0.000361	0.001571	
t Critical two-tail	2.570582	2.570582	2.570582	2.570582	2.570582	

Roce & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROCE & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between ROCE & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Roe & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROE & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between ROE & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Rota & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROTA & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between ROTA & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Eps & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between EPS & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between EPS & D/E, Variance is Equal).
Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

P/E & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between P/E & D/E, Variance is not Equal).
 $H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between P/E & D/E, Variance is Equal).
Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Exhibit – 21: T-Test: Two-Sample Assuming Unequal Variances: Lupin

	ROCE	ROE	ROTA	EPS	P/E	D/E RATIO
Mean	30.126235	23.775679	13.924246	41.5050	15.298440	0.181344
Variance	80.688838	11.955840	16.063267	214.552870	42.406363	0.044799
Observations	6	6	6	6	6	6
Hypothesized Difference	Mean	0	0	0	0	0
df	5	5	5	5	5	
t Stat	8.163401	16.683270	8.387497	6.909743	5.683282	
P(T<=t) one-tail	0.000224	0.000007	0.000197	0.000487	0.001175	
t Critical one-tail	2.015048	2.015048	2.015048	2.015048	2.015048	
P(T<=t) two-tail	0.000448	0.000014	0.000395	0.000973	0.002350	
t Critical two-tail	2.570582	2.570582	2.570582	2.570582	2.570582	

Roce & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROCE & D/E, Variance is not Equal).
 $H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between ROCE & D/E, Variance is Equal).
Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Roe & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROE & D/E, Variance is not Equal).
 $H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between ROE & D/E, Variance is Equal).
Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Rota & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROTA & D/E, Variance is not Equal).
 $H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between ROTA & D/E, Variance is Equal).
Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Eps & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between EPS & D/E, Variance is not Equal).
 $H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between EPS & D/E, Variance is Equal).
Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

P/E & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between P/E & D/E, Variance is not Equal).
 $H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between P/E & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Exhibit – 22: T-Test: Two-Sample Assuming Unequal Variances: Cipla

	ROCE	ROE	ROTA	EPS	P/E	D/E RATIO
Mean	30.126235	23.775679	13.924246	41.5050	15.298440	0.181344
Variance	80.688838	11.955840	16.063267	214.552870	42.406363	0.044799
Observations	6	6	6	6	6	6
Hypothesized Mean Difference	0	0	0	0	0	
df	5	5	5	5	5	
t Stat	8.163401	16.683270	8.387497	6.909743	5.683282	
P(T<=t) one-tail	0.000224	0.000007	0.000197	0.000487	0.001175	
t Critical one-tail	2.015048	2.015048	2.015048	2.015048	2.015048	
P(T<=t) two-tail	0.000448	0.000014	0.000395	0.000973	0.002350	
t Critical two-tail	2.570582	2.570582	2.570582	2.570582	2.570582	

Roce & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROCE & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between ROCE & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Roe & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROE & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between ROE & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Rota & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROTA & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between ROTA & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Eps & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between EPS & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between EPS & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

P/E & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between P/E & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between P/E & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Exhibit – 22: T-Test: Two-Sample Assuming Unequal Variances: Dr Reddy's

	ROCE	ROE	ROTA	EPS	P/E	D/E RATIO
Mean	26.3981	21.1930	10.8349	103.2083	25.6608	0.1755
Variance	61.1613	44.8911	6.8372	656.4907	5.5391	0.0118
Observations	6	6	6	6	6	6
Hypothesized Mean Difference	0	0	0	0	0	
df	5	5	5	5	5	
t Stat	8.212392	7.682797	9.976871	9.849924	26.496055	
P(T<=t) one-tail	0.000218	0.000298	0.000086	0.000092	0.000001	
t Critical one-tail	2.015048	2.015048	2.015048	2.015048	2.015048	
P(T<=t) two-tail	0.000436	0.000596	0.000173	0.000184	0.000001	
t Critical two-tail	2.570582	2.570582	2.570582	2.570582	2.570582	

Roce & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROCE & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between ROCE & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Roe & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROE & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between ROE & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Rota & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROTA & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between ROTA & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Eps & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between EPS & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between EPS & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

P/E & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between P/E & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between P/E & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Exhibit – 23: T-Test: Two-Sample Assuming Unequal Variances: Dr Reddy's

	Roce	Roe	Rota	Eps	P/E	D/E Ratio
Mean	24.392856	12.692632	7.168929	24.5883	15.955362	0.234258
Variance	163.295397	42.801839	16.704822	24.797617	54.257227	0.032601
Observations	6	6	6	6	6	6
Hypothesized Mean Difference	0	0	0	0	0	
df	5	5	5	5	5	
t Stat	4.630384	4.662732	4.151999	11.971733	5.226361	
P(T<=t) one-tail	0.002841	0.002759	0.004446	0.000036	0.001696	

t Critical one-tail	2.015048	2.015048	2.015048	2.015048	2.015048	
P(T<=t) two-tail	0.005682	0.005519	0.008893	0.000072	0.003392	
t Critical two-tail	2.570582	2.570582	2.570582	2.570582	2.570582	

Roce & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROCE & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between ROCE & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Roe & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROE & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between ROE & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Rota & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROTA & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between ROTA & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Eps & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between EPS & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between EPS & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

P/E & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between P/E & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between P/E & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Exhibit – 24: T-Test: Two-Sample Assuming Unequal Variances: Aurobindo Pharma

	ROCE	ROE	ROTA	EPS	P/E	D/E RATIO
Mean	40.033399	38.415918	17.777377	28.1517	7.733005	0.258733
Variance	641.172745	567.575357	173.369747	150.327017	12.726204	0.028805
Observations	6	6	6	6	6	6
Hypothesized Mean Difference	0	0	0	0	0	
df	5	5	5	5	5	
t Stat	3.847555	3.923098	3.258768	5.571982	5.126302	
P(T<=t) one-tail	0.006015	0.005574	0.011238	0.001282	0.001844	
t Critical one-tail	2.015048	2.015048	2.015048	2.015048	2.015048	
P(T<=t) two-tail	0.012031	0.011147	0.022476	0.002564	0.003688	
t Critical two-tail	2.570582	2.570582	2.570582	2.570582	2.570582	

Roce & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROCE & D/E, Variance is not Equal)

$H_1: \mu_1^2 = \mu_2^2$ (There is significant no relationship between ROCE & D/E, Variance is Equal)
Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Roe & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROE & D/E, Variance is not Equal).
 $H_1: \mu_1^2 = \mu_2^2$ (There is significant no relationship between ROE & D/E, Variance is Equal).
Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Rota & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROTA & D/E, Variance is not Equal).
 $H_1: \mu_1^2 = \mu_2^2$ (There is significant no relationship between ROTA & D/E, Variance is Equal).
Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Eps & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between EPS & D/E, Variance is not Equal).
 $H_1: \mu_1^2 = \mu_2^2$ (There is significant no relationship between EPS & D/E, Variance is Equal).
Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

P/E & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between P/E & D/E, Variance is not Equal).
 $H_1: \mu_1^2 = \mu_2^2$ (There is significant no relationship between P/E & D/E, Variance is Equal).
Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Exhibit – 24: T-Test: Two-Sample Assuming Unequal Variances: Cadila

	ROCE	ROE	ROTA	EPS	P/E	D/E RATIO
Mean	23.795108	25.178694	11.954199	24.7150	22.165193	0.347510
Variance	25.171772	17.717935	11.161479	124.876910	14.207815	0.016915
Observations	6	6	6	6	6	6
Hypothesized Mean Difference	0	0	0	0	0	
df	5	5	5	5	5	
t Stat	11.443825	14.443062	8.503432	5.340918	14.169751	
P(T<=t) one-tail	0.000045	0.000014	0.000185	0.001543	0.000016	
t Critical one-tail	2.015048	2.015048	2.015048	2.015048	2.015048	
P(T<=t) two-tail	0.000089	0.000029	0.000370	0.003087	0.000032	
t Critical two-tail	2.570582	2.570582	2.570582	2.570582	2.570582	

Roce & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROCE & D/E, Variance is not Equal).
 $H_1: \mu_1^2 = \mu_2^2$ (There is significant no relationship between ROCE & D/E, Variance is Equal).
Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Roe & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROE & D/E, Variance is not Equal).
 $H_1: \mu_1^2 = \mu_2^2$ (There is significant no relationship between ROE & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Rota & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between ROTA & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between ROTA & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Eps & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between EPS & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between EPS & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

P/E & D/E Ratio

$H_0: \mu_1^2 = \mu_2^2$ (There is significant relationship between P/E & D/E, Variance is not Equal).

$H_1: \mu_1^2 \neq \mu_2^2$ (There is significant no relationship between P/E & D/E, Variance is Equal).

Here the t Stat value do not lie between - **2.570582** & + **2.570582**. Therefore, we accept Null Hypothesis stating that the variances are not equal.

Conclusion

Profitability and Liquidity management is essential for every organization. Leverage refers to debt or the borrowing of funds to finance the purchase of a company's assets as well as Working Capital Management. Optimum Debt Equity ratio refers to the utilisation of Debt and Equity in such a manner which boots up the Company's Profits. Leverage affects volatility of Stock market which is negatively related to stock return. When volatility rises, expected returns tend to increase, leading to a drop in the stock price. As a consequence, volatility and stock returns are negatively correlated. The second explanation is based on financial leverage. When stock prices fall, financial leverage increases, leading to an increase in stock return volatility. The above analysis shows that D/E mix has significant impact on both EPS and P/E ratio.

Anova Findings

The Study Reveals

1. Sun Pharma reported the maximum CAGR in terms of Revenue of 31.31%, followed by Aurobindo Pharma 26.37% & Lupin 19.82%.
2. Aurobindo Pharma reported the maximum CAGR in terms of PBIT of 75.01%, followed by Lupin 24.52% & Sun Pharma 22.79%.
3. Lupin reported the maximum CAGR in terms of EPS of 23.87%, followed by Aurobindo Pharma 17.43%.
4. Aurobindo Pharma reported the highest mean value in terms of DOL followed by Cipla.
5. Sun Pharma reported the highest mean value in terms of DFL followed by Lupin.
6. Aurobindo Pharma reported the highest mean value in terms of DCL followed by Lupin & Dr Reddy's.
7. Aurobindo Pharma had the maximum mean value in terms of Debt Equity ratio followed by Biocon & Lupin.
8. Lupin have been able to manage its Debts better than other firms and hence it had the the maximum mean value in terms of Interest Coverage ratio.
9. Dividend Coverage ratio of Aurobindo Pharma is maximum followed by Sun Pharma & Biocon.



T-Test Conducted with selected Cement Firms revealed:

1. There is significant relationship between DOL & P/E Ratio.
2. There is significant relationship between DFL & P/E Ratio.
3. There is significant relationship between EPS & P/E Ratio.
4. There is significant relationship between ROCE & P/E Ratio.
5. There is significant relationship between ROE & P/E Ratio.

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