COMPANY-SPECIFIC COMPONENTS OF BUSINESS RISK OF SELECTED PHARMACEUTICAL COMPANIES IN INDIA:AN EMPERICAL ANALYSIS

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Abstract:

In today's challenging and competitive environment, the matter of designing appropriate strategies for managing risks in accomplishing the wealth maximization objective of pharmaceutical sector is of utmost importance. Considering the stiff competition that exists in the contemporary corporate world, understanding analyzing and measuring business risk are immensely important to the pharmaceutical sector that belongs to the corporate world in order to investigate managerial efficiency and excellence. The pattern of business risk associated with the companies in the Indian pharmaceutical sector has witnessed notable changes. In this backdrop, the present study seeks to analyze the business risk in the Indian pharmaceutical sector.

Keyword: Business Risk, Return.

Introduction:

The Pharmaceutical sector plays a vital role in maintaining the health and well-being of the global populace by developing and marketing lifesaving drug and medical devices. We know that the global industry is dominated by US and European multinationals. So, these companies belong to a major sector of the world economy and they also have a significant impact on one's financial health by providing solid return over the long term. As a result, every pharmaceutical company‘s corporate performance is subject to major impact from a range of possible future events. Any business operation in a risky situation is one that is in danger of going out of business as a result of an adverse event effecting the operation. We consider these events as the principal sources of risk to the development of our business. Business risk arises out of the difference between company's real returns and projected returns. We recognize the possibility of those risks which are actually occurring, and have prepared policies to control such risk and take appropriate measures when they do occur. Besides, as the business can't operate without its environment, so, it also means to say that business is a deliberate process of interacting with its environment continuously for the purpose of realizing its value making objectives or the development of the business. As such in order to make this process of interaction efficiently and effectively a firm should always accommodate to acclimatize itself with the way the changes of environment. Hence, it will not be difficult to say that every business enterprise are facing some form of risk at a time on its earning capability due to the ever changing character of the environment where the company operates its business activity and interacts. So, managing business risk is essential for a company to stabilize its earnings and to generate value for its owners' wealth. In today's challenging and competitive environment, the matter of designing appropriate strategies for managing business risk in accomplishing the wealth maximization objective of Indian pharmaceutical sector is of utmost importance. Business risk arises out of the randomness in the company's real returns in contrast to its projected ones. The class and size of business risk depends on several factors that are generally categorized as economy-specific factors, industry-specific factors and company-specific factors. Economy-specific factors, beyond the control of a corporate, affecting all the sectors of an economy, are inflation, earthquake, concentration of revenue, restrictive regulations, fluctuations in foreign exchanges, imports etc. Industry-specific factors relate to the industry to which the company belongs. Changes in demand for the product, increased competition for the product, special status enjoyed by the industry, growth prospects of the output produced or service rendered by the industry in the market and so on are included in this category. Company specific factors are explicit to the affairs of the company concerned with such as human factors like managerial competence, talent management, strikes, technological factors, like emerging technologies; physical factors like failure of machine, fire or theft, operational factors like access to credit, cost cutting, cost structure, assets composition, advertisement, organizational culture, ethical values and so on. Business risk arising out of economy-specific, industry-specific and company specific factors are regarded as economy risk, industry risk and company risk respectively. The company risk emanates from precariousness in one or more fronts of the company, important of which are instability in cost behavior pattern, dispersion of revenue generating capability using long term funds and variability in short term debt paying capability. These weaknesses lead to cost structure risk, capital productivity risk and liquidity risk (Ghosh, 1997). There is almost no scope to exercise control over the economy risk and industry risk while it is, to some extent, possible to have power over the company risk. Theoretically, it is expected that high risk can be rewarded by higher risk premium i.e. higher return. It will be very hard to a company with high risk-low return profile to run its operating wheel in the long run. However, a great deal of controversy has always been persisting over this issue. The findings of the relevant studies carried out so far are conflicting and inconclusive in nature.

Literature Review

Amit & Wernerfelt (1990) conducted a study to identify the reasons for firms' intention to reduce business risk. In this study two empirical tests designed to disentangle firms' motives for reducing business risk were carried out. The study revealed that low business risk allowed firms to acquire factors of production at lower costs, to operate more efficiently or both. These findings were consistent with theories assuming both value maximization and efficient capital markets.

Blacker (2000) in his study identified the ways of mitigating operational risk in British retail banks and designed a theoretical framework based on the emerging core practices of the banks under study. The study also revealed that raising awareness of risk management through effective training provided means to overcome inertia and to make staff more risk-conscious.

Mishra and Mshra (2007), risks and returns of different sectors of the Indian economy were analyzed using both the market based and accounting based information. The net outcome derived from the analysis of market information showed that FMCG, health care and oil & gas sectors were the most defensive sectors of the Indian economy whereas metal and IT sectors were the most aggressive ones. The results based on accounting information indicated that FMCG, metal and IT sectors had the highest business risk while sectors like technology, auto and public sector units had the least business risk. The study also revealed that the entire risk measured on the basis of accounting information was not significantly captured by the market.

Sur (2007) made an attempt to make a comparative analysis in respect of business and financial risks of NTPC Ltd. in the pre-liberalization and post-liberalization periods. The study revealed that both the business and financial risks associated with the company declined notably resulting in a significant decrease in its total risk profile during the post- liberalization period. The study also concluded that as NTPC Ltd. enjoyed almost monopoly power in the Indian power sector throughout the study period (1982-83 to 2005-06), two major components of business risk, such as economy risk and industry risk associated with the company did not increase during the post-liberalization era. Rather the business risk stemmed from company-specific factors, i.e. company risk associated with the company reduced noticeably during the same period.

Mallik and Sur (2009) carried out a study to analyze the business and financial risks in the Indian corporate sector during the period 1995-96 to 2006-07 and also to examine whether its findings conformed to the theoretical arguments. While making this study fifty companies were selected by taking the top five companies (based on net sales revenue) from each of the ten selected manufacturing industries and coefficient of variation was used as the measure of risk. The study observed that no strong evidence of positive or negative relationship between business and financial risks associated with the selected companies was noticed during the study period and high risk was not at all compensated by high risk premium during the same period.

Sur and Mitra (2011) in their study attempted to make the business risk analysis of seventeen selected companies in Indian IT sector during the period 1999-2000 to 2008-09. While measuring business risk and its company-specific components associated with the sample companies in the study, Ginni's coefficient of mean difference was used. The study revealed that there was a lack of uniformity in respect of risk-return trade-off among the selected IT companies during the study period. Another notable outcome of the study was that high risk was not at all compensated by high risk premium in the selected companies during the period under study.

Research Gaps

A good number of studies on the analysis of business and financial risks have been carried out in India and abroad during the last few decades while a very few studies on the same issue relating to the Indian pharmaceutical sector has so far been made during the last few years. By a careful scrutiny of the studies of business risk analysis in Indian pharmaceutical sector it can be inferred that no in-depth study on the issue in connection with the business risk associated with the pharmaceutical sector in India considering the effects of the major changes that took place in Indian business environment during the post-liberalization period has been made. Even the studies so far conducted at both the national and international levels have failed to make any definite conclusion on the relationship between business risk and operating profitability. Most of the studies so far made in the global perspective are theoretical and associated with financial institutions only. Moreover, Ginni's coefficient of concentration is presently recognized as a reliable measure of risk. But no significant study on the business risk analysis in Indian corporate sector has been carried out using such a coefficient. In order to bridge the gap, it is, therefore, high time to deal with the issue relating to the analysis of business risk in the Indian Pharmaceutical sector during the period 2007-08 to 2016-17 applying Ginni's coefficient of concentration.

Objectives of the Study

The present study has the following objectives:

i) To measure the business risk (BR) associated with each of the selected companies and of the selected industry as a whole. **ii)** To ascertain the company-specific components of BR associated with each of the selected companies, to analyze industry averages of such components and to test whether there has any uniformity among the trends in such components. **iii)** To study the relative risk-return status of the selected companies. **iv)**To analyze the closeness of association between BR and return of the selected companies. **v)** To assess the joint effect of the company-specific components of BR associated with the selected companies on their returns. **vi)** To examine whether the findings of the study conform to the theoretical arguments.

Methodology of the study

The study is based on twenty companies which were taken from the pharmaceutical sector following purposive sampling procedure. Twenty companies were selected based on market capitalization. The data of the selected companies for the period 2007-2008 to 2016-2017 used in this study were taken from secondary sources i.e. Capitaline Corporate Database of Capital Market Publishers (I) Ltd., Mumbai. While measuring the business risk and its company-specific components with the selected companies Ginni's coefficient of concentration was used. For making the analysis of the computed values of risks, statistical techniques like Pearson's simple correlation analysis, Spearman's rank correlation analysis, analysis of Kendall's coefficient of concordance, multiple correlation analysis and multiple regression analysis and statistical tests like t-test, F test and chi-square ($\chi 2$) were applied at appropriate places.

Empirical results and Discussion

Business risk arising out of company specific factors is regarded as company risk. The genesis of company risk lies in instability in one or more fronts of the company, important of which are instability in cost behavior pattern, dispersion of revenue generating capability using long term fund and variability in short term debt paying capability. These weaknesses lead to cost structure risk, capital productivity risk and liquidity risk (Ghosh, 1997).

A. In Table A, an attempt was made to measure the business risk associated with each of the selected companies during the study period using Ginni's coefficient of concentration of its operating profit to capital employed ratio. This table also Shows that the degree of business Risk (BR) was the highest in Dr. Reddy's Labs, followed by Strides Shasun, Aurobindo pharma, Ajanta Pharma, Glenmark, Shilpa, Piramal Enter, Sun Pharma, Biocon, Sanofi India, Jubilant Life, Natco Pharma, Cipla, Torrent Pharma, Lupin, Glaxosmithkline, Ipca Labs, Divis Labs, Cadila Health and Abbott India respectively in that order. Sun Pharma, Dr. Reddy's Labs, Aurobindo pharma, Piramal Enter, Glenmark, Biocon, Ajanta Pharma, Sanofi India, Strides Shasun and Shilpa were placed in the 'BR above the Indian pharmaceutical Industry average' category while the reaming ten pharmaceutical companies under study were able to find place in the category of 'BR below the Indian pharmaceutical industry average' during the period under study.

B. In Table B, the values of three major components of company-specific BR, namely liquidity risk (LR), cost structure risk (CSR) and capital productivity risk (CPR) were found out. Before ascertaining the mean values, the LR, CSR and CPR of each of the selected companies were measured by Ginni's coefficient of concentration of working capital ratio, that of variable cost to total cost ratio and that of capital turnover ratio respectively. In this table, in order to examine whether there was any uniformity among the trends in LR, CSR and CPR of the selected companies Kendall's coefficient of concordance
(W) was computed. For testing the significance of such coefficient, Chi-square ($\chi 2$) test was applied. This table discloses that the average risk in respect of short term debt paying capability was the maximum in Abbott India and it was followed by Glaxosmithkline, Piramal Enter, Dr. Reddy's Labs,
Glenmark, Ajanta Pharma, Sun Pharma, Divis Labs, Biocon, Sanofi India, Strides Shasun, Shilpa, Cadila Health, Lupin, Torrent Pharma, Cipla, Aurobindo Pharma, Jubilant Life, Natco Pharma respectively in that order. Ipca Labs enjoyed the lowest risk in liquidity front during the period under study. Out of the twenty pharmaceutical companies, nine were placed in the category of 'LR above the Indian pharmaceutical industry average' and the remaining eleven companies found place in 'LR below the Indian pharmaceutical industry average'. In respect of CSR, Divis Labs occupied the top most position and the next five positions were captured by Strides Shasun, Glaxosmithkline, Aurobindo Pharma, piramal Enter, Dr. Reddy's labs, while the degree of CSR was the least in Jubilant Life. Nine companies found place in the category of 'CSR above the Indian pharmaceutical industry average' and the remaining eleven companies were placed in 'CSR below the Indian pharmaceutical industry average'. Shilpa maintained the highest level of risk of not getting stable turnover by utilizing average long term funds during the period under study, followed by Glenmark, Sun Pharma, Jubilant Life, Strides Shasun, Ajanta Pharma and so on whereas the degree of CPR was the minimum in case of Ipca Labs. Out Of the twenty selected companies, only eight companies were placed in the category of 'CPR above the Indian pharmaceutical industry average' while the remaining twelve companies found place in 'CPR below the Indian pharmaceutical industry average'. It is, generally, accepted that disparity among the nature of instability in short term debt paying

capability, cost behaviour pattern and capital productivity is obvious. Thus, lack of uniformity among the trends in LR, CSR and CPR in different companies is a natural phenomenon. But, this study revealed an interesting outcome. In this table it also shows that the computed value of Kendall's coefficient of concordance were 0.5342 which was found to be statistically significant at 5 per cent level during the period under study. So, uniformity among the trends in the selected company specific components of business risk was observed during the study period.

C. In Table A.1, risk-return status of the selected companies in India was ascertained with reference to BR and ROCE. From this table it is observed that companies like Cipla, Divis Labs, Glaxosmithkline, and Abbott India were low risk-high return company. Sanofi India was in the moderate risk-high return class. Biocon, Natco Pharma and Jubilant Life maintained a combination of moderate risk and moderate return. Aurobindo Pharma, Ajanta Pharma and Strides Shasun were placed in the worst category i.e. high risk- low return category. On the other hand, Sun Pharma and Shilpa were maintained a high risk- high return combination. Sanofi India was placed in the moderate risk-high return class. No company found place in the low risk-low return or moderate risk-low return blend while a combination of low risk-moderate return was kept by Lupin, Cadila Health, Torrent Pharma and Ipca Labs during the study period.

In Table A.2, risk-return profile of the selected companies was assessed on the basis of LR and ROCE.

This table discloses that Cipla, Sanofi India and Shilpa were the only three companies among the selected ones which found place in the most desirable category i.e. low risk-high return class whereas no company was placed in the most undesirable class by maintaining a high risk-low return blend. Glaxosmithkline and Abbott India were placed in the high risk-high return class. Dr. Reddy's Labs, Piramal Enter and Glenmark maintained high risk-moderate return combination while Sun Pharma and Divis Labs were placed in the reversed category i.e. moderate risk-high return class. A blend of moderate risk and low return was adopted by Ajanta Pharma whereas Lupin, Cadila Health, Torrent Pharma, Biocon, Natco Pharma, Jubilant Life and Ipca Labs maintained a combination of low risk-moderate return. Aurobindo Pharma and Strides Shasun maintained a combination of low risk-low return. However no company maintained a balance between risk and return by occupying moderate risk-moderate return cell.

In Table A.3 an assessment of risk-return status of the selected companies was made by taking into account the combination of CSR and ROCE. This table depicts that only Divis Labs was placed in the cell representing a blend of high risk and high return whereas no company found place in the low risk-low return or high risk-moderate return class. A blend of low risk and moderate return was adopted by Lupin, Cadila Health, Torrent Pharma, Glenmark, Biocon, Jubilant Life, Ipca Labs while Aurobindo Pharma and Ajanta Pharma maintained the reverse combination i.e. moderate risk-low return combination. Dr. Reddy's Labs, Piramal Enter, and Natco Pharma maintained a balance between risk and return by capturing the moderate risk-moderate return cell. Glaxosmithkline and Shilpa was placed in the moderate risk-high return category while the most desirable blend which is stemmed from low risk and high return was maintained by Sun pharma, Cipla, Abbott India and Sanofi India and the most undesirable blend, i.e. high risk-low return was maintained by Strides Shasun.

In Table A.4 risk-return status of the selected companies was measured with reference to CPR and ROCE. This table discloses that Sun Pharma and Shilpa were placed in the high risk-high return class whereas only Aurobindo Pharma maintained a combination of low risk and low return. While Glenmark and Jubilant Life found place in the high risk-moderate return cell, Sanofi India was placed in the class indicating the reverse blend i.e. moderate risk-high return combination. Lupin, Dr. Reddy's Labs, Cadila Health, Torrent Pharma, Biocon, Natco Pharma and Ipca Labs maintained a combination of low risk and moderate return whereas no company maintained the reverse combination i.e. moderate risk-low return blend. Cipla Divis Labs, Glaxosmithkline and Abbott India were the only four companies which were placed in the most desirable class i.e. low risk-high return category, while Ajanta Pharma and Strides Shasun were placed in the most undesirable class i.e. high risk-low return category. Piramal Enter maintained a balance between risk and return by occupying the cell representing moderate risk and

moderate return.

D. In Table C it was attempted to assess the extent of relationship between business risk and return and that between each of the company specific components of business risk and return of the selected companies through correlation coefficients between the selected measures of risks and return taking into account their magnitudes (i.e. by Pearson's simple correlation coefficient) and rankings of their magnitudes (i.e.by spearman's rank correlation coefficient). In order to test whether these coefficients were statistically significant or not, t-test was used. This table shows that both the correlation coefficients between BR and ROCE were negative and found to be statistically significant at 0.05 level.

The correlation coefficients between ROCE and the LR of the selected pharmaceuticals companies were positive but the coefficient was found to be statistically significant at 0.05 level only in case of Pearson simple correlation coefficient. The correlation coefficients between CSR and ROCE were positive but not found to be statistically significant at 0.05 level. The correlation coefficient between CPR and ROCE were negative which were also not found to be statistically significant at 0.05 level. Thus, based on Table C it can be concluded that there was a strong negative relationship between BR and ROCE. A strong evidence of positive relationship between LR and ROCE was noticed. The net outcome derived from the analysis of correlation between BR and ROCE does not conform to the theoretical argument that the higher the BR, the higher is the risk premium while the risk associated with short term debt paying capability was well compensated by the risk premium, however, no definite relationship between CSR and ROCE and that between CPR and ROCE were statistically established from this study.

E. In Table D, multiple correlation analysis and multiple regression analysis were made in order to investigate the joint effect of LR, CSR and CPR on the return of the selected companies during the period under study. The partial regression coefficients and the multiple correlation coefficient were tested using t test and F test respectively. The regression equation that was fitted in this study is: $ROCE= b_0 + b_1.LR + b_2.CSR + b_3 .CPR + e$ where b_0 is the intercept, b_1, b_2 and b_3 are the partial regression coefficients and e is the error term. Table D discloses that when LR increased by one unit, the ROCE increased by 74.265 units which was found to be statistically significant. For one unit increase in CSR or CPR, there was no significant influence on the ROCE. So, the results obtained from the multiple regression analysis are in conformity with the correlation results. Table D also depicts that the multiple correlation coefficient of ROCE on LR, CSR and CPR was 0.588 which was also not found to be statistically significant. It discloses that the selected influencing factors LR, CSR and CPR contributed 34.60% of the variation in the ROCE during the study period.

Table A: Ranks of Business Risk of the Selected Pharmaceutical Companies in India.

Serial No.	Company	Business Risk	Status	Rank
1	Sun pharma	0.201	A	8
2	Lupin	0.131	B	15
3	Dr. Reddy's Labs	0.369	A	1
4	Aurobindo Pharma	0.242	A	3
5	Cipla	0.140	B	13
6	Cadila Health	0.108	B	19
7	Divis Labs	0.118	B	18
8	Piramal Enter	0.203	A	7
9	Torrent Pharma	0.133	B	14
10	Glenmark	0.210	A	5
11	GlaxoSmithKline	0.128	B	16
12	Biocon	0.187	A	9
13	Ajanta Pharma	0.227	A	4
14	Natco Pharma	0.157	B	12
15	Abbott India	0.106	B	20
16	Jubilant Life	0.169	B	11
17	Sanofi India	0.186	A	10
18	Strides Shasun	0.307	A	2
19	Ipca Labs	0.126	B	17
20	Shilpa	0.206	A	6
Indian Pharmaceuticals industry Average		0.183		

'A' denotes ' Business Risk above the Indian Pharmaceuticals Industry Average' and 'B' denotes ' Business Risk below the India Pharmaceuticals Industry Average'

Source: Compiled and computed from 'Capitaline Corporate Database' of Capitaline Market Publishers (I) Ltd., Mumbai.

Table B: Ranks of Company-specific Components of Business Risk of the Selected Pharmaceutical Companies in India

Serial No.	Company	Liquidity Risk (LR)			Cost Structure Risk (CSR)			Capital Productivity Risk (CPR)		
		LR	Status	Rank	CSR	Status	Rank	CPR	Status	Rank
1	Sun Pharma	0.186	A	7	0.051	B	10	0.238	A	3
2	Lupin	0.086	B	14	0.029	B	18	0.081	B	18
3	Dr. Reddy's Labs	0.209	A	4	0.070	A	6	0.088	B	15
4	Aurobindo Pharma	0.075	B	17	0.078	A	4	0.136	B	11
5	Cipla	0.076	B	16	0.046	B	11	0.097	B	14
6	Cadila Health	0.110	B	13	0.036	B	17	0.087	B	16
7	Divis Labs	0.174	A	8	0.150	A	1	0.138	B	10
8	Piramal Enter	0.212	A	3	0.077	A	5	0.190	A	7
9	Torrent Pharma	0.086	B	15	0.042	B	14	0.114	B	13
10	Glenmark	0.206	A	5	0.039	B	15	0.251	A	2
11	GlaxoSmithKline	0.274	A	2	0.079	A	3	0.130	B	12
12	Biocon	0.148	A	9	0.043	B	13	0.151	B	9
13	Ajanta Pharma	0.194	A	6	0.066	A	7	0.213	A	6
14	Natco Pharma	0.048	B	19	0.059	A	9	0.076	B	19
15	Abbott India	0.331	A	1	0.039	B	15	0.085	B	17
16	Jubilant Life	0.067	B	18	0.018	B	20	0.231	A	4
17	Sanofi India	0.142	B	10	0.044	B	12	0.167	A	8
18	Strides Shasun	0.133	B	11	0.101	A	2	0.214	A	5
19	Ipca Labs	0.023	B	20	0.022	B	19	0.053	B	20
20	Shilpa	0.124	B	12	0.066	A	7	0.302	A	1
Indian Pharmaceuticals Industry Average		0.145			0.058			0.152		

'A' denotes 'LR/CSR/CPR above the ' Indian Pharmaceuticals Industry Average' and 'B' denotes 'LR/CSR/CPR below the 'Indian Pharmaceuticals Industry Average'

Kendall's coefficient of concordance among the selected company-specific components of business risk (W) is 0.5342 and Chi-square ($\chi 2$) value of W is 30.448 being significant at 0.05 levels.

Source: Compiled and computed from 'Capitaline Corporate Database' of Capitaline Market Publishers (I) Ltd., Mumbai.

Table A.1: Risk-Return Status of the Selected Pharmaceutical Companies in India based on combination of Business Risk and Return

ROCE / Business Risk	High (≥ 25%)	Moderate (>15% but <25%)	Low (≤15%)
High (≥0.20)	Sun Pharma, Shilpa	Piramal Enter, Dr. Reddy's Labs, Glenmark	Aurobindo Pharma, Ajanta Pharma, Strides Shasun
Moderate (>0.15 but <0.20)	Sanofi India	Biocon, Natco Pharma, Jubilant Life	
Low (≤0.15)	Cipla, Divis Labs, GlaxoSmithkline, Abbott India	Lupin, Cadila Health, Torrent Pharma, Ipca Labs	

Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.

Table A.2: Risk-Return Status of the Selected Pharmaceutical Companies in India based on the combination of Liquidity Risk and Return

ROCE / LR	High (≥ 25%)	Moderate (>15% but<25%)	Low (≤ 15%)
High (≥ 0.20)	GlaxoSmithkline, Abbott India	Dr. Reddy's Labs Piramal Enter Glenmark	
Moderate (>0.15 but<0.20)	Sun Pharma, Divis Labs		Ajanta pharma
Low (≤ 0.15)	Cipla, Sanofi India, Shilpa	Lupin, Cadila Health, Torrent Pharma, Biocon, Natco Pharma, Jubilant Life, Ipca Labs	Aurobindo Pharma, Strides Shasun

Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.

Table A.3: Risk-Return Status of the Selected Pharmaceutical Companies in India based on the combination of Cost Structure Risk and Return.

ROCE / CSR	High (≥ 25%)	Moderate (>15% but<25%)	Low (≤ 15%)
High (≥ 0.10)	Divis Labs		Strides Shasun
Moderate (>0.05 but<0.10)	GlaxoSmithkline, Shilpa	Dr. Reddy's Labs, Piramal Enter, Natco Pharma	Aurobindo Pharma, Ajanta Pharma
Low (≤ 0.05)	Sun Pharma, Cipla, Abbott India, Sanofi India,	Lupin, Cadila Health, Torrent Pharma, Glenmark, Biocon, Jubilant life, Ipca Labs	

Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.

Table A.4: Risk-Return Status of the Selected Pharmaceutical Companies in India based on the combination of Capital Productivity Risk and Return.

ROCE / CPR	High (≥ 25%)	Moderate (>15% but<25%)	Low (≤ 15%)
High (≥ 0.20)	Sun Pharma, Shilpa	Glenmark, Jubilant Life	Ajanta Pharma, Strides Shasun
Moderate (>0.15 but<0.20)	Sanofi India	Piramal Enter	
Low (≤ 0.15)	Cipla, Divis labs, GlaxoSmithkline, Abbott India	Lupin, Dr. Reddy's Labs, Cadila Health, Torrent Pharma, Biocon, Natco Pharma, Ipca Labs	Aurobindo Pharma
Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.			

Table C: Analysis of Relationship between Risk and Return of the Selected Companies in Indian Pharmaceutical Industry.

Correlation Coefficient between / Correlation Measure	Business Risk and Return	Liquidity Risk and Return	Cost Structure Risk and Return	Capital Productivity Risk and Return
Pearson	**-0.521***	**0.522***	0.082	-0.174
Spearman	**-0.556***	0.369	0.015	-0.083
***Significant at 0.05 level.**				
Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.				

Table D: Analysis of Multiple Regression and Multiple Correlation of Return on Company-specific Components of Business Risk of the Selected Companies in the Indian Pharmaceutical Industry.

Multiple Regression Equation of ROCE on LR, CSR and CPR:

$$\textbf{ROCE} = b_0 + b_1.LR + b_2.CSR + b_3.\ CPR + e$$

Variable	Partial Regression Coefficient	t Value
LR	74.265	2.727*
CSR	-12.034	-0.176
CPR	-38.535	-1.303
Constant	20.018	3.196

Multiple Correlation Coefficient of ROCE on LR, CSR and CPR:

$R_{P.LCC} = 0.588$

$R^2_{P.LCC} = 0.346$

$F = 2.821$

***Significant at 0.05 level.**

Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai

Conclusions:

The conclusions of the study are:

i) The highest volatility in operating profitability was observed in Dr. Reddy's Lab whereas Abbott India enjoyed the lowest risk associated with its overall business operation during the study period 2007-2008 to 2016-2017. 50 per cent of the selected companies maintained their BR at the level 'above the Indian pharmaceutical industry average' whereas the remaining 50 per cent maintained their BR 'below the Indian pharmaceutical industry average' in the same period.

ii) 45 per cent of the selected pharmaceutical companies maintained their LR 'above the Indian pharmaceutical industry average' and the remaining 55 per cent of the selected pharmaceutical companies found place in the category of 'below the Indian pharmaceutical industry average'. The maximum LR was observed in Abbott India whereas Ipca Labs occupied the lowest rank in respect of LR during the period under study.

iii) 55 per cent of the selected pharmaceutical companies maintained their CSR 'below the Indian pharmaceutical industry average' and the remaining 45 per cent of the selected pharmaceutical companies were placed in the category of 'above the Indian pharmaceutical industry average'. Divis Labs was placed in the top most position in respect of CSR and the minimum CSR was observed in Jubilant Life.

iv) 40 per cent of the selected pharmaceutical companies maintained their CPR 'above the Indian pharmaceutical industry average' whereas the remaining 60 per cent of the selected pharmaceutical companies found place in the category of 'below the Indian pharmaceutical industry average'. The highest CPR was observed in Shilpa while Ipca Labs occupied the lowest rank in respect of CPR during the period under study.

v) Abbott India faced the highest risk in respect of liquidity while the fifteenth and seventeenth ranks were occupied by it in respect of CSR and CPR respectively during the period under study. Ipca Labs found place in the last row by holding twentieth rank in LR and CPR and nineteenth rank in CSR. So, Ipca Labs was able to find place almost on the last-benches in respect of company specific components of BR. Similarly, Divis Labs occupied the highest rank in respect of CSR while in respect of LR and CPR the company was able to obtain eighth and tenth ranks respectively. Jubilant Life occupied the fourth rank in CPR, least rank in CSR and eighteenth rank in respect of LR in the same period. On the other hand, Shilpa occupied the top most rank in respect of CPR and seventh rank in respect of CSR and twelveth rank in respect of LR during the period under study whereas Ipca Labs occupied the lowest rank in respect of CPR during the period under study. Abbott India maintained high degree of LR by occupying first rank whereas fifteenth and seventeenth ranks were occupied in respect of cost structure and capital productivity fronts of the companies respectively during the period under study. Lack of uniformity among the trends in LR, CSR and CPR of the different companies is a natural phenomenon. However, in this study, strong evidence of disparity among LR, CSR and CPR of the selected companies was not at all noticed during the study period. The outcome of the analysis of Kendall's coefficient of concordance made in this study also provides strong evidence of the correctness of the above inferences.

vi)The uniformity in respect of risk-return trade off among the selected companies was not at all present during the study period rather in many cases peculiar blends of risk return were observed.

vii) Dr. Reddy's Labs, Piramal Enter and Glenmark proved themselves as aggressive risk-taker as they were placed in high risk-moderate return combination in two cases during the study period. Cipla, Divis Labs, Glaxosmithkline and Abbott India were risk averse but profit hunter as they were placed in the most desirable class i.e. low risk-high return class in two cases during the period under study. Sanofi India and Shilpa were recognized as high return companies as they found place in high return cells with different levels of risk. However, Sun Pharma was considered as a profit hunter company with different levels of risk classes. Similarly, Lupin, Cadila Health, Torrent Pharma and Ipca Labs proved themselves as risk averse companies as they found place in the moderate return-low risk category in all the cases. On the other hand, Biocon, Natco Pharma and Jubilant Life maintained a balance by occupying in the moderate return-moderate or low risk classes in all the cases. Ajanta Pharma, Strides Shasun and Aurobindo Pharma were low return companies with different levels of risk during the study period. Aurobindo Pharma, Ajanta Pharma, Strides Shasun yielding low return with different levels of risk faced a severe crisis in respect of generation of sales revenue and payment of short term debt during the period under study. So, these companies proved themselves as low return companies.

viii) The BR and its company specific components of Sun Pharma, Shilpa, Sanofi India, Glaxosmithkline, Abbott India, Divis Labs and Cipla fluctuated widely from high to low during the study period but these companies proved themselves as profit hunter.

ix) Lupin, Cadila Health, Torrent Pharma, Ipca Labs, Biocon, Natco Pharma were risk averse as well as failed to establish themselves aggressive in generating operating surplus.

x) Cipla was the only company among the selected ones which was risk averse as well as profit hunter as it maintained a blend of low risk and high return in all the cases during the study period.

xi) Although a 'high-high' combination of BR or its company specific components and return is theoretically desirable, the analysis of interrelation as made in the present study reflects no strong evidence of positive or negative relationship between risk and return in most of the cases associated with the selected companies during the study period. Only in the case of relationship between LR and ROCE, the empirical result of the study conform to the theoretical argument indicating that the risk associated with short term debt paying capability was well compensated by the risk premium.

xii) The study of multiple regression of ROCE on LR, CSR and CPR also does not provide any significant influence of the company specific components of BR on the return of the selected companies during the study period.

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