UTILIZATION OF FUND TO IMPROVE PROFITABILITY OF MULTINATIONAL COMPANIES IN INDIAN PHARMACEUTICAL SECTOR: A STUDY

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ABSTRACT: *Liberalization of the Indian economy in 1991 exposed the Indian pharmaceutical industry to intensified competition from multinational corporations. Further, India's signing of the Trade Related Intellectual Property Rights System (TRIPS) agreement compelled the industry to look at growth driven by product innovation. In this backdrop, survival of the multinational companies in the Indian pharmaceutical sector requires efficient fund management which is an integral part of the overall corporate strategy to create shareholder value. Although during the last four decades, in US, UK and some other developed countries a considerable number of studies have been conducted on the evaluation of the interrelationship between management of fund and profitability, this important issue has not been considered with due importance in India. Furthermore, no study in connection with this unresolved issue has yet been made during the post-liberalization era on multinational pharmaceutical companies in India. In this context, the present paper makes an attempt to examine empirically the performance of the Indian pharmaceutical industry during the post-liberalization era in reference to the relationship between fund management and profitability of ten selected multinational pharmaceutical companies belonging to the Indian private sector during the period 1999-2000 to 2008-09. The data used in this paper pertains to the year end figures of each financial year under study. The study tries to account for the effects of the liberalization reforms carried out in the 1990s, which can't be discerned clearly during the initial years of the reforms. Therefore, the financial year 1999-2000 has been treated as the initial year of the period under study. The issue has been tackled using relevant statistical tools and techniques.*

Key Words:
Fund management, Profitability, Multinational Pharmaceutical companies

INTRODUCTION:

I.Introduction:

Fund management is the effective and efficient acquisition and utilization of fund. There are different opinions regarding what is exactly meant by a fund. According to the orthodox school, fund is represented by only cash. Others, however, opine that the aggregate of all the items appearing on the liabilities side of the balance sheet is to be treated as the actual fund of the firm. Some others prefer to treat the total assets invested and employed in the firm as its total fund. Here, the total amount of fixed assets, inventories and debtors has been considered as the fund of the concern. The way in which funds are managed can have a significant impact on the profitability of the company. The efficiency with which funds are managed is gleaned from turnover ratios. As per the traditional view, a low value of turnover ratio hurts the company's profitability. However, it is an empirical

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question whether a high value of turnover ratio has a positive influence on the company's earning capability. The issue relating to fund management and its impact on profitability is gaining importance in the context of the changing business paradigms ushered in by globalization and liberalization. It is certain that the Indian pharmaceutical landscape is changing rapidly and becoming more competitive due to intensified competition from multinational companies and the signing of the Trade Related Intellectual Property Rights System (TRIPS) agreement. In this backdrop, survival of the multinational companies in the Indian pharmaceutical sector requires efficient fund management which is an integral part of the overall corporate strategy to create share holder value. Although during the last four decades, in US, UK and some other developed countries a considerable number of studies have been conducted on the evaluation of the interrelationship between management of fund and profitability, this important issue has not been considered with due importance in India. Furthermore, no study in connection with this unresolved issue has yet been made during the post-liberalization era on multinational pharmaceutical companies in India. In this context, the present paper makes an attempt to examine empirically the performance of the Indian pharmaceutical industry during the post-liberalization era in reference to the relationship between fund management and profitability of ten selected multinational pharmaceutical companies belonging to the Indian private sector during the period 1999-2000 to 2008-09. The data used in this paper pertains to the year end figures of each financial year under study.

The remainder of this paper is organized as follows. Section II reviews the existing literature on the relationship between management of fund and profitability. Section III narrates the objectives of the study. In Section IV the methodology adopted in this study is explained. Section V presents the findings of the study. In Section VI concluding remarks are given.

II. Review of literature:

During the last four decades, in U.S.A., U.K. and some other developed countries several studies have been carried out on fund management. Lemke (1970), Gentry (1976), Foster (1978), Smith (1980), Shin & Soenen (1998) are among the prominent contributors who extensively investigated the issue of interrelationship between utilization of funds and profitability. The findings of their studies are conflicting in nature. In fact, there are many intricacies in assessing the influence of management of different asset components on the profitability of a firm. Sur, Chakraborty and Begum (2008), who made a study on the interrelationship between asset management and profitability in the Indian tea industry, concluded that the joint influence of the fixed asset management, inventory management and debtors' management on the corporate profitability was not statistically significant in the selected tea companies. In another study carried out by Sur and Chakraborty (2009) the relationship between fund management and profitability of twenty five selected

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pharmaceutical companies belonging to the Indian private sector during the period 1993-94 to 2004-05 has been examined empirically. The study concluded that in a majority of the cases, the management of fixed assets and inventory made positive as well as very significant contribution towards improvement of the earning capability of the companies under study.

III. Objectives of the study:

The present study has the following objectives:

(i) To measure the impact of fund management on profitability of multinational companies in Indian pharmaceutical industry, by computing Pearson's simple correlation coefficient, Spearman's rank correlation coefficient and Kendall's correlation coefficient between profit before interest and tax margin (PBITM) and each of some of the selected efficiency indicators of fund management and between return on capital employed (ROCE) and each of these efficiency parameters for each of the companies selected in this study.

(ii) To assess the joint effect of the selected efficiency measures on the profitability of each of the multinational pharmaceutical companies under study by applying multiple correlation and multiple regression techniques.

IV. Methodology of the study:

The study is based on some selected companies in the Indian pharmaceutical industry. In this study ten well-known multinational companies belonging to the private sector have been selected following purposive sampling procedure. The companies that have been chosen for this study have been listed in Appendix 1. The data of the selected companies for the period 1999-2000 to 2008-09 used in this study have been taken from the Capitaline Corporate Database, the Official database of Capital Market Publishers (India) Ltd., Mumbai. In fact, the post-liberalization period has been considered in this study. Although liberalization process started in India in July 1991, it is obvious that its effect could not be seen immediately after its inception. Thus, for accounting for the effects of liberalization the financial year 1999-2000 has been treated as the initial year of the period under study. The data used in this paper pertains to the year end figures of each financial year under study. While making analysis of these data ratio analysis as well as various statistical tools and techniques have been used. The ratios relating to the measurement of efficiency in fund management which have been used in this study are: (a) fixed assets turnover ratio (FATR), (b) inventory turnover ratio (ITR) and (c) debtors turnover ratio (DTR). The profitability measures which have been selected for this study are: (A) profit before interest & tax margin (PBITM) and (B) return on capital employed (ROCE). The degree of relationship between efficiency of fund management and profitability has been assessed through correlation coefficients between the selected measures of fund management and profitability taking into account their magnitudes (i.e. by Pearson's simple correlation coefficient), ranking of their magnitudes (i.e. by Spearman's rank correlation coefficient) and the nature of their associated changes (i.e. by Kendall's correlation

The ratios relating to the measurement of efficiency in fund management which have been used in this study are: (a) fixed assets turnover ratio (FATR), (b) inventory turnover ratio (ITR) and (c) debtors turnover ratio (DTR). The profitability measures which have been selected for this study are: (A) profit before interest & tax margin (PBITM) and (B) return on capital employed (ROCE).

coefficients). For studying the joint influence of the selected measures relating to fund management on profitability, multiple correlation and multiple regression techniques have been applied. In order to examine whether the computed values of correlation coefficients and partial regression coefficients are statistically significant or not, t test has been used. The multiple correlation coefficients have been tested by F test.

V. Findings of the study:

I.A) Table I shows that out of thirty correlation coefficients between FATR and PBITM in the ten selected companies, twenty-five coefficients were positive, out of which only seven coefficients were found to be statistically significant while the remaining five correlation coefficients were negative and all these coefficients were found to be statistically insignificant. Table I also depicts that out of thirty correlation coefficients between FATR and ROCE in the selected companies, twenty-nine coefficients were positive, out of which eighteen coefficients were found to be statistically significant, whereas the remaining one correlation coefficient was negative as well as found to be statistically insignificant. Theoretically, the higher the FATR, the greater is the efficiency of managing fund invested in fixed assets and the higher is the earning capability. The computed values of correlation coefficient between FATR and PBITM and those between FATR and ROCE in a majority of the companies selected in this study conform to the theoretical argument.

B) Table II exhibits that out of thirty correlation coefficients between ITR and PBITM in the selected companies' twenty-seven coefficients were positive, out of which eleven coefficients were significant while the remaining three correlation coefficients were negative and all these negative coefficients were found to be statistically insignificant. This table also discloses that the correlation coefficient between ITR and ROCE was found to be positive in twenty-five out of thirty cases, and of these twenty-five correlation coefficients, nine were found to be statistically significant. The remaining five correlation coefficients between ITR and ROCE were negative and were found to be statistically insignificant. It is an accepted principle that the higher the ITR, the greater is the efficiency of inventory management and the larger is the scope of profitability. The computed values of correlation coefficient between ITR and PBITM and those between ITR and ROCE in a substantial portion of the sample companies conform to the accepted principle.

C) Table III reveals that out of thirty correlation coefficients between DTR and PBITM twenty-five coefficients were positive of which only two coefficients were found to be statistically significant and five coefficients were negative of which two coefficients were found to be statistically significant. This table also shows that the correlation coefficient between DTR and ROCE was found to be positive in twenty-one out of thirty cases of which only two were found to be statistically significant, whereas in the remaining nine cases, the correlation was found to be negative of which three

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cases were found to be statistically significant. Generally speaking, the faster the DTR the lower is the relative investment in receivables and the higher is the profitability. The computed values of correlation coefficient between DTR and PBITM and those between DTR and ROCE in a majority of the companies under study conform to the principle.

II. The joint influence of the selected ratios indicating efficiency of fund management on the profitability of each of the companies under study has been studied in Table IV, Table V, Table VI and Table VII. The multiple regression equations which have been fitted in this study are: (a) PBITM = b0 + b1.FATR + b2. ITR + b3.DTR where b0 is the constant, b1, b2, and b3 are the partial regression coefficients and (b) ROCE= B0 + B1.FATR + B2.ITR +B3.DTR where B0 is the constant, B1, B2, and B3 are the partial regression coefficients.

The negative impact of DTR on ROCE was found to be statistically significant in one company while the positive influence of DTR on PBITM was found to be statistically insignificant.

Table IV shows that when FATR increased by one unit, the PBITM increased in eight companies out of the ten companies under study and the increase in PBITM was found to be statistically significant in four companies only, whereas for one unit increase in FATR, the PBITM decreased in two companies, but the decrease in PBITM was found to be statistically insignificant. When ITR increased by one unit, the PBITM stepped up in eight companies and it came down in the remaining two companies. The positive influence of ITR on PBITM was found to be statistically significant in two companies, whereas the negative effect of ITR on PBITM revealed in the two companies was found to be statistically insignificant. For one unit increase in DTR, the PBITM increased in six companies whereas it declined in the remaining four companies. However, the negative impact of DTR on ROCE was found to be statistically significant in one company while the positive influence of DTR on PBITM was found to be statistically insignificant.

Table V exhibits that when FATR increased by one unit, the ROCE went up in nine companies out of the selected ten companies, and the increase in ROCE was found to be statistically significant in five companies, whereas for one unit increase in FATR, the ROCE came down in one company which is statistically insignificant. For one unit increase in ITR, the ROCE increased in eight companies, whereas it reduced insignificantly in the remaining two companies. The increase in ROCE was found to be statistically significant in two companies. When DTR increased by one unit, the ROCE stepped up in seven companies, out of which only in one company this change was found to be statistically significant whereas the decrease in ROCE due to one unit increase in DTR which was found in the remaining three companies out of which in one company only the partial regression coefficient was found to be statistically significant.

Table VI reveals that the multiple correlation coefficient of PBITM on FATR, ITR, and DTR in the selected companies ranged between 0.425 (Organon) and 0.935 (Merck). This coefficient was found to be statistically significant in four companies. It implies that the joint influence of management of fixed asset, inventory and debtors on profitability was notable only in these four companies. The coefficients of

multiple determination in the selected companies reflect that the percentage of the total variation in the PBITM of the selected ten companies due to the variation in FATR, ITR and DTR ranged between 18 per cent and 87.5 per cent.

Table VII shows that the multiple correlation coefficient of ROCE on FATR, ITR and DTR in the companies under study varied between 0.559 (Fulford) and 0.895 (Merck). This coefficient was found to be statistically significant in five companies. It reveals that the joint influence of FATR, ITR and DTR on ROCE was highly significant in these five companies. The contribution made by the selected variables towards improving ROCE in the companies under study varied between 31.2 per cent and 80.1 per cent.

VI. Concluding remarks:

(i) There was a positive association between FATR and profitability in fifty-four out of sixty cases and in twenty-five cases the positive association was significant. In the remaining six cases, the relationship between FATR and profitability was negative but not at all significant. Thus, the analysis of correlation between FATR and both measures of profitability reveals that in 90 per cent cases a positive association was observed and in (46.30 per cent) of these cases the positive association was significant. Therefore, the study of the interrelation between FATR and profitability in a majority of the pharmaceutical companies conforms to the generally accepted rule that the higher the efficiency of fixed asset management, the higher the profitability.

(ii) A positive correlation between ITR and profitability was found in fifty-two cases out of sixty cases and the positive correlation was significant in twenty cases. The association between ITR and profitability was negative as well as insignificant in the remaining eight cases. Thus, the study of correlation between ITR and both measures of profitability exhibits that there was a positive relationship between efficiency of inventory management and profitability in 86.67 per cent cases and in 38.46 per cent of these cases the relationship was found to be significant. Hence, these results provide strong evidence of positive contribution of inventory management towards improving earning capability in a substantial portion of the sample companies during the study period.

(iii) The relationship between DTR and profitability was positive in forty-six cases out of sixty cases and in four cases the positive association was significant. In the remaining fourteen cases, DTR was negatively associated with profitability and in five cases out of these fourteen, the negative association was statistically significant. Thus the analysis of correlation between DTR and both measures of profitability discloses that in 76.67 per cent cases a positive association was found and in the remaining 23.33 per cent cases a negative association was observed. Although both significant favourable and adverse effects of the performance of debtors' management on profitability was present in the selected pharmaceutical companies, the outcome of the study confirms the hypothesis in a majority of the cases that the higher the efficiency of credit management, the higher the profitability.

These results provide strong evidence of positive contribution of inventory management towards improving earning capability in a substantial portion of the sample companies during the study period.

(iv) The study of the partial regression coefficients shown in the regression equation of PBITM on FATR, ITR and DTR and the regression equation of ROCE on FATR, ITR and DTR which were fitted in this study reveals that in nine cases the effect of fixed assets management on profitability was positive as well as significant, while in three cases the effect was negative but insignificant, in four cases the impact of inventory management on profitability was positive and significant whereas in no case the impact was negative as well as insignificant and the effect of credit management on profitability was positive and significant in one case, while in two cases the effect was negative as well as significant. Thus, the significant effect of fixed assets management on profitability was positive in 100 per cent cases and that of inventory management on profitability was positive in 100 per cent cases whereas the significant influence of credit management on profitability was positive only in 33.34 per cent cases. It also confirms that in a majority of the cases the management of fixed assets and the inventory management made positive as well as very significant contribution towards improvement of earning capability of the pharmaceutical companies during the study period.

The study of multiple correlation coefficient of ROCE on FATR, ITR, and DTR reflects that the joint impact of fixed asset management, inventory management and credit management on profitability was notable in five companies.

(v) The analysis of multiple correlation coefficient of PBITM on FATR, ITR and DTR discloses that the joint influence of fixed asset management, inventory management and debtors' management on profitability was very significant in four out of the ten selected companies, while the study of coefficient of multiple determination witnesses that at least 64.2 per cent of the total variation in the profitability of these four companies was accounted for by the joint variation in the three selected indicators of fund management, FATR, ITR and DTR. The study of multiple correlation coefficient of ROCE on FATR, ITR, and DTR reflects that the joint impact of fixed asset management, inventory management and credit management on profitability was notable in five companies, whereas the analysis of multiple determination makes it clear that at least 68.9 per cent of the total variation in the profitability of these five companies was explained by the three selected measures relating to fund management.

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Table I

Analysis of Correlation between Management of Fixed Assets and Profitability of the Selected Companies in Indian Pharmaceutical Industry

Company	Correlation coefficient between FATR and PBITM			Correlation coefficient between FATR and ROCE		
	Pearson	Kendall	Spearman	Pearson	Kendall	Spearman
Abbott	0.741 (3.489)**	0.364 (1.235)	0.469 (1.679)	0.735 (3.427)**	0.515 (1.899)*	0.615 (2.466)*
Astrazeneca	0.494 (1.796)	0.091 (0.288)	0.133 (0.424)	0.803 (4.260)**	0.576 (2.228)**	0.699 (3.090)*
Aventis	0.729 (3.367)**	0.565 (2.165)*	0.750 (3.585)**	0.835 (4.798)**	0.718 (3.262)**	0.865 (5.451)**
Fulford	0.299 (0.990)	0.015 (0.047)	(-)0.063 (0.199)	0.222 (0.719)	0.076 (0.241)	(-)0.021 (0.066)
Glaxosmithkline	0.896 (6.380)**	0.364 (1.235)	0.510 (1.874)	0.802 (4.245)**	0.242 (0.788)	0.392 (1.347)
Merck	0.674 (2.869)*	0.333 (1.116)	0.413 (1.434)	0.605 (2.402)*	0.168 (0.538)	0.340 (1.143)
Novartis	0.196 (0.632)	0.061 (0.193)	0.084 (0.266)	0.616 (2.472)*	0.485 (1.753)*	0.573 (2.210)
Organon	0.072 (0.228)	0.030 (0.094)	(-)0.035 (0.110)	0.586 (2.286)*	0.455 (1.615)*	0.608 (2.421)*
Pfizer	0.418 (1.455)	0.412 (1.430)	0.641 (2.640)*	0.481 (1.734)	0.364 (1.236)	0.608 (2.422)*
Wyeth	(-)0.437 (1.536)	(-)0.273 (0.897)	(-)0.406 (1.405)	0.708 (3.170)*	0.394 (1.355)	0.566 (2.171)

Figures in the parentheses indicatetvalues
*Significant at 5 per cent level.
** Significant at 1 per cent level.

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

Table II

Analysis of Correlation between Inventory Management and Profitability of the Selected Companies in Indian Pharmaceutical Industry

Company	Correlation coefficient between ITR and PBITM			Correlation coefficient between ITR and ROCE		
	Pearson	Kendall	Spearman	Pearson	Kendall	Spearman
Abbott	0.462 (1.647)	0.333 (1.116)	0.455 (1.615)	0.496 (1.806)	0.424 (1.459)	0.518 (2.018)
Astrazeneca	0.226 (0.733)	0.212 (0.686)	(-)0.147 (0.469)	0.079 (0.250)	(-)0.121 (0.385)	(-)0.192 (0.585)
Aventis	0.612 (2.447)*	0.455 (1.615)*	0.720 (3.280)**	0.797 (4.172)**	0.606 (2.402)**	0.804 (4.275)**
Fulford	0.479 (1.725)	0.168 (0.538)	0.235 (0.764)	0.452 (1.602)	0.168 (0.538)	0.270 (0.886)
Glaxosmithkline	0.593 (2.328)*	0.198 (0.638)	0.305 (1.012)	0.513 (1.889)	0.229 (0.743)	0.333 (1.116)
Merck	0.900 (6.529)**	0.485 (1.753)*	0.650 (2.704)*	0.785 (4.007)**	0.657 (2.755)**	0.834 (4.779)**
Novartis	0.467 (1.670)	0.333 (1.116)	0.441 (1.553)	0.321 (1.071)	0.273 (0.897)	0.413 (1.434)
Organon	0.345 (1.162)	(-)0.061 (0.193)	(-)0.042 (0.132)	(-)0.068 (0.215)	0.061 (0.193)	0.133 (0.424)
Pfizer	0.680 (2.932)*	0.462 (1.647)*	0.611 (2.440)*	0.602 (2.384)*	0.473 (1.697)*	0.641 (2.640)*
Wyeth	0.728 (3.358)**	0.364 (1.235)	0.497 (1.811)	(-)0.088 (0.279)	0.183 (0.586)	(-)0.014 (0.044)

Figures in the parentheses indicate t values
*Significant at 5 per cent level.
** Significant at 1 per cent level.

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

Table III

Analysis of Correlation between Debtors Management and Profitability of the Selected Companies in Indian Pharmaceutical Industry

Company	Correlation coefficient between DTR and PBITM			Correlation coefficient between DTR and ROCE		
	Pearson	Kendall	Spearman	Pearson	Kendall	Spearman
Abbott	0.490 (1.777)	0.061 (0.193)	0.126 (0.401)	0.540 (2.028)	0.212 (0.685)	0.308 (1.023)
Astrazeneca	0.225 (0.730)	0.107 (0.340)	0.207 (0.669)	0.396 (1.363)	0.290 (0.958)	0.371 (1.263)
Aventis	0.073 (0.231)	0.121 (0.385)	0.252 (0.823)	0.122 (0.388)	0.091 (0.288)	0.119 (0.379)
Fulford	0.460 (1.638)	0.290 (0.958)	0.497 (1.811)	0.434 (1.523)	0.351 (1.185)	0.511 (1.879)
Glaxosmithkline	0.349 (1.177)	0.515 (1.899)*	0.545 (2.055)	0.436 (1.532)	0.636 (2.606)**	0.664 (2.808)**
Merck	(-)0.227 (0.737)	0.273 (0.897)	0.014 (0.044)	0.566 (2.171)	0.229 (0.743)	0.298 (0.987)
Novartis	0.099 (0.314)	0.121 (0.385)	0.245 (0.799)	0.288 (0.951)	0.242 (0.788)	0.378 (1.291)
Organon	0.240 (0.781)	(-)0.030 (0.094)	(-)0.028 (0.088)	(-)0.212 (0.686)	(-)0.212 (0.686)	(-)0.294 (0.972)
Pfizer	0.568 (2.182)	(-)0.534 (1.997)*	(-)0.609 (2.428)*	(-)0.430 (1.506)	(-)0.303 (1.005)	(-)0.371 (1.263)
Wyeth	0.721 (3.290)**	0.364 (1.236)	0.497 (1.811)	(-)0.658 (2.763)*	(-)0.606 (2.409)**	(-)0.818 (4.497)**

Figures in the parentheses indicate t values
*Significant at 5 per cent level
** Significant at 1 per cent level.

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

Table IV

Analysis of Multiple Regression of PBITM on FATR, ITR and DTR of the Selected Companies in Indian Pharmaceutical Industry Regression Equation of PBITM on FATR, ITR and DTR: $PBITM=b_0+b_1 FATR+b_2 ITR+b_3 DTR$

Company	Partial regression coefficients			
	CONSTANT	FATR	ITR	DTR
Abbott	2.595 (0.502)	1.562 (2.785)**	0.399 (1.365)	-0.887 (-1.226)
Astrazeneca	-2.328 (-0.297)	1.250 (0.439)	1.029 (1.614)	0.923 (1.179)
Aventis	-20.991 (-1.475)	15.459 (1.871)*	-1.611 (-0.662)	0.484 (0.775)
Fulford	1.764 (0.419)	-0.123 (-0.543)	0.640 (1.065)	0.153 (0.950)
Glaxosmithkline	0.241 (0.013)	8.361 (4.253)****	-3.162 (-0.819)	0.041 (0.221)
Merck	-3.163 (-0.565)	4.695 (1.980)*	1.555 (5.104)****	-0.295 (-0.527)
Novartis	2.860 (0.357)	1.920 (1.173)	3.417 (2.841)**	-2.272 (-1.998)*
Organon	0.694 (0.057)	0.851 (0.644)	0.399 (0.628)	0.538 (0.750)
Pfizer	9.004 (0.683)	-0.841 (-0.326)	1.683 (1.503)	-0.340 (-0.640)
Wyeth	2.184 (0.274)	0.598 (0.572)	1.741 (1.468)	0.541 (1.472)

Figures in the parentheses indicate t values
*Significant at 10 per cent level.
**Significant at 5 per cent level
***Significant at 2 percent level
****Significant at 1 per cent level.

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

Table V
Analysis of Multiple Regression of ROCE on FATR, ITR and DTR of the Selected Companies in Indian Pharmaceutical Industry
Regression Equation of ROCE on FATR, ITR and DTR:
ROCE=B$_0$+B$_1$FATR+B$_2$ ITR+B$_3$ DTR

Company		Partial regression coefficients		
	CONSTANT	FATR	ITR	DTR
Abbott	-4.399 (-0.198)	5.164 (2.142)*	1.969 (1.569)	-1.887 (-0.608)
Astrazeneca	-27.233 (-1.523)	15.247 (2.351)**	1.591 (1.094)	1.101 (0.617)
Aventis	-40.254 (-1.653)	22.608 (1.699)	1.016 (0.244)	0.697 (0.596)
Fulford	16.231 (0.628)	-1.155 (-0.831)	4.346 (1.177)	1.021 (1.030)
Glaxosmithkline	14.076 (0.389)	10.321 (2.783)**	-4.436 (-0.998)	0.279 (0.803)
Merck	-13.509 (-0.885)	1.345 (0.208)	3.091 (3.723)****	3.471 (2.274)*
Novartis	-33.325 (-1.561)	12.225 (2.889)**	2.969 (0.955)	0.426 (0.145)
Organon	-18.364 (-0.656)	6.898 (2.291)*	-1.075 (-0.742)	1.633 (0.999)
Pfizer	-4.210 (-0.081)	3.035 (0.299)	4.640 (1.054)	-0.310 (-0.149)
Wyeth	12.921 (0.813)	3.066 (1.472)	5.784 (2.445)**	-1.654 (-2.255)*

Figures in the parentheses indicate t values
*Significant at 10 per cent level ***Significant at 2 percent level
**Significant at 5 per cent level. ****Significant at 1 per cent level.

Source: Compiled and computed from Capitaline Corporate Database, Capital Market Publishers (India) Ltd Mumbai

Table VII
Analysis of Multiple Correlation of ROCE on FATR, ITR and DTR of the Selected Companies in Indian Pharmaceutical Industry

	Multiple Correlation Coefficient of ROCE on FATR, ITR and DTR		
Company	R	R^2	F
Abbott	0.819	0.671	5.447
Astrazeneca	0.838	0.702	6.286*
Aventis	0.852	0.726	7.079*
Fulford	0.559	0.312	1.210
Glaxosmithkline	0.830	0.689	5.909*
Merck	0.895	0.801	10.756**
Novartis	0.750	0.562	3.424
Organon	0.651	0.423	1.957
Pfizer	0.609	0.371	1.574
Wyeth	0.857	0.735	7.401*

*Significant at 5 per cent level
**Significant at 1 per cent level

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

Table VI
Analysis of Multiple Correlation of PBITM on FATR, ITR and DTR of the Selected Companies in Indian Pharmaceutical Industry

	Multiple Correlation Coefficient of PBITM on FATR, ITR and DTR		
Company	R	R^2	F
Abbott	0.836	0.669	6.200*
Astrazeneca	0.660	0.436	2.061
Aventis	0.753	0.568	3.502
Fulford	0.556	0.309	1.195
Glaxosmithkline	0.906	0.821	12.198**
Merck	0.935	0.875	18.669**
Novartis	0.727	0.529	2.994
Organon	0.425	0.180	0.587
Pfizer	0.703	0.494	2.606
Wyeth	0.801	0.642	4.783*

*Significant at 5 per cent level
**Significant at 1 per cent level

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

Appendix 1
List of Companies under Study

Sl. No.	Company
1	Abbott India Ltd. (Abbott)
2	Astrazeneca Pharma India Ltd. (Astrazeneca)
3	Aventis Pharma Ltd. (Aventis)
4	Fulford (India) Ltd. (Fulford)
5	Glaxosmithkline Pharmaceuticals Ltd. (Glaxosmithkline)
6	Merck Ltd. (Merck)
7	Novartis India Ltd. (Novartis)
8	Organon (India) Ltd. (Organon)
9	Pfizer Ltd. (Pfizer)
10	Wyeth Ltd. (Wyeth)

Note: Serial numbers denote alphabetical order of the names of the companies