CHAPTER VI

RESULTS, INTERPRETATIONS, LIMITATIONS AND POLICY RECOMMENDATIONS

As described in chapter V, empirical analysis for the present study was carried out employing the ordinary least squares (OLS) method of multiple regression analysis on a Time-series Statistical Package (TSP) The empirical model of firm strategic behaviour proposed by this study was also presented in section 5 0 of chapter IV The a priori hypothesis were further listed in sec 7.0 of the same chapter Section 6 0 of chp V laid out the functional and equational form of the model and the same were accordingly tested in their linear forms. This chapter reports the findings, interpretations, limitations and policy recommendations for the various specifications of the model The individual relationships of the explanatory variables with the determined variable is explored This is to say, the individual impact of choice of high growth market segments, retention ratio, vertical integration and marketing intensity on firm profitability Next, the debatable role of market share in determining profits is taken up. The final section deals with empirical findings of the model's performance, observations, inferences, and limitations The relevant tables containing results are presented at the end of the chapter

1.0 Choice of Market Segments (CMS)

Proposition: In section 7 1 of chapter IV, the role of industry structure in influencing firm performance was presented The use of the concept of 'market structure', as against

the term industry structure, was introduced as relevant to the study of the Indian pharmaceutical industry characteristic of multiple diverse therapeutic segments The role of market evolution and its linkages with firm performance was also explored Mainly, a dimension of the structure-conduct-performance paradigm was sought to be presented, i e , industry structure variables influence the firm's strategy (conduct) to eventually impact business performance For the purpose of this study, market growth rates were considered Chief amongst the impact on firms of high market growth rates, the following were highlighted

* High gross margins co-existing with high marketing costs
* Increasing inflationary impact on input costs partially offset by rising productivity gains and economies of scale
* Pressure to increase capital investments in the manufacturing base to keep pace with growth and increasing volumes
* Rising return on investment but low or negative cash flow.

The net impact of these effects results in profitability growing at a high rate One of the reasons as to why firms pursue sales maximisation and growth offered was, to secure its long-run survival in a dynamic context It was also stated that firms do opt for sacrificing current profits to achieve a critical size Such growth could come from diversifying into related market segments. This is true of pharmaceutical firms in the Indian context. Finally, it was proposed that the decision to participate in expanding nascent markets, where the firm has relative efficiency advantages, has a positive impact on financial performance

Findings : Regression results for the Choice of High growth Market Segments (CMS), regressed on Return on Capital Employed (ROI) are presented in Table 6 1 The functional form of the same may be expressed thus

$$ROI = f(CMS)$$

Cross-sectional regressions were run for each of the six years from 1989-90 to 1994-95 Pooled data regressions were run to examine the behaviour of the variable over the combined time period 1989-90 to 1994-95 with 'time' as an additional variable The sign of the coefficient for five years out of the mentioned six, is negative and that for the entire period alongwith the time factor is also negative This implies that participation in high growth market segments has a negative impact on return on capital employed, i e firm profitability However, the 2-tail significance for the values derived employing the t-test, for all the mentioned periods of study, are not significant This implies that the variable choice of participation in high growth market segments, is not a statistically significant explanator of the variance accuring in firm profitability Except for the year 1990-91 the coefficient of determination (R^2) is low

Interpretation: The estimated regressions R^2 values mean that, with the exception of the year 1990-91, about 3 percent of the variation in firm profitability is explained by variation in the firms decision to participate in high growth market segments The two variables share a predominantly inverse relationship. This is to say that for the year 1989-90, where the results are not near to the significance level, if the representation of high growth market segment products in the firm's total turnover goes up by one percent, the

profitability of the firm is expected to decrease by about 0 10 percent For the entire period taken together, i e. from 1989-90 to 1994-95, incorporating the time factor, a one percent increase in the representation of high growth market segment products brings about a 0 06 percent decrease in firm profitability It should be noted that the determining variable in question with regards to the determined variable is insignificant, i e there is no statistically significant relationship between choice of high growth market segments and firm profitability.

The important finding, however, is the inverse relationship between the two The probable explanation for this could be in the underpinnings of the product market portfolio theory Large diversified multiproduct companies are usually manufacturing an assortment of products few of which are cash generators, while others are cash absorbing divisions The product portfolio, going by the popular BCG growth-share matrix, consists of four categories. One, the high growth - low market share products called 'Problem Children' (or question marks). Two, the high growth - high market share products called 'Stars' Three, the low growth - high market share products called 'Cash Cows' and four, the low growth - low market share products called 'Dogs' Thus, it can be seen that the variable in question in this study represents problem children as well as stars

As the name suggests, problem children can pose serious dilemmas for strategic planners As the market is growing relatively rapidly, if market share is to be maintained and further increased, there must be substantial net cash input As problem children have low market shares they will be low or negative net cash generators and yet, in order to achieve a larger market share in a high growth market (something which is often

prerequisite to future profitability), larger amounts of cash must be invested Star products, on the other hand, are characterised by having high market shares and tend to generate large amounts of cash. However, in order to maintain this predominant market position, they must also spend large amounts of cash Thus their overall cash position tends to be, mostly, roughly in balance The financial support for funding the existence of problem children (potential star candidates) and stars (potential high cash generators) comes from the large amounts of surplus cash generated by cash cows (McNamee, 1985, p 116/117) It is entirely possible that for the sample of pharmaceutical firms selected for this study, the products representing high growth market segments are predominantly consisting of problem children. The performance of any stars, perhaps, may be eclipsed by the effort to maintain and enhance market share in the face of emerging intense competition attracted by a rapidly growing market

The alternative explanation may be found in the work of Aaker & Day (1986) where they point out that high-growth markets may prove perilous because of two basic causes First, a visible growth market can attract too many competitors - the market and it's distribution channel cannot support them The intensity of competition is accentuated when growth fails to match expectations or eventually slows Second, the early entrant is unable to cope when key success factors or technologies change, in part because it lacks the financial resources or organisational skills In either case firm profitability gets affected

Lastly, the cost of inventing a new drug, giving legal clearances, designing and setting up requisite manufacturing operations, and finally winning the acceptance of the

medical profession is a most expensive and risky affair. In recent times, new drug candidates have barely managed to recoup their investments and break even

Limitations : The compounded annual growth rates (CAGR) were calculated from the year 1989-90 to 1994-95. Thus, a therapeutic segment was demarcated as a high growth market segment if it's CAGR was higher than that of the entire industry's CAGR for the same period. However, the cross-section regressions were run for single years So while the profitability values were for a single year, the therapeutic segment product may or may not be a high growth candidate for that specific year Since the growth dimension itself is inherently a time concept the cross-sectional method, perhaps, is inappropriate While a therapeutic segment may exhibit high growth for 1989-90, it may decline by 1992-93 and again regain in the closing year of 1994-95 These inter-year fluctuations may not be compatible with the annual profitability values Moreover, the data source for the profitability values were different from the source for the market related data. The only sure method would be to know the amount of profits that the high growth market segment products contribute to the firm's overall profits Obviously, no firm would permit access to such confidential data

A more rigorous methodology to capture the impact of a firm's product portfolio efficacy, yielding insights to a firm's priorities for investments, cash-flow movements, acquisitions and divestitures, on firm performance is called for (Mac Millan, Hambrick & Day 1982).

Policy Recommendations : Going by the finding that rapidly growing markets do not necessarily contribute to increased firm profits and that the two are not significantly related, the government could do well to keep drug products belonging to such segments outside the purview of the Durg Price Control Order

For the pharma firms, while the logic of the quest to achieve a critical size in order to influence market forces is valid, this would not necessarily translate into profitability gains in the short to medium run This also indicates that while large pharmaceutical Indian companies forego maximising current profits to reap long-term market share gains, they would be better off pursuing low volume niche markets offering better profit potential

The attractiveness of growth markets is enhanced to the extent that the opportunities can be exploited and the risks identified and controlled for The discussion of the premises and risks underlying growth situations, pointed out by Aaker & Day (1986) implies that early entry is most desirable or perhaps even mandatory in the context of the Indian pharmaceutical industry

2.0 Retention Ratio

Proposition : This variable represents the first component of firm conduct of the model proposed in this study A firm's proactive behaviour involves the attempt over time to modify and/or remove market constraints, thus permitting a better achievement of the firm's objectives. The proactive perspective recognises profits not as an outcome of the

play of market forces but more importantly emphasises the discretion that these profits provide for a firm to release itself from industry constraints. Chapter IV sec 7.2 laid out the role of reserves to make strategic investments in funding research and development projects, acquiring technology, entering emerging markets, acquisitions and building core competencies to acquire a critical mass of economic power to thwart legitimate market forces and to gain a competitive edge. The place of Retention Ratios, in policy formulation in the domain of finance for a firm, was also highlighted displaying the importance of Retained Earnings vide Fig 4.6. Linkages explored between growth and profitability further introduced the presence of the profit reinvestment rate, alternatively the retention ratio, as necessary to determine the maximum sustainable growth rate for the firm It was proposed that a conservative dividend policy, resulting in an improved retention ratio, will have a favourable impact on financial performance

Findings : Regression results for the Retention Ratio with one year time lag (assuming that reserves of the current financial year will have an impact not immediately but in the near future), regressed on Return on Capital Employed (ROI) are presented in Table 6 2 The functional form of the same may be expressed thus

$$ROI = f(RR_{t-1}).$$

Cross-sectional regressions were run for each of the six years from 1989-90 to 1994-95 Pooled data regressions were run to examine the behaviour of the variable over the combined time period 1989-90 to 1994-95 with 'time' as an additional variable The sign of the coefficients for five years out of the mentioned six, is negative and that for the

entire number of years combined alongwith the time factor is also negative This indicates that the retention ratio, representing a commitment to accumulate earnings and build reserves has a negative impact on return on capital employed, i e firm profitability The 2-tail significance for the values derived employing the t-test, for 2 years in the mentioned periods of study, 1990-91 and 1994-95 turn out to be statistically significant. The results for the pooled data regressions for the combined period from 1989-90 to 1994-95 with the time factor also turns out to be statistically significant Given these results, it would be reasonable to state that the variable Retention Ratio with a one year time lag, is not quite a statistically significant explainator of the variance accuring in firm profitability. For the years 1990-91 and 1994-95 the coefficient of determination (R^2) is 17 % and 24 % respectively. For the combined period of six years, from 1989-90 to 1994-95, with time, R^2 is 6 %

Interpretation : As the sign of the coefficient for 5 years out of the six years for the period in question is negative and especially given that the coefficient sign for the combined six years together, i.e. 1989-90 to 1994-95, with the time factor is also negative, the implication is that the relationship, between the two variables being analysed is inverse. An improved retention ratio, reflecting a conservative dividend policy, would increase retained earnings which in the succeeding financial year would lead to a decrease in firm profitability. The coefficient of determination (R^2) for the year 1994-95, being statistically significant, is 24 % This means that about 24 percent of the variation in return on capital employed, i.e firm profitability, is explained by variation in the Retention

Ratio with a time lag of one year. Given the inverse relationship, the estimated regression for 1994-95 may be interpreted as follows If the Retention Ratio for the current financial year is increased by one percent, the profitability of the firm for the succeeding financial year is expected to decrease by about 0.82 percent However, for the combined period of six years (1989-90 to 1994-95) with time, where the results are statistically significant, R^2 is only 6 % The estimated regression for the same year may be interpreted as follows · the increase in the Retention Ratio for the current financial year by 1 % will lead to a decrease in profitability by about 0.11 %. The results for the year 1990-91 also have statistically significant results, and bear almost similar interpretations

The surprising results contradict the a priori expected direct relationship between the two concerned variables These results indicate that in the Indian pharmaceutical sector a conservative dividend policy and consequently the practice of ploughing back profits adversely impacts financial performance. Although the results of the R^2s for the concerned periods points out that the impact is not all that influential Nevertheless, given that a positive relationship between Retained Earnings and Profitability was pivotal in our model of firm proactivity, the empirical findings are indeed disturbing. However, the theoretical rationale underpinning this construct is undisputable

Limitations : The plausible explanations that may be offered for the contradictory findings are :

The denominator component in return on capital employed, consists of net worth and long-term borrowings The net worth, further, consists of share capital, reserves and

surplus A conservative dividend policy will lead to an improved reserves position which in turn results to an increase in the denominator component of the determined variable, i e profitability. Obviously, the net result is as the retention ratio increases, the reserves component of capital employed also increases leading to a decrease in the overall profitability percentage. However, there are other inflows to the denominator component over and above retained earnings The extent to which retained earnings inflate reserves, will determine the decrease in the overall profitability ratio

Given the nature of the pharmaceutical sector, any investment in the current year would recover, or at least begin to recoup capital sunk, and generate profits after a minimum of four to five years. The time lag of one year will not suffice to capture the effect of the efficacy of strategic investments made in the current year It is quite possible that the investments made are yet in the process of breaking even and are presently in their gestation phases. Finally, it can even be the case that investments thus made are loss making propositions eating into the profitability of established business divisions A point also dealt with in the preceding section.

To determine the causal effects of reserves invested on profitability would require pure data devoid of accounting treatment for a long-term period of 20 to 25 years Cross-sectional data would not prove adequate for the same

The above mentioned flaws are largely methodological in nature and not defaults inherent in theory development Data to conduct a longitudinal analysis is a prime requisite to capture the dynamic behaviour of this construct

Policy Recommendations : Based on the theoretical rationale presented in chapter IV, the large pharmaceutical Indian firms would be well advised to adopt a consistent conservative dividend payout policy Further, based on the empirical findings of this study, there lies a need to reevaluate existing investments in new ventures, acquisitions and research and development candidates for their respective profit potential.

3.0 Vertical Integration

Proposition : This variable represents the second component of firm conduct of the model Central to our proposed model of firm proactivity as an explainator of differential performance amongst firms, is the acquisition of economic power through autonomy in the supply function or the value creation chain. In keeping with the Resource-Advantage Theory of the firm, chapter IV section 7.3 pointed out that the extent to which a firm is vertically integrated will determine which critical assets and competitive capabilities should be irrevocably within the firm. Chief amongst the advantages cited were avoidance of transaction costs, acquiring defensive as well as offensive market power and developing administrative and managerial advantages The major strategic value of vertical integration lies in its goal to harness and protect the building of critical complementary assets Further, the role of vertical integration as an important link to achieve critical growth, where the firm's objective is size, was also highlighted The place of vertical integration in the circumvention of legitimate competitive market forces vide leveraging opportunities for indirect price discrimination was also presented Finally, it was proposed

that financial performance, i e firm profitability, will be positively impacted by the level of vertical integration

Findings : Regression results for Vertical Integration, regressed on Return on Capital Employed are presented in table 6.3 The functional form of the same may be expressed thus :

$$ROI = f(VI)$$

Cross-sectional regressions were run for each of the seven years from 1988-89 to 1994-95 Pooled data regressions were run to examine the behaviour of the variable over the combined time period 1988-89 to 1994-95 with 'time' as an additional variable The sign of the coefficients for six years out of the mentioned seven, is positive and that for the entire number years combined alongwith the time factor is also positive. This indicates that the two variables vertical integration and return on capital employed, i e firm profitability, share a direct relationship. The 2-tail significance for the values derived employing the t-test, for the 3 years in the mentioned periods of study, 1988-89, 1989-90, and 1993-94 turn out to be statistically significant The results for the pooled data regressions for the combined period from 1988-89 to 1994-95 with the time factor also turns out to be almost significant Given these results, it would be reasonable to state that the variable vertical integration is quite a statistically significant explainator of the variance accuring in firm profitability For the years 1988-89, 1989-90, and 1993-94 the coefficient of determination (R^2) is 30 %, 20 %, and 11 % respectively For the combined period of 7 years, from 1988-89 to 1994-95, with time, R^2 is 3 %

Interpretation : As the sign of the coefficient for 6 years out of the 7 years for the period in question is positive and especially given that the coefficient sign for the combined seven years together, i e. 1988-89 to 1994-95, with the time factor is also positive, the implication is that the relationship between the two variables being analysed, is direct The more vertically integrated a firm is, indicating a greater autonomy possessed in the value creation chain also reflecting a better protection of critical complementary assets/resources, the more will it's profitability be An increase in the degree of vertical integration will lead to an increase in profitability Given the positive relationship, the estimated regression for 1988-89 may be interpreted as follows If the degree of vertical integration is increased by one percent, the firms profitability is expected to increase by 0.63 % Similarly, for the years 1989-90 and 1993-94, an increase in the degree of vertical integration by one percent, will lead to an increase in firm profitability by 0.36 % and 0.33 %, respectively For the combined period of seven years (1988-89 to 1994-95) with time the increase in vertical integration by 1 % will result in profitability going up by 0.16 %. The coefficient of determination (R^2) for the years 1988-89, 1989-90, and 1993-94, being statistically significant, is 30 %, 20 %, and 11 % respectively This means that about 11 to 30 percent of variation in return on capital employed, i.e firm profitability, is explained by variation in the degree to which the firm is vertically integrated However, for the combined period of seven years (1988-89 to 1994-95) with time, where the results are almost statistically significant, R^2 is only about 3 % It may be noted, however, that in cross-sectional data involving a substantial number of observations (in this case, 166) one can obtain very low R^2 values, yet find that the estimated coefficients are signed

appropriately and that quite a few of them are statistically significant, implying that the high R^2 criterion need not be overemphasized (Damodar, 1988, pg 122-123)

As per prior hypothesised expectations, and obtaining confirmatory expected coefficient signs in seven out of eight cases, the proposition that vertical integration as firm strategy brings about improved profitability may be adopted as valid for the large pharmaceutical firms in India Moreover, obtaining statistically significant results for three out of seven individual years and also for the combined period, indicates that vertical integration does indeed explain differential financial performance amongst firms to a great extent in the case of some years.

Limitations : As already explained in chp V sec. 5.4, Indian firms have been traditionally in the practice of buying major raw materials from their sister concerns, mainly to avoid taxation. The effects of this upstream integration escapes being captured by the measure formulated in this study, as it is inherently based on accounting values

In fact, if the further upstream integration effects are encorporated, the findings and results of the above mentioned report would be even more pronounced in favour of this study's postulations vindicating vertical integration as a clear candidate for being a part of the firm's proactive strategy programme

Policy Recommendations : The findings should come as a cause of concern for the State as firms, in the pharmaceutical industry, that are highly vertically integrated possessing high degrees of autonomy along the supply function may squeeze non-integrated ones,

avail of opportunities for indirect price discrimination, remove firms with counter-veiling market power by vertical acquisitions, and raise the capital requirements entry barrier The anti-trust authorities, would do well to monitor vertical integration practices in order to check anti-competitive consequences.

The value of vertical integration in strategy and business policy formulation of the firm, earlier espoused at the start of this section, entirely hold valid

4.0 Marketing Intensity

Proposition : This variable represents the final component of firm conduct of the model Product launch and subsequent promotion of the same, is one of the three critical competencies that prove decisive while competing in the pharmaceutical markets Chapter IV sec. 7 4 introduced the concept of marketing intensity representing the dimensions of market orientation, firm reputation, and brand equity. An organisation possessing a customer orientation is better able to track and respond to customers current and future needs, better satisfy customers by creating superior value for them, and pre-empting competitive actions Such organisations exhibit superior financial performance Favourable corporate reputations, also help enhance firm performance. They signal product quality, lower information collection costs, help charge premium prices, attract and retain efficient personnel, and act as a source for related diversification. The equity of the brands owned by an organisation also are a valuable intangible resource which is invariable, rare, and hard to copy. It was spelled out that firms owning brands with strong

equity help differentiate the organisation's product from competitors offerings, serves as a proxy for quality helps prevent market share erosion during price and promotional wars resulting in an entrenched competitive position. Quoting empirical works it was further pointed out that brand equity specifically translates into superior profitability by lowering current and future marketing expenditure, charging premium prices without fear of market share erosion and being a source of diversification for growth The three aspects reflecting the efficacy of a firms marketing activities was consolidated into the construct termed marketing intensity. Finally, it was proposed that a firms financial performance will be positively influenced by marketing intensity

Findings : Regression results for marketing intensity with a one year time lag (assuming that marketing efforts of the current financial year will have an impact not immediately but in the near future), regressed on Return on Capital Employed (ROI) are presented in Table 6 4 The functional form of the same may be expressed thus

$$ROI = f(MI_{t-1})$$

Cross-sectional regressions were run for each of the six years from 1989-90 to 1994-95 Pooled data regressions were run to examine the behaviour over the combined time period 1989-90 to 1994-95 with 'Time' as an additional variable The sign of the coefficients for all the six years is positive and that for the entire number of years combined alongwith the time factor is also positive This indicates that the two variables marketing intensity, representing the consolidated construct of market orientation, firm reputation and brand equity with a one year time lag, and return on capital employed, i e firm profitability,

share a direct relationship. The 2-tail significance for the values derived employing the t-test, for all the 6 years in the mentioned periods of study from 1989-90 to 1994-95 turn out to be extremely statistically significant It may be noted that for the years 1989-90, 1990-91, and 1992-93 the results are significant at the one percent level. The results for the pooled data regressions for the combined period from 1989-90 to 1994-95 with the time factor also turns out to be extremely significant. The final year 1994-95 is the lone exception. This may be attributable to the data source, Capital Line Ole's financial database, which was used in the absence of data availability from majority of the sample firms, the stock exchanges, and especially CMIE Given such emphatic results, it would be reasonable to state that the variable marketing intensity is a comprehensively significant explainator of the variance accuring in firm profitability For the years 1989-90, 1990-91 and 1992-93 the coefficient of determination (R^2) is 35 %, 33 %, and 35 % respectively For the combined period of six years, from 1989-90 to 1994-95, with time, R^2 is 13 %

Interpretation : As the sign of the coefficient for all the six years for the period in question is positive and especially given that the coefficient sign for the combined six years taken together, i.e. 1989-90 to 1994-95, with the time factor is also positive, one may conclude that the relationship between the two variables being examined is direct The more intense the marketing effort; reflecting a comprehensive customer orientation, a commitment to possess a trust worthy reputation, and build a greater equity for brands, the more will profitability be. An increase in the degree of marketing intensity will lead to an increase in firm profitability Given the positive results, the estimated regression for

1989-90 may be interpreted as follows . If the degree of marketing intensity is increased by one percent, the firms profitability is expected to increase by 0.67 % Similarly, for the years 1990-91, 1991-92, 1992-93, 1993-94, and 1994-95, an increase in the degree of marketing intensity by one percent, will lead to an increase in firm profitability by 0 65, 0.73, 0.98, 0.67 and 0.17 percent respectively For the combined period of six years (1989-90 to 1994-95) with time the increase in marketing intensity by 1 % will result in profitability going up by 0 65 % The coefficient of determination (R^2) for the years 1989-90, 1990-91, 1991-92, 1992-93, 1993-94 and 1994-95 is 35, 33, 20, 35, 18 and 0 25 percent respectively. This means that about 18 to 35 percent of variation in return on capital employed, i.e. firm profitability is explained by variation in the degree to which the firm is pursuing marketing intensity as a strategy. However, for the combined period of six years (1989-90 to 1994-95) with time, where the results are most significant, R^2 is about 13 %. Again, as explained earlier in sec. 3 0 of this chapter, a low R^2 for cross-sectional data need not be perceived as disturbing if the a priori coefficient signs are being yielded and the results are statistically significant

Given the favourable conclusive results in favour of the a priori hypothesised expectations, the proposition that marketing intensity pursued as firm strategy brings about improved profitability may be expected as valid for the large pharmaceutical firms in India Further, obtaining highly statistically significant results for five out of six years and also for the combined period, indicates that marketing intensity amply explains differential financial performance amongst firms to a large measure, almost for the entire period of study in question

Limitations : While marketing expenditure as a percentage of sales does indeed capture the extent of marketing effort put in by the firm, it is a weak method to encapsulate the effects of market orientation, firm reputation, and brand equity on profitability Measuring the individual influence of each of these components, perhaps would generate better clarity. But once again, developing and implementing refined measurement constructs would be certainly beyond the immediate scope of this study

Policy Implications : As the findings have demonstrated that to survive in the pharmaceutical market, substantial funding of marketing activities is essential This implies that budgeting for such expenditures is a top priority and could very well prove decisive for a pharmaceutical firm. However, the Price Control (DPCO, 1987) retail price formula's MAPE (Maximum Allowable Post-Manufacturing Expenses) component clubs post ex-factory production costs with mark-ups, which has a fixed ceiling as well No explicit consideration is given to marketing expenses, which as the empirical results of this study reveal, determines the fate of the firm Thus, the legislation authorities would do well to accommodate for this aspect, to some extent, in their price fixation formula

While the findings ensure the place of Marketing Intensity as a central piece in the proactive strategy scheme of the firm, what the firm can do is to develop an Integrating Control System to monitor and audit marketing activities to ensure the efficacy of the same

Finally, given that in all there are about 23,790 units jostling for a place in the Indian pharmaceutical market, itself is reflective of why marketing intensity is a crucial

capability in determining firm success. A more detailed analysis follows in Sec 6 0 of this chapter.

5.0 Market Share

Proposition : Sec 7 5 of Chp. IV presented the case for competitive position, alternatively market share, positively impacting a firm's financial performance. Chiefly the reason for this direct association, according to the efficiency theory, is that firm's with large market shares are more cost efficient due to experience curve effects and scale effects. The market power theory proposes that firms with large market shares have the power to obtain inputs at lower costs, extract concessions from channel members, and be in a position to dictate prices The reader was also referred to Szymanski, Bharadwaj & Varadarajan (1993) for a meta-analytic review

A note of caution was also made to view the variable in question as an output of the operations of some other variables Thus, implying that it per se had no intrinsic value and in fact, was a determined variable itself. Although this is open to debate, it was felt that the exclusion of this variable from the proposed model of this study is justified. Nevertheless, the pressure of overwhelming empirical evidence in favour of market share compelled this researcher to explore if the relationship holds true for the organised sector of the Indian pharmaceutical market.

Findings : Regression results for market share regressed on Return on Capital Employed (ROI) are presented in Table 6.5 The functional form of the same may expressed thus

$$ROI = f(MS).$$

Cross-sectional regressions were run for each of seven years from 1988-89 to 1994-95 Pooled data regressions were run to examine the behaviour over the combined time period 1988-89 to 1994-95 with 'Time' as an additional variable. The sign of the coefficients for five of the seven years is negative and that for the entire number of years combined alongwith the time factor is positive While associations for individual years is predominantly inverse, that for the combined period is direct. The relationship may at the best be considered to be inverse. An increase in market share will lead to a decline in return on capital employed, i.e. firm profitability The 2-tail significance for the values derived using the t-test for all the 7 years in the mentioned periods of study from 1988-89 to 1994-95 turn out to be extremely insignificant statistically With the lone exception of 1994-95, the results for all the years are far from being significant even at the 20 percent level of significance The results for the pooled data regressions for the combined period from 1988-89 to 1994-95 with the time factor also yields highly insignificant results Given such adverse results, it would be reasonable to claim that the variable market share is a comprehensively insignificant explainator of the variance accuring in firm profitability The maximum coefficient of determination (R^2) value is only 9 % for the year 1994-95. For the years 1992-93 and 1993-94 is approaching zero, while for the years 1988-89, 1989-90, 1990-91, and 1991-92 is 8 %, 5 %, 2 %, and 4 % respectively. For the combined period of seven years, from 1988-89 to 1994-95, with time, R^2 is only 1 %

Interpretation : Although the results, one may conclude, are overall very poor either in explainatory power or in terms of statistical significance, one important observation may be noted The sign of the coefficient for five of the seven years for the period in question is negative While the coefficient sign for the combined seven years taken together, i e 1988-89 to 1994-95, with the time factor is positive, the results of this regression prove to be the most statistically insignificant Based on these results, the relationship between market share and return on capital employed, i e firm profitability, may be interpreted as inverse. An increase in market share will lead to a decrease in firm profitability Although the results are insignificant, nevertheless the estimated regression for 1994-95 may be interpreted as follows If the market share is to increase by one percent, the firm's profitability would increase by 7 37 % On the other hand for the years 1988-89, 1989-90, 1990-91, 1991-92 and 1993-94, an increase in the market share by one percent would bring about a decrease in firm profitability by 3 62, 1 90, 1.44, 2 30 and 0 74 percent respectively For the combined period of seven years (1988-89 to 1994-95) with time the increase in market share by 1 %, will result in profitability going up by only 0 09% The coefficient of determination (R^2) for the individual years ranges from an abysmal almost nil percent to nine percent and for the total period of combined years taken together is a poor 1 % only This implies that, at best, about 9 % of variation in return on capital employed, i e firm profitability is explained by variation in the firm's market share, or alternatively it's competitive position For the combined period of seven years (1988-89 to 1994-95) encorporating the time element too, the R^2 is low at only one percent In summary, with

the exception of the inverse nature of relationship between the variables, the results highly statistically insignificant render market share a poor candidate to be considered as an explainator of differential performance amongst firms

As mentioned above the inconclusive, contradictory, and insignificant nature of results not in favour of the a priori hypothesised expectations, demonstrates that achieving a dominant competitive position as firm strategy does not necessarily translate into profitability gains for the large pharmaceutical firms in India At best, the important observation yielded from this exercise is that market share leadership may not always prove beneficial

The empirical findings of this study could perhaps be a case for Porter's (1980, pg 41-44) "stuck in the middle" firms Neither of the top 26 sample firms (totally accounting for a little more than half of the industry's output) possess a decisive lion's share of the market Either Indian pharmaceutical firms lack the aggressive investments to modernize, and the ability to capture or acquire critical market share size necessary for attaining cost-leadership volumes Or the Indian pharmaceutical firms carry too comprehensive a product line resulting in low economies of scale in manufacturing, distributing, and servicing the same. Given the nature of the highly segmented pharma market along therapeutic lines, the later appears more valid in the Indian context The firm stuck in the middle loses the high-volume customers who demand low prices or must bid away its profits to get this business away from low-cost firms Yet it also loses high-margin businesses to the firms who are focused on high margin targets or have achieved overall differentiation Also refer sec 6 0 of this chapter

Further, Woo (1984) in a study of 41 low return market share leaders reported that such firms were operating in volatile less stable markets exhibiting price inelastic demand characteristics and were orchestrating an inappropriate choice of competitive strategies These findings may be indicative of the phenomenon uncovered by the results obtained by this researcher However, a more specific and detailed investigation is warranted to ascertain the same.

The works of Woo & Cooper (1981, 1982), Prescott, Kohli & Venkataraman (1986), Jacobson & Aaker (1985); and Boulding & Staelin (1990) presented in the critique of PIMS data based research in chp. III may also be referred.

Limitations : While the data for the profitability ratios were sourced from company annual reports, the CMIE and the Capitaline Ole data base, the market share values were sourced from the ORG Retail Audit data base. Perhaps, these two different sources may have made the data incompatible. Moreover, the ORG figures are based on a sampling methodology and could perhaps not be reflective of true values Finally, the ORG market share figures are representative of the finished formulations sector of the entire pharmaceutical market. It is quiet possible that the poor performance of non-formulation products, which can represent a maximum of 40 % of the sample firm's turnover for this study, are eating into the profits generated by the formulations businesses

Policy Recommendations : The findings indicate that pursuit by firms to achieve a dominant market player status does not necessarily result in acquisition of market power that allows them the privilege of raising prices to subsidise operational inefficiencies The

government may presume that any potential collusive practices do not necessarily lead to cornering of the market Moreover, given the fragmented nature of the structure of the Indian pharmaceutical market, a stringent monopolistic restrictive trade practices legislation is uncalled for

Large pharmaceutical firms in India would be better off pursuing competitive positions in low volume high margin niche therapeutic segments adopting a focused differentiation business policy

The succeeding section extends the argument in favour of marketing intensity, and not market share, as a valid explainator of variation in profitability

6.0 Marketing Intensity, Market Share And Return On Investment

Proposition : Chapter V, sec 5.5 presented the linkages between return on investment, i e firm profitability; marketing intensity, representative of market orientation, firm reputation, and brand equity; and market share, representative of competitive position Chapter III and IV presented the case for market share as per se having no intrinsic value and that it be viewed as an 'output' variable that is a route to profitability In Chapter V it was also stated that the intensity and efficacy of the firms marketing effort should materialise into an enhanced competitive position While a multitude of factors would determine market share, the direct impact of marketing intensity is too strong to be ignored It was proposed that the two variables were directly related and that marketing intensity should favourably influence market share

Having obtained statistically insignificant results when regressing firm market share on firm profitability and having obtained favourable statistically significant results for regressing marketing intensity on firm profitability; regressing marketing intensity on market share represents the third conclusive equation mentioned in section 5 5 of chapter V First, this section explores the relationship between marketing intensity and market share, and later takes up the implications of the same to demonstrate that it is firm proactivity that leads to differential performance

Findings : Regression results for Marketing Intensity with one year time lag, regressed on market share are presented in Table 6.6 The functional form of the same may be expressed thus

$$MS = f(MI_{t-1})$$

Cross-sectional regressions were run for each of the six years from 1989-90 to 1994-95 Pooled data regressions were run to examine the behaviour over the combined time period 1989-90 to 1994-95 with 'Time' as an additional variable The sign of the coefficient for five out of six years is positive and that for the entire number of years combined alongwith the time factor is positive The nature of relationship between the two variables, predominantly for the individual years and that for the combined number of years being positive, indicates a direct association However, the 2-tail significance for the values derived using the t-test, in all cases, is statistically highly insignificant It may be claimed that marketing intensity is in no way significantly related with market share The maximum coefficient of determination (R^2) is 1 % and in five cases out of the six

regressions run is nearing zero, reflecting almost no amount of variation in market share being explained by the variation in marketing intensity

Interpretation : In summary the obtained results are extremely poor, either in explainatory power or in terms of having any significant statistical value While the coefficient signs, with the exception for 1989-90, are as per a priori expectations, the coefficient values are at best 0 01 to 0 02 and in two cases are nearing zero The coefficients of determination per se signal that the two variables are unrelated The hypothesised association for all individual years and for the combined period, in any case, is statistically invalid

These results imply that for the Indian Pharmaceutical Industry a firm's market share is not determined by the level of marketing effort, specifically size of outlay that a firm allocates for its marketing priorities but by some other factors However, the predominantly positive coefficient signs do indicate that two are favourably related and in the event had the obtained results been significant, would suit the proposition made Albiet one may conjecture that the inefficacy of marketing efforts deployed, too, might have resulted in the inability to enhance market share Or perhaps gains in volume may be attributable to a price penetration policy Or perhaps the growth in sales volume of firms have been neutralized by the overall growth in the Industry, in this case a healthy CAGR of 19 % Alternatively, other dimensions of competitive strategy like product quality, new product emphasis, product breadth, and Research and Development are better explainators of market share in the Indian pharmaceutical industry

Limitations : As explained earlier in the sections 4 0 and 5 0 of this chapter, marketing expenditure as a percentage of sales may not be a composite proxy for market orientation, firm reputation and brand equity which individually per se may be responsible for influencing market shares Again the data for the two variables come from different sources and perhaps may make them incompatible.

Implications for Profitability : From sections 4 0, 5 0 and the results obtained from this section, of this chapter, the following observations may be stated

* Market share is not a significant explainator of differential financial performance (profitability) amongst firms
* Marketing Intensity is not a significant explainator of differential competitive positions (Market shares) amongst firms
* Marketing Intensity is an extremely significant explainator of differential financial performance amongst firms

The above observations imply that marketing intensity does not determine market share and nor does market share, in turn, determine firm profitability However, marketing intensity does have a favourable, direct and statistically significant impact on firm profitability The reader is referred to the flowchart presented as Fig 5.2 in section 5 5 of chp. V. Given these associations, it would be arguably safe to make the following assertion

Volumes or achieving dominant competitive positions do not necessarily improve profitability Rather, it is the efficacy of a firm's marketing efforts, that differentiate the

firm's offering as being relatively superior leading to greater and better value addition, targeted at high margin niche market segments that deliver enhanced profitability, in the Indian pharmaceutical context

Given that the nature of demand for medicines is price inelastic (refer Chp II, sec 1.0), achieving dominant market share is, in fact, not based on a price penetration policy but on differentiating the firms offering as being relatively superior enabling it to charge premium prices in the pharmaceutical markets It is a successful product differentiation marketing effort that can offset the disadvantages of even a low share firm (Buzzell & Gale, 1987, pg 86)

Further, given the results in section 1 0 of this chapter it may also be claimed that industry structure, in this study represented by market growth rates, does not influence firm performance Rather, it is firm conduct, i e deployment of firm-specific resources, leading to a circumvention of market forces - in this study using product differentiation as strategy to influence demand conditions - which explains variation in profitability better A clear demonstration of the phenomenon that firm proactivity results in the acquisition of monopolistic power which in turn leads to differential performance among competing firms

7.0 Empirical Findings For Model

This study proposed an integral model of firm proactivity as strategic behaviour, attributable to the dynamics of competition, for explaining differential performance

amongst firms In order to empirically test this model, four constructs were created, operationalised and measured Choice of High growth Market Segment (CMS) was used to represent market structure, Retention Ratio (RR_{t-1}) to represent investment priorities to fund strategic thrusts; Vertical Integration (VI) to represent a commitment for internalizing, building, and protecting competencies and also for harnessing economic power, and Marketing Intensity (MI_{t-1}) to represent proactive monopolistic competitive intentions Market share was not included as it was taken to be a determined variable having no inherent strategic value per se The four constructs were used as predictors of the criterion variable, namely, firm performance represented by return on investment measured as return on capital employed The theoretical rationale and empirical underpinnings for the choice of the four constructs for explaining variation in financial performance amongst large firms in the Indian pharmaceutical sector was offered in sections 4 and 5 of chapter IV The linear form of the equation of the model was expressed thus

$$ROI = f(CMS, RR_{t-1}, VI, MI_{t-1})$$

Cross-sectional regressions were run for the six individual years from 1989-90 to 1994-95 As two variables possess a time lag of one year, the start-up year 1988-89 was rendered invalid Table 6 7 through to Table 6 12 present the results of the same Pooled data regressions were run to examine the model performance over the combined time period 1989-90 to 1994-95 with 'Time' as an additional variable Table 6 13 presents the relevant results The results and its implications are presented yearwise below

1989-1990 : The sign of the coefficients for Vertical Integration (VI) and Marketing Intensity (MI_{t-1}) are positive as per a priori expectations However, for the other two variables it is not so The 2-tail significance for values derived employing the t-test, turn out to be extremely significant for the Retention Ratio (RR_{t-1}) and Marketing Intensity (MI_{t-1}) individually The highest partial regression coefficient 0 78 means that, holding all other variables constant as marketing intensity increases by 1 %, firm profitability increases by 0 78 %. In the similar manner, interpretations for the other variables may be deduced. The coefficient of determination (R^2) value shows that the variables together explain about 74 % of the variation in firm profitability The high statistically significant F value indicates that the estimated regression model and R^2 are overall significant The variation in firm profitability does depend on the mentioned four variables.

1990-1991 : Almost similar results as 1989-90 are obtained but for the coefficient sign of Choice of High growth Market Segments (CMS) turning positive in line with a priori expectations The earlier mentioned two variables (RR_{t-1} and MI_{t-1}) continue to be individually significant However, there is a fall in R^2 to 0 50 % But the statistically significant F value continues to demonstrate the overall significance of the model

1991-1992 : Results indicate that the coefficient sign for CMS again reverts back to negative but yet remains individually statistically insignificant The coefficient sign for the Retention Ratio changes to positive, as per a priori expectations, but turns insignificant The coefficient sign for vertical integration changes to negative, not as per a priori

expectations, but yet remains highly insignificant The partial regression coefficient for Marketing Intensity not only remains positive and statistically significant but also climbs to 0 92 The overall significance of the model, indicated by the F value, now becomes significant at the 10 % level The R^2 further goes down to 36 %

1992-1993 : Results present a similar case of coefficient signs as in 1989-90 for the four variables Marketing Intensity turns out to be the only highly statistically significant variable out of the four with its partial regression coefficient further going up to 1.02 The model for this year retains its overall significance level of 5 %, and the improved explainatory power of the model is reflected in an increased R^2 of 46 % this time

1993-1994 : With the exception of Retention Ratio turning positive, the sign of the coefficients for other variables remains the same as in the previous year Once again the only significant variable is Marketing Intensity However, its partial regression coefficient drops to 0.54 The overall significance of the model reverts back to the 10 % level while the R^2 dips to around its 1991-92 level of 33 %

1994-1995 : The results for this year are not at all statistically significant Either for the variables individually (the lone exception being Retention Ratio) or for the overall model The R^2 also touches a low of 25 % These poor results, perhaps, may be attributable to the data source used, Capitaline Ole financial database, for the year in question, which is the case for all sets of results observed for this year

1989-90 to 1994-95 : Apart from the coefficient signs of time and Marketing Intensity, the results indicate an inverse relationship for the other variables and firm profitability. While the results for Marketing Intensity and Time are highly statistically significant, those for the Retention Ratio are so at the 7 % level, and for the remaining two are not significant Once again the partial regression coefficient for Marketing Intensity is high at 0.71 and that for Time is the highest at 1 86, implying that firm profitability will increase by 1 86 % per year other variables remaining constant The overall significance of the model is high at the 1 % significance level indicating that the combination of the four variables with time are statistically significant explainators of firm profitability However, R^2 is a low 18 % This may be, perhaps, attributable to the pooling of data Refer sec 3 0 of this chapter

Observations and Inferences: The inclusion of Choice of High growth Market Segments is needless Individually and as part of the model, this variable is highly statistically insignificant Nevertheless, explanations for the predominantly inverse relationship have been offered in section 1 0 of this chapter However, the important contribution of this finding is that market growth rates donot necessarily induce profitability favourably In fact, participation in such rapidly expanding markets to achieve critical size, i e pursuing growth as an objective, may not always be profitable Thus, market opportunities promising potential growth avenues should be viewed with caution in the Indian pharmaceutical sector context The major evidence is that market structures do not impact firm performance significantly

The inclusion of Retention Ratio, reflecting a crucial component in the proactive strategic component of the firm, appears to be reasonably justified Individually, in 2 yearly cases and for the combined number of years it appears statistically significant As part of the model, in 3 yearly cases and for the combined number of years it appears statistically significant Explainations for the disturbing inverse relationship was presented extensively in section 2 0 of this chapter

The inclusion of Vertical Integration, representing the firm's proactivity in controlling the supply function, is debatable Individually, in 3 yearly cases and for the combined period it is statistically significant. As part of the model surprisingly it is not significant in any of the cases Individually, too, its explainatory power, with the exception of 1988-89 and 1989-90, is not very high Nevertheless, the positive relationship does indicate that large firms in the Indian pharmaceutical sector would benefit by vertically integrating their operations

The major conclusive evidence of this study is the role of a firm's marketing activities in adding value to it's market offering by employing product differentiation and other related marketing tools Individually, with the exception of 1994-95, it is highly significant for all yearly cases and is also highly significant for the combined period with time As part of the model, again with 1994-95 as an exception (perhaps attributable to the data source), it proves highly significant for all yearly cases and for the combined period, too, is highly significant Individually, it's explainatory power is too large to ignore and the nature of association with profitability being positive clearly signals that the exclusion of this variable would certainly result in a specification bias

Having proved the insignificance of market share in explaining firm profitability and also demonstrating that marketing outlays do not necessarily lead to market share gains - the above presented evidence strongly indicates that marketing activities of a firm do not necessarily lead to increases in volume, however, more importantly it enables a firm to discriminate its offering as competitively superior thereby allowing it to charge premium prices This inference, arguably supported by empirical evidence, establishes the place of monopolistic competitive practices in proactive firm behaviour, the central theme of this study

Lastly, given the range of R^2 values, from 74 % to 33 % for the individual years from 1989-90 to 1993-94 and the R^2 value of 18 % for the combined period of all the years taken together, the model's explainatory power appears reliable With the exception of 1994-95, the model is highly statistically significant in all cases implying the validity of the overall specifications Largely, the integral model of proactive firm behaviour proposed in this study may be considered acceptable in explaining differential performance amongst large pharmaceutical firms in India

Limitations : The model would be more comprehensive had competitive strategy variables like product line breadth, product customization, product price and product quality, and firm-specific skills like corporate culture, functional skills, planning and implementation ability, been encorporated However, it should be appreciated that this would entail a massive research effort and is beyond the scope of the immediate concerns of this study

Table 6.1 : Regression results for Choice of High Growth Market Segments (CMS) regressed on Return On Capital Employed (ROI).

Year	Intercept	Coefficient Value	Time	Coeff of Determination (R^2)	No of Observations
1989-90	23.45 (5 93)	- 0 10 (0 61)	-	0 0245	17
1990-91	16 19 (5 50)	0 14 (1 35)	-	0 0763	24
1991-92	21 99 (5 57)	- 0 02 (0 20)	-	0 0017	25
1992-93	22 62 (5 84)	- 0 10 (0 93)	-	0 0345	26
1993-94	25 76 (6 27)	- 0 07 (0 70)	-	0 0201	26
1994-95	33 00 (3 46)	- 0 13 (0 54)	-	0 0124	25
Pooled Data	18 14 (6 00)	- 0 06 (0.99)	1 62** (2 26)		143

t - Values are presented within paranthesis
* - Significant at the 0.01 level
** - Significant at the 0 05 level
*** - Significant at the 0 10 level

Table 6.2 : Regression results for Retention Ratio with one year time lag $RR_{(t-1)}$ regressed on Return On Capital Employed (ROI).

Year	Intercept	Coefficient Value	Time	Coeff of Determination (R^2)	No of Observations
1989-90	26.87 (5 39)	- 0 07 (0 99)	-	0 0575	18
1990-91	30 28 (4 71)	- 0 17*** (1.88)	-	0 1729	19
1991-92	16 96 (2.52)	0 08 (0 84)	-	0 0339	22
1992-93	26 94 (4 45)	- 0 09 (1 09)	-	0.0533	23
1993-94	25 78 (4 17)	- 0 03 (0 34)	-	0 0054	24
1994-95	88 19 (3 85)	- 0 82* (2.65)	-	0 2416	24
Pooled Data	24 62 (5 57)	- 0 11** (2 05)	1 53** (2 12)	0 0596	130

t - Values are presented within paranthesis
* - Significant at the 0.01 level
** - Significant at the 0.05 level
*** - Significant at the 0 10 level.

Table 6.3 : Regression results for Vertical Integration (VI) regressed on Return On Capital Employed (ROI).

Year	Intercept	Coefficient Value	Time	Coeff of Determination (R^2)	No of Observations
1988-89	- 5 40 (-0.52)	0 63** (2 69)	-	0 2981	19
1989-90	6 02 (0.84)	0.36** (2 18)	-	0 1999	21
1990-91	15 29 (1 72)	0 09 (0.47)	-	0 0099	24
1991-92	13.86 (1 67)	0 19 (0 93)	-	0 0361	25
1992-93	16 17 (1 65)	0.08 (0 36)	-	0 0054	26
1993-94	9 38 (1 14)	0 33*** (1 74)	-	0 1117	26
1994-95	48.53 (2 21)	- 0 44 (0.93)	-	0 0364	25
Pooled Data	11 65 (2 36)	0 16 (1.54)	0 92*** (1 74)	0 0332	166

t - Values are presented within paranthesis
* - Significant at the 0.01 level
** - Significant at the 0 05 level
*** - Significant at the 0 10 level

Table 6.4 : Regression results for Market Intensity with one year time lag (MI_{t-1}) regressed on Return On Capital Employed (ROI).

Year	Intercept	Coefficient Value	Time	Coeff of Determination (R^2)	No of Observations
1989-90	15 75 (6 26)	0 67* (3 04)	-	0 3523	19
1990-91	12 60 (5 38)	0 65* (3.06)	-	0.3299	21
1991-92	15.66 (5 03)	0 73** (2 37)	-	0 2039	24
1992-93	12 19 (4 28)	0 98* (3 53)	-	0 3516	25
1993-94	17 42 (5.44)	0.67** (2 31)	-	0 1826	26
1994-95	26 93 (3 11)	0 17 (0 24)	-	0 0025	25
Pooled Data	11 78 (3 98)	0 65* (3.95)	1 37*** (2 08)	0 1312	140

t - Values are presented within paranthesis
* - Significant at the 0.01 level
** - Significant at the 0 05 level
*** - Significant at the 0 10 level

Table 6.5 : Regression results of Market Share (MS) regressed on Return On Capital Employed (ROI).

Year	Intercept	Coefficient Value	Time	Coeff. of Determination (R^2)	No of Observations
1988-89	30 28 (4 32)	- 3 62 (1 27)	-	0 0872	19
1989-90	25 59 (5 66)	- 1 90 (1 05)	-	0 0544	21
1990-91	22 43 (5 08)	- 1 44 (0 76)	-	0 0255	24
1991-92	26 10 (5 08)	- 2 30 (1 01)	-	0 0426	25
1992-93	18 70 (4 03)	0 43 (0 22)	-	0 0020	26
1993-94	24 84 (5 21)	- 0.74 (0 36)	-	0 0055	26
1994-95	14 04 (1 32)	7 37 (1 54)	-	0 0939	25
Pooled Data	18 07 (5 21)	0.09 (0.08)	0 95*** (1 78)	0 0192	166

t - Values are presented within paranthesis
* - Significant at the 0.01 level
** - Significant at the 0 05 level
*** - Significant at the 0.10 level.

Table 6.6 : Regression results of Marketing Intensity with one year time lag (MI_{t-1}) regressed on Market Share (MS).

Year	Intercept	Coefficient Value	Time	Coeff of Determination (R^2)	No of Observations
1989-90	2 46 (6 62)	- 0 01 (0 22)	-	0 0028	19
1990-91	2.25 (6 84)	0 001 (0 02)	-	0 0007	21
1991-92	2 03 (6 47)	0 01 (0 22)	-	0 0021	24
1992-93	2 01 (5 38)	0 02 (0 59)	-	0 0151	25
1993-94	2 03 (5 77)	0 005 (0 16)	-	0 0010	26
1994-95	1.91 (5.46)	0 01 (0 33)	-	0 0044	26
Pooled Data	2 35 (10 27)	0 006 (0 49)	-0 07 (1 33)	0 0141	141

t - Values are presented within paranthesis
* - Significant at the 0 01 level
** - Significant at the 0.05 level
*** - Significant at the 0 10 level

Table 6.7 : Regression results for the Model[#], for the year 1989-90.

Variable	Partial Coeff Value	Coeff of Determination (R^2)	F value	No of Observations
Intercept	19 06 (2 53)	0 7399	7 82*	16
CMS	- 0 06 (0 53)			
RR_{t-1}	- 0 12** (2 55)			
VI	0 07 (0.45)			
MI_{t-1}	0 78* (3 65)			

t - Values are presented within paranthesis
* - Significant at the 0 01 level
** - Significant at the 0.05 level
*** - Significant at the 0 10 level
\# - ROI = f (CMS, RR_{t-1}, VI, MI_{t-1})

Table 6.8 : Regression results for the Model#, for the year 1990-91.

Variable	Partial Coeff. Value	Coeff of Determination (R^2)	F value	No of Observations
Intercept	18 57 (1 60)	0 5019	3 53**	19
CMS	0 10 (0 69)			
RR_{t-1}	- 0 19 (2 35)			
VI	0 12 (0 52)			
MI_{t-1}	0 61 (2 63)			

t - Values are presented within paranthesis
* - Significant at the 0.01 level
** - Significant at the 0.05 level
*** - Significant at the 0 10 level
# - ROI = f (CMS, RR_{t-1}, VI, MI_{t-1})

Table 6.9 : Regression results for the Model[#] , for the year 1991-92.

Variable	Partial Coeff Value	Coeff of Determination (R^2)	F value	No of Observations
Intercept	13 35 (1 02)	0 3570	2 36***	22
CMS	- 0 11 (0 77)			
RR_{t-1}	0 14 (1 50)			
VI	- 0 11 (0 42)			
MI_{t-1}	0 92** (2 38)			

t - Values are presented within paranthesis
* - Significant at the 0 01 level
** - Significant at the 0.05 level
*** - Significant at the 0.10 level
\# - ROI = f (CMS, RR_{t-1}, VI, MI_{t-1})

Table 6.10 : Regression results for the Model#, for the year 1992-93.

Variable	Partial Coeff Value	Coeff of Determination (R^2)	F value	No of Observations
Intercept	14 99 (1 05)	0 4612	3 85**	23
CMS	- 0 005 (0 05)			
RR_{t-1}	- 0 05 (0 72)			
VI	0 02 (0 08)			
MI_{t-1}	1 02* (3.07)			

t - Values are presented within paranthesis
* - Significant at the 0 01 level
** - Significant at the 0.05 level
*** - Significant at the 0.10 level
\# - ROI = f (CMS, RR_{t-1}, VI, MI_{t-1})

Table 6.11 : Regression results for the Model[#], for the year 1993-94.

Variable	Partial Coeff Value	Coeff of Determination (R^2)	F value	No of Observations
Intercept	11 17 (1 02)	0 3329	2 37***	24
CMS	- 0 11 (0 91)			
RR_{t-1}	0.01 (0 07)			
VI	0 27 (1 37)			
MI_{t-1}	0.54*** (1 76)			

t - Values are presented within paranthesis
* - Significant at the 0.01 level
** - Significant at the 0 05 level
*** - Significant at the 0 10 level.
\# - ROI = f (CMS, RR_{t-1}, VI, MI_{t-1})

Table 6.12 : Regression results for the Model[#], for the year 1994-95.

Variable	Partial Coeff Value	Coeff of Determination (R^2)	F value	No of Observations
Intercept	94 69 (3 06)	0 2498	1 58	24
CMS	0 03 (0 11)			
RR_{t-1}	- 0 81** (2 13)			
VI	- 0 18 (0 34)			
MI_{t-1}	0 03 (0 04)			

t - Values are presented within paranthesis
* - Significant at the 0.01 level
** - Significant at the 0 05 level
*** - Significant at the 0.10 level.
\# - ROI = f (CMS, RR_{t-1}, VI, MI_{t-1})

Table 6.13 : Regression results for the Model#, for the combined years 1990-95.

Variable	Partial Coeff Value	Coeff of Determination (R^2)	F value	No of Observations
Intercept	20 38 (2 89)	0 1792	5 33*	128
CMS	- 0.05 (0 65)			
RR_{t-1}	- 0 10** (1 80)			
VI	- 0 07 (0 50)			
MI_{t-1}	0 71* (3 77)			
Pooled Data	1.86* (2.58)			

t - Values are presented within paranthesis
* - Significant at the 0 01 level
** - Significant at the 0.05 level
*** - Significant at the 0 10 level
\# - ROI = f (CMS, RR_{t-1}, VI, MI_{t-1}, T_{t-1})