6.1: CONCLUSIONS

A) On the basis of the study the following major industry specific conclusions emerge.

1. The Pharmaceutical Industry in large populated geographically vast developing country plays a strategic role in the economy. Firstly, it is very critical for the health security of the people of the country. Secondly, in recent years economies are becoming more knowledge based. Here in the pharmaceutical industry possesses the potential to translate scientific knowledge into innovations for new novel drug discovery through properly planned research and development activity. Such application of technically component human resource for industrial development is feasible in India, which has vast base of technically component skilled personnel technical man power. Further, under globalization trade creation and trade diversion is possible and this can also enhance the capabilities of local pharmaceutical industry to become competitive in the global market. Taking the above into account, pharmaceutical industry in India assumes critical importance and in the recent years the policy initiatives of the Government have mainly focused to accelerate the growth of this strategic industrial sector the economy. Our study reveals that the policy initiatives by the Government have succeed in the post reform period as far as acceleration of the growth of the pharmaceutical industry is concerned in India.

The Indian pharmaceutical industry has undergone structural changes with positive efforts on its growth during the period of our study. The industry which had limited technical capabilities to
manufacture modern drugs locally in the 1950s to 1970s has in post economic reform period emerged technologically as one of the most dynamic manufacturing segment of the Indian economy. Technologically today the Indian pharmaceutical industry has the capability to manufacture modern life saving and other drugs indigenously and cost effectively. Presently indigenously the pharmaceutical industry meets up to the seventy percent of the domestic requirement of bulk drugs and almost all the demand for formulation. This post economic reform development has thus restricted the imports from developed countries into India.¹ Further more the industry also exports pharmaceutical product to nearly 65 countries² According to Daily Deccan Herald; in 2005 the Indian pharmaceutical industry possesses the largest number of United State of America Food and Drug Administration approval manufacturing facilities outside USA³. Thus the post economic reform period the Indian pharmaceutical industry has;

1. Achieved a great deal of self reliance
2. Become more globally competitive.
3. Reduced imports from other countries and increased its exports to other countries.
4. Made significant efforts to enhance research and development capabilities. Globalization and suitable domestic policy changes have helped and succeeded in making this sector cost efficient and competitive.

2. Macro economic policy initiatives in the economic reform period since 1991 have increased free trade and also opened the economy for more foreign capital inflows and technology. Financial sector reforms, foreign trade reforms, capital market reforms, fiscal and foreign trade reform have facilitated the capital and technology inflow into the pharmaceutical industry in India and this has brought
in industrial structural changes in the form of Acquisition and Merger activity. Industrial consolidation has taken place due to this and this process has enhanced the efficiency in this sector. Of course our study adequately reveals that efficiency enhancement has benefited the organized sector to a greater extent and the large number of small pharmaceutical units has yet to benefit from this.

3. Top pharmaceutical companies of India like Dr.Reddy’s Lab, Ranbaxy, Zydus, Torrent etc have also undertaken global merger and acquisitions and this has made there companies globally competitive.

4. Product Patent Regime has increased the research and development efforts in Indian pharmaceutical industry and the world trade organisation Patent Regime in initial stages has benefited the multinational companies, but once the products come off patent, the generic capabilities of the domestic pharmaceutical industry in India will give to competitive edge to India in the world generic market in future.

5. Theoretically the advocates liberalization and open economy growth model of economic growth argue that globalization policies lead to creation of trade creation and trade diversion benefits which in the long run bring about favorable international balance of payments position. Developing countries were apprehensive that only developed countries will benefit from globalization. However, the experience of post economic reform performance of Indian pharmaceutical industry reveals that the Indian pharmaceutical industry export value has not only increased but export diversification also has taken place. Thus our study reveals that developing countries can also benefit from globalization if appropriate policy formulation is undertaken.

6. The present study also highlights another important growth aspect of the Indian pharmaceutical industry. Though is post economic reform period growth is impressive yet the fact cannot be denied that
the relative size of the Indian pharmaceutical industry in terms of production, sales, export value, share in global trade is yet small. The sales research and development ratio also needs to be improved as compared to the position of the other countries. The basic issue is to further investigate into the issue of global competitiveness of the industry. Further study needs to be done as to how the Indian pharmaceutical will perform in a global setting. For this study relating to cross country performance of the industry needs to be done with emphasis of;

I. Growth potential
II. Productivity analysis
III. Technology and trade performance as compared to some of the best world pharmaceutical companies, and
IV. Analysis of the new competitive strategies that Indian pharmaceutical firms are adopting to compete in the global market.

7. Based on the study of the Indian pharmaceutical industry in post economic reform period and data analysis done our hypothesis stands validated.

B) On the basis of data tabulation analysis and data interpretation done in the study the following major conclusion emerge;

1. The largest pharmaceutical markets are US, Europe and Japan. The United State accounted for approximately 33 percent of the total world market for ethical (prescription) pharmaceuticals in 1996, while Europe’s share amounted to about 29 percent and Japan’s share was nearly 18 percent. In 2006 global pharmaceutical revenues was US $ 643 billion growing by 7 percent over the last year.

2. The share of the global pharmaceutical industry in the global
healthcare industry was 15 percent as reported by Indian Credit Rating Agency in January 2004. The share of pharmaceutical expenditure in the total global healthcare expenditure varies from country to country. The size of the global pharmaceutical industry was estimated at US$ 400.5 billion and around 88 percent of the market was accounted for by North America, Europe and Japan in the year 2002. The global pharmaceutical industry reported a compound annual growth rate of 6.8 percent during 1992-2002. The pharmaceutical markets in the developed regions witnessed healthy growth rates thereafter with growth rate of around 12 to 15 percent in the US and 8 to 10 percent in European countries. The pharmaceutical industry which had been concentrated at the top underwent further consolidation. The top 10 players, who together had around 28 percent share of the global market in 1990, accounted for around 46 percent of the market in 2002.

3. The global pharmaceutical market is forecasted to grow to US$ 842 billion in 2010, an equivalent compound growth rate of 6.9 percent over the next five years. The global generic medicines market is worth over US$ 80 billion, which is 30 percent of total sales.

4. The Indian pharmaceutical industry is ranked 13th in value terms and 4th in volume terms globally, as in 2004.

5. The USA share of total pharmaceutical production from 38 percent in 1985 to 31 percent in 1999, during the period total production of USA was decreased but compared to other countries USA is largest pharmaceutical producer in world market. Japan share of total pharmaceutical production from 19 percent in 1985 to 16 percent in 1999. Together these two countries produced 57 percent of the world pharmaceutical in 1985 and 47 percent in 1999.

6. In 2007, the total global pharmaceutical sales reached to US$ 712 billion. Among the ten leading international markets combined, which account for 81 percent of world wide sales, audited growth was just 5.7 percent, down from 7.2 percent in 2004.
7. Data on study reveals that from 1997 to 2007: total sale of the global pharmaceutical industry shows continuous growth the period under study. Total sales of global pharmaceutical industry increased from US$ 289 billion in 1997 to US$ 357 billion in 2000 and further to US$ 560 billion by 2004. This global sale by 2007 was US$ 712 billion.

8. The majority of global pharmaceutical sales originate in the triad (three) means US, EU and Japan with ten key countries accounting for over 80 percentage of global market.

9. According to IMS Health as stated in the 2004 Annual Report, the United States, the European Union and Japan comprise the three major pharmaceutical markets which together represent 91.5 percent of world sales; and the U.S. market alone accounts for about 70.4 percent of world sales. Not surprisingly, all big Pharmaceutical companies to a significant extent concentrate their resources on these markets, especially on the U.S. market.

10. The share of world pharmaceutical sales in developing countries at this point of time is much lower, India’s and Pakistan sales is very low it is to US$ 628.3 million. Share of world pharmaceutical sales only 0.3 percent. They show much faster growth rate than developed countries do.

11. The total sales of USA and PhRMA member companies have shown a continuous increasing trend since the study period. Total sales to states were US$ 66535.6 million in 1991 increased to US$ 245801 million in 2006. In 1995 sales of USA and PhRMA member companies was US$ 91039 million, which rose to US$ 145958.4 million in 2000 and further went up to US$ 230557.9 million in 2004.

12. Research and Development is the cornerstone of the pharmaceutical industry since the extent and success of company research and development activities largely determine the future pattern of corporate earning and growth. The larger companies in the industry in general and multinational sector in particular are highly research and
development intensive. Research and development intensity in terms of sales, net income and cash income (net income after tax). Research and Development from 1991 to 2006 in the USA indicated that the pharmaceutical industry composition of research and development expenditure was 77.7 percent it is higher than world Pharma countries.

13. Compound growth rate of Total research and development expenditure of USA and PhRMA member companies during the study period was 10.44 percent.

14. USA research and development expenditure as a percentage of sales increased from 17.9 percent in 1991 to 21.9 percent in 1994 further increased to 19.4 percent in 2006.

15. International trade in pharmaceuticals is dominated by the high-income industrialized countries. In 1999, they accounted for 93 percent of global exports and 80 percent of global imports, by value. This concentration in trade has increased since 1980. Between 1980 and 1999, middle-income countries’ share of world exports fell, and the shares of both low and middle-income countries in world imports dropped significantly. With the notable exception of Japan, the countries, which contribute most to world, trade both in exports and in imports are the world’s major producers: the USA, UK, Germany and France. Japan, the world’s second largest producer, continues to produce primarily for the domestic market and since 1980 has reduced its share of the world’s pharmaceutical imports.

16. The low-income manufacturing countries produce predominantly for the local market. Even in India, with over 20000 pharmaceutical manufacturers, where the export share of local production has tripled since 1985, less than 20 percent of total production enters international trade.

17. U.S. companies play a key role in the world pharmaceutical industry out of 15 leaders of this market are headquartered in the United States; moreover, the largest world pharmaceutical company, NJ based Pfizer,
has sales of pharmaceutical products that are approximately 1.5 times higher than those of its closest competitor. The pharmaceutical industry is characterized by a high level of concentration with fifteen multinational companies dominating the Industry.

18. The majority of the largest pharmaceutical companies are not diversified. They are either concentrated exclusively on pharmaceutical products, (Eli Lilly and Astra Zeneca are good examples with virtually 100 percent of their revenues coming from sales of pharmaceutical products) or although they develop and manufacture other health care products, they still have pharmaceutical divisions as the core of their business that provide more than 50 percent of their revenues.

19. The Indian pharmaceutical industry is one of the developing world’s largest and most developed industries in the global sense. India ranks 4th worldwide accounting for 8 percent of the world's production (in terms of volume) and 13th in terms of value. It is estimated that by the year 2010, the Indian pharmaceutical industry will have the potential to achieve over Rs1,00,000 crores in formulations and bulk drug production. In addition, in the year 2005 Indian pharmaceutical companies captured around 70 percent of the domestic market. In the year 2006-2007, India's gross domestic product grew at an impressive 9.2 percent. The growth rate of industrial sector was 10.6 percent in the first nine months of the year 2006-07. The share of industrial sectors of the economy in India's gross domestic product is 26.4 percent, of which pharmaceutical industry contributed 1.3 percent to gross domestic product in 2006-2007. The pharmaceutical sector value of output grew more than tenfold from Rs. 5700 crores in 1991 it has grown to Rs.51471crores in 2006-07.

20. The Indian pharmaceuticals industry had achieved a turnover of about US$12 billion in 2005-06, and is expected to grow by 13 percent in 2007. Its pharmaceutical export value reached about US$ 4.7 billion
during 2005-06. Pharmaceutical industry accounts for about 2.91 percent of total foreign direct investment into the country. The foreign direct investment in pharmaceutical sector is estimated to have touched US$ 172 million, thereby showing a compound annual growth rate of about 62.6 percent.

21. Indian Pharmaceutical sector is a highly fragmentated industry. The Indian Pharmaceutical industry is estimated to have over 10,000 manufacturing units, as given by Organisation of Pharmaceutical Producer of India. The organized sector accounts for just 5 percent of the industry with around 300 players, while a huge 95 percent is in the unorganized sector. A large number of players in unorganized segment are small and medium enterprises and this segment contributes 35 percent of the industry turnover. There are also 5 Central Public Sector Units that manufacture drugs.

22. The Indian pharmaceutical industry is valued at US$ 5.3 billion in 2005, it is less than one percent of the global pharmaceutical industry (US$ 550 billion)

23. Surge in production has been driven by legislative reforms, the growth in contract manufacturing and outsourcing, value added foreign acquisitions and joint ventures, India’s mastery of reverse engineering of patented drug molecules, and India’s efforts to comply with its World Trade Organization (WTO) Trade Related Intellectual Property when India joined the world trade organisation in 1995, its Agreements (TRIPS) obligations.

24. Pharmaceutical exports were valued at less than US$600 million. By 2005, its exports had grown to US$ 3.7 billion and accounted for more than 61 percent of industry turnover.

25. Under the new patent regime many multinationals are making a comeback on the Indian centre stage; the attractions being India’s traditional strengths in contract manufacturing and as an outsourcing location for research and development, particularly for clinical trials and other
The major multinational players in the organised sector of the industry are E Merck (India), Parke-Davis (India), Pfizer, Rhone-Poulenc (India), Glaxo-Wellcome, Novartis, and SmithKline Beecham Pharmaceuticals. The main Indian bulk drugs and formulations manufacturers in the organised sector are Dr. Reddy's Laboratories, Ipca laboratories, J B Chemicals & Pharmaceuticals, Nicholas Piramal India, Ranbaxy, Cipla, Sun Pharmaceuticals, and Wockhardt.

Under the globalisation process the role of the public sector has been marginalised and they have been made sick. Attempts either have been made to privatise or close them.

In 2006-07 the pharmaceutical industry had a capital investment of Rs. 7100 crore. It produced bulk drugs worth Rs.13600 crore in 2006-07, and formulation worth Rs.21107 crore in 2001-02. The annual turnover Rs.35800 crore in 2005-06, the research and development expenditure Rs. 2350 crore in 2006-07.

The domestic pharmaceutical industry output exceeds Rs.51471 crore, of this around 74 percent is formulations and 26 percent is bulk drugs. Production of both bulk drugs and formulations increased at a very rapid pace between 1991-1992 to 2006-2007.

The compounded annual growth rate (CAGR) of bulk drug of Indian pharmaceutical industry for the period 1991-92 to 2006-07 is approximately 19.65 percent.

The compounded annual growth rate (CAGR) of formulation of Indian pharmaceutical industry for the period 1991-92 to 2006-07 is approximately 14.68 percent.

The current capital investment in the industry is estimated at Rs.7100 crore against Rs.24 crore in 1952 and Rs. 56 crore in 1962 and Rs. 600 crore in 1982. The capital investment has also increased over the past few years. It has increased from Rs. 950 crore in 1991-92 Rs. 9125
crore in 1995-96, Rs.3400 crore in 2001-02, and Rs. 7100 crore in 2006-07 and registering a growth about 7.47 times over the study period.

33. Investment in research and development by industry as a whole in India has been low, only around 0.6 percent of the turnover. In the Indian pharmaceutical industry, the average research and development expenditure is around 2 percent of the turnover contributed by around 150 companies. The low investment in research and development is due to the low levels of profitability and comparatively small size of the companies. However, the scenario is now changing. Some pharmaceutical companies now spend nearly 5 percent of their turnover on research and development. The research and development expenditure by the Indian pharmaceutical industry is around 1.9 percent of the industry’s turnover. This obviously, is very low when compared to the investment on research and development by foreign research-based pharmaceutical companies. They spend 10 to 16 percent of the turnover on research and development.

34. The pharmaceutical industry has been selected as one of the sunrise areas where concerted efforts are being made to attract foreign direct investment. The Government of India has not only abolished industrial licensing for bulk drugs, intermediates and formulations, but has allowed automatic foreign direct investment approvals up to 100 percent foreign ownership. During 1991 to 2004, the drugs and pharmaceutical sector attracted nearly Rs 35 billion in foreign direct investment inflows.


36. Merger and acquisitions is fuelled by the need to explore newer markets and product for future growth in this industry. Further,
acquisitions also act as mechanisms to alleviate regulatory constraint in penetrating overseas markets. Hence, Indian Pharmaceutical companies are increasingly focusing on global acquisition and adopting the strategy of acquiring existing generic drug marketing companies that hold valid drug licenses.

37. The Indian Pharmaceutical companies have been aggressively making acquisition overseas, especially in the US and Europe, in the past two to three years. Most of the acquisitions have been in the generics space and have resulted in Indian firms gaining access to manufacturing facilities in potential areas like the European Union. Industry consolidation is considered to be a better option for including growth. Many organized companies like Ranbaxy, Sun Pharma, Wockhardt, Cipla and Dr, Reddy’s Lab, have already adopted the consolidation strategy in an attempt to strengthen their base in the regulated markets by acquiring small companies in Europe and US.

38. Number of overseas acquisitions by Indian firms was 33 in 2000 which come down to 21 in 2002, but again increased to 38 in 2003 and reached to a high of 177 in 2006 and within eight months of 2007, Indian multinational companies have made 122 acquisitions worth nearly US$ 32.9 billion.

39. Number of acquisitions made by Indian pharmaceutical firms abroad increased from 5 in 2002 to 28 in 2006 and total acquisitions made in 2000 to 2006 were 87. Increase acquisition in value terms of Pharmaceutical sector increased from US$12 million in 2002 to US$ 1374 million in 2006 and total value of overseas acquisitions by this sector in 2000-2007 was US$ 2814 million. The share of Pharmaceutical sector in total overseas acquisitions (in value terms) was 7.20 percent in 2000-2007.

40. Total export of the Indian Pharmaceutical Industry shows continuous growth during the period under the study. Total export increased from
Rs.46.38 crore in 1980-81 to Rs. 16681.14 crore in the year 2004-05. The Compound growth rate of total export for this period 29.51 percent.

41. A total export consists of formulations and bulk drugs. Between these two shares of formulations more than bulk drugs. It is about 53.59 percent. Formulation shows continuous growth as it increased from Rs.35.11 crore in 1980-1981 to 3180 crore in 1997-1998. Formulations export have grown at Compound Growth Rate of 31.20 percent.

42. Total imports of drugs and pharmaceuticals rose from Rs. 112.54 crores in 1980-1981 to Rs. 5300 crore in 2006-2007.

43. India has a comparative advantage in pharmaceutical exports due to its known ability for low-cost reverse-engineering of brand name drugs to produce generic drugs. Despite this proven comparative advantages , Indian pharmaceutical exports contribute a negligible share to world pharmaceutical exports, hovering around 1 percent of world pharmaceutical exports.

6.2: SUGGESTIONS

Following are the major suggestions that the present study makes on the basis of the data analysis and study made of the Indian Pharmaceutical Industry in post-economic reform period;

1. Patent protection regime no doubt gives benefit to the global pharmaceutical industry in the form of profit maximization. However, the fact also remains that if research and development expenditures are increased in all countries it is also possible that new drugs and better drugs will develop to cure diseases that are more prevalent in densely populated countries in Asia and Africa. This can help poor countries in there continents to get access to better drugs to cure disease like Aids, HIV, malrrtrtion, T.B., which etc are region specific.
2. Indian Pharmaceutical Industry has a role to play in the global generic market and policy initiatives are needed to boost India’s exports in this industry. Tax incentives for research and development, allowing for liberal imports of raw material further simplification of export producers, encouragement to facilitate more inflow of technology into the Indian Pharmaceutical Industry are steps that both the Central and State Governments can take.

3. The market base for life saving drugs in third world countries is very large. The Pharmaceutical Industry in India can be well benefited of maximum use of the countries vast resource base Scientific Laboratories, Scientists and databases in Universities, IITs, research and development Institutes are harnessed in collaboration to look into the health security needs of the developing countries. This calls for coordination among the and across the multiple partners and herein Indian Pharmaceutical Companies can provide liberal funds to under take more and more industry need specific applied research in pure and life sciences.

4. At the World Trade Organization level and in the Trade Related Intellectual Property Rights Agreement clauses it is necessary that relaxation has to be provided for making medicines being available sufficient in poor countries. This needs a great deal of lobbying and here it is suggested that India should take the leads. India’s trade making polices need to be reoriented by sufficient pressure been exerted by activist oriented Non Governmental Organizations intelligentsia and press also.

5. Product patent regime has increased the pharmaceutical companies research and development expenditure and they have made huge investment in research and development. the effect of this is felt on the price of patented drugs sold being on the higher
side. This has had an adverse impact on the welfare of the consumers and affordability of the better quality drug. Herein it is suggested that the role of the Government has to one of positive enervation. Budgetary allocations for public health has to go up on the one hand and on the other subsidy on life saving drugs needs to be announced so that poor peoples access to better quality medicine is increased.

6. Export competitiveness of the Indian pharmaceutical industry needs to be increased. Reduction in transaction and production costs, brand promotion marketing strategy, fiscal and monetary incentives for exports is what needs to be stressed upon.

7. In, future Indian pharmaceutical industry has to become more consumer oriented both for medicinal and health care segments of market preferences of the consumer, treatment more specific to lifestyles and behaviour have to be evolved to expand sales. Factors like health status, ethic and racial back round, gender, age and interest in activities needs to be emphasized. For this information and consumer survey are important.

8. Strong patent laws, joint ventures possibility, feasibility of conducting clinical trials at lesser costs are advantages that the Indian Pharmaceutical Industry has and there advantages should be fully exploited to increase collaborative ventures and attract more foreign direct investment into this sector.

9. The technological gap between Indian and foreign pharmaceutical firms has to be reduced so that negative spillovers of backward linkages with foreign firms are reduced and made positive.

10. A key aspect of technology change and up gradation is the close interaction that Indian pharmaceutical private sector firms have with public funded Laboratories of the Council for Scientific and Industrial Research (CSIR). Such further initiatives in future have to be explored with other Research Lab with research and development Institutes/ IIT.
References:-


