SUMMARY AND CONCLUSION

Industrialisation is an important indicator of economic growth. It facilitates development of other sectors of an economy through forward and backward linkages. It creates demand for agricultural output, relieves balance of payment problem, and expands income, savings and investment. It relieves fluctuations and encourages stability of income, tax receipts, increases economic flexibility and expands employment. It has the responsibility of increasing employment opportunities for the young work force. Growth of manufacturing sector is important for the agriculture growth with the focus on agro-based industrial units. Infact, rapid growth and diversification of an economy is not possible without emphasising on industrial development. This thesis throws light on industrial development in Punjab.

Punjab economy has gone through many ups and downs over the last few decades. Distribution of Punjab in 1947 and then in 1966-67 resulted in major setback in Punjab. Then Green Revolution brought prosperity which was undertaken by the new economic reforms. Since then, Punjab has not been able to recover from this major setback of 1990’s. Its GSDP which was far higher than national level during 1980’s fell down and lagged behind the national level in 1990’s and is not being able to recover even today. Industrial sector in Punjab originated during the First World War. Punjab’s industrial sector suffered with the partition in 1947 and then partition on linguistic basis in 1966. Initialisation of green revolution brought prosperity to the industrial sector. But later with the introduction of economic reforms in 1990’s, Punjab’s industrial sector experienced a major hitback and is not able to recover from it till today. Till now, many studies have been conducted where different aspects of Punjab’s industrial sector and performance of its different industries have been considered. Many comparative studies in these directions have also been conducted. But till now, no study has been conducted where by considering all the industrial groups of Punjab, industrial performance is evaluated and based on that, growth strategy is formulated. The present study is an endeavour
in this direction. The main aim of the study is to measure the past performance of Punjab’s manufacturing sector and based on that, to formulate a growth strategy for industrial development. More specifically, the objectives of the study were to analyse the industrial policies in Punjab, to analyse the structure of Punjab’s industrial sector, both district wise and industry group wise. Further, it aimed at making a comparative analysis of Punjab’s industrial sector with selected states. It tried to measure the productivity of industrial sector of Punjab and to evaluate the impact of liberalisation on Punjab’s industrial sector. Finally, based on the past performance, it aimed at formulating the growth strategy for Punjab’s industrial sector.

To pursue the aforementioned objectives, the study has been divided into nine chapters. Chapter one is introductory in nature and started by explaining the importance of industrialisation in economic development of an economy. It throws light on the historical background of Punjab’s manufacturing sector. Further, it explains the need, objectives and chapter scheme of the thesis.

Second chapter reviews the literature. Differences in the study arise while decomposing TFPG. Some viewed that technical efficiency change contributed more to TFPG. Several factors responsible for the same as reported in different studies are introduction of skill development programmes, experience of years on the same machinery, etc. On the other hand, some studies highlighted that it was due to technological progress that TFPG improved. In support of it, it was found that introduction of R&D activities, new technologies being introduced, reforms programs brought in new development opportunities which resulted in technological progress. It has been noticed by different researchers that total factor productivity is affected by many factors like capital intensity, foreign investment, research and development expenditure, exports and imports, output growth, capital-labour ratio etc. Further, researchers have also shown how technical efficiency is influenced by size of the firm, age of the firm, research and development expenditure, ownership structure, experience of workers etc. Among the above reviewed studies, some studies showed a direct relation of these factors with TFPG/TE; some found an
inverse relation, while others experienced no relation between them. This section also reviewed the studies relating to measuring the performance of Indian manufacturing sector. Also, the studies have highlighted the impact of liberalisation on Indian manufacturing. Further, the performance of Punjab’s manufacturing has been studied as a part of the interstate analysis of Indian states. But, not much work has been done to measure the total factor productivity of Punjab’s manufacturing sector by taking industry-level data at two or three digit classification. In this study, such an effort is made.

Third chapter discusses about the methodology and database. It highlighted that various techniques used for measuring manufacturing performance are compound growth rates, partial productivities, total factor productivity and panel data analysis. Malmquist Productivity Index is preferred over other techniques for productivity measurement as it involves lesser a-priori assumptions and hence the chances of flaws are lesser. Moreover, unlike growth accounting and econometric approaches, it does not assume units to be fully efficient and hence can decompose TFP into technical change and technical efficiency change. The study takes into consideration 12 industrial groups after meeting concordance between NIC-1970, NIC- 1987 and NIC- 1998. The time period used is from 1980-81 to 2007-08. Data is culled from Annual Survey of Industries (ASI) through Economic and Political Weekly Research Foundation (EPWRF). State-wise analysis considers 9 states and the data for it is also taken from ASI. District-wise data is taken from Industries Department, Government of Punjab, Chandigarh and from Statistical Abstract of Punjab. Other sources of data are Udyog Bhawan, Chandigarh; Economic Survey of Punjab; Reserve Bank of India Bulletin; Handbook of Statistics on Indian Economy; CMIE; Ministry of Industries, Government of India etc. The variables used for measuring TFP are labour, capital and output. Single deflation method is used for deflating variables. Perpetual Inventory Method is used for deflating fixed capital.

Fourth chapter presents the comparative picture of the industrial development in Punjab and that of other selected states. Overall speaking, it reported that the present study contradicted Kuznet’s theory and found that India’s sectoral
shift is directly from the agriculture sector to the service sector and not from the agriculture to industrial sector and then to the service sector. Comparing Punjab with selected Indian states, the following findings are reported:

- Considering the sectoral share of different sectors in GSDP, it was found that all the states reported declining agricultural share in GSDP during the last four decades. In relative terms, Maharashtra and Tamil Naidu are least developed states as far as agriculture sector is concerned. Punjab’s agriculture sector recorded maximum downfall in the previous decade because of declining agricultural productivity, over exploitation of land, declining soil fertility, excessive use of fertilizers. As far as manufacturing sector is concerned, though Punjab’s percentage contribution of manufacturing to GSDP increased consistently during the study period, but its growth per annum has fallen. Himachal Pradesh recorded maximum improvement in the same. Considering service sector’s share in GSDP, it is observed that Punjab state’s improvement is least i.e. by just six percentage points since 1980’s. Haryana recorded drastic improvement in the same.

- It was found that not only Punjab is the least contributor to Indian manufacturing production, employment and capital, but its share has registered a declining trend in case of former two and increased slightly in case of later. Thus, Punjab is not only the least contributor to Indian manufacturing, but also a state with decelerating share when compared with other selected states.

- Punjab has suffered a major setback in post-liberalisation period as is evidenced by average annual growth rate of production, employment and capital stock of manufacturing. Punjab which was among the top three states in this respect in the pre-reform period lagged behind other states and became the slowest growing state in the post reform period. Considering the overall period, Himachal Pradesh’s manufacturing production and employment increased at the highest rate while Gujarat showed maximum growth in capital stock.
- Punjab witnessed a decelerating trend in the growth of partial productivity in the reforms period. Punjab is among the only two selected states that registered a decline in the growth of capital productivity in the post-reform period. Further, it has least labour productive manufacturing sector and its manufacturing capital intensity is growing at the slowest rate.

- TFPG results indicate that Tamil Nadu, followed by Punjab, has least productive manufacturing sector.

- Liberalisation policy, on average, resulted in acceleration in TFPG of manufacturing sector. Punjab recorded deceleration in TFPG in the post-reform period.

- Considering TC and TEC, former contributed most to TFPG while the latter registered a negative trend throughout the period under consideration.

- Maharashtra and Himachal Pradesh has been the innovator states for the maximum number of years. Punjab has never acted as an innovator during the entire study period.

  Overall speaking, Punjab’s manufacturing sector when compared with that of in other states has been a worst performer.

Fifth chapter gives a detailed picture of Industrial policies announced in Punjab till today. It concluded that the industrial policies of Punjab have been divided into two parts i.e.:

- Incentive based policies and competition based policies. Incentive based industrial policies i.e. industrial policy 1978, 1987, 1989, 1992, 1996 and 2013 emphasised on attracting new investments by providing incentives like capital subsidies, land subsidies, sales tax concession, electricity duty exemption and others. Thrust areas were identified in these policies and special set of incentives were provided for promoting these thrust areas.

- Competition based policies i.e. Industrial Policy 2003 and 2009 apart from attracting new investments, also concentrated on developing infrastructure, reviving sick units, enhancing competitiveness of existing units etc.
Using the policy dummies, it tried to find out that the impact of policies on production and employment of Punjab’s manufacturing sector. It concludes that:

- Incentive oriented industrial policy significantly and positively influence the production of Punjab’s manufacturing while Competition based industrial policy on the other hand had insignificant impact on its production.
- Incentive based policies have positive and significant relation with the employment as employment orientation was the main motive of these policies. On the other hand, competition based policies are insignificantly related to the employment generation.

Sixth chapter tried to examine the existing structure, composition and growth pattern of Punjab’s manufacturing sector. This chapter takes into consideration both the state-wise analysis and industry-wise analysis. Following are the major findings of the analysis from this chapter:

- The share of registered sector in Punjab’s manufacturing GSDP has improved overtime but it is below the national level. Further, the shift from unregistered to registered sector in Punjab’s manufacturing GSDP was less when compared with national figure in the last four decades.
- Decomposing manufacturing sector by size, it was found that more than 99 percent of the industrial units in Punjab are small scale and less than one percent are M&L units. Though very less in number, these M&L units contribute more than 50 percent in total production, about 80 percent of total fixed capital, and employ about 20 percent of total industrial employment in Punjab.
- District-wise analysis reveals that Ludhiana is the most industrially developed district as it has maximum share in number of units, fixed investment, employment and production. Faridkot is the least industrially developed district. Among the new districts formed, SAS Nagar has come up as an industrial hub while Mansa and Tarn Taran are backward districts in this respect.
Over the study period, Ropar and Patiala experienced a major setback in terms of decline in their relative share of indicators considered. It is so because SAS Nagar originated from these districts and is one of the most industrially developed districts.

Comparing all the districts, Bathinda and Ropar constitute industrial units which are highly labour productive.

Scale wise analysis reveals that L&M scale units recorded more labour productivity than SSI’s.

Industry wise analysis revealed that among all the industrial groups, Food products (20-21); Cotton, Wool, Silk and Jute textiles (23+24+25); Metal and Metal products (33-34); and Machinery and Transport Equipment (35-36, 37) are the major players in Punjab’s manufacturing sector. Their relative share remained among the first four in the indicators taken i.e. GVA, employment, fixed capital, number of factories and emoluments. On the other hand, Wood and Wood products (27); Leather and Leather products (29); and Other Manufacturing products (38) had least contribution in these indicators.

Non-Metallic Mineral products (32) showed maximum improvement. Its relative share increased maximum in terms of number of factories and employment but to a smaller extent in GVA and fixed capital.

Among all the industrial groups, labour is highly paid in Chemical and Chemical products (30) and Machinery and Transport Equipment (35-36, 37). On the other hand, Food Products (20-21) and Wood and Wood Products (27) employed labour at cheaper rates.

In aggregate terms, Punjab’s manufacturing sector experienced jobless growth since employment grows at a lower rate when compared with the output growth and capital stock growth.

Computing compound annual growth rates, it was found that all the industrial groups except for (32) experienced a downfall in growth rates in the post reform period. Non-Metallic Mineral products (32) has shown maximum improvement over the time period as its percentage contribution to
Punjab’s manufacturing has increased maximum and its growth is also among highest growing industrial groups.

➢ To evaluate the size of firms in each industrial group, GVA per factory and investment per factory were used as indicators. Chemical and Chemical products (30); Cotton, Wool, Silk and Jute textiles (23+24+25) and Paper and Paper products (28) industrial groups have factories of largest size while Wood and Wood products (27) and Leather and Leather products (29) industrial groups have factories of smallest size.

Seventh chapter discusses about the productivity of Punjab’s manufacturing sector. It throws light on both the partial productivities and total factor productivity of Punjab’s manufacturing sector. Malmquist productivity index is prepared for the same. It also analysed the impact of economic reforms on productivity of selected industrial groups. Further, it tried to find out the determinants of the same. Panel data analysis is done for the same. The major findings of the empirical analysis are:

➢ Considering the selected industrial groups for working out the partial productivities, it is found that Chemical and Chemical products (30) recorded highest labour productivity and capital intensity while it is among the least capital productive industrial groups. Though it has lowest capital productivity, but it registered maximum improvement in it. Textile and Textile Products (26) has highest capital productivity. Cotton, Wool, Silk and Jute Textiles (23+24+25) recorded maximum improvement in labour productivity and capital intensity among all the industrial groups.

➢ Working out the impact of liberalisation policy, it was found that though, the labour productivity ratio in absolute terms has increased in the post-reforms period in almost all the industrial groups, but the rate at which it has improved has fallen in the post-reforms period. The similar is true for capital intensity. On the other hand, capital productivity ratio as well as its compound growth declined in the post-reform period. Thus, liberalisation policy adversely affects the capital productivity of the industrial groups.
Punjab’s manufacturing experienced meagre improvement (i.e. 1.6 percent per annum) during the last 28 years. Decomposing total period into pre-reform and post-reform period, it was found that TFPG declined from 4.2 percent per annum during pre-reform period to zero percent per annum during post-reform period.

Further decomposing TFPG, it was found that technical efficiency change (TECH) contributed more than technical change (TCH) to TFPG.

Economic reforms resulted in negative technical efficiency change in most of the industrial groups.

Among the PTECH and SECH, former contributed more to technical efficiency change. Both these components of technical efficiency change declined in the post reforms period.

On the other hand, on average, technological regression was witnessed with the advent of new economic reforms.

Industry-wise analysis reveals that considering total study period, Paper and Paper products (28) followed by Non- Metallic Mineral Products (32) and Cotton, Wool, Silk and Jute products (23+ 24+ 25) are most productive industrial groups. Further, liberalisation resulted in decelerating TFP growth in 11 of 12 industrial groups.

Among all the industrial groups, Chemical and Chemical products (30) is the most consistent innovator during the entire study period.

While analysing the determinants of TFPG, it was found that TFPG has a positive significant relation with output growth, labour skill, emoluments growth, size of the factories, while it has insignificant relation with capital intensity.

Eight Chapter throws light on the strengths, weaknesses, opportunities and threats of Punjab’s manufacturing sector and on the basis of these SWOT analysis and the discussion in the previous chapters, a growth strategy is formulated for the revival of Punjab’s manufacturing sector.
Strengths: Shift from unregistered to registered manufacturing, above national level per capita income, high credit deposit ratio, highest road density, best business climate in Ludhiana and introduction of public private partnership (PPP) in roads, medical, health care, education, tourism, transportation etc., are some of the strengths of Punjab which can facilitate industrial development in Punjab.

Weaknesses: Some of the weaknesses which hinder the industrialisation in Punjab are power shortage, unskilled labour, mounting fiscal deficit, high land prices, geographical location, failure to take advantage of Central Government Schemes, unfair treatment of Punjab Government towards industry.

Opportunities: Agrarian economy, Integrated Check Post (ICP) at Attari Wagah border, major cotton grower state, extension of rail freight corridor, largest pharmaceutical industry, and progression of new thermal power plant are the opportunities in Punjab.

Threats: Fiscal incentives to neighbouring states and import duty on steel scrap force discouraged industrialisation in Punjab and forced the existing industrial units to move to the neighbouring states. Further, more than 80 percent of the net borrowings are used to meet the revenue deficit and only 20 percent is left for capital expenditure.

Based on these SWOT analysis, a growth strategy formulated suggests several measures which include the good quality education system to produce skilled labour force, need of initiative from the government to develop vocational training institutes. Further there is a need to improve the fiscal health through introducing new taxes. There is also a need to keep a check on shifting budgetary expenditure from developmental to non-developmental expenditure. Further partial treatment to the industrial sector of Punjab by Central government as well as by the Punjab government is the need of hour. Developing land banks, Special Economic Zones, Industrial Clusters can aid the development of industrial sector in Punjab. Introduction of High Powered Supervisory Committee, proper implementation of
Industrial Policies, extension of items in ICP at Attari, extending air connectivity, single window clearance system, developing farmers’ associations etc. can work as an engine for industrial development in Punjab.

Ninth chapter concludes the study.

**Policy Implications**

In all, it can be said that Punjab’s manufacturing sector is experiencing a decelerating trend. When compared with the other selected states, it is the worst performer as far as industrial sector is concerned. It was among the best performing states in the pre-reform period, but reforms left the Punjab industry in the clutches of distress and pain. Economic reforms are not sufficient to improve the performance of any economy. Appropriate investment policies which channel resources to improve human capital and better infrastructure are important if potential benefits of macro-economic and trade policy reforms are to be achieved. Thus an effort is needed to invest in human capital formation and in forming better infrastructure to revive the dying industrial sector of Punjab. Following are some of the policy implications in this regard:

- As noticed in the research work, productivity, both partial and total, of Punjab’s manufacturing sector is declining. So, there is a need to work on improving the efficiency of existing inputs and to work on developing new technologies to meet the global competition. It can be done by providing satisfactory wages to the employees, improving the scale size of the firm, improving labour skills, investing in R&D activities to make technological improvement etc. R&D institutions should work towards developing latest machinery to compete with the global world. This will lead to technological progress of the industrial sector in Punjab.

- The foremost weakness noticed is the unskilled labour force. Also while working out the determinants of TFPG, it was found that it is directly related to the labour skills. Punjab government should develop training institutions whereby training is imparted to the youth according to the demand by the entrepreneurs. Even, entrepreneurs should organise training courses and
workshops from time to time to provide the required skills so that they can adopt the latest technology easily.

- The quality of education also needs to be improved. Emphasis should be made in engineering colleges on imparting practical knowledge rather than just concentrating on theoretical concepts. Syllabus should be updated from time to time according to the job requirements in the industry.

- Industrial policies should be formed after every 8-10 years and these policies should be formed taking innovator states’ industrial policies as a base.

- To reduce the regional inequalities among the districts, government should provide incentives and subsidies to the backward districts so as to encourage industrial development in these districts. Also, industrial parks and clusters can be developed in these backward districts.

- Government should withdraw the policy of free power to the farmers. It will reduce the unproductive use of power and will reduce the burden on industrialists in the form of reduced tariff rates.

- State government should work towards making Punjab a high priority state for industrialisation. It should work towards encouraging private investments in the development of industrial clusters, industrial parks, SEZs etc. It can be done by providing incentives, subsidies and providing land at subsidised rates to the private investors. Development of these clusters, parks and SEZs will aid the development of SSIs. SSIs can avail the benefits of good industrial climate in these parks and can act as ancillary units to M&L units established there.

- There is a need to encourage development of agro industries in Punjab. Farmers in villages should form cooperatives and farmers associations whereby these groups could act as intermediary between agriculture and the industrial sector. These associations should collect the agricultural produce of the member farmers and supply in bulk to the industrialists. Also, industrialists should offer demands of raw materials to these association heads, and production in crops should be done accordingly.

- Government should work towards improving its fiscal health by introducing new taxes, optimum utilisation of central government funds, controlling unproductive expenditure etc.
Thus, the state government has an active role to play for the revival of industrial sector in Punjab. Government should consider industrial sector as a priority sector and should undertake the above said measures to take the industrial sector on the growth trajectory.