CHAPTER 3

Review of Literature
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The growth and productivity of manufacturing sector as well as the small scale sector of Indian economy have been studied by the economists over the years. These studies pertain to the national economy as well as the State or Group of States. However, scarcely there have been the studies, particularly on the comparative analysis of pre and post reform period, for the State of Himachal Pradesh, which is gradually moving up in the race of industrialisation.

In this chapter, we have taken for review the productivity studies which have made pre and post reform analysis of industrial sector in two categories, (a) Studies conducted at the National Level and (b) Studies conducted at the level of Himachal Pradesh.

3.1 REVIEW OF RELATED LITERATURE AT THE NATIONAL LEVEL

Dholakia (1979) studied the growth of output and stock of registered manufacturing units in different states of the country. The main objective of the study was to make an attempt to estimate the real output and the net stock of real capital of these industries and to examine the extent and behaviour of State-wise inequalities in these aggregates in the sixties. The study was conducted for the years 1960-61 and 1970-71. The States covered in the study comprised Andhra Pradesh, Assam (including Meghalaya), Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. The basic source of data used for the study was Annual Survey of Industries and National Sample Survey. The study applied Capital-output ratio to estimate net stock of real capital in the registered manufacturing sector...
in each of State. The coefficient of variation was used to measure the extent of variation in income and capital. The inequality was measured through Gini Coefficient.

The study found significant inter-state variations in the per capita output and capital stock in the registered manufacturing sector for 1960-61 and 1970-71. The per capita output was the highest in Maharashtra and the lowest in Orissa in 1960-61 and 1970-71. The per capita capital stock was the highest in West Bengal and the lowest in Rajasthan in 1960-61, whereas in 1970-71 it was highest Maharashtra and lowest in Rajasthan. The extent of state variation was found greater in per capita output as compared to capital stock for both the years under study. The inequalities in the output and capital in the registered manufacturing sector had declined between 1960-61 and 1970-71. However, this decline was found to be higher in case of capital. The study concluded that the investment in different States between 1960-61 and 1970-71 had not been made on the criterion of reducing the regional disparities or for exploiting the best technology.

The study used the data for two points of time, i.e., 1960-61 and 1970-71 and as such, analysed the variations in the growth of output and capital in manufacturing sector for these of two years. The study did not take into account the continuous data between 1960-61 and 1970-71 and thus could not explain as to what had happened to the output and capital of manufacturing sector for all these years.

Subramaniyan (1979)² studied the Inter-state analysis of the trends in total factor productivity growth in sugar industry in the selected states. The main objective was to determine the relevant form of production function for the Indian sugar industry on the basis of the time series data for the period of the study. The study was conducted for the period 1953-69 for Uttar Pradesh, Bihar, Maharashtra, Tamil Nadu and Andhra Pradesh.
The study used Cobb Douglas Production function, Constant Elasticity of Substitution and Variable Elasticity of Substitution as well as Kendrick Index to determine the appropriate production function which was applicable for the sugar industry. It was found that the Cobb Douglas production function was consistent for the industry at the national and regional levels. The elasticity of substitution between capital and labour was found to be the unity. The study showed that there was an evidence of increasing returns to scale in All India and Tamil Nadu and constant returns to scale in Uttar Pradesh, Bihar, Maharashtra and Andhra Pradesh. The analysis also reported significant increase in labour productivity in all the States, whereas the capital productivity experienced a decline. Except Tamil Nadu, the total factor productivity showed a general decline. The data used for the study was about a decade’s old and the trends of production function could best be described by using the recent data.

Rajalakshmi (1983) conducted a study of growth and productivity of the total manufacturing sectors at All India level and for a relatively industrially backward state of Rajasthan. The main objective of the study was to investigate the trends in the total productivity indices in Rajasthan and All India levels as well as to determine inputs elasticity of output, marginal productivities, relative contributions of input factors, returns to scale etc. The Annual Survey of Industries data for the period 1961-73 was used in the study. Solow index was used to determine the trend of the total productivity index. The Cobb Douglas production function was used for the purpose of the study.

The study found that both labour and capital productivities are higher at All India level than those in Rajasthan. However, the labour and capital productivities had increased in Rajasthan as well as at the national level during the period of study. However, the capital intensity was higher in Rajasthan than that at All India level. As such, there was
considerable under-utilization of capacity in the total manufacturing sector in Rajasthan as compared to that for All India level. As regard total productivity, it was found that All India total productivity index fell at the initial stage up to 1966, picked up gradually and became 100 per cent of the 1961 value in 1973. Similar case was noticed for Rajasthan. Total productivity index in the State of Rajasthan had declined up to 1964 and gradually increased thereafter. However, the total productivity in the total manufacturing sector had not increased in 1973 as compared to 1961 level. The capital elasticity of output in case of Rajasthan was found to be significant statistically. Further, the marginal productivity of labour was found to be much lower in Rajasthan than that of All India, whereas the marginal productivity of capital in Rajasthan was higher as compared to All India level. The study found that constant returns to scale was operating in the total manufacturing sectors in Rajasthan and All India level. While the study delineated the comparative trends in productivity in Rajasthan vis a vis at All India level, the period of study was relatively old to the time of undertaking the study.

Sandesara (1988)\(^4\) had reviewed the small scale industrialization in India. The main objective of the study was to review the Indian experience of promoting small scale industry since independence in terms of industrial policy, prioritization of objectives as well as growth and diversity achieved by the small scale sector. The period of the study was from 1950-51 to 1983-84. The study was based on the official reports and academic studies on small scale industries. The study pointed out that for a given product, the small units had higher cost of production than the large units, though most of the small units were labour intensive. Further, the capital was found to be relative to the number of workers which suggested that the capital and labour intensiveness should be understood in terms of employing more or less capital per unit of labour. The performances of outside units were found
to be superior to the industrial estate-based units. The study also examined the impact of competition on the small scale units and found that the performance of reserved industries was not better than the performance of other industries. The study, however, did not explain State-wise variations in the development of small scale industries as there had been varying degree of industrial development in different States.

Ramaswamy (1993) had studied the capital intensity, productivity and returns to the scale in modern small industries in India. The study involved three hypothesis, viz., use of more labour per unit of capital, production of more output per unit of capital and efficient use of resources in terms of total factor productivity by small units as compared to the large units.

The study used unit-level data from Reserve Bank of India Survey of small scale industrial units (1977). Four industrial groups, viz., Motor Vehicle parts, Agricultural Machinery and parts, Machine Tools and Parts and Plastic Products were taken up for the study. The study covered all the States and Union Territories of India. The study measured mean Capital-Labour Ratios, partial and total factor productivities based on Cobb Douglas production function in the selected industrial groups. The mean capital labour ratio in terms of employment size of the largest size class was found to be significantly different from those of lower size class, except in Agricultural Machinery and Machine Tools. Further, the capital intensity showed the tendency to increase with farm size. The small industrial units having investment of less than Rs. 2,00,000 indicated significantly lower capital intensity than those having greater investment. The mean capital intensity was found to be the lowest in Agricultural machinery and highest in Plastic products. Labour productivity was found to be highest in Motor Vehicle parts in the size class ‘50 to 100’ and ‘greater than 100’ size class in
Agricultural Machinery and Machine Tools. The capital productivity was highest in the largest size class of ‘greater than 100’ in Motor Vehicle parts, Agricultural Machinery and Plastic products and in ‘50 – 100’ size class in Machine Tools. The total factor productivity of the smallest size class of ‘less than 5’ was lower than that of the largest size class of ‘greater than 100’ in all the four industrial groups under study.

The study rejected the hypothesis of constant returns to scale in all the four industrial groups. The hypothesis of small units using more labour per unit of capital was found acceptable if the size is measured by capital and not by employment. The relative efficiency as measured by the index of relative total factor productivity was found to be neither systematic nor substantially different between employment or investment size class. However, the study used sixteen years-old data which would give results which might not have been valid at the time of study.

Sandesara (1993)\(^6\) had studied the growth and structural changes in the small scale industries in India. The main objective of the study was to revisit the growth, size, structural changes and impact of the policy of reservation on small scale sector over a period of 15 years from 1972-73 to 1987-88. The study used the Small Scale Industries data collected by first (1972-73) and second (1987-88) censuses of small scale industries. It was found that the number of units increased by 317 percent between 1972 and 1987-88, whereas investment in fixed assets increased by 267 percent. The growth of employment was found to be relatively modest at 122 percent between the reference periods. The average size of Small Scale Industries units declined from Rs. 57000 to Rs. 50000 in terms of investment in plant and machinery. However, the average size in terms of production increased by 25 percent. The capital and labour productivity had increased between 1972 and 1987-88. The average size of units at the aggregate level in
terms of employment had reduced from 12 persons in 1972 to 6 persons in 1987-88. In 1972, the average size of six industries, viz., Food Products, Chemicals, Basic Metals, electrical and Electronic Products, Transport Equipment and Other Industries and Services was above than the national average. Further Rubber and Rubber Products, Chemicals, Basic Metal Industries, Machinery and Parts, Electrical and Electronic Equipment and Transport Equipment had higher average size in 1987-88.

Pradhan and Barik (1999) had studied the total factor productivity growth in the selected industries in India. The main objective of the study was to measure total factor productivity growth as a result of interaction between economies of scale and technical change in the registered manufacturing sector and eight selected industries, viz., cement, chemical and chemical products, glass, iron and steel, non-ferrous metals, pulp and paper, pottery and earthen ware and structural clay, in India. The Translog function was used to estimate the total factor productivity growth in the study. The study covered the period from 1963-64 to 1992-93.

The study found that the economies of scale had consistently deteriorated since 1975-76 in the registered manufacturing sector. Out of the eight industries under the study, only the pulp and paper had shown some improvement in the economies of scale. Further, the rate of technical change was also found to be declining, with the exception of non-ferrous metal which had witnessed technical progress in 1992-93 (0.064) as compared to that in 1985-86 (0.064). The study noticed declining total factor productivity in the aggregate registered manufacturing sector as well as in cement, glass, iron and steel, non-ferrous metal, pulp and paper, pottery and earthenware. However, in case of chemicals and structural clay, the extent of negative growth had lessened over the year. The study attributed declining trend in the total
factor productivity growth to the deterioration in returns to the scale and the diminishing rate of technical progress.

Nath (1999)\(^8\) studied the efficiency of modern small scale industries in different States of India. The main objective of the study was to measure the inter-state variations in the relative efficiency of Small Scale Industries. The basic source of the data was the report of the Second All India Census of Small Scale Industrial Units which was conducted in 1988-89. Thus, the reference year for the study was 1987-88. Nine industries in fifteen major States of India were taken up for the study. These industries include consumer durable, intermediate products, consumer non-durable, non-ceramic bricks, iron and steel casting, structural metal products, readymade garments, wooden furniture industry and rice milling. The States included in the study were - Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Karnataka, Maharashtra, Kerala, Tamil Nadu, West Bengal, Madhya Pradesh, Orissa, Punjab, Rajasthan, Uttar Pradesh. Farell’s index of technical efficiency were used for the calculating the productivity. The relative size, level of capacity utilization and level of technology were used as variables for explaining relative efficiency in the selected industries in the selected states. The study found that the most of the Small Scale Industries in Maharashtra and Madhya Pradesh were relatively more efficient than those in other States. For use-based classification of industries, consumer durable industries had highest average efficiency index and relatively smaller coefficient of variations. Further, the intermediate product industries and the consumer non-durable industries had wider variations in their relative efficiency indexes across the States. The relative efficiency was positively and significantly correlated with relative size in case of non-ceramic bricks, iron and steel casting and structural metal products, whereas the correlation coefficient relative to capacity utilization was significant only in Ready-made Garments industry. The level of technology explained inter-state
variations in efficiency only in rice milling. The study found a positive correlation between relative efficiency and proportion of power using units in most of the industries.

Unni, Lalitha and Rani (2001) studied the productivity trends in Indian Manufacturing for the period from 1978 to 1995. The main objective of the study was to analyse the trends in growth and efficiency in the utilisation of resources in the Indian manufacturing industry before and after the introduction of economic reforms. The study used a comparative analysis of All-India figures with Gujarat, one of the most industrially developed states of the country. The study estimated the total factor productivity growth as the difference between the growth rate in value added and a weighted sum of capital and labour growth rates. The period of study was divided into three sub-periods, 1978-85, 1985-90 and 1990-95. The study used secondary data from the follow-up surveys of the National Sample Survey and the Central Statistical Organisation on the manufacturing sector for the above period for India and Gujarat. The data were grouped under different user groups, viz., basic and intermediate goods, capital goods, consumer non-durable and durable goods industries. Basic goods included Basic metal and alloy industries, Salt, Fertilizers and heavy chemicals and Cement, whereas intermediate goods comprised Cottons pinning, Manufacture of jute and other vegetable-fibre textiles, Wood and wood products, Newsprint, Leather products, Basic chemicals, Rubber, plastics etc, Non-metallic mineral products, Metal products and parts, Batteries of dry cell, Capital goods included Manufacture of hand tools and general hardware, Non-electrical machinery, Electrical machinery, Transport equipment, Repair of capital goods. Consumer goods durables included furniture and fixtures, Office equipment, Electrical appliances and parts, Radio, television, transmitters of receiving sets, Radio-broadcasting, TV transmitters, Television receivers, Motor cars, Motorcycles, Bicycles, cycle-rickshaw and parts, Other manufacturing industries, Repair
services and Non-durables including Food products, Beverages, Cotton textiles, Wool, silk, Textiles, Paper products, Footwear, Drugs and medicine, Glass and Glass Products, Metal Products (not classified elsewhere), Photograph, optical goods, Miscellaneous products (not classified elsewhere). The study showed that both organised and unorganised sectors in Gujarat were doing better than the All-India average in terms of growth of value added. Growth in the manufacturing sector in Gujarat was also more efficient than average All-India growth after the reforms were introduced.

Biswanath Golder (2004) had studied the total factor productivity growth in Indian Manufacturing for two decades. The main objective of the study was to present an alternative set of estimates of Total Factor Productivity growth in Indian manufacturing industries. The study used the secondary data from the Annual Survey of Industries for the period from 1979-80 to 1999-2000 for two-digit industries from National Industrial Classification 20-21 to 39. The Total Factor Productivity growth rates were estimated for the period from 1979-80 to 1990-91 and 1991-92 to 1997-98 and 1991-92 to 1999-2000. The study used the Translog Index of Total Factor Productivity and the annual average growth rates were calculated by taking the simple average of annual growth rates. The study found that the average annual growth rate of Indian manufacturing industries were 2.14 percent for the period from 1979-80 to 1990-91, 1.00 percent for 1991-92 to 1997-98 and 1.57 percent for 1991-92 to 1999-2000. The Total Factor Productivity growth based on production function was 2.23 percent per annum for 1979-80 to 1990-91, 1.08 percent per annum for 1991-92 to 1997-98 and 1.65 percent per annum for 1991-92 to 1999-2000. The study concluded that there was a decline in the growth rate of Total Factor Productivity in Indian manufacturing in the post reform period. The slowdown in Total Factor Productivity growth in Indian manufacturing in the post reform period was due to the adverse influence of certain factors that more
than offset the favourable influence of the reforms. Two important such factors were (a) decline in the growth rate of agriculture and (b) deterioration in capacity utilisation in the industrial sector. The productivity estimates and the analysis presented in the above study are related only to a particular segment (National Industrial Classification 20-21 to 39) of Indian industry.

**Burange (2004)** estimated the comparative growth rate of real output of the manufacturing sector over different periods for the selected States. The main objective of the study was to estimate and analyse the growth of output and employment in the pre and post liberalization period achieved by the selected States and to make a comparison thereof among them with reference to the All-India level. The study used the secondary data from the summary result for factory sector by Annual Survey of Industries for the organized sector only. The data were collected and analysed for agriculture related industries, National Industrial Classification 20-21 to 29 and non-agriculture-related industries, National Industrial Classification 30 to 39. Sixteen (16) States, viz., Assam, Bihar, Orissa and West Bengal under Eastern Region; Haryana, Punjab, Uttar Pradesh and Delhi from Northern Region; Andhra Pradesh, Karnataka, Kerala and Tamil Nadu from Southern Region; and Gujarat, Madhya Pradesh, Maharashtra and Rajasthan from Western Region were selected for inter-state analysis. The annual compound growth rate was estimated by using the semi-log method for the period 1980-81 to 1997-98. This total period was divided in two periods - from 1980-81 to 1991-92, (pre reform period) and 1991-92 to 1997-98, (post reform period). The growth rates for these periods were estimated by 'Kinked Exponential Model'. The Annual Compound Growth Rate of Value of Output in the Organised Manufacturing Sector of all the States taken together during Post Reform Period (1991-92 to 1997-98) (at constant prices 1981-82 = 100) was worked out as 9.90 percent for the manufacturing sector, with 8.26 percent for agriculture.
related industries and 10.69 percent for non-agriculture related industries. The annual growth rate was estimated at 7.72 percent, 7.27 percent and 7.96 percent for manufacturing, agriculture-related and non-agriculture related industries respectively, during the pre reform period (1980-81 to 1991-92). It was found that on the basis of Annual Survey of Industries data, Haryana, Rajasthan, Punjab, Tamil Nadu, Andhra Pradesh, Karnataka, Madhya Pradesh, Kerala and Delhi recorded higher growth rate of employment in the manufacturing sector than that of All-India during 1980-81 to 1997-98. However, Assam, Gujarat, Uttar Pradesh, Maharashtra, Bihar and West Bengal recorded lower growth rate of employment during 1980-81 to 1997-98. During pre reform period, Punjab, Rajasthan, Haryana, Delhi, Tamil Nadu, Andhra Pradesh, Orissa, Madhya Pradesh and Karnataka recorded higher employment growth than that of All India, while States such as Uttar Pradesh, Kerala, Assam, Bihar, Gujarat, Maharashtra and West Bengal recorded lower growth rate. During post reform period, States like Karnataka, Kerala, Gujarat and Maharashtra accelerated the growth of employment. During post reform period in terms of growth of real output better performance was recorded by Haryana, Gujarat, Karnataka, Tamil Nadu, Rajasthan and Maharashtra, while Assam, Bihar and West Bengal showed relatively poor performance. In general, Tamil Nadu, Andhra Pradesh, Punjab, Haryana, Rajasthan and Karnataka recorded better performance in terms of growth of employment and output of the manufacturing sector during 1980s and 1990s. However, in terms of index of industrial development Tamil Nadu, Gujarat, Punjab and Andhra Pradesh showed improvement during 1990s whereas West Bengal, Maharashtra, Bihar and Assam registered deterioration in the industrial development during 1990s.

Banerjee and Chakraborty (2005) conducted a study of manufacturing sector in the State of West Bengal. The basic objective of the study was to analyze the structure and growth of manufacturing
sector in West Bengal during the period 1977-98. The study covered two-digit industries such as Food, Beverages and Tobacco, Cotton Textiles, Wool, Silk, Man-made fibre, Jute Textile, Textile Products, Wood, Furniture Products, Paper, Printing and allied industry, Leather product, Basic Chemical Product, Rubber, Plastic & Petroleum Products, Non-Metal Products, Metal Products, Machinery Equipment, Transport Equipment, Other Manufacturing Sector. The compound annual growth rates for these industries were calculated for the periods 1977-98, 1977-92 and 1992-98. The closeness between employment and output and also the relation between employment and capital, employment elasticity with respect to output and capital were calculated in the study which used Hirshman Herfindal Index to measure the concentration of industries. The study revealed that the industrial situation in the State of West Bengal during 1977-92 was dismal, but the situation had improved thereafter. West Bengal experienced a great improvement mostly in case of agro-based industries. The new economic reforms had a great impact on West Bengal as most of the industries in manufacturing sector registered improvement. The manufacture of jute, beverages, furniture, wood, silk had showed positive employment elasticity, which indicated labour intensiveness of these industries. The employment elasticity with respect to fixed capital was found to be negative for most of those industries which show positive sign for employment elasticity with reference to output, implying substitutability between capital and labour. Hirshman Herfindal Index showed that the employment was increasing in capital goods industries as distribution of capital was becoming more even among the industries. Further, the intermediate goods were found concentrating more on the consumer goods industry.

Mishra (2006) studied the structural changes in the Indian Industrial Sector in the era of globalization. The main objective of the study was to investigate the structural changes in employment of labour
and capital in the manufacturing sector of India brought about by the liberalization and globalization of Indian economy. The data from various sources, such as Report on Currency and Finance 1997-98 and Annual Survey of Industries were used for the study. The various production functions, viz., Constant Elasticity of Substitution Production Function, Cobb Douglas Production Function, Transcendental Production Function, Diewert Production Function were used to analyse the production structure. The study found that the number of factories at the national level had increased by 17 percent in 2003-04 in comparison to 1990-91. However, the study revealed that the disparities between the states regarding distribution of number of factories had neither increased nor decreased appreciably in the post reform period. There was an increase in the capital-labour ratio with the decrease in the number of workers per industrial establishment.

The study fitted various production functions to analyse the structure of manufacturing sector, which indicated that the rise in industrial output was due to the substitution of capital for labour in almost all the States. The Transcendental Production Function indicated decrease in labour-capital ratio in the post-globalised period. In 1990-91, the output elasticity of labour was significant, whereas in 2003-04, the capital had become the significant input, inasmuch as that a further increase in labour might have an adverse impact on resultant output. An analysis of Diewert Production Function revealed that there had been the large substitution of capital for labour in the post-globalisation period. As regard the return to scale, the pre-globalised industrial sector witnessed the increasing return to the scale, whereas the post-globalisation period was dominated by the diminishing return to the scale. The study also noted a decline in the regional disparities in the employment of manpower and capital and the resultant output on the basis of population-deflated indices of inputs.
Bhandari and Maiti (2007) studied the efficiency of manufacturing firms in India. The major objective of the study was to examine the productivity of Indian industrial firms at the microeconomic level. The case study of textile industry was taken up for this purpose. The firm level Annual Survey of Industries data for the five selected years, 1985-86, 1990-91, 1996-97, 1998-99 and 2001-02 were used in the study. In order to examine the relationship between firm size and technical efficiency, the firms were classified as very old (more than 20 years), old (between 10 and 20 years) and young (in the last 10 years). The Translog stochastic frontier production function was used to estimate the technical efficiency of the textiles firms. The units engaged in the production of cotton, woolen, silk, terry-cotton and other natural fibers like jute, coir and mesta were covered. The study found that the some improvement was noticed in the average technical efficiency in the post reform period as it increased from 0.68 in 1996-97 to 0.76 in 1998-99 and further to 0.80 in 2001-02. Though the technical efficiency was related to the size of the firms, an inverse relationship was noticed between the age of the firm and the technical efficiency scores for the each year under study. The technical efficiency was lower for the older firms as the younger firms might be using recent/modern assets and fresher workforce than their older counterparts.

Pradeep, Anbumani, Saravanakumar (2007) conducted a study on the growth and total factor productivity of small scale engineering industries in Coimbatore district of Tamil Nadu. The objective of the study was to make a comparative analysis of growth and productivity of small scale engineering industries in Coimbatore district during pre reform and post reform periods.

The study was based on time-series data collected from District Industries Centre (DIC), Coimbatore for the period 1980-2004. Five major industries, viz., Basic Metals and Alloys, Metal and Metal
Products, Machinery and Machine Tools, Electrical Machinery and Transport Equipment, were taken for the analysis. The period of pre reform was from 1980 – 1991 and for post reform it was from 1992 - 2004. Growth was calculated by using the World Bank Growth Rate formula using the least square method. Total Factor Productivity was estimated by the Solow Index method. The growth rate during pre reform period was found to be satisfactory when compared to the post reform period. The growth performance had weakened in the Small Scale Engineering Industries due to reform. ‘Manufacture of Machinery and Machine Tools’ recorded the highest growth during pre reform period whereas ‘Manufacture of Transport Equipments’ registered the highest growth during the post reform period.

The study found that some industrial groups such as Basic Metals and Alloys, Electrical Machinery and Transport Equipments registered growth in productivity, whereas Metal and Metal Products and Machinery and Machine Tools showed a sharp decline in productivity during pre reform period. However, post reform period showed productivity growth in Basic Metals and Alloys and Transport Equipments whereas a sharp decline in productivity was found in Metal and Metal Products, Machinery and Machine Tools and Electrical Machinery industries. The total factor productivity growth during the pre reform as well as post reform period recorded negative growth. The study was undertaken for only one district of Tamil Nadu. The result of Coimbatore district could further be compared with that of the State of Tamil Nadu in order to have more exploratory study.

Suresh and Shashidhar (2007) studied the role and performance of small industries in India. The main objective of the study was to examine the impact of economic reforms on the growth pattern and productivity of small scale industries. The data for the purpose of the study was obtained from different sources, such as various issues of
economic survey, Annual Survey of Industries, and Report on Currency and Finance, Reserve Bank of India bulletin. No specific productivity growth model/function was used. However, the study mainly relied upon the average annual growth rates, growth patterns in employment, production and exports in Small Scale Industries. The period of the study was from 1980-81 to 2003-04. It was found that the against the 2.6 times (average annual growth rate of 8.35 percent) increase in the number of Small Scale Industries during the pre-reform period, the number of Small Scale Industries increased only 1.84 times (annual growth rate of 5.42 percent) during the post reform period. Further, the growth of Small Scale Industries had surpassed the overall industrial growth in the post reform period. Food products industry was the largest employment generating industry, followed by non-metallic mineral products and metal products. However the per unit employment was highest in units engaged in beverages, tobacco & tobacco products. Further, per unit employment was highest in metropolitan areas and the lowest in the rural areas. The study found that the number of sick units had decreased in the post reform period.

Raj and Duraisamy (2008)\(^{17}\) analysed the total factor productivity growth in the unorganized manufacturing sector in India. The main objective of the study was to examine and compare the performance of unorganized manufacturing sector in selected Indian States during the pre and post reform periods. The states included Kerala, Tamil Nadu, Andhra Pradesh, Karnataka, Maharashtra, Gujarat, Madhya Pradesh (including Chhattisgarh), Orissa, Punjab, Rajasthan, Uttar Pradesh (including Uttarakhand), West Bengal and Bihar (including Jharkhand). The total factor productivity was measured through Data Development Analysis (DEA) and Malmquist multi-factor productivity index. The study used the secondary state level data of 33\(^{rd}\), 40\(^{th}\), 45\(^{th}\), 51\(^{st}\) and 56\(^{th}\) rounds National Sample Survey during the period of study, i.e., 1978-79
to 2000-01. The total factor productivity growth was decomposed into efficiency change and technical change.

The study found that technical efficiency change was major contributor to the total factor productivity growth. Further, Andhra Pradesh, Bihar, Karnataka, Kerala, Maharashtra, Punjab, Uttar Pradesh had registered total factor productivity growth during the period of study, whereas technical regress, which implied negative rate of technical change, was found in all the States, which might be due to the deterioration in the quality of inputs. Punjab, Bihar and Andhra Pradesh had witnessed high overall technical efficiency, whereas Rajasthan, West Bengal and Tamil Nadu experienced a negative growth of technical efficiency. While comparing the performance of manufacturing sector for pre and post reform period, the study found that the annual rate of productivity growth was higher in post reform period as compared that in to the pre reform period, with efficiency change had major influence on the total factor productivity growth during the post reform period. The post reform period had also noticed decline in the rate of technical regress.

Bhushan and Pendse (2009) studied the productivity of consumer products and home appliances industries in India. The study covered trends in total factor productivity growth in three-digit industries, such as manufacture of dairy products, canning and preservation of fruits and vegetables, processing, canning and preservation of fish, spinning, weaving and processing of man-made textile fibre, manufacture of all types of textile garments and clothing accessories, manufacture of foot-wears. The total factor productivity was derived from Kendrick, Solow and Divisia Indices. The overall analysis on the basis of all the three indices suggested positive trend in canning and preservation of fruits and vegetables, manufacture of bakery products, production of common salt, manufacture of cocoa products and sugar.
confectionaries, manufacture of hydrogenated oils and vanaspati ghee, processing and blending of tea, manufacture of food products, weaving and finishing of cotton textiles on power-loom, cotton spinning, manufacture of perfumes, cosmetics, lotions, hair dressing, tooth pastes, soaps in any form etc. However, insignificant estimates were observed in case of manufacture of dairy products, coffee curing, roasting, grinding, weaving and finishing of cotton khadi, weaving and finishing of cotton textiles in handlooms, manufacture of all types of textiles garments and clothing accessories, manufacture of consumer goods of leather and substitution of leather other than apparel and footwear etc.

Sampath and Sarvankumar (2009) studied the impact of economic reforms on the total factor productivity growth in the Southern States of India. The main objective of the study was to examine the structure of industrial sector and the growth of total factor productivity growth in four southern States, viz., Andhra Pradesh, Karnataka, Kerala and Tamil Nadu in relation to the economic reforms in the country. The study covered a period of twenty four (24) years from 1980-81 to 2004-05. The study used secondary data which was collected from Annual Survey of Industries. The period of study was divided into two phases, viz., pre reform period, 1980-81 to 1990-91, and post reform period, 1991-92 to 2004-05, to understand the impact of reforms on industrial sector.

The structural changes in the industrial sector were analysed in terms of capital-output, labour-output, capital-labour ratio and factor productivity. The productivity was measured as growth accounting which was the difference in the rate of growth of output and the weighted rate of growth of factor inputs. Divisia –Tornquisil (D -T) approximation was used for calculating total factor productivity growth. The study found that despite an improvement in capital intensity, there
was no corresponding increase in the capital productivity during post reform period. Increase in capital productivity was marginal in the pre reform period. However in post reform period, significant decline in capital productivity was observed in the Karnataka and Tamil Nadu, which indicated under-utilisation of capital. The study noted higher labour productivity in Karnataka. The estimates showed significant relationship between labour productivity and emoluments per employee during the period of study. The total factor productivity measured by Translog mode was found higher in the post reform period than that of pre reform period among the States, except in case of Tamil Nadu. The increasing trend in the productivity indicated positive impact of the liberalization policies in the country.

Sonia and Rajeev (2009) studied the impact of globalisation on the small scale industries in India. The major objective of the study was to evaluate the performance of Small Scale Industries before and after the liberalization. The period of the study was 1973 to 2007 and was based on different data sources such as Ministry of Micro, Small and Medium Enterprises and Handbook of Statistics on Indian Economy published by Reserve Bank of India. The average annual growth rates for pre and post liberalization periods were used in respects of performance indicators such as number of units, production, employment and exports. The study found that the average annual growth rate was higher (9.36 percent) in the pre-liberalised period as compared to the growth rate of 4.07 percent in the post-liberalised period, though the number of units increased during the study period. As regard production, the average growth rate of production in the pre-liberalised period was 19.45 percent which declined to 13.57 percent in the post-liberalised period. The yearly growth rate was less than the average growth rate for most of the post reform period. Likewise, the average annual growth rate was higher (7.25 percent) during the pre reform period in comparison to the growth rate (4.26 percent) in the post reform period.
reform period. Similar is the case with the growth exports in both the periods. The study concluded that the globalization had negative impact on the key performance indicators, viz., number of units, production, employment and exports, of small scale sector in India.

Hitendera Bargal et al (2009) studied the performance of small scale industries during the pre and post liberalization period. The specific objectives of the study were to analyse the performance of Small Scale Industries in respect of number of units, employment generated, export and productivity of labour in the pre and post liberalization periods. The study also tested the causal relationship between total output and exports of Small Scale Industries with Gross Domestic Product (GDP). The period of the study was from 1973 to 2005, with pre reform period from 1973 to 1990 and post reform period from 1991 to 2005. The study was based on the data available in the Handbook of Statistics on the Indian Economy published by Reserve Bank of India for the period 2004-05. The study used semi-log model to calculate Compound Annual Growth Rate (CAGR), Unit Root Test, Granger Causality to test causal relationship and annual average growth rate as statistical tools for analysis.

The study found that the Compound Annual Growth Rate of output and the productivity had declined in the post liberalization period as compared to pre reform period, whereas the growth of number of units, employment and exports were greater in the post reform period. Further, the average growth rates of all the parameters under study, i.e., number of units, employment, productivity per unit of employee, exports and Gross Domestic Product, had declined in the post liberalization period. The study concluded that “there has not been any significant change in the performance of small scale industries, despite a number of policies, schemes initiated by the Government after 1991”. The decline in productivity might be due to the changes in the definition of
Small Scale Industries over the years as well as due to the shifting of techno-driven Small Scale Industries to large industries, leaving thereby only the labour intensive Small Scale Industries under the sector. The study further found that there was no causal relationship between the exports and output of Small Scale Industries and the Gross Domestic Product and that the small scale sector had not been contributing significantly to the overall Gross Domestic Product.

Dash, Kabra and Singh (2010) conducted a study of the performance of manufacturing industries at the State level. The basic objectives of the study were to know the structure and growth of registered manufacturing factory sector and to examine the extent of total factor productivity growth in manufacturing industries. Ten States, viz, Andhra Pradesh, Bihar, Gujarat, Karnataka, Tamil Nadu, Maharashtra, Madhya Pradesh, Uttar Pradesh, West Bengal and Orissa, were taken for the purpose of the study. Total Factor Productivity growth rates were estimated for three periods, i.e., 1980-81 to 1989-90, 1990-91 to 1999-2000 and 2000-01 to 2007-2008. A simple average of annual growth rates was used to compute the average annual growth rate of Total Factor Productivity in each of these periods.

The study used Translog Production Function to estimate the total factor productivity which was defined as the difference between the rate of growth of output and rate of growth of combined inputs. The secondary data was obtained from various issues of Annual Survey of industries published by Central Statistical Organisation. The study noticed that Total Factor Productivity Growth was higher in Andhra Pradesh, Bihar, Gujarat and Madhya Pradesh than All India level, whereas Karnataka, Tamil Nadu, Maharashtra, Uttar Pradesh, West Bengal and Orissa performed lower than All India level for the period 1980-81 to 1989-90. Further, Andhra Pradesh, Bihar, Karnataka, Madhya Pradesh and Uttar Pradesh performed better than All India
level for 1990-91 to 1999-2000 and Gujarat, Tamil Nadu, Maharashtra, West Bengal and Orissa had relatively lower Total Factor Productivity Growth during this period. For the period 2000-01 to 2007-08, Andhra Pradesh, Bihar, Karnataka, Madhya Pradesh and Uttar Pradesh achieved higher Total Factor Productivity Growth and Gujarat, Tamil Nadu, Maharashtra, West Bengal, Orissa recorded lower growth than All India level. However, the study did not specify the details of the manufacturing industries taken for the purpose of measuring total factor productivity growth.

**Joshi and Singh (2010)** conducted a study of total factor productivity in the Indian garment industry. The objective was to estimate the total factor productivity of Indian garment-manufacturing firms for the period 2002-2007. The study was based on the firm-level data collected from the Centre for Monitoring Indian Economy for the years 2002-2007. The study took into account gross sale as output variable and net fixed assets, wages & salaries, raw material, and energy & fuel, as input variables. The DEA-based Malmquist Productivity Index (MPI) approach was applied to measure the Total Factor Productivity. It was found that the Indian garment industry had achieved a moderate average Total Factor Productivity growth rate of 1.7 per cent per annum during the study period, with small-scale firms were found to be more productive than the medium and large-scale firms. The study also revealed that the productivity growth was contributed largely by change in technical efficiency rather than by the technological change.

**Satinder & Parminder (2011)** studied the productivity of small scale industries in the States of Punjab and Haryana. The main objective of the study was to make a comparative analysis of growth of partial and total productivity as well as changes in the production structure during the pre and post reform period for Punjab and Haryana.
The overall period of the study was 1971–2007, which was bifurcated into pre reform (1971-1990) and post reform (1991-2007) periods. The data were collected from the various issues of Economy Surveys and as available from the concerned websites. The study calculated productivity by using Kendrick Index of total factor productivity growth. The technical changes in the production structure were estimated by using Cobb-Douglas and Constant Elasticity of Substitution (CES) Production Function.

The study found variations in the Total Factor Productivity growth in small scale industries. The Total Factor Productivity growth was comparatively higher in the pre reform period. The average annual growth rate of Total Factor Productivity was 1.64 per cent in pre reform period, whereas it declined to 0.72 per cent during the post reform period, implying that the economic reforms had failed to sustain the post reform productivity growth in small sector. The study decomposed the total factor productivity into labour productivity and capital productivity and found that the labour productivity (83 percent) contributed more to the total factor productivity than the capital productivity. Thus, the decline in Total Factor Productivity could be attributed to the decline in the capital productivity. It was found that that increasing returns to scale prevailed in Indian Small Scale Industries sector and there was a limited substitutability between two factors of productions. Besides, the Small Scale Industries sector was operating with a high level of inefficiency. The productivity growth had declined in Punjab and Haryana during the post reform period. However, the capital productivity was the major contributor to the total productivity in Punjab, whereas the labour productivity had the major share in the total productivity in Haryana. The analysis of production structure disclosed that an insignificant technical regress was existed in small scale industrial sector of Punjab in comparison to an insignificant technical progress in small scale industrial sector of Haryana. The observation regarding production
elasticity and return to scale parameters of Cobb-Douglas production function confirmed that in both the states labour elasticity dominated the capital elasticity and the small scale sector had operated under increasing return to scale.

Saikia (2011) examined the performance of small scale industries in India which special reference to Assam. The main objective of the study was to find out the total factor productivity growth in the underdeveloped economy of Assam. The study used the secondary data from various sources, such as National Sample Survey Office, publications of Central and State Governments and Research Publications. The primary data was collected through multi-stage random sampling method for the five districts, viz., Kamrup, Jorhat, Golaghat, Dibrugarh and Lakhimpur districts, of Assam for about 220 industrial units. The period of the study was 1973-74 to 2008-09. The productivity was measured through Kendrick Index. The study found that the growth of productivity in Small Scale Industries had fallen substantially. The output to labour ratio in Small Scale Industries in Assam was small and lower that the All India level. The study found that the labour efficiency had enhanced along with the increase in investment in plants and machinery up to a stage after which it tended to decline. Further, the labour productivity was low in rural areas as compared to that in urban areas. The study indicated that the capital-output ratio had declined in the post reform period at All India level, whereas it had increased in Assam. The manufacturing units registered highest productivity, whereas the rubber/plastic based industries had lowest factor productivity. The total factor productivity had grown at an annual average growth rate of 3.75 percent in Assam during 2000-09.

Development Research Group (DRG), RBI (2011) conducted a study on the performance of manufacturing sector in India. The main objective of the study was to study the productivity and efficiency at
industry and state levels for the organised and unorganised manufacturing sector. The study covered 18 States, viz., Andhra Pradesh, Bihar, Jharkhand, Delhi, Gujarat, Haryana, Karnataka, Kerala, and Madhya Pradesh, Chhattisgarh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, Uttarakhand and West Bengal and six (6) industries, viz. Food, Beverages & Tobacco, Chemical & Chemical Products, Leather & Leather Products, Metal & Metal Products, Machinery & Transport Equipment and Textiles & Textile Products. Within manufacturing sector. The period of the study was 1980-81 to 2003-04. However, the period was extended up to 2007-08 in case of overall organised manufacturing sector.

The data sources for the study were Annual Survey of India, Reserve Bank of India and unit-level National Sample Survey Office data (for unorganised sector). The study used both parametric (Cobb Douglas, Translog, Constant Elasticity of Substitution) and non-parametric (index of productivity, malmquist index and data environment analysis) methods to estimate the productivity of manufacturing sector in India. The study found that though the contribution of unorganised sector in employment generation in manufacturing sector was about 80 percent and its contribution to the income of total manufacturing sector was about one-fifth. The study noted that the rate of growth of real emoluments had decreased after the reform process. The average share of manufacturing sector in real Gross Domestic Product had marginally decreased from about 13 percent in 1970-71 to about 16.1 percent in 2009-10. The economically backward states had higher proportion of employment in the unorganised manufacturing sector. The study found that the total factor productivity growth was lowest in Food, Beverages and Tobacco industry, followed by the Textiles industry. The total factor productivity growth was highest in Machinery & transport Equipment and Chemical Industries in the organised sector. As regard the performance of the States, it was found that Bihar, Rajasthan and
Andhra Pradesh performed well in total factor productivity growth, whereas Tamil Nadu showed the lowest total factor productivity growth rate. However, the level of total factor productivity was highest in Maharashtra which had a high degree of industrialisation. The study found that there had been deceleration in total factor productivity growth in all industries (except metal) in most of the States. However, the empirical evidences suggested that some of the policy measures, such as reduction in trade barriers, had led to improvement in the productivity growth.

Gautam & Singh (2012) studied the impact of liberalization on small scale industries in the State of Punjab. The main objective of the study was to analyse the overall impact of liberalization on the performance of selected small sector units in the State of Punjab. The study was based on primary data collected by a structured questionnaire from the small scale units working in (a) manufacturing of textiles, (b) bicycles & bicycle parts, (c) food products & beverages and (d) leather & leather products in Punjab were taken up for study. The final sample was of 173 units which included 43 each from food products & beverages units and textiles, 46 from the bicycles & bicycles parts and 41 from leather & leather products.

The study applied Kruskal-Wallis test to ascertain significant differences between the respondents of different industries, age and turnover categories. The test was applied at assumed p-value of 0.05, with the statements less than assumed p-value were considered as significant. The study found that the surveyed units believed that the liberalization has led to increased competition, increase in quality consciousness, difficulty in marketing, dumpling of cheaper goods by other countries, reduction in profit margin. However, the food products and beverages and leather & leather products believed that the liberalization had brought new opportunities for them. The K-W statistics
showed that there was no significant difference among the units relating to different industries, age and turnover groups with regard to various statements (contained in the questionnaire) relating to liberalization. It was also observed that the small units faced lack of infrastructural and operational facilities, absence of clear policies of marketing and human resource management as well as financial limitations which aggravated the problems of small units in the liberalized era. The study was based on survey of selected industrial units. However, the period of the study was not specified.

Mandal and Madheswaran (2012) studied technological progress and total factor productivity growth in Indian Cement Industry. The major objective of the study was to examine as to whether the growth of cement industries during the period of study was due to growth of total factor productivity or increase in the input uses. The period of the study was 1989-90 to 2006-07. The study used company level data of 70 firms from PROWESS database created by the Centre for Monitoring Indian Economy. The total factor productivity was estimated by Stochastic Frontier Production function. The efficiency of the firms was examined by Farrell measurement of efficiency which decomposed the efficiency into technical efficiency and allocative efficiency. However, the study focused on technical efficiency only. The study found that the cement companies were operating, in a static manner, at 75 percent of their potential efficiency, though none of the firms were following the best practice techniques due to poor infrastructure, limited Research & Development activities, inadequate technology support services and absence of any long term training programmes. The study found that the technical progress had increased during the study period, mainly due to the new industrial policy and complete decontrol of cement industry. The scale effects were the major force behind the productivity growth of the cement industry, which implied that the cement industries needed to exploit potential
economies of the scale in order to achieve optimal factor productivities. Further, while the total factor productivity was found to be on higher side as compared to the earlier studies, it was noticed that the 5.37 percent of increase in output is explained by the factor productivity, whereas the rest of the increase, i.e., 94.63 percent, was due to growth in inputs.

3.2 REVIEW OF RELATED LITERATURE AT THE LEVEL OF HIMACHAL PRADESH

While hardly any exclusive study on factor productivity come across specifically for the State of Himachal Pradesh, some of the productivity and technical efficiency studies included Himachal Pradesh as one of the States. In this part, some of such studies relating to Himachal Pradesh had been reviewed.

Das(2004) studied the efficiency, technical change and regional disparities of registered industries in India. The main objective of the study was to provide estimates of productive efficiency and of technical change in the factory sector among major States for the period from 1970-71 to 2002-03. This period was divided into the two periods, viz., 1971-85 and 1986-2002, for the purpose of the study. The States included Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. The study used stochastic frontier production model on the secondary data provided by Annual Survey of Industries. The study found that the mean productivity efficiency of the states had increased during 1986-2002 as compared to 1971-2002. The productive efficiency of Himachal Pradesh rose from 0.30 during 1971-85 to 0.54 during 1986-2002. In terms of rank amongst the States studied, Himachal Pradesh stood fifteenth out of seventeen States during 1971-85, whereas it stood at fourteenth place along with Bihar during 1986-2002. Technical advancement had taken place in all the states during
1986-2002 in comparison to that during 1971-1985, though in states like Gujarat, Maharashtra, Uttar Pradesh and West Bengal the technical change was at relatively faster rates during 1986-2002 as compared to the earlier period. The technical change in Himachal Pradesh was 0.043 percent during 1986-2002 as compared to 0.035 percent during 1971-85. The study found that on an average the industrial activities in India showed the presence of productivity inefficiency in their operations. While the efficiencies had increased during the period 1970-71 to 2002-03, the rate of change of productive efficiency was found to be volatile during the post reform period. The western region had gained in efficiency and technical progress, thereby dominating in country’s share of industrial output in comparison with eastern states. The study noted that the economic reforms of 1990s were not able to make perceptible impact on improvement in productivity efficiency as on technical change in the factory sector in India.

Singh (2005) conducted a diagnostic study of the existing status of the General and Light Engineering Cluster of Industrial area of Parwanoo in District Solan of Himachal Pradesh. The main objective of the study was to delineate the development of General and Light Engineering cluster since its establishment and bring out a road map to revitalize it by suggesting the interventions needs for its development. The study used the data and relevant information provided by the Government and private institutions as well as the stakeholders of the cluster. The study used SWOT (Strength, Weakness, Opportunities and Threats) analysis for getting into the potential development of the cluster. The study found that the some of the units were established in the industrial area only to take advantage of the incentives provided by the State Government and thus, soon closed down or shifted to another industrial area, i.e., Baddi, as soon as the incentive period had expired. Further, most of the small scale industrial units were working as the ancillary units of large units, which are manufacturing auto filters, bush
bearings and gears for tractors and light commercial vehicles. Some of the units were engaged in manufacturing of watch components, light engineering components, welding electrodes, forging, shock absorbers, brake shoes, hand tools, packaging materials, automobile steering assembly, steel fabrication, welding, machining etc. The connectivity by road and rail, quality improvement of ancillary by the large units, easy availability of raw material were found to be the major strengths of the cluster. Limited scope of marketing and diversification, non-existence of skill upgradation facilities/training, poor infrastructure such as road, water, sewerage, etc., increased completion from external units were major bottlenecks or weakness indentified for the cluster by the study. However, emergence of India as auto parts hub and possible expansion of foreign trade, availability of Government incentives and support were the major opportunities for development of cluster. Further, rapid changes in technology, non-upgradation of technology, increase in the price of raw material and availability of quality components at the lower rate from large auto components clusters at other places in the country were serious threats to the cluster. The study identified the activities such as awareness programmes, technology upgradation and capacity building programmes, support for marketing and diversification, creation of common facilities, etc. in order to realize the growth potential of the cluster.

Saravanan (2007) conducted a study on the productivity growth of selected States during the pre and post reform periods. The study focused on analyzing the inter-state differences in productivity levels and the growth rates for the period during 1980-81 to 2005-06. The study used the secondary data of Annual Survey of Industries. The output is measure in gross value added, labour in terms of total number of persons employed and capital in terms of fixed capital. The study adopted parametric approach by using Divisia, Solow and Kendrick indices on the translog production function. Sixteen states, viz., Andhra
Pradesh, Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. The estimates of Kendrick index of total factor productivity of industrial sector of sixteen States showed that the contribution of total factor productivity to output growth was greater than the base year value in all the States, except Himachal Pradesh in 1980s, whereas it was greater than the base year value in all the States in 1990s. Himachal Pradesh was also one of the States exhibiting positive rate of total factor productivity growth in 1990s, characterizing efficient use of existing technology which paved the way for higher output growth. The Solow index indicated that the average contribution of total factor productivity to output growth was greater than the base year value in Andhra Pradesh, Haryana and Uttar Pradesh. Himachal Pradesh is one of the States which have total factor productivity rates less than the base year value in the 1980s as well as in 1990s. Further during 1990s, the State of Himachal Pradesh registered a low magnitude of 43.88 percent. Most of the States, viz., Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan and Tamil Nadu, exhibited negative annual compound growth rate of total factor productivity for the post reform period as whole. This implied that the augmentation of technical efficiency had not affected the growth of output in these States. The Divisia index showed that the average contribution of total factor productivity to output growth was greater than the base year in Andhra Pradesh, Assam, Bihar, Himachal Pradesh, Orissa and Uttar Pradesh in 1980s. Five States, viz., Himachal Pradesh, Orissa, Punjab, Rajasthan and Uttar Pradesh, registered greater total factor productivity during 1990s. The study concluded that the total factor productivity growth in the 1990s had slightly higher influence on the process of output growth vis a vis the 1980s.
Mukherjee and Majumdar (2007) studied the trends in factor productivity, technological progress and technological efficiencies in the manufacturing sector in India and examined the relative importance of each component. The main objective of the study was to calculate the Total Factor Productivity Growth in the organised manufacturing sector in India before and after the Structural Adjustment Programme by major industry group and State, to examine the relative importance of the total productivity, total factor productivity growth and technical efficiency changes and explore the factors that might have caused regional disparity in productivity and efficiency levels. The study covered the period from 1980 to 2000 and used the secondary data about organised manufacturing sector collected through Annual Survey of Industries. The Translog Production Function was used to measure factor productivity. The values of the terms were at 1981-82 prices. The study covered 14 industries and 16 States. The product groups included non-durables, i.e., food and beverages, and textiles; durables, i.e., textile products, wood products, paper products, and leather products; intermediates, i.e., basic chemicals, rubber and plastic, non-metallic minerals, basic metals, and metal products; machinery and equipment, i.e., electrical, electronic and non-electrical equipment, and transport equipment; and manufacture not elsewhere classified. The 16 major states studied were Punjab, Haryana, Himachal Pradesh, Delhi, Bihar, West Bengal, Orissa, Rajasthan, Gujarat, Maharashtra, Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Uttar Pradesh and Madhya Pradesh. The study found that the substantial disparity existed among regions and product groups regarding efficiency, technological progress and efficiency changes. Further, increasing capital intensity was associated with failing productivity, efficiency and technological deceleration in the 1990s. The total factor productivity of the organised manufacturing sector in India was not very encouraging. The total factor productivity at All India level was 1.6 per cent per annum during 1980-
90. However, during 1990-2000, the total factor productivity growth rate dropped to -1.5 per cent per annum. As far as industrial groups were concerned, the drop in factor productivity was highest in the non-durable sectors. The technical efficiency of all the industries taken together in Himachal Pradesh declined between 1980 and 1990, but increased between 1994 and 2000. In fact, the average annual rate of change of technical efficiency was -2.3 during 1980-1990 and 2.7 during 1990-2000, which is incidentally the highest amongst the States studied. The study identified Leather Products, Basic Chemicals, Non-metallic Minerals, Machinery and Equipment as focus areas for the State of Himachal Pradesh. The study, however, did not provide state-wise growth of total factor productivity.

**National Productivity Council (2010)** conducted a study on the Productivity & Competitiveness of Textiles and Garments Manufacturing Sector in India. The main objective of the study was to assess the productivity and competitiveness of Indian textile and garments sector during the post liberalization period as well as to review the global and Indian scenario of the textile and clothing trade. The study used the Annual Survey of Industries data for estimation of productivity levels in the textile and garments sector for the period 1980-81 to 2005-06. The study also carried out the field surveys of Textiles and Garments manufacturing units at various textile clusters in India for the period from 2004-04 to 2007-08 on the basis of a structure questionnaire. The labour productivity was studied for three different periods, i.e. 1980-81 to 1989-90, 1990-91 to 2000-01 and 2000-01 to 2004-05. Total Factor Productivity was estimated by using the Divisia index method. The labour productivity growth rates estimated for the textile and garments sector at the state level as well as for All India for three different time periods was found declining continuously over the years. The compound annual growth rate of labour productivity in Himachal Pradesh was the highest during 1980-81 to 1989-90, whereas
it slipped to the fourth place behind Karnataka, Andhra Pradesh, Madhya Pradesh during 1990-91 to 2000-01 and further to the sixth place behind Uttaranchal, Orissa, Bihar, Jammu & Kashmir, Assam during 2001-01 to 2004-05. The labour productivity in Himachal Pradesh was found to be higher than that of All India level during the above three periods. As per field surveys, the average annual turnover for the manufacturing units at All India level showed increasing trends except for 2007-08. The average annual turnover for the State of Himachal Pradesh increased in 2004-05 but declines for 2005-06, 2006-07 and 2007-08. A very high proportion (65 percent) of manufacturing units were found engaged in export and reported increase in export but a comparatively (32 percent) small segments were engaged in import of finished products. Further, the increase in cost-competitiveness was reported by 63 percent manufacturing units.

Katyal and Singh (2013)\textsuperscript{34} studied the role played in growth of Gross Domestic Production of India by Gujarat, Punjab and Himachal Pradesh by evaluated the performance of selected industries. The objectives of the study included comparison of growth of Punjab, Gujarat and Himachal Pradesh with reference to the selected industries as well as to find out the reasons behind variations in the growth of these States. The study selected four industries, viz., Food & Beverages, Apparel, Chemical and Textile. The secondary data from the year 2006 to 2010 were used for the purpose of the study. The statistical tools, such as mean, standard deviation and skewness were used in the study. The study found that the growth of investment in textile industries is stagnant in Himachal Pradesh, whereas it was declining in case of Punjab. Investment in Gujarat was found to be far greater than the two other States. Similarly, the investment in apparel industry is far greater in Gujarat as compared to Punjab and Himachal Pradesh. In the nutshell, Himachal Pradesh is found to be growing slowly but at a consistent pace. The study observed that the growth rate
of Gujarat is far more than the Punjab and Himachal Pradesh. Himachal Pradesh is also growing in chemical manufacturing industries. But in the case of Punjab, it was found that the growth is stagnant or declining in all the industries. The study found that the reasons for development of Himachal Pradesh included allotment of land at subsidized rate by the Government which attracted pharmaceutical manufacturing companies, development of suitable infrastructure which assured the companies making long-term investment, cheap and hardworking human resources as well as uninterrupted supply of electricity to the industries.

3.3 CONCLUSION

The most of the studies reviewed above used the data base of Annual Survey of Industries for All India/State level measurement of total factor productivity. The productivity growth was studied at two or three digit level of National Industrial Classifications. In some cases, the data of Centre of Monitoring Indian Economy, Research Bank of India and National Sample Survey Office were utilised for the purpose of productivity study. The studies measured partial productivity as well as total factor productivity through production function/index number approaches, depending upon the objectives underlying the study. The most of the studies had reported decline in factor productivity in the post reform regime.

The present study is different from those indicated in the reviewed literature on the following counts –

Firstly, it is simple in nature and thus immune from the general complexity of the productivity studies, both in terms of research design and objectives.

Secondly, it seeks to measure the trends in growth, structure and productivity in small scale industries exclusively for the State of
Himachal Pradesh for which the studies are scantly available, particularly in view of its relatively low level of industrialisation.

Thirdly, it is extensive in so far as temporal dimensions are concerned as it intends to make a comparative analysis of small scale industries in the State during the pre and post reform period.
REFERENCES


