CHAPTER -1

INTRODUCTION

The role of industrialisation in accelerating the process of economic development of a country has long been recognized in the economic literature. In order to jump over the obstacles to economic development, a high minimum amount of industrial investment is required because industrialization realizes economies of scale, internal or external or both. The substantial dynamic benefits offered by industrialization is essential for changing the traditional structure of economically less developed countries. Industrialization is also necessary for the primary exporting countries that are faced with the problem of lagging export demand. Industrialization is advocated for providing employment to the rapidly increasing labour force. Industrialization is essential for raising the national income because industrialization raises productivity per worker.

The main objective of this dissertation is to analyse the regional variations in the growth performance of organized manufacturing industries in India over the period 1976-77 to 1987-88. Any region can expect to achieve rapid growth in per capita income through the process of industrialization. The low share of industrial income in the domestic product reflects the backwardness of the economy. The backwardness would be excacerbated when there is low rate of growth in the industrial output. A detailed analysis of
the regional patterns of growth of organized manufacturing industries in India has been carried out. A number of alternative propositions are examined for explaining the regional variations in the rates of growth of output of aggregate organized manufacturing as well as at the disaggregative level.

The regional patterns of growth of organized manufacturing industries is also carried out at three main groups of industries, namely, (1) Agro-based industries, (2) Petro-chemical and mineral-based industries and (3) Metal-based industries. Besides, the regional variations are also examined for 17 industries at two digit industrial classification given in the Annual Survey of Industries. All kinds of analyses at aggregative as well as at different disaggregative levels are carried out to find out the main factors responsible for the regional variations in the rates of growth of value added or output and employment in organized manufacturing over the period 1976-77 to 1987-88.

1.1 The Objectives of the Study

Broadly, the main objectives of the study are as follows:

1. To examine the factors responsible for the good performance of manufacturing at all-India level over the period 1976-77 to 1987-88.

2. To examine the regional pattern of growth and disparities in manufacturing in India over the period 1960-61 to 1987-88.
3. To Analyse the regional pattern of growth of aggregate organized manufacturing industries in India over the period 1976-77 to 1987-88.

4. To examine the regional pattern of growth of agro-based industries, petro-chemical and mineral-based industries and metal-based industries in India over the period 1976-77 to 1987-88.

5. To study the factors responsible for the observed differential rates of growth of value added originating in aggregate as well as disaggregate organized manufacturing industries in various regions in India over the period 1976-77 to 1987-88.

Methodology

The details of the methodology are given in the respective chapters. However, it is useful to present a broad picture of the type of analysis that is attempted. With a view to studying the sub-sectoral growth patterns, the aggregate organized manufacturing is divided into three broad categories: (1) agro-based industries, (2) petro-chemical and mineral-based industries, and (3) metal-based industries. In order to understand the structure and patterns of manufacturing industries, it is further analysed at the level of disaggregation of 17 industries, and growth rates by each individual industries are computed. The importance of this disaggregation and thereby calculation of growth rates indicates that high growth in manufacturing industries is
concentrated in specific industry groups. It has there been possible to trace the causes that may have led to fast growth of some industries, slow growth by other industries.

The annual compound growth rates of value added, output, employment, labour productivity, capital productivity, capital intensity and total factor productivity are calculated by fitting a statistical trend line of the type \( Y = ab^t \) at 1970-71 prices and that of per worker real wages at 1960-61 prices. The gross value added figures are more relevant for studying the production characteristics. The depreciation charges in the Indian industries are known to be highly arbitrary, which have been calculated by the Income Tax Authorities for taxable income and seldom represent the capital consumption. By adding net value added to depreciation one would arrive at the gross value added.

With a view to measure the divergence or convergence in regional disparities, Hanna's method of state relatives is used. The method of coefficient of variation is also applied. Finally, time trends in the coefficient of variation is also examined with a regression technique.

The regional distribution of manufacturing industries and their composition, structure and growth rates are calculated. The industrial base analysis of various regions by different industries is also carried out with the help of coefficient of specialization and location quotient techniques. This has helped in identifying the importance of various industries in a region. Further, this analysis brings
out whether to diversify or not the industrial structure of a region.

Productivity growth is first analysed in terms of partial productivities. Since partial productivities give diverse trends over time, total factor productivity indices are calculated by using four kinds of formulas, namely, (1) Kendrick's index, (2) Solow's index-I, (3) Solow's index-II and (4) Translog index. These indices provide a composite picture. Productivity has also been analysed through the estimation of the parameters of Cobb-Douglas type production function. The industry-wise and region-wise estimation of Cobb-Douglas production function enable to assess the elasticity of output with respect to labour and capital. In order to get the idea of technological progress, Hick's concept of neutrality is incorporated in Cobb-Douglas Production function.

The relationship between productivity and employment growth on output growth (which is known as Verdoon's law) has also been estimated by using linear regression model.

1.2 Hypotheses

Some of the hypotheses examined in various contexts of the study are as follows:

1. Regional disparities in the economic development in India are converging over the years because of the growth of manufacturing.
2. Higher the rates of growth of organized manufacturing, higher would be the rates of growth of the domestic product.

3. Higher the rate of growth of agriculture, higher would be the rate of growth of manufacturing.

4. Diversification is a necessary condition for high rates of growth of output in aggregate organized manufacturing.

5. Spatial variations in the rates of growth or levels of labour productivity leads to differential rates of growth of value added in manufacturing in various states.

6. Wage cost is an important determinant of the manufacturing growth in a region. The per worker wages and the per worker productivity in various states are closely related. The productivity per head and the capital-labour ratio are correlated.

7. Capital productivity has a significant role to play in the determination of growth rates of value added.

8. The presence of economies or diseconomies of scale causes the value added in manufacturing to grow at different rates in various regions.

9. High rate of growth total factor productivity leads to high rates of growth of manufacturing.
10. The performance of manufacturing also depends on the performance of agriculture.

11. The growth of manufacturing in a region depends on the nature of infrastructural development.

12. The extent of industrial disputes play a major role in the differential rates of growth of manufacturing in various states.

13. The rate of growth of employment depends on the rate of growth of value added, capital intensity and the per worker real wages.

1.3 Sources of Data

The present study is based on the data available from the secondary sources of information. Among the secondary sources, the most extensively used are the Annual Survey of Industries from 1976-77 to 1987-88 published by the Central statistical organization (CSO). The industrial sector consists of three sub-sectors: (1) manufacturing, (2) mining and quarrying and (3) electricity, gas and water supply. The manufacturing sector consists of (a) the factory sector referred to as the organized or registered manufacturing, comprising of all manufactured enterprises registered under the Indian Factories Act of 1948. It includes both the census sector and the sample sector. The census sector cover all registered firms employing 50 or more workers with the aid of power or 100 or more workers without the aid of power. The sample sector cover all units employing 10 to 49 workers if
using power or 20 to 99 workers, if not using power. (b) the non-factory sector or unorganized sector or unregistered sector consist of all manufacturing enterprises which are not registered under the Indian factories Act of 1948. It covers all the manufacturing units employing less than 10 workers if using power or less than 20 workers if not using power. It includes household enterprises and small scale non-household enterprises.

The present study is based on the organized manufacturing because there was no detailed informations available on the unorganized manufacturing. The only information available on the unorganized manufacturing sector in aggregate is the net value added estimated by CSO in "Estimates of State Domestic product". On the other hand, detailed industry-wise informations is available on organized manufacturing in the Annual Survey of Industries published by the CSO.

Regarding the Annual Survey of Industries, the study depends on, "the summary results for the Factory Sector" for the period of nine years from 1979-80 to 1987-88. From the year 1976-77 to 1978-79, the study depends on the 'Supplement to the Annual Survey of Industries' (Factory sector) which provides the data at three digit level, are combined at two-digit level.

The choice of the initial year is governed primarily by data availability considerations. Data regarding the organized manufacturing industries at two digit level and at
the state level are available from 1976-77 to 1987-88. Before that no data were available at two digit level as well as at the state level. At the national level, the summary statistics of factory sector (new pattern) are available from 1973-74 to 1987-88. Similarly, it is available at the state level only for the aggregate organized manufacturing. At the state level, no data are available at two-digit level. What available at the state level are the data of census sector at two or three digit level. But this data are given for an industry combinedly for two or three or more states. Moreover, as there is no separate publication for sample sector after 1969, it is not possible to construct the factory sector data from 1973-74 to 1975-76 at state level. So this study is confined to the period 1976-77 to 1987-88. It is also mentioned that the study could not be confined even to the census sector because from 1983-84 onwards the separate publication of census sector data has been terminated.

The appropriate revised wholesale price index numbers at 1970-71 prices are taken from "Revised wholesale Price Index Numbers in India", published by the CSO. The value of gross output and gross value added are deflated by these wholesale price indices. The nominal wages are converted into real wages by deflating it with appropriate consumer price indices. The consumer price indices at 1960-61 prices are taken from various issues of Statistical Abstracts of India, published by CSO.
The capital input in the study is computed by the perpetual inventory method, i.e. the common method of making the estimates of written-down replacement cost for fixed capital stock. In this study, the number of workers is taken as the measure of labour input. The detailed methodology of the capital input is described in chapter V.

Data on income originating in various sectors in different states over the period 1960-61 to 1987-88 are available in 'Estimates of State Domestic Product' published by the CSO.

Informations, at all-India level, on the value added in agriculture, capital formation, savings, implicit terms of trade and rural and urban non-food consumption expenditure are available in various issues of the National Accounts statistics published by the CSO. That on index of national income, index of agricultural production, index of industrial production, indices of terms of trade are based on the data available in the Statistical Abstracts of various issues, All India, published by the CSO. Informations on index of consumer goods industrial output, index of basic and capital goods output are available in the Reserve Bank of India Bulletin of various issues published by the Reserve Bank of India. Informations on imports of capital goods, index of inedible and crude material imports are available in Economic Survey of various issues published by the Ministry of Finance.
Informations on input-output transactions are available in input-output Transactions Tables published by Dept. of Statistics, Ministry of Planning.

The index of infrastructural development is based on the informations available in the Statistical Abstracts, All India. Data on industrial disputes and mandays lost are taken from statistical abstracts.

Aggregate and disaggregate data on net domestic capital formation is available in National Accounts statistics.

1.4 Chapter Scheme of the Study

The study has been organized in nine chapters. The first chapter briefly introduces the relevance of the study and its objectives. The second chapter presents the critical survey of the studies related to the process of industrial growth. This chapter also examines the studies related to the regional growth in India.

Chapter III gives some explanations for the observed high growth rate of industrial output at all-India level over the period 1976-77 to 87-88. Chapter IV deals with what happened to the regional pattern of growth and disparities in manufacturing in India over the period 1960-61 to 1987-88.

In chapter V, the regional pattern of growth of value added, output and employment in aggregate organized manufacturing over the period 1976-77 to 1987-88 are presented. Some explanatory hypotheses are also tested in
this chapter. Chapter VI discusses the regional pattern of growth of agro-based industries in India over the period 1976-77 to 1987-88. Explanations are also provided for the observed pattern of growth.

Chapter VII is devoted to an analysis of the rates of growth of petro-chemical and mineral-based industries and the explanations for the same over the period 1976-77 to 1987-88. Chapter VIII deals with the regional pattern of growth and the factors responsible for the same in metal-based industries over the same period.

Chapter IX, finally covers brief summary and conclusions.