CHAPTER - I

THE OBJECTIVES AND METHODOLOGY

1.1) Introduction:

In 1989-90, India emerged as the largest producer of sugar in the World. The sugar production in the country attained a record level of 110 lakh tonnes. The sugar industry in India has, over the years, acquired large proportions, with an investment of Rs.2700 crore and 377 sugar factories in operation in the country.

This ancient agrobased industry, in the initial stages, grew under the Protection Act of 1932. However, with the passing years, sugar industry established itself and the protection was removed in 1950. By 1957, India had not only become self sufficient but also entered the international market, although in a small way. Later, in 1975-76, India exported more than 1 million tonnes of sugar and presently, as mentioned in the beginning, India is the largest producer of sugar.

The growth of sugar industry after 1950 should be mainly attributed to the co-operative movement. Since 1950, co-operative sector has played a vital role in the growth of sugar industry in Maharashtra and also in the rural development. As the sugar factories are located in rural areas, these factories have carried with
themselves, the breeze of industrialization to rural areas.

Although with the co-operative movement the Government policy has also played an important role in shaping up the sugar industry. In fact, the Government policy controls almost every aspect of sugar industry from cane prices, to licensing to financing of sugar factories etc. Depending on the circumstances, the Government policy towards sugar industry has changed from time to time, to suite the requirements.

One can not deny the importance of agro-based industries in a country like India. Capital Scarcity and abundance of human resources warrant setting up of an appropriate agro-based industrial structure as many of such industries are suitable for low tech investments. Amongst the various agro-based industries like cotton and Woollen textiles, leather processing, fruits and vegetable processing, jute industry, etc., sugar industry has registered a remarkable performance.

In the 1970's and 1980's, efforts were made to use the by products of the sugar industry profitably. Thus a number of sugar factories started distilleries, paper plants based on by products like molasses and bagasse.

1. Vijayrajan,A : "Role of Agro-based Industries" in Industrialization in India, ed. by R.S. Singh.
1.2) Sugar Industry in Maharashtra:

Maharashtra occupies an important place in the Indian sugar industry. Since 1950, there has been continuous expansion of sugar industry in Maharashtra. However, it should be noticed that up to mid-70's the sugar industry spread mainly in the southern and central parts of Maharashtra.

Being an agro-based industry which depended heavily on the raw material (cane) which undergoes rapid deterioration and so should be processed fast, most of the sugar factories are situated amidst cane fields in the rural areas. Thus, the sugar industry spread in the sugar cane cultivating areas like Ahmednagar, Kolhapur, Sangli and Pune.

Taking into account the socio-economic benefits of sugar factories in rural areas, the state Govt. adopted a policy of dispersal of sugar industry in different parts of the state. As a result, in the 70's and 80's the sugar industry spread in all parts of Maharashtra (Marathwada, Khandesh, Vidarbha) except coastal regions where no sugarcane cultivation is possible. By 1989-90 there was at least one sugar factory in every district of Maharashtra (except Bombay and Konkan).
However, sugar industry in different parts of Maharashtra operated under varied conditions with regard to sugarcane cultivation. Being an agro-based industry which is very sensitive to the raw material, the differences in the agroclimatic conditions are of paramount importance for the sugar industry. These differences are reflected in the varied nature of yield of sugarcane and recovery of sugar, which are very important factors that prompt further growth of sugar industry in a region.

A regionwise analysis of such factors affecting growth of sugar industry would throw light on the regional disparities with regard to these factors and help us understand the location pattern of sugar industry in different regions of the state of Maharashtra.

1.3) Objectives of the Study:

Earlier discussion suggests that the geographic association of this industry has led to the concentration of sugar industry in the cane cultivating areas. At the same time, state Government's policy of dispersal, in view of the socio-economic effects of sugar factory in rural areas, has been major factor that prompted setting up of sugar factories in relatively new areas. This has caused changes in the locational
pattern of sugar industry over the years. Thus the major objectives of the present study are:

1. To measure the regional concentration of sugar industry in Maharashtra.

2. To assess the impact of dispersal policy of the state Government towards sugar industry on the locational pattern of sugar industry over the years.

3. To study the regionwise performance of sugar industry in Maharashtra.

As this study proposes a regionwise analysis of location pattern of the sugar industry over the years, in the following sections we shall discuss the concept of a 'region', factors leading to regional disparities and later we shall take a review of various location theories.

1.4) Methodology and Sources of Data:

1. Data Sources:

This study is based on the analysis of secondary data, published by various financial and research institutions, Government agencies, research papers, etc. Important among them are:
1) Director of Sugar, Govt. of Maharashtra, Pune,
2) Working Results of Sugar Factories in Maharashtra—
Various issues published by Vasantdada Sugar
Institute, Pune.
3) Bhartiya Sugar Directory, Pune.
4) Co-operative Sugar, New Delhi.
5) Annual Survey of Industries, Central Statistical
Organisation, Govt. of India.
6) Report of the Fact Finding Committee on Regional
Imbalance in Maharashtra State.
7) 'Epitome of Agriculture in Maharashtra' Part-II,
Govt. of Maharashtra, 1990.

Limitations of the data:

We have faced some problems relating to data on
employment and capital which has been compiled in
aggregate by Govt. and other agencies which includes,
not only employment in sugar production, but also
employment in distilleries, paper plants etc. Time
series data relating to employment in sugar industry
separately, is also difficult to get.
1) **Methodology:**

As this study is related to the problems, performance and development of sugar industry in 3 regions of the State of Maharashtra, we have adopted the well known tools and techniques of analysis to present our findings. These tools have been developed by regional economists like, Hoover, Weber, Isard and others.

1) For measuring the development of sugar industry at all India level, and also at the district level, we have adopted the Composite Index Method to delineate the regions, i.e. States/Districts, as per the level of development attained in the region.

2) For estimating the concentration and dispersal of sugar industry in 3 regions of the State of Maharashtra, we have employed the following techniques.

   a) Location quotients,
   b) Coefficient of localization,
   c) Localization curve,
   d) Relative Growth Charts,
3) For measuring the dispersal of the sugar industry in 3 regions of the state during the period, 1960-1990, we have used the factory-wise distribution of installed capacity in these 3 regions. We have compared these distribution at 3 points of time on the basis of the norms of dispersal and concentration, defined in chapter-V.

4) For measuring the performance of sugar industry in Maharashtra as well as in the 3 regions of the State, we have used the method of estimating labour productivity and capital productivity indices, for the period, 1984 to 1990.

1.5) Conceptual Framework:

Concept of a "Region": There has been a great deal of discussion on the concept of 'Region', but this has not led to any firm agreement. The term 'Region' is closely associated with the concept of 'area or space'. This term could be applied to a small area, a village, a group of villages, even a group of nations. The prevalent view is that there is no unambiguous method of defining an ideal region. The common procedure is to delimit the region by reference to physical criteria, administrative boundaries or data availability. In Regional Science a region has been defined as an area in which all parts have, as far as possible similar
economical structure and therefore similar economic problems and interests.

Similarity in economic structure as well as problems calls for uniformity in economic action in the form of regional planning. From the economic point of view, a region should be an integral part of economic development. The economic regions are classified into 3 categories:

i) Homogeneous Regions (these are close to natural regions of geographers).

ii) Polarised Regions (these represent polarization in terms of population density or market in a given region).

iii) Planning Regions (these represent administrative regions for planning purposes).

The definition of a region depends on technical, physical and economic factors. The political or administrative boundaries are, though not unimportant from the economic standpoint, often, economic regions cross political/administrative boundaries. In case of India, economic regions are often smaller than the state.

Similarly, an economic region may spread over more than one state. Thus economic delineation of a region begins where homogeneity ends. According to the nature of problems faced by a region, regions could be classified as:

i) Congested regions where economic development leads to congestion costs,

ii) Depressed regions - where rate of development is lower than the national average.

iii) Under-developed region - where traditional agricultural activity in the major activity and manufacturing activity is totally absent.

In our study, a region is defined by the agro-climatic conditions in the state. Regions endowed with rich natural resources, water, fertile soil and favourable climatic conditions have shown a tendency to develop at a faster rate with little effort. The differences with regard to above mentioned factors have significant impact on the sugarcane cultivation. This is reflected in the yield of sugarcane per hectare and recovery of sugar obtained from cane. Thus depending on the recovery of sugar, Maharashtra has been classified into 3 recovery regions:

i) High Recovery Region (11% and above),

ii) Medium Recovery Region (10% to 11%),

iii) Low Recovery Region (Below 10%).
Apart from these above mentioned factors, a number of other factors like local initiative, entrepreneurship and efforts to exploit the resources, further widen the regional disparities. This is reflected in the location pattern of the sugar industry in Maharashtra. In the following section we shall review the various location theories.

1.6) Review of Location Theories:

"Location theories were originally developed to examine the underlying logic of the location decision of the firm and this sought to explain the relative influences of the factors exerting on the choice of particular location of the individual firm which seeks to maximise its own profit under condition of free market.

Most of the location theories have been developed on the basis of following three approaches:

1) Least cost approach,
2) Demand approach,
3) Profit maximisation approach.


i) **Least cost approach:**

Earliest of the location theories were propounded by Von Thunen, Launhardt and Alfred Weber. The theoretical approach of these three economists is commonly known as least cost approach.

In the location theory formulated by Weber, two important factors that decide on the choice of location are transport and labour costs. Thus, Weber classified the industries into:

i) Transport oriented industries,

ii) Labour oriented industries, and

iii) Industries which tend to get located due to agglomerative advantages.

1. Transport costs are very important in deciding the location of a factory. Material oriented industries like cement, sugar would be located at the source of the raw material to minimise the transport cost. Similarly a market oriented industry would be located near the market in order to minimise on the transport cost location. Depending on the pull of these two factors, the industry will finally settle for a least cost location.

This theory of location formulated by Weber is based on the restrictive assumptions of uniformity of
interest rates, transport rate, immobility of labour and spatial uniformity of demand. Thus, "in these early theories, location is seen largely as a product of spatial cost differences, with variation from place to place in sales potentials virtually ignored".

ii) Demand Approach:

In 1940, Losch formulated a general theory of location with demand as a major spatial variable. Losch wrote that the location and production of most goods lie closer together, and the production of most goods is rather evenly distributed in respect of their sales.

He emphasised the role of demand as the location deciding factor and argued that high demand and large sales will consequently generate sufficient profit to neutralise the high cost of transportation.

His theory is based on the assumptions of uniform distribution of natural resources, conformity with regard to population density and tastes, and lastly, there is no locational interdependence between firm. However, these restrictive assumptions have been criticised and questioned. The major criticism of the Losch's theory of location is that it neglects spatial cost variations.

iii) Profit Maximisation Approach:

The first significant attempt to integrate the Least Cost Approach and Demand Approach to the location theory was made by Melvin Greenhut in 1956. His theory incorporates the following factors:

1. Cost factors of location (transportation, labour and processing costs).
2. Demand factors of location (locational inter-dependence of firms, attempts to monopolise certain market segments).
3. Cost reducing factors.
4. Revenue increasing factors.

Greenhut aims at maximization of profits rather than minimisation of costs. He regards transportation costs as the determining factor of location only when cost of transportation forms a substantial part of total cost. In such cases production is located near market or near the source of raw material. As for the demand factors, he argues that the elasticity of demand is a very important factor. The more elastic the demand for a firm's product the more dispersed the production will be.

A brief review of location theories indicates that transportation cost is an important location factor that decides particularly the location of the materials oriented industries that are tied to the source of raw material.
1.7) Geographical Incidence and Transmission of Economic Development:

Regional disparities that occur due to various factors discussed earlier, often lead to regional imbalance. Regionwise disparities with respect to natural resources and other economic factors determine the geographical incidence of growth. Hirschman argued that in the geographical sense growth is necessarily unbalanced. He further believed that "there can be little doubt that an economy to lift itself to higher income levels must and will first develop within itself one or several centres of economic strength".

The Hirschman theory deals with economic development including not only economic variables but also inter-relation between these and certain social, cultural variables, particularly those which determine the emergence of entrepreneurial talents and ability of entrepreneurs to take investment decisions. Unequal distribution of such factors lead to emergence of 'growth poles' in the region & consequently differences in the levels of economic development of the regions. He further observed that "investigators spend a long


9. Ibid.

10. Ibid.
time mopping up all the opportunities around the same growth pole and neglect those that may have arisen or 11 could be made to arise elsewhere". According to Hirschman, development occurring in geographical growth points sets in motion forces which induces development in backward hinterland through "trickiling down" effects.

A study of the regional disparities in the state of Maharashtra arising due to the above mentioned social and economic factors has been carried out by the "Fact Finding Committee on Region Imbalances in Maharashtra". It was observed that one can not rely on totally the "trickiling down effects" discussed by Hirschman, for transmission of economic development in backward areas. The state has to step-in to speed up the spread effects of the economic development toward backward areas.

The state Government policy plays an important role in initiating the process of growth in the under-developed regions with the help industrial location policy. Thus to promote the industrial development in the backward areas of Maharashtra, the state has been pursuing a two fold policy:

11. Ibid.
a) To restrict the industrial growth in Bombay Metropolitan Region, and
b) to give appropriate incentives to industries going into backward areas.

Sugar factories play a major role in initiating the process of industrialization in rural areas. It was observed that the sugar co-operatives have provided a solid base and a jumping ground for agricultural and rural development in Western Maharashtra. In order to provide a similar base for development in Vidarbha and Marathwada regions, sugar policy of the Govt. has formulated a policy to disperse the sugar industry in these regions. As stated earlier, to assess the impact of location policy on sugar industry is a major objective of this study.

1.8) Chapter Scheme:

Chapter-I: This chapter gives an introduction to the subject of this study and also states the objectives of this study. The same chapter also discusses the conceptual framework underlying this research work, in which we have discussed the concept of "region", factors leading to regional disparities and finally we have

13. Western Maharashtra consists of two sugar recovery regions defined in our study.

* Report of the Fact Finding Committee on Regional Imbalances in Maharashtra State, April, 1984.
outlined the evolution of the various theories of location. It also explains the methodology followed in this study.

Chapter-II: This chapter gives a brief review of growth of sugar industry in India over the years. In the same chapter we have discussed the importance of the Government policy in the development of sugar industry. It gives a brief account of various policies adopted by the Government towards sugar industry and recommendations of various committees appointed by the Government to promote the development of this industry.

Chapter-III: In this chapter we have highlighted the significant position enjoyed by Maharashtra in the Indian Sugar Industry. For this purpose we have resorted to a state wise comparison of time series data with regard to sugar industry. The comparative analysis revealed that, with respect to yield of sugarcane, recovery of sugar from cane, and the capacity utilization of the sugar factories, the sugar industry in Maharashtra is way ahead of the subtropical states and very often tropical states also. To compare the overall development of sugar industry in various states we have constructed a composite index of development of sugar industry. The results of this exercise confirm the superior status of the sugar industry in Maharashtra.
The same exercise is repeated for Maharashtra with the help of districtwise data. This gave us the levels of development of sugar industry in the various districts and in turn revealed the disparities that existed with respect to development of sugar industry within the state.

Chapter-IV: Assessing the location pattern of industry is the main objective of this study. In this chapter we have attempted to measure the shift in the regionwise location pattern of the sugar industry with the help of employment data for sugar industry and all industries at two points of time. The employment data for sugar industry was obtained from the office of the Director of Sugar, Pune. The all industries employment data was obtained from District Statistical Abstracts for the concerned year. We selected the variable employment as the measure of concentration mainly because it is the creation of employment opportunities which is considered as the foremost objective underlying the policy of dispersal.

Chapter-V: In the chapter-IV we tried to measure the changes in the location pattern with the help of employment data. In this chapter we have tried to measure the growth of sugar industry alongwith the shifts in the location pattern on the basis of growth of
installed capacity of the sugar industry during the period 1960-90. Thus we obtained a picture of the relative positions of the three regions during the growth process and also impact of dispersal process, during this period.

Chapter-VI : Chapter 6 is devoted to measure the performance of sugar industry in Maharashtra on basis of labour & capital productivities Regionwise analysis of these productivities is attempted.

Chapter-VII : States the conclusions of this study.

Before we end this chapter we shall take a brief review of literature on the research carried out on various aspects of the sugar industry.

1.8 Review of Literature : This multifaceted industry has attracted attention of a number of scholars. Various studies have been carried out by scholars in order to study different aspects of sugar industry, like

14. labourers in the sugar industry, production and employment in sugar industry, importance of co-operative sugar factories in the economy.


* Cited in R.M. Kharche.
In a major study on sugar industry, "Government and co-operative sugar factories" N.R. Inamdar discussed problems and prospects of sugar industry, Govt. policy towards sugar industry and also the role of financial institutions like IFCI in the development of sugar industry.

Efficient management is very important for economic viability of any factory. G.S. Kamath in his book titled "Management of Co-operative sugar factories in Maharashtra" discussed management of co-operative enterprise with special reference to sugar co-operatives in Maharashtra. He studied various problems of sugar industry relating to financing, personnel management, cane supply etc. He also emphasised the role of sugar co-ops. in rural development.

The districts of Kolhapur and Ahmednagar enjoy a dominant position in the sugar industry in Maharashtra. Studies have been carried out in order to assess the impact of sugar industry in the Kolhapur and Ahmednagar districts on the agricultural and economic development of these districts and social welfare of the rural population in these districts.

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18. G.S. Kamat: "Management of co-operative sugar factories in Maharashtra".


Due to the extent of Govt control, govt policy holds great significance for sugar industry. In 1973, Mrs. V. Raghavachari in her study assessed the role of Govt in the development of sugar industry. She has analysed various aspects of the Govt policy towards sugar industry, like, Licensing and Location of Sugar factories, financing of sugar factories for the period 1956-70.

A sugar factory affects various aspects of growth process in rural areas like employment, mobilisation of rural savings development of irrigation facilities for the agricultural sector etc. In 1975, V. Malayadri in his study "Socio-economic Impact of Sugar Factories" discussed the above mentioned factors with regard to sugar industry.

In 1976, N.S. Jain in his study titled "Regional Economic Planning in a Sugar Factory Area", emphasized the need for regional planning. In his study he has identified and categorised various functions in the planning process that should be assigned to the local planning bodies and to the sugar factory management. 

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His findings and conclusions are based on the sample study carried out for "Yashwant Sahakari Sakhar Karkhana" Dist. Pune.

S.D. Tupe, in his book "Sugar Co-operatives and Rural Change", analysed in details the impact of sugar factory in a given area on agriculture, living standards of agricultural labourers, and factory workers and overall change in the rural area that comes about with the setting up of a sugar factory. The study concluded that there is an increase in area under cane cultivation and irrigation facilities. There is also a change in cultivation practices and cropping pattern with the setting up of a sugar factory. The real incomes of farmers have increased after the setting up of a sugar factory.

R.M. Kharche, in his exhaustive study titled "Sugar co-operatives in developing Economy" has discussed various aspects of sugar industry in Marathwada region. In his study, he has discussed at length the policies of the Central and State Government with respect to Licensing and Financing of Sugar factories. He has also discussed at length, importance


of proper cane supply, cane development activities and other problems that affect the efficiency of a sugar factory.

G.A. Nikam (1991), has made an indepth study of the financial and costs structure of Sugar Co-operatives in Maharashtra, for the period, 1975 to 1985.

After this brief review of literature of sugar industry in Maharashtra, we shall make an attempt to discuss the progress of sugar industry in India, in the next chapter.