

**Location of Industries In
North—Western India : 1961-81**

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MASTER OF PHILOSOPHY

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**CENTRE FOR THE STUDY OF REGIONAL DEVELOPMENT
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SCHOOL OF SOCIAL SCIENCES
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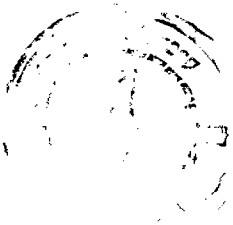
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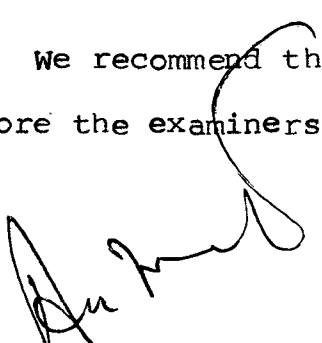
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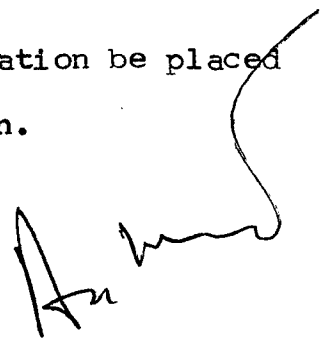


CERTIFICATE

Certified that the dissertation entitled
"LOCATION OF INDUSTRIES IN NORTH-WESTERN INDIA:
1961-81", submitted by Miss Sangeeta Gupta is in
partial fulfilment of the requirements for the
award of the degree of Master of Philosophy of this
University. This dissertation has not been submitted
for any other degree of this University or to any
other University and is her own work.

We recommend that this dissertation be placed
before the examiners for evaluation.


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_C_O_N_T_E_N_T_S_

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I

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CHAPTER I

INTRODUCTION

I.1 INTRODUCTORY NOTE:

The most distinctive feature of high per capita income economies is a high degree of industrialization. All over the world it has been seen that there is a high correlation between the level of per capita income and industrialization.

The relevance of structural changes in the pattern of industrialization has been widely discussed by Hoffman,¹ Chenery² and Kuznet³. The consumer goods industries always developed first. The main reason why consumer goods industries developed first seems to be that expansion of capital goods industries require a large amount of capital and advanced technique of production, which are not easily forthcoming in initial stages of development.

The process of industrialization involves a significant change in the economic activities of different regions along with overall change in industrial structure. This reflects a spatial dimension in the process of industrialization.

Industrial activities have till today got spatially distributed on the basis of locational factors represented

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1. W.G. Hoffman, The Growth of Industrial Economies, Manchester Univ. Press, 1958.
 2. H.B. Chenery, "Patterns of Industrial growth", American Economic Review, 1960.
 3. S. Kuznet, Economic Growth of Nations. Total Output and Production Structure, Cambridge Mass: Harvard Univ. Press, 1971.

by availability of basic raw materials and nearness to the market. Raw material based industries have a tendency to locate at the source of raw material and market oriented industries near the market. Raw material based industries are generally concentrated whereas market oriented industries are relatively more dispersed. Along with these two important locational factors, infra-structural facilities in the form of transport, power, communication and banking also play a dominant role in location of industries.

While industrialization is desirable, a policy oriented towards balanced regional industrial development is essential in a developing country. Regional development involves optimum industrial activity based on broader economic and strategic considerations. Balanced regional development strategy also takes into account the problem of uneven growth which is an acute problem in most of the developing countries.

The need for dispersal of industries as a means of attaining balanced development has been emphasized in the successive Five Year Plans of India. The Second Plan emphasized the need for balanced regional development by the location of new enterprises in backward region. In the Third Plan, to remove regional disparities, backward areas in different regions were given special consideration for location of industries.

The Fourth Plan laid stress on location of central projects in backward regions and the Sixth Plan emphasized financial assistance to industries in backward areas.

One of the major characteristics of industrial development in any nation is a drive towards diversification. In view of importance of a diversification policy in the country, an understanding of effects of industrial diversification is essential for industrial planning.

The concept of 'diversification index' was developed by Rodgers.⁴ More precise definition of diversification is the presence in an area of a great number of different types of industries. If diversification is defined as 'balanced industrial structure' there is difficulty in defining the word 'balanced'. Absolute diversification, again, would mean equal employment in all major industrial groups. This is meaningless because a measure constructed on such a base would vary tremendously depending on the kinds and number of industrial groups measured. With a wide variety of factors to be considered any measure of diversification is a compromise.⁵ It should use a

4. Allan Rodgers, "Some aspects of Industrial diversification in the U.S.", Economic Geography, 1957.

5. Ibid.

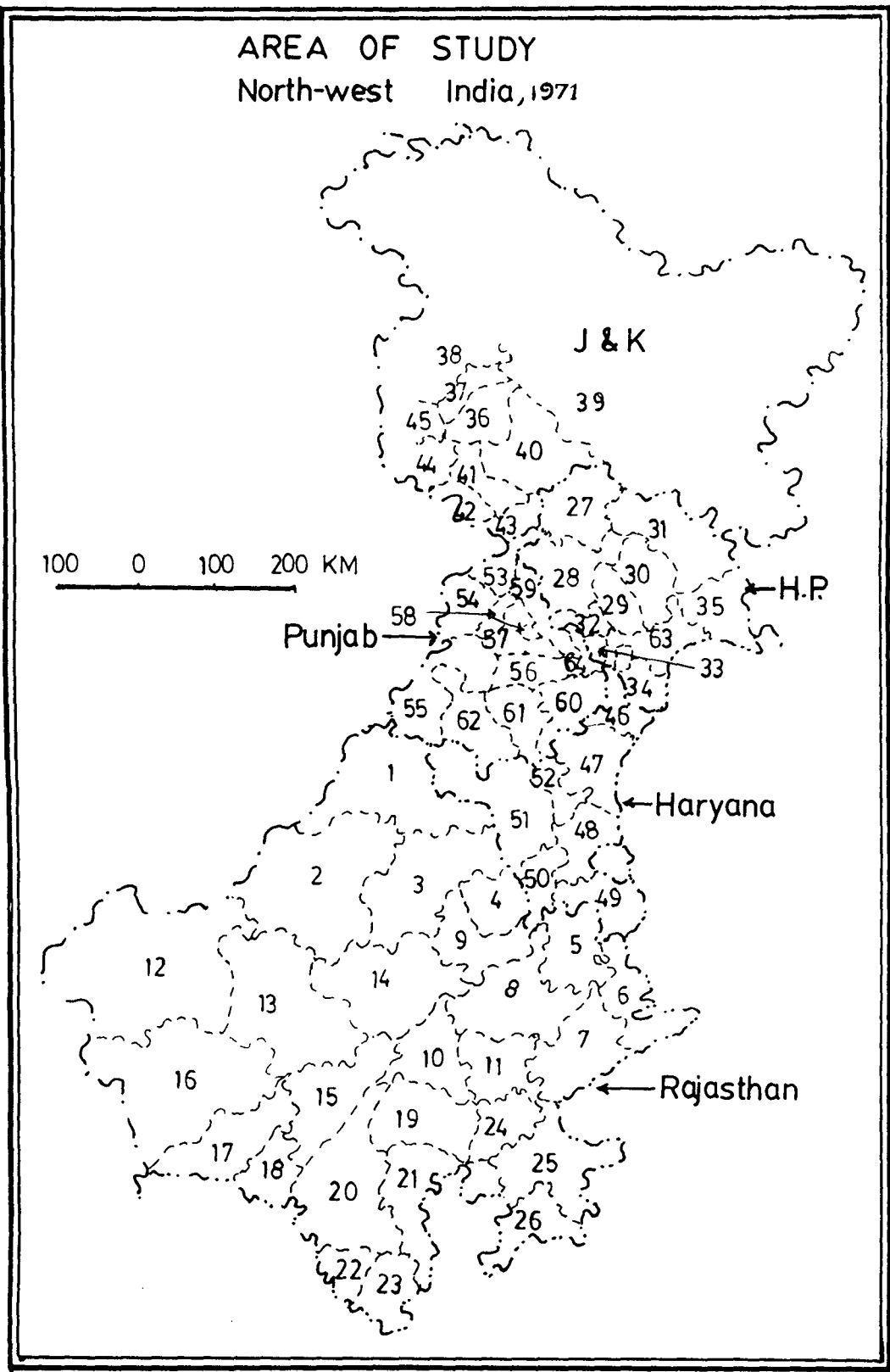
large and varied number of industrial groups as a base and be computed in such a way that deviations are measured from some norm which is considered to be a diversified pattern.

I.2 STATEMENT OF THE PROBLEM:

The basic techniques for the measurement of spatial distribution need to be adequately developed. The definition of manufacturing activity, the choice of proper indicators, the selection of sources of data, and statistical aid should all be precise.

The present dissertation seeks to find out the locational structure of manufacturing at the state and district level. Three indices have been selected.

The location quotient is used to find out the industrial base of the state/district by taking out a ratio between proportion of workers in a particular industry and total industrial employment. The coefficient of localization shows the degree of concentration of a particular industry. It has been computed by subtracting proportion of workers in all industries from the proportion of workers in a particular industry and then aggregating positive deviations. The specialization coefficient demonstrates the degree of specialization of the state/district in industrial activity by subtracting proportion of workers in all states/districts from the proportion of workers in one state/



district and aggregating positive deviations. These indices have been used for making inter-industry and inter-regional comparisons over a period of time.

I.3 AREA OF STUDY:

In the present paper North-western region of the country comprising Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana and Rajasthan has been considered. There has been a change in the boundaries of the states between 1961-71. Haryana state was non-existent in 1961 and the present Haryana was merged with Punjab. Besides three districts of Himachal Pradesh were in Punjab in 1961. Here Haryana has been formed by taking out those districts of Punjab in 1961 which fell in Haryana 1971.

(Fig) I.1)

I.4 PERIOD OF STUDY:

This study covers three decades: 1961, 1971 and 1981. However, study of temporal change has not been able to observe transformation between 1971 and 1981 at district level because of changes in the boundaries of districts and data not being available at Tehsil & village level.

I.5 OBJECTIVE OF STUDY:

The primary object of this empirical investigation is to discover main trends in the location of industries

in North-western region of India. For this purpose the major aspects which have been analysed are:

- 1) To identify industrial base of the five states and various districts of these states and the changes that have occurred in them over a period of time;
- 2) To measure the level of concentration or dispersion of various industries in the region/states and to observe the tendency towards diversification over a period of time;
- 3) To observe the level of specialization of the states/districts in industrial activity and to notice the trends towards diversification.

Besides, the industrial structure of the five states and a theoretical discussion of factors affecting location have been undertaken.

I.6 CHOICE OF INDICATORS:

For a study of the trends of location of Industries in a region over time we must have some statistical measures of this concept. The various measures that suggest themselves are (1) Value of output, (2) Capital invested, (3) Power consumed, (4) Number of establishments and (5) Number of people employed. As regard the value of output, it can be obtained from census of production but census of production is not available

in India at district level. As regards capital, it depends on the method of financing the industry which varies from industry to industry and from region to region. Similarly, with regard to the power consumed, the difficulty is to aggregate the units using different sources of power. Besides, the availability of data at district level does not exist for all indicators. So employment has been taken as the indicator in the present study. Only male workers have been taken into account because data for male workforce are more reliable on account of change in the inter-Census definition of workers.

I.7 METHODOLOGY:

The statistical measures which have been used for studying the level and locational concentration of Industries are: Location Quotient, Coefficient of localization and the coefficient of specialization. These concepts were widely used by Professor Sargent Florence⁷, Isard⁸ and other locational analysts. The location quotient gives the degree of concentration of a particular industry in a region. The coefficient of localization gives a general picture of the degree of localization of

7. Sargent Florence, Investment, Location and Size of the plant, Cambridge Univ. Press, 1943.

8. W. Isard, Methods of regional analysis - an introduction to regional science, M.I.T. Press, 1960.

a particular industry as compared to the total industrial employment and coefficient of specialization shows the degree of concentration of industries within a region.

The location quotient measures the degree to which a specific region has more or less than its share of any particular industry. The coefficient is computed as the ratio of proportional share of the region in employment in a particular industry to the proportional share of the region in total manufacturing employment. This can also be explained as the ratio of the proportional share of a particular industry in employment in the region to the proportional share of the industry in total working population.

$$L_{ij} = \frac{e_{ij}}{\sum_{j=1}^m e_{ij}} \bigg/ \frac{\sum_{k=1}^n e_{ik}}{\sum_{j=1}^m \sum_{i=1}^n e_{ij}} \quad \text{or} \quad \frac{e_{ij}}{\sum_{i=1}^n e_{ij}} \bigg/ \frac{\sum_{j=1}^m e_{ij}}{\sum_{i=1}^n \sum_{j=1}^m e_{ij}}$$

where

e_{ij} = employment in i^{th} industry in j^{th} region.

$\sum_{j=1}^m e_{ij}$ = employment in i^{th} industry in all regions.

$\sum_{i=1}^n e_{ij}$ = employment in all industries in j^{th} region.

$\sum_{j=1}^m \sum_{i=1}^n e_{ij}$ = total industrial employment in all industries all regions.

A location quotient of one means that a region has neither more nor less of an industry than its overall volume of manufacturing. A quotient of more than one shows concentration of an industry in the region and a quotient less than

shows that the industry is less developed than manufacturing in that region.

The coefficient of localization is the sum of positive (or its equivalent negative) deviations of regional proportion of workers in the particular industry from the corresponding regional proportion of workers in all industries.

This can also be expressed as equal to half^{8a} the sum of the absolute differences between the regional proportion of workers in a particular industry from corresponding regional proportion of workers in all the industries. In terms of percentage :

$$S_{cei} = \frac{1}{2} \sum_{j=1}^m \left[\frac{e_{ij}}{\sum_{j=1}^m e_{ij}} - \frac{\sum_{i=1}^m e_{ij}}{\sum_{j=1}^m \sum_{i=1}^m e_{ij}} \right] \times 100$$

where

e_{ij} = employment of workers in i^{th} industry j^{th} region.

$\sum_{j=1}^m e_{ij}$ = employment in i^{th} industry in all regions.

$\sum_{i=1}^m e_{ij}$ = employment in all industries in j^{th} region.

$\sum_{j=1}^m \sum_{i=1}^m e_{ij}$ = employment in all industries in all regions.

8a. 'Half' because the maximum value of

$$\sum_{j=1}^m \left| \left[\frac{e_{ij}}{\sum_{j=1}^m e_{ij}} - \frac{\sum_{i=1}^m e_{ij}}{\sum_{j=1}^m \sum_{i=1}^m e_{ij}} \right] \right|$$

is always less than 2.

The range of this coefficient varies from 0 to 100 percent. Zero denotes no regional deviation of the particular industry from regional pattern of all industries.

The coefficient of specialization is estimated for specific regions. This is computed by subtracting the proportional share of workers in all regions from the proportional share of workers in a particular region, adding all the positive deviations.

In the present study it has been calculated in the percentage form, as given below:

$$S_{cej} = \frac{1}{2} \sum_{i=1}^n \left[\frac{e_{ij}}{\sum_{i=1}^n e_{ij}} - \frac{\sum_{i=1}^n e_{ij}}{\sum_{i=1}^n \sum_{j=1}^m e_{ij}} \right] \times 100$$

where

e_{ij} = employment in i^{th} industry in j^{th} region.

$\sum_{i=1}^n e_{ij}$ = employment in all industries in j^{th} region.

$\sum_{j=1}^m e_{ij}$ = employment in i^{th} industries in all regions.

$\sum_{i=1}^n \sum_{j=1}^m e_{ij}$ = employment in all industries in all regions.

If the region has a proportional mix of industry same as the country/region the coefficient would be zero. If the region has very limited industrial activity this coefficient would approach 100 percent.

I.8 DATA BASE:

The data used for finding the industrial base, localization and specialization of industries are based on employment in manufacturing and repair industries from the Census of India 1961, 1971, 1981 (General economic tables part II Bii) Division 2 & 3 i.e., manufacturing and repair industrial employment has been considered. Two digit classification, i.e., 19 major groups like 20-21... 39 has been taken into account. To make the data comparable with 1971 and 1981 the data of 1961 has been adjusted according to the comparison chart given in the Census of India, 1971, General economic table, Delhi, Part II Bii (Appendix I).

I.9.1 LITERATURE SURVEY:

To comprehend the locational pattern in industrial it is essential to take into consideration the set of dynamic factors which account for the tendencies of certain industries to locate at particular sites. The contribution of classical economists to the theory of industrial location was not much. They made only passing reference to the problem. Adam Smith⁹, while discussing the principle of division and specialization of labour, referred to location in terms of geographical division

9. Adam Smith, Inquiry into the nature & causes of the wealth of Nations, 1776.

of labour. J.S. Mill¹⁰ and Alfred Marshall¹¹ confined themselves to the survey of various factors contributing to localization.

Thus the classical treatment did not go beyond this and it fell to the hands of Alfred Weber, a German economist, to enunciate a systematic theory of industrial location.¹² His original work was published in German language in 1909, but could not get recognition till 1929 when it was translated into English by Carl J. Friedrich. Weber's pure theory is the starting point of all later approaches to an analytical theory based on the study of general factors which pull an industry towards different geographical regions and which ultimately, determine the fundamental framework of industrial orientation.

Weber discovers by investigation and analysis factors which operate as economic causes of determining the location of industry. He classifies the causes into two categories:

- 1) Primary causes of regional distribution of industry, which may be called Regional factors, and

10. J.S. Mill, Principle of Political economy, 1848.

11. Alfred Marshall, The Principles of Economies, 1890.

12. A. Weber, Theory of Location of Industries (Translated by J. Friedrich), Chicago Univ. Press, 1965.

- 2) Secondary causes responsible for distribution of industries - Agglomerating and Degglomerating factors.

Regional factors: Weber discovered two general regional factors, namely transportation cost and labour cost.

Transport costs are determined by (1) Weight to be transported and (2) distance to be covered. Each industry would be first drawn to those sites which have the most favourable transport relations, both with regard to the source of raw materials and the markets.

The actual basis on which production will get oriented within a location triangle depends on the type of materials used and the nature of their transformation into products. Weber classified raw materials as ubiquitous and localized. Further, raw materials are pure and weight losing.

On the basis of this Weber formulated his law of transport orientation. He argued that the proportion of the weight of localized materials to that of the final products exercised a determining influence on the location of manufacturing industries. If this proportion, which he called material index was high, production tended to be attracted to the place of deposit, and if low, it lay at the centre of consumption.

Weber, further, examined the cause of deviation from the point of least transport cost when there were differences in labour cost. The extent of deviations caused by varying labour cost was determined by the ratio of labour cost to the locational weight which has been called the labour coefficient.

Agglomerating and deglomerating factors: Agglomeration refers to the cheapening of factors of production due to concentration of an industry mainly due to external economies. Deglomeration refers to increase in cost of production due to decentralization of industry. These two tendencies influence in opposite directions. Industries with high proportion of manufacturing expenses in their total cost of production have a strong tendency to agglomeration because external economies can largely be affected in that sphere.

In spite of the fact that Weber's theory stimulated a chain of research and provoked thinking, it has been vehemently criticised by Dennison, Sargent Florence and Robbinson because Weber's theory is based on unconvincing over-simplified and unreal assumptions regarding cost. The assumption of fixed centres of consumption is unrealistic, division of raw materials into ubiquitous and localized is artificial and localization cannot be generalized as it is also a result of non-economic considerations.

Finally, according to Dennison, Weberian approach is over-burdened with technical considerations.

Despite these shortcomings the theory of Alfred Weber is the only comprehensive deductive theory which is capable of universal application.

The first attempt to construct a general location theory is to be attributed to Weber but his predecessors also made some valuable contribution to the theory of location.

The development of basic methodology in the analysis of specific as well as general location theory can be traced back to Von Thünen in his work 'Gut Tellow'.¹³

Launhardt the other major predecessor of Weber also attempted to work on location theory. But his study was limited and lacked sufficient generality.

Weber's attempt at general locational theory was also influenced by the writing of Roscher (1878) and Schäffle (1873). They tried to discover whether there were any natural laws and regularities for evolving locational structure of economies. Their works were based on historical facts.¹⁴

13. Isard, Location and space economy, MIT Univ. Press, 1956.

14. Ibid.

Englander (1926) investigated first the spatial form of primary production i.e., of land and forest economy. He then observed consequent changes in the spatial structure of the economy and spatial realignments of economic activities.

E.M. Hoover's¹⁵ work was evolutionary. His analysis was partial though it isⁱⁿ a broad setting. By drawing a set of assumptions and relaxing them one by one he proceeded from an analysis of extractive industries to manufacturing. He emphasized major forces affecting location of industries and did not pay much attention to general interrelation of these forces. He was able to synthesize the various theoretical contribution of his predecessors. His empirical work gave a practical shape to the location theory.

Some other major works published in English on location theory are by A.P. Usher¹⁶ and W.H. Dean, Jr.¹⁷ Both Usher and Dean tried to develop a relationship between geographic pattern of population density and localized resources. They followed a partial approach:

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15. E.M. Hoover, Location theory and the shoes and leather industries, Cambridge Mass, 1937.
 16. A.P. Usher, A dynamic analysis of the location of economic activities, unpublished.
 17. Dean, The theory of geographical location of economic activities, doctoral dissertation, 1938.

in their static and dynamic analysis. They relied upon extensive use of historical material.

V. Furlan (1913) also made attempts at general locational analysis. He recognized the complicated interrelations of various economic factors affecting location of industries. He concentrated on developing oversimplified models of market both domestic and international and determining point of collection and distribution of goods and export and import of goods.

Andreas Predöhl used a principle by which a general equilibrium theory could be applied to location analysis. His general economic theory was based on interdependent prices and quantities of general equilibrium as developed by Walras, Pareto and Cassel. He wished to investigate how far the location problem was a price problem and location theory a price theory.¹⁸

Weighman's analysis on general location theory embraced spatial structure of economic processes, the spatial extents of market and spatial interrelation of economic quantities.

August Losch¹⁹ presented a set of elementary equations. Through these equations he developed a simplified

18. Isard, Location and space economy, MIT Univ. Press, 1956.

19. August Losch, The economics of location, 1954.

static model of space economy under conditions of monopolistic competition.

A lot of stress was given on the interrelation of trade and location theories by Furlan, Engländer, Weighman and others. But it was Bertil Ohlin²⁰ who made the first attempt to integrate the two. In his Inter-regional and International trade^{he} showed that International trade was only a part of general localization theory where the space aspects of pricing are taken into full account. His general location theory determined simultaneously price, markets and location of industries, commerce and spatial distribution of factors and commodities.

Greenhut²¹ attempted to determine the condition of location equilibrium where firms aim at maximising profit and cost could vary and demand is affected by the possibility of locational interdependence.

Lefebvre²² in his general equilibrium theory attempted to show the optimal locational pattern and

20. Bertil Ohlin, Interregional and International trade, Cambridge, 1933.

21. Greenhut, Plant Location in theory and practice, 1956.

22. Lefebvre, Allocation in space, Production, Transport and Industrial location, 1958.

how this pattern maximises the production of final goods for consumers. He included transportation element in location theory.

Isard's²³ work on location theory, particularly in its transport orientation aspects, is very much in the Weberian pattern. Isard outlines a simple model where the search for the optimum location involves the minimization of the transport cost. His technique is flexible since it includes a more realistic transport rate structure.

In location theory spatial variations in cost also play an important role. Just as the normal cost curve in effect holds location fixed and indicates how costs vary with the level of output we can devise a different cost curve which in essence holds the firm's output fixed and shows how cost of production varies over space. Such a curve might be termed as a space cost curve. This concept was suggested by D.M. Smith²⁴ (1966).

The statistical technique devised by Sargent Florence²⁵ for measuring the degree and incidence of

-
23. Isard W., Location and space economy, Chap.IV-VI, MIT Univ. Press, 1956.
24. D.M. Smith, "A theoretical framework for geographical studies of Industrial location", Economic Geography 42, 1966, 1-11.
25. Sargent Florence, Investment, Size and Location, Cambridge Univ. Press, 1943.

localization has made valuable contribution to inductive study of recent trends in the localization of industries. The empirical investigation conducted by him shows a close relationship between inductive studies of trends in localization and Weber's deductive findings.

In America a study was undertaken in 1940 under the Federal Trade Commission U.S.A.²⁶ It studied the long-term trends in the size of industrial establishments. Among other studies in United States mention must be made of Gardiner C. Mean's, "Growth of relative importance of large cooperations in American Economy" and Williard Thorpe's work on "Recent Economic Changes in the U.S.". These studies reveal the tendency of American industries to disperse gradually.

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I.9.2 LITERATURE ON DIVERSIFICATION:

The pioneering work on the measure of diversification was done by McLaughlin in 1930.²⁷ He used Census data on value added by manufacturing and computed the degree of concentration in five leading industries in 14 cities.

26. "The structure of American Industry" (1941), Monograph of the temporary National economic Committee.

27. Glenn-McLaughlin, "Industrial diversification of American Cities", Quarterly Journal of Economics, 1930.

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Tress²⁸, a British economist, used equal employment in 12 major industrial groups as a basis for absolute diversification. He computed deviations from this base as indicators of the degree of diversification or specialization of industrial areas.

Florence in 1942 developed a new method for the measurement of diversification. He computed the percentage distribution of employment in all economic activities on state level and contrasted that pattern with the national economic pattern, using the latter as a frame of reference for a balanced structure.

Reinwald²⁹ in 1949 used percentage of total manufacturing employment in the leading industry and the two largest industrial groups in various industrial areas in the U.S. for measuring diversification.

Allan Rodgers³⁰ used a large number of industrial groups as the base. He used a recognized standard for all industrial areas instead of distribution for all industrial areas studied as the norms.

28. Tress, Unemployment and Diversification of Industries.

29. Reinwald, Some aspects of Statistically Interpreting manufacturing function of U.S. cities, Clark Univ., 1949.

30. Allan Rodgers, "Some aspects of Industrial diversification in the U.S.", Economic Geography, 1957, pp.18-20.

Isard³¹ calculated the percentage of different manufacturing groups of different regions. Taking these percentages he calculated the location quotient and found out the dispersion level.

I.9.3 STUDIES IN INDIA:

In India, much remains to be explored in this field. An attempt in the thirties was made by P.S. Locanathan³² to study trends in the size and location of industrial units in selected industries.

N.S.R. Sastry³³ in 1941 made an analysis of important large-scale industries in India, namely cotton, Jute, Sugar, Iron and Steel, Cement, Paper and Coal and did a critical study of their progress in the present century. The problems of location of industries, the size of industrial units, industrial productive activity and industrial fluctuations have been analysed on existing data available regarding large scale industries in India.

M.M. Mehta³⁴ presents the results of an inductive and exploratory enquiry into the size, location and

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31. W. Isard, Location and Space economy, Cambridge, 1953.
 32. P.S. Locanathan, Industrial Organisation in India, London, 1935.
 33. N.S.R. Sastry, A statistical study of Indian Industrial development, Bombay, 1941.
 34. M.M. Mehta, Structure of Indian Industries, Popular Book Depot, Bombay, 1961.

integration of industrial units in seven selected industries of India, viz. Cotton, Jute, Sugar, Iron and Steel, Coal, Paper and Cement. The study attempts to examine the main trends in the localization of these industries.

G.P. Mukherjee³⁵ has further extended Prof. Florence's measure of localization and developed an index of localization which is equal to half of the sum of squares of the deviations of the regional proportion of workers in the particular industry from the corresponding regional proportion of workers in all industries. An attempt has also been made to measure the concentration of industries by using other indicators as base than the usually followed volume of employment.

Y.K. Alagh, D.T. Lakdawala et al³⁶ attempted to find out the regional variation in industrial development. The objective of the study was to study statistical criteria for clusters of industries in the Indian economy, industrial base of each region, and policy implications of the results of the study for construction of industrial allocation

35. G.P. Mukherjee, "Some Indices for measuring localization", Indian Economic Journal, vol.X, 1963-64.

36. Y.K. Alagh & D.T. Lakdawala et. al., Regional variations in Industrial development, Sardar Patel Institute of Economic and Social Research, Ahmedabad, 1972.

models in national economy.

T.S. Papola³⁷ has examined the traditional postulates regarding location and spatial dispersal of industries and an assessment of some of the current policy instruments aimed at influencing industrial location in favour of backward areas.

Dr. Kulwinder Kaur³⁸ has critically examined the growth, pattern and spatial distribution of industries. The study also emphasizes the fact that industrialization and infrastructure tend to develop side by side.

Dr. Hemlata Rao's³⁹ study is designed to examine the regional disparities in Karnataka. She attempted to identify differentially developed regions, and delineate homogenous regions in terms of both level of development and typology of development for micro-level planning.

A book Regional Dispersal of industries and industrial development, edited by Dr. B.S. Sreekantaradhya, 1985, covers methodological and policy issues relating to

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37. T.S. Papola, Spatial Diversification of Industries (A Case study of U.P.), Allied Publishers Pvt. Ltd., 1981.
38. Dr. Kulwinder Kaur, Structure of Industries in India, Deep and Deep Publications, New Delhi, 1983.
39. Dr. Hemlata Rao, Regional disparities and development in India, Ashish Publishing House, 1984.

regional dispersal of industries in the state of Karnataka. The state has been following a very progressive policy of incentive and concessions to facilitate proper regional spread of industries.

I.10 DESIGN OF THE STUDY:

The dissertation is divided into seven chapters. The present chapter contains introduction to industrialization and location of industries, statement of problem, area of study, time period, objective of study, choice of indicators, methodology, data base and literature survey. The second chapter deals with a theoretical study of factors in location. The third chapter deals with structure of industries in the North-western region and states. Chapter IV is related to the industrial base of state/districts. Chapter V deals with the trends in localization of industries with the help of coefficient of localization. Chapter VI is concerned with the levels of specialization of states/districts under study with the aid of specialization coefficients. This is followed by the last chapter which summarises the findings and concludes the study.

CHAPTER II
FACTORS INFLUENCING LOCATION
OF INDUSTRIES

II.1 INTRODUCTION:

The geographical distribution of industry in a country is determined by a great complexity of considerations, viz., natural, economic, technical, and sometimes psychological factors. In certain cases historical accidents have also played an important role.

In his evidence before the Royal Commission, the President of the Federation of British Industries summarized the main factors which appear to influence the choice of location as follows (a) proximity to the market, (b) presence of skilled labour at an economic price, (c) situation of raw materials, (d) situation of auxiliary materials, (e) transport facilities, (f) access to cheap fuel or other forms of power, (g) amenities of particular sites, (h) social amenities including housing facilities having regard to burden of rates, taxes etc. and personal. The list omits the favourable natural factors i.e. climatic condition, land, water etc.¹

1. N.S.R. Sastry, A Statistical Study of Industries in Indian Industrial Development, Bombay, 1941.

In the past location was dictated by the existence of power resources in the form of coal and transport facilities in the form of waterways and railways. In recent years, with the rapid development of electricity and road transport and certain other factors a large number of industrialists are able to choose many sites which offer more or less equal chances of profitable production and great mobility has been conferred on the industry.

Before going deep into the study of factors responsible for industrial location we once again turn back to Weber. As a result of the study of cost structure, Weber discovered two general regional factors, namely Transportation cost and Labour cost. These two factors create the basic framework of regional orientation of the industries. Each industry will be first drawn to those sites which have the most favourable transport relations both with regard to the source of the raw materials and the markets. Weber proceeds to examine the cause of deviation from the point of least transport cost. When there is difference in labour cost, industry may deviate from optimum point of transport orientation. This will be possible only when additional cost of transportation at a new centre is less than compensated by a saving of labour cost.

II.2 ECONOMIC FACTORS:

INFRASTRUCTURE:

Infrastructure provides industry with the basic services necessary to the production process. The economic overhead services include transportation, power, water supply and communication. Infrastructure provides a skeleton which forms an essential basis for investments in miscellaneous industries. These facilities provide the conditions and inducements for consequential direct productive investment. Advances in the range of manufactures by means of successful new promotions and the expansion of existing industry from workshop to factory depends on prior or parallel provisions of railways, power stations, roads, telephone, etc.

Industries in a given geographic situation determine infrastructure requirements, but infrastructure, too determines the kind of regional industries and industrial structure that are economically feasible.

Transport:

Advanced planning of transport is a prerequisite for the attainment of integrated industrial development. The projected cost of transport services influences the location of industries and kinds of industrial complexes that can be established. The doctrine of balanced growth emphasizes the creation of markets as a key problem, but.

markets can be created by methods other than by inducing balanced demand. "Investment in transport facilities is most obviously an alternative to the balanced investment package as a method of creating new markets. The absence of markets in underdeveloped countries is not merely a question of the specific economic framework and institutions in which the incomes are carved. If the division of labour depends on the extent to which certain facilities are available, transport is the most obvious of these facilities."²

Navigable highways were at the height of these influences in the eighteenth century. In nineteenth century railways were the pre-eminent mode of transport in England which secured incalculable advantage by this means. Roads have become just as important as the other two in the twentieth century. Adequate network of road communications link the farmer with markets, open up new industrial sites, develop raw materials and bring a new atmosphere to the rural areas. Roads are said to be the harbingers of all social, political and economic advancement in the country.

2. H.W. Singer, "Balanced growth in Economic development" in E. Nelson (ed.), Economic growth: Rationale, Problems, Cases Austin: University of Texas, 1960, p.83.

Power:

Power is the backbone of the industries and plays a vital role in fostering industrial activity. Transport and power supply are integral parts of industrial activity. The use of energy is one of the important indicators of economic development. Economic growth is related with increasing the average productivity of the labour force and this in turn is influenced by the quantity of energy incorporated within the production process. There is a high degree of positive correlation between the consumption of energy and the industrial activity in a country.

Underdeveloped nations have scarcity of power supply and therefore industrial activities cannot take place in backward regions and rural areas. In fact, in most of the regions there is absolutely no power supply and industries cannot be set up. Then there are problems of power cut and low voltage. Therefore, industries tend to cluster where there is ample power supply.

Communication:

It is rightly observed by the renowned economist, Arthur Lewis that, "A cheap and extensive network of communication is the greatest blessing which any country can have from the economic point of view". Development of communication system as that of transport system is vital in creating economic infrastructure for the industrial

development of the economy. Communication is not merely an amenity but in fact a key sector in economic development and constitutes the life line of industry and commerce.

Important modes of communication are post and telegraph, telephones and radios and televisions. In India, this important sector is under the direct control of the central government and hence the regional development of communication sector very much depends upon the policies of the central government.

Banking:

Banks are vital financial institutions in any economy. Their role in industrial development is very crucial, as a repositories of the community's savings and as purveyors of credit. On the one hand they mobilize savings and on the other hand they finance vital economic activities like industries, and trade. Industries generally are set up where there exists the facilities of loaning and funding by such financial institutions.

Resources:

Industries tend to locate where there are natural resources. Different regions are endowed with different kinds of resources and industries using that particular resource are established at that site. Resources are one of the most important factors influencing the locational

pattern of industries.

Raw materials are generally of two types. In the first category come the raw materials which are found everywhere i.e. water, clay, brick etc. and in the second category come the resources which are confined to certain regions. The latter obviously exert a greater pressure on the location of industry than the former. Further, weight loosing raw materials, i.e. coal & other minerals, influence the location of industry more than pure materials.

Raw materials based industries generally locate at the sight of raw material. Consumer goods industries locate near the market and there are other industries which locate in between.

There are various type of resources of a region which might influence the locational structure of industries.

Forest:

Forest provides resources to various industries. Industries related to forest would locate near forests. Such industries are wood and wood products industries, furniture and fixture industries and paper industries.

Mineral resources:

There are many industries which use minerals as raw materials. Manufacture of non-metallic mineral products, manufacture of metal products and parts

manufacture of electrical apparatus, manufacture of petroleum and coal products etc. generally localize at regions having mines of these raw materials.

Livestock:

Livestock of a region provides base for livestock based industries like wool & silk, leather and fur products, footwear industries, dairy etc. Such industries generally cluster around livestock based regions.

Land and Climate:

The type of soil a region possesses is also one of its resources and so is the climatic condition the region faces. The land and climate provide base for agriculture and agriculture acts as a resource for industries. Various industries like food product, beverages, tobacco, textile, jute & hemp, sugar, tea etc. are based on agriculture and industries of this nature locate near the sites of agricultural production of these goods.

Urbanization:

Urbanization also plays an important role in location of industries. A favourable climate, both technical and economic, conducive to industrial growth exist in urban areas. The cities tend to favour a propensity to innovate and accept change by providing a relatively impersonal setting in which bonds of traditional community system

are difficult to maintain. Industrialization has been associated with growth of cities. In almost all countries, urbanization is closely associated with the development of increasingly large industrial capacity, capital intensity, high levels of technology and innovation, and specialization in the production of goods and services which are crucial elements of industrialization. Since modern industry enjoys enormous economies of the increasing size of the optimum unit and the cities provide an effective way of exploiting technological economies, industrialization and urbanization go together. The relationship between the processes has been so close that these are viewed as two facets of one and the same process.

Availability of cheap and skilled labour:

Industries generally tend to locate at places where there is no scarcity of cheap and skilled labour. Cheap labour is available where there is competition among workers and skilled labour is found where there already exist industries and where there are educational facilities. Education tends to improve the quality of labour force and thereby promotes modernization. If there is underinvestment in human capital the rate at which additional physical capital can be productively utilized will be limited.

Locational linkages among industries:

Industrial units of an industry tend to locate where related industries with linkage potential already exist. Expansion of an industry is more related with the base of the related industries, than its own importance in a region. For example, location of new activity in the manufacture of miscellaneous textile products is highly positively associated with the level of activity in the spinning, weaving and finishing of textiles. Similarly in the manufacture of electrical machinery, apparatus, appliances etc., the new activity would get located in line with the base of melting and refining of non-ferrous metals. In the same way rubber products and chemical products will form another pair of industries with closely associated locations.

This aspect of locational structure needs a detailed study of the nature of the association of industries - forward or backward linkages or reliance on some common inputs available in a region.

Proximity to the market:

Nearness to the market is an essential factor in the location of industries. It becomes more convenient for the producers to supply their goods to the market. In the production process it is not only the production which matter but also the supply. Industries located

near the market save extra transport cost, time and effort and a few other problems.

Existence of industrial estates:

This also influences entrepreneurs' decision to locate their factories there. Because of various economic, technical, ^{and} social infrastructural facilities entrepreneurs like to locate their factories in Industrial estates.

II.3 NON-ECONOMIC FACTORS:

Some of the non-economic factors seem to emerge as having a very important influence in location. These are psychological factors like preference for the place of origin and residence, attraction of good social and community life, place of previous work etc.

Rarely does one find a single factor as the motivating force behind a location decision. There are a number of economic factors that an entrepreneur may like to consider so as to assess the potential performance of a location. Besides, the non-economic factors also feature as important influences, which to a certain extent, may be considered by entrepreneurs as compensating for the unfavourable economic situation. Therefore, the entrepreneurs mention more than one factor as motivating them to locate their factory where it is.

CHAPTER III

STRUCTURE OF INDUSTRIES
IN NORTH-WESTERN INDIA

III.1 INTRODUCTION:

The north-western part of India is not uniform in physical setting, forest, agriculture, mineral resources and industry. Rajasthan is semi-arid with a rich source of mineral resources. Himachal Pradesh and Jammu & Kashmir are hilly and have thick forests. Haryana & Punjab are mostly plains with strong agricultural base and have potential for further agricultural development. The nature of industrialization of the region is therefore varied. Some states specialize in one type of industry whereas the others specialize in other types of industries.

The North-western region is industrially very backward, especially Rajasthan, Himachal Pradesh and Jammu & Kashmir. Punjab and Haryana too are backward. But they are relatively more advanced. This region has potential for industrial development. The availability of raw materials, power & transport system are adequate if not sufficient for industrial development. Despite all these the region has stayed neglected both by central and state governments.

This chapter deals with the structure of manufacturing industries in north-western region on the whole and in each of the five states separately. Employment of male workers in manufacturing industries is the only indicator

taken for this exercise. Industries have been grouped under three main heads. Employment level of more than 10 per cent shows high level of employment. Employment level between 1 to 10 per cent shows medium level of employment. Employment level of less than 1 per cent shows low level of employment. With the help of these groups high medium and low level of employment have been worked out for 1961, 1971 and 1981 and changes that have occurred during this period have been observed.

III.2 STRUCTURE OF INDUSTRIES IN NORTH WESTERN REGION:

In 1961, there were 1103118 male workers in manufacturing industries in the region. This comprised 24.33 per cent of total male workforce in the region. Wood and wood products, leather, leather and fur products, textile products, food products, cotton textiles and non-metallic mineral products industries had high level of employment. Wood and wood products industries had highest employment level with 13.22 per cent of total employment. Industries with less than 1 per cent employment level were beverages and tobacco products, jute, hemp and mesta textiles and rubber plastic, coal and petroleum products. Rest of the industries had employment level between 1 to 10 per cent of total employment in manufacturing (Table III.1).

In India in 1961 male workers in manufacturing industries were 28.75 per cent of total male workers.

Levels of industrial employment
Code No- Industrial Group

Table III.1

	Region			Rajasthan			Haryana		
	1961	1971	1981	1961	1971	1981	1961	1971	1981
High	1, 3, 6, 7, 9, 12	6, 7, 12	1, 6, 19	3, 6, 7, 9, 12	3, 6, 7, 9, 12	6, 7, 12, 19	1, 9, 12	12	1, 6, 12, 19
Total	6	3	3	5	5	4	3	1	4
Medium	4, 8, 11, 13, 14, 15, 16, 17, 18, 19	1, 3, 4, 8, 9, 11, 13, 14, 15, 17, 18, 19	3, 4, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18	1, 2, 8, 13, 14, 17, 18, 19	1, 2, 4, 8, 14, 15, 18, 19	1, 3, 4, 8, 9, 10, 11, 13, 14, 15, 18	3, 6, 7, 8, 13, 14, 16, 17, 18, 19	1, 3, 6, 7, 8, 9, 10, 13, 14, 15, 16, 17, 18, 19	3, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18
Total	10	12	13	8	8	11	10	14	11
Low	2, 5, 10	2, 5, 10, 16	2, 5, 16	4, 5, 10, 11, 15, 16	5, 10, 11, 13, 16, 17	2, 5, 16, 17	2, 4, 5, 10, 11, 15	2, 4, 5, 11	2, 4, 5, 7
Total	3	4	3	6	6	4	6	4	4
	Punjab			Himachal Pradesh			Jammu & Kashmir		
	1961	1971	1981	1961	1971	1981	1961	1971	1981
High	1, 3, 6, 7, 14	3, 6	1, 19	1, 6, 7, 9	1, 6, 7,	1, 6, 7, 9	1, 4, 6, 7	1, 6	7
Total	5	2	2	4	3	4	4	2	1
Medium	4, 5, 8, 9, 11, 12, 13, 15, 16, 17, 18, 19	1, 4, 5, 7, 8, 9, 11, 12, 12, 14, 15, 16, 17, 18, 19	3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18	2, 3, 4, 8, 12, 13, 14, 18, 19	2, 4, 8, 9, 11, 12, 13, 14, 18	2, 3, 4, 8, 9, 11, 12, 13, 14, 18	3, 8, 9, 10, 11, 12, 14, 18, 19	3, 4, 7, 8, 9, 12, 14, 18, 19	1, 3, 4, 6, 8, 9, 11, 12, 14, 18, 19
Total	12	15	15	9	9	10	9	9	11
LOW	2, 10	2, 10	2, 5	5, 10, 11, 15, 16, 17	3, 5, 10, 15, 16, 17	5, 10, 15, 16, 17	2, 5, 13, 15, 16, 17	2, 5, 10, 11, 13, 15, 16, 17	2, 5, 10, 13, 15, 16, 17
Total	2	2	2	6	6	5	6	8	7

High level of employment was observed in cotton textiles, wood & wood products and food products industries.

Industry with highest level of employment was cotton textiles with employment level of 18.47 per cent of total manufacturing employment. Industry with low level of employment were rubber plastic coal and petroleum and electrical machinery.

In 1971, total employment in manufacturing industries in North Western India was 1,305,989 male workers. This was 26.59 per cent of total male workers, a very insignificant rise since 1961. High level of employment was found in textile products, wood and wood products and non-metallic mineral products. These industries had high employment level in 1961 as well but industry with highest level of employment was textile products^{in 1971}. The industries which had low level of employment in 1971 had low level of employment in 1961 as well (Table III.1).

In India in 1971, cotton textiles, wood and wood products and textile products industries had high level of employment. Rest of the industries had medium level of employment. None of the industries had employment level of less than one per cent.

In 1981 total employment in manufacturing industries in North Western region was 2,031,980 male workers. This was 27.69 per cent^{of} total male work force in the region.

Industries with high level of employment were textile products, food products and repair. Textile products industry had highest employment^{level} as in 1971. Beverages, tobacco and tobacco products, jute, hemp and mesta textiles and electrical machinery industries had low level of employment as in 1971. Rest of the industries were moderately employed.

Textile products industry had high level of employment in all the three decades. Beverages and Tobacco products and jute, hemp and mesta textiles industries had low level of employment in all the three decades.

The total number of industries under high level of employment have fallen from 6 to 3, those in low level of employment, remained constant at 33 during 1961-81. In the medium level however the number of manufacturing industries have increased from 10 to 13 during 1961-81.

III.3.1 STRUCTURE OF INDUSTRIES IN RAJASTHAN:

Rajasthan is a semi-arid region. The most conspicuous physiographic feature of the State is the Aravali range, one of the oldest mountain systems in the world. It has a steep discontinuous slope towards the north-west side facing the Thar desert and a gentle slope towards the south-east side facing alluvial plains. Being an agro-pastoral state, agriculture is the main occupation of the

people of Rajasthan. The main agricultural products are wheat, bajra, jowar, rice, maize, barley, mustard, castor, sugarcane, cotton and tobacco. In Rajasthan forests cover 10 per cent of total geographical area. The State possesses wide range of mineral deposits which are of great industrial value. Apart from metallic minerals, the state produces over 20 different non-metallic minerals. Some of them are asbestos, limestone, marble, mica, quartz etc. Rajasthan has been one of the most backward States industrially despite abundance of minerals, livestock and other raw materials.

In 1961, there were 371,948 male workers in manufacturing industries in the State. This was 21.79 per cent of total male workers. Manufacture of leather, leather and fur products, non-metallic mineral products, wood and wood products, cotton textile and textile products had high level of employment. Wool, silk and synthetic products, jute, hemp and mesta textiles, rubber, plastic, petroleum and coal products, chemicals and chemical products, machine tools and parts and electrical machinery industries had low level of employment.

In 1971, there were 494,686^{male} workers in manufacturing industries which was 25.79 per cent of total male workers in the State. There was an increase in percentage of

workers in manufacturing since 1961 when it was 21.79 per cent of total workers. Leather, leather and fur products, cotton textile, textile products, wood and wood products, and non-metallic mineral products industries had high level of employment of more than 10 per cent. Jute, hemp and mesta textile, rubber, plastic, coal and petroleum products, chemicals and chemical products, basic metals and alloy industries, electrical machinery and transport equipment industries had low level of employment. Rest of the industries had medium level of employment.

In 1981, manufacturing industries employed 829,140 male workers. This was 27.85 per cent of total male workers in the State. Manufacture of textile products, wood and wood products, non-metallic mineral products and repair industries had high employment level. Beverages and tobacco products, jute, hemp & mesta textiles electrical machinery and transport equipments industries had low level of employment. Rest of the industries had medium level of employment. Leather, leather and fur products industries employed highest percentage of workers in 1961 and 1971. But it had medium level of employment in 1981. Textile products industry had highest level of employment, i.e., 13.48 per cent in 1981.

The number of industries under high level of employment fell from 5 to 4 and under low level fell from 6 to

4 in 1961-81 under medium level of employment the number of industries increased from 8 to 11 in 1961-81. Textile products and wood & wood products industries had high level of employment in all the three decades (Table III.1).

III.3.2 STRUCTURE OF INDUSTRIES IN HARYANA:

Haryana was a backward state economically till 1966. The backwardness was both on account of development activities being mainly concentrated in the areas going to the state of new Punjab and natural factors i.e. topography, inferior quality of soil, acute moisture, deficiency etc. Forests are conspicuous by their absence in Haryana. Limestone, marble, slate, iron ore, silicon, sand, felspar, quartz and building stone are the minerals found in Haryana. Even though, Haryana was primarily an agricultural region, agricultural development has been neglected considerably. Cash crops have less cultivated land under them than food crops.

In 1961 Haryana employed 223,302 male workers in manufacturing which was 23.97 per cent of total male workers in the state. Industries with high level of employment were non-metallic mineral products, leather and fur products and food products. Beverages and tobacco products, wool, silk and synthetic products, jute, hemp and mesta textile products, rubber, plastic, coal and

petroleum products, chemicals and chemical products and machine tools, industries had low level of employment. Rest of the industries had the medium level of employment.

In 1971, the State of Haryana employed 28.45 per cent of total male workers. Only one industry had employment level of more than 10 per cent against 3 industries in 1961. This industry was non-metallic mineral products. Industries with employment level of less than 1 per cent were beverages, tobacco and tobacco products, wool, silk and synthetic textiles, jute, hemp and mesta textiles and chemicals and chemical products. Rubber, plastic, coal and petroleum industries had medium level of employment in 1971 whereas in 1961, it had low level of employment.

In 1981, the employment in manufacturing industries were 25.46 per cent of total male workers in Haryana. Employment level was high in non-metallic mineral products, food products, textile products industries and repair industry. Low level of employment was observed in wool, silk and synthetic textiles, jute, hemp, mesta textiles beverages and tobacco products and wood and wood products industries. Rest of the industries had medium level of employment.

Number of industries under high level of employment increased from 3 to 4 in 1961-81. In low level employment

group number of industries decreased from 6 to 4. In the medium level group industries increased from 10 to 11 in 1961-81 (Table III.1).

III.3.3 STRUCTURE OF INDUSTRIES IN PUNJAB:

The Punjab Plains cover a vast area and occupy a place in history. On the east of Punjab lies the Yamuna, while the Siwaliks form the northern boundary. Rajasthan extends to its south. Punjab has been famous for its greenery and agriculture. Agriculture is very important and at least 75 per cent of area is sown. The predominant feature of the agriculture is the wide varieties of crops grown and preponderance of food crops over non-food crops. Punjab is deficient in forests only typical forests like babul, and shisham are found. Industrially Punjab is not a developed state but industries are quite widespread comprising mostly of small units.

In 1961 there were 403,613 male workers employed in manufacturing industries which was 28.49 per cent of total workers in the State. Manufacture of food products, cotton textiles, wood and wood products, metal parts and products, and textile products had high level of employment. Only manufacture of rubber, plastic, petroleum and coal products and beverages and tobacco products had employment level of less than 1 per cent. Rest of the industries had employment level of 1-10 per cent.

In 1971, there were 427,246 male workers in manufacturing which was 30.54 per cent of total male workers in the state. Industries with high level of employment were of textile products, and cotton textiles. Maximum employment level was observed in textile product industry against cotton textiles industry in 1961. Low level of employment was seen only in rubber, plastic, petroleum and coal products and beverages and tobacco products as in 1961.

In 1981, there were 622,302 male workers in manufacturing industries. This was 31.98 per cent of total male workers in the State. Food products and repair industries had high level of employment. On the other hand, jute, hemp and mesta textile industry and beverages and tobacco industries had low level of employment. Rest of the 15 industries had medium level of employment. The total number of industries under high level employment group decreased from 5 to 2 in 1961-81, remained constant under low level group and increased under medium level group from 12 to 15 (Table III.1).

III.3.4 STRUCTURE OF INDUSTRIES IN HIMACHAL PRADESH:

Himachal region covering the state of Himachal Pradesh is located to the South of Kashmir to the north east of Punjab plains, to the North west of U.P. and to

the West of Tibet. It is a hilly region known for its mountains, forests, rivers and valleys which are rich in cultural and human elements. Agriculture is by far the most important occupation. Animal husbandry plays a vital role in supplementing agriculture. Commercial forests are abundant in Himachal Pradesh. The minerals found are mica, iron, slate, lead, building stones etc. The remote situations, certain geographical conditions, lack of adequate transport facilities and other infra-structural factors have been a hinderance in industrial development of the state.

In 1961 the State employed 45,180 male workers in manufacturing industries which was 22.45 per cent of total male workers. Industries with high level of employment were wood and wood products, leather and fur products textile products and food products. Industries with low level of employment were jute, hemp and mesta textiles, rubber, plastic, coal and petroleum products, machine tools and parts, chemicals and chemical products, electrical machinery and transport equipments. Rest of the industries had medium level of employment.

In 1971, industries with high level of employment were again wood and wood products and food products along with textile products industry. The industries with low

level of employment were cotton textiles, jute, hemp & mesta textiles, rubber plastic, petroleum and coal products, machine tool & parts electrical machinery and transport equipments.

In 1981, number of people employed in manufacturing industries were 70,836. The industries with high level of employment were same as in 1971 along with repair industry. Manufacture of jute, hemp and mesta textiles, rubber plastics, coal and petroleum, machine tools and parts, electrical machinery and transport equipment had low level of employment as in 1971. Rest of the industries, fell in the group of medium level of employment.

The number of industries remained constant in 1961-81 in high level group, increased from 9 to 10 in medium level group and decreased from 6 to 5 under low level group. High level of employment was seen in wood & wood products industries and textile products in 1961-81. Industries with low level of employment were generally same in all three decades. There has not been much change in industrial structure in 1961-81 (see Table III.1).

III.3.5 STRUCTURE OF INDUSTRIES IN J&K:

Jammu and Kashmir is famous for its natural beauty with snow clad mountains, deep valleys and thick forests. The population of State is very less specially in districts

like Ladakh. The vegetation varies from meadows to deciduous forests. Jammu and Kashmir has very little mineral resources. However, deposits of limestone, gypsum, zinc and lignite are found.

In 1961, the state employed 60,075 male workers in manufacturing industries. This was 21.32 per cent of total male workers in the state. Textile products, food products, wood and wood products and wool, silk and synthetic products industries had high employment level. Industries with low level of employment were beverages, tobacco and tobacco products, jute, hemp, and mesta textiles, basic metals and alloy industries, machine tools & parts, electrical machinery and transport equipment industries.

In 1971, percentage of workers in manufacturing was 20.32 per cent of total male workers employed in the state. Industries with more than 10 per cent employment level were same as in 1961, except wool, silk and synthetic products and wood & wood products which had medium level of employment in 1971. The industries with low level of employment in 1971 were same as in 1961 along with rubber, plastic, petroleum and coal products and chemical products industries. Manufacture of jute, hemp and mesta textiles, had zero level of employment.

In 1981, the State employed 24.77 per cent of total male workers in manufacturing industries. Manufacture of wood and wood products industries had high level of employment. Beverages tobacco and tobacco products, jute, hemp and mesta textiles, rubber, plastics, petroleum and coal products basic metals and alloy industries along with machine tools and parts, electrical machinery and transport equipment industries had low level of employment. The number of industries under high level in 1961-81, decreased from 4 to 1, increased under low level from 6 to 7 and under medium level 9 to 11.

The level of employment in an industry depends upon the industries in which the state specializes. The level of specialization in turn depends upon the availability of raw materials and labour facilities for the particular type of industry. We have observed that Rajasthan had high level of employment in non-metallic mineral product industries whereas Himachal Pradesh had high level employment in wood and wood products industries. Jammu and Kashmir had high level employment in textile products and Punjab in food products. (table III.1)

The number of industries falling under high level of employment diminished in three states. In Himachal Pradesh, it was constant in 1961-81. The number of industries falling under the group of low level of employment decreased in Rajasthan. Himachal Pradesh and Haryana, remained constant in Punjab and increased in J&K

in 1961-81. The number of industries under medium level of employment increased in all the states. The reason could be that the employment of workers were being distributed among various industries. So the number of industries under medium level of employment have increased during 1961-81.

In the entire North western region the number of industries fell under high ^{level of employment,} remained constant under low level of employment and increased under medium level of employment.

The overall picture of the Region on the whole, and five states separately do not show drastic changes in structure of Industries. Generally the same industries are falling under each category in the period 1961-81. The number of industries under high, medium and low levels of employment, however, vary in the same period.

CHAPTER IV

INDUSTRIAL BASE OF
NORTHWESTERN INDIA

IV.1 INTRODUCTION:

Every region has certain advantages over others. These may be natural such as are to be found in the quality of soil, the climate or the geological structure of the land or they may be traditional and cultural. It is but natural, therefore, for a region to develop along lines indicated by such advantages.

Various regions specialize in one or more sets of industries which can be termed as industrial base of the region. In a general sense the industrial base of a region is defined in terms of the industries in which a district has relatively higher level of activity, let us say more than proportionate share. We would try to examine this aspect with the help of location quotient.

Location Quotient is a device for comparing a region's percentage share of a particular industry with its percentage of some basic aggregate. In other words, it measures the degree to which a specific region has more or less than its share of a particular industry.

For any given manufacturing activity it can be found out for each district a Quotient which is computed by dividing the district's share of the region's total

wage earners for a given manufacturing industry by the district's share of all manufacturing.¹

Location Quotient:

$$L_{ij} = \frac{e_{ij}}{\sum_{j=1}^m e_{ij}} \bigg/ \frac{\sum_{i=1}^n e_{ij}}{\sum_{i=1}^n \sum_{j=1}^m e_{ij}} \approx \frac{e_{ij}}{\sum_{i=1}^n e_{ij}} \bigg/ \frac{\sum_{i=1}^n e_{ij}}{\sum_{i=1}^n \sum_{j=1}^m e_{ij}}$$

where

e_{ij} = employment in industry i in region j .

$\sum_{j=1}^m e_{ij}$ = employment in industry i in all regions.

$\sum_{i=1}^n e_{ij}$ = employment in all industries in region j .

$\sum_{j=1}^m \sum_{i=1}^n e_{ij}$ = employment in all industries in all regions.

Thus we see that the L.Q. can be computed by both the methods, i.e., by

1) By dividing the proportionate share of the industry in the total workers employed in the industry by the proportionate share of the region in total working population.

or 2) By dividing the proportionate share of the industry in the total workers employed in the region by proportionate share of the industry in the total working population.

A Location Quotient of one means that a region has neither more nor less of an industry than its overall volume of manufacturing would suggest. A quotient over

1. W. Isard, Methods of Regional analysis, MIT Press, 1960.

one means a higher concentration of an industry in a particular region than the manufacturing as a whole. A quotient of less than one suggests that an industry is less developed in that region than is manufacturing in general. They are useful in comparing different industries with one another in the same region and in comparing different regions with one another.

Using the location quotient, an attempt has been made to study the following phenomenon in the northwestern region of India.

1. a) Industrial base of different states with respect to the region have been worked out.
b) Intertemporal change of the base has been observed for the period 1961-71-81.
c) Interstate comparison of industrial base over the period of time, 1961-71-81, has been observed.
2. Relationship between Industrial base with respect to country and with respect to region has been observed for the decade 1961-71 only because data for country's industrial employment is not available for the year 1981.
3. Industrial Base of different districts has been worked out with respect to region for 1981 separately.

The objective of this analysis is to observe the concentration of various industries in all the five states

and various districts of these states and to see the change in industrial base of the states. Besides, relationship between industrial base with respect to country and with respect to region has been studied.

IV.2.1 INDUSTRIAL BASE OF RAJASTHAN WITH RESPECT TO REGION:1961-71-81

In 1961 there were at least seven industries in Rajasthan which formed the industrial base of the state with respect to the whole of northwestern region. These were beverages, tobacco & tobacco products, cotton textiles, wood & wood products, leather, fur & leather products, non-metallic mineral products, basic metals and alloy industries and other manufacturing industries.

In 1971 these industries continued to form the industrial base of the state, with their location quotient lying above unity, except for the basic metals and alloy industries. The location quotient of this industry became 0.526 in 1971 against 1.261 in 1961.

In 1981, again, all those industries which formed base in 1971 including basic metals and alloy industries continued to form the base. The location quotient of this industry rose from 0.526 in 1971 to 1.169 in 1981. A new addition in the industrial base was repair industry. (see table IV.1)

In 1961 the industries which formed the manufacturing base of the state with respect to the country also formed

TABLE IV.1 MANUFACTURING INDUSTRIAL BASE 1961-1971-1981
WITH RESPECT TO REGION

STATE	YEAR	CODE NO OF INDUSTRIAL GROUP	TOTAL IND. GROUP
RAJASTHAN	1961	2, 3, 7, 9, 12, 13, 18	7
	1971	2, 3, 7, 9, 12, 18	6
	1981	2, 3, 7, 9, 12, 13, 18, 19	8
HARYANA	1961	5, 8, 9, 10, 12, 16, 17, 19	8
	1971	3, 8, 10, 12, 13, 14, 15, 16, 17, 19	10
	1981	1, 2, 8, 10, 11, 12, 13, 15, 17, 19	10
PUNJAB	1961	3, 5, 10, 11, 14, 15, 16, 17, 19	9
	1971	1, 3, 4, 5, 6, 10, 11, 13, 14, 15, 16, 17, 19	13
	1981	1, 3, 4, 5, 8, 10, 11, 13, 15, 17, 19	11
HIMACHAL PARDESH	1961	2, 4, 6, 7, 8, 9, 13, 14	8
	1971	1, 2, 4, 6, 7, 8, 11, 14, 19	9
	1981	1, 2, 4, 7, 8, 11, 13, 18	8
JAMMU & KASHMIR	1961	4, 6, 7, 8, 18,	5
	1971	1, 4, 6, 7, 8, 14, 19	7
	1981	4, 6, 7, 8	4

industrial base with respect to the region except manufacturing of textile product.

In 1971 textile products and metal parts and products industries had L.Q. greater than 1 according to country and L.Q. less than 1 according to the region. Rest of the industries formed the industrial base both with respect to the country and the region. (see table IV.2)

IV.2.2 INDUSTRIAL BASE OF HARYANA WITH RESPECT TO REGION: 1961-71-81

In 1961 eight industries formed the base in Haryana. These were jute, hemp & mesta textiles paper & paper products, rubber, plastic, petroleum & coal products, non-metallic mineral products, leather, leather & fur products, electrical machinery, transport equipments & repair industries.

In 1971 10 industries formed the industrial base. These were cotton textiles, paper & paper products, rubber, plastic, petroleum & coal products, non-metallic mineral products, basic metals & alloy industries, metal products & parts, machinery, machine tools & parts, electrical machinery & parts, transport equipment & parts and repair industries. Out of these paper & paper products, rubber, plastic, petroleum & coal products, non-metallic mineral products, basic metals and alloy industries, electrical machinery, transport equipments and repair industries formed the base in 1961 as well.

TABLE IV.2 MANUFACTURING INDUSTRIAL BASE 1961- 1971
WITH RESPECT COUNTRY

STATE	YEAR	INDUSTRIAL CODE NO.	TOTAL IND. GROUP
RAJASTHAN	1961	6, 9, 12, 13, 18	5
	1971	6, 7, 9, 12, 14, 18	6
HARYANA	1961	1, 2, 8, 9, 12, 16, 18, 19	8
	1971	1, 8, 9, 13, 14, 15, 16, 17, 19	9
PUNJAB	1961	1, 6, 7, 9, 11, 15, 16, 19	8
	1971	1, 4, 6, 12, 13, 14, 15, 17, 19	9
HIMACHAL PARDESH	1961	1, 4, 6, 7, 9	5
	1971	1, 4, 6, 7, 9, 14, 19	7
JAMMU & KASHMIR	1961	1, 4, 6, 7, 18	5
	1971	1, 4, 6, 7, 9, 19	6

In 1981, again, 10 industries formed the base. Cotton textiles, metal products and parts & electrical machinery industries ceased to form the industrial base. The new additions were food products, beverages, tobacco & tobacco products and chemicals & chemical products industries. (see table IV.1)

Paper & paper products, leather, leather & fur products, non-metallic mineral products, electrical machinery and repair industries formed the industrial base of the state with respect to country as well as region in 1961. In case of food products and tobacco & beverages & other manufacturing industries the L.Q. with respect to country was greater than unity.

In 1971, paper & paper products, basic metals & alloy industries, manufacture of metal parts machinery, machine tools & parts, electrical machinery, transport equipments & repair industries formed industrial base according to country as well as region. In case of food products and leather & fur products and other manufacturing industries L.Q. with respect to country was greater than unity but less than unity with respect to region. (see table IV.2)

IV.2.3 INDUSTRIAL BASE OF PUNJAB WITH RESPECT TO REGION: 1961-71-81

Nine industries formed industrial base of the state in 1961. These were cotton textiles, jute, hemp & mesta

textiles, rubber, plastic, petroleum & coal products, chemicals & chemical products, metal parts & products, machinery machine tools & parts, electrical machinery, transport equipments and repair industries.

In 1971, all these industries continued to form the base along with food products, wool, silk & synthetic fibres, textile products & basic metals & alloy industries.

In 1981 all the industries which formed base in 1971 continued to form the base except textile products, metal products & parts and electrical machinery industries. New addition to the base was manufacture of paper & paper products only. (see table IV.1)

With respect to country there were as many as eight industries which formed the industrial base in 1961. Out of these chemicals & chemical products, machinery, machine tools & parts, electrical machinery and repair industries formed base according to region as well.

All the industries forming industrial base in 1971 according to country formed base with respect to region as well along with few other industries. But only manufacture of non-metallic mineral products had a location quotient higher than unity according to country and less than unity according to region. (see table IV.2)

IV.2.4 INDUSTRIAL BASE OF HIMACHAL PRADESH
WITH RESPECT TO REGION: 1961-71-81

In the state 8 industries together formed the base in 1961. These were beverages, tobacco & tobacco products, wool, silk & synthetic fibres, textile products, wood & wood products, paper and paper products, leather, leather & fur products, basic metals and alloy industries and metal parts and products.

In 1971 food products, beverages, tobacco & tobacco products, wool, silk & synthetic^{bibres,} wood & wood products, paper & paper products, textile products, chemicals & chemical products, metal products and parts and repair industries formed the base of the state.

Manufacture of food products, chemicals & chemical products and repair were new addition to the industrial base in the state. Manufacture of leather and fur products and basic metals & alloy industries ceased to be among the industrial base with their location quotient falling from 1.312 in 1961 to 0.903 in 1971 and from 2.955 to 0.715 respectively.

In 1981 eight industries formed the locational base of the state. Out of these six industries were same as in 1971. Only manufacture of metal products & parts and repair industries left the group forming industrial base in 1971. New additions were basic metal and alloy industries which formed industrial base

in 1961 as well and another absolutely new addition was of other manufacturing industries.

With respect to country the picture was not different. In 1961 manufacture of food products, wool, silk & synthetic fibres, textile products, wood & wood products, leather and fur products formed the industrial base of the state. All these industries except food industry formed the industrial base in 1961 with respect to region along with a few other industries.

In comparison to industrial base of 1971 of the state with respect to the region in case of leather & fur products industry the location quotient was higher with respect to country. It was 2.305 with respect to country and 0.903 with respect to region. Rest of the industries forming industrial base with respect to country were all forming industrial base with respect to region.

IV.2.5 INDUSTRIAL BASE OF JAMMU & KASHMIR WITH RESPECT TO REGION: 1961-71-81.

In 1961 five industries formed the industrial base of the state. These were wool, silk & synthetic products, textile products, wood & wood products, paper & paper products and other manufacturing industries.

In 1971 these industries continued to be the industrial base along with manufacture of food products, metal products & parts and repair. Other manufacturing industries ceased to form industrial base in 1971.

In the year 1981, manufacture of wool, silk & synthetic, textile products, wood & wood products and manufacture of paper & paper products were the only industries forming industrial base. These industries formed industrial base in 1971 and 1961 as well along with other industries. (see table IV.1)

There were five industries forming industrial base in 1961 according to the country. These were manufacture of food products, wool, silk & synthetic, textile products, wood & wood products and other manufacturing industries. Leaving food product industries these industries joined to form industrial base along with paper & paper products according to region in 1961. (see table IV.2)

To compare the position of country with the region in 1971 except manufacture of leather, leather & fur products, all other industries were forming industrial base in the region as well as country. The location quotient of leather, leather & fur industry with respect to country was 1.360 against 0.536 of the region.

In Rajasthan number of industries forming industrial base in 1961 were 7 and decreased to 6 in 1971. In Haryana number of industries increased from 8 to 10 in 1961-71. In Punjab industrial base strengthened from 9 to 13 in Himachal Pradesh from 8 to 9 and in J&K from 5 to 7 in 1961-71. The number of industries forming

industrial base declined in Punjab from 13 to 11 in J&K from 7 to 4 and in Himachal Pradesh from 9 to 8 in 1971-81. In Haryana number of industries forming industrial base remained constant at 10 and in Rajasthan increased from 6 to 8 in 1971-81. The industrial base with respect to country, however, strengthened for all the five states in 1961-71. The number of industries forming industrial base increases from 5 to 6 in Rajasthan, from 8 to 9 in Haryana, from 8 to 9 in Punjab, from 5 to 7 in Himachal Pradesh, from 5 to 6 in J&K. With respect to country the picture of strengthening of industrial base was more significant.

IV.3 INTERSTATE COMPARISON OF INDUSTRIAL BASE WITH RESPECT TO REGION 1961-71-81:

The following observations have been made by the study of Interstate comparison of Industrial base. Manufacture of food products had its base in Himachal Pradesh in 1971 and 1981. It had its base in Punjab in 1971 and 1981 in Jammu & Kashmir only in 1971 and in Haryana in 1981 only. Manufacture of beverages, tobacco & tobacco products had its base in Rajasthan in 1961, 1971 and 1981 as well as in Himachal Pradesh. In Haryana it had its base in 1981.

Manufacture of cotton textiles had its foundation in Rajasthan and Punjab in 1961, 1971 and 1981 and Haryana in 1971.

Wool, silk & synthetic fibres was found in Himachal Pradesh and J&K in 1961, 1971 and 1981 and in Punjab in 1971 and 1981.

Jute, hemp & mesta textile was found in Punjab in all the three decades and in Haryana in 1961 only.

Textile products had its base in J&K in 1961, 1971 and 1981, in Himachal Pradesh in 1961 and 1971 and in Punjab in 1971.

Wood & wood products were found in Rajasthan, Himachal Pradesh and J&K in 1961, 1971 and 1981.

Paper & paper products formed base in J&K, Himachal Pradesh & Haryana in 1961, 1971 and 1981 and in Punjab in 1981.

Leather, leather & fur products formed its base in all the three decades under study in Rajasthan. It formed base in Himachal Pradesh and Haryana in 1961 only.

Rubber, plastic, petroleum and coal had its base in Punjab and Haryana in all the three decades.

Chemicals & chemical products was found in Punjab in 1961, 1971 and 1981, in Himachal Pradesh in 1971 and 1981, and in Haryana only in 1981.

Non-metallic mineral products was found in Rajasthan and Haryana in 1961, 1971 and 1981.

Basic metals & alloy industries was found in Punjab and Haryana in 1971 and 1981 and in Rajasthan and Himachal Pradesh in 1961 and 1981.

Metal products & parts had its base in Himachal Pradesh and Punjab in 1961 and 1971 and in J&K and Haryana in 1971.

Manufacture of machinery, machine tools & parts had its base in Punjab in 1961, 1971 and 1981 and in Haryana in 1971 and 1981.

Manufacture of electrical machinery had its base in Haryana and Punjab in 1961 and 1971.

Transport equipment had its base in Punjab and Haryana in all the three decades.

Other manufacturing industries had base in Rajasthan in 1961, 1971 and 1981. In J&K in 1961 and in Himachal Pradesh in 1981.

Repair had its base in Haryana and Punjab in 1961, 1971 and 1981. In Himachal Pradesh and J&K in 1971 and in Rajasthan in 1981. (see table IV.3)

Broadly it can be said that states have industrial base according to raw material supplies. For example, Himachal Pradesh and J&K had industrial base of wool, silk & synthetic fibres, paper & paper products, wood & wood products. Rajasthan had industrial base of leather,

TABLE IV.3 INDUSTRIAL BASE WITH RESPECT TO REGION 1961-1971-1981

CODE NO OF INDUSTRIAL GROUP	STATE	YEAR
1	HARYANA	1981
	PUNJAB	1971, 1981
	HIMACHAL PRADESH	1971, 1981
	JAMMU & KASHMIR	1971
2.	HARYANA	1981
	RAJASTHAN	1961, 1971, 1981
	HIMACHAL PRADESH	1961, 1971, 1981
3.	PUNJAB	1961, 1971, 1981
	HARYANA	1971
	RAJASTHAN	1961, 1971, 1981
4.	PUNJAB	1971, 1981
	HIMACHAL PRADESH	1961, 1971, 1981
	JAMMU & KASHMIR	1961, 1971, 1981
5.	HARYANA	1961
	PUNJAB	1961, 1971, 1981
6.	PUNJAB	1971
	HIMACHAL PRADESH	1961, 1971
	JAMMU & KASHMIR	1961, 1971, 1981
7.	RAJASTHAN	1961, 1971, 1981
	HIMACHAL PRADESH	1961, 1971, 1981
	JAMMU & KASHMIR	1961, 1971, 1981
8.	HARYANA	1961, 1971, 1981
	PUNJAB	1981
	HIMACHAL PRADESH	1961, 1971, 1981
	JAMMU & KASHMIR	1961, 1971, 1981
9.	HARYANA	1961
	RAJASTHAN	1961, 1971, 1981
	HIMACHAL PRADESH	1961

Contd.....

CODE NO OF INDUSTRIAL GROUP	STATE	YEAR
10.	HARYANA PUNJAB	1961, 1971, 1981 1961, 1971, 1981
11.	PUNJAB HARYANA HIMACHAL PRADESH	1961, 1971, 1981 1981 1971, 1981
12.	HARYANA RAJASTHAN	1961, 1971, 1981 1961, 1971, 1981
13.	HARYANA PUNJAB RAJASTHAN HIMACHAL PRADESH	1971, 1981 1971, 1981 1961, 1981 1961, 1981
14.	HARYANA PUNJAB HIMACHAL PRADESH JAMMU & KASHMIR	1971 1961, 1971 1961, 1971 1971
15	PUNJAB HARYANA	1961, 1971, 1981 1971, 1981
16.	HARYANA PUNJAB	1961, 1971 1961, 1971
17.	HARYANA PUNJAB	1961, 1971, 1981 1961, 1971, 1981
18.	RAJASTHAN HIMACHAL PRADESH JAMMU & KASHMIR	1961, 1971, 1981 1981 1961
19.	HARYANA PUNJAB RAJASTHAN HIMACHAL PRADESH JAMMU & KASHMIR	1961, 1971, 1981 1961, 1971, 1981 1981 1971 1971

leather & fur products, non-metallic mineral products, basic metals & alloy industries. Punjab and Haryana had industrial base of cotton textiles, food products, jute, hemp & mesta textiles, paper & paper products. But these states also had a strong hold in industries for which raw materials are imported. For example, Punjab and Haryana had industrial base in manufacture of various machinery & parts for which raw materials came from other states. The repair industry was the only industry which had a base in all the five states.

IV.4 INDUSTRIAL BASE OF DISTRICTS WITH RESPECT TO REGION - 1981

In this section we have tried to look at the latest position of the industrial base of various districts of north-western India. There has been an increase in the number of districts in 1981 since 1961. There were 60 districts in the whole region in 1961. In 1971 there were 64 districts and in 1981 there were 75 districts in all. A change in industrial base from 1961-81 at district level cannot be observed as mentioned earlier, hence industrial base of only 1981 has been considered.

In 1981 there was an addition of 2 districts in Himachal Pradesh, 3 districts in J&K, 5 districts in Haryana and 1 district in Punjab over 1971. The location quotient of each district for each industry has been worked out in this part of the chapter.

Manufacture of food products had its base in Ganganagar, Bikaner, Churu, Jhunjhunu, Alwar, Bharatpur, Sawai Madhopur, Ajmer, Jodhpur, Chittaurgarh, Banswara, Bundi & Kota of Rajasthan, all districts of Himachal Pradesh except Kinnaur, all districts of J&K except Srinagar, Baramula, Punch & Badgam, all districts of Haryana except Gurgaon, Mahendragarh, Faridabad and Bhiwani, all districts of Punjab except Amritsar, Ludhiana, Jullundhar and Sangrur.

Beverages, tobacco & tobacco products had its base in Churu, Sawai Madhopur, Ajmer, Tonk, Jaisalmer, Chittaurgarh, Bundi, Kota and Jhalawar of Rajasthan, Kullu, Una & Solan of Himachal Pradesh, Jammu of J&K, Ambala, Kurukshetra of Haryana and Kapurthala of Punjab.

Manufacture of cotton textiles had its base in Jhunjhunu, Ajmer, Jodhpur, Pali, Barmer, Bhilwara, Banswara & Jhalawar districts of Rajasthan, Karnal and Bhiwani of Haryana, Amritsar, Ferozpur, Kapurthala, Hoshiarpur, Bhatinda and Faridkot of Punjab and Kathua & Punch of J&K.

Manufacture of wool, silk & synthetic fibres was found in Bikaner, Alwar, Sikar, Barmer, Bhilwara, Banswara and Kota of Rajasthan, all districts of J&K except Baramula, Jammu and Punch. It had base in Karnal

of Haryana, Gurdaspur, Amritsar, Ludhiana and Rupnagar of Punjab and all districts of Himachal Pradesh except Lahul & Spiti and Bilaspur.

Manufacture of jute, hemp & mesta textiles had its base in Bikaner, Barmer, Churu of Rajasthan, Ferozpur, Ludhiana, Jullundhar, Hoshiarpur, Faridkot and Rupnagar of Punjab and Punc of J&K.

Textile products had its base in Jhunjhunu, Bharatpur, Sawai Madhopur, Sikar, Tonk, Jaisalmer, Dungarpur and Kota of Rajasthan, Sirsa and Hisar of Haryana, Ludhiana of Punjab, Chamba, Mandi, Kullu, Lahul & Spiti, Simla and Kinnaur of Himachal Pradesh and all districts of J&K except Jammu.

Wood & wood products had its base in Ganganagar, Churu, Jhunjhunu, Alwar, Sawai Madhopur, Sikar, Tonk, Jaisalmer, Nagaur, Jalore, Sirahi, Bhilwara, Udaipur, Chittaurgarh, Dungarpur, Banswara & Kota of Rajasthan, all districts of Himachal Pradesh except Kullu, all districts of J&K except Badgam. It also had base in Mahendragarh and Kurukshetra of Haryana, Hoshiarpur & Sangrur of Punjab.

Manufacture of paper & paper products had its base in Alwar, Jaipur, Ajmer, Jodhpur of Rajasthan, Ambala, Gurgaon, Faridabad, Mahendragarh and Sonipat of Haryana and Amritsar, Jullundhar, Hoshiarpur and Patiala of

Punjab, Simla and Solan of Himachal Pradesh and Srinagar and Jammu of J&K.

Manufacture of leather, leather & fur products had its foundation in all districts of Rajasthan except Ganganagar, Bharatpur and Kota, Gurgaon, Mahendragarh, Sirsa and Jind of Haryana, Sangrur and Bhatinda of Punjab, Chamba and Mandi of Himachal Pradesh, Doda, Rajauri, and Punch of J&K.

Manufacture of rubber, plastic, petroleum and coal products had its base in Churu, Jodhpur, Udaipur, Chittaurgarh and Kota of Rajasthan, Gurgaon, Faridabad, Hisar of Haryana and Jullundhar and Sangrur of Punjab and Solan and Chamba of Himachal Pradesh.

Manufacture of chemicals & chemical products were found in Bikaner, Alwar, Udaipur, Dungarpur and Kota of Rajasthan, Bilaspur, Sirmaur, Una and Solan of Himachal Pradesh, Jammu, Rajauri and Kargil of J&K, Karnal Faridabad, Rohtak and Gurgaon of Haryana, Amritsar, Hoshiapur, Bhatinda and Rupnagar of Punjab.

Manufacture of non-metallic mineral products had its base in Ganganagar, Bikaner, Jhunjhunu, Alwar, Bharatpur, Sawai Madhopur, Sikar, Nagaur, Pali, Jalore, Sirohi, Udaipur, Chittaurgarh, Dungarpur, Banswara, Bundi, Kota and Jhalawar of Rajasthan, Ambala, Rohtak, Gurgaon,

Mahendragarh, Bhivani, Faridabad, Hisar, Jind, Kurukshetra and Sonapat and Sirsa of Haryana, Sangrur, Bhatinda, Faridkot of Punjab and Bilaspur and Sirmaur of Himachal Pradesh.

Basic metals and alloy industries, ^{had base in} Jhunjhunu, Udaipur of Rajasthan, Sirmaur and Solan of Himachal Pradesh, Rohtak, Jind, Faridabad and Sonipat of Haryana, all districts of Punjab except Ferozpur, Hoshiarpur, Bhatinda, Faridkot and Rupnagar.

Manufacture of metal products and parts were found in Jodhpur, Nagaur, Barmer, Jalore, Udaipur, Chittaurgarh, Dungarpur, Banswara and Jhalawar of Rajasthan, Ambala, Rohtak, Gurgaon, Mahendragarh, Jind, Faridabad, Sonipat of Haryana, Gurdaspur, Jalandhar, Sangrur of Punjab, Doda, Udhampur, Jammu, Rajauri, Kupwara, Kargil and Ladakh of J&K and all districts of Himachal Pradesh.

Manufacture of machinery, machine tools & parts were found in Ambala and Faridabad of Haryana, whole of Punjab except Ferozpur & Bhatinda.

Electrical machinery had foundation in Jaipur and Kota of Rajasthan, Una & Solan of Himachal Pradesh, Ambala, Gurgaon, Jind, Faridabad and Sonipat of Haryana, Amritsar, Jullundhar, Kapurthala, Patiala and Rupnagar of Punjab.

Transport equipment had its base in Bharatpur & Jodhpur of Rajasthan, Ambala, Faridabad and Sonipat of

TABLE IV.4 INDUSTRIAL BASE OF INDUSTRIES IN NORTH WESTERN REGION-1981
With respect to region.

CODE NO OF IND. GROUP	CODE NO DISTRICTS	TOTAL
1	1-7, 10, 13, 21, 23, 24, 25, 27-34, 36, 39-44, 46, 47, 48, 51, 52, 53, 55, 58, 59, 60, 62-65, 67, 68, 70-73	49
2	3, 7, 10, 11, 12, 21, 24, 25, 26, 30, 42, 46, 58, 64, 65, 70	16
3	4, 10, 13, 15, 16, 19, 23, 26, 43, 45, 47, 54, 55, 58, 59, 62, 69, 72	18
4	2, 5, 9, 16, 23, 25, 27-30, 33, 35-37, 39-41, 43, 44, 47, 53, 54, 56, 64-68, 73	30
5	2, 3, 16, 45, 55, 56, 57, 59, 72, 73	10
6	4, 6, 7, 9, 11, 12, 22, 25, 27, 29, 30, 31, 33, 35-45 (EXCEPT 42), 51, 56, 66, 67, 68, 76	29
7	1, 3, 4, 5, 7, 9, 11, 12, 14, 17-23, 25-45 (EXCEPT 30) 50, 59, 61, 63-68 (EXCEPT 66), 70	47
8	5, 8, 10, 13, 33, 37, 42, 46, 49, 50, 54, 57, 59, 60, 71, 75	17
9	2-24 (EXCEPT 6) 26, 27, 29, 40, 44, 45, 49, 50, 52, 61, 62, 76	34
10	2, 3, 13, 20, 21, 25, 27, 49, 51, 57, 61, 65, 75	13
11	2, 5, 20, 22, 25, 32, 34, 42, 44, 47, 48, 49, 54, 59, 62, 64, 65, 68, 71, 73, 75	21
12	1, 2, 4-7, 9, 14, 15, 17, 18, 20-26, 32, 34, 46, 48, 49, 50, 51, 52, 61, 62, 69-72, 75, 76	35

contd...

CODE NO OF IND. GROUP	CODE NO DISTRICTS	TOTAL
13	4, 20, 34, 48, 52, 53, 54, 56, 57, 58, 60, 61, 65, 71, 75	15
14	13, 14, 16, 17, 20-23, 26-32, 34, 35, 39, 40, 41, 42, 44, 45, 46, 48, 49, 50, 52, 53, 57, 61, 63, 64, 65, 67-71(EXCEPT 70), 75	39
15	46, 53, 54, 56-61, 72, 73, 75	12
16	8, 25, 46, 49, 52, 54, 57, 58, 60, 64, 65, 71, 73, 75	14
17	5, 6, 13, 46, 56, 57, 58, 60, 61, 65, 71, 75	12
18	1-4, 7-20(EXCEPT 10), 22, 23, 26, 28, 31, 49, 57, 64, 65, 75	29
19	1, 2, 6, 13, 24, 29, 31, 32, 33, 42, 46, 55, 57, 59-62, 64, 69-74, 76	25

Haryana, Ludhiana, Jullundhar, Kapurthala, Patiala, and Sangrur of Punjab and Solan of Himachal Pradesh.

Other manufacturing industries were there in all districts of Rajasthan except Alwar, Bharatpur, Ajmer, Chittaurgarh, Bundi & Kota. It had base in Gurgaon and Faridabad of Haryana and Jullundhar in Punjab and Mandi, Lahul & Spiti, Una and Solan of Himachal Pradesh.

Repair was there in Ganganagar, Bikaner, Bharatpur, Jodhpur and Bundi of Rajasthan, Mandi, Una, Simla, Lahul & Spiti, Bilaspur of Himachal Pradesh, Ambala, Bhivani, Kurukshetra and Sirsa districts of Haryana, Ferozpur, Jullundhar, Hoshiarpur, Patiala, Sangrur, Bhatinda and Faridkot districts of Punjab and Jammu & Kargil of J&K.

(See Table IV.4)

It was observed that manufacture of food products had maximum number of districts having its base, total number of districts being 49. This was followed by manufacture of wood & wood products with 47 districts having its base. Metal products & parts had base in 39 districts. Next came manufacture of Non-metallic mineral products and leather, leather & fur products which had their base in 35 and 34 districts respectively. The industries with least number of districts having their manufacture of jute, hemp and mesta, textiles. This was followed by machine tools & parts and transport equipments. ^{industries} They had industrial base in 12 districts each.

CHAPTER V

LEVELS OF INDUSTRIAL LOCALIZATION

V.1 INTRODUCTION:

The process of development of regions to some extent is natural and to some extent historical. Some regions of an economy are endowed with natural resources and once the development process starts they attract such industries which will need these raw materials.

In some cases, historical forces proved to be more important than the natural ones. In India, historical forces guided the development of port towns of Bombay, Calcutta, Madras and these cities later turned into nuclei for the development of Maharashtra, West Bengal and Tamil Nadu respectively which are at present the most developed industrial states. The same is not true of other states such as Bihar, Orissa & Madhya Pradesh which are endowed with natural resources.

If one looks at the historical record, the process of social development and economic growth has been, for most part, cumulative. Most of the activities started independently at diverse places and with time became concentrated round those places.

If plants of an industry concentrate or localize what are the degrees of concentration and the pattern of localization exhibited by different industries? This

question is answered quantitatively by the coefficient of localization which A.J. Wenseley and Sargent Florence put forward in 1933 and which Florence developed for the U.S.¹

The statistical index of localization of a particular industry measures the local concentration of that industry compared with the distribution of industries as a whole. On this basis a coefficient of localization can be worked from the Census of population.²

When workers are divided up region by region as proportion of the total in all regions, the coefficient is the sum of positive deviations of the regional proportions of workers in the particular industry from the corresponding regional proportion of workers in all the industries.

$$S_{cei} = \sum_{j=1}^m \left[\frac{e_{ij}}{\sum_{j=1}^m e_{ij}} - \frac{\sum_{i=1}^n e_{ij}}{\sum_{j=1}^m \sum_{i=1}^n e_{ij}} \right]$$

This can also be expressed as equal to half³ the sum of the absolute difference between the regional

1. Sargent Florence, Industrial Location and National Resources (N.R.P.B.), US Government Printing Office, Washington.
2. Sargent Florence, Investment, Location and the size of the plant, Chap. "Location and size of the Plant", Cambridge Univ. Press, 1943, . . .
3. $\frac{1}{2}$ because the maximum value of

$$\sum_{j=1}^m \left| \left[\frac{e_{ij}}{\sum_{j=1}^m e_{ij}} - \frac{\sum_{i=1}^n e_{ij}}{\sum_{j=1}^m \sum_{i=1}^n e_{ij}} \right] \right|$$

is always less than 2.

proportion of workers in the particular industry from regional proportion of workers in all the industries.

$$S_{cei} = \frac{1}{2} \sum_{j=1}^m \left[\left| \frac{e_{ij}}{\sum_{j=1}^m e_{ij}} - \frac{\sum_{i=1}^n e_{ij}}{\sum_{j=1}^m \sum_{i=1}^n e_{ij}} \right| \right]$$

where

e_{ij} = employment of workers in i^{th} industry in j^{th} region.

$\sum_{j=1}^m e_{ij}$ = employment in all the regions in i^{th} industry.

$\sum_{i=1}^n e_{ij}$ = employment in all the industries in j^{th} region.

$\sum_{i=1}^n \sum_{j=1}^m e_{ij}$ = employment in all industries in all regions.

and

$| |$ = denotes numerical value ignoring signs.

In the present paper coefficient of localization has been taken out in terms of percentage because this way it is easier to categorize industries into various groups.

$$S_{cei} = \frac{1}{2} \sum_{j=1}^m \left[\left| \frac{e_{ij}}{\sum_{j=1}^m e_{ij}} - \frac{\sum_{i=1}^n e_{ij}}{\sum_{j=1}^m \sum_{i=1}^n e_{ij}} \right| \right] \times 100$$

Percentages, then, are obtained for each industry given the proportion it employed in each of the state or regions. If these regional percentages do not deviate from those for industry as a whole there is no localization. If they deviate localization is high. The extreme range of coefficient is 0 to 100 per cent. 0 denotes no regional deviation of a particular industry

from the regional pattern of industry in general and thus no localization.

The objective of this study is to see the trends of localization as between different industries and to observe the trends of localization in industries over a period of time. Coefficient of localization has been worked out for all 19 groups of industries for region as well as for each of the 5 states separately. The idea is to group the industries in terms of their localization or dispersion.

An attempt has been made to explore the following issues:

- 1) To identify highly localized industries and highly dispersed industries;
- 2) To observe the change in the pattern of localization of such industries over the period 1961-71-81.
- 3) To see which industries are showing a tendency to diversify over time.

Taking these points into consideration industries have been categorized under three heads: Highly localized industries are those which have a coefficient over 45 per cent (Group I); Industries with medium level of localization are with coefficient in the range of 25 per cent to 45 per cent (Group II); and Industries with low level localization fall under the category showing coefficient of less than 25 per cent (Group III).

V.2 SPATIAL SPREAD OF INDUSTRIES
IN THE REGION: 1961-71-81

In the year 1961, five industries showed a high level of localization in the region. These were beverages tobacco & tobacco products, wool silk and synthetic fibre textiles, rubber, plastic, petroleum and coal products, machinery, machine tools and parts except electrical machinery and electrical machinery, apparatus, appliances, supplies and parts industries. (table V.1)

There were six industries which fell into the category of medium level of localization. These were jute hemp and mesta textiles, paper and paper products and printing, publishing and allied industries, chemicals and chemical products (except products of petroleum and coal), non-metallic mineral products, basic metal and alloy industries and transport equipment and parts.

Eight industries showed low level of localization i.e. high level of dispersion. They were food products, cotton textile, textile products (including wearing apparel other than footwear), wood and wood products, leather, leather and fur products, metal products and parts, other manufacturing industries and repair industry.

In 1971 four industries out of six highly localized industries were same as in 1961. They were beverages, tobacco and tobacco products, wool, silk and synthetic fibre textiles, rubber, plastic, petroleum and coal

Table V.1

Levels of Localization
Code No. of Industrial Group.

	Region			Rajasthan			Haryana		
	1961	1971	1981	1961	1971	1981	1961	1971	1981
High	2,4,10 15,16	2,4,5,10, 16,17	2,4,5,15,17,	15	2,4, 5,11,16	2,5,15, 17	8,10	4,5,10, 16,17	4,17
Total	5	6	5	1	5	4	2	5	2
Medium	5,8,11,12, 13	3,8,11,12, 13,15,18	3,8,9,10, 11,13,16, 18	2,4,5,8, 10,11,13, 16,17	8,13,15, 17	3,4,8,10, 11,13,16	4,5,13, 15,16,17	3,8, 13,15	2,3,8,10, 11,15,16
Total	6	7	8	9	4	7	6	4	7
Low	1,3,6,7,9, 14,18,19	1,6,7,9,14, 19	1,6,7,12, 14,19	1,3,6,7, 9,12,14, 18,19	1,3,6,7, 9,10,12, 14,18,19	1,6,7,9, 12,14,18,19	1,2,3,6, 7,9,11,12, 14,18,19	1,2,6,7, 9,11,12,14 18,19	1,5,6,7,9, 12,13,14, 18,19
Total	8	6	6	9	10	8	11	10	10
	Punjab			Himachal Pradesh			Jammu & Kashmir		
	1961	1971	1981	1961	1971	1981	1961	1971	1981
High	4	4	4,5	2,8,10,13	2,5, 8,13,17	2,5,8,11, 13,17	11,13,16	2,5,11,13, 16	2,3,5,10,11, 13,15,16,17
Total	1	1	2	4	5	6	3	5	9
Medium	2,5,8,10, 11,12,15, 16,17	2,3,5,8,10, 11,13,16,17	2,3,10,11, 13,16,17,18	3,4,5,11, 14,15,16	10,11,16	4,10,12, 15,16	2,4,5,8, 9,10,15, 18,19	3,8,10, 15,17	8,9,12, 18,19
Total	9	9	8	7	3	5	9	5	5
Low	1,3,6,7,9, 13,14,18,19	1,6,7,9,12,14, 14,18,19	1,6,7,8,9, 12,14,15,19	1,6,7,9,12, 17,18,19	1,3,4,6,7, 9,12,14,15, 18,19	1,3,6,7,9,14, 18,19	1,3,6,7,12, 14,17	1,4,6,7,9, 12,14,18, 19	1,4,6,7,14
Total	9	9	9	8	11	8	7	9	5

products and electrical machinery industries. Industry of machinery, machine tools and parts diversified and fell in the category of medium level of localization in 1971, the coefficient falling from 52.451 per cent to 42.726 per cent.

In 1971 jute, hemp and mesta textile industry became highly localized and manufacture of transport equipment and parts became highly localized which were moderately localized in 1961.

As many as seven industries fell in the category of medium level of localization in 1971. Out of those paper and paper products and printing, publishing and allied industries, chemicals and chemical products (except products of petroleum and coal), non-metallic mineral products, and basic metal and alloy industries occupied the same position as in 1961. Cotton textile industry, machinery, machine tools and parts and other manufacturing industries came under this category in 1971 with cotton textile and other manufacturing industries ^{coming} from lower level to medium level and machinery, machine tools and parts from higher level. All the industries with low level of localization in 1961 fell under the same head in 1971 except cotton textile industry and other manufacturing industry which joined the medium level of localization group.

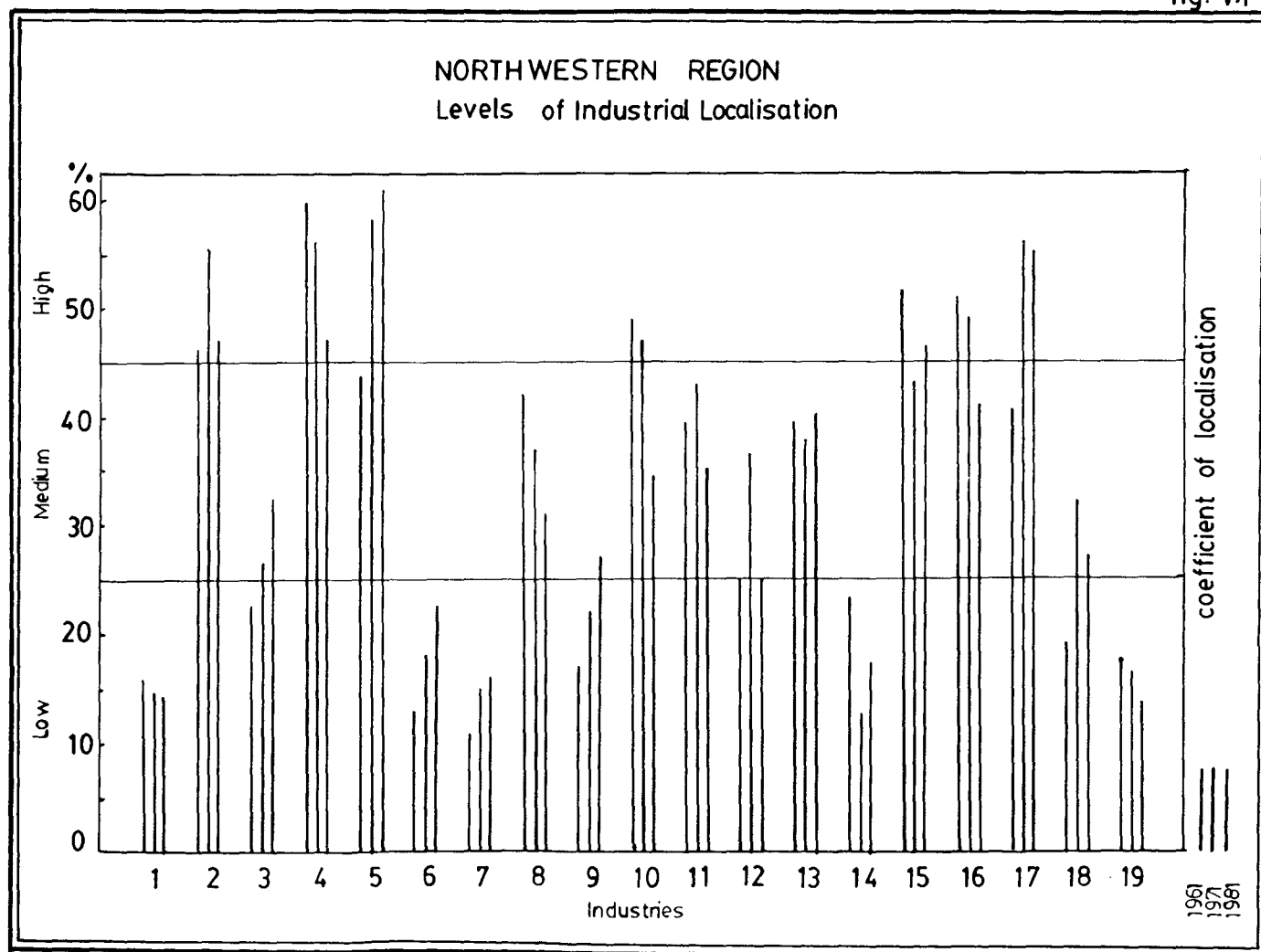
In 1971 as compared to 1961 one industry increased in high level of localization. Number of industries under

medium level also increased by one against 1961 and two industries decreased in the low level of localization or high level of diversification category. Overall it can be stated that there hadn't been a tendency towards spatial diversification of industries in the region in the decade 1961-71.

In 1981 industries with high level of localization were five. They were beverages, tobacco and tobacco products, wool, silk and synthetic fibre textile, jute, hemp and mesta textiles, machinery, machine tools and parts and transport equipment and parts industries. As compared to 1971 machine, machine tools and parts industry became highly localized. But it was highly localized in 1961. Manufacture of rubber, plastic, petroleum and coal products diversified and joined group II in 1981. Manufacture of electrical machinery, apparatus, appliances and supplies and parts also diversified in 1981 and joined group II. Both the industries used to come under highly localized industries in 1971.

In 1981 six industries came under the category of low level of localization. Out of those food products, textile products, wood and wood product, metal products and parts and repair industries were highly diversified in 1961 and 1971. (Fig.v.1)

fig. V.1



In the northwestern region the number of industries under high level of localization increased from five to six in 1961-71 and again fell to five in 1981, under medium level of localization the number of industries increased from 6 to 7 in 1961-71 and from 7 to 8 in 1971-81. The number of industries under low level of employment fell from 8 to 6 in 1961-71 and remained 6 in 1981.

V.3.1 SPATIAL SPREAD OF INDUSTRIES IN RAJASTHAN: 1961-71-81

In 1961 there was only one industry which were highly localized. This was manufacture of machinery, machine tools and parts. There were nine industries in the medium level of localization group. These were beverages, tobacco and tobacco products, wool, silk and synthetic fibre, jute, hemp and mesta textiles, paper and paper products, rubber, plastic, petroleum and coal products, chemicals and chemical products, basic metals, electrical machinery and apparatus, and transport equipments and parts industries. Rest of the nine industries came under the category of low level localization or high level of diversification.

The general industrial structure of Rajasthan in 1961 was more or less moderately and highly diversified. Most of the industries fell in the group of low and medium level of localization.

In 1971 there were at least five industries which came under the range of high localization as against ^{one} in

1961. They were beverages, tobacco and tobacco products, wool, silk and synthetic fibre, jute, hemp and mesta textiles, chemicals and chemical products, and electrical machinery industries. Four industries fell in the category of medium level of localization. They were paper & paper products, basic metals and alloy industries, machinery and machine tools and transport equipments industries. Rest of the ten industries fell in low level of localization group. Out of these manufacture of food products, cotton textiles, textile products, wood & wood product, leather and leather product, non-metallic mineral product, metal products, other industries and repair were common with 1961. Rubber plastic and petroleum coal industries joined this group in 1971 while it was moderately localized in 1961.

In 1981 again there was a fall in the number of industries in high level of localization. There were four industries under this category. They were beverages, tobacco and tobacco products, jute, hemp and mesta textiles, machinery and machine tools and parts and transport equipments industries.

Manufacture of wool, silk and synthetic fibres, chemicals and chemical products, electrical machinery, cotton textiles, rubber, plastic, petroleum and coal products, paper and paper products and basic metals and alloy industries were moderately localized in 1981.

Rest of the industries were highly diversified. Out of those food products, textile products, wood & wood products, leather & fur products, metal parts and repair industries were same as in 1961 and 1971.

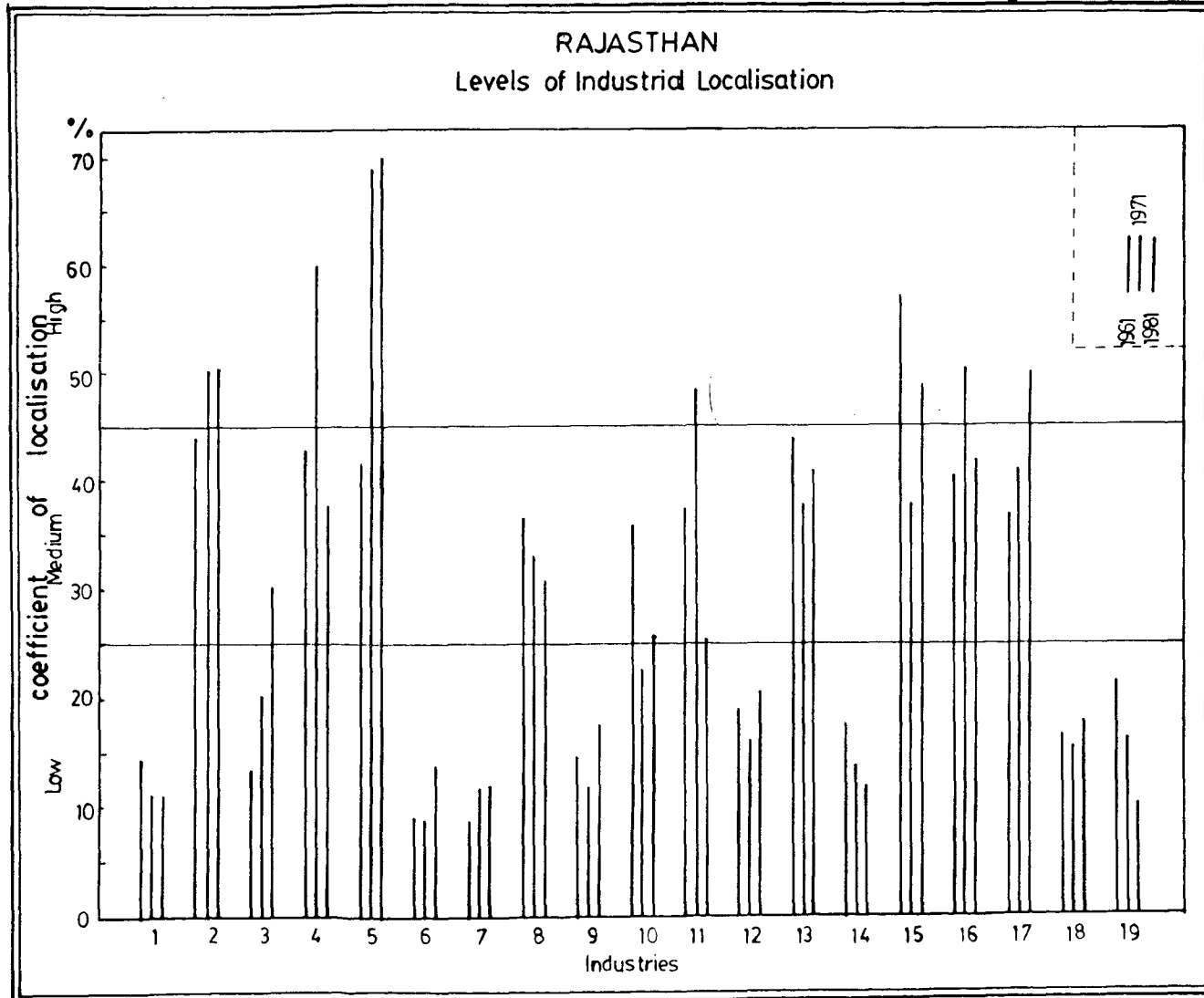
There were seven industries which were moderately concentrated in 1981 against four in 1971. It can be concluded that most of the industries were highly diversified and quite a few of them were moderately localized in 1981. But the number of highly diversified industries diminished since 1971. (Fig.v.2)

V.3.2 SPATIAL SPREAD OF INDUSTRIES IN HARYANA, 1961-71-81.

The structure of industries in Haryana in 1961 was more or less dispersed. Two industries were highly and six moderately concentrated. Eleven industries were dispersed.

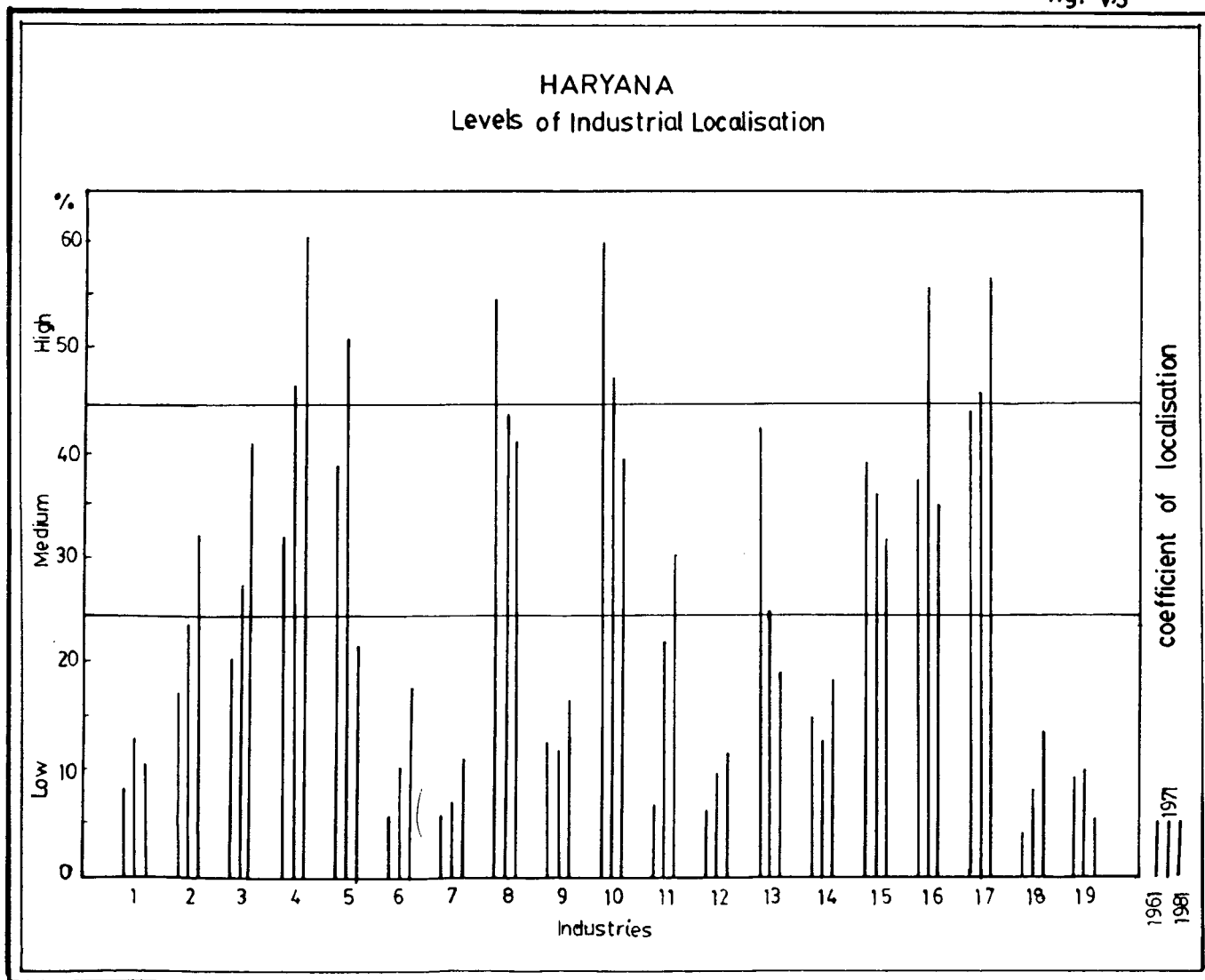
Among the highly localized industries were manufacture of paper & paper products, and manufacture of rubber, plastic, petroleum and coal products. Wool, silk and synthetic industries, jute, hemp & mesta textiles, basic metals and alloy industries, machinery, machine tools and parts and electrical machinery industries were moderately localized. Rest of the eleven industries in 1961 were highly diversified.

In 1971 there was a pull towards concentration of industries in the state. Wool, silk & synthetic fibres,



jute, hemp & mesta textiles, electrical machinery and transport equipment industries were highly localized in 1971 whereas they were moderately localized in 1961. Four industries were moderately localized in 1971. Basic metals, and alloy industries and machinery, machine tools and parts were moderately localized in 1971 as well as in 1961 and manufacture of cotton textile was moderately diversified in 1971 but highly diversified in 1961. In 1971 all the rest of ten industries which were highly diversified were also highly diversified in 1961. In 1971, again, it can be concluded that most of the industries were dispersed but the number of highly concentrated industries increased.

In 1981 only two industries were highly localized. These were manufacture of wool, silk and synthetic and manufacture of transport equipments. They were highly localized in 1971 also. There were seven industries in the range of medium level of localization. Out of these beverages & tobacco products and chemicals & chemical products were highly dispersed both in 1971 and 1961. There were ten industries under high level of dispersion in 1981. Manufacture of jute, hemp and mesta textiles and basic metals and alloys industries fell in group I and group II respectively in 1971. Rest of industries with high level of diversification were same as in 1971 and 1961. (t . Fig.v.3)



V.3.3 SPATIAL SPREAD OF INDUSTRIES
IN PUNJAB:1961-71-81

The structure of industries in Punjab in the year 1961 was generally moderately and highly diversified. Only manufacture of wool, silk & synthetic was highly localized. Manufacture of beverages, tobacco & tobacco products, jute, hemp and mesta textile, paper & paper products, rubber plastic, petroleum & coal products, chemicals & chemical products, non-metallic mineral products & machine tools, electrical machinery and transport equipments were moderately localized. Rest of the nine industries were highly diversified.

In 1971 again manufacture of wool, silk & synthetic was highly localized. Under medium level of localization manufacture of beverages, tobacco & tobacco product, jute, hemp & mesta textiles, paper & paper products, rubber, plastic, petroleum & coal products, electrical machinery and transport equipments were same as in 1961. The industries coming under high level of diversification in 1971 were all in the same category in 1961 except non-metallic mineral products and machinery, machine tools & parts which were moderately localized.

In 1981 manufacture of wool, silk & synthetic fibres and jute, hemp & mesta textiles were highly localized. The former being highly localized in 1971 and 1961 as well. The latter has concentrated since

1971 and 1961 when it fell in group II.

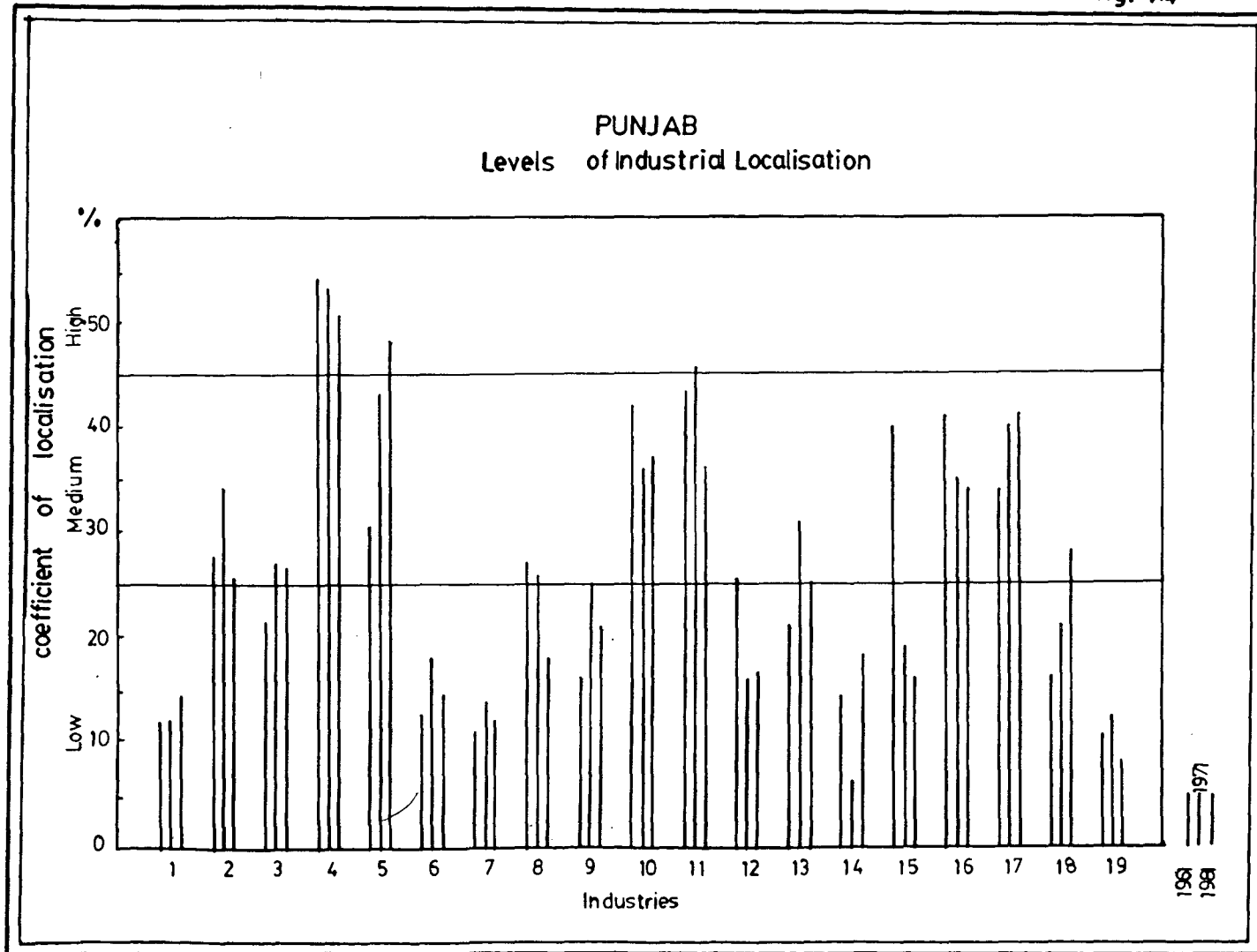
Out of eight industries under medium level of localization, manufacture of beverages, tobacco & tobacco products, cotton textiles, rubber, plastic, petroleum & coal products, basic metals and alloy industries, transport equipment and electrical machinery fell in the same category in 1971. The remaining industries came under the group of highly diversified industries in 1981. All these industries were highly diversified in 1971 except paper & paper products industry which diversified from group II. (See Fig. V.4)

V.3.4 SPATIAL SPREAD OF INDUSTRIES IN HIMACHAL PRADESH:1961-71-81

There were four industries which were highly localized in the year 1961. These were beverages, tobacco & tobacco products, paper & paper products, rubber, plastic, petroleum and coal and basic metal and alloy industries. Seven industries were moderately diversified in 1961. They were cotton textiles, wool, silk & synthetic fibre, jute, hemp and mesta textiles, chemicals & chemical products, metal products and parts, machinery, machine tools and parts and electrical machinery industries. Rest of the eight industries fell in the group of high level of diversification. In 1961 maximum number of industries were highly diversified.

fig. V.4

74



96

In 1971 five industries were highly localized. Out of these beverages, tobacco & tobacco products, paper & paper products and basic metals and alloys industries were common with 1961. Manufacture of rubber plastic and petroleum & coal products diversified since 1961 and reached group II in 1971 from group I. In 1971 there were three industries which were moderately localized. Manufacture of electrical machinery and chemical products were moderately localized in 1961 as well. Manufacture of rubber, plastic, petroleum and coal products has diversified since 1961. Rest of the eleven industries were highly diversified in 1971. The number of industries under this head were eight in 1961. So the number of diversified industries were more in 1971 against 1961. In general there is a tendency of diversification from medium level of concentration to low level of concentration in 1971 over 1961.

In 1981 there were six industries which were highly localized. There was an addition of one industry in 1981 over 1971 in high level of concentration i.e. manufacture of chemicals & chemical products, which was moderately diversified in 1961 & 1971. The number of industries in medium level of concentration was five. Three industries concentrated since 1971. They were wool, silk and synthetic fibre, manufacture of non-metallic mineral products and machinery, machine tools and parts

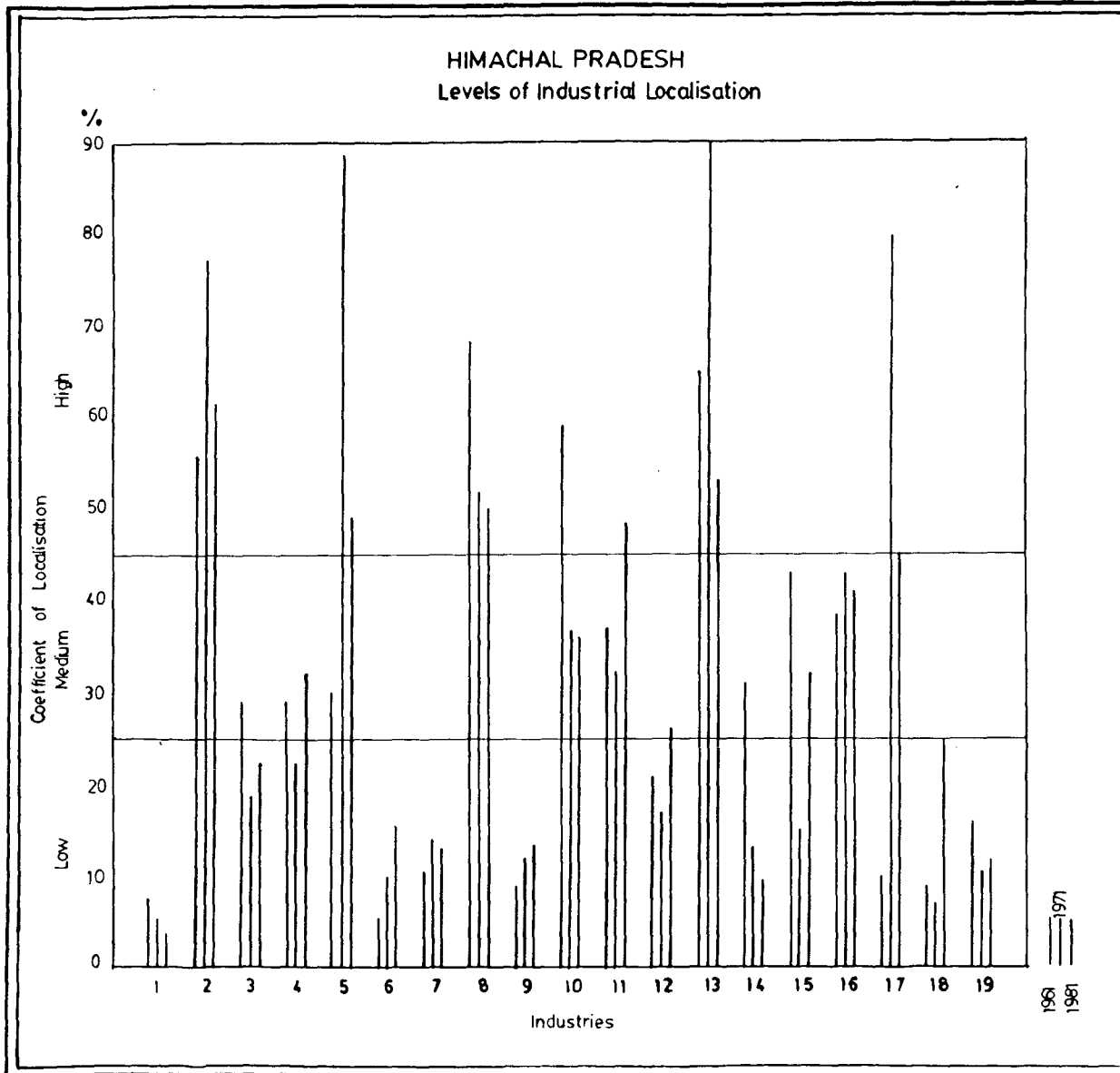
industries. Eight industries were highly diversified in 1981. All these industries were highly diversified in 1971. In 1981 the diversification level of industries has deteriorated and there is a tendency towards concentration of industries. (--- Fig.V.5)

V.3.5 SPATIAL SPREAD OF INDUSTRIES IN JAMMU & KASHMIR:1971-71-81

Three industries were highly concentrated in Jammu and Kashmir in 1961. They were manufacture of chemicals and chemical products, basic metals and alloys industries, and manufacture of electrical machinery. Nine industries were moderately concentrated in 1961. They were beverages, tobacco & tobacco products, wool, silk and synthetic fibres, jute, hemp and mesta textiles, paper & paper products, leather & fur products, rubber, plastic, petroleum and coal products, machinery and machine tools, other manufacturing industries and repair industry. Rest of the seven industries were highly diversified in the state.

In 1971 five industries were highly concentrated, out of these chemicals & chemical products, basic metals and alloy industries and electrical machinery industries were highly concentrated in 1961 as well. Five industries were moderately diversified in 1971. Manufacture of cotton textile was moderately diversified in 1971 but highly diversified in 1961. Paper & paper products, rubber, plastic petroleum and coal products and machine

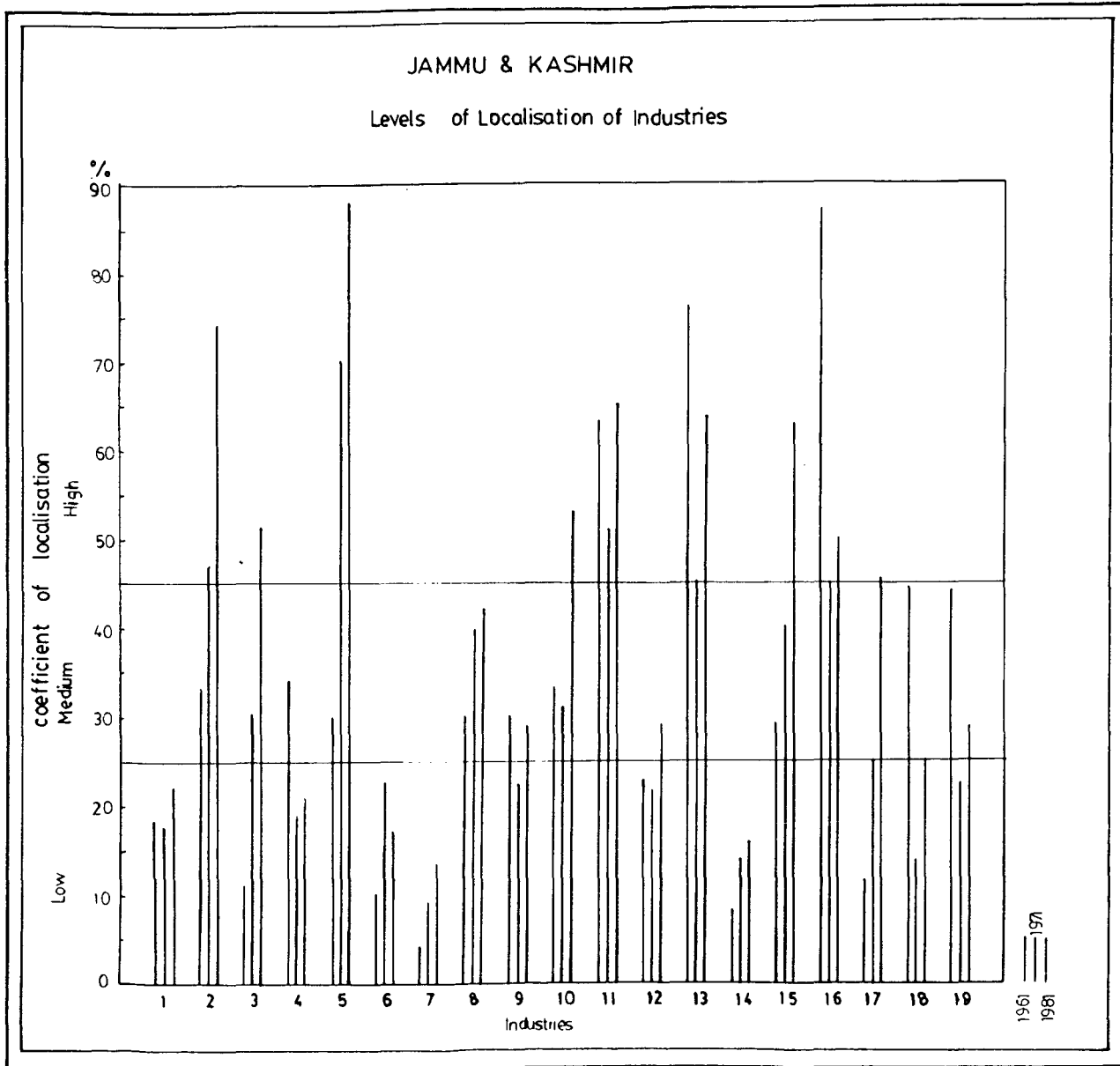
fig. V.5



tools products have remained moderately diversified in 1971 since 1961. Manufacture of transport equipment and parts have concentrated in relation to 1961 where it was highly diversified. In 1971 nine industries were highly diversified. Manufacture of wool, silk & synthetic fibres, leather and leather products, other manufacturing industries and repair diversified since 1961.

In 1981 nine industries were highly localized. These were manufacture of beverages, tobacco and tobacco products, cotton textiles, jute hemp & mesta textiles, rubber, plastic, petroleum and coal, chemicals and chemical products, basic metal and alloy industries, machinery and machine tools & parts, electrical machinery and transport equipments. Five industries were moderately dispersed in 1981. Manufacture of leather, leather and fur products, manufacture of non-metallic mineral product, other manufacturing industries and repair were highly diversified in 1971. Manufacture of paper & paper products was moderately dispersed in 1971 and 1961. Five industries were highly dispersed in 1981. These industries were highly dispersed in 1971 also. In Jammu & Kashmir over a period of time there was developing a tendency towards concentration of various industries. (. Fig.V.6)

In Rajasthan the number of industries with high level of localization increased from 1 to 5 in 1971 and decreased to 4 in 1981. The number of industries under



medium level fell from 9 to 4 in 1971 and increased 7 in 1981. Under low level of localization the number of industries increased from 9 to 10 in 1971 and fell to 8 in 1981. In Haryana number of industries under high level of localization increased from 2 to 5 in 1971 and fell to 2 in 1981. The number of industries under medium level increased to 7 in 1981 from 4 in 1971. Number of industries under low level remained constant at 10 in 1981 since 1971. In Punjab number of industries under high level remained at 1 in 1971 from 1961 and increased to 2 in 1981. Under medium level the number of industries fell from 9 to 8 in 1971-81. Under low level the number of industries remained constant at 9 in 1961-71-81. In Himachal Pradesh the number of industries under high level increased from 4 to 5 to 6 in 1961-71-81. The number of industries under low level of localization increased from 8 to 11 in 1961-71 and came back to 8 in 1981. In Jammu & Kashmir number of industries under high level of localization increased from 3 to 5 to 9 in 1961-71-81. Under low level of localization the number of industries increased from 7 to 9 in 1961-71 and fell to 5 in 1981. (table V.1) No clear trend on diversification of industries has been observed but it can be said that the diversification level was high in Rajasthan and Haryana in all the three decades. In Punjab there was medium and high level of diversification of industries

in all three decades. In Himachal Pradesh there was high level of diversification in 1961, 1971 and 1981. In J&K, however, maximum number of industries fell under medium level of localization group in 1961. In 1971 most of the industries had high level of diversification but in 1981 most of the industries were highly localized.

CHAPTER VI

LEVELS OF INDUSTRIAL SPECIALIZATION

VI.1 INTRODUCTION:

With an amazing growth in population there has been an associated increase in economic interaction as the people of different areas exchange commodities and services. This has produced a world wide pattern of geographic organization. Through his economic and political decision man has organized a series of interrelated areas with their distinctive role in the economy. The recent trend is towards diversification of activities rather than specialization and more & more emphasis is being given to regional diversification of activities.

The importance of regional balance and achievement of balanced regional development of the economy was incorporated as an important objective of planning in India. Industrial development in India has been playing a crucial role, towards structural diversification, modernization and self-reliance. Apart from improvement in technology and output, industrial structure has widely diversified covering the entire consumer, intermediate and capital goods industries.

The coefficient which pertains to patterns of distribution of industries in a particular region is known as coefficient of specialization of a region. This coefficient

can be computed for each region by subtracting the proportional share of workers in different industries in all regions from the proportional share of workers in the particular region and adding up all the positive deviations.

$$S_{cej} = \sum_{i=1}^m \left[\frac{e_{ij}}{\sum_{i=1}^m e_{ij}} - \frac{\sum_{i=1}^m e_{ij}}{\sum_{i=1}^m \sum_{j=1}^m e_{ij}} \right]$$

where

e_{ij} = employment in i^{th} industry in j^{th} region.

$\sum_{i=1}^m e_{ij}$ = employment in all the industries in j^{th} region.

$\sum_{j=1}^m e_{ij}$ = employment in i^{th} industry in all regions.

$\sum_{i=1}^m \sum_{j=1}^m e_{ij}$ = employment in all industries in all regions.

This can also be expressed as equal to half¹ the sum of absolute difference between the proportional share of workers in a particular region and proportional share of workers in all regions.

$$S_{cej} = \frac{1}{2} \sum_{i=1}^m \left[\left| \frac{e_{ij}}{\sum_{i=1}^m e_{ij}} - \frac{\sum_{j=1}^m e_{ij}}{\sum_{i=1}^m \sum_{j=1}^m e_{ij}} \right| \right]$$

In the present paper coefficient has been taken out in terms of percentage because it is more convenient.

1. $\frac{1}{2}$ because the maximum value of

$$\sum_{i=1}^m \left| \left[\frac{e_{ij}}{\sum_{i=1}^m e_{ij}} - \frac{\sum_{j=1}^m e_{ij}}{\sum_{i=1}^m \sum_{j=1}^m e_{ij}} \right] \right|$$

is greater than 2.

$$S_{cej} = \frac{1}{\sum_{i=1}^m e_{ij}} \left[\frac{e_{ij}}{\sum_{i=1}^m e_{ij}} - \frac{\sum_{j=1}^m e_{ij}}{\sum_{i=1}^m \sum_{j=1}^m e_{ij}} \right] \times 100$$

The limits of the coefficient are 0 to 100. If the region has a proportional mix of the industry identical with the system (country/region) the coefficient would be zero. In contrast if all the employment of the region is concentrated in one industry the index would approach 100.

This coefficient thus measures the extent to which distribution of employment by industry classes in a given region deviates from such distribution for the country. This coefficient is helpful to the regional analysis seeking to implement a policy of diversification.

The trend of specialization has been worked for all districts of Rajasthan, Haryana, Punjab, Himachal Pradesh and Jammu & Kashmir. The trend of specialization has been worked out over a period of time.

An attempt has been made to analyse the following dimensions with the help of coefficient of specialization.

- 1) Specialization pattern of each district in 1961, 1971 and 1981.
- 2) To locate highly specialized and highly diversified districts.
- 3) To observe specialization pattern of each district with respect to region and country.

- 4) An attempt has been made to observe whether the districts industrial pattern has become more diversified or concentrated over the period 1961-71 both with respect to country and region.

An index of specialization has been worked out for all the district with respect to employment in the region and with respect to employment in the country. The specialization coefficient has been classified into three categories. The districts having a coefficient of more than 45 per cent have been classified as highly specialized districts, Group I. The districts having coefficients between 25 and 45 per cent are called moderately specialized districts, Group II. Districts with values less than 25 per cent are placed under the category of low level of specialization, Group III.

Referring to the basic formula the coefficient of specialization with respect to the country^C/region^R has

been expressed as follows:

$$S_{cej}^C = \frac{1}{2} \sum_{i=1}^n \left[\frac{e_{ij}}{\sum_{i=1}^n e_{ij}} - \frac{\sum_{j=1}^m e_{ij}}{\sum_{i=1}^n \sum_{j=1}^m e_{ij}} \right] \times 100$$

where

$$S_{cej}^R = \frac{1}{2} \sum_{i=1}^n \left[\frac{e_{ij}}{\sum_{i=1}^n e_{ij}} - \frac{\sum_{j=1}^m e_{ij}}{\sum_{i=1}^n \sum_{j=1}^m e_{ij}} \right] \times 100$$

S_{cej}^C = specialization coefficient with respect to total industrial employment in the country.

S_{cej}^R = specialization coefficient with respect to total industrial employment in the region.

Those districts which fell in the same category of low degree of specialization according to both measures

have been called hard core diversified districts and those which fell under medium level of specialization have been called hard core moderately specialized industries. Those industries which fell in the high level of specialization according to both the measures have been termed as hardcore specialized industries.

VI.2.1 SPECIALIZATION PATTERN OF DISTRICT WITH RESPECT TO REGION:1961:

There were 60 districts in the whole of North-western region in 1961. Out of that 26 were in Rajasthan, 9 in Himachal Pradesh, 9 in Jammu & Kashmir, 6 in Haryana and 10 in Punjab.

Haryana did not exist in 1961. Those districts of Punjab which fell in Haryana in 1971 have been taken together to form the state of Haryana in 1961.

Four districts fell in the category of high level of specialization in 1961. 20 districts came in the range of medium level of specialization and 36 districts were highly diversified. Thus most of the districts of the region were of diversified nature in 1961.

In Rajasthan out of 26 districts none was highly specialized. Alwar, Sawai Madhopur, Jaisalmer, Barmer, Dungarpur, Banswara and Bundi were moderately specialized. Rest of the 19 districts were highly diversified. It can be said that there was low level of specialization among districts of Rajasthan in 1961.

In Haryana none of the districts were highly specialized. Only one district was moderately specialized which was Mahendragarh. Rest of the five districts had highly dispersed industrial activity. Most parts of Haryana in 1961 had a wide variety of industrial activities.

In Punjab the picture was no different from Haryana, Kapurthala was the only district which had moderately concentrated industrial activity. Rest of eight districts had a wide variety of industries.

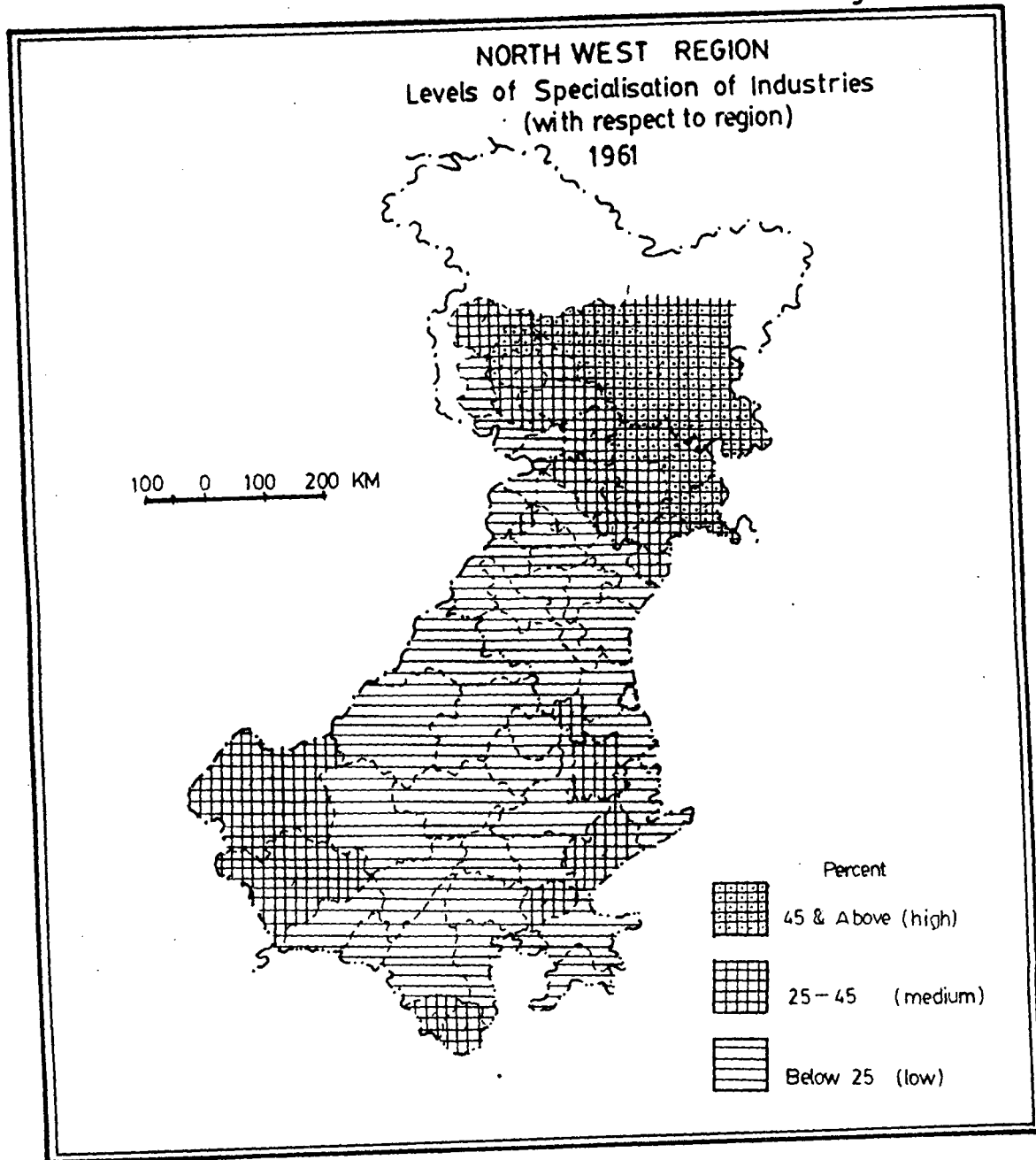
In Himachal Pradesh two districts were highly specialized. These were Lahul & Spiti and Kinnaur. Rest of the districts were moderately specialized. These were Chamba, Mandi, Bilaspur, Simla, Kangra, Sirmaur and Mahasu districts. The pattern of specialization of each of the districts was either moderately or highly specialized.

Two districts of Jammu & Kashmir were highly specialized, Srinagar and Ladakh. Four districts were moderately specialized. These were Anantnag, Baramula, Doda and Udhampur. Jammu, Kathua and Puncn districts were highly diversified. It can be concluded that there was a tilt towards specialization in J&K in the year 1961.

In 1961 Himachal Pradesh and Jammu & Kashmir districts showed a moderate and high level specialization in industrial activity whereas in Rajasthan, Haryana and Punjab they showed a highly dispersed level of industrial activity.

(Fig. VI.1)

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VI.2.2 SPECIALIZATION PATTERN OF DISTRICTS WITH RESPECT TO COUNTRY: 1961

The picture was somewhat different in the specialization pattern of districts with respect to country than with respect to the region.

Out of 60 districts in the North-west region as many as 8 districts were highly specialized, 37 were moderately specialized and 15 had low level of specialization. In general most of the districts had medium level of specialization in 1961.

In Rajasthan two districts - Jaisalmer and Dungarpur were highly specialized. 16 districts had medium level of specialization. They were Bikaner, Jhunjhunu, Alwar, Sawai Madhopur, Sikar, Tonk, Nagaur, Pali, Barmer, Jalore, Sirohi, Udaipur, Chittaurgarh, Banswara Bundi and Jhalawar. Ganganagar, Churu, Bharatpur, Jaipur, Ajmer, Jodhpur, Bhilwara and Kota were highly diversified. The state generally had medium level of specialization.

The districts of Haryana in 1961 were generally moderately specialized with none of the districts falling in the highly specialized category. Only Hisar district was highly diversified. Rest of the five districts fell under medium level of specialization.

In Punjab four districts were moderately specialized. Rest of the districts were highly diversified.

In Himachal Pradesh out of nine districts four were highly specialized. These were Chamba, Lahul & Spiti, Kinnaur and Mahasu. Rest of the five districts were moderately specialized.

As regards to Jammu & Kashmir two districts were highly specialized with respect to country namely Srinagar and Ladakh. Rest of the districts were moderately specialized.

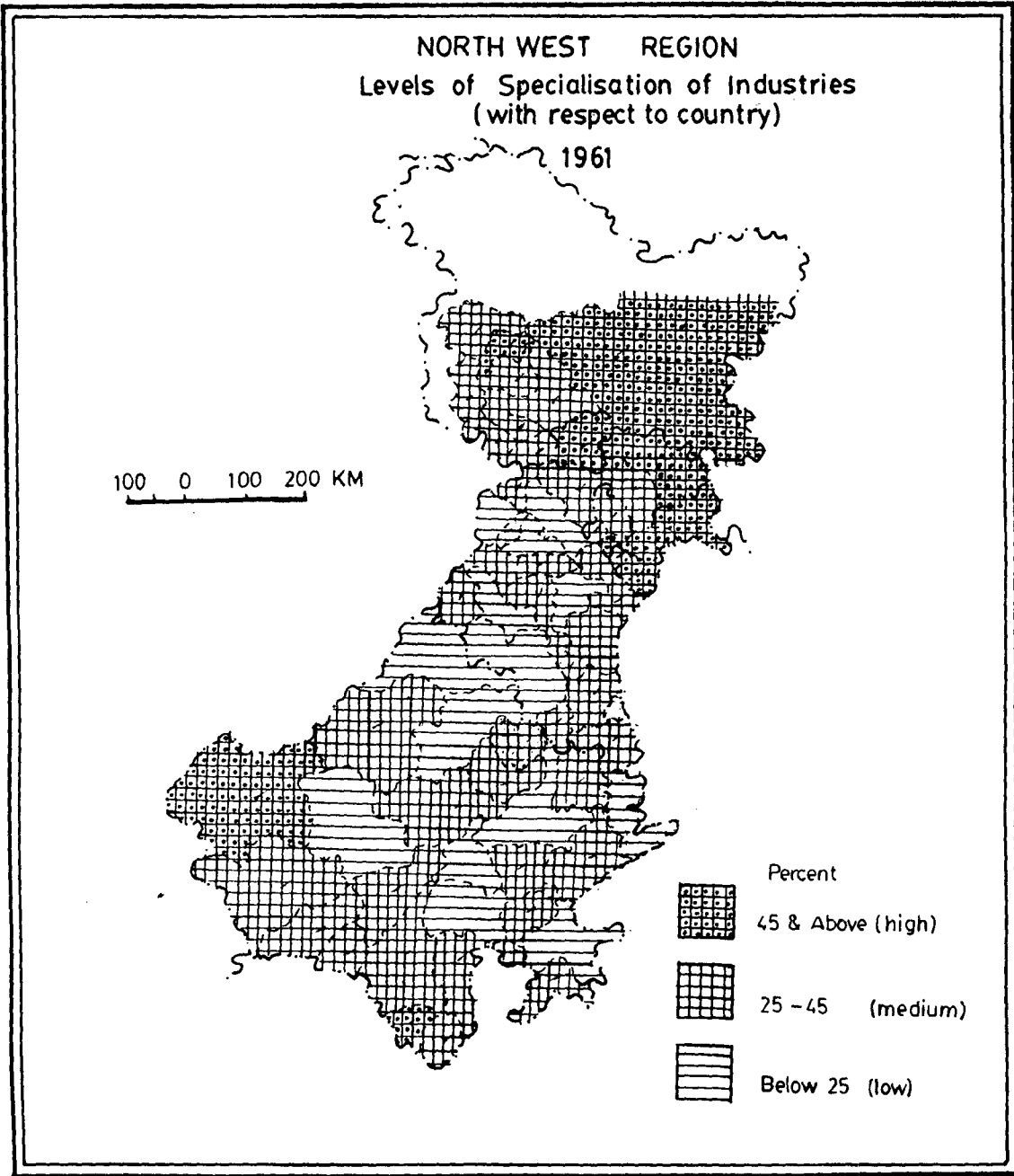
Districts of Himachal Pradesh were highly and moderately specialized. In J&K and Rajasthan most of them were moderately specialized. In Haryana all districts were moderately diversified except Hisar. In Punjab the districts were generally diversified. (Fig.VI.2)

VI.2.3 **HARDCORE SPECIALIZED, HARDCORE MODERATELY SPECIALIZED & HARDCORE DIVERSIFIED DISTRICTS :1961**

Four districts were highly specialized with respect to region as well as country. These were Lahul & Spiti, Kinnaur, Srinagar and Ladakh.

Fifteen districts were hardcore moderately specialized. These were Alwar, Sawai Madhopur, Barmer, Banswara, Bundi, Kangra, Mandi, Bilaspur, Sirmaur, Simla, Anantnag, Baramula, Doda, Udhampur, Mahendragarh.

Fourteen districts were hardcore highly diversified districts. These were Ganganagar, Churu, Bharatpur, Jaipur, Ajmer, Jodhpur, Bhilwara, Kota, Hisar, Amritsar,



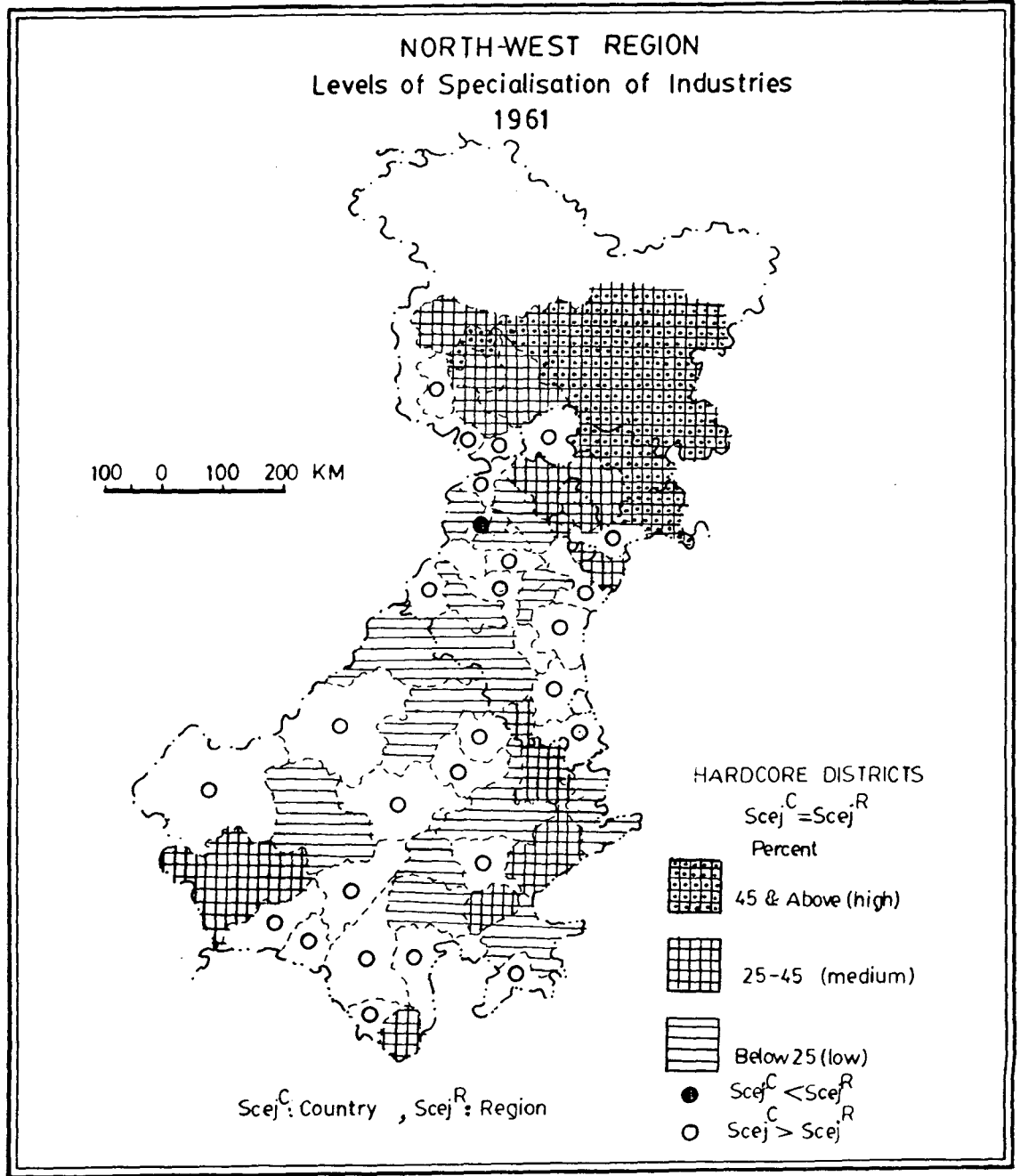
Jullundhar, Hoshiarpur, Patiala and Bhatinda.

Rest of the districts were variable districts. Jaisalmer, Dungarpur, Chamba, and Mahasu were highly specialized with respect to country and moderately specialized according to region.

Bikaner, Jhunjhunu, Sikar, Tonk, Nagaur, Pali, Jalore, Sirohi, Udaipur, Chittaurgarh, Jhalawar, Jammu, Kathua, Punch, Ambala, Karnal, Rohtak, Gurgaon, Gurdaspur, Ferozpur, Ludhiana and Sangrur were moderately specialized according to country and highly diversified according to region.

All the districts which were highly specialized according to region were also highly specialized according to the country only Kapurthala had medium level of specialization according to region and high level of diversification according to country. Some districts which were moderately specialized according to ^{region} but highly specialized according to country were Jaisalmer, Dungarpur, Chamba, and Mahasu.

The element of specialization both of high level and medium level was more with respect to country in comparison with respect to region. The difference was due to the difference in base magnitude. (Fig.VI.3)



VI.3.1 SPECIALIZATION PATTERN OF DISTRICTS IN 1971 WITH RESPECT TO REGION:

In 1971 there were as many as 64 districts in the north-western region. Three of the districts were highly specialized, 30 were moderately specialized. Rest of the 31 districts had low level of specialization.

None of the districts of Rajasthan were highly specialized. Nine districts were moderately specialized. There were Churu, Sikar, Jaisalmer, Pali, Barmer, Jalore, Sirohi and Banswara. Seventeen districts had diversified industrial structure.

The districts of Haryana which were moderately specialized were Gurgaon, Mahendragarh and Jind. Rest of the four districts - Ambala, Karnal, Rohtak and Hisar were highly diversified.

In Punjab most of the districts were generally diversified. Only Gurdaspur, Ludhiana and Kapurthala were moderately diversified.

In 1971 there were two districts of Himachal Pradesh which were highly specialized - Lahul & Spiti and Kinnaur. All other districts were moderately specialized.

Ladakh was highly specialized in Jammu & Kashmir, Kathua was highly diversified. Rest of the districts were moderately diversified.

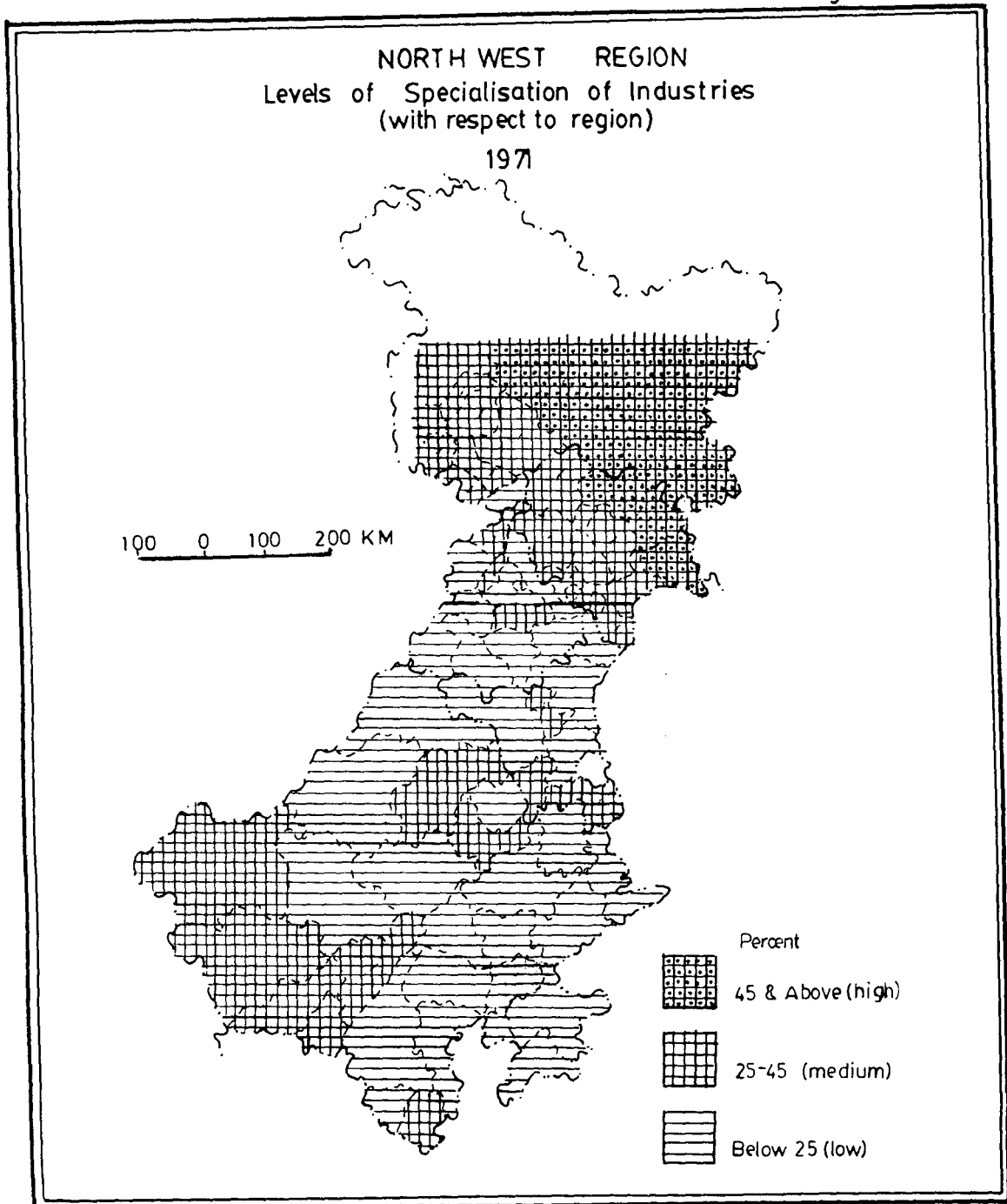
In the region, Rajasthan, Haryana and Punjab had diversified structure of industrial activity in most of the districts. In Himachal Pradesh and J&K the industrial activities were moderately and highly specialized to a large extent. (Fig.VI.4)

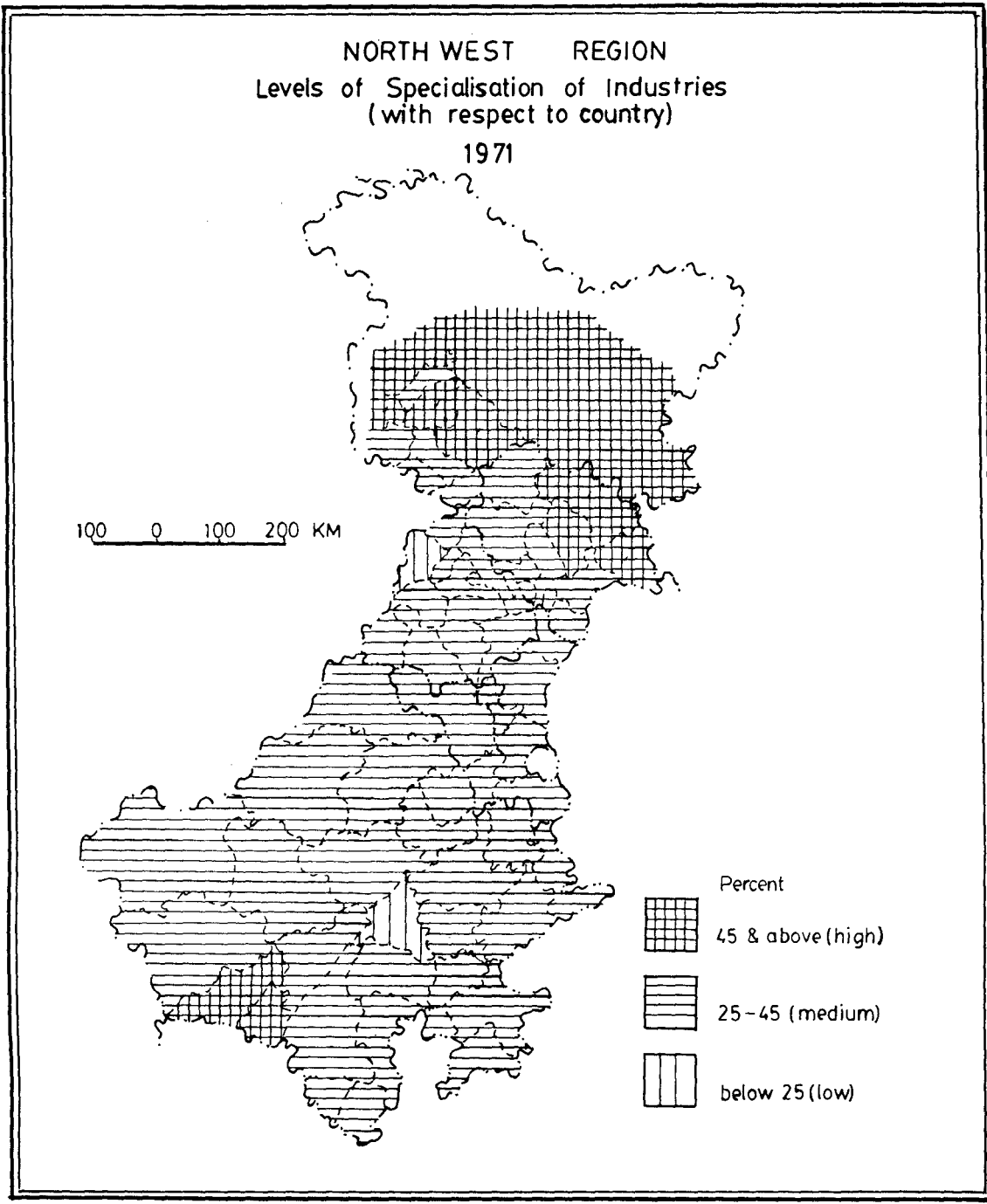
VI.3.2 SPECIALIZATION PATTERN OF DISTRICTS WITH RESPECT TO THE COUNTRY:1971.

Ten districts with respect to country were highly specialized. 52 districts were moderately specialized and only two districts were highly diversified. In Rajasthan, Jalore and Sirohi were highly specialized. Ajmer the only district which was highly diversified. Other districts were moderately specialized. In Haryana all the districts were moderately specialized. In Punjab none of the districts was highly specialized. Amritsar was highly diversified. Rest of the districts were moderately diversified. In Himachal Pradesh, Kullu, Lahul & Spiti, Kinnaur were highly specialized. Rest were all moderately specialized. In Jammu & Kashmir Anantnag, Baramula, Ladakh, Doda and Punch were highly specialized. Rest of them were moderately specialized. (Fig.VI.5)

VI.3.3 HARDCORE SPECIALIZED, HARDCORE MODERATELY SPECIALIZED AND HARD- CORE DIVERSIFIED DISTRICTS:1971

There were three hardcore highly specialized districts. These were Lahaul & Spiti, Kinnaur and Ladakh.



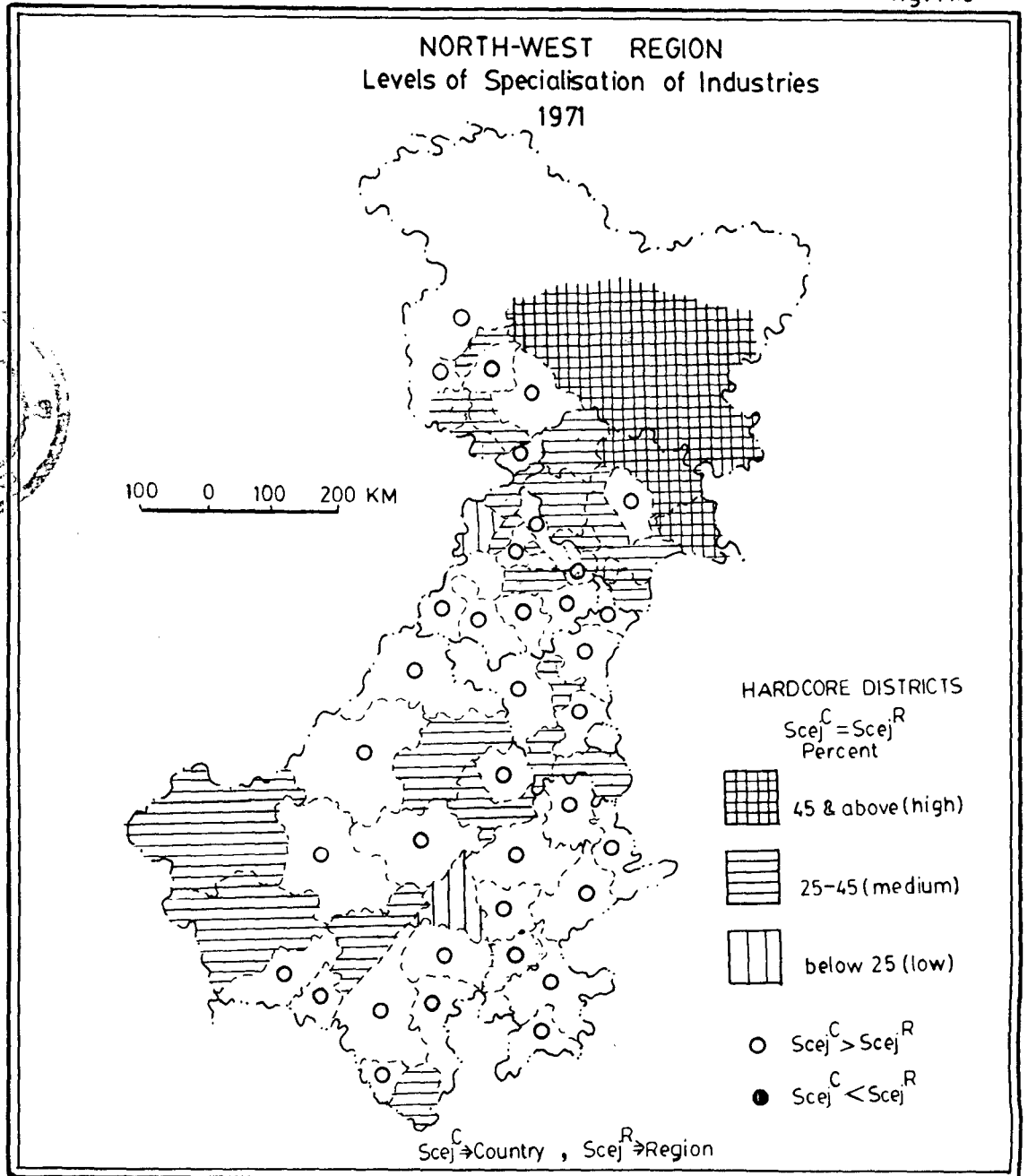
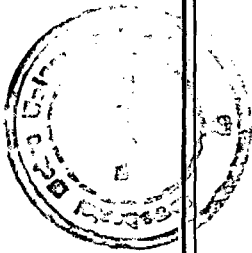


There were 22 hardcore moderately specialized districts, these were Churu, Sikar, Jaisalmer, Fali, Barmer, Banswara, Chamba, Kangra, Mandi, Bilaspur, Simla, Sirmaur, Mahasu, Srinagar, Udhampur, Jammu, Rajauri, Gurgaon, Mahendragarh, Jind, Gurdaspur, Ludhiana and Kapurthala. Only two districts were hardcore diversified districts Ajmer and Amritsar.

According to the region there were seven districts less under the category of high level of specialization than according to the country. These were Jalore, Sirohi, Kullu, Anantnag, Baramula, Doda and Punch. These districts were under the category of medium level of specialization according to region.

All the districts which were moderately specialized according to region were so according to country as well. Ajmer and Amritsar were highly diversified according to country's industrial employment so were they according to region.

It can be concluded that industrial activities in the region were dispersed to a large extent in Rajasthan, Punjab and Haryana when industrial employment of the region was the yardstick. But when the country's industrial employment was taken as the yardstick the picture was not very appealing and the region had more or less specialized industrial activities. (Fig.VI.6)



VI.4 SPECIALIZATION PATTERN OF DISTRICTS WITH RESPECT TO THE REGION :1981:

In 1981 the boundaries of the states remained the same but a lot of new districts came up by division of the districts already existing in 1971. There were as many as 75 districts in the Northwestern region against 64 in 1971.

Data for industrial employment of manufacturing industries for the country have not yet been published so the categorization of districts according to specialization coefficients with respect to country was not possible neither was there a possibility of classifying Hardcore specialized, Hardcore moderately specialized and Hardcore diversified districts.

An attempt, however, has been made to classify districts into high, medium and low level of specialization groups.

Out of 75 districts six districts showed high level of concentration. 28 districts showed medium level of specialization. 41 districts were showing high level of diversification which in itself was very good because most of the districts all over the region were highly diversified.

None of the districts of Rajasthan showed a high level of specialization. Tonk, Jaisalmer, Nagaur, Pali,

Barmer, Jalore, Chittaurgarh and Bundi showed medium level of concentration. Rest of the 18 districts showed a high level of dispersion.

In Haryana Ambala, Kurukshetra and Sonapat were the only districts with medium level of concentration. Rest of the nine districts had high level of diversification.

In Punjab Ludhiana, Kapurthala and Patiala were moderately specialized. Rest were the districts which had high level of diversification in industrial employment.

In Himachal Pradesh only Kinnaur gave a highly specialized picture. Chamba, Kangra, Kullu, Lahul & Spiti, Bilaspur, Simla, Solan and Hamirpur were moderately specialized. Manid, Sirmaur and Una gave the picture of diversified industrial activity.

In J&K Anantnag, Srinagar, Baramula, Badgam, and Kupwara were highly specialized. Leh (Ladakh), Doda, Udhampur, Rajauri, Punch were moderately specialized. Jammu and Kathua were the only highly diversified districts.

In Himachal Pradesh and Jammu & Kashmir, only two districts each were highly diversified. Rest of the three states had most of the districts falling under the category of high level of diversification.

VI.5 TRENDS IN SPECIALIZATION LEVEL
WITH RESPECT TO REGION - A DISTRICT
LEVEL ANALYSIS - 1961-71

This part of the chapter deals with the trends in specialization level at district level for the decade 1961-71. 1981 could not be taken into account because the boundaries of the districts changed in 1981 and quite a few new districts emerged. Data at tehsil and village level not being available intertemporal change in specialization level for the period 1961-71-81 could not be worked out.

There was a change in the boundaries of four districts between 1961 and 1971. Those districts have been adjusted according to 1961. Kullu district of Himachal Pradesh (1971) was a part of Kangra district (1961), so the employment data of Kullu & Kangra (1971) have been clubbed together to make it comparable with the data of Kangra (1961). The same adjustment has been made in Rajauri district (1971) which was a part of PUNCH district in 1961.

Jind district (1971) of Haryana was a part of Sangrur districts (1961) of Punjab. So the employment data of Jind (1961) have been formed in proportion with the area of Jind lying under Sangrur district in 1961. Ropar district (1971) of Punjab was formed by part of Hoshiarpur (1961) and Ambala (1961). So the employment data of Ropar

(1961) have been formed in proportion with area of Ropar being under Ambala (1961) and under Hoshiarpur (1961).

It is evident from the table that three districts in the whole region stayed in the category of high degree of specialization in 1971 since 1961. These districts were Lahul & Spiti and Kinnaur of Himachal Pradesh and Ladakh of Jammu & Kashmir. (see table VI.1)

Srinagar of Jammu & Kashmir joined the group of medium level of specialization in 1971 whereas it was highly specialized in 1961.

None of the districts in the region showed a high diversification trend over the decade. There was no such district which fell from highly specialized to highly diversified group from 1961 to 1971. There was no district which joined high level of specialization group from medium level of specialization group over the decade.

There were as many as seventeen districts in 1971 in the category of medium level of specialization which fell in this category in 1961 as well. So the trend in these districts didn't change over the period 1961-71. These districts were Jaisalmer, Barmer and Bundi of Rajasthan, Chamba, Kangra, Mandi, Bilaspur, Simla, Sirmaur and Mahasu of Himachal Pradesh, Anantnag, Baramula, Doda and Udhampur of Jammu & Kashmir, Mahendragarh of Haryana and Kapurthala of Punjab.

Only five districts diversified from medium level of specialization to low level of specialization in 1961-71. These were Alwar, Sawai Madhopur and Dungarpur of Rajasthan, Ambala of Haryana and Hoshiarpur of Punjab.

None of the districts became highly specialized from highly diversified over the decade. There were, however, eleven districts which became moderately specialized in 1971 from highly diversified in 1961. These were Churu, Sikar, Pali, Jalore and Sirohi of Rajasthan, Jammu & Puncb of Jammu & Kashmir, Gurdaspur and Ludhiana of Punjab and Gurgaon, Jind of Haryana. Rest of the twentyfive districts were highly diversified both in 1961 as well as in 1971.

As many as eleven districts joined the group of medium level of specialization in 1971 from low level specialization group in 1961. So the trend had been of concentration of industrial activity over the decade. Not more than five districts, diversified from medium level of specialization in 1961 to low level of specialization in 1971. Seventeen districts stayed moderately specialized in 1961-71. Only one district diversified from highly specialized group to moderately specialized group. (see Table VI.1)

It can be concluded that in 1961 and 1971 most of the districts were highly and moderately diversified.

Table VI.1

Trends in specialization level 1961-71

1. High to High	Lahul & Spiti, Kinnaur (H.P.), Ladakh (J&K)
2. High to Medium	Srinagar J & K.
3. High to Low	None
4. Medium to High	None
5. Medium to Medium	Jaisalmer, Bamer, Banswara, Bundi (Rajasthan) Chamba, Kangra, Mandi, Bilaspur, Simla, Simaur, Mahasu (H.P.), Anantnag, Baramula, Doda, Udhampur (J & K), Mahendragarh (Haryana), Kapurthala(Punjab)
6. Medium to Low	Alwar, Sawaimadhopur, Dungarpur (Rajasthan), Ambala (Haryana), Hoshiarpur (Punjab)
7. Low to high	None
8. Low to Medium	Churu, Sikar, Pali, Jalore, Sirohi (Rajasthan) Jammu, PUNCH (J & K), Gurdaspur, Ludhiana (Punjab) Gurgaon, Jind (Haryana)
9. Low to Low	Ganganagar, Bikaner, Jhunjhunu, Bharatpur, Jaipur, Ajmer, Tonk, Jodhpur, Nagaur, Bhilwara, Udaipur, Chittaurgarh, Kota, Jhalawar(Rajasthan) Amritsar, Ferozpur, Jullundhar, Patiala, Sangrur, Bhatinda, Ropar (Punjab).

Rajasthan, Haryana and Punjab had highly diversified industrial activity and Jammu & Kashmir and Himachal Pradesh had moderately diversified industrial activity in 1961 and 1971.

VI.6 TRENDS IN SPECIALIZATION LEVEL OF STATES WITH RESPECT TO REGION: 1961-71-81

In 1961 the specialization coefficient of Rajasthan was 12.33 per cent which means the state was highly diversified. In 1971 the coefficient of specialization was 13.35 per cent. Though the level of specialization became slightly concentrated but the change was insignificant. The state remained under high level of diversification group. In 1981 the coefficient of specialization was 13.79 per cent. The state remained highly diversified with a very insignificant rise in the concentration level.

Haryana was highly diversified in 1961. The coefficient of localization was 10.92 per cent. In 1971 the specialization level remained highly diversified and there was a small rise in the specialization coefficient which became 12.89. In 1981 the coefficient of specialization rose to 17.96 per cent. Thus the specialization level concentrated but the state continued to fall in the category of high level of diversification.

Punjab was highly diversified in 1961 the coefficient being 11.4 per cent. In 1971 the coefficient of specialization reached 12.45 per cent which shows an

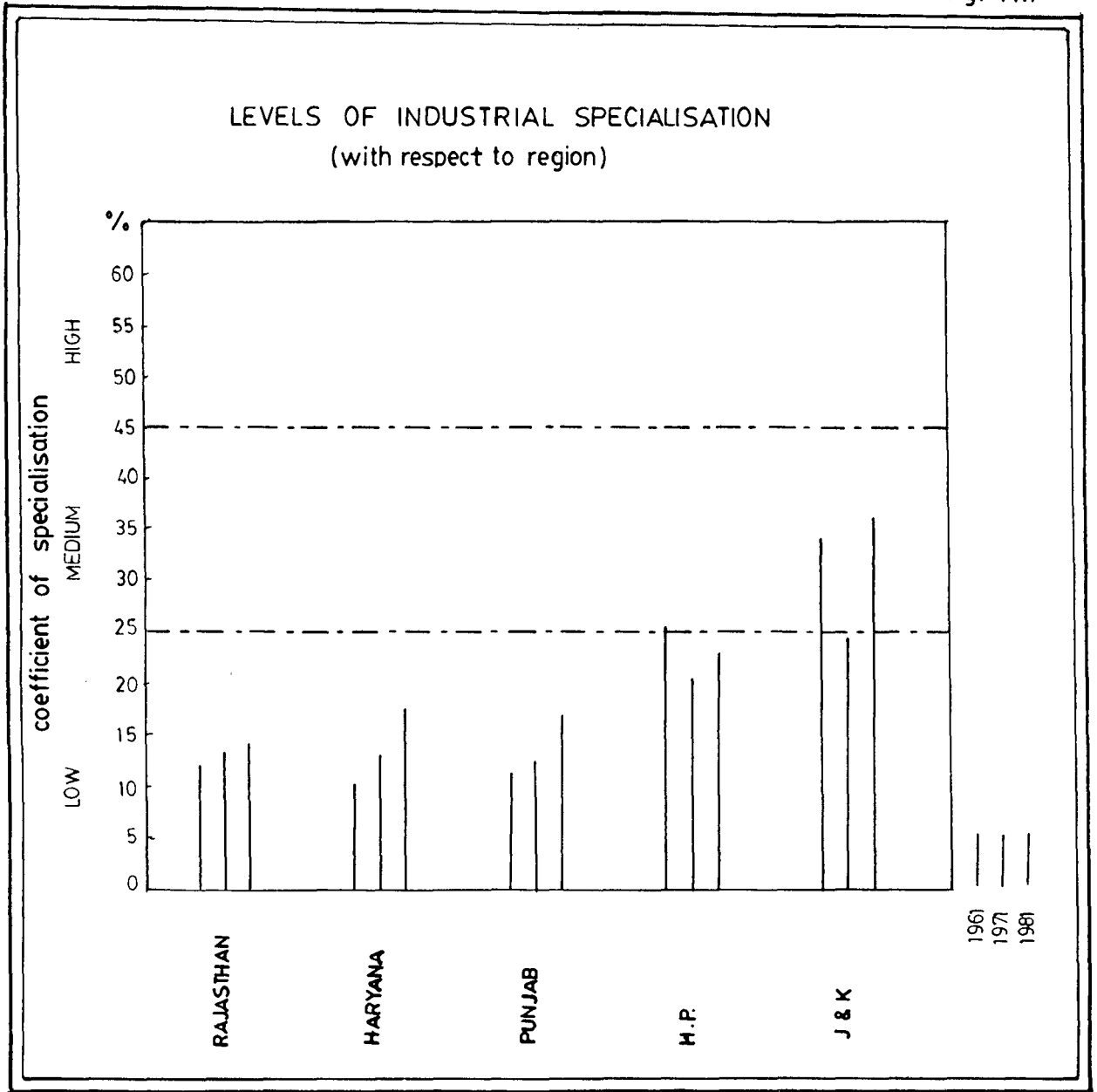
insignificant rise in concentration level. In 1981 again the state remained highly diversified though the coefficient of specialization increased to 17.36 per cent.

Himachal Pradesh was moderately specialized in 1961 with the coefficient of specialization at 25.2 per cent. In 1971 the state diversified in specialization level with a coefficient of 20.59 per cent. The state joined high level of diversification group in 1971 from medium level of diversification group in 1961. In 1981 the coefficient of specialization was 23.49 per cent. The coefficient rose a little but the state still fell in the high level of diversification group.

Jammu & Kashmir, again was moderately specialized with a coefficient of 34.28 per cent in 1961. The coefficient fell to 24.39 per cent in 1971 and the state became highly diversified. But, once again, in 1981 the state became moderately specialized with the coefficient reaching 36.45 per cent. Jammu & Kashmir was the only state which fell from moderately specialized category in 1961 to highly diversified category in 1971 and back to moderately diversified category in 1981.

In 1961 Rajasthan, Haryana and Punjab were highly diversified and Himachal Pradesh and Jammu and Kashmir were moderately specialized. In 1971 all the five states fell in the group of high level of diversification. In

fig. VI.7



1981 only Jammu & Kashmir was moderately specialized. Rest of the states were highly diversified. (Fig.VI.7)

In 1961 Jammu & Kashmir had highest specialization coefficient, followed by Himachal Pradesh, Rajasthan, Punjab and then Haryana. In 1971 Jammu & Kashmir occupied the highest specialization position followed by Himachal Pradesh and Rajasthan in the same order. Punjab, however, was least specialized this time. Haryana followed Rajasthan in specialization level. (Fig.VI.7)

In 1981 the pattern of 1971 was repeated with Jammu & Kashmir leading in specialization level and Punjab being least specialized.

CHAPTER VII

CONCLUSIONS AND SUMMARY

Location of industries has been an interesting topic among both Economists and Geographers. Exhaustive work has been done in both the fields of social sciences. The location theory owes its recognition to Alfred Weber who is regarded as the Father of location theory. This theory received impetus by Florence and Isard and exploratory work has been going on in this field till to date.

The present study helps us arrive at a few conclusions. An investigation into the structure of Industries in North-western region highlighted the fact that the number of male workers increased from 1961 to 1981. The industries with high level of employment in the entire North-western region were wood & wood products, leather, leather & fur products, food products, textile products and non-metallic mineral products. The reason for high level of employment in these industries may be attributed to the physical setting, climatic conditions, availability of raw materials and infrastructural facilities. Some industries lacked these facilities and had a low level of employment. These were rubber, plastic, coal & petroleum products, jute, hemp & mesta textiles and chemicals & chemical products. A similar pattern was observed in each of the five states. Rajasthan had high level of employment in leather, leather

& fur products industry, textile products & non-metallic mineral products industry. Haryana had high level of employment in non-metallic mineral and textile products industries. Punjab had high level of employment in food products and cotton textile industries. Himachal Pradesh had high level of employment in wood & wood products and textile products industries. Jammu & Kashmir had high employment level in leather, leather & fur products, textile products, paper & paper products and other industries.

A point worth-mentioning is that in the whole region as well as in the states except Haryana and Himachal Pradesh, the total number of industries under high level of employment decreased in 1981 since 1961. The number fell from six to three in the region; from five to four in Rajasthan, from five to two in Punjab, from four to one in Jammu & Kashmir, and stayed constant at four in Himachal Pradesh. The number of industries under high level increased in Haryana from three to four. While the number of industries under medium level of employment increased in all the states. The reason could be that the employment of workers were being distributed among various industries because of general increase in the level of industrial activity. So number of industries under medium level of employment have increased during 1961-81. The number of industries under low level of employment decreased in Rajasthan, Haryana and Himachal Pradesh. It remained

constant in Punjab and increased in Jammu & Kashmir. Decrease in the number of industries under low employment is a good sign because the employment level of these industries have increased in three states.

The industrial base of the five states with respect to region have decreased, as well as increased in 1961-71. In Rajasthan the total number of industries forming industrial base in 1961 were seven. It decreased to 54% in 1971. In Haryana it increased from eight to ten; in Punjab from nine to thirteen; in Himachal Pradesh from eight to nine and in J&K from five to seven during 1961-71. Except Rajasthan all the states had addition to their industrial base in 1961-71. The number of industries forming industrial base during 1971-81, however, declined in Punjab from thirteen to eleven, in Jammu & Kashmir from seven to four and in Himachal Pradesh from nine to eight. The number of industries forming industrial base in Haryana remained constant at ten during 1971-81 and in Rajasthan increased from six to eight during 1971-81. The industrial base with respect to country, however, strengthened in all the five states during 1961-71. The number of industries forming industrial base increased from five to six in Rajasthan, from eight to nine in Haryana, from eight to nine in Punjab from five to seven in Himachal Pradesh and from five to six in J&K in the

same period. Industrial base with respect to country shows a tendency towards strengthening Industrial activities in all states under study.

An inter-state comparison of Industrial base during 1961-71 and 1971-81 showed that industries had their base in states which had the raw materials for these industries. Manufacture of food products had its base in Himachal Pradesh and in Punjab in 1971 & 1981 and in Haryana & J&K in 1971. Manufacture of beverages & tobacco products had its base in Rajasthan and Himachal Pradesh in 1961, 1971 & 1981 and in Haryana in 1981. Manufacture of cotton textiles had its base Rajasthan & Punjab in 1961, 1971 & 1981. Manufacture of wool, silk & synthetic textiles had its base in Himachal Pradesh & Jammu & Kashmir in 1961, 1971 & 1981. Manufacture of wood & wood products had its base in Jammu & Kashmir, Rajasthan & Himachal Pradesh in all three decades. Manufacture of rubber, plastic, petroleum & coal products, and manufacture of transport equipment had their base in Punjab & Haryana in all the three decades. Manufacture of non-metallic mineral products had its base in Rajasthan & Haryana in 1961, 1971 and 1981. Manufacture of basic metals & alloy industries had its base in Punjab and Haryana in 1971 & 1981 and in Rajasthan and Himachal Pradesh in 1961 and 1981.

A district level analysis of industrial base with respect to region in 1981 showed that food products industries had maximum number of districts having its base. Total number of districts which had its industrial base was forty-nine. This was followed by wood & wood products industries with forty seven districts having its base. Manufacture of metal products & parts had its base in thirty-nine districts. Manufacture of non-metallic mineral products and leather, leather & fur products explicit their base in thirty-five and thirty-four districts respectively. Rest of the industries had less than half of the total districts in north-western region as their industrial base. The industries with least number of districts having their base was jute, hemp and mesta textiles. Just above it was machine tools & parts and transport equipments industries with twelve districts each having their base. Above them came manufacture of rubber, plastic, coal & petroleum products with base in thirteen districts.

A study of levels of localization of Industries reveals that in the North-western region the number of industries under high level of localization increased from five to six during 1961-71 and again decreased to five in 1981. The number of industries with medium level of localization increased from six to seven during 1961-71

and from 7 to 8 during 1971-81. The number of industries with low level of localization fell from eight to six in 1961-71 and remained constant at six in 1981. There was a tendency towards medium level of diversification of industries in 1961-81.

In Rajasthan the number of industries with high level of localization increased during 1961-71 and decreased during 1961-71 and decreased in 1981. Under medium level of localization the number fell during 1961-71 and rose in 1981. In the low level of localization group the number of industries increased during 1961-71 and decreased in 1981. The same case was repeated with Haryana except for the fact that the number of industries remained constant under low level of localization group during 1971-81. In Punjab and Himachal Pradesh the number of industries under high level group increased, the number of industries under medium level group decreased and under low level group remained constant during 1961-81. A similar tendency was observed in Jammu and Kashmir. The number of industries under high level of localization group increased and decreased under medium level of employment during 1961-81. However, the number of industries under low level of localization group decreased in the same period.

No clear trend on diversification of industries has been observed but it can be said that the diversification

level of industries was high in Rajasthan and Haryana in all the three decades. In Punjab there was medium and high level of diversification of industries in all three decades.

In Himachal Pradesh maximum number of industries fell in high level of diversification group in 1961, 1971 and 1981. In Jammu & Kashmir, however, the picture was different. Maximum number of industries fell under medium level of localization group in 1961. In 1971 most of the industries had high level of diversification. But in 1981 most of the industries were highly localized.

The levels of Industrial specialization with respect to region in 1961, showed high & moderate level of specialization ⁱⁿ districts of Himachal Pradesh and Jammu & Kashmir. In Rajasthan, Haryana and Punjab the districts showed a highly dispersed level of industrial activity. With respect to country, the districts of Himachal Pradesh were highly and moderately specialized. Most of the districts of Rajasthan, Jammu & Kashmir and Haryana were moderately diversified while in Punjab districts were highly diversified. Out of sixty districts in the whole of North-western region four were highly specialized, twenty were moderately specialized and thirtysix were highly diversified with respect to region. With respect to country eight districts were highly specialized, thirtyseven districts were moderately specialized and

fifteen districts had low level of specialization.

In 1971 out of sixty four districts, three were highly specialized, thirty were moderately specialized and thirtyone were highly diversified with respect to region. With respect to country, ten were highly specialized while fiftytwo moderately specialized and only two districts were highly diversified. Districts of Rajasthan, Haryana and Punjab were moderately specialized. Districts of Himachal Pradesh and J&K had medium and high level of specialization.

In 1981, with respect to the region six districts were highly specialized twentyeight districts were moderately specialized and fourtyone districts were highly dispersed. Rajasthan, Haryana & Punjab had high dispersion level. Districts of Himachal Pradesh and Jammu & Kashmir were mostly moderately specialized with a few of them being highly specialized.

Trends in the industrial specialization at district level showed that eleven districts joined the group of medium level of specialization in 1971 from 1961. So the trend reflects concentration of industrial activity over the decade. Five districts diversified from medium level in 1961 to low level of specialization in 1971. Seventeen districts stayed moderately specialized in 1971 against 1961. Only one district diversified from

highly specialized to moderately specialized group in 1971 from 1961.

Trends in the specialization level ^{with respect to regions} of five states during 1961-71-81 showed that in 1961 Rajasthan, Haryana and Punjab were highly dispersed. While Himachal Pradesh and Jammu & Kashmir were moderately specialized. However, in 1971 all the five states were highly diversified. In 1981 only Jammu & Kashmir had medium level of specialization. Rest of the states were highly diversified.

It has been observed that there is no single factor that determines the location of industry at a particular site. There are in fact a number of interrelated factors influencing location of industries and it is the cumulative effect of all these factors like climatic conditions, physiography, raw materials, power and communication that affect location.

The present empirical work tried to find out whether there was a tendency towards diversification of Industries over the period of 1961-81 at state and district level. Though the trends towards dispersal of industries have mostly been insignificant, yet at some level or the other, a diversification trend could be observed. But what remains of importance is that there has not been a sign of steady diversification of industries since 1961-71-81.

There is a lot of scope for the North-western region to develop industrially with the help of diversification of industries. A proper planning and suitable industrial policy would lead this region to a high level of development. Dispersal of industries has been one of the most important features of balanced regional development and both central government and state governments should concentrate more and more on this line. Diversification of industries would lead to industrial development and industrial development would lead to over all economic development of the region.

Despite the attempts to investigate the problems, there remain a few limitations regarding this study. The changes in the boundaries of districts could not allow a comparison of industrial base and levels of specialization at district level over the period 1961-81. Besides, selection of more than one indicator would have led to a better insight of the problem. At the same time, to observe a diversification trend a longer period of time is desired.

There is a lot of scope for further development of this empirical work. The correlation between factors influencing location of industries and specialization of industries could be worked out to observe over all development of the region. To highlight the industrial development of the region technological factors could have been taken into account and technological clusters of industries could be worked out.

APPENDIX I

Comparison Chart of NIC 1970 and SIC 1960

Division 2&3 - Manufacturing & repair

N.I.C. 1970SIC 1960

1.	20-21 Manufacture of food products	20 & 21 (215,217,218,219 and 33 (338))
2.	22 Manufacture of Beverages, Tobacco & Tobacco products	22 & 21 (all minor groups except 215,217,218,219)
3.	23 Manufacture of cotton textiles	23 (exclude 238 & 239)
4.	24 Manufacture of wool, silk & synthetic textiles	25, 27 (part of 276, 279) and 26 (except 266)
5.	25 Manufacture of Jute, hemp & mesta textiles	24 (exclude a part of 244 of 24 and 27 (part of 276))
6.	26 Manufacture of textile products (including wearing apparel other than footwear)	27 (except part of 276) Also cover 238 & 239 of 23 and a part of 244 of 24 and 266 of 26
7.	27 Manufacture of wood & wood products furniture & fixtures	28
8.	28 Manufacture of paper & paper products and printing publishing and allied industries.	29 & 30
9.	29 Manufacture of leather & leather products (except repair)	31 (excluding 314 & 315)
10.	30 Manufacture of Rubber, plastic, petroleum and coal products	32 (also part 337 of 33)
11.	31 Manufacture of chemicals & chemical products (except products of petroleum & coal)	33 (excluding part 337 and 338 of 33)

- 12. 32 Manufacture of non-metallic mineral products 34 & 35
- 13. 33 Basic metal & alloy industries 36 (360 and 361)
- 14. 34 Manufacture of metal products and parts except machinery and transport equipments. 36 (except 360, 361 & 362 of 36)
- 15. 35 Manufacture of machinery, machine tools & parts except electrical machinery 37 (includes 370, 371, 372 & 373 only) 36 (362 only)
- 16. 36 Manufacture of electrical machinery, Apparatus, Appliances and supplies and parts 37 (includes 374 to 379)
- 17. 37 Manufacture of transport equipments & parts 38 (excludes 384 and 388)
- 18. 38 other manufacturing industries 39 (excludes a part of 392 & 399)
- 19. 39 repair 31 (314, 315) 38 (384 & 388) 39 parts of 392 & 399)

APPENDIX II

NAME OF INDUSTRIAL GROUPS

S.No.	Name of Industrial Groups	Code No.
1.	Manufacture of Food Products	1
2.	Manufacture of Beverages, Tobacco and Tobacco products	2
3.	Manufacture of Cotton Textiles	3
4.	Manufacture of Wood, Silk & Synthetic Textiles	4
5.	Manufacture of Jute, Hemp and Mesta Textiles	5
6.	Manufacture of Textile Products	6
7.	Manufacture of Wood & Wood Products Furniture and Fixtures	7
8.	Manufacture of Paper & Paper Products and printing, publishing and allied industries	8
9.	Manufacture of Leather, Leather & Fur Products (except repair)	9
10.	Manufacture of Rubber, Plastic, Coal and Petroleum Products	10
11.	Manufacture of Chemicals & Chemical Products (except products of Petroleum & Coal)	11
12.	Manufacture of Non-metallic Mineral Products	12
13.	Basic Metal & Alloy Industries	13

S.No.	Name of Industrial Groups	Code No.
14.	Manufacture of Metal Products & Part except machinery and Transport equipments	14
15.	Manufacture of Machinery, Machine Tools and Parts except electrical machinery	15
16.	Manufacture of electrical machinery apparatus, Appliances and supplies and parts	16
17.	Manufacture of Transport equipment and parts	17
18.	Other Manufacturing Industries	18
19.	Repair	19

APPENDIX-IIISTATEWISE NAMES OF DISTRICTS 1961-71

<u>Code No.</u>	<u>Name</u>	<u>Code No.</u>	<u>Name</u>
	<u>RAJASTHAN</u>		
1.	Ganganagar	26.	Jhalawar
2.	Bikaner		<u>HIMACHAL PRADESH</u>
3.	Churu	27.	Chamba
4.	Jhunjhunu	28.	Kangra
5.	Alwar	29.	Mandi
6.	Bharatpur	30.	Kullu(1971 only)
7.	Sawai madhopur	31.	Lahul & Spiti
8.	Jaipur	32.	Bilaspur
9.	Sikar	33.	Simla
10.	Ajmer	34.	Sirmaur
11.	Tonk	35.	Kinnaur
12.	Jaisalmer	63.	Mahasu
13.	Jodhpur		<u>JAMMU & KASHMIR</u>
14.	Nagaur	36.	Anantnag
15.	Pali	37.	Srinagar
16.	Barmer	38.	Baramula
17.	Jalore	39.	Ladakh
18.	Sirohi	40.	Doda
19.	Bhilwara	41.	Udhampur
20.	Udaipur	42.	Jammu
21.	Chittaurgarh	43.	Kathua
22.	Dungarpur	44.	Rajauri(1971 only)
23.	Banswara	45.	Punch
24.	Bundi		<u>HARYANA</u>
25.	Kota	46.	Ambala

<u>Code No.</u>	<u>Name</u>
47.	Karnal
48.	Rohtak
49.	Gurgaon
50.	Mahendragarh
51.	Hisar
52.	Jind(1971 only)
 <u>PUNJAB</u>	
53.	Gurdaspur
54.	Amritsar
55.	Ferozpur
56.	Ludhiana
57.	Jullundhar
58.	Kapurthala
59.	Hoshiarpur
60.	Patiala
61.	Sangrur
62.	Bhatinda
64.	Ropar(1971 only)

APPENDIX-III

Statewise names of Districts -1981

<u>Code No.</u>	<u>Name</u>	<u>Code No.</u>	<u>Name</u>
	<u>RAJASTHAN</u>		
1.	Ganganagar	25.	Kota
2.	Bikaner	26.	Jhalawar
3.	Churu		<u>HIMACHAL PRADESH</u>
4.	Jhunjhunu	27.	Chamba
5.	Alwar	28.	Kangra
6.	Bharatpur	29.	Mandi
7.	Sawaimadhopur	30.	Kullu
8.	Jaipur	31.	Lahul & Spiti
9.	Sikar	32.	Bilaspur
10.	Ajmer	33.	Simla
11.	Tonk	34.	Sirmaur
12.	Jaisalmer	35.	Kinnaur
13.	Jodhpur	63.	Hamirpur
14.	Jagaur	64.	Una
15.	Pali	65.	Solan
16.	Barmer		<u>JAMMU & KASHMIR</u>
17.	Jalore	36.	Anantnag
18.	Sirohi	37.	Srinagar
19.	Bhilwara	38.	Baramula
20.	Udaipur	39.	Leh(Ladakh)
21.	Chittaurgarh	40.	Doda
22.	Dungarpur	41.	Udhampur
23.	Banswara	42.	Jammu
24.	Bundi	43.	Kathua

<u>Code No.</u>	<u>Name</u>	<u>Code No.</u>	<u>Name</u>
		57.	Jhullundher
44.	Rajauri	58.	Kapurthala
45.	Punch	59.	Hosiarpur
66.	Badgan	60.	Patiala
67.	Kupwara	61.	Sangrur
68.	Kargil	62.	Bhatinda
	<u>HARYANA</u>	72.	Faridkot
46.	Ambala	73.	Rupnagar
47.	Karnal		
48.	Rohtak		
49.	Gurgaon		
50.	Mahendragarh		
51.	Hisar		
52.	Jind		
69.	Bhivani		
70.	Kurukshetra		
71.	Sonipat		
75.	Faridabad		
76.	Sirsa		
	<u>PUNJAB</u>		
53.	Gurdaspur		
54.	Amritsar		
55.	Ferozpur		
56.	Ludhiana		

APPENDIX IV

PERCENTAGE OF EMPLOYMENT IN MANUFACTURING INDUSTRIESNorth Western Region

Code No. of Industrial Group	1961	1971	1981
1.	11.03	9.38	10.66
2.	0.88	0.94	0.61
3.	12.05	9.41	8.20
4.	1.87	2.03	1.84
5.	0.76	0.69	0.38
6.	11.12	12.42	15.78
7.	13.22	11.40	9.58
8.	1.69	1.72	1.63
9.	12.30	9.16	4.91
10.	0.28	0.77	1.13
11.	1.11	1.17	1.39
12.	10.02	11.31	9.48
13.	1.52	1.63	3.05
14.	7.82	6.83	5.80
15.	1.16	4.11	3.42
16.	1.04	0.82	0.82
17.	1.75	1.85	1.84
18.	5.25	7.32	5.63
19.	5.15	7.02	13.81

PERCENTAGE OF EMPLOYMENT IN MANUFACTURING INDUSTRIESRajasthan

Dode No. of Industrial Group	1961	1971	1981
1.	8.20	8.13	9.87
2.	1.65	1.78	0.84
3.	13.21	10.39	9.89
4.	0.80	1.37	1.30
5.	0.22	0.56	0.29
6.	10.33	10.81	13.48
7.	13.26	12.20	11.24
8.	1.22	1.11	1.17
9.	14.95	12.88	9.57
10.	0.14	0.32	1.04
11.	0.73	0.92	1.03
12.	13.84	12.36	11.56
13.	1.78	0.83	1.64
14.	4.29	5.60	5.50
15.	0.73	1.24	1.01
16.	0.12	0.41	0.56
17.	1.05	0.32	0.80
18.	7.76	3.41	8.44
19.	5.70	5.20	12.72

PERCENTAGE OF EMPLOYMENT IN MANUFACTURING INDUSTRIESHaryana

Code No. of Industrial Group	1961	1971	1981
1.	13.40	8.93	12.80
2.	0.28	0.02	0.48
3.	8.96	9.94	6.58
4.	0.70	0.73	0.54
5.	0.86	0.47	0.14
6.	9.50	8.93	10.96
7.	1.41	8.98	0.91
8.	3.21	2.99	2.38
9.	13.68	8.79	3.73
10.	0.36	1.75	1.48
11.	0.71	0.96	1.64
12.	14.31	16.88	13.88
13.	1.24	2.41	2.71
14.	7.01	7.71	8.91
15.	0.56	5.25	2.56
16.	1.27	1.74	1.00
17.	1.76	1.58	2.89
18.	4.71	4.11	3.78
19.	5.87	7.66	16.62

PERCENTAGE OF EMPLOYMENT IN MANUFACTURING INDUSTRIESPunjab

Code No. of Industrial Group	1961	1971	1981
1.	11.49	9.64	10.33
2.	0.53	0.50	0.35
3.	3.04	10.28	9.27
4.	1.09	2.40	2.71
5.	1.34	1.19	0.70
6.	10.73	12.84	4.91
7.	12.67	9.84	7.98
8.	1.19	1.66	1.68
9.	9.75	5.98	2.93
10.	0.40	0.90	1.31
11.	1.81	1.57	1.71
12.	5.57	8.15	5.90
13.	1.56	2.46	5.96
14.	11.46	7.40	4.42
15.	2.14	7.80	8.23
16.	2.00	1.04	1.25
17.	2.58	4.32	3.23
18.	3.40	3.41	3.62
19.	4.95	8.66	16.18

PERCENTAGE OF EMPLOYMENT IN MANUFACTURING INDUSTRIESHimachal Pradesh

Code No. of Industrial Group	1961	1971	1981
1.	16.34	16.59	15.96
2.	1.41	1.57	1.56
3.	2.40	0.71	1.75
4.	4.25	4.20	3.10
5.	0.30	0.00	0.00
6.	13.22	15.20	13.96
7.	23.59	21.04	16.62
8.	1.99	2.00	2.19
9.	16.36	8.30	3.64
10.	0.00	0.19	0.38
11.	0.48	2.17	2.30
12.	2.70	5.28	6.25
13.	1.65	1.14	1.84
14.	8.87	8.96	8.80
15.	0.12	0.69	0.51
16.	0.23	0.29	0.48
17.	0.45	0.00	0.36
18.	3.68	2.67	7.25
19.	1.84	8.09	11.94

PERCENTAGE OF EMPLOYMENT IN MANUFACTURING INDUSTRIESJammu & Kashmir

Code No. of Industrial Group	1961	1971	1981
1.	12.54	12.49	8.88
2.	0.24	0.09	0.18
3.	3.56	2.76	1.82
4.	16.80	6.60	3.46
5.	0.21	0.00	0.26
6.	23.00	27.80	4.11
7.	15.53	5.51	12.86
8.	2.61	1.66	1.94
9.	4.80	5.61	2.01
10.	9.32	0.08	0.16
11.	5.42	0.75	1.09
12.	5.71	8.16	4.54
13.	0.55	0.00	0.38
14.	7.57	7.44	4.50
15.	0.25	0.91	0.39
16.	0.00	0.03	0.16
17.	0.69	0.10	0.26
18.	3.43	3.60	2.23
19.	2.70	6.87	5.98

Location quotient of manufacturing industries in Rajasthan

Code No. of indus- trial group	with respect to region			with respect to country	
	1961	1971	1981	1961	1971
1.	0.770	0.282	0.907	0.823	0.943
2.	1.887	2.000	1.338	0.279	0.310
3.	1.065	1.115	1.268	0.688	0.673
4.	0.421	6.694	0.723	0.440	0.930
5.	0.278	0.204	0.724	0.102	0.051
6.	0.934	0.880	0.885	1.061	1.038
7.	1.015	1.043	1.081	0.200	1.100
8.	0.720	0.661	0.716	0.948	0.407
9.	1.297	1.412	1.666	3.264	3.610
10.	0.475	0.488	0.230	0.665	0.000
11.	0.683	0.776	0.716	0.431	0.346
12.	1.390	1.104	1.168	1.670	1.666
13.	1.261	0.526	1.149	1.020	0.330
14.	0.543	0.859	0.567	0.060	1.042
15.	0.698	0.260	6.330	0.801	0.305
16.	0.573	0.510	0.096	0.555	0.252
17.	0.675	0.180	0.442	0.458	0.122
18.	1.519	1.854	1.476	1.818	2.321
19.	0.796	0.750	0.198	0.820	0.912

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Location quotient of manufacturing industries in Haryana

with respect to region

with respect to country

Code No. of industries	1961	1971	1981	1961	1971
1.	0.812	0.949	1.002	1.301	1.013
2.	0.252	0.191	5.602	17.850	0.000
3.	0.729	1.045	0.799	0.481	0.628
4.	0.333	0.360	0.208	0.389	0.458
5.	1.285	0.663	0.277	0.474	0.179
6.	0.856	0.712	0.720	0.969	0.838
7.	0.864	0.778	0.681	0.934	0.824
8.	1.882	1.735	1.601	1.455	1.111
9.	1.092	0.944	0.732	2.796	2.417
10.	2.000	2.160	1.858	0.607	1.545
11.	0.636	0.767	1.096	0.437	0.346
12.	1.430	1.476	1.375	1.722	0.227
13.	0.545	1.486	2.403	0.632	1.000
14.	0.864	1.121	0.940	0.107	1.357
15.	0.545	1.267	1.551	0.600	1.444
16.	1.625	2.150	0.349	1.444	1.063
17.	1.25	1.456	1.720	0.833	1.041
18.	0.870	0.575	0.716	1.068	0.724
19.	1.255	1.082	1.086	1.15	1.333

Location quotient of manufacturing industries in Punjab

Code No. of industrial groups	with respect to region			with respect to country	
	1961	1971	1981	1961	1971
1.	0.697	1.030	1.033	1.117	1.102
2.	0.625	0.551	0.597	0.089	0.086
3.	1.240	1.087	1.126	0.811	0.654
4.	0.523	3.414	1.501	0.611	1.600
5.	1.857	1.694	1.748	0.684	0.545
6.	0.964	1.029	0.816	1.092	1.219
7.	0.962	0.858	0.744	1.040	0.907
8.	0.706	0.970	1.049	0.545	0.593
9.	0.716	0.650	0.595	1.980	1.639
10.	2.000	1.114	0.995	0.666	0.727
11.	1.636	1.297	1.230	1.125	0.692
12.	0.560	0.717	0.612	0.674	1.080
13.	0.726	1.529	4.234	0.842	1.000
14.	1.419	1.074	0.464	0.176	1.304
15.	1.909	1.800	2.733	2.100	2.139
16.	2.500	1.285	0.214	2.222	0.625
17.	1.625	2.386	1.787	1.083	1.720
18.	0.841	0.465	0.644	0.841	0.586
19.	1.064	1.319	1.157	1.00	1.614

Location quotient of manufacturing industries in Himachal Pradesh

Code No. of industrial groups	with respect to region			with respect to country	
	1961	1971	1981	1961	1971
1.	0.989	1.784	1.523	1.582	1.908
2.	1.750	1.843	2.503	0.250	0.258
3.	0.130	0.161	0.210	0.130	0.045
4.	2.050	2.099	1.692	2.388	2.750
5.	0.452	0.000	0.076	0.158	0.000
6.	1.189	1.283	0.927	1.347	1.523
7.	1.788	1.847	1.767	1.934	1.950
8.	1.235	1.180	1.339	0.428	0.741
9.	1.312	0.903	0.728	3.346	2.305
10.	0.000	0.230	0.345	0.000	0.090
11.	0.364	1.807	1.577	0.250	0.846
12.	0.280	0.470	0.569	0.338	0.786
13.	2.955	0.716	1.290	3.421	0.458
14.	1.099	1.319	0.922	0.136	1.607
15.	0.091	0.194	0.168	0.100	0.194
16.	0.250	0.370	0.080	0.222	0.188
17.	0.313	0.015	0.120	0.208	0.000
18.	0.615	0.357	1.267	0.841	0.448
19.	0.383	1.174	6.860	0.360	1.439

Location quotient of manufacturing industries in J & K

Code No. of industrial groups	with respect to region			with respect to country	
	1961	1971	1981	1961	1971
1.	0.110	1.314	0.849	1.194	1.402
2.	0.261	0.106	0.283	0.00	0.
3.	0.288	0.288	0.120	0.189	0.173
4.	8.841	3.230	1.907	8.944	4.330
5.	0.253	0.000	0.084	0.000	0.000
6.	2.039	2.371	3.053	2.306	2.8
7.	1.153	1.331	1.390	1.245	0.407
8.	1.246	0.961	1.130	0.897	0.593
9.	0.360	0.536	0.387	0.954	1.363
10.	0.457	0.105	0.138	0.000	0.000
11.	0.482	0.608	0.718	0.312	0.267
12.	0.566	0.707	0.55	0.674	1.067
13.	0.106	0.015	0.254	0.842	0.000
14.	0.816	1.071	0.470	0.097	1.304
15.	0.208	0.216	0.125	0.500	0.25
16.	0.249	0.018	0.025	0.000	0.000
17.	0.298	0.056	0.126	0.200	0.000
18.	1.013	0.480	0.376	1.221	0.603
19.	0.571	0.961	0.451	0.000	1.175

APPENDIX VI

COEFFICIENT OF LOCALIZATION NORTH-WESTERN REGION

Code No. of Industrial Group	1961	1971	1981
1.	15.2834	14.4644	13.4772
2.	46.2570	55.6650	46.9291
3.	22.5000	26.4311	32.5256
4.	59.6377	56.1382	46.8886
5.	43.3840	58.2283	60.8600
6.	12.9499	18.0034	22.5079
7.	10.5277	14.5558	15.7509
8.	42.2162	37.3545	31.1056
9.	17.8572	21.7646	27.1897
10.	48.8825	46.8965	34.6509
11.	39.6787	42.8503	34.8986
12.	25.1084	36.7862	24.3133
13.	39.3489	38.3162	40.0714
14.	23.3595	12.5117	17.2766
15.	51.4511	42.7262	46.5567
16.	51.2090	48.9007	40.9795
17.	40.3913	56.1965	54.9715
18.	18.8655	32.0134	26.9150
19.	17.6163	16.6068	13.5960

COEFFICIENT OF LOCALIZATION RAJASTHAN

Code No. of Industrial Group	1961	1971	1981
1.	14.1056	11.0730	10.7349
2.	43.7172	49.9189	50.3069
3.	13.0955	20.6976	29.9674
4.	43.3965	60.2955	37.8818
5.	41.2926	68.5866	70.6847
6.	9.3125	8.5222	14.2253
7.	8.5359	12.7431	12.6700
8.	38.4444	33.7949	31.0680
9.	15.1676	11.9237	18.5569
10.	35.7869	23.2577	26.4625
11.	37.6682	47.8414	25.8137
12.	19.2998	16.3232	21.1194
13.	44.3189	37.1249	40.7497
14.	18.3249	14.2817	11.6949
15.	57.3909	38.7457	49.0871
16.	40.5010	55.6930	42.2801
17.	37.6934	42.7350	50.4618
18.	17.0882	16.5186	18.1841
19.	22.6202	16.0391	12.6563

COEFFICIENT OF LOCALIZATION - HARYANA

Code No. of Industrial Group	1961	1971	1981
1.	8.2261	12.7934	10.4504
2.	16.9651	23.8565	32.6028
3.	20.6323	26.9183	40.9045
4.	32.9074	46.6318	60.2680
5.	38.9570	51.0314	21.9066
6.	5.5471	10.3695	18.5841
7.	5.9378	7.1425	11.3338
8.	54.4579	44.0629	41.2895
9.	13.2076	12.4805	16.7234
10.	59.8095	47.1389	39.5341
11.	7.1990	22.4067	30.4833
12.	6.5583	9.7210	11.8831
13.	42.6711	25.3250	19.6379
14.	15.2749	13.3262	17.7872
15.	39.3718	36.3784	31.7144
16.	39.5616	55.4708	35.3505
17.	44.1132	45.3839	56.1975
18.	3.9141	8.2166	13.667
19.	8.7348	10.2517	6.8845

COEFFICIENT OF LOCALIZATION - PUNJAB

Code No. of Industrial Group	1961	1971	1981
1.	11.6183	11.7386	13.5992
2.	27.3963	34.2089	25.3824
3.	21.3887	26.6303	26.3424
4.	54.8664	53.1790	50.1584
5.	30.5094	42.9631	48.0921
6.	12.4382	18.2830	14.3874
7.	10.9920	14.0501	12.0291
8.	27.1271	26.3955	18.1396
9.	16.0579	24.9919	20.6160
10.	41.9790	36.0350	36.4150
11.	43.3582	45.0579	35.8088
12.	25.5177	16.1311	16.6973
13.	21.0203	31.1102	25.0574
14.	14.0867	6.5692	17.8425
15.	40.2506	18.9004	16.1601
16.	41.3115	34.6728	33.7900
17.	33.8166	39.8246	40.6326
18.	15.7405	21.2295	28.5559
19.	10.2284	11.8625	7.8490

COEFFICIENT OF LOCALIZATION - HIMACHAL PRADESH

Code No. of Industrial Group	1961	1971	1981
1.	7.5633	4.8664	4.1151
2.	55.7009	77.3295	61.0937
3.	29.0055	18.8351	22.6282
4.	28.1782	21.9921	32.0148
5.	29.9840	88.6135	48.5933
6.	5.3890	9.5713	15.5408
7.	10.4356	13.8319	13.2041
8.	68.0419	51.5342	49.7534
9.	9.1181	12.1407	13.5469
10.	58.9464	36.7655	35.8891
11.	36.6584	32.4023	48.0538
12.	21.3304	17.2793	25.3689
13.	65.0047	89.2424	53.5730
14.	31.3657	12.8040	9.8252
15.	43.3913	14.7439	32.6649
16.	38.0412	43.1694	41.8550
17.	10.3924	80.2888	45.0791
18.	9.1957	7.5564	24.7260
19.	15.7401	11.8698	12.1704

COEFFICIENT OF LOCALIZATION - JAMMU & KASHMIR

Code No. of Industrial Group	1961	1971	1981
1.	18.5517	18.1226	22.7177
2.	33.0497	47.3281	73.9442
3.	12.2055	29.4581	51.1997
4.	43.9220	19.1196	20.4841
5.	30.0575	70.0534	87.2433
6.	9.8447	22.0672	17.1024
7.	3.5649	8.6898	13.0135
8.	30.0785	39.4189	42.0649
9.	30.5571	22.4876	29.0485
10.	32.9446	30.8463	53.0880
11.	62.7513	50.8778	70.0719
12.	23.2384	21.4739	27.9852
13.	76.0949	45.1335	64.2695
14.	8.3936	14.3394	15.6867
15.	29.2310	44.9335	62.9211
16.	87.0678	45.3408	50.1157
17.	11.4152	25.1933	45.3611
18.	44.6661	13.9184	25.0853
19.	43.9605	22.3168	28.3239

COEFFICIENT OF SPECIALIZATION- 1961

<u>District Code No.</u>	<u>WRT Region</u>	<u>WRT Country</u>	<u>District Code No.</u>	<u>WRT Region</u>	<u>WRT Country</u>
1.	19.495	24.341	25.	14.200	22.625
2.	17.980	25.781	26.	24.058	36.128
3.	24.556	24.187	27.	36.609	48.005
4.	19.527	27.017	28.	25.779	36.349
5.	27.366	35.313	29.	31.571	43.405
6.	21.277	21.720			
7.	28.077	32.101	31.	65.052	67.779
8.	17.087	23.081	32.	30.021	42.681
9.	18.271	30.443	33.	36.042	43.796
10.	23.289	19.813	34.	30.835	42.107
11.	19.125	27.371	35.	60.159	62.564
12.	34.467	45.408	36.	26.262	33.034
13.	15.871	19.654	37.	45.945	46.900
14.	21.964	30.833	38.	31.634	36.310
15.	23.811	28.577	39.	70.860	71.934
16.	25.189	30.715	40.	28.438	40.092
17.	22.484	33.526	41.	29.803	40.106
18.	24.415	35.456	42.	19.268	27.614
19.	13.417	21.207	43.	18.263	31.192
20.	14.676	27.445			
21.	17.555	28.451	45.	20.345	32.096
22.	35.816	46.091	46.	19.687	26.135
23.	28.190	38.091	47.	15.682	27.423
24.	33.846	33.746	48.	16.918	26.291

contd...2/-

<u>District Code No.</u>	<u>WRT Region</u>	<u>WRT Country</u>
49.	18.990	26.583
50.	25.389	36.740
51.	16.932	20.574
53.	21.024	25.526
54.	24.705	20.027
55.	12.909	24.967
56.	24.777	32.719
57.	20.274	20.922
58.	29.346	21.208
59.	22.701	23.148
60.	14.820	23.326
61.	13.071	25.671
62.	12.279	22.191
63.	39.644	45.056

COEFFICIENT OF SPECIALIZATION- 1971

<u>District Code No.</u>	<u>WRT Region</u>	<u>WRT Country</u>	<u>District Code No.</u>	<u>WRT Region</u>	<u>WRT Country</u>
1.	20.013	29.195	25.	21.474	25.512
2.	19.045	29.849	26.	16.894	31.325
3.	25.328	30.679	27.	28.328	41.352
4.	18.405	35.426	28.	28.624	41.036
5.	23.111	39.869	29.	30.785	42.813
6.	17.596	34.057	30.	36.644	45.315
7.	21.927	36.893	31.	51.105	52.738
8.	20.591	30.929	32.	31.430	41.800
9.	30.646	37.453	33.	32.483	38.416
10.	20.099	23.745	34.	28.943	41.360
11.	24.593	34.509	35.	55.588	56.475
12.	29.909	36.498	36.	33.697	47.251
13.	16.988	33.287	37.	39.532	42.109
14.	22.426	38.303	38.	35.355	45.197
15.	26.721	34.080	39.	45.619	48.620
16.	26.311	38.221	40.	37.647	50.167
17.	33.397	50.598	41.	26.897	40.726
18.	29.980	45.761	42.	28.797	40.759
19.	24.178	30.555	43.	21.252	29.562
20.	17.500	33.774	44.	31.901	43.460
21.	20.380	37.043	45.	32.592	47.264
22.	21.865	40.528	46.	24.114	33.323
23.	25.115	41.275	47.	15.579	28.337
24.	24.242	38.814	48.	14.722	29.792

contd....2/-

<u>District Code No.</u>	<u>WRT Region</u>	<u>WRT Country</u>
49.	25.737	35.826
50.	28.291	43.136
51.	23.336	30.093
52.	27.147	44.439
53.	25.017	33.667
54.	23.756	19.541
55.	16.034	25.776
56.	29.325	36.949
57.	24.142	25.469
58.	32.814	28.280
59.	16.354	25.601
60.	20.127	31.524
61.	20.257	36.790
62.	18.931	34.751
63.	38.205	37.057
64.	22.498	28.760

COEFFICIENT OF SPECIALIZATION-1981

<u>District Code No.</u>	<u>WRT Region</u>	<u>District Code No.</u>	<u>WRT Region</u>	<u>District Code No.</u>	<u>WRT Region</u>
1.	40.942	25.	21.351	49.	21.660
2.	18.605	26.	22.507	50.	21.990
3.	21.816	27.	33.581	51.	16.053
4.	15.722	28.	25.475	52.	19.646
5.	14.120	29.	24.415	53.	24.216
6.	17.448	30.	38.692	54.	18.705
7.	16.477	31.	32.897	55.	23.379
8.	13.608	32.	27.497	56.	29.428
9.	18.068	33.	33.551	57.	22.019
10.	23.623	34.	22.664	58.	33.910
11.	31.826	35.	45.748	59.	18.357
12.	30.947	36.	45.545	60.	30.474
13.	14.613	37.	49.596	61.	22.882
14.	25.363	38.	55.524	62.	14.162
15.	27.188	39.	38.065	63.	29.384
16.	30.137	40.	30.695	64.	23.697
17.	27.764	41.	25.558	65.	31.036
18.	22.259	42.	14.955	66.	55.714
19.	20.813	43.	21.901	67.	45.275
20.	20.319	44.	28.373	68.	40.275
21.	27.987	45.	29.275	69.	23.060
22.	21.433	46.	26.130	70.	25.926
23.	16.543	47.	19.581	71.	33.861
24.	30.051	48.	20.260	72.	15.520
				73.	23.446
				75.	18.754
				76.	22.554

APPENDIX-VIICOEFFICIENT OF SPECIALIZATION WITH RESPECT TO REGION AFTER
ADJUSTMENT OF BOUNDARIES OF FOUR DISTRICTS

<u>Code no. of Dis- tricts</u>	<u>1961</u>	<u>1971</u>	<u>Code no of Dis- tricts</u>	<u>1961</u>	<u>1971</u>
1. ^a	19.495	20.013	25.	14.200	21.474
2.	17.980	19.045	26.	24.058	16.894
3. ⁱ	24.556	25.328	27.	36.609	28.328
4. ⁱ	19.527	18.405	28.	25.779	30.914
5.	27.366	23.111	29. ⁱ	31.571	30.785
6. ⁱ	21.277	17.596			
7. ⁱ	28.077	21.927	31. ⁱ	65.052	51.105
8. ^a	17.087	20.591	32.	30.021	31.430
9.	18.271	30.646	33. ^a	36.042	32.483
10.	23.289	20.099	34.	30.835	28.943
11. ^a	19.125	24.593	35.	60.159	55.588
12.	34.467	29.909	36. ⁱ	26.262	33.697
13. ⁱ	15.871	16.988	37.	45.945	39.432
14. th	21.964	22.426	38.	31.634	35.355
15.	23.811	26.721	39.	70.860	45.618
16. ⁱ	25.189	26.311	40. ⁱ	28.438	37.647
17.	22.484	33.397	41.	29.803	26.897
18.	24.415	29.980	42.	19.268	28.797
19.	13.417	24.178	43.	18.263	21.252
20.	14.676	17.500	44.		
21. ⁱ	17.555	20.380	45. ⁱ	20.345	31.902
22. ⁱ	35.816	21.864	46. ⁱ	28.900	24.114
23. ⁱ	28.190	25.115	47. ⁱ	15.682	15.579
24. ⁱ	33.846	25.242	48.	16.918	14.722

contd... 2/-

<u>Code No. of Dist- ricts</u>	<u>1961</u>	<u>1971</u>
49.	18.990	25.737
50.	25.389	28.291
51.	16.932	23.336
52.	20.00	27.147
53.	21.024	25.017
54.	24.705	23.756
55.	12.909	16.034
56.	24.777	29.325
57.	20.274	24.142
58.	29.346	32.814
59.	28.201	16.354
60.	14.820	20.127
61.	11.511	20.257
62.	12.279	18.937
63.	39.644	38.205
64.	10.401	22.498

BIBLIOGRAPHY

- Alagh, Y.K., D.T. Lakdawala, "Inter-regional industrial structure in developing economy A conceptual frame with a case study", Journal of regional Science.
- _____, Regional variations in industrial development, Sardar Patel Institute of Economic & Social Research, Ahmedabad, 1972.
- Alexander, John W., "Location of manufacturing: Methods of measurement", Annals of the Association of American Geographers, vol.51, 1958.
- _____, Economic Geography, Prentice Hall of India, New Delhi, 1977.
- _____ & James B. Lindberg, "Measurement of manufacture Coefficient of correlation", Journal of Regional Science, vol.3, 1961.
- Bhatt, L.K., Regional structure of Industrialization in Rajasthan 1961-71, M.Phil. dissertation, Jawaharlal Nehru University, 1981.
- Chenery, H.B., "Patterns of Industrial growth", American Economic Review, 1960.
- Das, T.P., Localization & specialization of Industries in Eastern India 1961-71, M.Phil. dissertation, Jawaharlal Nehru University, 1983.
- Dean, The theory of Geographic Location of economic activities, doctoral dissertation, 1938.
- Florence Sargent, Investment Location & size of Plant, Cambridge, 1948.
- _____, The logic of British and American Industry: A realistic analysis of economic structure, Routledge and Kegan Paul, London, 1972.

- _____, "Economic Research and Industrial Policy",
Economic Journal, No.188, vol.XLVIII
(Dec.).
- _____, Industrial Location and Nation resources,
(N.R.P.B.) U.S. Government Printing
Office, Washington.
- Gadgil, D.R., Industrial evolution of Industries in recent
times, Oxford University Press,
Calcutta, 1962.
- _____, Planning and Economic policy in India, Oxford
University Press, Calcutta, 1962.
- Green Hut M.L., Micro Economics and Space economy, 1963.
- Helen, Strong, "Regions of manufacturing industry in the
United States", Annals of the Asso-
ciation of American Geographers,
vol.XXVII, 1937.
- Hoover, E.M., "Measurement of Industrial Location",
Review of Economic Studies, vol.19,
1936.
- Isard, Location and Space Economy, MIT Press, 1956.
- _____, Methods of Regional Analysis - an introduction
to regional science, MIT Press, 1960.
- John, "Areal distribution of manufacturing in U.S.",
Economic Geography, vol.24, 1938.
- Kaur, Kulwinder, Structure of Industries in India, Deep &
Deep Publications, New Delhi, 1983.
- Khurana, Indu, Structure of manufacturing industries in
India - A district level analysis of
labour force and establishment 1901-
1971, Ph.D. thesis, Jawaharlal Nehru
University, 1985.
- Kuznets, Simon, Modern Economic Growth - Rate structure
and spread, Oxford and IBH Publishing
Co., New Delhi, 1966.
- Locanathan, P.S., Industrial Organization in India,
London, 1935.

- Laughlin, Glenn Mc, Industrial Diversification and Industries, United States, 1930.
- Marshall, Alfred, Principles of Economics, 8th ed., 1920.
- Mehta, M.M., Structure of Indian Industries, Popular book depot, Bombay, 1961.
- Mishra, R.F., Regional development and planning in India, Vikas Publishing House, New Delhi, 1974.
- Mukherjee, G.P., "On some Indices for Measuring localization and estimating its effect on productivity", Indian Economic Journal, vol.X, 1962-63.
- Ohlin, Bertil, Interregional and International trade, Cambridge, 1933.
- Papola, T.S., Spatial Diversification of Industries (A case study of U.P.), Allied Publishers Pvt. Ltd., 1981.
- Rao, Hemlata, Regional disparities and Development in India, Ashish Publishing House, 1984.
- Richardson, H.W., Regional Economics: Location Theory, urban structure and Regional change, Redwood Press Ltd., Trowbridge and London, 1960.
- Rodgers, Allan, "Some aspects of Industrial diversification in the U.S." , Economic Geography, 1957.
- Sastry, N.S.R., A statistical study of Indian Industrial development, Thacker and Co. Ltd., Bombay, 1941.
- Singh, R.L., Regional Geography of India, Silver Jubilee Publication, Varanasi, 1971.
- Smith, D.M., "A theoretical framework for geographical studies of Industrial Location", Economic Geography, vol42, 1966.
- Weber, Alfred, Theory of Location of Industries (Translated by J. Friedrich), Chicago Univ. Press, 1965.