# A REGIONAL ANALYSIS OF LEVELS OF SOCIO-ECONOMIC DEVELOPMENT IN JAMMU PROVINCE OF THE JAMMU & KASHMIR STATE— A TEHSIL-WISE STUDY

Dissertation submitted in partial fulfilment
of the requirements for the degree of
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To My Father

## A C K N O W L E D G E M E N T

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MBashir

MAHMUDA BANU

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# CHAPTER - I

## THE PROBLEM OF REGIONAL DISPARITY

### 1.0 Statement of The Problem

One of the major emerging facts in the current economic scene is the accentuation of socio-economic inequalities. Whatever growth has taken place is unevenly distributed among various regions. The existence of such disparities generates a feeling of economic insecurity and frustration, especially for a country such as India where the existence of inequalities in the socio-economic levels of development violates the most important constitutional obligation of social, economic and political justice.

However, before analysing the levels of development in various spatial units, one must be clear about the concept of disparity. Development is the process of exploiting the natural resources of a region. In any discussion on the levels of regional development, one usually comes across two words- inter-regional diversity and inter-regional disparity[1]. Differences in the initial resource endowment constitute the basis and the substance of inter-regional diversity. Inter-regional disparity, on the other hand, denotes the failure of a region to exploit the development potential of its initial resource endowment relative to

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1. Moonis Raza and Boudhayan Chattopadhyay, "Regional Development - Analytical Framework and Indicators", Indian Journal of Regional Science (Kharagpur), Vol.VII No.1, (1975), p.11.

another comparable region. Thus, it includes factors other than natural or physiographic i.e., it comprises human, institutional and historical factors. Consequently, the inter-regional disparity in neither the basis nor the cause of inter-regional disparity. In fact, inter-regional disparity is essentially a consequence of the relative failure of region to convert the initial resource endowment into effective economic resources. While discussing the levels of regional development, we examine the relative position of regions in terms of their economic attainments. For example, Jammu and Kashmir is regarded among the least developed states of India; nevertheless when we consider the natural endowments (e.g. forest wealth, water resources, etc.), we find that it possesses vast growth potentialities.

The main thrust of planning being on 'balanced regional development', the need to identify disparities in the levels of regional development and to study the temporal changes assumes great urgency. Professor Mahalanobis emphasised that "economic development of a big country like India must have the aim not only of a continuing increase of the aggregate production of the country as a whole but also of an all-round progress of the different regions within the country. The regional concept has, therefore, a special significance in connection with economic planning."[2] The importance of such

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2. P.C. Mahalanobis in A.T.A. Learmonth and L.A. Bhat - ed; Mysore State - an Atlas of Resources, Vol.I, (Bombay, 1961), p.v.

studies is that the identification of backward regions can help in plugging the loop-holes in the development process because the empirical measures give quantative expression to otherwise unintelligible and complex socio-economic phenomenon. The integrated development at the area level is essential for carrying the benefits of development to the more backward sections of the society. Hence, for meaningful formulation and successful implementation of future plans, it has become essential to study the economic situation at levels even smaller than districts. The present study on socio-economic distance among tehsils of Jammu province and changes therein between 1961 and 1971, has been undertaken with a view to gaining an insight into the complex process of regional variations of economic development. Owing to time and data constraints, the study cannot go beyond a preliminary attempt. Nevertheless, it is a useful exercise for bringing into bold relief the tehsil-wise problems and prospects of the strategically located state of Jammu and Kashmir.

It is relevant to point out that socio-economic backwardness is a multi-dimensional problem, embracing agriculture and industrial activities and socio-economic and political structure. Hence, for a 'balanced regional development' all variables contributing to the development process should be considered. With this in mind, a large number of variables

covering different aspects of the regional economy of Jammu province have been selected for analysing the various socio-economic processes operating within the regional economy of the province. For our study, we have chosen the decade 1961-71, primarily because it is an important development decade in the economic history of India as also of the state; moreover, the latest information on most indicators of socio-economic development is available for this decade alone.

## 1.1 A Socio-Economic Profile of Jammu and Kashmir

The land locked state of Jammu and Kashmir extends over an area of 222,236 square kilometres of which 1,38,992.15 square kilometres is on the Indian side of the ceasefire line.[3] The state is the sixth largest state of India in physical size having 6.76 per cent of the country's total area; but its population, according to the 1971 census, is only 0.84 per cent of the country's population. The growth rate of population during the decade ending 1971 works to 29.65 per cent. Consequently, in population size, Jammu and Kashmir takes the sixteenth rank among the thirty states and union-territories of India. This is so because most part of the state consists of a huge complex of uninhabitable mountains. Hence, any advantage that may

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3. Government of Jammu and Kashmir, General Population Tables (Census of India, 1971), Series 8 -Jammu and Kashmir, Part II-A (Delhi, 1973), p.25.

have accrued to the state on account of its large physical size and a relatively small population is offset by the fact that 92 per cent of its total area consists of high mountain ranges, nude or thickly forested, unsuitable for organised human settlement.

The state of Jammu and Kashmir, consisting of ten districts, is divided into three geographical and linguistic regions - Kashmir Valley, Ladakh and Jammu province. Jammu province comprises six districts, sub-divided into twenty-one tehsils, three of which were carved during the inter-census period of 1961-71 only.

The state continues to be predominantly rural in character. As against 17 per cent in 1961, the proportion of urban dwellers rose to 19 per cent in 1971. To a large extent the level of urbanisation is confined to the two districts of Srinagar and Jammu which are also concentrated by the industrial activity. The state income at constant (1960-61) prices was Rs. 94.77 crores in 1960-61 which rose to Rs. 150.83 crores in 1973-74, giving an annual average growth rate of about 3.5 per cent[4]. The per capita income of the state at constant (1960-61) prices increased from Rs.231.97 in 1965-66 to Rs. 306.38 in 1973-74[5]. However, with a higher rate of population growth in the state, of more than 2.5 per cent per annum, the increase in per capita income has not been

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4. Government of Jammu and Kashmir, Digest of Statistics (Srinagar, April 1975), p.269.

5. Ibid.

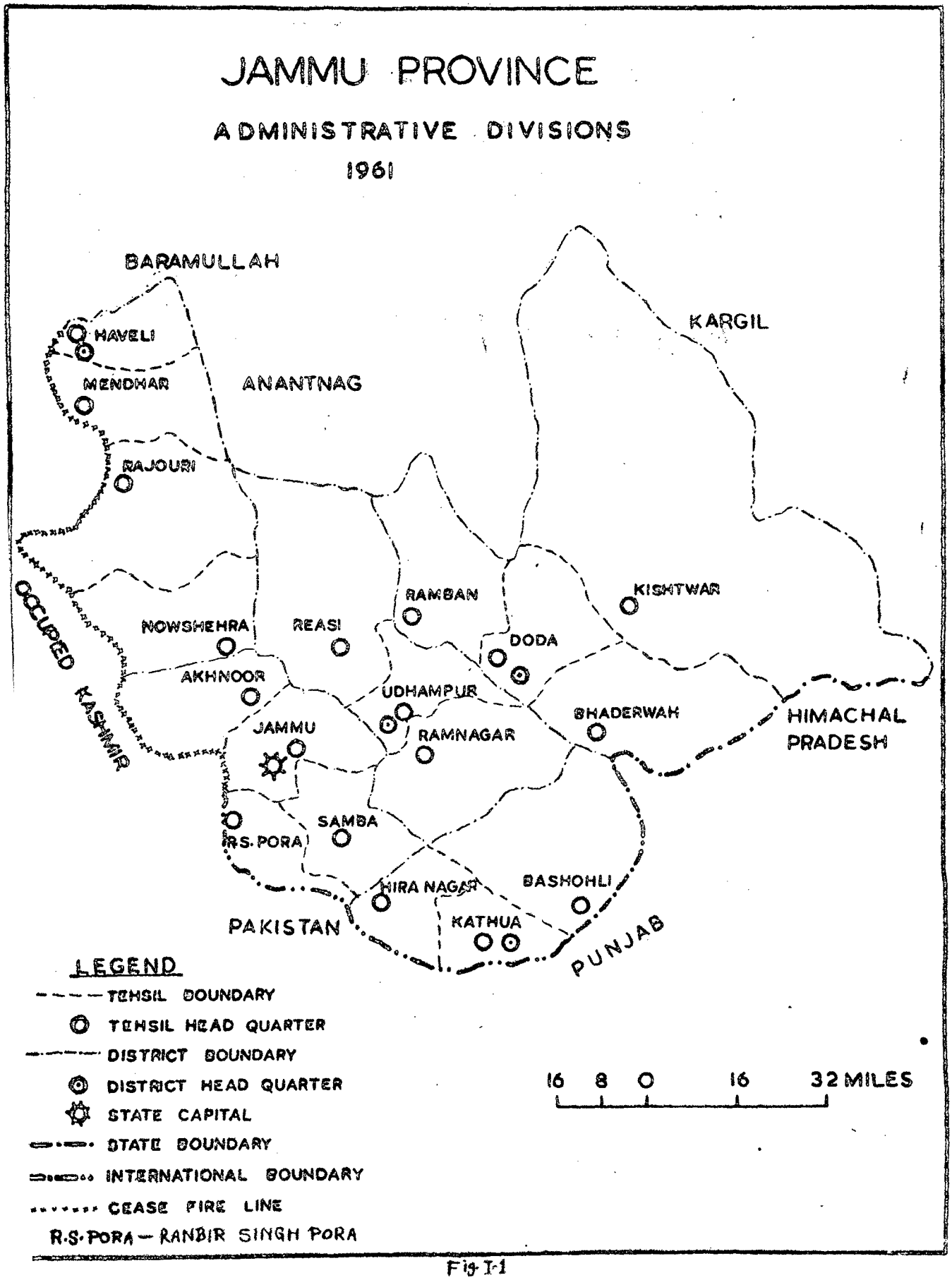
JAMMU PROVINCE
ADMINISTRATIVE DIVISIONS
1961
BARAMULLAH
KARGIL
HAVELI
MENDHAR
ANANTNAG
RAJOURI
OCCUPIED KASHMIR
RAMBAN
KISHTWAR
NOWSHEHRA
REASI
DODA
AKHNOOR
UDHAMPUR
BHADERWAH
HIMACHAL PRADESH
JAMMU
RAMNAGAR
SAMBA
R.S. PORA
HIRA NAGAR
BASHOHLI
KATHUA
PAKISTAN
PUNJAB
LEGEND
TEHSIL BOUNDARY
TEHSIL HEAD QUARTER
DISTRICT BOUNDARY
DISTRICT HEAD QUARTER
STATE CAPITAL
STATE BOUNDARY
INTERNATIONAL BOUNDARY
CEASE FIRE LINE
R.S. PORA — RANBIR SINGH PORA
16 8 0 16 32 MILES

Fig I-1

more than one per cent per anum.[6] The total number of workers in the state in 1971 was 13.74 lakhs giving a work-participation rate of 29.76 per cent. The same in 1961 was, 42.77 per cent. The fall in the working force in 1971 is mainly because of the divergent concepts and definitional changes occurring between the two Censuses. According to the revised estimates there has been an annual increase of 2.33 per cent in working force between 1961 and 1971 (from 10.91 lakhs to 14.46 lakhs)[7] There has been a significant increase in the number of workers employed in tertiary sector (an annual increase of 3.5 per cent) between 1961 and 1971. The percentage employment contributed by this sector increased from 13.3 per cent in 1961 to 14.7 per cent in 1971[8] Hence, there has occurred a marginal occupational shift but on the whole, the economy of the state remains basically agricultural in character.

Agriculture is the predominant sector of the state economy. But it is run on backward and primitive lines and is inhibited in its development by the physical and climatic

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6. Government of Jammu and Kashmir, Report of The Development Review Committee, Part, I-Review of The Past And Strategy For The Future (Jammu, n.d.), p.5.

7. Government of Jammu and Kashmir, "Fifth Five Year Plan (1974-79)", (Srinagar, March 1974), p.2.

8. Ibid. p.3.

difficulties. This is evident from the fact that the sector could contribute only 36 per cent to the state income in 1972-73 whereas about 68 per cent of the total work force was engaged in this sector[9] Paddy, maize and wheat are the three principal crops of the state. The main crops of Jammu province are maize, rice, millets, barley and wheat. Irrigation facilities have been extended to bolster cultivation especially of rice and wheat. The percentage net area irrigated to net area sown was 40.59 and 42.82 in 1960-61 and 1974-75 respectively.[10] Increase in the net area under irrigation over the years has not been significant. Canals are the main source of irrigation (96 per cent). Rabi cultivation is difficult owing to heavy snowfall in the valley. That is why double cropping is practised in limited areas (22.5 per cent of the net area sown).[11]

Judged in terms of persons employed, it is the most important activity in the state. It engaged 67.8 per cent of workers in 1971 against 74.78 per cent in 1961. Animal

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9. Government of Jammu and Kashmir, n.7, pp.2-3. (The Total State Income being 135.68 crores at 1955-56 prices, agriculture contributed only 48.71 crores).

10. Government of Jammu and Kashmir, Report of the Development Review Committee, Part V, Agriculture and Irrigation", (Jammu, February, 1977), p.6.

11. Government of Jammu and Kashmir, n.7, p.49.

husbandary is an extremely important activity for the state on which a large section of the population depends. In 1961-62, animal husbandary contributed an income of Rs. 797 lakhs which amounted to 8.5 per cent of the net state income.[12] The state has undoubtedly great potential for breeding sheep, for producing both mutton and wool, but it has yet to be adequately tapped. Fruit industry and tourism have been important sources of income to the state exchequer. Besides, Sericulture is one of the oldest industries in the state with two big silk factories, one each in Srinagar and Jammu districts.

Next in importance to agriculture are forests. The forests occupied 15.1 per cent of the state's geographical area in 1966. The figure would swell very high if we exclude the district of Ladakh. Ladakh which alone occupies nearly 43 per cent of the State's geographical area, is almost devoid of forests. The area under forests in Kashmir valley and the Jammu and province is 58.4 and 45.9 per cent respectively.[13] In 1960-61, the forests contributed about 17 per cent to the state income, against just one percent for the country as a whole.[14] This clearly establishes the extreme importance of of forests in the economy of the state.

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12. NCAER, Techno-Economic Survey of Jammu and Kashmir (New Delhi, 1969), p.39.

13. J & K Forest Department, A Digest of Forest Statistics, J & K Forest Record No.1, (Srinagar, 1966), pp.4-9.

14. NCAER, n.12. p.52.

Industrially, Jammu and Kashmir is one of the least developed states of India. The general shortage of outside raw materials and their high cost-especially because of huge transport expenses, absence of a viable entrepreneurial class, limited local demand because of small population and meagre purchasing power, long distance from the rest of the country and other infrastructural difficulties are some of the factors limiting the process of industrialization. The large scale industries are conspicuous by their absence. Whatever small industrial base the state has, the modern factory type industries are severely limited in number (40.7 per cent in comparison to 83.1 per cent for the nation).[15] The state has, all the same, a large and fairly developed handicrafts sector with a tremendous scope for further development, especially because the scope for large and heavy industrial units is severely limited. Though the contribution of manufacturing sector (organised as well as unorganised) to the state income increased from 8.84 per cent in 1960-61 to 16.31 per cent in 1975-76,[16] On the whole the total industrial activity in the state is still at a very low ebb. Structurally, it is

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15. Ibid. p.76.

16. Government of Jammu and Kashmir, Draft Annual Plan, Vol. I (General) (Jammu, January 1976), p. 1.3.

dominated by the household industries which, in the absence of any technological improvements, underlines the industrial backwardness of the state.

Jammu and Kashmir possesses considerable hydel potential equal to 8.6 per cent of the total potential of India; but only a small fraction of the total potential has been harnessed so far; the power supply is inadequate and irregular. Owing to the mountaineous terrain, transport in Jammu and Kashmir is one of the major problems facing the state; road development is costly and difficult. The provision of the infrastructure for accelerating pace of economic development in the state is a crucial factor. Political upheavels and invasions have created conditions of uncertainty making economic reconstruction and development slow and difficult.

One of the major economic problems confronting the state today is unemployment, especially among the educated youth. Hence, there is urgent need for better manpower planning in order to give a vocational bias to the educational system. In the spread of literacy though the state has faired well by returning the highest decadal rate of increase - 68.4 per cent - among the major states of the country, the level of literacy is still among the lowest in the country. Only 18.58 per cent of the total population is literate (1971 Census) against 29.85 per cent at the national level.

Hence, the state has a huge back-log of illiteracy in spite of free education up to the universlity level.

Thus, the main features of the economy of Jammu and Kashmir are the over-dependence on agriculture and weak industrial and infrastructural conditions. In the attempt to foster economic development, the state is hindered by a number of obstructions including its mountaineous terrain, long distance from the main centres of trade and commerce in the country, antiquated social attitude, organisational inadequacies, lack of adequate financial resources, unstable political conditions and, above all, hostile climatic conditions in most parts of the state. The development process in the state suffers from all the disadvantages of a mountain-locked region and the state has remained much below the economic level attained in the rest of the country. The natural resources like forests, irrigation, water, hydro-electric potential, mineral wealth etc, even though available in abundance, have not been adequately harnessed because of huge investments involved. Instead, the investments have generally been made in the areas where the utilisation of existing potentialities was comparatively easier. This led to the consequent widening of socio-economic distance between the relatively developed and relatively under-developed regions.

Within this backward state, there are pockets of extreme backwardness where the economic life of the people is characterised by subsistence agriculture, barter trade and primitive cattle breeding. While the multi-dimensional socio-economic changes that have taken place in the stage during the last two decades cannot be denied, all the regions have not been equally benefited, and this has led to accentuation of regional disparities; many areas are as much cut off and poor today as they were two decades back. Their backwardness is attributable both to the investment policy of the government, favouring the lucky regions, and the cumulative effect of the socio-cultural factors mentioned earlier. Some sections of the population are socially extremely backward which further accentuates the economic inequality because "there is a close relation between the two since social inequality stands as a main cause of economic inequality also economic inequality supports social inequality. In most situations social and economic inequality are a joint affairs."[17] Thus, in order to uplift the society, the main pre-requisite is the equality in the socio-economic development levels of various geographical units.

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17. Gunnar Myrdal, Challenge Of World Poverty : A World Anti-Poverty Programme In Outline (London, 1970) p. 57.

## 1.2 Problem of Regional Balance in Development- A Theoretical Discussion

One of the most important problems facing mankind today is the immense disparity in the level of income and, consequently, in the standard of living among the people in different parts of the world. The growth rate of income of the developed countries is consistently much higher than the rates for economically backward countries. The shrinking of geographical distance and increasing knowledge about the people living in other parts of the world are the main factors which have led to its rapid cognition.[18] Even between different regions of the same country, immense disparities in the levels of development are well marked - some pockets are highly developed enjoying high levels of affluence whereas others suffer from abysmal poverty and there are many levels in between. The reasons for under-development are many; it can be due to the poor natural resources, severe climatic conditions, past social and cultural development and other institutional factors.

The existence of regional disparities has given rise to many theories and views put forward by different economists. Many economic models have been put forth and empirical research on the problem has been taking place on

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18. Surender Patel, "Economic Distance Between Nations - Its Evolution, Measurement and Outlook", Economic Journal, (Cambridge) Vol. 74, (March 1964), pp. 119-131.

a large scale to find some common solution. Yet the socio-economic distance between the rich and the poor regions has continued to grow. The stress placed on regional planning stems from two sources:

1. Uneven distribution of economic resources or development potential; and
2. Wide disparities in economic growth and levels of living in different areas.

The phenomenon of economic disparity between different regions of a country is observed in most countries; especially in the countries passing through the early stages of devolopment. In the developed countries, generally, due to the forces forming an internal coherence, all the parts rise or fall together and as a result of it, inequalities do not tend to increase. But in a traditional society in the initial stages of development, due to amany factors, activities tend to concentrate in a few centres which thus grow and also act as "Suction Pumps" to pull the resources from the surrounding areas with the result that the growth centres are enriched and the poor areas remain improverished. Myrdal attributes this inequality to the principle of circular and cumulative causation and explains his point in terms of "Spread effects" and "backwash effects.[19]

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19. Gunnar Myrdal, Economic Theory and Under-developed Regions, (Bombay, 1958), pp. 35-50.

Spread effects tend to propogate the dynamism of growth from initial growth centres to other areas; backwash effects act reversely - they tend to suck away from the immediate environment the growth that was there. The profit motive results in the development of those regions where the profit expectations are high, while other regions remain under-developed with the consequent widening of inter-regional disparities. Both, Myrdal and Williamson,[20] attribute this phenomenon to the free play of market forces. They are of the view that labour migration, capital movement and trade are the media through which the cumulative process evolves - upwards in 'lucky' regions and downwards in 'unlucky' regions by tending to cluster all the economic activities in the favoured regions, leaving the poor regions with weak linkages in a backwater. Also, the government, in the initial stages of development, is usually interested in making the investment where the results are quick and better;[21] this generates the growth

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20. J.G. Williamson, "Regional Inequality and the Process of National Development: A Description of the Patterns", Economic Development and Culture Change, (Chicago), Vol. 13, (1965), pp.3-45.

21. For the same reasons, Friedmann and Alonso emphasize the importance of the regional development issue in the early stages of economic development. See J Friedmann and W. Alonso in Regional Development and Planning - A Reader (London, 1965), pp. 3-6.

rate in these areas and, thus, widens the gap between them and the poor regions. In other words, a low level of socio-economic development is accompanied by great economic inequalities so that in the cumulative process "poverty becomes its own cause!"[22] As Nurkse puts it, the concept implies, of course, a circular constellation of forces tending to act and react upon one another in such a way as to keep a poor country in a state of poverty....' a country is poor because it is poor!"[23] Hirschman's 'Polorisation effects' and 'trickling down effects', correspond with Myrdal's 'spread effects' and 'backwash effects! His version is that if a region is to develop, developmental activities would have to be concentrated at a few points which are comparatively better placed in resources and the economies accruing from them can be utilised for the development of other sectors. (Thus, for some time, growth will not be equal in all regions and

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22. Myrdal 19, p. 34.

23. Ragnar Nurkse, Problems of Capital Formation in Under-Developed Countries, (Oxford, 1973), pp. 4-31.

24. Albert, O Hirschman, Strategy of Economic Development, (New Haven, 1958),pp.62-132.

therefore, regional disparities are bound to develop. Hence, in the initial stages of development, as the economy is disintegrated and fragmented, divergence is the rule. In the later stages of development, economy is integrated leading to convergence; and once the process of convergence begins, it becomes cumulative with the forces tending towards regional equality mutually strengthening each other.

The equality issue is central to the development policies. The problem before developing countries is to so plan the alignment of productive resources and of class relationships as to achieve reduction in economic and social inequality. The process of reducing inequality is a two-fold one-on the one hand, measures have to be taken to reduce excessive concentration of wealth and income to the lowest levels, and on the other hand, incomes at the lowest levels have to be raised. The Spatial aspect of economic development is important for India which is characterized by extreme regional variations. The availability of capital and enterprise and many other facilities is unevenly distributed among areas. The favourable areas not only steal a march over the unfavourable ones but also create suctioning backwash effects on the latter. Therefore, a regional approach is the only device for redressing the oddities as far as nature would permit, because inequality and the trend towards rising inequality have often impeded

healthy economic expansion.

The awarness of regional development problems, particularly regional disparities in development, has existed among the planners since the beginning of planning. A reference to the need for reducing such disparities was made in the very first plan document.[25] However, the question was persuaded more vigorously only during the second Five Year Plan with stipulated various devices for regulating the pattern of investment in such a way as to lead to a balanced regional development. In the Third Plan, a more concrete approach to the problem of balanced regional development was attempted. The Fourth Five Year Plan took note of the widening regional imbalances and the planners visualized that the handicaps of backward areas would be removed through expansion of social services and infrastructural facilities and development of agriculture and allied activities. Apart from the weightage given to backward areas in allocation of finance, programmes for small farmers, marginal farmers, dry areas, tribal areas and industrially backward areas have been taken up. The Fifth Plan with 'removal of poverty' and 'attainment of self-sufficiency' as the two long term basic objectives, proposed to intensify the efforts taken so

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25. See Planning Commission's, First Five Year Plan - A Draft Outline", (New Delhi, July 1951), pp.42-43.

far in the direction of removing regional imbalances. The concept of national development itself has undergone a change to include not merely a growth in Gross National Product, but its equitable distribution among people and regions. This growing awareness of increasing disparity has necessitated inventions of a number of policy instruments for generating growth so that the spatial spread of growth generating economies would by themselves remove poverty and reduce disparities. Otherwise, removal of inequality without significant growth would only lead to a sharing of poverty.

1.3 Objectives of the Study

The objectives of the present study are :

1. Identification of the levels of socio-economic development prevailing in the tehsils of Jammu province at two points of time : 1961 and 1971;
2. To examine the trend in inter-regional and intra-regional disparities in the sectoral and overall levels of development within the province over a period of time : 1961 and 1971; and
3. To consider the relationship between population growth and economic development in Jammu province, specifically

to test the hypothesis that "high rate of population growth leads to the retardation of socio-economic development of developing areas."

As mentioned earlier, Jammu and Kashmir is the sixth largest state of India but its population is only 0.84 per cent of the country's population; 92 per cent of area in the state is unsuitable for human settlement. Consequently it has to make do with the remaining 8 per cent of the area in which the entire population is concentrated. In the circumstances the fact that the population of Jammu and Kashmir has registered a decadal growth rate of 29.65 per cent gives some cause of thought. This is especially so since the increase in absolute numbers during the past decade is nearly twice the addition registered during the preceding two decades. There are arguments on both sides regarding the association between population growth and economic development so that it is not possible to reach a uniform conclusion. But, at the same time, population is the basic economic variable in India and is considered to be the main factor inhibiting the development process in the country. Hence, the need arises to test the relation between the two empirically so that appropriate measures are taken and relevant population policies are formed and effectively implemented to accelerate economic development

of the economy. Such a study is one of the important procedural tools in analysing the factual relationship between the regions economy and its stage of economic development. It provides the basic format for the consideration of economic policies to be framed. In so far as economic development is negated or promoted by population growth, developmental efforts must encompass demographic discussion. It is on these considerations that the third objective has been included in the present study and is considered to be of vital importance for studies dealing with regional disparities.

# CHAPTER - II

## THE DEVELOPMENT INDICATORS AND THE DATA BASE

### II.1 Selection of Study Unit

For any study on regional disparities, there is need for identifying an appropriate spatial unit of analysis. There are a variety of area levels that are taken cognizance of for various purposes. Two levels, a state or a district, are considered significant for practically all purposes. Hence, many studies in India have been conducted at the state level and/or the district level, more often the latter, and an index of the level of development is prepared accordingly. Needless to say that smaller the unit area, the greater is its dependability in regional delimitation, and the greater is the realism attached to the policy conclusions arrived at in such studies.

As mentioned earlier, the present study area comprises the Jammu Province of Jammu and Kashmir State. Jammu is a distinct geographical and linguistic region but in order to identify the levels of development and disparities therein, a certain unit of study has to be selected so that the spatial disparities in the levels of socio-economic development are reflected in a better and fuller manner. Hence, 'Tehsil' has been selected as a unit of study for identifying backward areas as well as for studying inter-temporal regional disparities in the levels of socio-economic development.

## II.2 Formation of Tehsils

The present study is an inter-temporal one covering two points of time - 1961 and 1971. All the tehsils of Jammu Province have been covered. Due to some boundary changes during the period 1961-71 adjustments had to be made in order to ensure comparability of data between 1961 and 1971. For example tehsil Gool Gulab Garh (constituted newly with 68 villages of tehsil Reasi and 10 villages of tehsil Ramban) and tehsil Reasi had to be clubbed together. Similarly, the erstwhile tehsils of Billawar and Bashohli, and those of Budhal and Rajouri had to be considered as single tehsils under the name of Bashohli and Rajouri respectively.

## II.3 Selection of Indicators

Economic development is a complex and multi-dimensional phenomenon and has been defined differently by geographers, regional scientists and economists. There is no simple objective criterion of measuring economic development, nor can a single indicator be used to measure it. In the present study, development is taken to imply a whole socio-economic process which results in a perceptible and cumulative rise in the standard and 'quality' of life for an increasing proportion of population For capturing this socio-economic transformation process, a large number of variables might be suggested as indicators of of development. While in western countries employment and per capita income constitute the main criteria of progress, in

developing countries basic amenities like electricity, communications, education and health are the real hallmark of socio-economic development.

The levels of economic activity and growth, despite complex conceptual and technical problems, are reasonably well measured in the economically more advanced nations thanks to ready availability of relevant data. Contrary to this, in the economically less developed countries, such information is usually inadequate and sometimes entirely absent, especially at the levels of lower areal units. In fact, the lack of adequate economic and demographic statistics may itself be regarded as one of the indicators of "under-development."[1] In such countries the inadequancy or absence of direct measurements of socio-economic progress impel the use of various indirect indices or proxies therefor. In some cases the high degree of relationship between economic and demographic variables may justify the use of demographic data as indicators of economic development.

The two conventional methods for measuring economic growth are growth of the total and of the per capita income. It is now increasingly felt that these measures are inadequate,

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1. Philip M, Hauser, "Population Statistics and Research in Planning Economic Development", United Nations World Population Conference, Vol. V, (New York, 1955),pp.927FF.

if not faulty. The only merit of these measures is that they give us an overall view of the growth potential. Firstly, being aggregates, these measures hide the structure of the economy. Secondly, they fail to illuminate the pattern of growth process. Finally, as development is a multi-dimensional process, a uni-dimensional measure such as total or per capita income fails to focus attention on these very important aspects of economic development. This stresses the importance of multiple-cause approach. The present study goes by this approach. In the selection of indicators, an effort has been made to cover as many aspects of the province's economy as possible. The indicators chosen can be broadly described as economic, demographic and social in nature. These indicators have been assigned to five sectoral blocks namely:

1. General Indicators
2. Agricultural and Allied Activities
3. Industry and Trade
4. General Infrastructure
5. Social Services

We are of the opinion that all the indices are either essential or the best that could be chosen. However, it cannot be denied that some more obvious and significant indices like per capita income, per capita consumption of power, yield per acre, etc. could not be included merely because data were not available. It would be worthwile to mention the development indicators included under each of the five sectoral blocks.

This is done in the following paragraphs with an explanatory note following immediately thereafter:

| Block 1 | General Indicators |
|---|---|
| $a_1$ | Male participation rate. |
| $a_2$ | Percentage of urban population to total population. |
| $a_3$ | Percentage of literate population to total population. |
| $a_4$ | Density of population per square kilometre. |

| Block 2 | Agriculture and Allied Activities |
|---|---|
| $b_5$ | Net cropped area per agricultural worker. |
| $b_6$ | Gross irrigated area as a percentage of gross cropped area. |
| $b_7$ | Cropping Intensity (=Gross Cropped area divided by net sown area x 100) |
| $b_8$ | Percentage of cultivators to total agricultural workers. |
| $b_9$ | Number of tractors per 1,000 acres of net cropped area. |
| $b'_{10}$ | Number of live-stock per capita of total population. |
| $b'_{11}$ | Percentage area under orchards to total cropped area. |
| $b'_{12}$ | Percentage area under forests to total geographical area. |
| $b'_{13}$ | Percentage workers in forests, live-stock, orchards and mining and quarrying to total workers. |

| | |
|---|---|
| Block 3 | Industry and Trade |
| $c_{14}$ | Percentage of male workers in manufacturing other than household to ~~the~~ total male industrial workers. |
| $c_{15}$ | Percentage of male workers in industry to total male workers. |
| $c_{16}$ | Percentage of workers in Trade and Commerce to total workers. |
| Block 4 | General Infrastructure |
| $d_{17}$ | Villages connected by roads as a percentage of all villages. |
| $d_{18}$ | Villages electrified as a percentage of all villages. |
| $d_{19}$ | Number of Bank-offices per 10,000 population. |
| $d_{20}$ | Number of Post-offices per 10,000 population. |
| Block 5 | Social Services |
| $e_{21}$ | Average number of educational institutions per 10,000 population. |
| $e_{22}$ | Average number of medical institutions per 100 square kilometres. |
| $e_{23}$ | Villages with protected water supply as a percentage of all villages. |

In order to have a correct picture of the relative levels of social services, their number has been taken as a ratio of (a) Population; (b) Area; or (c) number of villages in the tehsils. For example, educational facilities have been expressed in terms of population because the availability of such facilities is affected by an increase in population.

The areas as a denominator has been found more appropriate in the case of medical facilities as accessibility is the major constraint due to long distances. In the case of water facilities, total number of villages have been considered to be a much better denominator.

It needs no stressing that the indicators chosen by us are closely related to the process of agricultural transformation, industrialisation, infrastructural development and the development of other essential social services. Our list encompasses almost all important aspects of the province's economy and is fairly representative of the socio-economic changes that took place during 1961-71. The same set of variables have been chosen for 1961 and 1971.

## II.4 Explanation of the Variables Chosen

### Block 1 General Indicators (Urbanisation, Literacy, Work Participation and Density of Population)

The diverse types of human resources have their own impact on the socio-economic process, hence the socio-cultural indices play a very important role in the idenfification of regional levels of development. Those indices not only manifest the effects of economic development but also indicate the stage of economic development attained by a certain region. In order to consider their spatial dimension, the variables $a_1$, $a_2$, and $a_3$ have been included.

The work participation has been taken as a reciprocal for dependency. A worker is a person whose main activity is participation in any economically productive work by his physical or mental activity.[2] Variable $a_1$ accommodates spatial dispersal of the participation rate. In view of change in the definition of workers in 1971 census, which has mainly led to the reduction in the participation rate, more pronouncedly in the case of females due to a higher percentage of part time workers among them, only the male participation rate has been considered to make the figures more comparable between 1961 and 1971. Moreover, male participation rate gives more stable and reliable index of economic activity than the overall crude participation rate. In spite of the above precautions, it cannot be claimed that the figures pertaining to workers are strictly comparable between 1961 and 1971.

Urbanisation, which is not only a social phenomenon but has also economic implications in the regional development process, has, no doubt, its own problems. However, in a traditionally backward region such as Jammu, urban centres play an important role by serving as catalytic agents and diffusion points of socio-economic change. In general, urban areas have

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2. Government of Jammu and Kashmir, General Report, Series 8 - Jammu and Kashmir (Census of India 1971), Part I-A, (Delhi, 1976), p. 120.

higher level of living than rural areas. Moreover, the expansion of economic activity generally transforms rural character of the area into urban character. The social, economic and technological process results in increasing degree of urbanisation. This indicates that urbanisation of a population is positively correlated with levels of economic development and it can be considered as a major index of change and development occurring in the area in question. Indicator $a_2$ reflects this aspect. The indicators like urban income generation could not be considered due to the non-availability of data.

Literacy is an important indicator of socio-economic development. In the state of Jammu and Kashmir, majority of the population, especially in rural areas, prefer to put even the minors to work to gain some economic return, however, meagre, to supplement the family's income. This can be attributed probably less to their poverty and more to their social backwardness especially because in the state, education is provided free even upto the university level. Hence, literacy is undoubtedly a significant indicator of social change in the backward province of Jammu. It also reflects upon the quality of human resources. The indicator $a_3$ indicates the level of literacy in the region as determined by the percentage of literates to total population.

In the study area, it is found that population density is an important factor which embodies many features of development; in backward and hilly Jammu province it is a fairly reliable index of development in as much as the population tends to get concentrated at a few focal points of development. The indicator $a_4$ covers this aspect.

Block 2 Agriculture and Allied Activities:

Net cropped area per agricultural worker ($b_5$) is reciprocal of rural density and is a good indicator for average productivity of land and labour. Gross area irrigated as a percentage of gross cropped are ($b_6$) is a reflection of the development of modern cultivation because irrigated area bears great complementarity with the application of fertilizers, high yielding variety of seeds and other modern inputs. Due to non-availability of data, fertilizers and improved seeds could not be considered as separate indicators. The cropping intensity ($b_7$) is a composite, end-expression of effort in three directions - area, yield and cropping pattern.[3] It reflects upon the extent to which improved seeds and better techniques of cultivation are used.

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3. Asok Mitra, Levels of Regional Development in India (Census of India, 1961), Vol. I Part I-A(i), India (New Delhi, 1965), p. 11.

The percentage of cultivators to agricultural workers ($b_8$) throws some light on the institutional frame of agriculture. It is generally believed that an area with a greater proportion of owner-cultivation is at a higher level of development than an area with greater degree of proletarization of the peasantary; the owner-cultivators have better prospects for investment. In other words, agricultural efficiency is likely to be high in an area where the number of cultivators outweighs that of agricultural labourers. The number of tractors per 1,000 acres ($b_9$) is an important indicator of agricultural modernisation. Live stock is an extremely important sector for the province because it lends diversification of economic activity; large sections of the population depends upon it and derive supplementary income therefrom. Moreover, an important community known as Gujjars is principally engaged in cattle rearing. Indicator $b'_{10}$ takes care of this important activity of animal husbandry. The area under orchards to total cropped area ($b'_{11}$) also reflects the degree of diversification of economic activity within agriculture. Forests have a special significance in the economy of Jammu province which has 45.9 per cent of its geographical areas under forests.[4] It is a major revenue earning sector besides

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4. Jammu and Kashmir Forest Department, A Digest of Forest Statistics, Jammu and Kashmir Forest Record No. 1 (Srinagar, 1966), p. 8.

providing employment and raw-materials to forest-based industries. In a hilly area like Jammu, the proportion of forest area to total area is an important variable indicating the growth potential of a region, $b'_{12}$ takes care of this source of development.

The importance of forests and live-stock in the economic development of tehsils could, no doubt, be assessed in a better manner by their respective contribution to the tehsil income. But due to severe data limitation the same could not be included. Instead the area under forests has been taken as a proxy for income on the assumption that the income generated by forests in each tehsil is proportional to the area under them. The externalities of forest resources are assumed to be equi-proportionately shared among the tehsils of Jammu. The proxy used is no doubt beset with heroic assumption, yet an indicator for forest resources cannot be left out just because tehsil level data for forest-based income are not available. The development in forests, live-stock and orchards can also be considered from an important angle i.e. employment; this is taken care of by indicator $b'_{13}$.

Block 3 Industry and Trade

Industrial development is directly measured by production in this sector. However, the concerned data at tehsil-level not being available, some indirect indicators

had to be explored. Apart from production, level of industrial development can be assessed from the point of view of the employment provided by this sector. The strength of the modern industrial sector is important for the economic viability of a region because it is through the backward and forward linkages in this sector that growth impulses are transmitted. Hence, the justification for taking indicator $c_{14}$ i.e., workers in manufacturing other than household to total workers. The diversion of labour from agricultural activity to industrial activity indicates the degree of industrialisation of economy; indicator $c_{15}$ (percentage of male workers in industry to total male workers) considers this aspect. In the study area, it has been found that due to the change in the definition of workers in 1971 census, the reduction in the number of workers has been more pronounced in the case of industry, especially the household sector. Hence, to overcome the problem of incomparability, only males have been included in the indicators $c_{14}$ and $c_{15}$.

Initially it was proposed to take the distributional aspect into account by including 'the number of census houses used as factories, workshops and worksheds per 1,000 census houses. But the required data for 1971 were not available, at tehsil level; so this indicator had to be dropped. The same problem arose in respect of workers in registered

factories to total workers in industry and for the industrial consumption of electricity which is often used as a crude index of modernisation of the industrial sector. Trade and commerce provide the life-blood to the economic system and the income levels are relatively higher in trade than in agriculture and in house-hold industries. Indicator $c_{16}$ covers this aspect.

Block 4 General Infrastructure

In as much as the development of regional infrastructure is a pre-requisite for the development of agriculture, industry and urban centres, the inter-tehsil comparison will not be complete unless due consideration is given to the tehsil level development of infrastructures. Infrastructures include transportation net work, power supply, banking facilities etc. In a landlocked province such as Jummu, the need of communication and transport cannot be over-emphasized; the road transport is an independable means of communication for the regular distribution of goods and services. The tehsil-wise data of surfaced road milage for 1971 were not available; hence the percentage of villages connected by roads to total villages ($d_{17}$) was taken. For the same reasons, instead of consumption of electricity, the number of villages electrified ($d_{18}$) has been included. The indicators $d_{19}$ and $d_{20}$ i.e. number of bank-offices per 10,000 population and number of post offices per 10,000 population respectively, have been

included to consider the extent to which such amenities are available to public. It would seem from the above that in the choice of many indicators under infrastructure the focus has been kept deliberately more on preponderant rural sector.

Block 5 Social Services

The indices of social services, reflecting upon the stage of socio-economic development of the region, have been devised in terms of the prevailing conditions of educational ($e_{21}$) and medical ($e_{22}$) facilities and the protected drinking water facilities ($e_{23}$). The indices selected for education and medical facilities have been the drawback of treating different kinds of medical services and educational institutions on equal footing. Considering the marginal quality differences between various medical institutions, the error introduced by giving equal weightage to them is not significant. Similarly, in Jammu, with extreme social backwardness, even the primary and middle schools play a very important role in the development of the region - in no case less than that played by higher educational institutions which cater to the needs of a small proportion of population only - especially so when more than 80 per cent of the population live in villages.

The importance of protected water supply in the rural sector cannot be over-emphasised in that the provision of drinking water facilities is the first and the most formidable proof of development of a hilly area.

## II.5 Data Base

Because of its very nature, the present study is based on secondary data. Census publications of 1961 and 1971 are the main sources of data. For example, the data pertaining to General Indicators, Trade and Industry and Social Services were collected from the concerned 'District Census Handbooks' for the years 1961 and 1971. Besides drawing upon Census documents, some information was collected personally from various organisations/agencies. For example, the statistics on gross cropped area, irrigated area, area under double cropping, net cropped area, area under orchards and number of tractors and live-stock were obtained personally from the office of the Financial Commissioner, Srinagar. The figures for area under forests were copied from the 'Digest of Forest Statistics', Jammu and Kashmier Forest Record No. 1, Srinagar, 1966. Information regarding bank-offices were procured again personally from the Directorate of Evaluation and Statistics, Planning and Development Department, Srinagar.

## II.6 Limitations of the Study

Needless to say that the indicators selected under each of the five blocks are limited in number, especially in blocks 3 and 5, and would not always be able to articulate the forces underlying the development phenomenon in its totality. The main problem of coverage or exclusion of different components, sectors or aspects of socio-economic development lies in the deficiency of the basic quantitative data.

Also the quality of the data that are available is not wholly satisfactory because of the limited reliability of the figures and weaknesses inherent in the nature of indicators (e.g. number of medical institutions or educational institutions does not necessarily reflect quality of health and education services to the wide mass of people). These imperfections could be remedied by using a fairly large set of indicators. But then, there is the danger of multicollinearity which tends to exaggerate some specific aspects of phenomenon by exposing the study to the errors of duplication.

Owing to the change in the definition of workers during the inter-census period, the data regarding work participation and other workers are not strictly comparable. This limitation remains, though to a lesser extent, even when ratio of only male workers is considered. Similarly in the case of land-use pattern, the data for 1961 were not available, so we were obliged to use 1965 figures.

Some of the indices described above are obviously no good substitutes for direct measurement of economic activity, yet they seem highly related to level of socio-economic development. There are, therefore, severe limitations on the conclusions that can be drawn. It goes without saying that further research should improve the findings of the present study.

There is, however, a comforting compensation. Although many errors are unavoidable in the enumeration, they are likely to cancel one another out. The errors introduced, even if unidirectionally (i.e. consistently too high or consistently too low) are apt to be more or less uniformally distributed over the region so as not to greatly affect inter-regional comparison. The consequent limitation of this study would not, therefore, bias the relative picture of the tehsils as much as they would affect the absolute picture. Moreover, in the field of socio-economic development where so little is really known, it is necessary to take advantage of the second best information if indeed the first best is not available.

# CHAPTER - III

## METHODOLOGY OF ANALYSIS

### III.1 Construction of Composite Index

The weighted composite index for each tehsil has been calculated with the help of the selected indicators under each block. This block-wise composite index helps to know the position of different tehsils in respect of sectoral achievements. The study being intertemporal, the block-wise composite index can give us more information about the relative changes that have taken place in different blocks during 1961-1971. After the calculation of the sectoral composite index of development, a single weighted composite index for the overall economy has been calculated both for 1961 and 1971. The tools and methods of measurement of regional disparities emerge from the analytical frame within which the problem is posed and studied. In the field of social sciences, therefore, tools and methods are subservient to and flow from the analytical frame and cannot be developed in an autonomous fashion. However, there exists no fool-proof method of obtaining an "operational index" for regionalisation from its theoretical concept.[1] In the construction of a composite index of socio-economic development, three distinct types of problems arise:

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1. Hubert M. Blalock, Social Statistics Ed. 2. (Tokyo, 1972), pp. 11-28.

1. selection of the constituent indicators;
2. transformation of indicators to a common scale; and
3. determining weights to be accorded to each indicator before their merger into a single overall index.

Various indicators of development have already been explained in Chapter II (Section 3). The present chapter seeks to unite those numerous indicators to give us an aggregate picture of the regional disparities in the levels of development. It requires two operations, namely (i) scaling the data according to some common standard to arrive at comparative sets of score or the index numbers for each variable considered; and (ii) combining the development scores for each tehsil. In other words, the first job is to remove the variations in the unit of measurement for each variable by an appropriate method of transformation and then, the second job is to decide the weights that should be attached to the selected variables. Needless to say that procedures followed in deciding the weighting scheme have major consequence for the resulting index.

Transformation of Indicators to a common scale:

The variables chosen for working out a composite index are measured in different units and are, therefore, not additive, in general. Hence, the need arises to convert them to some standard 'units' by making them scale free. In other words, it is necessary to eliminate the variations of scale

before evolving any system of weightage. There are various methods of removing the scale bias. In "ranking method"the scale bias is eliminated by ranking the regions according to each variable and the ranks are then ordered according to the total rank score which is treated as the composite index of development.[2] This method, though known for its simplicity, ignores the magnitude of variation between any two regions with respect to any one variable.

Another method of standardising the data is to assign a score of zero to the least favoured and a score of hundred to the most favoured spatial unit with respect to each variable.[3] Intermediate scores are given to each of the remaining spatial units according to the arithmetic distance of their non-standardized score from the two extremes.[4] The same procedure has

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2. Asok Mitra, Levels of Regional Development In India (Census Of India, 1961) Vol-I. Part I-A(i)(New Delhi) 1965). pp. 9-49.

3. Joseph. E. Schwartzberg, Occupational Structure and Levels of Economic Development in India -A Regional Analysis, (Census of India, 1961); Monograph Series. Monograph No. 4 (Delhi, 1969) p.4.

4. Assuming, for example, that spatial units 'A' and 'B' with literate population of 50 per cent and 20 per cent respectively, are the most and the least favoured in a particular region and that a third spatial unit 'C' has a literate population of 35 per cent. Scoring 100 for 'A' and zero for 'B' and noting the difference of 30 between the two, one would then assign a score of 50 to region C, the difference of 15 between its literate population and that of region 'B' being 50 per cent of 30.

been followed by Kamili in 1961 for identifying the levels of development prevailing in the districts of Jammu and Kashmir.[5]

Under the method of standardization, the biasness of scale is removed by taking the ratio of the deviation of observations from their mean and their standard deviation = $\frac{(x - \bar{x})}{SD_x}$. This procedure implies a shift in the origin as the scale of measurement and distorts the 'relative positions' of observations. Another defect in this method is that it equalises the variance and length of variables so that the variables with higher dispersion, independent of scale, are discriminated against.

Under the method of 'Division by Standard Deviation', no shift in the origin takes place with the result that it leaves the relative position of observations unaltered. But when the original observations are divided by their standard deviation, it leads to the equalisation of variance i.e., the variance of the variables becomes unity. The composite index remains independent of the dispersion of the variables, as happens under the method of 'standardisation'.

It is thus obvious that neither of the above methods is wholly satisfactory or wholly unsatisfactory. The method of "Division By Mean", which is free from most of these defects, has been adopted by us. Under this method the scale bias can be eliminated without affecting the dispersion or the relative position of observations in a series, with the result that due

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5. Government of Jammu and Kashmir, "Demographic Regions", Census Atlas of Jammu and Kashmir, (Census of India, 1961) Vol VI - Part IX, (Delhi, 1967), pp. 316-323.

weightage can be given to the differences of variance while compositing the variables into a final index. When the observations are divided by their mean, 'the mean of the new variable equals unity and the standard deviation equals the co-efficient of variation of the original series. The co-efficient of variation of both the original and the transformed series remains the same. Thus, new transformation retains the relative variability of the original variable.

The choice of the method of eliminating the scale bias depends to a large extent on the objective of the study. As the main objective of the present study is to identify the distance in the socio-economic development levels among the tehsils of Jammu province, the method of "division by means" has been preferred because it gives due weightage to the differences of variance while constructing a final index, whereas other methods lack this advantage.

Determination of Weights:

After the elimination of the biasness of scale, the next problem in the construction of the composite index is to determine weights to be accorded to each variable. The weights reflect the degree of importance that each indicator should command in the measurement of the development process. We have to decide, for example, whether literacy is more important for overall development than, say, agricultural

productivity or industrial development; and if so by how much more. Also different indicators could have different significance at different levels of development.

The subjective weightage, though it expedites the work and saves labour, is not considered good on the ground that it is purely arbitrary and the scope for manipulation of the results is greater than under other objective methods. Hence, it is only when one has sufficient insight into the nature and magnitude of the inter-relation among the variables and their socio-economic implication, the subjective weightage should be resorted to.

"Equal Weightage" scheme is the simplest method of tackling the weightage problem. To arrive at the composite index of development, the variables are just linearly added up. The logic behind this is that it is always better to give equal importance to all indicators of development when there do not exist sufficient reasons to believe otherwise. But, this takes too simple a view of the development process. It needs no special stressing that some indicators play more important role in the development process than others; consequently, they would deserve higher weightage.

'Ranking Method is another popular alternative. Asok Mitra adopted the 'Ranking Method' in the 1961 Census to classify the districts of India according to their levels of development.[6] The composite index of development is arrived

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6. Asok Mitra. n.2.

at by a straight forward adding up of the rank orders of spatial units according to sets of variables. Then the total rank scores in various sectors are again ranked to get an index of overall level of development. Though this method is known for its simplicity and computational ease, it ignores the magnitude of variation between any two regions with respect to any one variable. For example, tehsil 'A' may be leading tehsil 'B' in population density by 100 and 'B' might be ahead of 'C' in this respect by 50; the ranks given to the three will be 1,2 and 3 respectively, with no regard for the magnitude of difference. In other words, unit differences in ranks do not reflect an equal difference in the variable values. Again 'A' might be leading 'B' in urbanisation by a large margin, but 'B' might be leading 'A' by a small margin in literacy; when their ranks are summed up, both will have the same rank order. The ranking device can be useful, to some extent, in cases where the number of variables and observations are large; because the larger the number, the smaller will be the distortion due to ranking. However, the methodology is crude and involves arbitrariness as well as subjective weighting.

Recently, several studies have been conducted using quantitative techniques. Pal[7] and Dasgupta[8] have undertaken

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7. M.N. Pal, 'Regional Disparities in levels of Development in India', Indian Journal of Regional Science(Kharagpur), Vol VII No. 2 (1975), pp. 35-52.

8. Biplab Dasgupta, "Socio-Economic Classification of Districts - A Statistical Approach", Economic and Political Weekly (Bombay), (August 14, 1971), pp.1763-1775.

such exercises. Although the subjective element cannot be completely eliminated, yet it can be minimised to a considerable extent by employing better statistical methods. The method of "Equal Correlation" determines a vector having equal correlation with all the constituent variables and, in this sense, gives them an equal representation. But the main limitation of this method is that it ignores the differences in variance and the length of variables while computing the factor loadings to construct a composite index.

The methods of 'giving equal weightages', 'ranking technique' and the 'equal correlation method' suffer from limitations that these do not give larger weight to the mutually interrelated variables. This lacuna is sought to be corrected by the 'Principal Component Analysis, one of the forms of 'Factor Analysis'. Factor analysis minimises the subjective element to a considerable extent and explicitly takes account of multicollinearity among variables. The main objective of factor analysis is to reduce the dimension of a complex multivariate problem; in other words, the original number of explanatory variables is reduced to a smaller number of independent factor in terms of which the whole set of variables can be understood[9]. In many studies the number of

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9. Amitab Kundu, "Construction of Indices for Regionalization - An Enquiry into the Methods of Analysis", Geographical Review of India, (Calcutta), Vol.37. No. 1 (march 1975), pp. 19-29.

variables is too large to handle. Since it is thedispersion in these variables which ought to get reflected in the composite index, the linear combinations of the variables, called principal components, explaining smaller variances are discarded and those with larger variances are retained. Thus, principal components give a new set of linearly combined measurements. The principal component method enables us to determine a vector known as the first principal component, linearly dependent on the variables, having themaximum sum of squared correlation with the constituent variables. The factor loadings are obtained from the eigen vector corresponding to the maximum eigen value of correlation matrix say R. Weights are given on the basis of correlation i.e., higher the correlation of a variable with others, greater is the weight in general. After the factor loadings for the different variables have been obtained, each variable is multiplied by its respective weight and the addition of the group of weighted variables gives the composite index of sectoral development. The first principal component of various sectoral groups may be treated as a new set of variables and the same me method is applied a second time to arrive at the final index.

In the principal component analysis, the given data matrix is standardised to get the correlation matrix R = • $\left( \frac{\dot{x}' \cdot \dot{x}}{n} \right)^{*}$ . Then with the help of the equation

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*The symbols/notations used and the relevant derivations are described in reasonable detail in appendix - D.

( $R - \lambda I$ ) $K = 0$ , we get the eigen values ( $\lambda$ values). Taking the highest eigen value which explains the highest variation, the corresponding eigen vector (K) is obtained which represents the weights. These weights are finally multiplied to the standardised matrix ($\dot{X}$) to get the final composite index.

This method is criticised on the same basis as the method of "equal correlation", i.e., it ignores the difference in the variance of variables in computing the factor loadings resulting in discrimination against higher dispersion. We also face the problem of 'negative weights' which is very difficult to explain once we have selected the indicators that reflect the development levels. Also, this method determines weights generally on the basis of correlation; in other words, higher the correlation, the higher the weightage, which may not always be defendable on a priori grounds. Another defect of the principal component analysis is that it gives good results only when all the given variables are highly correlated and thereby showing a unidimensionality in the data. If such is not the case, the data show a multi-dimensionality.

The "Modified Principal Component Analysis",[10] which is another form of principal component analysis, is free from

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10. Ibid. 9. The technique has been designed as an alternative to the use of correlation matrix as a basis in the traditional principal component analysis.

the two defects mentioned above and presents, generally, a picture nearer to reality. Hence, in the present study the same method has been adopted to construct the weighted sectoral composite indices of development of the tehsils of Jammu Province for both the time points, using the same set of variables. The composite index of overall development also has been obtained by the application of 'modified principal component analysis', taking all the five sectoral composite indices into account and treating them as a set of new variables. In this method, the factor loadings for the variables are determined to maximize the sum of squared projection of the transformed variables.[11] Higher weightage is given to the variables with greater disparity in distribution and a higher degree of inter-relationships. In this method, the standardised data matrix ($\dot{x}$) is replaced by the normalised matrix ( $\hat{X}$ ) and the correlation matrix R = ( $\frac{\dot{x}' \cdot \dot{x}}{n}$ ) by the matrix A ( $\frac{\hat{x}' \cdot \hat{x}}{n}$ ). The transformation of variables is done by the method of 'Division By Mean', as opposed to the method of 'Standardisation' used in the simple principal component analysis model. The same steps are followed as in the principal component analysis to get the final set of weights which are ultimately multiplied to

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11. The Mathematical Derivation is given in the Appendix - D.

the normalised data to get the final composite index. This method has been preferred to the simple factor analysis because it takes into consideration the difference in the variance of variables while computing the factor loadings; and also because the weights determined are always positive.

Composite index of development has been determined by computation at two stages. At the first stage, the selected variables have been classified into five groups comprising separately, general indicators, agriculture and allied activities, industry and trade, general infrastructure, and social services. At the second stage, the composite indices of the five group indicators have been obtained to get the overall development index.

The first principal component in each sector is computed in such a way that it explains the maximum of 'total variance' depicted by the constituent variables; hence, it has been treated as the group index. The variation explained by the first principal component in 1961 and 1971 has been as follows:

TABLE - III.1

Percentage Variation explained by the First Principal component.

| Sl.No. | Block/Overall Economy | 1961 | 1971 |
|---|---|---|---|
| 1. | General Indicators | 87 | 86 |
| 2. | Agriculture and Allied Activities | 67 | 62 |
| 3. | Trade and Industry | 91 | 94 |

contd...

| Sl.No. | Block/Overall Economy | 1961 | 1971 |
|---|---|---|---|
| 4. | Infrastructure | 67 | 79 |
| 5. | Social Services | 81 | 85 |
| 6. | Overall Economy | 90 | 94 |

The equations for the five sectoral indices have been found as follows:

FOR 1961:

$$A_i = 0.365.a_{1i} + 0.627.a_{2i} + 0.467.a_{3i} + 0.505.a_{4i} \quad \ldots\ldots\ldots(1)$$

$$B_i = 0.292.b_{1i} + 0.392.b_{2i} + 0.276.b_{3i} + 0.265.b_{4i} + 0.531.b_{5i} + 0.247.b_{6i} + 0.395.b_{7i} + 0.236.b_{8i} + 0.245.b_{9i} \quad \ldots\ldots\ldots(2)$$

$$C_i = 0.631.c_{1i} + 0.439.c_{2i} + 0.639.c_{3i} \quad \ldots\ldots\ldots(3)$$

$$D_i = 0.358.d_{1i} + 0.703.d_{2i} + 0.551.d_{3i} + 0.274.d_{4i} \quad \ldots\ldots\ldots(4)$$

$$E_i = 0.340.e_{1i} + 0.421.e_{2i} + 0.841.e_{3i} \quad \ldots\ldots\ldots(5)$$

FOR 1971:

$$A_i = 0.368.a_{1i} + 0.619.a_{2i} + 0.457.a_{3i} + 0.522.a_{4i} \quad \ldots\ldots\ldots(6)$$

$$B_i = 0.284.b_{1i} + 0.405.b_{2i} + 0.268.b_{3i} + 0.256.b_{4i} + 0.574.b_{5i} + 0.244.b_{6i} + 0.338.b_{7i} + 0.225.b_{8i} + 0.253.b_{9i} \quad \ldots\ldots\ldots(7)$$

$$C_i = 0.542.c_{1i} + 0.571.c_{2i} + 0.617.c_{3i} \quad \ldots\ldots\ldots(8)$$

$$D_i = 0.481.d_{1i} + 0.623.d_{2i} + 0.500.d_{3i} + 0.362.d_{4i} \quad \ldots\ldots\ldots(9)$$

$$E_i = 0.435.e_{1i} + 0.570.e_{2i} + 0.697.e_{3i} \quad \ldots\ldots\ldots(10)$$

Where $A_i$, $B_i$, $C_i$, $D_i$ and $E_i$ stand for sectoral development indices of ith tehsil and $a_{ji}$, $b_{ji}$, $c_{ji}$, $d_{ji}$ and $e_{ji}$ stand for normalised data matrix of the five development blocks. The coefficients of variables indicate their corresponding weights. The equations for the overall economy have been obtained as follows:

FOR 1961:

$$F_i = \left.\begin{array}{l} 0.429.A_i + 0.381.B_i + 0.456.C_i \\ 0.490.D_i + 0.473.E_i \end{array}\right\} \ldots\ldots\ldots (11)$$

FOR 1971:

$$F_i = \left.\begin{array}{l} 0.452.A_i + 0.443.B_i + 0.466.C_i \\ 0.442.D_i + 0.432.E_i \end{array}\right\} \ldots\ldots\ldots (12)$$

Where $F_i$ (1961) and $F_i$ (1971) stand for the composite index of overall economy of the ith tehsil for the years 1961 and 1971 respectively. $A_i$, $B_i$, $C_i$, $D_i$ and $E_i$ stand for the sectoral indices calculated separately for the two time points under study.

III.2 Classification of Tehsils:

After working out the sectoral composite indices and the composite index of overall development, the tehsils need to be classified into several groups according to their respective index values. Various methods of classification have been used by researchers and planners. For example quartile method and the method of considering the deviation

from the mean ( $\bar{x} \pm$ 1.S.D. or $\bar{x} \pm$ 2.S.D.) are quite popular. The main defect with these methods is that the magnitude of difference between the consecutive classes is not taken into account. There are enough chances that two regions which are very close to each other may be classified into two different classes and the two regions quite apart from each other may be placed under the same group. In the present study it has been considered appropriate to classify the tehsils into various groups by taking into consideration the closely related indexes under specific groups. The "average range" method of classification takes into consideration the magnitude of difference between consecutive classes; hence it has been preferred to the methods mentioned above.[12] (The average range ( = ar ) is the difference between the highest (h) and lowest (l) values divided by the number of observations). An effort has been made to include the large homogeneous tehsils with close composite index under the same group and to place the hetrogeneous tehsils, with a large difference between the index values, in separate groups. The same would not have been possible had the method of quartiling and deviation from the mean been applied. The criterion for a tehsil to enter a group is that its distance from the nearest tehsil (in the group) is less than 1.5 ar. and from its farthest tehsil in

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12. Amitab. Kundu, Measuring Urban Processes - A Study In Regionalisation, (To be published), Popular Prakashan (Bombay, 1978).

the group is less than 3 ar. As the nature of distribution in the index varies from block to block, the number of classes may not be the same for all the blocks (for the same reason, the interval between different classes varies from one sectoral block to another). However, for the sake of convenience, the tehsils have been classified into four development categories namely very high, high, medium and low. All the tehsils which have their development indexes, under various blocks, below the provincial average (geometric mean) have been considered as relatively under developed; hence they have been clubbed together under the category of lowly developed tehsils. The classifications are at best relative statements as the criterion chosen is arbitrary. Hence, the classification of tehsils into various development categories reveals only the relative position of tehsils.

The development levels prevailing in various sectors and the overall economy of the tehsils have been represented on maps under the respective headings, using choroplethic technique. The tehsil boundaries in the map have been taken from the concerned district Census handbooks and are very close to real boundaries.

III.3 Measurement of Regional Disparities

In order to calculate the extent of regional disparities in different sectors and in the overall economic development, at the two points of time - 1961 and 1971, the

"weighted co-efficient of variation" (VW)[13] has been estimated. Regional disparities can be measured with the help of simple co-efficient of variation also but it suffers from the law that it does not discriminate the regions on the basis of their population. Considering the fact that the tehsils of Jammu province are of uneven size so far as population is concerned, the "weighted co-efficient of variation" has been preferred which takes account of the population of each spatial unit and hence gives an accurate picture of the degree of disparity. The weighted co-efficient of variation has been calculated with the help of following formula:

$$VW = \frac{\sqrt{\sum_{}^{n} ( y_i - \bar{y} )^2 \frac{F_i}{N}}}{\bar{y}} \times 100$$

Where

VW = weighted co-efficient of variation

$y_i$ = Index number of the ith areal unit

$\bar{Y}$ = Average number of an index for the region as a whole. (Geometric Mean)

$F_i$ = Population of the ith areal unit.

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13. J.G. Williamson, "Regional Inequalities and the process of National Development: A Description of Patterns", Economic Development and Cultural Change, (Chicago), Vol. 13, No. 4, Part II (July 1965), pp. 3-45.

N = Total Population of the region; and

n = Total number of areal units.

### III.4 Relationship between Population Growth and Economic Development

In order to analyse the relationship between population growth and economic development, the rank correlation coefficients have been used. The Rank correlations have been worked out both between population growth and development and between population density and the level of development. Owing to the non-availability of data pertaining to death rates, birth rates and migration from 1971, it has not been possible to work out the association between these and the various development indices. Also because no Census was conducted in the state of Jammu and Kashmir in 1951, the relationship between population growth and various development blocks could not be considered for the decade 1951-61. This exercise is at best a very crude way of looking into the association between population growth and economic development, and the conclusions drawn cannot be stressed to any logical end.

# CHAPTER - IV

## ECONOMIC STRUCTURE OF THE PROVINCE IN 1961

The concept of 'balanced regional development' has gained increasing importance in recent years. Balanced regional development implies the fullest development of the potentialities of an area according to its capacity, so that the benefits of overall economic growth are shared by the inhabitants of all the regions. The ultimate aim is to raise the living standards of the people in backward regions by achieving rapid socio-economic development. And for the rapid development of the economy, balanced regional development is essential because the progress of the entire economy depends on the development of all regions in keeping with their factor endowments.

As pointed out earlier in Chapter - I, identification of under-development is an important first step not only in unravelling the causes of backwardness, but also for the formulation and the implementation of any development plans for a region. This is so because the efforts to improve the living standards in the specially backward areas can be fruitful only when the exact dimensions of the regional imbalances are known. The Jammu province comprises twenty-one tehsils. Although in general the entire province is backward in terms of socio-economic development, the position of

many tehsils is especially very depressing. It becomes important, therefore, to analyse the regional structure of the economy so that appropriate policies are properly formulated and effectively implemented. The present chapter is an attempt in that direction. In the first section, the levels of socio-economic development prevailing in various tehsils are identified. This is followed by an attempt to measure the extent of sectoral variations and regional disparities in different sectors as also in the overall economy of the region.

## IV.1 Identifying Levels of Socio-Economic Development of Tehsils

In Chapter - II, the twenty-three development criteria were classified into five sectoral groups[1] with a view to constructing tehsil-level composite development indices, reflecting the levels of development in each tehsil. From these sectoral indices, a global index for the economy as a whole were to be worked out. The tehsil-wise composite indices for each of the five sectors and the overall economy has been calculated with the help of equations 1,2,3,4,5 and 11 respectively of chapter-III.[2] The tehsils have been ranked

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1. The five sectors are: (1) General Indicators (urbanisation, literacy, work participation etc.) (2) Agriculture and Allied Activities, (3) Trade and Industry, (4) General Infrastructure and (5) Social Services.

2. For details, see Chapter-III, pp. 52-53.

in a descending order, on the basis of the value of their development indices. Finally, they have been classified into various development categories using the 'average range method'[3] The levels of development in each sector and in the overall economy have been depicted on maps under respective headings.

The levels of socio-economic development are assessed below for the year 1961.

Block 1 General Indicators (Urbanisation, Literacy, Work participation, Density of Population.

TABLE - IV.1

Levels of Development in 'General Indicators' - 1961

| Tehsil | Composite Index | Rank | Classification |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| Jammu | 6.317 | 1 | Very High |
| R.S.Pora | 3.115 | 2 | High |
| Kathua | 2.629 | 3 | Medium |
| Haveli | 2.483 | 4 | Medium |
| Udhampur | 2.276 | 5 | Medium |
| Samba | 1.841 | 6 | Medium |
| Hiranagar | 1.837 | 7 | Medium |

Contd...

3. Chapter-III. pp.54-55.

| (1) | (2) | (3) | (4) |
|---|---|---|---|
| Bhaderwah | 1.666 | 8 | Low |
| Akhnoor | 1.521 | 9 | Low |
| Ramban | 1.456 | 10 | Low |
| Doda | 1.454 | 11 | Low |
| Rajouri | 1.336 | 12. | Low |
| Bashohli | 1.322 | 13 | Low |
| Nowshehra | 1.319 | 14 | Low |
| Ramnagar | 1.252 | 15 | Low |
| Reasi | 1.224 | 16 | Low |
| Kishtwar | 1.174 | 17 | Low |
| Mendhar | 1.137 | 18 | Low |
| Geometric Mean | 1.756 | - | - |

The table reveals that the development index in this block varies from as high as 6.317 for Jammu to as 1.137 for Mendhar. The top position of Jammu tehsil can be attributed to the fact that in the matter of urbanisation and literacy (the two major development indicators in this block), this tehsil is much better placed. Almost

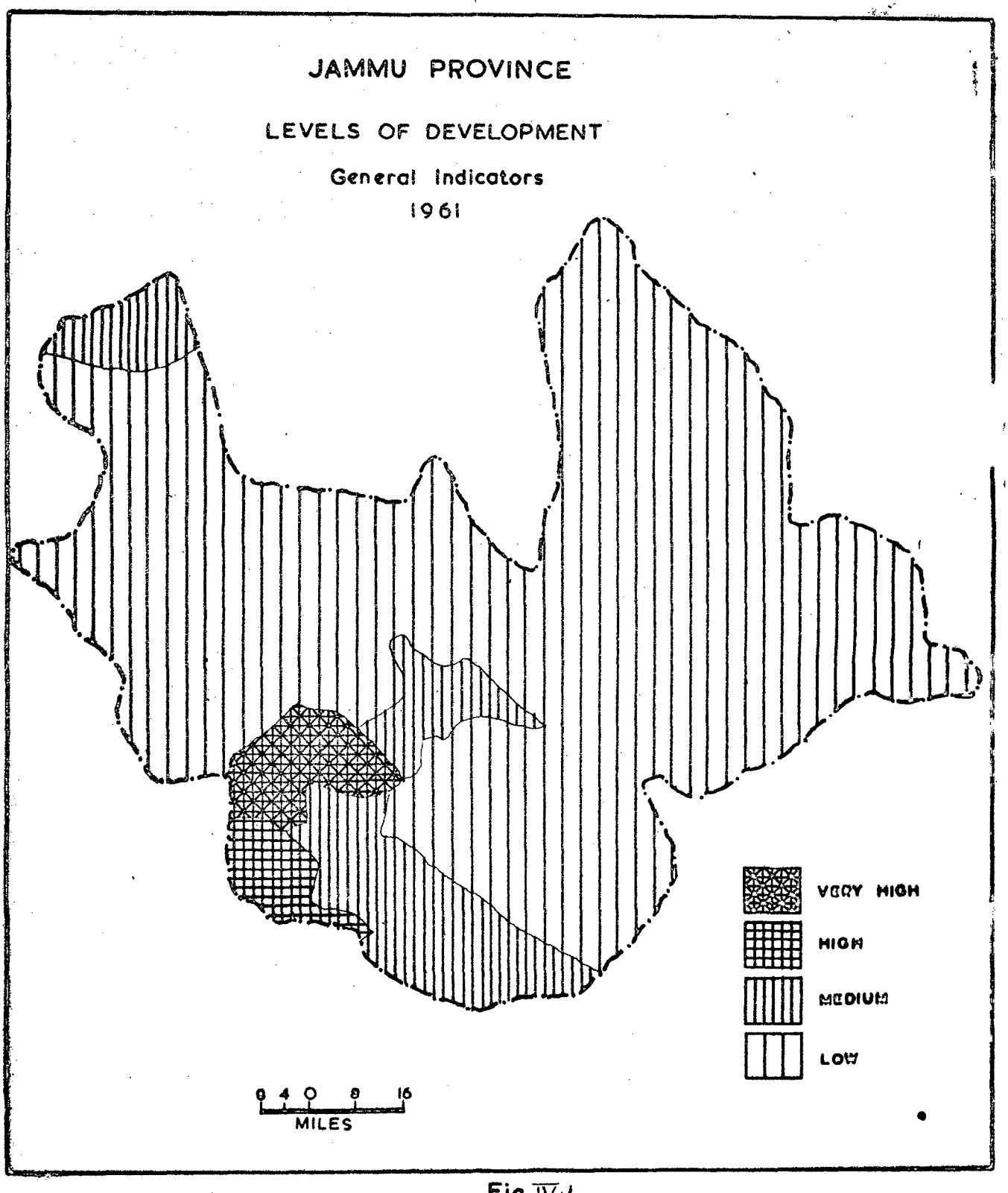
JAMMU PROVINCE
LEVELS OF DEVELOPMENT
General Indicators
1961
VERY HIGH
HIGH
MEDIUM
LOW
0 4 0 8 16
MILES

Fig. IV·1

half of its total population (46.40 percent compared with 8.71 for the province) is urbanised and the literacy rate is relatively high (26.98 per cent against 10.56 per cent for the province). It may be noted that in the tehsils classified under low level of development, urbanisation is at a very low ebb. For example, in tehsil Mendhar which comes at the bottom of the development level, only 0.90 per cent population is urban. Other tehsils such as Bashohli, Ramnagar, Rajouri, Nowshehra, Akhnoor and Reasi also show very low levels of urbanisation. Likewise, these lowly developed tehsils show a very low rate of literacy. For example, Mendhar, Rajouri, Reasi and Ramban have literacy rates below 7 per cent, whereas in the relatively developed tehsils such as Jammu this rate is about 27 per cent. It can thus be concluded that in 1961 there prevailed a substantial distance among the tehsils as regards general development criteria especially in the matter of urbanisation and literacy.

Block 2 Agriculture and Allied Activities

TABLE - IV.2

Levels of Development In Agriculture And Allied Activities-1961

| Tehsil | Composite Index | Rank | Classification |
|---|---|---|---|
| R.S.Pora | 7.985 | 1 | Very High |
| Jammu | 5.453 | 2 | Very High |
| Akhnoor | 4.331 | 3 | High |
| Hiranagar | 3.157 | 4 | Medium |
| Kathua | 3.116 | 5 | Medium |
| Ramban | 2.816 | 6 | Medium |
| Ramnagar | 2.780 | 7 | Medium |
| Nowshehra | 2.733 | 8 | Medium |
| Bhaderwah | 2.328 | 9 | Low |
| Doda | 2.279 | 10 | Low |
| Bashohli | 2.252 | 11 | Low |
| Kishtwar | 2.154 | 12 | Low |
| Reasi | 2.070 | 13 | Low |
| Samba | 1.865 | 14 | Low |
| Udhampur | 1.691 | 15 | Low |
| Haveli | 1.633 | 16 | Low |
| Rajouri | 1.631 | 17 | Low |
| Mendhar | 1.546 | 18 | Low |
| Geometric Mean | 2.590 | - | - |

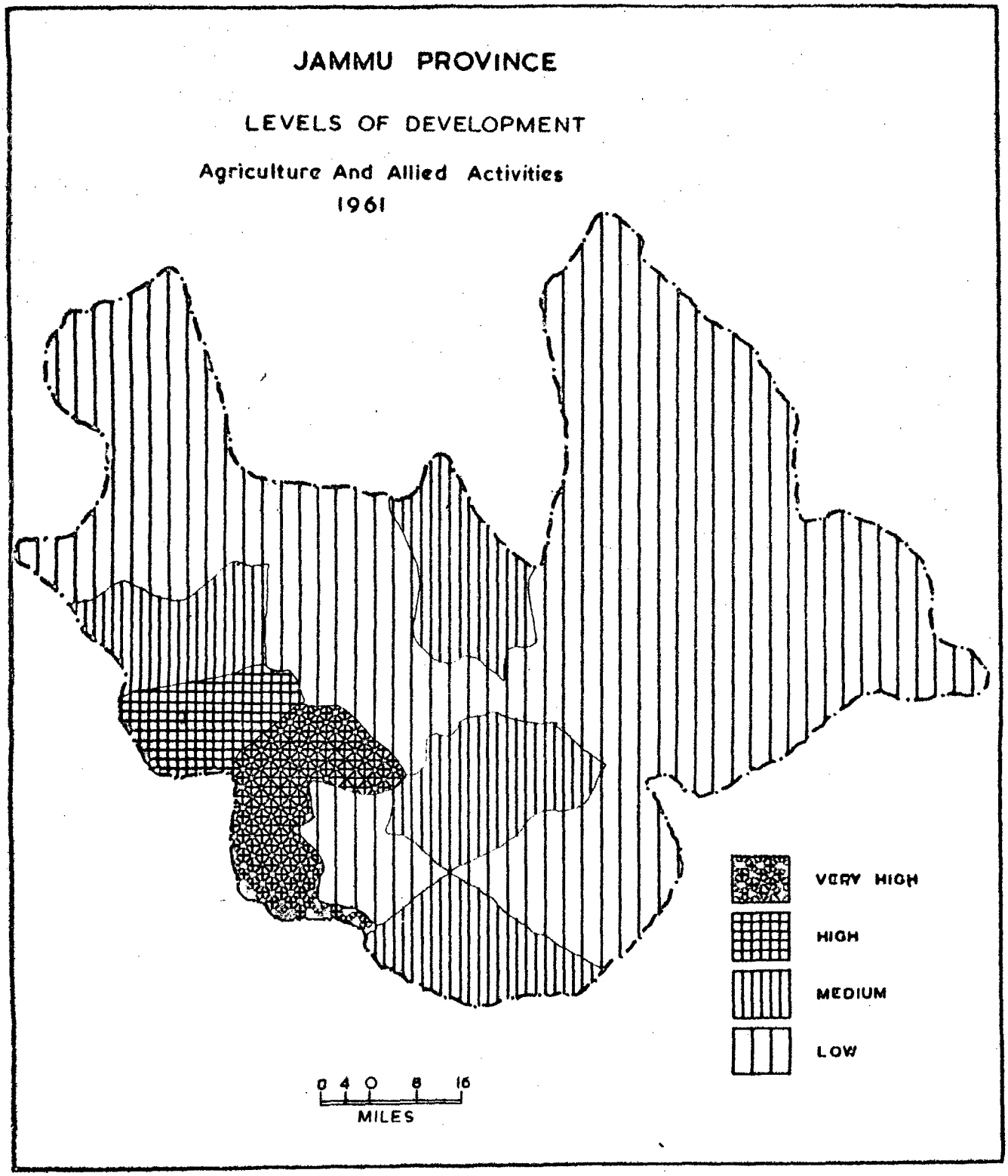
JAMMU PROVINCE
LEVELS OF DEVELOPMENT
Agriculture And Allied Activities
1961
VERY HIGH
HIGH
MEDIUM
LOW
0 4 0 8 16
MILES

Fig. IV·2

The tehsils showing low level of agricultural development are practically the very same which show low level of development of general economic indicators. To some extent sectoral complementarity is indicated from this result. The point, however, cannot be pressed too far essentially because of data restraints. Yet an important point does emerge. It can be seen that most of the tehsils with high and very high level of agricultural development are backed by the driving force of high population density. It seems Easter Boserup's contention that population pressure leads to changes in agricultural practices is at work.[3] For example, agriculturally developed tehsils such as R.S. Pora and Jummu which enjoy a very high irrigation base, some degree of tractorization, relatively higher area under orchards, and so on are also the tehsils of high population density. On the other hand many tehsils with comparatively low population density, such as Doda, Kishtwar, Bhaderwah, Bashohli and Reasi, suffer from a low land-man ratio, poor irrigation-base, total absence of tractorization, lesser area under orchards and so on.

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3. Easter Boserup, The Conditions of Agricultural Growth, The Economics of Agrarian Change under Population Pressure, (London, 1965).

The lowest development score for Mendhar is explained, apart from the above mentioned factors, also by extremely limited allied activities such as animal husbandry and forestry. In brief, it can be concluded that the levels of agricultural development in 1961 were characterized by substantial tehsil-wise disparities. To some extent, irrigation explains this disparate regional picture. For some other tehsils, difficult physical conditions pose formidable barriers to agricultural development.

Block 3 Industry And Trade

Looking across tables IV.1 and IV.3, we notice that all the tehsils which are relatively developed in general block fall under the same category in trade and industry also. In as much as urbanisation is an important concomitant of economic development in general and of industrial development in particular, the tehsils identified as relatively developed in block-1 have turned out to be developed in industry also. A similar sectoral complementarity can be seen between trade and industry and agriculture and allied activities (Tables IV.2 and IV.3).

TABLE IV.3

Levels of Development in Industry And Trade - 1961

| Tehsil | Composite Index | Rank | Classification |
|---|---|---|---|
| Jammu | 6.049 | 1 | Very High |
| R.S.Pora | 2.874 | 2 | High |
| Kathua | 2.759 | 3 | High |
| Samba | 2.238 | 4 | Medium |
| Udhampur | 2.042 | 5 | Medium |
| Haveli | 1.869 | 6 | Medium |
| Hiranagar | 1.860 | 7 | Medium |
| Akhnoor | 1.465 | 8 | Medium |
| Bhaderwah | 1.231 | 9 | Low |
| Nowshehra | 1.186 | 10 | Low |
| Reasi | 1.171 | 11 | Low |
| Rajouri | 1.060 | 12 | Low |
| Ramban | 1.008 | 13 | Low |
| Doda | 0.988 | 14 | Low |
| Bashohli | 0.947 | 15 | Low |
| Ramnagar | 0.802 | 16 | Low |
| Kishtwar | 0.776 | 17 | Low |
| Mendhar | 0.449 | 18 | Low |
| Geometric Mean | 1.418 | - | - |

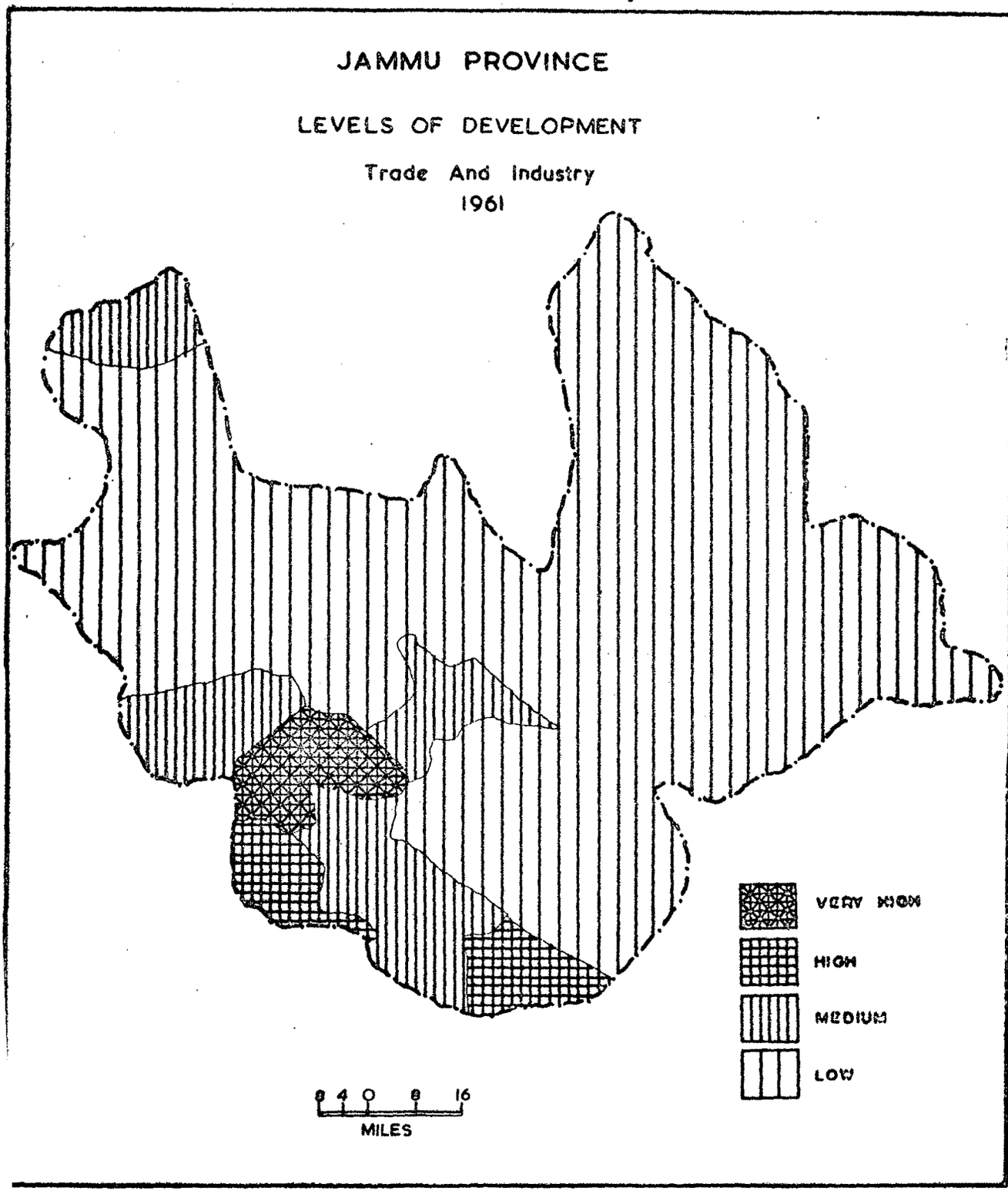
JAMMU PROVINCE
LEVELS OF DEVELOPMENT
Trade And Industry
1961
VERY HIGH
HIGH
MEDIUM
LOW
8 4 0 8 16
MILES

Fig. IV·3

A perusal of the composite index (Table IV.3) reveals that trade and industry-wise, Jammu was a very highly developed tehsil in 1961** Next in order were R.S. Pora and Kathua. The relatively developed tehsils are favourably placed with regard to industrial workers- especially workers in manufacturing. For example, compared to the province's figure of 13.98%, in Jammu, R.S. Pora and Kathua, 56.76, 30.40 and 22.66 per cent of industrial workers respectively belong to manufacturing sector whereas the figures are as low as 2.28 for Bashohli, 3.96 for Ramban and 4.13 for Mendhar. Again in respect of workers in trade, Jammu is much better placed with 8.10 per cent of workers in trade in comparison to Kisthwar (0.42), Mendhar (0.48) and Doda (0.63), the average figure for the province being 1.93. Hence, the low level of industrial development of tehsils may be mainly attributed to their low work participation rates in manufacturing and trade.

Block 4 General Infrastructure

Table IV.4 shows that the development index ranges from 7.438 to the lowest of 0.334. Almost half of the tehsils seem to maintain a low level of development in

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**It may be worthwhile to reiterate that statements such as 'very highly' or 'highly' developed are to be interpretted only in a relative sense; no absolute performance for any tehsil is hinted at.

infrastructure. In tehsils Reasi, Nowshehra, Doda, Ramnagar, Ramban and Rajouri, the banking facilities and village electrification are totally absent; in other loss developed tehsils, they are negligible. In respect of road-link and post-offices also, most of these tehsils are below the average figures of 28.84 (roads) and 5.99 (Post-Offices). For example, in Bhaderwah and Nowshehra, only 7.30 and 9.09 per cent villages respectively have the road-links; whereas 77.08 per cent villages of Hiranagar, 72.50 of R.S. Pora and 66.26 per cent of Kathua have such facility. These figures are quite high judged from the province's average of 28.84 per cent. With the exceptions of Akhnoor and Bashohli tehsils, in all other less developed tehsils, rural electrification is totally absent; even in these two tehsils the figures are deplorably as low (0.90 and 0.72 respectively).

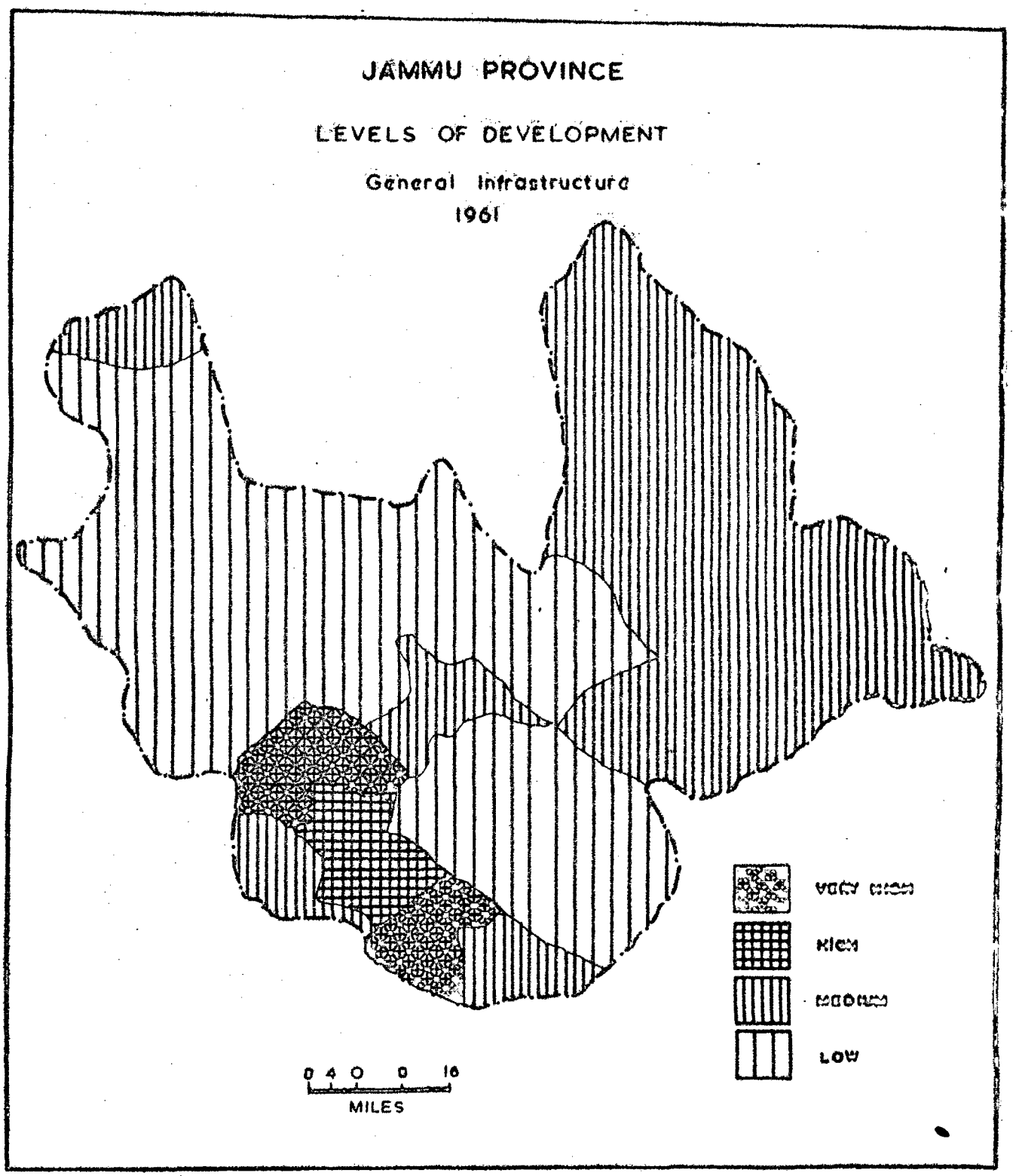
The tehsils with relatively greater proportion of urban population, generally maintain a higher level of infrastructural development. Further, most of the developed tehsils are comparatively plain areas. For low levels of infrastructural development of a number of tehsils, difficult terrain seems to be an important explanation. Difficult physical conditions make the construction work, particularly roads, quite costly and involve long gestations. In the beginning of development, investments are usually made where the costs are less and results are quickest; hence the urban-bias in planning. We may, thus, conclude that the spatial disparities with regard to infrastructural development

are mainly because of disparate terrain conditions prevailing in the tehsils of Jammu Province.

TABLE - IV.4

Levels of Development In General Infrastructure - 1961

| Tehsil | Composite Index | Rank | Classification |
|---|---|---|---|
| Jammu | 7.438 | 1 | Very High |
| Hiranagar | 3.867 | 2 | Very High |
| Samba | 3.065 | 3 | High |
| Udhampur | 2.815 | 4 | Medium |
| R.S.Pora | 2.605 | 5 | Medium |
| Haveli | 2.403 | 6 | Medium |
| Kathua | 2.017 | 7 | Medium |
| Bhaderwah | 1.935 | 8 | Medium |
| Kishtwar | 1.803 | 9 | Medium |
| Bashohli | 1.124 | 10 | Low |
| Akhnoor | 0.978 | 11 | Low |
| Ramban | 0.897 | 12 | Low |
| Mendhar | 0.741 | 13 | Low |
| Rajouri | 0.550 | 14 | Low |
| Ramnagar | 0.540 | 15 | Low |
| Doda | 0.441 | 16 | Low |
| Nowshehra | 0.377 | 17 | Low |
| Reasi | 0.334 | 18 | Low |
| Geometric Mean | 1.320 | - | - |


JAMMU PROVINCE
LEVELS OF DEVELOPMENT
General Infrastructure
1961
VERY RICH
RICH
MEDIUM
LOW
0 4 0 8 16
MILES

Fig·IV·4

Block 5 Social Services

As many as thirteen tehsils seem to maintain a comparatively low level of development in Social Services Sector. These tehsils have decidedly a low incidence of social services especially when we consider the poor accessibility owing to the vast size and hilly nature of the province. In the case of some tehsils, the inadequacy of social services can be judged by comparing their share in total population of Jammu province.

TABLE - IV.5

Levels of Development in Social Services - 1961

| Tehsil | Composite index | Rank | Classification |
|---|---|---|---|
| Hiranagar | 5.817 | 1 | Very High |
| Jammu | 4.948 | 2 | Very High |
| Kathua | 3.206 | 3 | Very High |
| Samba | 2.560 | 4 | High |
| Ramnagar | 2.018 | 5 | Medium |
| Bashohli | 1.015 | 6 | Low |
| Aknoor | 0.987 | 7 | Low |
| Udhampur | 0.981 | 8 | Low |
| R.S.Pora | 0.971 | 9 | Low |
| Mendhar | 0.896 | 10 | Low |
| Nowshehra | 0.848 | 11 | Low |
| Bhaderwah | 0.781 | 12 | Low |
| Doda | 0.780 | 13 | Low |
| Haveli | 0.722 | 14 | Low |
| Reasi | 0.692 | 15 | Low |
| Ramban | 0.678 | 16 | Low |
| Rajouri | 0.509 | 17 | Low |
| Kishtwar | 0.429 | 18 | Low |
| Geometric Mean | 1.164 | - | - |

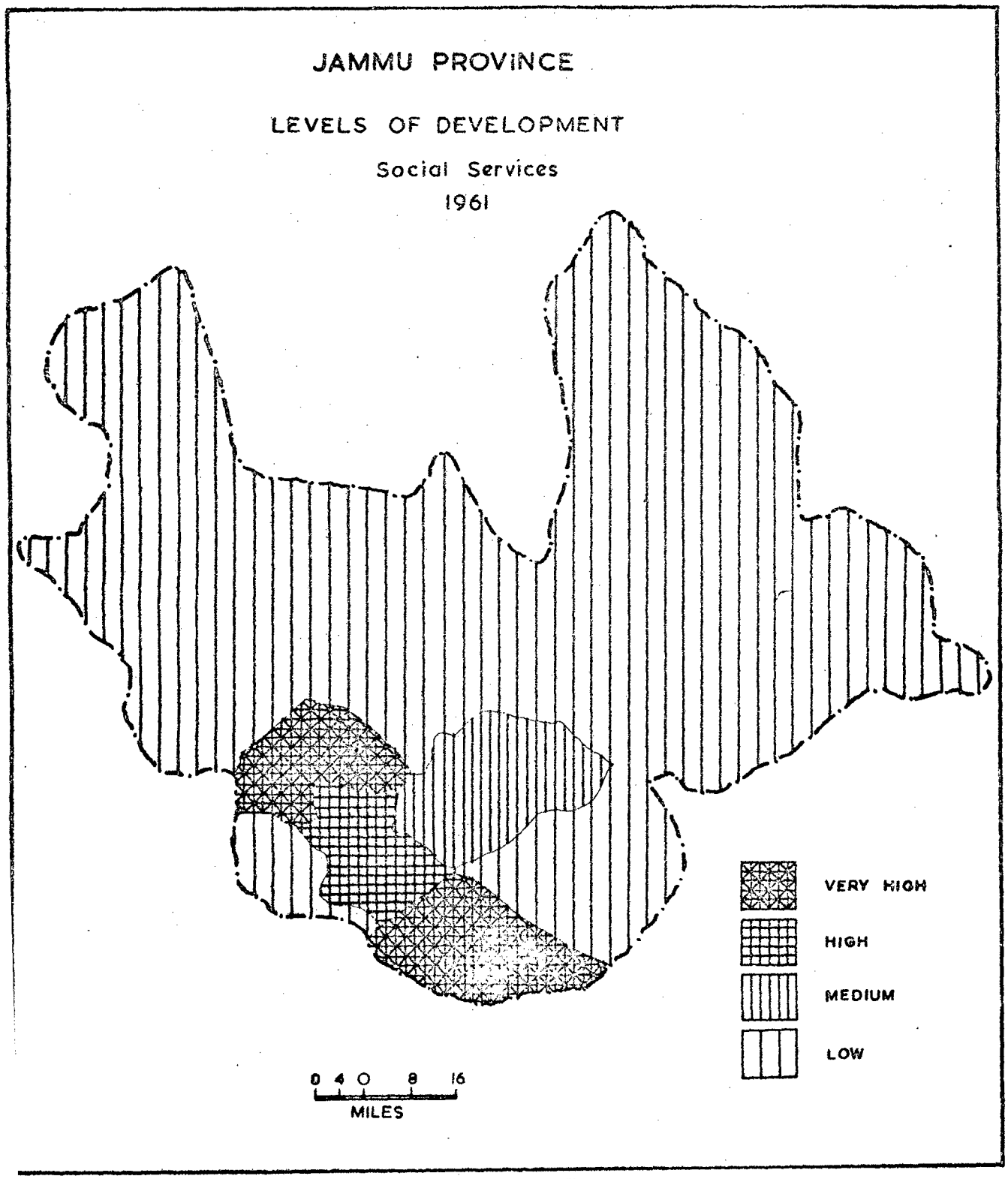

JAMMU PROVINCE
LEVELS OF DEVELOPMENT
Social Services
1961
VERY HIGH
HIGH
MEDIUM
LOW
0 4 0 8 16
MILES

Fig. IV·5

Developed tehsils such as Hiranagar, Jammu and Kathua are favourably placed in terms of educational, and medical institutions and protected water supply. Compared to the province's average of 10.29, there are 13.46 educational institutions per 10,000 of population in Hiranagar; the figures for Ramnagar and Samba being 12.77 and 11.01, respectively. Such developed tehsils are better off in respect of medical institutions also. It is essential to point out here that the number of educational and medical institutions although ostensibly the two most formidable indicators of social services, do not fully capture the effect of social development in our case.[4] Had the 'number of educational institutions' been a true indicator of development, it should have got reflected into the higher literacy rates of the developed tehsils; but in our case we find that in such tehsils the literacy rate is not proppptionate to their large number of educational institutions, e.g., Ramnagar and Samba. It can be inferred from this that inspite of the government efforts for raising literacy standards through opening of schools in ~~a~~ far-flung areas and providing free educational facilities, the people's response has been very poor. This obviously speaks of the social backwardness of the province.

The prevalence of low levels of development of the tehsils may be explained mainly in terms of either total absence or very poor protected water supply ($o_{23}$) and medical

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4. Some other indicators, more directly suggestive of social services sector, such as school enrolment, number of beds and/or doctors per 10,000 population could not be included in the list due to non-availability of data.

facilities ($e_{22}$). From table IV.5 it is evident that in 1961, a wide gap prevailed among the tehsils of Jammu province in respect of 'Social Services'. So is also the case in respect of other sectors.

Block 6 The Overall Economy

So far the levels of development under five blocks have been analysed. It is quite evident that some tehsils are relatively more developed in agriculture, some in trade and industry and some others in infrastructure and so on. An offshort of this situation is that some tehsils which are more developed under one sectoral block, show a low level of development under some other sectoral block. In other words, there are not many tehsils which enjoy higher rank uniformally in respect of all development criteria.** For example, R.S. Pora is very highly developed in 'agriculture and allied activities', but its development index with regard to social services is below the average level. Again Hiranagar, which shows a very high level of development in social services sector, is below the average level so far as general indicators are concerned. The picture is, therefore, not clear with regard to the overall level of socio-economic development prevailing in each tehsil. To deal with this problem, the weighted composite index of development, which gives an overall picture of inter-regional development has been constructed, treating the five sectoral indices of development as a set of new variables. Table IV.6 is quite revealing.

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**As argued a little later, the reverse is not true. The group of lowly developed tehsils repeats itself sector after sector.

TABLE - IV.6

Levels of Development in Overall Economy - 1961

| Tehsil | Composite Index | Rank | Classification |
|---|---|---|---|
| Jammu | 7.106 | 1 | Very High |
| Hiranagar | 4.035 | 2 | Very High |
| R.S.Pora | 3.466 | 3 | High |
| Kathua | 3.192 | 4 | High |
| Samba | 2.797 | 5 | High |
| Udhampur | 2.286 | 6 | Medium |
| Haveli | 2.094 | 7 | Medium |
| Akhnoor | 1.841 | 8 | Low |
| Doda | 1.827 | 9 | Low |
| Bhaderwah | 1.733 | 10 | Low |
| Ramnagar | 1.591 | 11 | Low |
| Bashohli | 1.430 | 12 | Low |
| Ramban | 1.392 | 13 | Low |
| Kishtwar | 1.343 | 14 | Low |
| Nowshehra | 1.314 | 15 | Low |
| Reasi | 1.144 | 16 | Low |
| Rajouri | 1.083 | 17 | Low |
| Mendhar | 1.029 | 18 | Low |
| Geometric Mean | 1.956 | - | - |

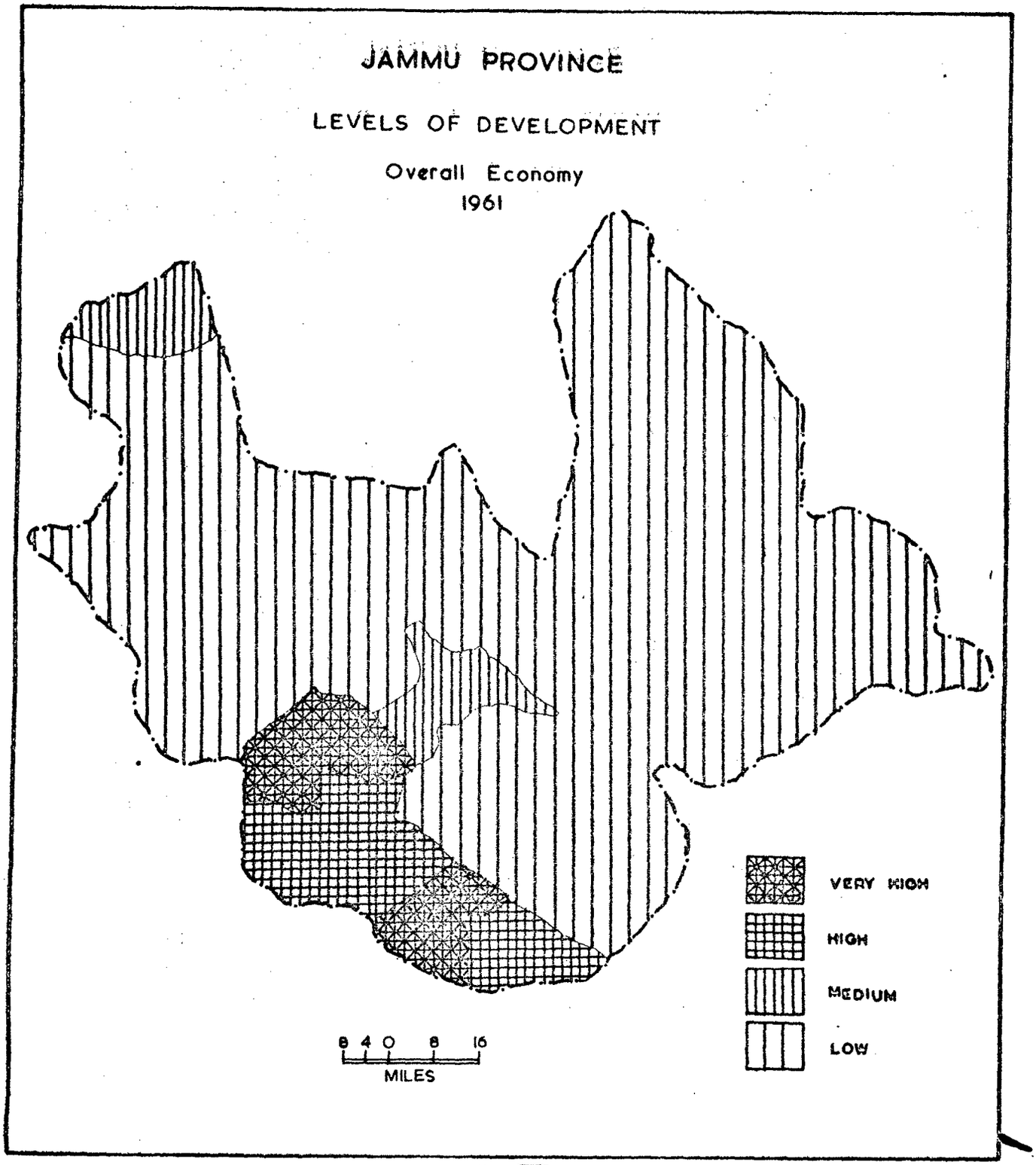
JAMMU PROVINCE
LEVELS OF DEVELOPMENT
Overall Economy
1961
VERY HIGH
HIGH
MEDIUM
LOW
8 4 0 8 16
MILES

Fig. IV. 6

Tehsil Jammu enjoys the development index above the average in all the five sectors. It is the most developed tehsil in respect of general indicators, trade and industry and infrastructure; while in agriculture and social services sectors, it holds the second position. Consequently, this tehsil enjoys the comparatively highest level of development in the province. Tehsils Hiranagar, R S Pora, Samba and Udhampur have their development indexes below the average in respect of one or two sectors, but with regard to other sectors, especially industry and infrastructure, they are quite ahead. Hence, their overall development levels turn to be quite high. The wide development gap prevailing among the tehsils of Jammu province is reflected by their development index for overall economy.

The absolute backwardness of Jammu province is well marked judged from its position in comparison to many other states of India. Hence while discussing the levels of development prevailing in tehsils of the province, the terms, 'development' and 'under-development' are to be understood as relative terms only. However, it is beyond any doubt that even in this backward province, the regional disparities are quite pronounced. Consequently, except for a few pockets of development, extreme backwardness prevails in most of the tehsils. An analysis of tables IV.1 through

IV.6 reveals that almost the same group of tehsils has turned out as backward in all the sectors of the economy. For example, tehsils Doda, Rajouri, Bashohli, Reasi and Mendhar have returned very low levels of development in all the five sectors and, consequently, in the overall economy. Although the possibility of some accidental changes in the relative position of some tehsils across different sectors of the economy cannot be ruled out, partly because of the inherent weaknesses of our methodology and partly because of lack of adequate data, yet the broad picture is what has been described above.

## IV.2 Relationship Among Sectoral Indices of Development-1961

The present section seeks to analyse the degree of interdependencies among the five sectors and also the relationship of each with the overall economy of the Jammu province. Table IV.7 summarizes the main results.

TABLE - IV.7

Rank Correlation Among Various Sectors - 1961

| Sector pair | Rank Correlation Co-efficient | Sector pair | Rank Correlation Co-efficient |
|---|---|---|---|
| 1 & 2 | 0.443** | 3 & 4 | 0.707* |
| 1 & 3 | 0.924* | 3 & 5 | 0.496* |
| 1 & 4 | 0.781* | 4 & 5 | 0.554* |
| 1 & 5 | 0.476* | 1 & 6 | 0.889* |
| 2 & 3 | 0.422** | 1 & 6 | 0.579* |
| 2 & 4 | 0.259 | 3 & 6 | 0.820* |
| 2 & 5 | 0.478* | 4 & 6 | 0.822* |
| | | 5 & 6 | 0.699* |

* = significant at 0.05 level

** = significant at 0.10 level

1. = General Indicators,

2. = Agriculture and Allied Activities,

3. = Trade Industry,

4. = General Infrastructure,

5. = Social Services, and

6. = Overall Economy.

The high correlation of general indicators with 'trade and industry' (0.924) is quite understandable. It can be explained in terms of urbanisation and work participation rates, the two important indicators of general block, both of which go hand in hand with industrialisation. While comparing the composite indices of trade and industry, general indicators and overall economy, one is struck by the association between these sectors on the one hand, and their relationship to the levels of overall development on the other. This accounts for their high and quite significant correlation co-efficients. The tehsils at a comparatively higher level of infrastructural development, are understandingly better placed in trade and industry also. The same, to agreat extent holds for general indicators. Hence, backwardness of other tehsils can mainly be explained in terms of lack of well-developed infrastructure, low levels of literacy and urbanisation (two major indicators of general block) and a weak, nascent industrial sector.

Agriculture was accorded the top priority during the fifties; consequently, this sector developed at a faster rate in comparison to other sectors. However, it cannot be denied that some of the spatial units which enjoyed comparatively higher level of agricultural development, were not uniformally better placed in respect of general indicators, trade and industry and infrastructure, and vice-versa. This partly

explains the low correlation of this sector with other sectors. The low correlation between various sectors of development points to the possible regional distortions in the economy of Jammu province. The correlation matrix however, has been found more balanced for trade and industry, infrastructure and social services. This underlines the important role that they play in the economy of Jammu province.

IV.3 Relative Sectoral Imbalances

We have seen under Section IV.1 above that the level of development for a number of tehsils differs from sector to sector. For example, a tehsil comparatively better placed in one sector, does not necessarily fair equally well in another sector; consequently it is sectorally unbalanced. In this section, an attempt is made to study the sectoral imbalances of tehsils. The tehsils with a comparatively similar level of development in all the five sectors have been treated as 'balanced' tehsils, and those characterized by wide disparity in their level of development under different blocks, have been identified as relatively 'unbalanced' ones. The sectoral balances or imbalance are proxied by an "overall co-efficient of variation index" for each tehsil, spread overall the five blocks. The tehsils with an index value of variation above the province's average have been termed as sectorally unbalanced and those below this average as sectorally balanced ones. It may be clarified that pharases like

'balanced' or 'unbalanced' are used here strictly in a relative sense, and for a limited purpose.

In order to find whether any association exists between the level of development and the degree of imbalance, the tehsils have been divided into two main classes - developed and under-developed. Here also, the average index of overall development for the province as a whole, has been taken as the line of demarcation between the developed and the under-developed tehsils. Table IV.8 makes the picture clearer.

TABLE - IV.8

Index of Co-efficient of Variation - 1961

| Tehsil | Class | Index of Co-efficient of variation | Sectoral Pattern. |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| Jammu | Developed | 13.99 | Balanced |
| Samba | Developed | 19.84 | Balanced |
| Kathua | Developed | 20.80 | Balanced |
| Udhampur | Developed | 31.21 | Balanced |
| Haveli | Developed | 34.91 | Balanced |
| Hiranagar | Developed | 44.62 | Unbalanced |
| R.S.Pora | Developed | 67.24 | Unbalanced |

Contd...

| (1) | (2) | (3) | (4) |
|---|---|---|---|
| Akhnoor | Under-developed | 33.35 | Balanced |
| Bhaderwah | Under-developed | 33.94 | Balanced |
| Bashohli | Under-developed | 35.81 | Balanced |
| Rajouri | Under-developed | 42.97 | Unbalanced |
| Kishtwar | Under-developed | 50.28 | Unbalanced |
| Reasi | Under-developed | 53.37 | Unbalanced |
| Doda | Under-developed | 53.54 | Unbalanced |
| Ramnagar | Under-developed | 55.62 | Unbalanced |
| Mendhar | Under-developed | 55.84 | Unbalanced |
| Ramban | Under-developed | 55.87 | Unbalanced |
| Nowshehra | Under-developed | 61.10 | Unbalanced |
| Average Index | - | 42.46 | - |

The above table indicates that only eight tehsils are sectorally balanced. Of the seven developed tehsils, five are sectorally balanced. On the other hand, out of the eleven under-developed tehsils, only three seem to be sectorally balanced. The exercise points out that the sectoral balance/imbalance in development can exist at different levels of development. However, the striking conclusion is that a majority of the relatively developed

tehsils enjoy a sectorally balanced economic structure, and a majority of the relatively under-developed tehsils suffer from sectoral imbalances.

TABLE - IV.9

Sectoral Pattern Of Tehsils - 1961

| Tehsils | Balanced | Unbalanced | Total |
|---|---|---|---|
| Developed | 5 | 2 | 7 |
| Under-developed | 3 | 8 | 11 |
| Total | 8 | 10 | 18 |

To lend statistical rigour to the above conclusion chi-square test was conducted with the null hypothesis that "there is no association between the level of development and degree of imbalance". The calculated value of chi-square ( = 3.378) is more than the table value ($\chi^2$ 0.10 for l.d.f. = 2.706 ), and hence the result rejects our hypothesis i.e, therefore, conclude that the two attributes are associated with each other. In other words, sectoral imbalance in development is more pronounced in the case of tehsils at lower levels of development[@@]

@@ However, the results cannot be stressed too far because the test requires the number of observations to be above thirty.

Whatever sectoral imbalances are observed in 1961, are obviously the outcome of development strategies pursued during the 1950's - probably, the development achieved in the fifties threw up more sectoral imbalances, especially because the development experience related to the beginning of planning era. And, as contended by Hirschman, deliberate unbalancing of the economy, atleast for some initial years, is the best way to achieve economic growth in an under-developed country.[5] Hirschman's contention, that the economy gradually moves from the path of unbalanced growth to that of balanced growth, will be tested in the succeeding chapters.

## IV.4 Socio-Economic Disparities-1961

In studying the inter-regional variations in the development of different sectors as also in the overall economy of the province, the technique of "weighted co-efficient of variation", as used by Williamson, has been applied to obtain the measure of disparity.[6] The population of each tehsil as a proportion of the province's population is used as weight, in order to correct for disparate population size of various tehsils. The spatial variations have

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5. Albert.O. Hirschman, "The Strategy of Economic Development (New Haven, 1958), Chapters 4-7.

6. See Chapter-III, pp. 56-57 for "weighted co-efficient of variation" technique.

separately been worked out for various development categories to analyse the behaviour of such disparities at various development levels also. Table IV.10 shows the measure of disparity.

TABLE- IV.10

Socio-Economic Disparities in Jammu Province - 1961

| Sector | Weighted Co-efficient of Variation(Sages) | | |
|---|---|---|---|
| | Under-developed Tehsils | Under-developed and Medium Development level Tehsils | All Tehsils |
| General Indicators | 7.81 | 25.06 | 105.10 |
| Agriculture and Allied Activities | 10.50 | 19.92 | 74.22 |
| Trade and Industry | 17.33 | 37.05 | 134.13 |
| General Infra-structure | 30.11 | 75.19 | 193.41 |
| Social Services | 17.95 | 36.17 | 156.79 |
| Overall Economy | 15.11 | 20.96 | 109.51 |

As revealed by the table, the magnitude of spatial variations increases as we move from the lowly developed tehsils to the relatively more developed tehsils. Inclusion of just one or two tehsils, falling under medium or high development-category, has led to a tremendous increase in the disparity index. As mentioned in section IV.1, except

for a few pockets of development, most of the tehsils of Jammu province are maintaining a uniformally low level of development. Hence, the disparity among such tehsils is very low.

A word about sectoral disparities. In the case of under-developed tehsils, the spatial disparities are less pronounced with regard to general indicators. This is so mainly because in almost all such tehsils, urbanisation is confined to less than five per cent of population; in terms of literacy also, these tehsils are almost uniformally placed.

Spatial disparities manifest themselves much more in the case of infrastructural development. A look at appendix-A.2 reveals that there are wide variations among these thesils with regard to village roads and post-offices. For example, 31.11 per cent villages of Mendhar have road links compared to as low a figures as 9.09 for Nowshehra. Similarly, 13.26 per cent villages of Ramban have postal facilities, while the same is as low as 3.50 for Reasi.

In the case of low and medium development level tehsils, agricultural sector seems to be spatially more balanced, whereas such variations are more marked in the case of infrastructure followed by trade and industry and social services. The same holds for all the tehsils taken

together. It is interesting that the regional disparity is comparatively less in 'agriculture and allied activities' and maximum in infrastructure. During the fifties, the development efforts were mainly focussed on agricultural development. It appears that these efforts were relatively uniformally distributed among the various tehsils. That is why this sector has turned out to be spatially more balanced. The prevalence of great regional disparity in infrastructure can mainly be explained in terms of the disparate physical conditions prevailing in various tehsils of the province. For example, the plain areas such as Jammu, Hiranagar and R.S.Pora are better placed under this sector, whereas the hilly areas, such as Doda, Nowshehra and Ramnagar are worse off with regard to infrastructure. A look at Table IV.4 and appendix - A.2 reveals that generally the tehsils with a higher proportion of urban population are better placed in terms of infrastructural development. Hence, the urban-bias inherent in our planning, particularly in the initial years, may also account for the prevelance of substantial spatial variation in the respect of infrastructual block.

The disparity index has been found quite higher under trade and industry block also. This may be attributed mainly to the concentration of urbanisation in a few areas only; while most of the areas are devoid of urbanisation and, consequently, of industrialisation also.

Great disparity has been depicted by the individual sectors. But in the case of overall economy (which takes all the five blocks together) the disparity index has gone down because one sector has tended to compensate for some other sector. Hence, the degree of disparity in overall economy has been found less than in most other sectors.

In brief table-IV.10 shows that in 1961, the economy of Jammu province depicted considerable disparities in the sectoral and the overall socio-economic development levels of the tehsils more particularly in the former. It is interesting, however, to note that the disparity among lowly developed tehsils is relatively much lower. They seem to share a common fortune a low level of development and a great degree of poverty. Although the tremendous increase in the co-efficient of variation in column 2 and many times more in column 3 over column 1 follows by definition, yet it clearly points to the extraordinary difference between the disparity indexes of various development groups. On the ono hand, there is a vast ocean of very low level of development and on the other a small island of relative prosperity, with a big gulf of socio-economic standards standing between the two.

SUMMARY:

Some degree of Sectoral complementarity has been found among general indicators, agriculture and allied activities, industry and trade and general infrastructure. Further,

tehsils with difficult terrain show a low level of development sectorally as well as in overall economy. It needs special stressing that hostile physical terrain of many parts of the province stand in the way of socio-economic development. Still more interesting is the finding that almost the same group of tehsils seem to suffer from a low level of development under various sectors as well as the overall economy. It seems that except for a few pockets of development, the province is characterized by extreme socio-economic backwardness. Again, the problem of sectoral imbalance seems to be more pronounced in the case of lowly developed tehsils. On the other hand, the relatively developed tehsils are comparatively sectorally more balanced. The intensity of the problem of spatial disparities has been found more in the case of general infrastructure, social services and trade and industry. The agricultural sector has been identified as relatively spatially more balanced.

# CHAPTER - V

## ECONOMIC STRUCTURE OF THE PROVINCE IN 1971

### V.1 Identifying Levels of Socio-Economic Development of Tehsils.

The present chapter seeks to measure spatial variations in the levels of socio-economic development as in 1971, along lines similar to those adopted earlier for 1961 analysis. Such an inter-temporal comparison would enable us to know whether, in terms of socio-economic development, different tehsils of Jammu province have shown dynamism, remained static or even deteriorated with time. This comparison acquires added significance inasmuch as the decade 1961-71 witnessed many structural changes in general and in the agricultural sector in particular.

The sectoral composite indices of the tehsils for the five blocks and for the overall economy have been calculated for 1971 again with the help of the equations 6, 7, 8, 9, 10 and 12 of Chapter-III*. As in the 1961 analysis, tehsils have been classified into four development categories.

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*Please see pp. 52-53.

Block 1 General Indicators (urbanisation, literacy, work participation, density of population).

TABLE - V.1

Levels Of Development In General Indicators - 1971

| Tehsil | Composite Index | Rank | Classification |
|---|---|---|---|
| Jammu | 6.025 | 1 | Very High |
| R.S.Pora | 3.277 | 2 | High |
| Kathua | 3.044 | 3 | High |
| Udhampur | 2.408 | 4 | Medium |
| Haveli | 2.285 | 5 | Medium |
| Hiranagar | 1.924 | 6 | Medium |
| Akhnoor | 1.578 | 7 | Low |
| Samba | 1.575 | 8 | Low |
| Bhaderwah | 1.513 | 9 | Low |
| Doda | 1.452 | 10 | Low |
| Ramban | 1.423 | 11 | Low |
| Rajouri | 1.378 | 12 | Low |
| Reasi | 1.347 | 13 | Low |
| Nowshehra | 1.321 | 14 | Low |
| Bashohli | 1.257 | 15 | Low |
| Ramnagar | 1.252 | 16 | Low |
| Mendhar | 1.218 | 17 | Low |
| Kishtwar | 1.115 | 18 | Low |
| Geometric Mean | 1.759 | - | - |

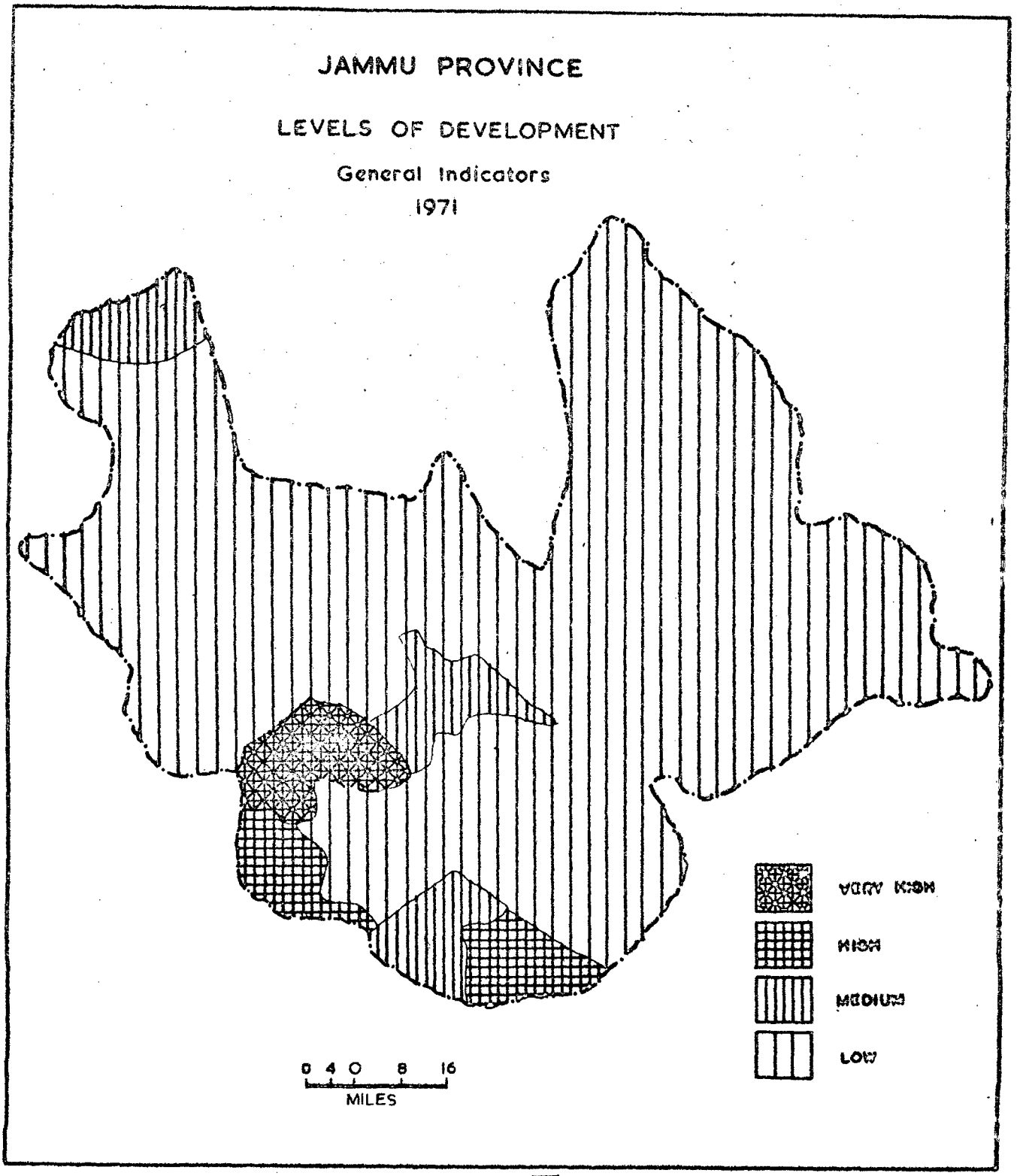
JAMMU PROVINCE
LEVELS OF DEVELOPMENT
General Indicators
1971
VERY HIGH
HIGH
MEDIUM
LOW
0 4 0 8 16
MILES

Fig. V.1

The table clearly shows that most of the tehsils of Jammu province are maintaining a low level of development under this block. Their relative backwardness can be explained in terms of low levels of literacy and urbanisation, the two important indicators under this block. The urban population in lowly developed tehsils is very low (Kishtwar: 5.39 per cent, Ramnagar: 3.84, Mendhar: 1.90 per cent and so on), while in the relatively developed tehsils, it is fairly high (Jammu: 48.55, Kathua: 21.40 and so on). Of course, the average for the province as such is also fairly low (9.43 per cent). In respect of literacy also the relatively under-developed tehsils do not seem to be better placed. For example, compared to the province's average of 18.16, Kishtwar has the lowest literacy rate (11.69); it is followed by Reasi (11.90) Ramban (12.07) and Rajouri (12.13). The same is above 20 per cent for tehsils Udhampur, Hiranagar, R.S. Pora and Kathua, and almost 40 per cent for Jammu. The foregoing analysis shows that a wide gap exists between the developed tehsils and the less developed tehsils. It reflects the extent of regional disparities prevailing in the Jammu province in the matter of urbanisation, literacy and work participation. This relative picture resembles the one witnessed earlier for 1961.

Block 2 Agriculture and Allied Activities

The development index under this sector varies from as high as 8.205 for R.S. Pora to as low as 1.299 for Mendhar. This reflects the development gap prevailing among the tehsils of the province.

TABLE- V.2

Levels of Development In Agriculture And Allied Activities-1971

| Tehsil | Composite Index | Rank | Classification |
|---|---|---|---|
| R.S.Pora | 8.205 | 1 | Very High |
| Jammu | 5.627 | 2 | Very High |
| Kathua | 4.007 | 3 | High |
| Hiranagar | 3.485 | 4 | High |
| Bhaderwah | 3.423 | 5 | High |
| Kishtwar | 2.778 | 6 | Medium |
| Reasi | 2.557 | 7 | Medium |
| Bashohli | 2.523 | 8 | Medium |
| Ramban | 2.471 | 9 | Low |
| Doda | 2.266 | 10 | Low |
| Samba | 2.143 | 11 | Low |
| Ramnagar | 1.952 | 12 | Low |
| Nowshehra | 1.893 | 13 | Low |
| Akhnoor | 1.880 | 14 | Low |
| Rajouri | 1.727 | 15 | Low |
| Udhampur | 1.604 | 16 | Low |
| Haveli | 1.416 | 17 | Low |
| Mendhar | 1.299 | 18 | Low |
| Geometric Mean | 2.520 | - | - |

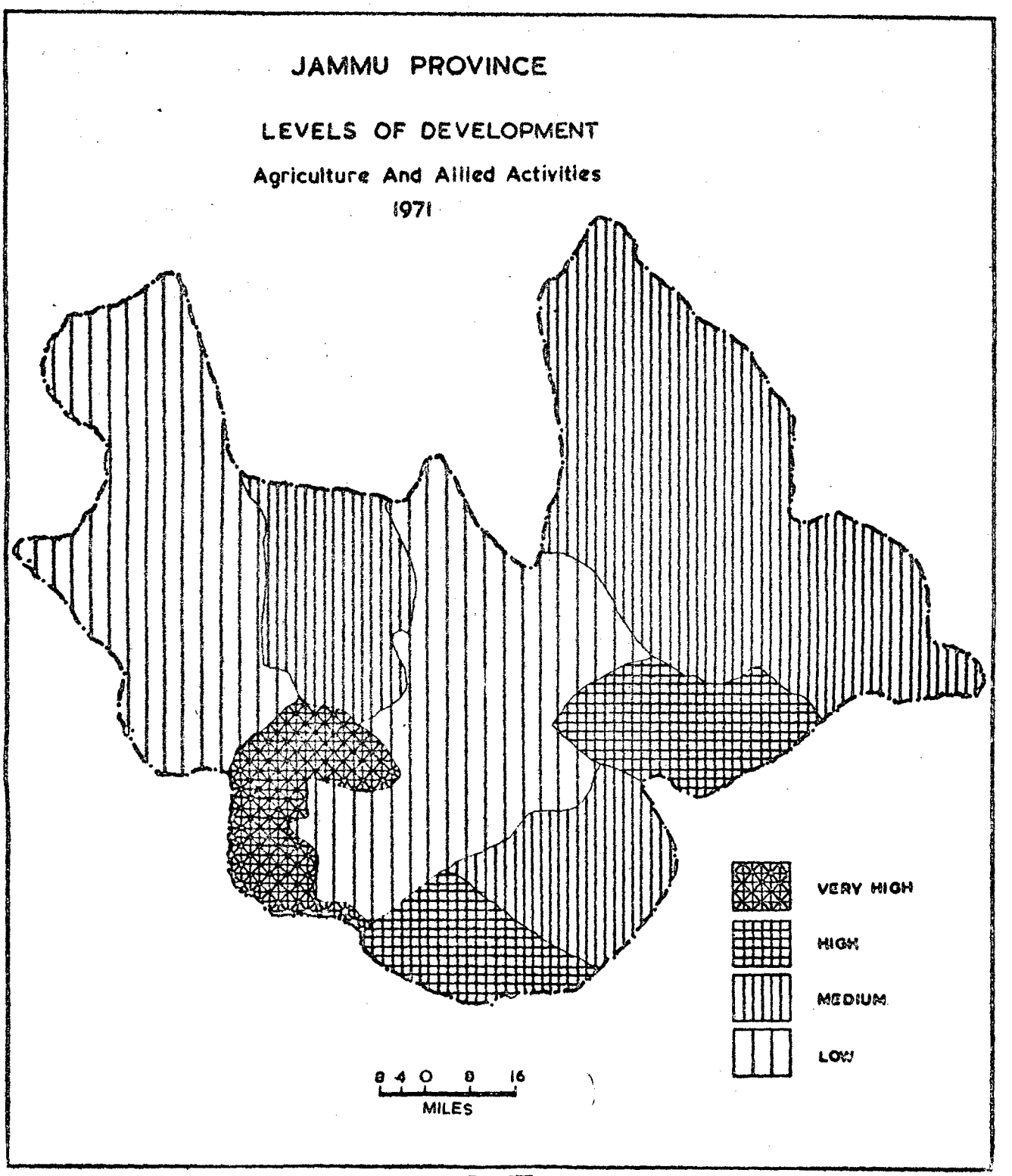
JAMMU PROVINCE
LEVELS OF DEVELOPMENT
Agriculture And Allied Activities
1971
VERY HIGH
HIGH
MEDIUM
LOW
8 4 0 8 16
MILES

Fig. V·2

It appears that R.S. Pora is emerging as highly developed tehsil of the province because of high irrigation base and rising mechanisation. For example, compared to the province's average of 18.Ø2, 78.21. per cent of its cropped areas enjoys irrigation facilities. Again, this tehsil is most favourably placed in terms of tractorisation with 3.25 tractors per 1,000 acres of net cropped area, the same for province being 0.36 only. However, irrigation, which does made a substantial contribution to agricultural development, does not seem to be the main factor behind the agricultural development of Jammu province. For example, in tehsils Bhaderwah, Reasi and Bashohli less than 10 per cent of the cropped area enjoys irrigation facilities, yet they have turned out as relatively developed under agricultural sector. On the other hand, more than 11 per cent of the cropped area enjoys irrigation facilities in tehsils Doda, Akhnoor, Rajouri, Haveli and Mendhar; yet their agricultural sector is comparatively less developed. Favourable land-man ratio, some mechanisation and cropping intensity seem to explain the relatively higher levels of development maintained by some of the tehsils. Some of the relatively developed tehsils such as Reasi, Bashohli and Bhaderwah are better placed in terms of allied activities such as animal husbandary and orchard development. Hence, apart from low irrigation-base, the low agricultural development levels of tehsils in the province seem to be an outcome of their unfavourable position with regard to mechanisation, land-man ratio, cropping intensity, animal husbandary and so on.

Block 3 Industry And Trade

TABLE - V.3

Levels of Development In Industry And Trade - 1971

| Tehsil | Composite Index | Rank | Classification |
|---|---|---|---|
| Jammu | 5.322 | 1 | Very High |
| Kathua | 3.570 | 2 | Very High |
| R.S.Pora | 2.573 | 3 | High |
| Udhampur | 2.509 | 4 | High |
| Hiranagar | 2.284 | 5 | High |
| Samba | 2.183 | 6 | High |
| Akhnoor | 1.461 | 7 | Medium |
| Ramban | 1.274 | 8 | Low |
| Nowshehra | 1.225 | 9 | Low |
| Haveli | 1.187 | 10 | Low |
| Reasi | 1.125 | 11 | Low |
| Rajouri | 1.080 | 12 | Low |
| Bashohli | 1.068 | 13 | Low |
| Bhaderwah | 1.000 | 14 | Low |
| Ramnagar | 0.986 | 15 | Low |
| Doda | 0.897 | 16 | Low |
| Kishtwar | 0.797 | 17 | Low |
| Mendhar | 0.588 | 18 | Low |
| Geometric Mean | 1.458 | - | - |

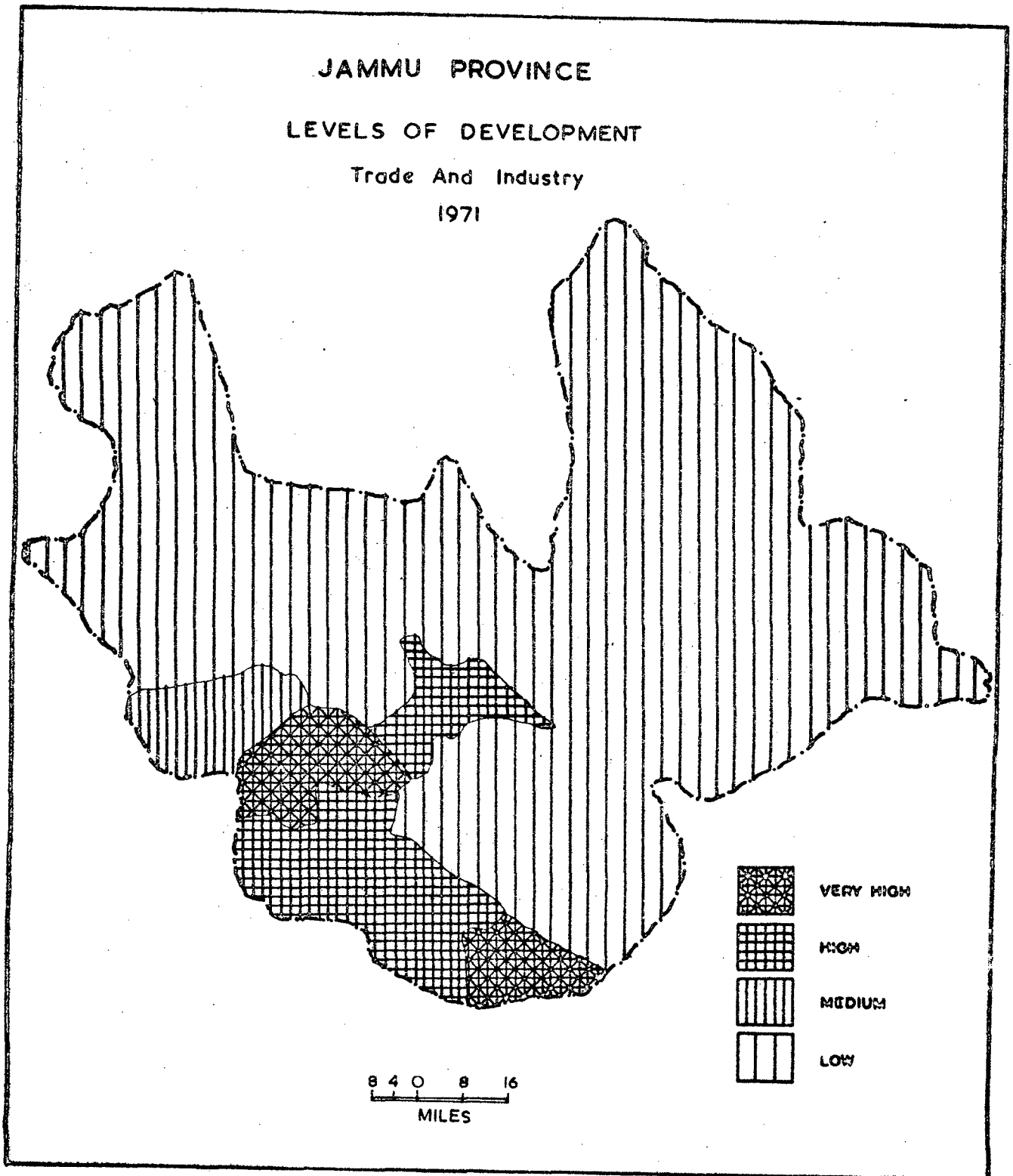
JAMMU PROVINCE
LEVELS OF DEVELOPMENT
Trade And Industry
1971
VERY HIGH
HIGH
MEDIUM
LOW
8 4 0 8 16
MILES

Fig. V·3

As is observed from the table V.3 most of the tehsils seem to maintain a low level of industrial development in 1971. This is reflected in terms of their very low industrial work participation rates(mostly below five per cent). It seems in a large number of tehsils, the manufacturing sector has yet to show a begining. The situation of some of the tehsils is excessively depressing. For example, tehsil Mendhar has just 2.86 per cent of industrial workers engaged in manufacturing against 18.61 for the province. This stands no where in comparison to Jammu (51.84), R.S. Pora (34.53), Kathua (32.95) and Udhampur (22.25). Similarly, in tehsils such as Kishtwar, Doda, Mendhar, Ramnagar and so on, only a negligible fraction of working population is engaged in trade. Hence, low work participation rates, especially in manufacturing and trade, account for the relatively backwardness of tehsils with regard to industrial sector. Thus, in the province, whatever little industrial development has takne place, is confined to a few pockets only, owing mainly to concentration of urban population and other infrastructural facilities.

Block 4 General Infrastructure

A cursory look at table V.4 reveals that nearly half of the tehsils of Jammu province suffer from inadequacy of infrastructural facilities. For example, in Kishtwar, Bashohli and Ramnagar, the village electrification is totally absent. In the case of other less developed tehsils, the proportion of the electrified villages is rather a negligible

proportion. For example, against the province's average figure of 6.24, less than two per cent of villages in Rajouri, Haveli and Reasi enjoy electricity facilities. For these very tehsils, the position in terms of village-roads is equally bad. A few tehsils are however, much better placed. For example, 90.24 per cent villages of R.S. Pora, 87.50 of Akhnoor and 80.82 per cent of Jammu are connected with roads, the same for province being 49.36 per cent, Again, 24.84 per cent villages of Jammu, 16.55 of Samba, 15.85 of R.S. Pora and 15.32 of Hiranagar respectively enjoy electricity facilities. A very interesting fact is that the spatial variations are less pronounced in the case of postal facilities.

TABLE - V.4

Levels of Development in General Infrastructure - 1971

| Tehsil | Composite Index | Rank | Classification |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| Jammu | 4.926 | 1 | Very High |
| R.S.Pora | 3.340 | 2 | Very High |
| Kathua | 3.263 | 3 | High |
| Samba | 2.927 | 4 | High |
| Hiranagar | 2.544 | 5 | High |
| Akhnoor | 2.018 | 6 | Medium |
| Udhampur | 1.819 | 7 | Medium |
| Ramban | 1.768 | 8 | Medium |
| Nowshehra | 1.757 | 9 | Medium |

Contd ...

| (1) | (2) | (3) | (4) |
|---|---|---|---|
| Bashohli | 1.479 | 10 | Low |
| Reasi | 1.432 | 11 | Low |
| Mendhar | 1.401 | 12 | Low |
| Doda | 1.320 | 13 | Low |
| Rajouri | 1.282 | 14 | Low |
| Bhaderwah | 1.262 | 15 | Low |
| Havelí | 1.242 | 16 | Low |
| Ramnagar | 1.054 | 17 | Low |
| Kishtwar | 0.545 | 18 | Low |
| Geometric Mean | 1.737 | - | - |

Assessed from the rugged terrain and, hence, from accessibility point of view, the picture turns to be more bleak for the hilly areas, Most of the tehsils such as Jammu, R.S. Pora, Kathua and Hiranagar, emerging with relatively developed infrastructure, are comparatively plain areas. On the other hand, the hilly areas are, generally, lowly developed in terms of infrastructure. It appears that apart from other factors, difficult terrain has continued to be the main obstacle in the way of infrastructural

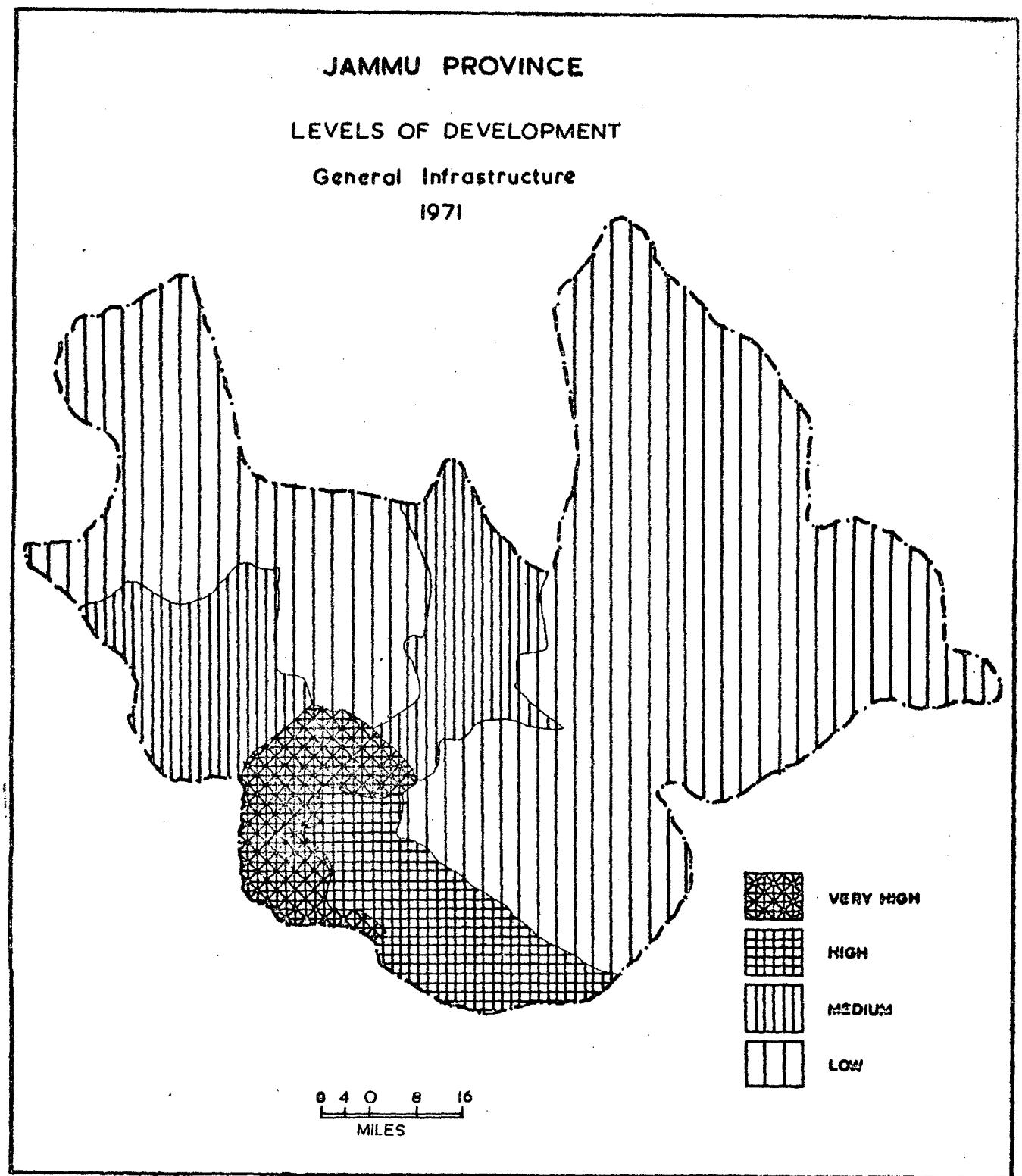
JAMMU PROVINCE
LEVELS OF DEVELOPMENT
General Infrastructure
1971
VERY HIGH
HIGH
MEDIUM
LOW
0 4 0 8 16
MILES

Fig. V·4

development of hilly areas such as Kishtwar, Ramnagar, Haveli, Rajouri and Doda. Owing to difficult terrain, their infrastructural development - especially the construction of roads and provision of electricity - poses the twin problem of the very heavy costs and long gestation periods. From what has been discussed above, it can be inferred that the relative backwardness of tehsils with regard to infrastructure, can be mainly attributed to the inadequate transport and electricity facilities.

Block 5 Social Services

Table V.5 shows the extent and classification of the levels of development under social services sector. As is the case with other sectors, most of the tehsils are relatively backward under this sector also. It is interesting to observe that tehsil Jammu which ranked first under general indicators block, trade and industry and infrastructure and second under agriculture and allied activities, assumes fifth rank under social services. This tehsil is unfavourably placed in respect of per capita availability of educational institutions. It has 7.72 educational institutions per 10,000 of population in comparison to the province's average of 14.37. Again, only 7.23 per cent villages of this tehsil enjoy protected water supply. Hence, the tehsil has slipped down as regards the development of social services sector.

TABLE - V.5

Levels of Development in Social Services-1971

| Tehsil | Composite Index | Rank | Classification |
|---|---|---|---|
| R.S. Pora | 4.453 | 1 | Very High |
| Hiranagar | 2.943 | 2 | High |
| Kathua | 2.741 | 3 | High |
| Udhampur | 2.437 | 4 | High |
| Jammu | 2.411 | 5 | High |
| Reasi | 1.653 | 6 | Medium |
| Bhadarwah | 1.614 | 7 | Medium |
| Ramnagar | 1.489 | 8 | Low |
| Ramban | 1.369 | 9 | Low |
| Mendhar | 1.340 | 10 | Low |
| Bashohli | 1.245 | 11 | Low |
| Kishtwar | 1.211 | 12 | Low |
| Doda | 1.179 | 13 | Low |
| Nowshehra | 1.078 | 14 | Low |
| Samba | 0.984 | 15 | Low |
| Haveli | 0.894 | 16 | Low |
| Rajouri | 0.810 | 17 | Low |
| Akhnoor | 0.786 | 18 | Low |
| Geometric Mean | 1.509 | - | - |

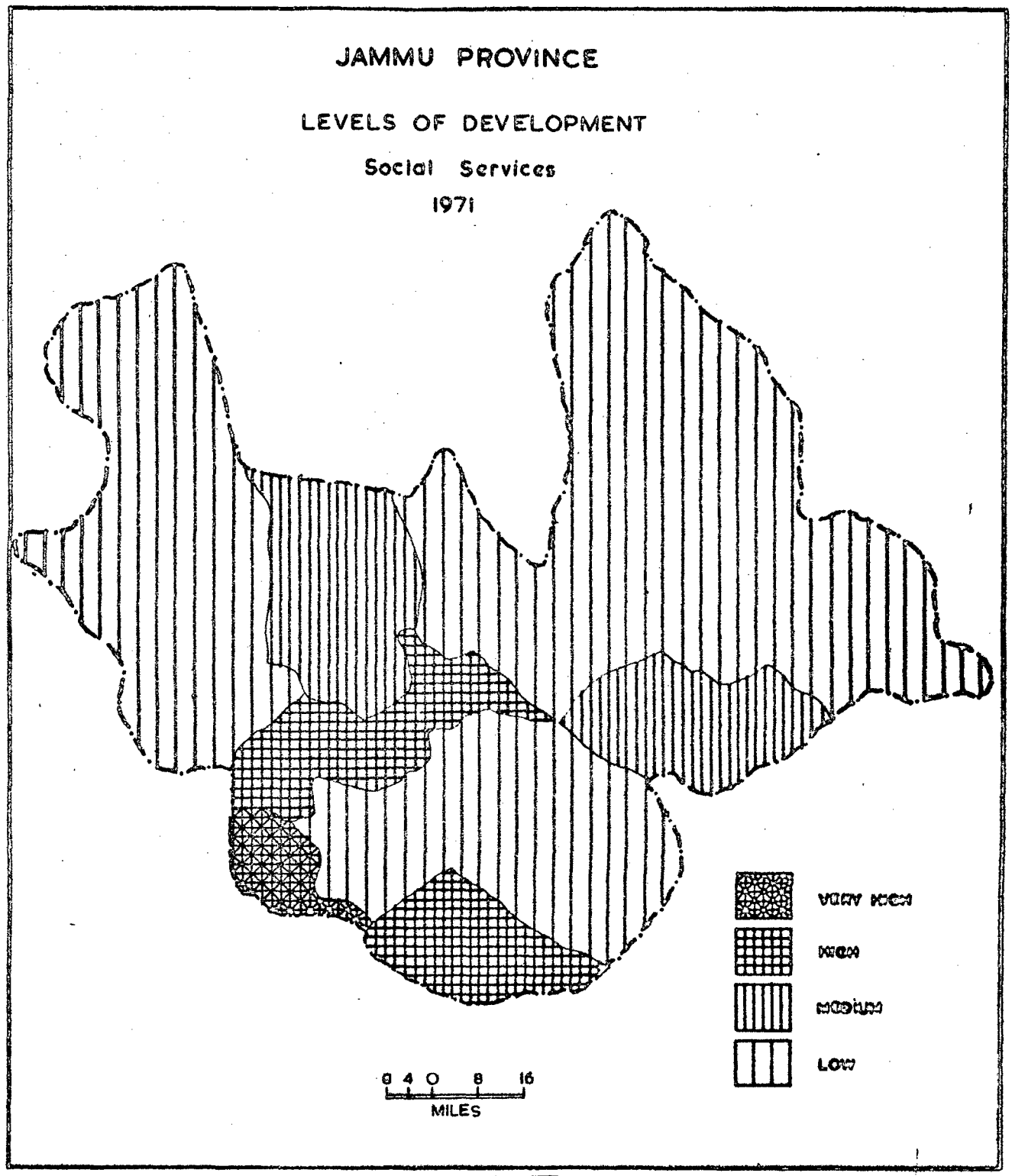
JAMMU PROVINCE
LEVELS OF DEVELOPMENT
Social Services
1971
LOW
8 4 0 8 16
MILES

Fig. V·5

The position of relatively under developed tehsils is far from satisfactory with regard to medical facilities and protected water supply. For example protected water facility is totally absent in tehsils Akhnoor, Haveli and Rajouri. The position of tehsils Nowshehra, Samba, Doda and Bashohli, which have a bare 0.74, 1.08, 1.58 and 2.19 per cent of their villages with protected water supply respectively, is no less distressing. Similarly, the lowly developed tehsisl are, generally unfavourably placed in terms of medical facilities also. However, they are better placed with regard to educational facilities. But as mentioned earlier for 1961 analysis also, mere presence of educational institutions does not fully reflect the development level of the region. The upcoming of such institutions should be an outcome of, and inherent in, the very process of development, getting reflected in the high literacy rates. Contrary to this, the tehsils of Jammu province with higher incidence of educational institutions are maintaining low literacy rates. Hence, in Jammu province the low development levels of tehsils, as also the spatial variations, under social services sector can be explained mainly in terms of low incidence of medical and protected water supply.

Block 6 Overall Economy

In the preceding discussion an assessment of the sectoral levels of development prevailing in various tehsils of Jammu province has been made. Some tehsils have been

identified relatively more developed in one sector, while the same tehsils have returned a lower level of development in some other sectors. To gain an overall view, it is imperative to construct the weighted composite index of overall development for each tehsil - taking all the five sectoral blocks into consideration. This has been attempted in the following paragraphs.

Table V.6 shows the overall socio-economic development levels of the tehsils as in 1971.

TABLE - V.6

Levels of Development In Overall Economy - 1971

| Tehsil | Composite Index | Rank | Classification |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| Jammu | 5.415 | 1 | Very High |
| R.S. Pora | 4.606 | 2 | Very High |
| Kathua | 3.715 | 3 | Very High |
| Hiranagar | 2.920 | 4 | High |
| Udhampur | 2.507 | 5 | Medium |
| Samba | 2.192 | 6 | Medium |

Contd...

| (2) | (2) | (3) | (4) |
|---|---|---|---|
| Bhaderwah | 1.844 | 7 | Low |
| Ramban | 1.800 | 8 | Low |
| Reasi | 1.753 | 9 | Low |
| Akhnoor | 1.702 | 10 | Low |
| Bashohli | 1.617 | 11 | Low |
| Nowshehra | 1.597 | 12 | Low |
| Haveli | 1.572 | 13 | Low |
| Doda | 1.524 | 14 | Low |
| Ramnagar | 1.472 | 15 | Low |
| Rajouri | 1.371 | 16 | Low |
| Kishtwar | 1.334 | 17 | Low |
| Mendhar | 1.296 | 18 | Low |
| Geometric Mean | 2.016 | - | - |

Some of the tehsils viz; Mendhar, Rajouri, Ramnagar and Doda, have returned their development indexes below the average under all the five sectors of economy. Tehsils Kishtwar, Haveli, Nowchehra, Bashohli and Ramban have been identified as below the province's average with respect of to four sectors. Similarly, Akhnoor Reasi and Bhaderwah enjoy a relatively higher level of development under two sectors only; but that has not been high enough to compensate for their low dovelopment levels in other three sectors.

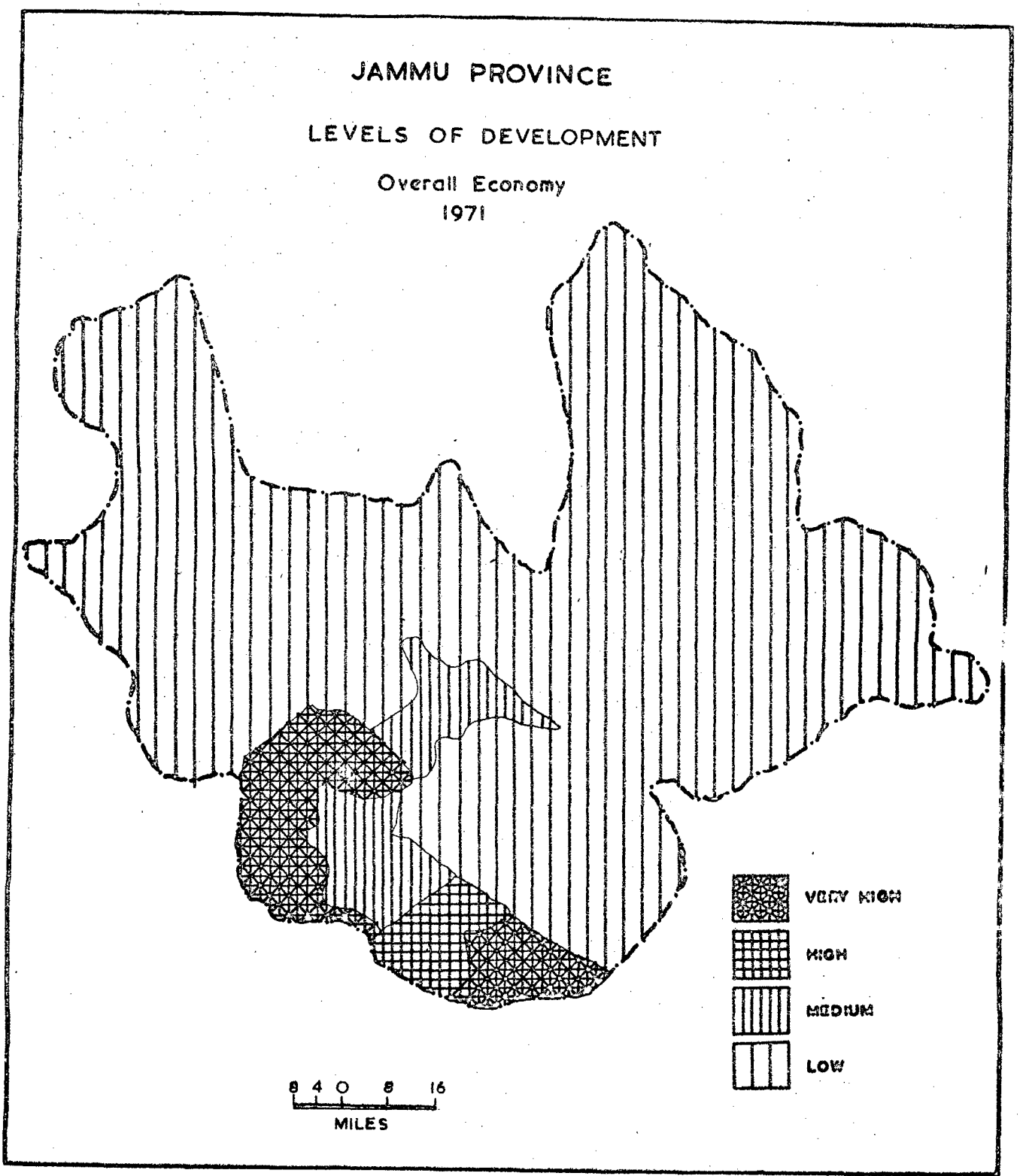
JAMMU PROVINCE
LEVELS OF DEVELOPMENT
Overall Economy
1971
VERY HIGH
HIGH
MEDIUM
LOW
8 4 0 8 16
MILES

Fig. V·6

Hence, all the twelve above mentioned tehsils have turned out as relatively backward in terms of overall socio-economic development levels.

However, there are not many tehsils in Jammu province which are uniformally enjoying a higher level of development under various sectors. Consequently, most of the tehsils are maintaining low levels of development with regard to overall economy. Barring a few relatively developed tehsils, extreme backwardness predominates the tehsils of the province. It is noteworthy that, generally, the same group of tehsils has throughout remained as relatively developed under various sectors and, hence, in overall economy. Most of the tehsils, falling under the relatively under-developed category, are hilly in nature, while most of the relatively developed tehsils are plain areas. From what has been said above, the important role played by physical conditions in the process of socio-economic development of the province is quite evident. It also lends support to the view that special development policies have to be framed and effectively implemented for the accelerated socio-economic development of the hilly areas. This way they can be rid of their age-old social as well as economic backwardness and catch up with the relatively developed areas.

From the above assessment of the sectoral and overall socio-economic development levels of the tehsils, it is obvious that in Jammu province a wide gap prevails among various tehsils, and this is more pronounced in the case of infrastructure and trade and industry.

## V.2 Relationship Among Sectoral Indices of Development-1971.

TABLE- V.7

Rank Correlation Among Various Sectors - 1971

| Sector pair | Rank correlation co-efficients | Sector pair | Rank Correlation Co-efficients. |
|---|---|---|---|
| 1 & 2 | 0.354 | 3 & 4 | 0.880* |
| 1 & 3 | 0.859 | 3 & 5 | 0.439** |
| 1 & 4 | 0.705 | 4.& 5 | 0.395 |
| 1 & 5 | 0.401** | 1 & 6 | 0.829* |
| 2 & 3 | 0.393 | 2 & 6 | 0.643* |
| 2 & 4 | 0.432** | 3 & 6 | 0.889* |
| 2 & 5 | 0.655* | 4 & 6 | 0.837* |
| | | 5 & 6 | 0.659* |

* = Significant at 0.05 level;

** = Significant at 0-10 level;

1 = General Indicators;

2 = Agriculture and Allied Activities;

3 = Trade and Industry;

4 = General Infrastructure;

5 = Social Services; and

6 = Overall Economy.

In the process of socio-economic development, urbanisation and industrialisation move hand in hand. Again, literacy, population density and work participation rates are, generally, higher in the case of industrially developed areas. This explains why the rank-correlation between sectors 1 and 3 is very high (0.859). For example, tehsils Jammu and Kathua are relatively advanced in terms of urban and literate population; and in respect of trade and industry also these two tehsils are much better off. Except for Haveli all the tehsils developed in terms of general indicators (block-1) are also better placed with regard to trade and industry. Development in infrastructure has an important impact on urbanisation and work participation and vice-versa. Hence, the high rank-correlation (0.705) between general indicators and infrastructure is understandable. Barring Haveli, all the relatively developed tehsils under general block have been identified as better off in terms of infrastructural development levels also.

Agricultural sector seems to maintain a comparatively low correlation with other sectors except with social services. Generally, many tehsils which are better placed with regard to general indicators, trade and industry and infrastructure, have returned relatively lower development levels under agriculture. The rank-correlation between industry and infrastructure has been found as quite high ~~(0.880~~ (0.880). A cursory look at tables V.3 and V.4 reveals that all those tehsils which are relatively developed in trade

and industry, are also better placed in terms of infrastructural development. It goes well with the general hypothesis that the development of infrastructure has a strong impact on industrialisation; in the absence of a well-developed infrastructure, trade and industry cannot thrive. This is more relevant in the case of the Jammu province where, as pointed out earlier, lack of well-developed infrastructure proves to be the main obstacle in the way of industrial development, more particularly in the case of areas with difficult terrain.

The three sectors viz; industry and trade, infrastructure and general indicators, have been found to maintain a very strong relationship (correlation above 0.80) with overall socio-economic development levels. A comparison of the relative position of tehsils under trade and industry, infrastructure and overall economy reveals that almost all the tehsils relatively developed with regard to trade and industry and infrastructure, have turned out as maintaining higher development levels in the respect of the overall economy also. This highlights the crucial role of these sectors in the socio-economic development of the province.

The rank correlation of agriculture and of the social services sectors with overall economy is comparatively low. However, comparing the rank correlation co-efficients of 1961 with those of 1971, it can be seen that the relationship

between agricultural sector and overall economy has tended to grow stronger- the rank correlation coefficient has gone up from 0.579 to 0.643.

## V.3 Relative Sectoral Imbalances

While analysing the sectoral development levels (Section V.1), we found that about five tehsils showed uniformally a high level of development in respect of all the five sectors; some others showed a high level of development in one or two sectors and a low level of development in the remaining. In other words, the development level of many tehsils varies from sector to sector. There is, however, a big block of tehsils (approximately 10) which reveal uniformally a low level of development in almost all sectors; they characterize a general picture of absolute backwardness and poverty and in their case, the relative statements have less serious implications than what would appear to be the case in an absolute sense. Their problems are nevertheless thrown into bold relief only when their socio-economic achievements are posited against those of their relatively better-off neighbours. It is, therefore, of some use to look into the sectoral variations in the levels of development of each tehsil.

The tehsils showing a relatively similar level of development in all the sectors, are treated as relatively balanced tehsils. The tehsils with varying levels of sectoral development have been identified as relatively sectorally unbalanced. The average of the index of overall co-efficient of variation has been taken as the dividing line between the sectorally balanced and the unbalanced tehsils. The classification of tehsils into relatively developed and relatively under-developed has also been made on the basis of the average index of overall development. In other words, the tehsils with their overall development indexes above the province's average, have been termed as relatively developed tehsils and vice-versa for those below the province's average. Table-V.8 throws some light in this behalf.

TABLE - V.8

Index Of Co-efficient Of Variation - 1971

| Tehsil | Class | Index of Co-efficient of variation | Sectoral Pattern |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| Kathua | Developed | 13.11 | Balanced |
| Udhampur | Developed | 17.17 | Balanced |
| Hiranagar | Developed | 20.45 | Balanced |
| Jammu | Developed | 26.26 | Balanced |
| Samba | Developed | 33.18 | Unbalanced |
| R.S. Pora | Developed | 45.99 | Unbalanced |

Contd...

| (1) | (2) | (3) | (4) |
|---|---|---|---|
| Nowshehra | Under-Developed | 21.65 | Balanced |
| Rajouri | Under-Developed | 24.46 | Balanced |
| Mendhar | Under-Developed | 25.41 | Balanced |
| Ramnagar | Under-Developed | 25.91 | Balanced |
| Ramban | Under-Developed | 26.37 | Balanced |
| Akhnoor | Under-Developed | 27.77 | Balanced |
| Reasi | Under-Developed | 30.56 | Unbalanced |
| Doda | Under-Developed | 32.33 | Unbalanced |
| Havelì | Under-Developed | 33.52 | Unbalanced |
| Bashohlì | Under-Developed | 34.19 | Unbalanced |
| Bhaderwah | Under-Developed | 48.64 | Unbalanced |
| Kishtwar | Under-Developed | 60.59 | Unbalanced |
| Average Index | - | 30.42 | - |

The above table reveals that the sectoral balance prevail does not necessarily prevails at higher levels of develop-

ment alone; some of the under-developed spatial units also are sectorally balanced. Nearly half of the under-developed tehsils seem to enjoy a sectorally balanced pattern of development, whereas out of six developed tehsils four appear to enjoy such a balance . There does not seem to be any association between the level of development and the extent of sectoral imbalance.

TABLE - V.9

Sectoral Pattern of Tehsils - 1971

| Tehsils | Balanced | Unbalanced | Total |
|---|---|---|---|
| Developed | 4 | 2 | 6 |
| Under-Developed | 6 | 6 | 12 |
| Total | 10 | 8 | 18 |

To lend statistical rigour to the above contention, Chi-square test, with the null hypothesis that "the level of development and degree of imbalance are not related", has been conducted. The calculated value of $\chi^2$ (0.450) has been found much less than the table value ( $\chi^2$ 0.05 for 1.d.f. = 3.841 and $\chi^2$ 0.01 for 1.d.f. = 6.635); hence, the result does not reject the hypothesis. Thus, all the developed tehsils need not, necessarily, be sectorally balanced. As is obvious from the above table,

some of the tehsils of the province are having balanced sectoral pattern irrespective of their development levels**.

A comparison of the sectoral pattern of tehsils between 1961 and 1971 (tables IV.9 and V.9) reveals that there has been a strong tendency on the part of the underdeveloped tehsils to muster sectoral balance over time. During the fifties more emphasis was laid on the development of agricultural sector. But during the sixties, apart from a balanced regional development, balanced sectoral development was also laid stress on. Hence, not only has the number of sectorally balanced tehsils increased (from eight to ten) over the period 1961-71, the average index of sectoral disparity has also gone down from 42.46 to 30.42. Hirschman's contention that the initial imbalancing of economy gradually gives way to the sectoral balance at a later stage seems to be at work, although a fetish cannot be made with a bare 2-3 figures.

## V.4 Socio-Economic Disparities-1971

In order to assess the extent of inter-tehsil disparities in various sectors as well as in the overall economy, weighted co-efficient of variation has been calculated (Table- V.10).

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**Owing to the small number of observations, the results of the last cannot be stressed too far.

TABLE - V.10

Socio-Economic Disparities in Jammu Province-1971

| Block/overall Economy | Co-efficient of Variation - (Percentages) | | |
|---|---|---|---|
| | Under-Developed Tehsils | Under Developed and Medium levels Tehsils | All Tehsils |
| 1. General Indicators | 8.38 | 20.89 | 103.92 |
| 2. Agriculture and Allied Activities | 12.67 | 17.91 | 83.49 |
| 3. Trade and Industry | 12.83 | 16.01 | 117.70 |
| 4. General Infra-structure | 15.40 | 21.94 | 85.32 |
| 5. Social Services | 15.68 | 19.47 | 69.32 |
| 6. Overall Economy | 8.06 | 17.14 | 81.30 |

Although the entire Jammu province is backward in terms of socio-economic development, there are a few relatively developed pockets as well. This explains why the index of regional disparity tends to increase substantially when these developed pockets are also included in the analysis. The under-developed tehsils are almost uniformally placed in terms of urbanisation which is at a very low level in their case. The same holds for literacy.

Hence, their disparity index with regard to general indicators is very low. However, the spatial variations are relatively greater with regard to social servicies because of wide variations among these tehsils in terms of medical and protected water facilities. Similarly, among these tehsils, regional disparity is more marked in the case of village roads and rural electrification (Appendix-A.3). Consequently, the disparity index has been found comparatively higher with regard to infra-structure also. The regional disparity in agricultural sector of the under-developed tehsils may be explained in terms of variations in their respective irrigation-base, cropping intensity and forestry. In the case of their trade and industry sector, the differences in work participation rates with regard to manufacturing sector and trade explain why the disparity index is greater compared to the general indicators.

However, the extent of regional disparities among the under-developed tehsils stands no where in comparison to that of all the tehsils taken together. For example, there has been more than two-fold increase in the disparity indexes of 'general indicators' block and overall economy when just two or three medium level tehsils were included. Similarly, the disparity index gets magnified many times over by the inclusion of a few relatively highly

developed tehsils. This again reflects the extreme backwardness of most of the tehsils in the province, and the presence of a few pockets of relative prosperity.

When all tehsils are taken together, the spatial variations seem to be more pronounced in respect of trade and industry and general indicators. This is because urbanisation and the industrialisation associated with it, are concentrated in a few tehsils only. In most of the tehsils such as Mendhar, Kishtwar, Doda and Ramnagar, industrial activity is at the lowest ebb. Most of the industrial units are confined to a few tehsils such as Jammu and Kathua. The social services sector appears to be spatially more balanced. In this behalf the government efforts aimed at the provision of social services to far-flung areas of the province must be commended.

Compared to Block-1 and 3 ( =general indicators and industry and trade), the extent of regional disparity has been found less in the respect of infrastructure. For the past two decades, government's efforts at developing the infrastructure of the hitherto neglected areas have been intensified; hence, the spatial variations with regard to infrastructure have got reduced.

The intensity of the problem of spatial variations has been found comparatively less in the case of the overall economy. However, it is more in comparison to social services. Owing to a very low disparity index under social services sector, the degree of disparity in overall economy has been pulled down. However, on the whole, the existence of well-marked inter-tehsil variations in sectoral and overall socio-economic development levels cannot be denied so far as the Jammu province is concerned.

SUMMARY:

The main findings of present chapter have been:

1. Jammu province is dominated by backward tehsils.
2. Almost the same group of tehsils have turned out as relatively backward under all the five sectors and, consequently, in overall socio-economic development also.
3. Difficult physical conditions seem to hold the explanation for the relatively lower development level of most of the tehsils; most of the hilly areas occur among the under-developed parts of the province.

4. Unlike 1961 analysis, the sectorally balanced pattern seems to exist irrespective of the level of development prevailing in the tehsils. An increase in the number of balanced tehsils and the falling "co-efficient of variation index" lend a support to Hirschman's views that with the passage of time, the sectoral imbalance gets reduced.
5. Regional inequalities have been found greater in the case of trade and industry and general indicators. On the other hand, social services sector seems to be relatively spatially more balanced.
6. The sectoral and spatial disparities with regard to socio-economic development of the province are quite evident.

# CHAPTER - VI

## CHANGES IN SOCIO-ECONOMIC DISPARITIES-1961-1971

The present chapter seeks to compare the 1961 picture of socio-economic development of tehsils with those of the 1971. The chapter is divided into four sections. In Section I, an attempt is made to evaluate the changes that have occurred in the relative position of tehsils over the period 1961-71 as regards the levels of their socio-economic development. Section II compares the tehsil-wise sectoral disparities of 1961 with those of 1971. In Section III, an attempt is made to evaluate the temporal trend in spatial disparities with regard to development levels under various sectors and the overall economy. The idea is to see if regional disparities have got accentuated or reduced with the passage of time. Section IV examines the relationship between population growth and the level of economic development. The purpose of this section is to test, although on an approximate basis, whether high population growth tends to dampen the process of economic development.

### VI.1 Relative Position of Tehsils Between 1961 and 1971.

As a first step, the 1961 development ranks of tehsils under each sector as well as the overall economy have been compared with those of 1971. Owing to some data-constraints and the methodology adopted for constructing the composite index, a direct comparison between the 1961 and the 1971

development indices is not justified at least for two reasons. Firstly, weights assigned to each of the 23 development indicators are not strictly comparable between 1961 and 1971. Secondly, the mean values of these variables are not the same between the two time-points. It serves the purpose well if we seek to assess the inter-temporal change in the relative position of tehsils in terms of their respective rank-orders. Table-VI.1 depicts the relative ranks of tehsils for 1961 and 1971.

TABLE - VI.1

Ranking of Tehsils In 1961 And 1971

| Tehsil | General Indicators | | Agri. & Allied Activities | | Trade & Industry | | Infra-structure | | Social services | | Overall economy | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1961 | 1971 | 1961 | 1971 | 1961 | 1971 | 1961 | 1971 | 1961 | 1971 | 1961 | 1971 |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
| Jammu | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 5 | 1 | 1 |
| Samba | 6 | 8 | 14 | 11 | 4 | 6 | 3 | 4 | 4 | 15 | 5 | 6 |
| RS. Pora | 2 | 2 | 1 | 1 | 2 | 3 | 5 | 2 | 9 | 1 | 3 | 2 |
| Akhnoor | 9 | 7 | 3 | 14 | 8 | 7 | 11 | 6 | 7 | 18 | 8 | 10 |
| Ramban | 10 | 11 | 6 | 9 | 13 | 8 | 12 | 8 | 16 | 9 | 13 | 8 |
| Doda | 11 | 10 | 10 | 10 | 14 | 16 | 16 | 13 | 13 | 13 | 9 | 14 |
| Kishtwar | 17 | 18 | 12 | 6 | 17 | 17 | 19 | 18 | 18 | 12 | 14 | 17 |
| Bhaderwah | 8 | 9 | 9 | 5 | 9 | 14 | 8 | 15 | 12 | 7 | 10 | 7 |

Contd..

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bashohli | 13 | 15 | 11 | 8 | 15 | 13 | 10 | 10 | 6 | 11 | 12 | 11 |
| Kathua | 3 | 3 | 5 | 3 | 3 | 2 | 7 | 3 | 3 | 3 | 4 | 3 |
| Hiranagar | 7 | 6 | 4 | 4 | 7 | 5 | 2 | 5 | 1 | 2 | 2 | 4 |
| Hafeli | 4 | 5 | 16 | 17 | 6 | 10 | 6 | 16 | 14 | 6 | 7 | 13 |
| Mendhar | 18 | 17 | 18 | 18 | 18 | 18 | 13 | 12 | 10 | 10 | 18 | 18 |
| Rajouri | 12 | 12 | 17 | 15 | 12 | 12 | 14 | 14 | 17 | 17 | 17 | 16 |
| Nowshehra | 14 | 14 | 8 | 13 | 10 | 9 | 17 | 9 | 11 | 14 | 15 | 12 |
| Ramnagar | 15 | 16 | 7 | 12 | 16 | 15 | 15 | 17 | 5 | 8 | 11 | 15 |
| Udhampur | 5 | 4 | 15 | 16 | 5 | 4 | 4 | 7 | 8 | 4 | 6 | 5 |
| Reasi | 16 | 13 | 13 | 7 | 11 | 11 | 18 | 11 | 15 | 6 | 16 | 9 |
| Rank Correlation between 1961-71 | 0.97 | | 0.69 | | 0.91 | | 0.54 | | 0.41 | | 0.80 | |

Block 1 General Indicators

As revealed by the table, five tehsils viz; Jammu, R.S. Pora, Kathua, Rajouri and Nowshehra, have retained the same rank order for both time-points. Tehsils Jammu witnessed an improvement with regard to both literacy and urbanisation; hence, it has continued to remain as the relatively most developed tehsil of the province under this block.

In the case of R.S. Pora, while percentage of urban population has remained the same, literacy rate has gone up from 13.09 to 25.99. Thus the tehsil retains its second position in 1971. Kathua improved its position with regard to both literacy and urbanisation, more markedly in the case of the latter (from 12.11 to 26.21). Consequently it has continued with rank 3 over the time 1961-71. Nowshehra witnessed a substantial improvement in respect of literacy from 9.53 to 18.99 percent. On the other hand, Rajouri improved its position with regard to literacy as well as urbanisation But the improvement in both the cases has not been sufficient enough to improve their relative positions vis-a-vis other tehsils. Hence Nowshehra and Rajouri continue to remain as backward with rank-orders 14 and 12 respectively.

Tehsil Reasi has got elevated from 16th to 13th position under this block, mainly because the share of literates in total population of the tehsil has gone up substantially between 1961 and 1971 from 6.53 to 11.90. The tehsil has shown an improvement with regard to urbanisation also. The same holds for Akhnoor which has consequently improved its rank from 9 to 7. In the case of tehsils Doda, Hiranagar, Mendhar, Ramnagar and Udhampur, a substantial increase in literacy rate, generally, explains the improvement in their respective rank-orders between 1961 and 1971. The literacy and urbanisation rates have not shown any improvement with regard to Samba. Consequently, the tehsil

slipped down in terms of rank-order from 6 to 8. Greater improvement in the case of some other tehsils explains why Bashohli has gone down even when its literacy and urbanisation rates have increased over the time-period. The same holds for Ramban, Kishtwar, Bhaderwah and Haveli. Hence, the decline in the ranking of some tehsils is caused by a relatively larger improvement of other tehsils, and does not in any way suggest a decline in their absolute positions. The most interesting feature emerging from this inter-temporal comparison is that except for tehsil Samba which has changed its development category from medium to low, no inter-group change is observed. In other words, between 1961 and 1971, the relatively lowly developed tehsils have continued to remain lowly developed and the 'so-called' highly developed tehsils have continued to enjoy their highly developed status as regards the process of urbanisation, literacy and so on.

Block 2 Agriculture And Allied Activities

A perusal of table VI.1, shows that as many as seven tehsils have witnessed an improvement with regard to agricultural sector; this has been more pronounced in the case of Kishtwar and Reasi. Both these tehsils have improved their rank-orders by six steps each. Over the period, Kishtwar improved its position in respect of land-man ratio, irrigation base, cropping intensity and more particularly in

terms of workers in forests etc ($b_{13}$). Hence, contrary to 1961, this tehsil has emerged as one of the relatively developed tehsils of the province in 1971. Reasi, which was lowly developed in 1961, has emerged relatively developed with regard to agriculture in 1971. This is so mainly because this tehsil was better placed in 1971 in respect of land-man ratio, irrigation, mechanisation, orchard area and workers in forests etc. The same factors (except irrigation) and, in addition, improvement with regard to cropping intensity explain the substantial improvement in the position of Bhaderwah and Bashohli also both of which have been able to shift from lowly developed category to the developed category over the time-period.

Five tehsils viz; Jammu, R.S. Pora, Hiranagar, Doda and Mendhar, have retained the same rank-order. While the first three have remained as developed even in 1971, the last two continue to remain lowly developed. Jammu and R.S. Pora witnessed an improvement with regard to some important development indicators such as tractorisation, cropping intensity and irrigation. Hence, they have retained their top positions. In the case of Hiranagar, there has been a substantial improvement with regard to tractorization only; in terms of most other indicators the tehsil's position has gone down. However, the improvement in the case of some other tehsils has not been adequate

enough to pull down this tehsil. Hence Hiranagar maintains fourth rank in 1971 also. Similarly Mendhar and Doda experienced an improvement with regard to some indicators like cropping intensity. But at the same time there was a decline in some other indicators like proportion of cultivators to total workers. On the whole, the tehsils retained their 1961 ranks.

Six tehsils viz; Akhnoor, Ramban, Haveli, Nowshehra, Ramnagar and Udhampur, have experienced a deterioration and this is more marked in the case of Akhnoor which has slipped down from rank 3 in 1961 to 11 in 1971. The relative deterioration has taken place not only because of fall in the value of some development indicators (such as proportion of cultivators, number of live-stock, workers in forests etc) but also because these tehsils could not catch up with some other forging ahead-tehsils. This is more true of Akhnoor and Nowshehra. Akhnoor improved its relative position with regard to almost all the development indicators of agricultural sector. But, owing to a substantial improvement in the case of some other tehsils, it has slipped down drastically.

Under this sector, substantial inter-group changes have also occurred. For example, in 1961 Akhnoor, Ramban, Ramnagar and Nowshehra were identified as relatively deve-

loped tehsils of the province under agricultural sector. But in 1971, they have shifted to the low developed category. On the other hand, tehsils Bhaderwah, Kishtwar, Reasi and Bashohli have changed from low development to relatively developed category over the time-period. Mechanisation and development of allied activities appear to be the main factors behind the changes in the relative position of tehsils.

In brief, table VI.1 read with table VI.2 suggests that the changes in the relative positions of different tehsils under Agriculture and Allied Activities were due to mainly to increasing incidence of tractorization (rank correlation = 0.30), workers engaged in forests, livestock, orchards etc. (rank correlation = r = 0.40) and area under orchards ( r = 0.57 ). With regard to most other indicators, the relative position of 1961 did not change much in 1971.

TABLE - VI.2

Rank Correlation Based On Tehsil-Level Changes Between 1961 and 7

| Sector/Development Indicator | Rank Correlation |
|---|---|
| 1. General Indicators | 0.97 |
| i) Male participation rate | 0.91 |
| ii) Percentage of urban population to total population | 0.95 |
| iii) Percentage of literate population to total population | 0.78 |
| iv) Population Density per $KM^2$ | 0.98 |
| 2. Agriculture and Allied Activities | 0.69 |
| i) Net cropped area per agricultural worker | 0.73 |
| ii) Percentage of gross irrigated to gross cropped area | 0.88 |
| iii) Cropping intensity | 0.87 |
| iv) Percentage of cultivators to total agricultural workers | 0.73 |
| v) Tractors per 1,000 acres of net cropped area | 0.30 |
| vi) Number of live-stock per capita of total population | 0.87 |
| vii) Percentage area under orchards to total cropped area | 0.57 |
| viii) Percentage area under forests to total geographical area | 1.00 |
| ix) Percentage workers in forests, live-stock orchards and mining quarring to total workers | 0.40 |

contd.

Table-VI.2 contd....

| Sector/Development Indicator | Rank Correlation |
|---|---|
| 3. Industry and Trade | 0.91 |
| i) Percentage male workers in manufacturing other than house-hold to total male industrial workers | 0.63 |
| ii) Percentage of male workers in Industry to total male workers | 0.53 |
| iii) Percentage of workers in Trade and Commerce to total workers | 0.96 |
| 4. General Infrastructure | 0.54 |
| i) Percentage of villages connected by roads | 0.49 |
| ii) Percentage of villages electrified | 0.67 |
| iii) Bank offices per 10,000 population | 0.003 |
| iv) Post-offices per 10,000 of population | 0.67 |
| 5. Social Services | |
| i) Educational institutions per 10,000 population | 0.57 |
| ii) Medical institutions per 10,000 population | 0.84 |
| iii) Percentage of villages with protected water supply | 0.33 |
| 6. Overall Economy | 0.80 |

Block 3 Trade and Industry

Under this sectoral block, the relative position of five tehsils - Samba, R.S. Pora, Doda, Bhaderwah and Haveli - has deteriorated in terms of their rank-order. The decline has been rather drastic in the case of Bhaderwah and Haveli. The relative deterioration is mainly explained by the falling industrial work-participation rates of these tehsils. However, in the case of tehsils such as Bhaderwah and Haveli, in addition to the above mentioned factor, the deterioration appears to have taken place also because the improvement in the case of some other tehsils such as Hiranagar, Akhnoor, Ramban and Nowshehra has been much more substantial.

Among the eight tehsils which have experienced an improvement during the decade 1961-71 the upward change has been quite remarkable in the case of Ramban which got elevated from 13th to 8th position. This tehsil witnessed a tremendous increase in the proportion of industrial workers in manufacturing sector from 3.96 to 19.52. Similarly its percentage of workers in trade almost doubled (from 1.12 to 2.34) during the time-period.

Five tehsils viz; Jammu, Kishtwar, Mendhar, Rajouri and Reasi have maintained the same rank order. While Jammu continues to remain the industrially most developed tehsil of the province, others have retained their low level of

industrial development because of their very low industrial participation rates.

Apart from the addition of tehsil Haveli, the group of relatively lowly developed tehsils has continued to remain the same. Haveli has slipped down between 1961 and 1971 from relatively developed category to the lowly developed one. Apart from the decline in the number of workers in manufacturing and trade, it may be attributed to the fact that this tehsil is located near the border. In such areas economic development is usually subservient to the defence interests. The same, to a great extent, explains the relative backwardness of some other tehsils such as Mendhar, Rajouri and Nowshehra also.

Block 4 General Infrastructure

While eight tehsils have been able to improve their relative positions with regard to infrastructure, the same has been quite substantial in the case of Nowshehra, Reasi and Akhnoor. These tehsils have experienced a substantial upcoming with regard to almost all the development indicators of the block, especially in terms of village-roads, bank-offices and postal facilities. Among the seven tehsils which have lost their positions over the time-period, Haveli, Kishtwar and Bhaderwah have moved down very significantly Barring a few minor exceptions, the development indicators of infrastructure for these tehsils have shown some absolute

progress during the period 1961-71. Hence, the deterioration in their relative positions may be explained in terms of substantial improvement shown by other tehsils such as Akhnoor, Nowshehra, Reasi and Ramban.

Jammu has experienced a substantial increase in all the development indicators of infrastructure. Thus, the tehsil has retained rank-1 in 1971 also. On the other hand, although Rajouri and Bashohli have also witnessed some improvement, it has not been sufficient enough to improve their position vis-a-vis some other tehsils. The inter-group changes that have taken place are as follows. Tehsils Haveli, Bhaderwah and Kishtwar have shown deterioration by slipping down from the 'so called' developed level to the 'so called' under-developed tehsils level. On the other hand, Akhnoor, Ramban and Nowshehra have shifted from relatively under-developed to developed tehsils of the province. Though some of the tehsils of lowly developed category have improved their relative positions within the group, the improvement has not been adequate enough to shift them upwards to the relatively developed category. As is observed from table VI.2, the changes have occurred mainly because of the change in relative position of tehsils with regard to village-roads and bank-offices (rank correlation coefficients are 0.49 and 0.003 respectively).

Block 5 Social Services

With regard to social services sector, eight tehsils have witnessed a fall in their relative rank orders over the decade ending 1971. Tehsils Samba and Akhnoor have registered a drastic deterioration in their rank orders; they have slipped down by 11 steps each. However, as is evident from the development indicators of this block for two time-points (appendices A.2 and A.3), the deterioration has occurred because some other tehsils have forged ahead at a faster rate. In other words, the increase in the development indicators of these tehsils has not been sufficient enough to enable them maintain their 1961 ranks.

Six tehsils have shown a substantial improvement in their rank orders over the decade. For example, Reasi, R.S. Pora, Ramban and Kishtwar have improved their rank orders by 9, 8, 7 and 6 steps respectively. Bhaderwah and Udhampur have gone ahead by 5 and 4 ranks respectively. As is evident from the development indicators and rank correlation between 1961 and 1971 ranks, these tehsils have experienced improvement mainly due to the extension of protected water facilities (rank correlation coefficient = 0.33). For example, in 1961 these facilities were absent in R.S. Pora, whereas in 1971, 21.95 per cent of its villages enjoyed these facilities. Similarly in other tehsils such as Ramban, Kishtwar and Bhaderwah, the protected water facilities started developing during sixties. In the case of Reasi,

there has been quite a substantial improvement with respect to educational institutions also. The number of such institutions, has gone up from 7.46 per 10,000 of population to 17.37 between 1961-71.

Kathua has improved its individual scores in terms of medical facilities and protected water facilities, this is more pronounced in the case of the latter; hence it retains rank-3 even in 1971. Tehsils Mendhar, Doda and Rajouri have not been able to steel a march ahead of other tehsils even when their individual indicators under social services sector have gone up. Consequently, they have maintained the same ranks at both time points.

Some inter-groups changes are also observed with regard to Social Service Sector. Contrary to the 1961 analysis, Samba and Ramnagar have turned out as lowly developed tehsils. On the other hand, R.S. Pora, Udhampur, Reasi and Bhaderwah have been able to come out of the low-development group. There were only five relatively developed tehsils in the province in 1961. Whereas the number increased to seven in 1971. However, most of the backward spatial units remain lowly developed even in 1971; and the highly developed tehsils have maintained their position over the decade.

It is quite obvious from the above discussion that the relative position of tehsils under five sectoral blocks has undergone a change during the time-period 1961-1971. The change has been more marked in the case of social services and infrastructure followed by agricultural sector. This may be attributed to the government's efforts regarding the development of infrastructure and provision of various social services to different areas of the state, particularly to the relatively backward areas. However, most of the tehsils continue to maintain low development levels especially in infrastructure. This may be explained in terms of long gestation period involve because of the constraints put by difficult physical conditions prevailing in these tehsils. On the whole, mostly the inter-tehsil changes have taken place within particular development groups only. The inter-group shifts have been negligible especially in the case of trade and industry and general indicators.

Block 6 Overall Economy

With respect to the overall economy, table VI.1 shows that tehsil Jammu has been able to maintain its top position during the decade ending 1971. As is evident from the table, tehsil Jammu has retained its top position with regard to general indicators, trade and industry and general infrastructural; it ranks second with regard to agriculture at both time-points, However, in the case of social services,

the tehsil experienced a decline in the rank-order from 2 to 5. But owing to fairly high development levels under other blocks, Jammu continues to be the most developed tehsil of the province with regard to the overall economy. On the other hand, Mendhar stays as the least developed at both time-points in the respect of the general indicators, agriculture and industry. Again, this tehsil is lowly developed with regard to infrastructure and social services also. Hence its lowest rank at both time-points.

Nine tehsils have improved their positions and it is more marked in the case of Reasi and Ramban. Except for trade and industry where it continues to maintain rank 13, Reasi has experienced an improvement with regard to all sectoral blocks. Hence the tehsil has been able to steel a march on some others in terms of the overall socio-economic development quite considerably. Although the position of Ramban with regard to general indicators and agricultural sector has deteriorated, the improvement with regard to trade and industry, infrastructure and social services has been quite substantial to pull up the tehsil from 13th to 8th position over the time-period. Similarly, trade and industry, general infrastructure and social services seem to be the main driving force behind the improved position of R.S. Pora, Kathua, Udhampur, Bhadarwah, Bashohli, Nowshehra and Rajouri.

Deterioration in the rank order of seven tehsils is obvious from table VI.1. This may, generally, be explained in terms of the decline in their positions with regard to general infrastructure, social services and agricultural sector. Tehsil Haveli has lagged behind with regard to all the five development blocks; and this is more marked as regards general infrastructure where the tehsil has slipped down from rank 6 to rank 16. Consequently, Haveli has experienced a drastic decline with regard to overall socio-economic development from rank 7 to 13. Similarly, Ramnagar has come down in the matter of the overall development mainly because its position under four sectoral blocks has deteriorated; the tehsil has shown some improvement with regard to trade and industry only. On the other hand, Doda has gone up with regard to general indicators and infrastructure and gone down in the case of trade and industry only. But the tehsil has witnessed tremendous decline in terms of overall socio-economic development. This may possibly explain why the tehsil has not been able to catch up with some other tehsils.

The rank correlation for overall economy has been found as high as 0.80, meaning thereby that compared to social services, general infrastructure and agricultural sector, the change in the relative position of tehsils over the period 1961-71 has been less pronounced with regard to overall socio-economic development. Hence, it

is quite evident that while in terms of socio-economic development some tehsils have shown some improvement over the period of time, some other tehsils have lagged behind, whereas in the case of some tehsils, the position has remained unchanged. A look at tables IV.6 (page-73) and V.6 (page-101) reveals that no single tehsil of the low development category has been able to come out of the vicious circle of backwardness. Instead, one tehsil (Haveli) has slipped down to join the category of relatively less developed tehsils. Hence, no inter-group shifts with regard to overall socio-economic development have occurred. In other words, the group of lowly developed tehsils remains lowly developed even in 1971. It requires further study to analyse the factors lying behind the relative stagnation or deterioration of the tehsils; the same could not be undertaken here owing to the time and data constraints.

## VI.2 Inter-Sectoral Disparities During 1961-71

The present section deals with the assessment of trend in the sectoral pattern of tehsils. It has been found imperative to trade out whether in a particular tehsil, the sectoral gap has tended to narrow down or got widened during 1961-71. With this objective in view, the inter-sectoral disparity indices (coefficient of variation) of tehsils for 1961 and 1971 were compared and the change over the decade was worked out. Results are given in table-VI.3. (page-135).

TABLE - VI.3

Inter-Sectoral Disparities During 1961 and 1971

| Tehsils | Co-efficient of Variation | | Change over 1961 |
|---|---|---|---|
| | 1961 | 1971 | |
| Jammu | 13.99 | 26.26 | 12.27 |
| Samba | 19.84 | 33.18 | 13.34 |
| RS. Pora | 67.24 | 45.99 | - 21.25 |
| Akhnoor | 33.35 | 27.77 | - 5.58 |
| Ramban | 55.87 | 26.37 | - 29.50 |
| Doda | 53.54 | 32.33 | - 21.21 |
| Kishtwar | 50.28 | 60.59 | 10.31 |
| Bhaderwah | 33.94 | 48.64 | 14.70 |
| Bashohli | 35.81 | 34.19 | - 1.62 |
| Kathua | 20.80 | 13.11 | - 7.69 |
| Hiranagar | 44.62 | 20.45 | - 24.17 |
| Haveli | 34.91 | 33.52 | - 1.39 |
| Mendhar | 55.84 | 25.41 | --30.43 |
| Rajouri | 42.97 | 24.46 | - 18.51 |
| Nowshehra | 61.10 | 21.65 | - 39.45 |
| Ramnagar | 55.62 | 25.91 | - 29.71 |
| Udhampur | 31.21 | 17.17 | - 14.04 |
| Reasi | 53.37 | 30.56 | - 22.81 |
| Average Level | 37.42 | 30.42 | - 7.00 |

As is evident from the table, the inter-sectoral gap has shown a tendency to widen in the case of four tehsils only. viz; Jammu, Samba, Kishtwar and Bhadarwah. In these tehsils, the development process in one sector has not been able to keep pace with that of other sectors and this has led to the accentuation of sectoral development gap. For example, tehsil Jammu maintained a very high level of development under all the five sectoral blocks in 1961. In 1971, while it was able to retain its very high development level with regard to four blocks, its rank with respect to social services sector has gone down from 2, to 5. Consequently, the sectoral gap has widened. Samba was maintaining a high level of development with regard to infrastructure and social services in 1961 and medium level in respect of trade and industry and general indicators, while it seemed to be lowly developed under agricultural sector only. But the position of this tehsil has changed in 1971 in the sense that it has been found as relatively lowly developed under three blocks viz; general indicators, agriculture and allied activities and social services. Although the tehsil was able to move from medium to high development level as regards infrastructure, it has shifted from high to low development category under social services sector. Its rank in terms of the overall socio-economic development has also declined from 5 to 6 over the period 1961-71.

Hence, it appears that in the case of Samba the shift in the sectoral pattern from balanced to unbalanced one has not been a reflection of development. It rather speaks of the relative deterioration that has taken place in the tehsil during 1961-71. The opposite is the case with Bhadarwah which has also moved for balanced to unbalanced sectoral pattern. In 1961, this tehsil witnessed medium level of development under infrastructure only. But in 1971, it has been able to improve remarkably with regard to agriculture (from low to high) and social services (from low to medium) whereas its position in respect of infrastructure has deteriorated from medium to low development category. On the whole, in the case of Bhadarwah, the increase in the sectoral gap seems to be an outcome of development during the decade 1961-71. This is also borne out by the relative position of this tehsil interms of overall development which has gone up substantially from 10 to 7.

On the other hand, judged by the overall socio-economic development, the increase in sectoral disparity in the case of Kishtwar does not appear to be a welcome trend in the sense that the tehsil has been found relatively unfavourably placed with regard to four development blocks at both time-points. Consequently, its position under overall economic development has also deteriorated from 14 to 17.

While fourteen tehsils have shown a trend of declining sectoral disparity, two tehsils (Haveli and Bashohli) have experienced a verly little reduction in inter-sectoral gap. However, in the case of Nowshehra, the inter-sectoral disparity has gone down significantly (-39.45). To a great extent, the same holds for Mendhar, Ramnagar, Ramban and Hiranagar. All these five tehsils alongwith Rajouri have moved from unbalanced to balanced sectoral pattern over the period 1961-71. Except for Hiranagar, improvement in the relative position of these tehsils under infrastructural block appears to be the main factor responsible for narrowing down the sectoral gap. In the case of Hiranagar, the sectoral disparity between social services and other sectors has declined sharply over the period. Hence, it has turned out as a sectorally balanced tehsil. Nowshehra and Ramban have been able to improve their relative position as regards overall socio-economic development. It seems that the reduction in the inter-sectoral gap in these tehsils has been an outcome of development process, and not otherwise.

With regards to agriculture and social services, Ramnagar was maintaining a medium level of development in 1961. But the tehsil has been found as lowly developed under these two sectors in 1971; whereas in the remaining three sectors, it continues to maintain a low level of development. Hence, we may infer that in the case of Ramnagar, the sectoral gap

has tended to narrow down not because of any socio-economic improvement but because of the relative deterioration with regard to the previously developed sectors of the tehsil.

Most of the tehsils which were depressingly underdeveloped in 1961 with regard to infrastructure and social services, have shown a remarkable improvement under these two sectors over the decade 1961-1971. It seems that the hitherto neglected areas could engage the attention of the development authorities which in turn, intensified the efforts in the direction of faster development of infrastructure and social services in such areas. Consequently, the sectoral gaps have tended to narrow down especially in the case of Nowshehra and Ramban tehsils.

The sectoral gap seems to have narrowed down or got accentuated irrespective of the level of development maintained by a particular tehsil. Both relatively developed as well as relatively underdeveloped tehsils have experienced a reduction and/or increase in the sectoral gap over the time-period. Hence, there does not appear to be any association between the level of development and the sectoral pattern of any spatial unit. However, barring a few exceptions such as Ramnagar, Samba and Kishtwar, the change in the sectoral pattern of tehsils seems to reflect a healthy trend in the sense that such a change has been an outcome of the development process and not otherwise.

On the whole, judged on the basis of the co-efficient of variation index, for the tehsils as well as for the province, the sectoral gap has shown a tendency to narrow down over the period 1961-71 except for 3 - 4 tehsils such as Jammu, Samba and Kishtwar. This goes well with Hirschman's contention that the sectoral imbalances tend to narrow down in response to an increase in the level of development, howsoever small this increase may be. It may be pertinent to suggest that some economic progress, however, little it may appear by any absolute yardstick, some economic progress was witnessed during 1961-71 as per most of the effective socio-economic indicators given in appendices A-2 and A-3.

## VI.3 Changes In Regional Disparities During 1961 -71

In the present section we seek to assess whether with the passage of time, the spatial disparity has tended to narrow down or got accentuated. The decadal variations in the disparity indices of the five sectors and the overall economy have been worked out. Table VI.4 summarises the results.

TABLE - VI.4

Temporal Change in Regional Disparities (1961-71)

| Block/Overall Economy | Change in Disparity Index of 1971 over 1961 | | |
|---|---|---|---|
| | Under-developed Tehsils | Under-developed & Medium development level tehsils | All Tehsils |
| 1. General Indicators | 0.57 | - 4.17 | - 1.08 |
| 2. Agriculture and Allied Activities | 2.17 | - 2.01 | 9.27 |
| 3. Trade and Industry | - 4.50 | -21.04 | -16.43 |
| 4. General Infrastructure | -14.71 | -53.25 | -108.09 |
| 5. Social Services | - 2.27 | -16.70 | -87.47 |
| 6. Overall Economy | - 7.05 | - 3.82 | -28.21 |

Among the under-developed tehsils, the disparity index has gone down significantly in the case of general infrastructure; this is followed by trade and industry. The spatial variations have tended to widen with regard to agriculture. But, on the whole, the regional disparity with regard to overall socio-economic development levels has narrowed down substantially.

Among the under-developed and medium development level tehsils taken together, the spatial variations have tended to fall significantly in the case of infrastructure; this is

followed by trade and industry and ~~infrastructure~~ Social Services. The relatively more backward tehsils within this group have, generally shown remarkable improvement in terms of infrastructure, trade and industry and social services. The improvement is more marked in the case of infrastructure and social services, thanks to government efforts in this direction.

In the case of all tehsils taken together, reduction in the magnitude of regional disparity with regard to all the sectors, except agriculture and allied activities, is evident. However, in the case of general indicators, the reduction has turned out to be minor. It can be traced back to the fact that the urban and the literate population, the two major indicators under this block, have remained confined to those tehsils which were already better placed in this respect; however, concentration has not tended to increase. The extent of spatial imbalance has gone up in the case of agriculture and allied activities. The level of agricultural development is a result of the interaction of many factors such as institutional, technological and environmental. The decade 1961-71 has been an important development decade especially with regard to agriculture. It appears that in the Jammu province, as in the case of many other states, the benefits of technological changes in the form of greater use of better seeds and fertilisers and other improved agricultural techniques have got reached all the areas equally. Rather, the already favourably placed

tehsils such as R.S. Pora and Jammu have derived the maximum benefit out of the development programmes. Hence, regional disparity has got accentuated over the period 1961-71.

It is remarkable that the extent of regional disparity with regard to infrastructure and social services has gone down considerably. During the decade ending 1971, the state government intensified its efforts with regard to construction of village - roads, rural electrification and provision of social services such as educational and medical facilities and drinking water facility to the far-flung areas. As a result of these efforts, the extent of spatial imbalances has got reduced quite significantly. Although the disparity index under trade and industry has gone down considerably, it remains the spatially more unbalanced sector of the province with a higher disparity index, incomparison to other sectors. This is so mainly because unbanisation has remained confined to a few pockets only.

The social services sector has turned out to be spatially the most balanced sector of the province. This commends well to the government efforts with regard to the spread of social services in various areas of the province.

As a result of the substantial reduction in regional disparities with regard to infrastructure, social services and trade and industry, the extent of regional imbalance in

the case of overall socio-economic development of the province has gone down significantly. It follows that the regional gap in development levels has shownaa strong tendency to narrow down in respect of infrastructure, social services and trade and industry. While the general indicators block has not undergone any significant change, the spatial variations in agriculture and allied activities have got accentuated during 1961-1971. All the factors responsible for this phenomenon of increasing regional disparities in agricultural sector are difficult to be located. However, we may partly explain this phenomenon in terms of weak "Spread-effects" and strong "backwash-effects" dominating the relatively under developed tehsils with regard to agricultural sector. On the one hand, the weak spread-effects seem to have failed to diversify the agricultural economy of the province. On the other hand, strong backwash-effects appear to have led to concentration of agricultural activities in certain tehsils only. The phenomenon may also be attributed to the improved agricultural technology which tended to throw up more spatial disparities.

Whether spatial disparities with regard to industrial development are a consequence of the poor resource endowments and, hence, development potentialities of the province in this regard, or because of some other factors, needs a detailed

study. However, the present variations in development levels of the tehsils can mainly be explained in terms of variations in their industrial development levels. And the regional variations with regard to this sector are a consequence of concentration of urbanisation and infrastructural facilities in a few pockets only. Thus, for a substantial reduction in regional disparities as regards the overall socio-economic development, the faster development of industry and infrastructure in backward tehsils is called for. At the same time, care has to be taken that such disparities do not get accentuated so far as other sectors are concerned.

Thus from the above discussion it is quite evident that in the province there have existed marked spatial and temporal variations with regard to development levels.. As a result, some of the tehsils have forged ahead, while some others have lagged behind. Although most of the tehsils have improved their absolute position especially with respect to infrastructure and social services, their relative position of 1961 has percolated to 1971 almost as an undisturbed package. However, the absolute level reached so far is still very low for almost all the tehsils, judged from the province's average and much more, judged from the standpoint of other states. Even in the case of our 'so called' developed tehsils, this level is well-behind the all India average. However, it is beyond doubt that both the underlying data and the

methodology of computation of index have considerable scope for further improvements. Hence, the results have to be taken with due degree of caution. The figures should, be regarded as approximate indicators rather than a precise measure of the level of development.

## VI.4 Population Growth And Economic Development

A number of social scientists have considered the phenomenon of rapidly rising population as a dreadful menace to the future development of the already over-populated third world countries, because it eats up their little available fruits of development.[1] On the other hand, some theoreticians point to the positive effects of population growth such as economies of scale and specialization, the possible spur to favourable motivation caused by increased dependency and the more favourable attitudes, capacities and motivation of younger population.

Thus, we are involved in a problem having two important facts: a vividly gloomy prospect so far as the third world countries are concerned and an anti-Malthusian uncertain phenomenon in advanced countries. It is not possible to

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1. Jaganath Pathy, "Population And Development", Economic and Political Weekly, (Bombay), (July 24, 1976), pp. 1125-30.

reach a uniform conclusion regarding the association between population growth and economic development in countries differing widely in population growth rates, population densities and income levels. Even within the same country, the nature of population problem may vary from one region to another. However, in order to understand the probelm in its proper perspective, it needs to be emphasized that the relationship between the two is a two-way process. Population affects economic development and the latter, in its turn also shapes the population in its qualitative as well as quantative dimensions. Also, we must bear in mind that mere rise in population by itself is neither good nor bad; its character needs to be seen and assessed in the context of the conditions in which this rise takes place.

Though population growth is regarded by some a potentially positive factor determining the growth of manpower, in India this factor has acquired a negative significance due to the insufficient rates of national economic development. The economic development of the country, in its turn, is hampered by tremendous demographic investments. The enormous growth of population which is quite high in relation to the available resources and output has made planning not a matter of mere choice but one of the absolute necessity in this country. However, as mentioned above, the nature of population problem may differ from region to region, especially in a

country such as India with diverse socio-economic and demographic features. The population policy appropriate for one region of the country may not be wholly relevant for another region. This necessitates the study of the problem at lower ~~at lower~~ spatial levels.

The state of Jammu and Kashmir has shown population growth rate higher than the all-India average during 1961-71. The tehsils of Jammu province are characterized by a sharp disparity in the size and density of population. Hence, the province has a wide scope for the study regarding the relationship between population and development. In the following paragraphs, an attempt is made to examine the pattern of association between population growth rates and the levels of development of tehsils in the Jammu Province. For this purpose, the rank correlations between population (measured both in terms of density and growth) and various development sectors as well as the overall economy have been worked out. The results are summarized in tables VI.5 and VI.6.

A look at the development indices of the tehsils under various blocks reveals that, generally, the tehsils with higher population densities show a relatively higher levels of development. This is more true of general indicators, trade, and industry and infrastructure. For example, Jammu, R.S. Pora, Kathua, Hiranagar and Samba enjoy the first five

positions with respect to population density both in 1961 and 1971. The same tehsils have also been found as relatively developed with regard to most of the sectors and, consequently, the overall economy. On the other hand, the tehsils with low population densities such as Kishtwar, Reasi, Nowshehra, Ramnagar, Bhaderwah, Bashohli and Doda have been identified as lowly developed both in 1961 and 1971. Consequently, leaving aside minor exceptions, the correlation coefficients between population density and various development blocks are generally quite high and uniformly significant.

TABLE - VI.5

Relationship Between Population Density And Indicators of Socio-economic Development

| Block/Overall Economy | Rank Correlation Coefficient | |
|---|---|---|
| | 1961 | 1971 |
| General Indicators | 0.775* | 0.772* |
| Agriculture and Allied Activities | 0.434** | 0.201 |
| Trade and Industry | 0.754* | 0.776* |
| General Infrastructure | 0.696* | 0.813* |
| Social Services | 0.545* | 0.346 |
| Overall Economy | 0.777* | 0.646* |

* = Significant at 0.05 level

** = Significant at 0.10 level

As is evident from table VI.5, in 1971 the correlation of population density with regard to agriculture and social services has been found quite low and insignificant. This is quite understandable. An increase in population may effect the development in agriculture and social services adversely in so far as it reduces the per capita availability of land and social services. But, at the same time, it might lead to the improvement in agricultural practices, and act as an incentive for the government to extend various facilities/social services. Hence, the observed relationship of population density with these two sectors cannot be stressed with full confidence. We expect a more reliable association between population growth (between 1961 and 1971) and levels of socio-economic indices, as in 1971. This relationship is worked out below in Table VI.6.

TABLE - VI.6

Relationship Between Population Growth And Economic Development-1961-1971

| Block/Overall Economy | Rank Correlation Co-efficient |
|---|---|
| General Indicators | 0.604* |
| Agriculture and Allied Activities | 0.618* |
| Trade and Industry | 0.748* |
| General Infrastructure | 0.725* |
| Social Services | 0.569** |
| Overall Economy | 0.835* |

* = Significant at 0.01 level

** = Significant at 0.05 level

Population growth does not appear to hamper the socio-economic development of the province. The two attributes, as revealed by rank correlation co-efficients, appear to be sustaining each other. For example, Mendhar has been identified as the least developed tehsil of the province as regards general indicators, agriculture and trade and industry and, consequently, under overall socio-economic development. This tehsil has registered the lowest rate of population growth (4.99 per cent per decade) in the province during 1961-71. The same for the other relatively developed tehsils is quite high. For example, it is 45.57 for Jammu, 45.12 for Samba, 42.63 for R.S. Pora, 39.86 for Udhampur, 38.67 for Kathua and 36.43 for Hiranagar. Again, the first six tehsils in order of population growth also rank ahead of the remaining tehsils in respect of socio-economic development.

In the context of the above findings, the validity of the contention that population growth always retards the process of economic development in under developed regions is doubtful. It seems, it is not always the accretion of the population which puts the strain on the development of an economy. In fact, an insufficiency of population may be as detrimental to development as its over-abundance, especially when the process of socio-economic development is at its infancy. Sparse population spread over a large area, as in the case of Kishtwar, is not, generally able

to co-operate in raising production, in exploration of resource base (e.g. forests) and in the extension of market. Population growth in the most thinly populated areas of the province will provide incentives for investment by creating demand for goods and services.

However, the relatively developed tehsils, with higher population densities and growth rates, are also backed by greater urbanisation, literacy and infrastructural and other facilities. This has promoted their socio-economic development which, in its turn, has led to an increase in their density and growth rates of population. Opposite is true in the case of almost all the relatively underdeveloped tehsils. Hence, the relatively higher development levels maintained by some tehsils cannot be attributed to their high population densities; nor can their higher population densities exclusively be explained in terms of high development levels prevailing therein.

Hence, it would be naive to hold that the rate of socio-economic development depends exclusively or mainly on the rate of population growth, and vice-versa. The two variables, although closely related, are at the same time independent to a considerable extent. Economic development depends much more on the stock of known natural resources, capital supply, technological change and efficiency of economic organisation. On the other hand, population growth is affected not by economic conditions alone, but also by

changing social attitudes towards family size and medical technology. The demographic variable as a determinant of development can take different shapes in societies with different socio-economic and tehcnological stages of development. In any case, the relationship between the two is quite complicated. While it is true that the population problems of some of the regions are quite serious, it is not always true that population growth is the principal reason why their levels of development are not rising. On the whole, simple empirical comparisons between population growth rates and economic development are inconclusive. The effect of population growth on economic development and vice-versa does not exclude other more important determinants.

# CHAPTER - VII

## CONCLUSIONS AND POLICY IMPLICATION

### VII.1 Summary of the Findings

The main objectives of the present study are to identify the levels of socio-economic development of the tehsils of Jammu province at two points of time, viz; 1961 and 1971, and to make an inter-temporal comparison of the degree of spatial and sectoral disparities between 1961 and 1971. The need for such studies stems from the fact that identification of socio-economic disparities is the first step forward in the direction of balanced regional development. The inter-temporal comparison of disparities enables us to formulate appropriate development policies for the future. Such a study assumes great significance for a backward area such as Jammu province. The province is characterised by subsistence agriculture, weak industrial and infrastructural condition and difficult physical terrain. The social backwardness of the province manifests itself in very low literacy rates in spite of free educational facilities. Within this backward province there are some pockets of extreme backwardness which are as much cut off and poor today as they were two decades back. Therefore, a regional approach is the only device to carry the benefits of development to these areas. Present study is an attempt in that direction. The data constraints have confined the study to a priliminary attempt only. However,

twenty-three variables, covering different aspects of the economy of the province, have been assigned to five sectoral blocks, namely general indicators (urbanisation, literacy etc.) agriculture and allied activities, industry and trade, general infrastructure and social services. The composite indexes of sectoral and overall socio-economic development have been arrived at by application of the method of 'Modified First Principal Component Analysis'. This method has been preferred to other methods ( such as ranking technique, equal correlation method and simple First Principal Component Analysis) because of its advantages. For example, this method does not ignore the dispersion in the variance of variables while computing the weights. It also overcomes the difficulty of negative weights faced under simple First Principal Component Analysis. The extent of spatial disparities has been measured with the help of the "weighted coefficient of variation" technique. In the measurement of sectoral disparities, simple 'Coefficient of Variation' has been used. The study yields a number of interesting conclusions.

(1) Barring a few relatively developed tehsils, there is predominance of backward tehsils in the Jammu province of Jammu and Kashmir state. These tehsils are characterized by subsistence agriculture, extremely low levels of

urbanization and literacy, weak and nascent industrial sector and inadequacy of infrastructural and other facilities. Generally, the same group of tehsils uniformally maintain a relatively low level of development under all the five sectoral blocks.

(2) Whatever little economic development has taken place in the Jammu province, it is concentrated at certain points only producing a mosaic of tehsils at different levels of socio-economic development. In other words, there prevails a wide gap among the tehsils with respect to the levels of socio-economic development. As many as twelve of the eighteen tehsils appear to operate at a very low level of socio-economic development. Only six tehsils viz; Jammu, R.S.Pora, Kathua, Hiranagar, Udhampur, and Samba, appear to enjoy a relatively high level of socio-economic development as per 1971 analysis, although in an absolute term, these relatively developed pockets quality as lowly developed when judged in terms of the national average level.

(3) Whatever the level of socio-economic development was registered in the province, there is clear evidence of this having happened much more in the plains (tehsils Jammu, R.S.Pora, Samba and Kathua) and most of the hilly

areas are depressingly backward. Their backwardness manifests itself especially in the matter of infrastructural facilities and the development of trade and industry. The physical landscape of these backward tehsils has inter-alia acted as a brake on their development.

(4) The overall levels of socio-economic development appear to be highly influenced by the development levels in trade and industry, infrastructure and urbanisation and literacy (two major indicators of general indicators block). The rank correlation co-efficients between the index of overall development and these three sectors are 0.889, 0.837 and 0.829 respectively. These are by far greater than those between other sectors. Here it deserves mention that in spite of the preponderance of agriculture, especially in terms of persons employed, this sector does not appear to have contributed significantly to the development process of the province. This may, partly, explain the low rank-correlation co-efficient of agricultural sector with overall socio-economic development.

(5) In 1961 analysis, the problem of sectoral imbalance seemed to be more pronounced in the case of relatively under-developed tehsils. Contrary to this, the 1971 analysis has shown that the sectoral balance does not necessarily prevail at higher levels of development alone, most of the relatively

backward tehsils also enjoy a balanced sectoral pattern. Hence, there does not seem to exist any association between the level of development and the balanced sectoral pattern.

(6) The magnitude of spatial disparities is quite high so far as the overall socio-economic development of the tehsils is concerned. It is more pronounced in the case of 'trade and industry', general indicators (mostly urbanisation and literacy) and infrastructure. Here it needs to be mentioned that although the entire Jammu province is backward in terms of industrialisation and urbanisation, almost all the industrial activity, and consequently urban population, are concentrated at certain pockets with a fairly developed infrastructure. The industrial activity, even in the house-hold sector, is virtually absent in most of the backward tehsils. The only redeeming feature of the province's economy is that the social services sector seems to be spatially more balanced.

(7) The inter-temporal analysis of various sectoral blocks and the overall economy of the tehsils reveals that while some of the tehsils have been able to improve their respective position (measured in terms of rank-orders), most of the tehsils could not improve their position during the decade 1961-71. Consequently, they remained confined to the category of 'lowly developed tehsils'. Some other tehsils have experienced a deterioration in their levels of socio-economic

development and this is more marked in the case of tehsil Haveli. This tehsil was identified as relatively developed in 1961 but it has been found as relatively lowly developed tehsil of the province in 1971. The location of this tehsil near the border mainly explains this change.

(8) The sectoral disparities got reduced significantly over the decade 1961-71 in the case of all tehsils except for Jammu, Samba, Kishtwar and Bhaderwah. The change in the sectoral pattern of the tehsils (from balanced to unbalanced and vice-versa) has, generally, occurred owing to the development process and not otherwise. During the sixties, most of the lowly developed tehsils started coming up in respect of social services and infrastructural development. Hence, the sectoral development gap has got narrowed down.

(9) The extent of regional disparities in overall socio-economic development has got reduced significantly. Agricultural structure was the only exception. Owing to the government efforts, the spatial variations have got narrowed down quite significantly in the case of general infrastructure and social services. On the other hand, the reduction was quite negligible as regards the general indicators (urbanisation, literacy etc.). On the whole, a clear tendency was witnessed towards reduction in the inter-tehsil disparities with regard to the socio-economic development levels. This

is, undoubtedly, paying a handsome tribute to government policies in reducing the sectoral as well as the spatial variations. And this is perhaps one of the happy symptoms in the economy of Jammu province.

(10) Although population growth and economic development in the province appear to be positively associated with each other, the relationship between the two remains inconclusive.

Owing to some weaknesses of the study, the conclusion have to be taken with due degree of precaution. Due to the deficiency of more relevant data, some of the development indices are poor predictors of socio-economic measurements; the quality of the available data poses another problem. The change in the definition of workers between 1961 and 1971 has made the figures pertaining to workers less comparable between the two time-points. Again, for 1961 landuse pattern we have used 1965 figures as the data for 1961 were not available. Methodology of analysis has a tremendous scope for further improvements. Hence, there are various limitations on the conclusion that have been drawn.

The tehsils which have been identified as relatively backward, appear to be so mainly due to difficult terrain resulting in continued inaccessibility (due to high transportation and other costs) and inadequacy or near complete absence of many common facilities. Most of the facilities

like surfaced roads, electricity, drinking water and medical institutions are largely confined to urban areas; this has enabled them to grow at a faster rate resulting in accentuating the spatial variations. Some of the tahsils such as Ramban, Kishtwar and Bhaderwah are at a low level of development owing mainly to the inadequate exploitation of their natural wealth, mostly forests. Hence, the differential levels of development of various tehsils appear to be based not so much on differences in natural resource endowment but much more on man-made factors like infrastructure, industrialization and other general factors. A substantial effort and attention are needed to push up the levels of development in backward tehsils, at a rate faster than in the developed tehsils so that the existing development gap between the two is narrowed down within a reasonable time-horizon. The efforts should ultimately lead to the reduction in existing sectoral and spatial disparities and ensuring social justice by fully exploiting the development potential of backward areas.

Hence, a deliberate policy is called for. This calls attention of the government to frame policies which would defuse concentration and thus reduce disparity.

## VII.2 Policy Implications

The strategy of economic development for the province will have to be based on a faithful assessment of the local conditions; because if the policies framed are not in con-

formity with real potentialities, it is bound to lead to failures sooner or later. The task of developing the handicapped areas cannot be effectively tackled merely by allocating financial resources. Undoubtedly, the dimension of the problem is colossal as majority of the tehsils are underdeveloped and people living there are extremely poor. It is necessary that a comprehensive survey of natural resources of the province is made for finding out the suitability of different types of activities; because the pattern of development for the province has to be evolved in a manner which will take full cognizance of its natural resources.

Sometimes, the solution to the problem of spatial disparities is sought to lie in transferring resources from the developed to the backward areas. But such a policy in the absence of other pre-requisities of development does not help the depressed areas and results in the sheer waste of national resources. Also, in the case of Jammu province even the 'so-called' developed tehsils are backward compared with tehsils of some other states. There is, therefore, no case for transferring the resources from relatively less backward tehsils to relatively more backward ones. Hence, we have to be very careful while formulating the development policies for backward areas.

In what follows, a modest attempt has been made to broadly indicate the policy measures to reduce the spatial imbalances.

The main factor behind the extreme backwardness of the tehsils lies in the inadequacy of infrastructural facilities which play a crucial role in the whole process of economic development especially in difficult, hilly areas. Hence, the regional inequalities in respect of the availablity of infrastructure should be tackled expeditiously. Transport is the main bottleneck in the development of backward hilly regions - whether it is agriculture or industry, power or tourism, minerals or forests, supply of raw-materials or marketing of goods, a developed system of transport is a sine qua non for all times to come. Many areas are virtually devoid of any type of roads which have thus been almost completely left out of the race of development. The development of transport will enhance the possibilities of development by acquiring access to remote areas with new and unexplored resources, as well as by integration and extension of market. A vast programme of road construction will also create job-opportunities for the rural unemployed. Thus, a very important solution to the problem of backwardness lies in the development of road transport net work. Both the quantity as well as quality of roads should be improved; special emphasis should be laid on the acceleration of rural-road programmes.

Availability of power in backward areas is inadequate which is hindering their development in industry as well as in agriculture. So priority should also be given to power; its availability in adequate quantity and usable quality

should be ensured. In short, in the absence of an adequate rural infrastructure, other developmental efforts can achieve very little and spatial variations will get accentuated. So the btrategy for infrastructure should undergo a decisive shift in favour of rural areas.

In the case of tehsils with deficient industrial resources, the tendency to locate an industry can be fraught with serious risks. Such areas can be helped with a large number of dispersed modern small-scale and cottage industries which could be absorbed in the socio-economic pattern of the area and which would make the best use of the resources available locally in these areas. Here it needs to be mentioned that in many backward tehsils of the province (such as Ramban, Doda, Kishtwar and Bhaderwah) it is mostly the forest-based products which are available. Hence, attempts should be made to develop these available resources. This will have a strong impact on the socio-economic development of many hilly areas. In the past, the forest resources have, generally, contributed not to the development of areas where they are located but mainly to outside areas, mostly under the impact of better technology, wider market and other general factors, It has acted as a 'suction mechanism' impoverishing the under-developed areas. To avoid such exploitation in the future, the industrial units set up in backward areas should be appropriate to local skill and resources.

In backward tehsils, owning to inadequate irrigation facilities, agriculture continues to be run on primitive methods of cultivation. Steps should be taken to provide irrigation facilities which would help in bringing more area under cultivation and will make possible the use of better techniques of cultivation. The heavey pressure on land, due to limited net sown area, should be reduced by focussing attention on other activities such as animal husbandry. Animal husbandry is an extremely important activity on which large sections of the population of backward and hilly areas depend, but they continue to rely on traditional methods which are relatively low yielding. By providing various incentives like increased supply of improved foods and financial assistance, the yield of milk, mutton and wood can be increased. The live-stock holders should be guided in the methods of quality improvements. Recently, new breeds have been introduced to improve the quality and strength of live-stock; the experiment of merino cross-breed has proved a success. However, so far the government efforts have mostly been confined to setting up of the sheep farms. A number of industrial units for processing and production of woolen fabrics, set up in areas closer to the sources of raw-materials, will improve the economic position of the people living in those areas.

The people living in the lowly developed tehsils are characterized by extreme social backwardness. This is not only a major factor behind spatial inequalities but also acts

as a great impediment to their economic development. In fact, generally the literacy rate is very low not as much due to the poverty of the people as it is due to their social backwardness. It aggrevates, the problem of regional disparity in respect of the 'human factor'. Safe drinking water remains a problem for majority of the villages. In rural areas, there is great inadequacy of medical facilities from "quality" as well as "accessibility" view-point. Hence, adequate coverage in respect of such social services must be provided. In short, for the faster development of backward tehsils of the province, more stress should be laid on the development of infrastructure especially transport, assured irrigation facilities, development of animal husbandry, forest-based industries and literacy.

However, the more effective way of tackling the poverty lies in working out several sub-strategies not only for each tehsil but for each block, taking into account the regional differences, resource potentialities, availability of infrastructure and the overall level of development of each spatial unit. For this, a detailed block-wise analysis would be worth undertaking.

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Appendix - A.1

## List Of The Indicators Of Development

General Indicators (Block 1)

$a_1$ = Male Participation Rate

$a_2$ = Percentage of Literate Population to Total Population

$a_3$ = Percentage of Literate Population to Total Population

$a_4$ = Density of Population Per Square Kilometre

Agriculture and Allied Activities (Block 2)

$b_5$ = Net Cropped Area Per Agricultural Worker

$b_6$ = Gross Irrigated Area As A Percentage Of Gross Cropped Area

$b_7$ = Cropping Intensity = ((Gross Cropped Area ÷ Net Sown Area) x 100)

$b_8$ = Percentage Of Cultivators To Total Agricultural Workers

$b_9$ = Number of Tractors Per 1,000 Acres of Net Cropped Area

$b_{10}$ = Number of Live-Stock Per Capita of Total Population

$b_{11}$ = Percentage Area Under Orchards to Total Cropped Area

$b_{12}$ = Percentage Area under Forests to Total Geographical Area

$b_{13}$ = Percentage Workers in Forests, Live-Stock, Orchards and Mining and Quarring to Total Workers.

Appendix A.1 (Contd...)

List Of The Indicators Of Development

Industry And Trade (Block 3)

$c_{14}$ = Percentage of Male Workers In Manufacturing Other Than House-Hold To The Total Male Industrial Workers

$c_{15}$ = Percentage of Male Workers in Industry to Total Male Workers.

$c_{16}$ = Percentage of Workers in Trade And Commerce to Total Workers.

General Infrastructure (Block 4)

$d_{17}$ = Villages Connected By Roads As a Percentage Of All Villages

$d_{18}$ = Villages Electrified As a Percentage Of All Villages

$d_{19}$ = Number of Bank-Offices Per 10,000 Population

$d_{20}$ = Number of Post-Offices Per 10,000 Population

Social Services (Block 5)

$e_{21}$ = Average Number of Educational Institutions Per 10,000 Population

$e_{22}$ = Average Number of Medical Institutions Per 100 Square Kilometre

$e_{23}$ = Villages With Protected Water-Supply As a Percentage of All Villages.

Appendix - A.2

Indicators of Socio-Economic Development Jammu Province 1961

| Tehsil | a1 | a2 | a3 | a4 | b5 | b6 |
|---|---|---|---|---|---|---|
| Jammu | 52.49 | 46.40 | 26.98 | 258 | 2.22 | 25.30 |
| Samba | 50.17 | 5.52 | 13.42 | 95 | 2.37 | 0.79 |
| R.S.Pora* | 49.75 | 10.53 | 13.09 | 263 | 2.70 | 73.01 |
| Akhnoor | 55.31 | 3.95 | 8.76 | 89 | 0.37 | 0.94 |
| Ramban | 59.19 | 5.53 | 6.87 | 67 | 1.15 | 10.60 |
| Doda | 61.93 | 5.39 | 8.30 | 54 | 1.06 | 14.08 |
| Kishtwar | 62.60 | 5.55 | 7.10 | 10 | 0.97 | 19.88 |
| Bhaderwah | 58.48 | 6.68 | 12.60 | 45 | 0.92 | 10.49 |
| Bashohli | 62.68 | 2.98 | 9.02 | 55 | 1.45 | 7.44 |
| Kathua | 54.11 | 15.78 | 12.11 | 109 | 4.04 | 28.03 |
| Hiranagar | 49.62 | 5.06 | 11.16 | 119 | 4.34 | 18.86 |
| Havcli | 55.06 | 16.18 | 11.63 | 80 | 1.60 | 15.69 |
| Mendhar | 54.49 | 0.90 | 6.29 | 92 | 1.21 | 11.51 |
| Rajouri | 57.22 | 3.47 | 6.46 | 78 | 1.35 | 11.75 |
| Noushchra | 53.59 | 3.89 | 9.53 | 49 | 1.64 | 1.85 |
| Ramnagar | 62.35 | 3.06 | 7.60 | 53 | 1.21 | 9.46 |
| Udhampur | 60.95 | 11.81 | 12.63 | 85 | 1.55 | 6.09 |
| Reasi | 59.90 | 4.15 | 6.53 | 45 | 1.52 | 6.76 |
| Jammu Province | 56.66 | 8.71 | 10.56 | 91 | 1.76 | 15.70 |

* R.S.Pora = Ranbir Singh Pora.

Appendix -A.2(Contd...)

Indicators of Socio-Economic Development Jammu Province 1961

| Tehsil | b7 | b8 | b9 | b10 | b11 | b12 |
|---|---|---|---|---|---|---|
| Jammu | 148.55 | 92.47 | 0.09 | 0.59 | 0.41 | 46.1 |
| Samba | 149.73 | 97.37 | 0.00 | 1.35 | 0.00 | 63.6 |
| R.S.Pora* | 148.26 | 93.99 | 0.17 | 0.75 | 0.44 | 00.0 |
| Akhnoor | 148.76 | 99.64 | 0.09 | 1.46 | 0.40 | 44.2 |
| Ramban | 100.00 | 99.25 | 0.00 | 1.77 | 0.27 | 75.7 |
| Doda | 103.82 | 99.68 | 0.00 | 2.12 | 0.11 | 67.5 |
| Kishtwar | 106.35 | 99.66 | 0.00 | 1.84 | 0.16 | 41.7 |
| Bhaderwah | 110.94 | 99.38 | 0.00 | 1.96 | 0.08 | 68.2 |
| Bashohli | 139.59 | 99.58 | 0.00 | 2.39 | 0.14 | 34.1 |
| Kathua | 126.55 | 98.78 | 0.00 | 1.24 | 0.15 | 10.7 |
| Hiranagar | 126.67 | 96.87 | 0.00 | 1.26 | 0.36 | 05.2 |
| Haveli | 108.62 | 98.98 | 0.00 | 0.79 | 0.00 | 32.1 |
| Mendhar | 115.96 | 99.00 | 0.00 | 0.67 | 0.00 | 27.3 |
| Rajouri | 121.76 | 99.00 | 0.00 | 1.09 | 0.00 | 48.6 |
| Nowshehra | 181.57 | 99.86 | 0.04 | 1.73 | 0.00 | 53.0 |
| Ramnagar | 146.47 | 99.52 | 0.04 | 2.49 | 0.00 | 57.5 |
| Udhampur | 139.16 | 99.56 | 0.00 | 1.91 | 0.01 | 52.3 |
| Reasi | 132.86 | 99.41 | 0.00 | 2.01 | 0.10 | 49.6 |
| Jammu Province | 130.87 | 98.45 | 0.02 | 1.52 | 0.15 | 43.19 |

* R.S.Pora = Ranbir Singh Pora.

Appendix - A.2(Contd...)

Indicators of Socio-Economic Development Jammu Province 1961

| Tehsil | b13 | c14 | c15 | c16 | d17 | d18 |
|---|---|---|---|---|---|---|
| Jammu | 1.56 | 56.76 | 10.82 | 8.10 | 25.49 | 8.82 |
| Samba | 2.60 | 18.50 | 4.66 | 3.19 | 24.16 | 2.30 |
| R.S.Pora* | 0.47 | 30.40 | 5.10 | 3.39 | 72.50 | 2.92 |
| Akhnoor | 0.88 | 7.11 | 7.57 | 1.75 | 23.42 | 0.90 |
| Ramban | 3.82 | 3.96 | 6.14 | 1.12 | 23.47 | 0.00 |
| Doda | 2.15 | 7.24 | 6.06 | 0.63 | 15.08 | 0.00 |
| Kishtwar | 0.41 | 7.62 | 3.92 | 0.42 | 5.13 | 0.00 |
| Bhaderwah | 4.27 | 13.28 | 4.82 | 0.82 | 7.30 | 0.00 |
| Bashohli | 2.63 | 2.28 | 6.74 | 1.03 | 23.74 | 0.72 |
| Kathua | 4.63 | 22.66 | 7.30 | 3.60 | 66.26 | 1.84 |
| Hiranagar | 1.97 | 8.66 | 8.69 | 2.48 | 77.08 | 5.42 |
| Haveli | 1.49 | 22.41 | 3.47 | 1.81 | 26.51 | 0.00 |
| Mendhar | 2.44 | 4.13 | 1.39 | 0.48 | 31.11 | 0.00 |
| Rajouri | 1.25 | 7.34 | 6.08 | 0.83 | 31.08 | 0.00 |
| Nowshehra | 2.56 | 5.81 | 7.85 | 1.02 | 9.09 | 0.00 |
| Ramnagar | 1.34 | 7.71 | 3.02 | 0.69 | 11.03 | 0.00 |
| Udhampur | 0.83 | 21.15 | 3.35 | 2.53 | 32.60 | 1.76 |
| Reasi | 1.98 | 4.53 | 8.82 | 0.93 | 14.01 | 0.00 |
| Jammu Province | 2.07 | 13.98 | 5.88 | 1.93 | 28.84 | 1.37 |

* R.S.Pora = Ranbir Singh Pora.

Appendix - A.2(Contd...)

Indicators of Socio-Economic Development Jammu Province 1961

| Tehsil | d19 | d20 | e21 | e22 | e23 |
|---|---|---|---|---|---|
| Jammu | 0.21 | 6.86 | 7.33 | 2.43 | 8.82 |
| Samba | 0.13 | 3.72 | 11.01 | 1.56 | 3.72 |
| R.S.Pora* | 0.00 | 4.58 | 8.84 | 1.72 | 0.00 |
| Akhnoor | 0.00 | 4.95 | 9.47 | 0.74 | 0.90 |
| Ramban | 0.00 | 13.26 | 10.73 | 0.82 | 0.00 |
| Doda | 0.00 | 5.56 | 11.30 | 1.03 | 0.00 |
| Kishtwar | 0.13 | 7.05 | 11.53 | 0.12 | 0.00 |
| Bhaderwah | 0.16 | 2.19 | 12.30 | 0.95 | 0.00 |
| Bashohli | 0.00 | 10.07 | 10.22 | 0.94 | 0.72 |
| Kathua | 0.00 | 5.52 | 11.57 | 1.87 | 4.91 |
| Hiranagar | 0.00 | 2.92 | 13.46 | 1.05 | 11.67 |
| Haveli | 0.16 | 7.23 | 9.68 | 1.02 | 0.00 |
| Mendhar | 0.00 | 7.78 | 5.68 | 0.60 | 1.11 |
| Rajouri | 0.00 | 3.59 | 7.76 | 0.64 | 0.00 |
| Nowshehra | 0.00 | 5.78 | 15.26 | 0.87 | 0.00 |
| Ramnagar | 0.00 | 8.82 | 12.77 | 0.88 | 2.94 |
| Udhampur | 0.12 | 4.40 | 8.86 | 1.27 | 0.44 |
| Reasi | 0.00 | 3.50 | 7.46 | 0.71 | 0.39 |
| Jammu Province | 0.05 | 05.99 | 10.29 | 1.07 | 1.98 |

* R.S.Pora = Ranbir Singh Pora.

Appendix - A.3

Indicators of Socio-Economic Development, Jammu Province, 1971

| Tehsil | a1 | a2 | a3 | a4 | b5 | b6 |
|---|---|---|---|---|---|---|
| Jammu | 46.37 | 48.55 | 39.07 | 354 | 2.21 | 42.81 |
| Samba | 42.51 | 5.14 | 13.46 | 138 | 2.36 | 1.58 |
| R.S.Pora* | 43.09 | 10.17 | 25.99 | 383 | 2.56 | 78.21 |
| Akhnoor | 48.47 | 4.35 | 18.20 | 113 | 1.99 | 12.70 |
| Ramban | 56.37 | 5.24 | 12.07 | 86 | 1.36 | 6.95 |
| Doda | 56.88 | 5.93 | 14.18 | 69 | 1.39 | 11.44 |
| Kishtwar | 57.11 | 5.39 | 11.69 | 13 | 1.23 | 25.56 |
| Bhaderwah | 52.45 | 6.40 | 18.20 | 60 | 1.57 | 9.87 |
| Bashohli | 53.66 | 3.10 | 14.74 | 69 | 2.27 | 7.87 |
| Kathua | 48.38 | 21.40 | 26.21 | 147 | 3.44 | 42.86 |
| Hiranagar | 44.24 | 4.48 | 25.84 | 154 | 4.28 | 18.53 |
| Haveli | 53.18 | 16.04 | 17.53 | 95 | 1.39 | 16.92 |
| Mendhar | 51.44 | 1.90 | 12.35 | 96 | 1.48 | 11.99 |
| Rajouri | 53.07 | 4.11 | 12.13 | 98 | 1.84 | 13.21 |
| Nowshehra | 47.63 | 3.37 | 18.99 | 65 | 1.83 | 2.13 |
| Ramnagar | 55.96 | 3.84 | 12.31 | 67 | 1.78 | 9.36 |
| Udhampur | 53.66 | 14.60 | 21.96 | 119 | 2.33 | 5.32 |
| Reasi | 56.75 | 5.68 | 11.90 | 62 | 1.59 | 7.13 |
| Jammu Province | 51.18 | 9.43 | 18.16 | 122 | 2.05 | 18.02 |

* R.S.Pora = Ranbir Singh Pora.

Appendix -A.3(Contd...)

Indicators of Socio-Economic Development,Jammu Province,1971

| Tehsil | b7 | b8 | b9 | b10 | b11 | b12 |
|---|---|---|---|---|---|---|
| Jammu | 186.17 | 84.06 | 1.37 | 0.62 | 0.36 | 46.1 |
| Samba | 184.44 | 93.39 | 0.34 | 1.21 | 0.00 | 63.6 |
| R.S.Pora* | 179.63 | 87.66 | 3.25 | 0.76 | 0.06 | 00.00 |
| Akhnoor | 192.47 | 97.10 | 0.14 | 0.95 | 0.00 | 44.2 |
| Ramban | 114.25 | 97.00 | 0.00 | 1.20 | 0.20 | 75.7 |
| Doda | 139.68 | 98.59 | 0.00 | 1.51 | 0.07 | 67.5 |
| Kishtwar | 121.37 | 99.33 | 0.00 | 1.34 | 0.09 | 41.2 |
| Bhaderwah | 111.13 | 98.27 | 0.00 | 1.09 | 0.31 | 68.2 |
| Bashohli | 150.25 | 98.32 | 0.00 | 1.92 | 0.21 | 34.1 |
| Kathua | 143.73 | 83.36 | 0.82 | 1.00 | 0.12 | 10.7 |
| Hiranagar | 119.74 | 90.35 | 0.52 | 1.16 | 0.27 | 05.2 |
| Haveli | 120.83 | 97.98 | 0.00 | 0.73 | 0.00 | 32.1 |
| Mendhar | 128.14 | 98.96 | 0.00 | 0.67 | 0.00 | 27.3 |
| Rajouri | 151.18 | 98.47 | 0.00 | 1.15 | 0.00 | 48.6 |
| Nowshehra | 232.98 | 99.33 | 0.00 | 1.55 | 0.00 | 53.0 |
| Ramnagar | 157.29 | 98.71 | 0.00 | 1.92 | 0.02 | 57.5 |
| Udhampur | 136.91 | 97.15 | 0.00 | 1.46 | 0.00 | 52.3 |
| Reasi | 126.82 | 97.37 | 0.08 | 1.80 | 0.17 | 49.6 |
| Jammu Province | 149.83 | 95.30 | 0.36 | 1.22 | 0.10 | 43.16 |

* R.S.Pora = Ranbir Singh Pora.

Appendix -A.3(Contd...)

Indicators of Socio-Economic Development,Jammu Province,1971

| Tehsil | b13 | c 14 | c15 | c16 | d17 | d18 |
|---|---|---|---|---|---|---|
| Jammu | 1.78 | 51.84 | 15.26 | 13.28 | 80.82 | 24.84 |
| Samba | 1.58 | 17.10 | 10.82 | 4.02 | 62.95 | 16.55 |
| R.S.Pora | 0.71 | 34.53 | 8.72 | 4.35 | 90.24 | 15.85 |
| Akhnoor | 1.30 | 16.08 | 5.29 | 2.86 | 87.50 | 3.13 |
| Ramban | 6.85 | 19.52 | 3.13 | 2.34 | 24.18 | 1.10 |
| Doda | 7.62 | 15.56 | 2.69 | 1.13 | 38.10 | 2.38 |
| Kishtwar | 4.02 | 11.58 | 3.32 | 0.93 | 5.13 | 0.00 |
| Bhadarwah | 17.04 | 12.12 | 3.68 | 1.76 | 10.91 | 6.91 |
| Bachohli | 4.49 | 7.10 | 5.06 | 2.27 | 26.28 | 0.00 |
| Kathua | 2.59 | 32.95 | 18.67 | 5.36 | 84.66 | 12.88 |
| Hiranagar | 1.12 | 12.54 | 13.41 | 4.08 | 57.02 | 15.32 |
| Haveli | 0.92 | 18.50 | 2.61 | 2.25 | 35.36 | 1.22 |
| Mendhar | 0.97 | 2.86 | 3.10 | 1.27 | 37.33 | 5.33 |
| Rajouri | 2.85 | 14.62 | 3.81 | 1.74 | 45.49 | 0.86 |
| Nowshehra | 5.02 | 16.90 | 3.51 | 2.29 | 80.74 | 0.00 |
| Ramnagar | 3.63 | 15.53 | 2.56 | 1.67 | 25.55 | 0.00 |
| Udhampur | 1.67 | 22.25 | 10.34 | 5.17 | 44.05 | 4.85 |
| Reasi | 7.11 | 13.39 | 4.00 | 2.08 | 52.17 | 1.18 |
| Jammu Province | 4.00 | 18.61 | 6.67 | 3.27 | 49.36 | 6.24 |

R.S.Pora = Ranbir Singh Pora.

Appendix - A.3(Contd...)

Indicators of Socio-Economic Development, Jammu Province, 1971

| Tehsil | d19 | d20 | e21 | e22 | e23 |
|---|---|---|---|---|---|
| Jammu | 0.50 | 8.49 | 7.72 | 4.82 | 7.23 |
| Samba | 0.17 | 5.75 | 10.03 | 2.04 | 1.08 |
| R.S.Pora* | 0.26 | 4.88 | 11.00 | 5.39 | 21.95 |
| Akhnoor | 0.16 | 12.05 | 12.90 | 1.47 | 0.00 |
| Ramban | 0.34 | 14.28 | 16.44 | 1.75 | 3.29 |
| Doda | 0.13 | 10.31 | 17.67 | 1.68 | 1.58 |
| Kishtwar | 0.10 | 6.41 | 14.72 | 0.24 | 5.77 |
| Bhaderwah | 0.12 | 4.00 | 20.01 | 1.61 | 4.73 |
| Bashohli | 0.18 | 21.16 | 14.98 | 1.95 | 2.19 |
| Kathua | 0.36 | 4.90 | 11.51 | 2.79 | 13.50 |
| Hiranagar | 0.12 | 3.83 | 16.50 | 3.12 | 13.19 |
| Haveli | 0.13 | 12.19 | 15.93 | 1.53 | 0.00 |
| Mendhar | 0.00 | 14.66 | 10.41 | 1.40 | 5.33 |
| Rajouri | 0.14 | 10.73 | 12.25 | 1.63 | 0.00 |
| Nowshehra | 0.14 | 17.03 | 21.54 | 1.25 | 0.74 |
| Ramnagar | 0.11 | 14.60 | 15.87 | 1.77 | 4.38 |
| Udhampur | 0.17 | 12.78 | 11.85 | 2.15 | 12.33 |
| Reasi | 0.16 | 10.67 | 17.37 | 1.51 | 5.93 |
| Jammu Province | 0.18 | 10.48 | 14.37 | 2.12 | 5.73 |

*R.S.Pora = Ranbir Singh Pora.

Matrix A - 1961 Appendix B.1

General Indicators

| | | | | |
|---|---|---|---|---|
| | 1.0061 | 0.9737 | 0.9842 | 0.9631 |
| | 0.9737 | 2.3568 | 1.4735 | 1.5589 |
| | 0.9842 | 1.4735 | 1.1963 | 1.2311 |
| | 0.9631 | 1.5589 | 1.2311 | 1.5060 |
| Eigen values= | 5.275 | 0.562 | 0.206 | 0.022 |

Appendix -B.1(Contd...)

Agriculture And Allied Activities.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1.3312 | 1.2649 | 1.0145 | 0.9943 | 1.0655 | 0.9183 | 1.1758 | 0.8113 | 1.0737 |
| 1.2649 | 2.0949 | 1.0018 | 0.9841 | 2.3907 | 0.8014 | 1.6520 | 0.6839 | 0.8619 |
| 1.0145 | 1.0018 | 1.0252 | 0.9991 | 1.1566 | 0.9995 | 1.0133 | 0.9907 | 0.9805 |
| 0.9943 | 0.9841 | 0.9991 | 1.0004 | 0.9743 | 1.0049 | 0.9862 | 1.0040 | 1.0025 |
| 1.0655 | 2.3907 | 1.1566 | 0.9743 | 4.7020 | 0.7340 | 2.3509 | 0.6761 | 0.5115 |
| 0.9183 | 0.8014 | 0.9991 | 1.0049 | 0.7340 | 1.1419 | 0.8767 | 1.0956 | 1.0306 |
| 1.1758 | 1.6520 | 1.0133 | 0.9862 | 2.3509 | 0.8767 | 2.1352 | 0.7949 | 0.8907 |
| 0.8113 | 0.6839 | 0.9907 | 1.0040 | 0.6761 | 1.0956 | 0.7949 | 1.2380 | 1.0550 |
| 1.0737 | 0.8619 | 0.9805 | 1.0025 | 0.5115 | 1.0306 | 0.8907 | 1.0550 | 1.3306 |
| | | | | | | | | |
| Eigen Values=10.762 | 3.471 | 0.789 | 0.486 | 0.210 | 0.182 | 0.069 | 0.027 | 0.002 |

Appendix-B.1(Contd...)

| | Industry And Trade | | |
|---|---|---|---|
| | 1.8686 | 1.1059 | 1.8092 |
| | 1.1059 | 1.1579 | 1.1867 |
| | 1.8092 | 1.1867 | 1.8705 |
| Eigen values. | 4.472 | 0.373 | 0.052 |

| | General Infrastructure | | | |
|---|---|---|---|---|
| | 1.5294 | 1.5840 | 0.7043 | 0.9258 |
| | 1.5840 | 3.8062 | 1.8934 | 0.8653 |
| | 0.7043 | 1.8934 | 3.1192 | 0.8948 |
| | 0.9258 | 0.8653 | 0.8948 | 1.2032 |
| Eigen values= | 6.435 | 1.765 | 1.183 | 0.275 |

Appendix B.1(Contd....)

Social Services

| | | | |
|---|---|---|---|
| | 1.0522 | 0.9879 | 1.0532 |
| | 0.9879 | 1.2394 | 1.4225 |
| | 1.0532 | 1.4225 | 3.7379 |
| Eigen values= | 4.877 | 1.015 | 0.138 |

Overall Economy

| | | | | |
|---|---|---|---|---|
| 1.3672 | 1.1945 | 1.4312 | 1.4845 | 1.3256 |
| 1.1945 | 1.2985 | 1.2360 | 1.2101 | 1.1475 |
| 1.4312 | 1.2360 | 1.5299 | 1.5884 | 1.4401 |
| 1.4845 | 1.2101 | 1.5884 | 1.8111 | 1.6292 |
| 1.3256 | 1.1475 | 1.4401 | 1.6295 | 1.8999 |
| Eigen values= 7.105 | 0.479 | 0.254 | 0.055 | 0.013 |

Matrix A - 1971 Appendix B.2

General Indicators

| | | | | |
|---|---|---|---|---|
| | 1.0087 | 0.9724 | 0.9778 | 0.9510 |
| | 0.9724 | 2.2976 | 1.3673 | 1.5669 |
| | 0.9778 | 1.3673 | 1.1533 | 1.2399 |
| Eigen Values= | 5.208 | 0.566 | 0.254 | 0.028 |

Appendix B.2 (Contd...)

Agriculture And Allied Activities.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1.1371 | 1.1285 | 1.0081 | 0.9863 | 1.3169 | 0.9861 | 1.1071 | 0.8825 | 0.8329 |
| 1.1285 | 2.0625 | 1.0303 | 0.9592 | 3.0676 | 0.8244 | 1.2056 | 0.6626 | 0.7784 |
| 1.0081 | 1.0303 | 1.0466 | 0.9977 | 1.1452 | 0.9993 | 0.9288 | 0.9993 | 0.9228 |
| 0.9863 | 0.9592 | 0.9977 | 1.0029 | 0.9150 | 1.0084 | 0.9756 | 1.0143 | 1.0209 |
| 1.3169 | 3.0676 | 1.1452 | 0.9150 | 5.7263 | 0.6803 | 1.3813 | 0.3781 | 0.2940 |
| 0.9861 | 0.8244 | 0.9993 | 1.0084 | 0.6803 | 1.1053 | 0.9791 | 1.0595 | 1.0987 |
| 1.1071 | 1.2056 | 0.9288 | 0.9756 | 1.3813 | 0.9791 | 2.2561 | 0.9951 | 1.3983 |
| 0.8825 | 0.6626 | 0.9993 | 1.0143 | 0.3781 | 2.2561 | 0.9951 | 1.2380 | 1.2283 |
| 0.8329 | 0.7774 | 0.9228 | 1.0209 | 0.2940 | 0.9951 | 1.3963 | 1.2283 | 1.9728 |
| Eigen values=10.860 | 4.650 | 1.075 | 0.582 | 0.199 | 0.101 | 0.046 | 0.024 | 0.010 |

Appendix -B.2(Contd...)

Industry And Trade

| | | | |
|---|---|---|---|
| | 1.3465 | 1.2823 | 1.1343 |
| | 1.2823 | 1.5284 | 1.4682 |
| | 1.4343 | 1.4682 | 1.7133 |
| Eigen values= | 4.332 | 0.173 | 0.083 |

General Infrastructure

| | | | | |
|---|---|---|---|---|
| | 1.2799 | 1.3458 | 1.1487 | 0.9534 |
| | 1.3458 | 2.3690 | 1.4182 | 0.6683 |
| | 1.1487 | 1.4182 | 1.3771 | 0.9487 |
| | 0.9534 | 0.6683 | 0.9487 | 1.2063 |
| Eigen values= | 4.935 | 0.999 | 0.181 | 0.117 |

Appendix B.2(Contd...)

Social Services

| | | |
|---|---|---|
| 1.0614 | 0.9288 | 0.9205 |
| 0.9288 | 1.3270 | 1.4073 |
| 0.9205 | 1.4073 | 2.0283 |

Eigen values= 3.755 0.513 0.149

Overall Economy

| | | | | |
|---|---|---|---|---|
| 1.3472 | 1.2279 | 1.3673 | 1.2696 | 1.1804 |
| 1.2279 | 1.3399 | 1.2379 | 1.2092 | 1.2668 |
| 1.3673 | 1.2379 | 1.4482 | 1.3299 | 1.2134 |
| 1.2696 | 1.2062 | 1.3299 | 1.2775 | 1.1700 |
| 1.1804 | 1.2668 | 1.2134 | 1.1700 | 1.2962 |

Eigen values=6.335 0.262 0.056 0.041 0.016

Appendix - C

Weights Assigned To The Indicators of Development

| Block/Indicators | Weight (1961) | Weight (1971) |
|---|---|---|
| Block 1 | 0.429 | 0.452 |
| $a_1$ | 0.365 | 0.368 |
| $a_2$ | 0.627 | 0.619 |
| $a_3$ | 0.467 | 0.457 |
| $a_4$ | 0.505 | 0.522 |
| Block 2 | 0.381 | 0.443 |
| $b_5$ | 0.292 | 0.284 |
| $b_6$ | 0.392 | 0.405 |
| $b_7$ | 0.276 | 0.268 |
| $b_8$ | 0.265 | 0.256 |
| $b_9$ | 0.531 | 0.574 |
| $b_{10}$ | 0.247 | 0.224 |
| $b_{11}$ | 0.395 | 0.338 |
| $b_{12}$ | 0.236 | 0.225 |
| $b_{13}$ | 0.245 | 0.253 |
| Block 3 | 0.456 | 0.466 |
| $c_{14}$ | 0.631 | 0.542 |
| $c_{15}$ | 0.439 | 0.571 |
| $c_{16}$ | 0.639 | 0.617 |

Appendix - C (Contd..)

Weights Assigned To The Indicators Of Development

| Block/Indicators | Weight (1961) | Weight (1971) |
|---|---|---|
| Block 4 | 0.490 | 0.442 |
| $d_{17}$ | 0.358 | 0.481 |
| $d_{18}$ | 0.703 | 0.623 |
| $d_{19}$ | 0.551 | 0.500 |
| $d_{20}$ | 0.274 | 0.362 |
| Block 5 | 0.473 | 0.432 |
| $e_{21}$ | 0.340 | 0.435 |
| $e_{22}$ | 0.421 | 0.570 |
| $e_{23}$ | 0.841 | 0.697 |

Appendix - D

## The Modified Principal Component Analysis Method Of Composite Index*

$$Z_i = \sum_{j=1}^{m} x_{ij} F_j$$

Where,

$Z_i$ = Composite Index number of i-th region ($i = 1, 2 \cdots n$)

where, n is the number of regions.

$x_{ij} = \frac{\hat{X}_{ij}}{\bar{\hat{X}}_j}$ ; = Scale free value of jth valuable in i-th region

$\hat{x}_{ij}$ = Value of j-th variable in i-th region; and

$\bar{\hat{x}}_j = \sum_{i=1}^{m} \hat{X}_{ij} / n$ = agrithmetic mean of j-th variable.

and

$F_j$ = weight assigned to j-th variable F is the eigen vector corresponding to the maximum eigen value ( $\lambda$ ) of the matrix A, where Matrix $A = \frac{\hat{x}' \hat{x}}{n}$

where, x = Normalised data matrix (normalisation of the data matrix is done by dividing the columns by their respective means)

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*Amitab. Kundu, "Construction of Indices For Regionalisation - An Enquiry Into The Methods Of Analysis", Geographical Review Of India, (Calcutta), Vol. 37, No.1 (March, 1975). pp. 19-29.

Appendix - D (Contd...)

n = Number of observations

$x_{ij}^{'0}$

i = 1, 2, 3, 4, ..... n (number of regions)

j = 1, 2, 3, 4, ..... m (number of variables).

The eigen vector corresponding to the highest eigen value, (calculated from matrix - A) gives the weights of the variables for the first principal component.

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