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THE CHANGING PROFILE OF REGIONAL DEVELOPMENT IN PAKISTAN

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The primary objective of this paper is to observe changes in development rank ordering of districts of Pakistan and to highlight some of the major underlying phenomena. The paper demonstrates that there are marked changes in the development ranking of a number of districts from the early 1970's to the early 1980's, especially among districts at intermediate level of development. The paper also identifies regional clusters and describes the sectoral profile of backwardness in the country.

I. Introduction

Earlier research on regional development in Pakistan demonstrated the existence of significant variation in the quality of life of people living in different parts of the country. Pasha and Hasan (1982) analysed the data at the district level for the early 1970s. They concluded that not only do levels of development vary among the four provinces of the country, but there are large regional disparities within the provinces as well. More recently, Jamal and Malik (1988) observed the changing patterns in regional development during the decade of the 1970s in one province, viz., Sindh. They identified significant changes between 1971-72 and 1980-81 in the development rankings, especially of districts at the intermediate level of development in the province.

The decade of the 1970s has, in fact, witnessed significant institutional, demographic, economic and social changes which are likely to have had major spatial consequences. Factors which may have contributed to increased regional inequality include agricultural stagnation during the decade, especially in the barani (rainfed)

areas,[1] lumpy public sector investments (like the Steel Mill) and rapid growth of finance and trade (largely in the metropolitan areas). As opposed to this, administrative decentralisation arising from the dissolution of one unit, expansion of the role of the public sector,[2] emergence of stronger urban-rural linkages and faster growth of smaller cities/towns,[3] dynamism exhibited by the small scale manufacturing sector, construction and personal services,[4] and expanded inflow of home remittances[5] have probably mitigated against the widening of regional disparities.

In addition, the decade of the 1970s witnessed the introduction of explicit regional development policies in Pakistan. The trauma of the separation of the eastern wing in 1971 led to special efforts, primarily through fiscal policies, for the development of the backward areas of the country. In 1974, special weightage[6] was given to the two underdeveloped provinces, NWFP and Baluchistan, in the allocation of funds in the Annual Development Programme (ADP). A package of fiscal incentives was also introduced which offered customs duty rebate on imported machinery and income tax holiday on profits to projects established in specially designated industrial estates.[7] Simultaneously, physical restrictions were placed on

[1] The annual growth rate of value added in the agricultural sector declined from 4.7 per cent during the 1960s to 3 per cent during the 1970s.

[2] The share of public investment in GDP increased from 7.6 per cent in 1971-72 to 10.6 per cent in 1980-81, while that by the private sector declined from 8.1 per cent to 6.8 per cent. A large component of the former was devoted to the development of physical and social infrastructure.

[3] During the period, 1961 to 1972, fastest growth of population at over 5 per cent per annum was observed in the case of large cities with population of one million or more. Growth in all other city sizes was below the overall rate of increase in urban population. This pattern was fundamentally reversed between 1972 to 1981. Big cities showed a growth rate below the overall growth rate, while the smaller cities grew faster. Intermediate cities with population ranging from 200,000 to 500,000 showed exceptional dynamism with an annual growth rate of 6.7 per cent as compared to the overall growth rate of the urban population in the country of 4.4 per cent.

[4] According to PEPAC estimates (1987), there are large differences in the extent of spatial concentration of economic activity in the different sectors. Over 70 per cent of the urban employment in the banking and finance sector and 66 per cent in the transport and communications sector is concentrated in the top five cities. The corresponding magnitude for the construction, trade and services (miscellaneous) sectors is 44 per cent, and for small-scale manufacturing, 40 per cent. The latter grew at the rate of 7.7 per cent during the 1970s as compared with large-scale manufacturing, where the growth rate was 5.2 per cent. The substantial devaluation of the rupee in 1972 triggered off export-led growth in the small-scale sector.

[5] The highest ratios of international migrants to population, according to the 1981 Population Census, are observed for the divisions of Peshawar, Bahawalpur, Sibi and Hazara divisions at 99, 51, 42 and 37 per 1000 population respectively as compared to the overall national average of about 19 per 1000 population. Most of the districts in the last three divisions are relatively backward. Therefore, it is possible that home remittances by the migrants have had a regionally equalising effect.

[6] In the allocation of the overall provincial ADP a share of five per cent each is given initially to NWFP and Baluchistan. The remaining 90 per cent is then distributed on the basis of population.

[7] Kemal (1984) and Pasha and Ismail (1988) show that the fiscal incentives have been only marginally successful in stimulating industrialisation in the lagging regions of the country, due to the presence of other constraints like lack of infrastructure, entrepreneurship and savings.

new investment in the metropolitan city of Karachi.[8]

Altogether, given the ambiguity of the impact on regional inequality of factors operating in the 1970s, there is a need for a more recent development ranking of districts. Comparison of this ranking with that of Pasha and Hasan for the early 1970s will help in identifying the major changes that have taken place in the profile of regional development in the country. This is the objective of this paper.

The paper is organised as follows: Section II describes the various measures of development. Section III indicates the statistical techniques used for constructing the composite indicator of development. Section IV presents the empirical findings including the district-wise ranking and the sectoral profile of backwardness. Section V identifies the major changes in rank orderings during the 1970s. Finally, in Section VI the key conclusions are highlighted.

II. Measures of Development

The use of per capita income as the unique measure of the level of development has been criticised by Adelman and Morris (1967), Tobarrah (1972), Hicks and Streeten (1979), and Lee and Liu (1988). They argue that development is a multi-dimensional phenomenon which involves a complex interaction between political, social, cultural and economic factors. The ultimate goal of development is improvement in the quality of life of the people and in the enhancement of productive capacity. Income levels capture variations in the consumption levels of private goods, but are usually inadequate in reflecting access to basic services which affect quality of life. For this purpose, it is necessary to quantify the levels of the availability of social and physical infrastructure as well.

UNRISD (1970), McGranahan (1972) and Ram (1980) have indicated that there are two possible approaches to measuring development. The first is to determine the outcome of this process in terms of the quality of life indicators like rates of literacy, life expectancy, etc. These are direct indicators and are likely, as such, to be less biased in reflecting the level of development. However, such data are usually not forthcoming at the regional level within a country. Consequently, reliance has to be placed on the indirect approach, which involves measurement of the inputs to development. These are perhaps more problematic because if the measures are only quantitative in character, then differentials in the quality of provision are not accounted for. However, data are frequently available at the regional level on inputs

[8] There is a general ban on the establishment of any new unit in Karachi, unless it can only be located in Karachi e.g., (ship-building and repairs, ship-breaking, sea salt, canning and preservation of sea-food) or has downstream links with major investments like the Steel Mill e.g., (engineering workshops) or has a localised market e.g., (ice and cold storage, bakeries) or represents the application of complex, large-scale technology e.g., (petro-chemicals).

to development. Further, this approach has the inherent advantage of being more amenable for planning purposes.

We have opted for the latter approach to choice of indicators primarily because of data considerations. These indicators are selected from diverse sectors like industry, agriculture, housing, transport and communications, health, education, gender equality and labour force, along with the traditional income indicators. Altogether, 31 indicators have been included in the study. These are described below. In the absence of an indicator which directly measures income or wealth position of the district, we have combined five indirect measures to form a composite indicator of income and wealth.

The basic indicator of agricultural income is the value of crop output (VCROP) of the rural population.[9] Given limited variation in the use of inputs, this variable acts as a close proxy of the per capita level of agricultural income. It includes crops, both major and minor. Livestock population per capita (LSTOCK)[10] is another important indicator of income and wealth in the rural areas.

Value added in the large-scale manufacturing sector (MVA) has been taken as the measure of income in the urban area of the district. Value added by the small scale component could not be included due to lack of data. Number of bank branches (BNK) per 1000 population in the district acts as an indicator of the wealth level of a district. The assumption here is that of a direct correlation between the number of branches and the volume of bank deposits in a district. Another indicator chosen to depict the income and wealth position of urban households is the number of cars per 1000 urban population (CAR). This is generally a good indicator of the size of the upper tail of the income distribution.

Modernisation of Agriculture

The following three indicators have been chosen to demonstrate the extent of modernisation of the agricultural sector: extent of cropped area which is irrigated (IRIG), cropped area fertilized (FRT) and the use of tractors (TRC).

[9] This indicator is based on the aggregation of 43 crops, including fruits and vegetables, as follows:

$$VCROP = \frac{\sum_{i=1}^{43} Q_i P_i}{RUR}$$

where Q_i = output of the ith crop, P_i = farm-gate price of the ith crop, RUR = rural population of the district.

[10] This indicator is constructed by using the method adopted by Pasha and Hasan, as follows:

$$LSTOCK = [0.8 \times CAT + BUF + 0.1 \times GOA + 0.1SHE + 0.01 \times POU] / RUR$$

where CAT = number of cattle, BUF = buffalo, GOA = goat, SHE = sheep, POU = poultry.

Housing Conditions

Shelter is one of the basic needs, and housing conditions are one of the key determinants of the quality of life. As such, six indicators have been chosen to determine the standard of housing consumption and availability of related facilities. Rooms per person (PROOMT) quantifies the access to housing in a district. Materials used in walls (MTW) and roof (ROF) indicate the quality of the housing stock. Three other indicators, that is, percentage of households with electricity (ELE), piped water (WAT) and gas (GAS) respectively measure the access to basic services.

Transport and Communications

Seven indicators have been included to portray the level of development of the transport and communications sector in a district. Metalled roads (MRD), unmetalled roads (URD) and railway mileage (RAIL) per 100 square miles of geographical area have been used to measure the transportation network of the district. Metalled roads and railway are used generally for inter-district and inter-provincial movement, while unmetalled roads essentially act as farm-to-market roads. With regard to the availability of transport vehicles, a summary measure, viz., passenger load carrying capacity (PASN) per 1000 population,[11] which was first suggested by Pasha and Hasan (1982), is used here. This variable aggregates different types of vehicles by assigning weights.

The development of communication facilities has been measured with three indicators, that is, telephones (TLF) per 1000 urban population, post offices per 1000 population (POS) and telegraph offices per 1000 population (TGR).

Health

Doctors (DOT) and hospital beds (BED) have been used to identify the level of health facilities in a district. Both variables, however, are subject to measurement error. Information on the involvement of the private sector in health provision is very scanty.

Education

Five indicators, one a measure of stock and four of flows represent the education level of a district's population in the study. The stock measure is the literacy rate

[11] Data on vehicles for each district was aggregated into a single measure, with weights reflecting passenger load carrying capacity, as follows:

$$PASN = [(3 \times TAX + 2 \times AUT + 55 \times BUS) / TOTPOP] \times 1000$$

where TAX = number of taxies, AUT = auto rickshaws, BUS = buses and TOTPOP = total population of the district.

(LTL) whereas enrollment rates with respect to population of relevant age at different levels, viz., primary (PENR), middle (MENR), higher secondary or matric (HENR) and intermediate and degree college (IDENR) respectively, are the flow measures.

Gender Equality

Adelman and Dalton (1972) have highlighted the correlation between changes in the role of women and the level of development. As such, two indicators have been selected to measure the extent of gender equality in a district. These are female to male literacy ratio (LTFM) and female to male labour force ratio (LABFM).

Labour Force

Share of the industrial sector in the urban labour force (INDLAB) of a district is the key labour force indicator. This variable reflects the extent of employment absorption, especially in small-scale manufacturing.

Diverse sources have been used for obtaining data on the above indicators.[12] These include the Population Census of 1981, the Census of Agriculture of 1980, the Housing Census of 1980, and the Census of Manufacturing Industries of 1980. In addition, the Provincial Development Statistics of 1980-81 have been used to obtain data on motor vehicle registration, fertilizer use and enrollment rates at different levels of education. The publication, Agricultural Statistics of Pakistan, for the year 1980-81 gave data on district-wise output and wholesale prices of major and minor crops while the publication, Banking Statistics, provided information on the number of bank branches. Data on the number of doctors were not available for the 1980s. As such, the same data as contained in Pasha and Hasan were used. Similarly, data on railway mileage (largely unchanged over time) were also taken from the same source.

III. Techniques for Deriving the Composite Indicator

In the literature on regional development, a number of techniques have been used to reduce the dimensions of the complex multivariate problem associated with the construction of a composite development indicator. The first is the Z-sum technique which sums for a particular district its Z-score on each indicator. The Z-Score is the

[12] A detailed description of the data sources along with the data at the district level on all the indicators is available from the authors on request.

standardised score, which has a zero mean and unit variance. The higher the Z-sum[13] the more developed the region.

The second technique computes the taxonomic distance [Khan and Iqbal (1983) and Nissan and Garcy (1988)], which is the Euclidean distance from the highest (standardised) values observed for different indicators.[14] The lower the taxonomic distance of a region or district, the more developed it is. Both the techniques have the problem of assigning equal importance to all development indicators. Further, the taxonomic distance technique is very sensitive to the presence of outliers.

The third and the most sophisticated method for indexing a multidimensional phenomena is the Factor Analysis (FA) technique (Adelman and Dalton (1971)]. This technique reduces the number of relationships by grouping together all those variables which are most highly correlated with each other into one factor or component. Thus the FA model can be described as follows:

$$X_i = a_{ij} F_1 + a_{ij2} F_2 \ldots + a_{ij} F_j$$

where,

X_i is the ith indicator.

a_{ij} is called the factor loading and represents the proportion of the variation in X_i which is accounted for by the jth factor.

Σa_{ij} is called the communality and it is equivalent to the multiple regression coefficient in regression analysis.

F_j represents jth factor or component.

Principal Components Analysis (PCA) produces components in descending order of importance, that is, the first component explains the maximum amount of variation in the data, and the last component the minimum. It is often found that the

[13] The Z-sum can be computed as follows:

$$(\text{Z-sum})_j = \sum_{i=1}^{n} Z_{ij}$$

where $Z_{ij} = X_{ij} - \bar{X}_i / S_i$, n = number of indicators, $\bar{X}_i$ = mean value of the ith indicator, S_i = standard deviation of the ith indicator, X_{ij} = value of the ith indicator in the jth district.

[14] The taxonomic distance can be derived as follows:

$$(\text{TD})_j = [\sum_{i=1}^{n} (Z_{ij} - Z_i^*)^2]^{1/2}$$

where Z_{ij} = standardised (as described in the previous footnote) value of the ith indicator in the jth region, Z_i^* = highest standardised value of the ith indicator in all the regions. The taxonomic distance is an Euclidean measure of the distance of a district from a hypothetical district which has the highest value for all the development indicators.

first few components, called principal components, account for a sizeable part of the variation and subsequent components contribute very little. Using factor loadings of these principal components, factor score for each region or unit is computed as follows:

$$(FS)_{kj} = \sum_{k} e_{ij} * Z_i$$

where,
FS_{kj} represents factor score of the kth region and the jth factor,
Z_i is the standardised value of the ith indicator,
a_{ij} is the factor loading of the jth factor and the ith indicator.

To compute weighted factor score (WFS), these individual factor scores are added using the following equation:

$$(WFS)_k = \sum_k e_j (FS)_{kj}$$

where e_j is the eigen value of the factor j and depicts the proportion of variation in the data set explained by the factor j. This WFS is used as an index for ranking regions on the basis of the general characteristics of the variable-set.

In this study, PCA is preferred to explain the grouping of variables, with WFS being used to rank the districts due to its more appealing characteristics. However, Z-sum technique is also used to observe the sensitiveness of the results with respect to the choice of technique for deriving the composite indicators. Pasha and Hasan (1982) also used these two techniques.

Table 1 presents the loading of each indicator on different factors along with the respective communality coefficients. In addition, it gives the eigen values of each factor and the proportion of variation explained in the data. Six factors emerge from the principal components analysis, which collectively explain 79 per cent of the total variation in the data. These factors are described below:

Factor 1

17 out of 31 indicators load highly on this factor. It is by far the most important factor and explains 44.7 per cent of the variation. It includes most of the indicators from the housing, transport and communications, health and education sectors. As such, it can be interpreted as capturing variations in the quality of life as reflected by levels of provision of basic services, largely by the public sector. Pasha and Hasan (1982) obtained similar results, with the significant difference that in their analysis income and wealth indicators like MVA and BNK also tended to load heavily on this factor. They considered the first factor as being indicative of the process of modernisation and urbanisation.

TABLE 1

Results of Principal Components Analysis

Indicators	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Communality
TLF	0.953	0.063	0.036	0.049	-0.089	0.157	0.949
ROF	0.945	0.128	-0.137	0.132	0.105	0.068	0.963
DOT	0.936	0.088	-0.022	-0.024	0.073	-0.004	0.890
WAT	0.934	0.123	0.136	0.014	-0.114	0.148	0.943
GAS	0.920	-0.077	-0.040	0.256	0.140	0.034	0.942
MTW	0.898	0.145	-0.170	0.164	0.220	0.019	0.932
IDNER	0.894	0.180	0.124	0.249	0.125	0.004	0.925
MRD	0.808	-0.030	0.052	0.328	-0.103	0.104	0.787
ELE	0.804	0.396	0.253	0.026	-0.020	-0.090	0.877
BED	0.797	0.246	0.101	-0.359	-0.203	0.060	0.881
PASN	0.748	0.198	0.058	-0.216	0.044	-0.130	0.668
LTL	0.708	0.413	0.202	0.375	0.265	0.123	0.940
LTFM	0.675	0.247	0.318	0.458	0.198	0.187	0.904
HENR	0.616	0.341	0.148	0.522	0.270	0.093	0.872
PENR	0.585	0.552	0.051	0.076	0.265	-0.177	0.757
CAR	0.504	0.271	-0.293	-0.112	0.165	-0.431	0.640
URD	0.492	0.347	0.232	0.136	-0.082	-0.077	0.448
MENR	0.236	0.847	-0.037	0.231	0.079	0.080	0.841
POS	-0.049	0.810	0.008	-0.061	0.234	0.105	0.729
PROOMT	0.274	0.765	-0.090	0.288	-0.142	0.014	0.773
BNK	0.654	0.673	0.045	-0.093	0.149	0.083	0.923
IRIG	0.039	-0.172	0.855	0.149	-0.030	0.109	0.798
VCROP	0.006	0.108	0.806	0.068	-0.160	0.023	0.693
FRT	0.084	-0.052	0.778	0.118	0.291	-0.296	0.802
LSTOCK	0.026	0.067	0.029	0.739	-0.184	0.002	0.586
INDLAB	0.156	0.247	0.473	0.588	0.314	0.181	0.787
TRC	0.388	0.281	0.364	0.546	0.034	0.161	0.688
RAIL	0.117	0.218	0.414	0.519	0.310	-0.062	0.604
TGR	0.127	0.224	-0.301	-0.469	-0.201	0.430	0.603
MVA	0.062	0.173	0.006	0.007	0.788	0.093	0.664
LABFM	0.162	0.113	-0.024	0.075	0.173	0.761	0.655
EIGENVALUE	13.850	3.980	2.640	1.580	1.330	1.100	–
VARIATION EXPLAINED	44.700	12.800	8.500	5.100	4.300	3.600	–

Factor 2

This factor includes four indicators and explains 12.8 per cent of the variation. It is essentially a continuation of factor 1 and probably reflects the same underlying phenomena. Variables included in this factor, like BNK, also tend to have high factor loadings in factor 1.

Factor 3

The three indicators in this factor all relate to agriculture. As such, this factor reflects the process of agricultural development. It explains about 8.5 per cent of the variation in the data.

Factor 4

This factor has a mixed collection of indicators and as such has no clear interpretation. The five indicators included in it collectively explain about 5 per cent of the variation in the data.

Factor 5

This factor includes only one indicator, MVA, and explains 4.3 per cent of the variation in the data. Loadings of this measure of development on other factors are also very low. This implies that the process of industrialisation does not possess a high degree of correlation with the overall process of development. This is in conflict with the perception that large-scale manufacturing generally acts as the leading sector stimulating economic growth. The small share of this sector currently in the national economy, limited employment creation and its dependence on imported materials have reduced its linkages with the rest of the economy. Consequently, districts with higher MVA are not necessarily the most developed.

Factor 6

This factor also consists of only one indicator, LABFM, and explains only about 3.6 per cent of the variation in the data. The conclusion here is that there is a low association between the status of women, as reflected in their rate of participation in the labour force, and the overall level of development.

The above results clearly highlight the importance of investment in physical and social infrastructure which lead to an improvement in the quality of life. This underscores the importance of the role, in particular, of the public sector in the process of development. To the extent that provision of services is more efficient and

cost effective in larger cities and towns, this explains the high degree of correlation between urbanisation and development.

IV. Empirical Findings

Ranking of Districts

Rank ordering of districts in the early 1980s is presented in Table 2. This table gives rankings generated both by the Z-sum technique and principal components analysis (weighted factor score) respectively. The correlation between the two rankings is 0.965. This indicates the high degree of robustness of the results. This is also highlighted by the fact that nine of the top ten districts are the same in both the orderings. Sukkur district being the exception: it has the ninth position according to WFS but occupies the fourteenth position in the Z-sum ranking. It is replaced in the latter by Sialkot district. It is also of some interest to note that Karachi and Lahore districts, the two major metropolitan centers of the country, have come very close to each other by the early 1980s. According to the WFS measure, Karachi is still somewhat ahead of Lahore, but the Z-sum ranking reveals that Lahore has displaced Karachi as the most developed district of the country.

At the lower tail of the distribution, it may also be observed that nine out of the bottom ten districts are the same in both the rankings. The difference is due to the juxtaposition of the positions of Zhob and Loralai districts of Baluchistan. As demonstrated by Pasha and Hasan (1982), there is somewhat greater sensitivity of rankings of districts at the intermediate level of development to the choice of technique for constructing the composite indicator. For example, there is a difference of over ten positions in the rankings from the two techniques of Kohat and Malakand districts in NWFP and Bahawalnagar district in the Punjab. As such, greater confidence can be attached to the results at the upper and lower end of the rankings than at the middle of these distributions.

Table 2 and Figure 1 classify the 62 districts covered by the study according to the level of development. Relatively developed districts are those in which the top quartile of population lived in 1981. Districts at the intermediate level are those in which the second and the third quartile lived, while the relatively underdeveloped districts account for the bottom 25 per cent of the population.

According to the WFS ranking, the top quartile consists of eight districts. This includes two districts, Karachi and Hyderabad, from Sindh, one, Quetta, from Baluchistan, one, Peshawar, from NWFP, and four Lahore, Rawalpindi, Jhelum and Faisalabad, from the Punjab. All the four provincial capitals are in this category. As mentioned earlier, dissolution of the one unit has reinforced their position. Rawalpindi district does well because of its close proximity to the national capital, Islamabad.

Faisalabad and Hyderabad districts include the third and fourth largest cities of the country within their boundaries. This confirms the close link between the extent

TABLE 2

Rank Ordering of Districts of Pakistan

DISTRICT[1]	PROVINCE[2]	WEIGHTED FACTOR SCORE	RANK	Z-SCORE SUM	RANK
FIRST QUARTILE[3]					
KARACHI	[S]	2.34	1	62.77	2
LAHORE	[P]	2.21	2	63.62	1
QUETTA	[B]	1.67	3	39.60	4
RAWALPINDI	[P]	1.34	4	43.94	3
HYDERABAD	[S]	1.05	5	24.58	5
PESHAWAR	[N]	0.70	6	18.23	7
JHELUM	[P]	0.32	7	22.58	6
FAISALABAD	[P]	0.30	8	16.95	8
SECOND QUARTILE[3]					
SUKKUR	[S]	0.30	9	8.86	14
GUJRANWALA	[P]	0.26	10	12.62	10
SIALKOT	[P]	0.26	11	13.52	9
ABBOTTABAD	[N]	0.20	12	8.94	13
MARDAN	[N]	0.16	13	7.33	16
GUJRAT	[P]	0.14	14	11.69	11
SIBI	[B]	0.14	15	6.00	18
MULTAN	[P]	0.13	16	7.85	15
KOHAT	[N]	0.06	17	0.99	29
BHAWALPUR	[P]	0.06	18	3.09	24
SHEIKHUPURA	[P]	0.05	19	10.25	12
THIRD QUARTILE[3]					
SANGHAR	[S]	0.04	20	2.06	25
SARGODHA	[P]	0.03	21	6.86	17
MALAKAND	[N]	0.03	22	-3.33	37
RAHIMYAR KHAN	[P]	0.01	23	5.63	19
LARKANA	[S]	-0.00	24	-1.22	32
D.I. KHAN	[N]	-0.00	25	1.78	26
NAWABSHAH	[S]	-0.00	26	1.43	28
ATTOCK	[P]	-0.02	27	3.73	22

TABLE 2

(continued)

SAHIWAL	[P]	-0.03	28	3.79	21
BANNU	[N]	-0.03	29	-2.70	34
DADU	[S]	-0.06	30	-2.34	33
KASUR	[P]	-0.09	31	3.60	23
KHAIRPUR	[S]	-0.09	32	-3.23	35
BHAWALNAGAR	[P]	-0.10	33	4.24	20
FOURTH QUARTILE[3]					
VEHARI	[P]	-0.11	34	0.88	30
JHANG	[P]	-0.14	35	1.56	27
SHIKARPUR	[S]	-0.14	36	-7.51	40
THARPARKER	[S]	-0.16	37	-4.65	38
MIANWALI	[P]	-0.19	38	-0.53	31
BADIN	[S]	-0.21	39	-3.30	36
JACOBABAD	[S]	-0.25	40	-9.91	44
THATTA	[S]	-0.26	41	-8.99	42
SWAT	[N]	-0.27	42	-8.60	41
MANSEHRA	[N]	-0.30	43	-11.19	46
CHAGAI	[B]	-0.31	44	-13.55	48
D.G. KHAN	[P]	-0.31	45	-10.45	45
CHITRAL	[N]	-0.33	46	-5.36	39
LASBELA	[B]	-0.34	47	-13.08	47
PISHIN	[B]	-0.36	48	-15.38	49
MUZAFFARGARH	[P]	-0.37	49	-9.24	43
KALAT	[B]	-0.45	50	-17.73	50
GWADAR	[B]	-0.46	51	-20.42	55
ZHOB	[B]	-0.49	52	-19.25	53
LORALAI	[B]	-0.50	53	-19.17	52
NASIRABAD	[B]	-0.52	54	-20.25	54
DIR	[N]	-0.54	55	-18.52	51
KACHHI	[B]	-0.57	56	-23.29	58
TURBAT	[B]	-0.58	57	-26.83	62
PANJGUR	[B]	-0.58	58	-25.12	60
KOHISTAN	[N]	-0.62	59	-25.79	61
KHUZDAR	[B]	-0.65	60	-23.61	59
KHARAN	[B]	-0.65	61	-22.92	57
KOHLU AGENCY	[B]	-0.69	62	-21.53	56

[1] Given in descending order of ranking according to WFS.

[2] B = Baluchistan, N = NWFP, P= Punjab, S = Sindh.

[3] In terms of population.

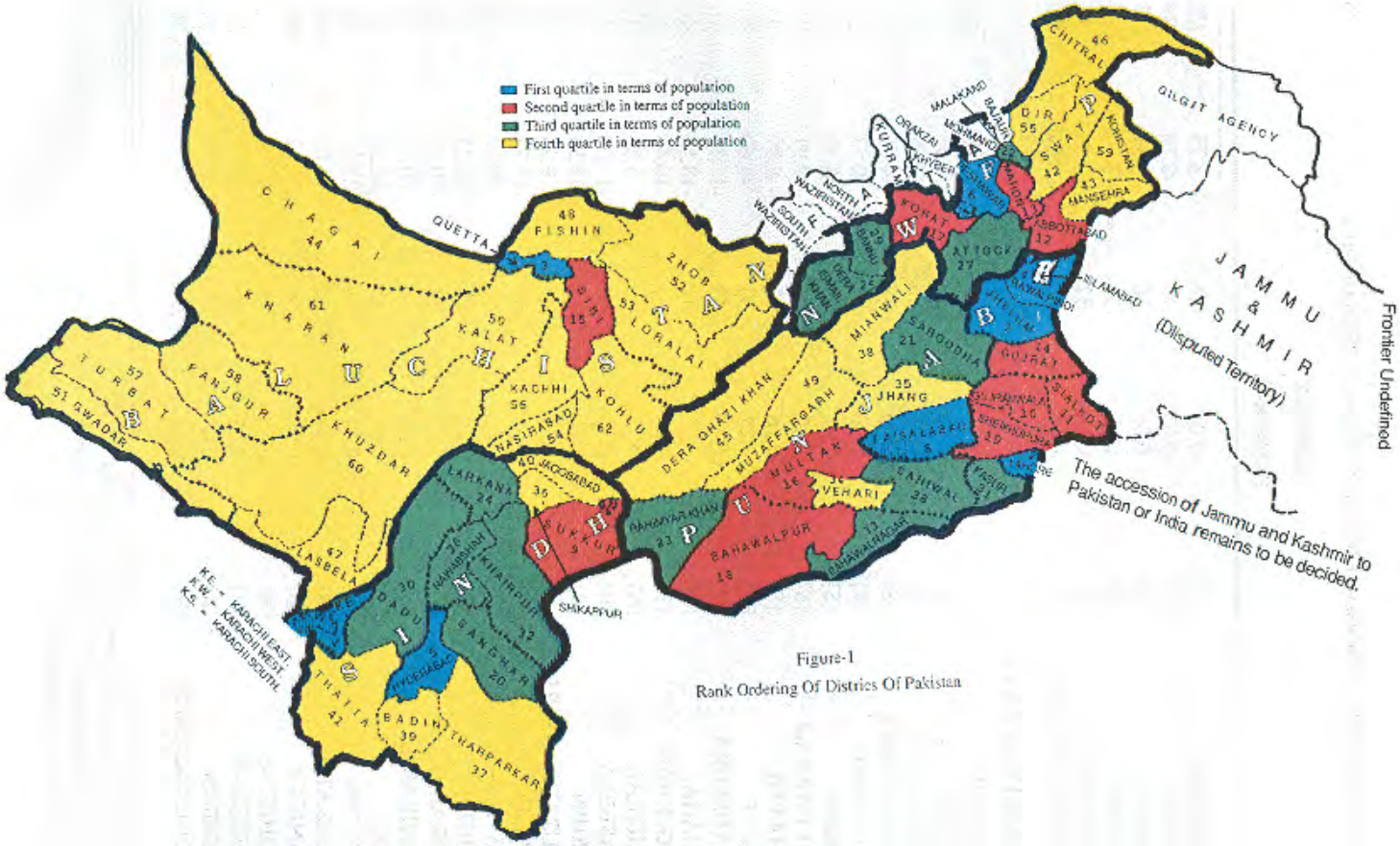

Figure-1

Rank Ordering Of Distries Of Pakistan

of urbanisation and regional development. The new entrant (as compared to the 1970s) to the list of developed districts is Jhelum. This is perhaps surprising given that this district falls in the barani areas of the Punjab. It has, however, historically enjoyed a special military impaortance by contributing a relatively high share of entrants into the army. More importantly, it is not so well known that by the beginning of the 1980s it has emerged as one the major industrial centers of the country, with the highest industrial value added per capita.

The share of the four provinces in the top quartile of the population is presented in Table 3. These shares correspond fairly closely to the overall population, although the share of Sindh is disproportionately high, because of Karachi. It is interesting, however, to note the significant changes that have occurred in the provincial shares in the top quartile in relation to the early 1970s. The share of the Punjab has increased,

TABLE 3

Share of Provinces[1] in Population Quartiles
by Level of Development

	Early 80's (%)			
	PUNJAB	SINDH	NWFP	BALUCHISTAN
Top Quartile.	53.2	34.6	10.5	1.8
Second Quartile.	76.6	5.5	17.2	0.7
Third Quartile.	62.1	29.7	8.3	0.0
Bottom Quartile.	40.8	22.6	18.1	18.4
Total.[2]	**56.1**	**22.6**	**13.1**	**5.1**
	Early 70's (%)			
	PUNJAB	SINDH	NWFP	BALUCHISTAN
Top Quartile.	41.8	42.1	12.4	3.6
Second Quartile.	96.8	0.0	3.2	0.0
Third Quartile.	64.9	27.6	7.5	0.0
Bottom Quartile.	45.4	23.5	19.4	11.7
Total[2]	**57.9**	**21.2**	**12.8**	**3.7**

[1] Excluding Malakand Agency in NWFP, in line with Pasha and Hasan (1982), for the 70's.

[2] These percentages do not correspond to the provincial distribution of total population because of the exclusion of centrally administered tribal areas, and Islamabad.

while that of the other three provinces had declined. While some of this change can be attributed to changes in district boundaries, it testifies to the buoyancy in some of the larger cities of the Punjab and an enhancement, in particular, in the share of industrial value added.

The second quartile of population resided in the eleven districts in the early 1980s. Here again, we observe the relative dominance of the Punjab, with six out of these districts belonging to this province. These districts are Gujranwala, Sialkot, Gujrat, Multan, Bahawalpur and Sheikhupura. Part of explanation for this is the dynamism of the small-scale industrial sector in the province and the establishment of stronger urban-rural linkages.

The significant change from the early 1970s is the emergence of the NWFP and inclusion of three of its districts, Abbottabad, Mardan and Kohat, in the second quartile. The first two districts, in particular, do well in both the rankings. Here again, part of the reason is statistical. The separation of Hazara into two districts, Abbottabad and Mansehra, with the former being relatively developed has significantly improved its position. Nevertheless, the high quality of housing stock and access to municipal services in Abbottabad highlights the favourable impact of the relatively large inflow of remittances to this area. The comparatively high position of Mardan in the development ranking can be attributed to its highly developed agriculture in cash crops like tobacco, etc., in fact, this district is second in the national ranking in modernisation of agriculture after the Lahore district.

Table 3 reflects this improvement in the position of some of the districts of NWFP. The share of this province in the second quartile has increased from about 3 per cent in the early 1970s to over 17 per cent in the early 1980s. This enhancement in share has occurred largely at expense of the Punjab.

The third quartile of the population contains fourteen districts. Of special significance here is the relatively large number (five) of districts in Sindh in this category. These districts are Sanghar, Larkana, Nawabshah, Dadu and Khairpur. It appears that the difference in the level of development of these districts, and the three most developed districts of the province, viz., Karachi, Hyderabad and Sukkur, is still quite large. Therefore, special efforts at improving the level of economic activity and quality of life in the former districts will contribute to more balanced regional development in the province.

Table 2 indicates that in 1980-81, there were 29 underdeveloped districts in Pakistan – 14 in Baluchistan and five each in the other three provinces. The high persistent level of backwardness of Baluchistan is clearly indicated. Except for Quetta and Sibi, all other districts of this province fall in the lowest quartile. The five backward districts of the Punjab are Vehari, Jhang, Mianwali, Dera Ghazi Khan and Muzaffargarh. The last three fall in the barani areas with underdeveloped agricultures. The backwardness of Vehari is perhaps exaggerated given its close proximity to Multan.

Within Sindh, the five lagging districts are Shikarpur, Tharparkar, Badin, Jacobabad and Thatta. Here again, the methodology used for measuring the level of development has a downward bias in the case of Thatta and Badin, which are close to the highly developed areas of Karachi and Hyderabad. Tharparkar lies in the arid zone of the province and given its relatively large area has a highly underdeveloped communications network. Shikarpur and Jacobabad have a weak economic base with hardly any industrialisation.

Backward areas of the NWFP are essentially concentrated in the northern parts of the province and include the districts of Swat, Manschra, Chitral, Dir and Kohistan. Here again, the basic bottlenecks to development appear to be communications, availability of basic services and lack of participation of women.

Altogether, Table 3 shows that the share of the Punjab in the lowest population quartile in 1980-81 was about 41 per cent; of Sindh, 23 per cent; of NWFP, 18 per cent and of Baluchistan over 18 per cent. This confirms the earlier conclusion of Pasha and Hasan (1982) that even the relatively developed provinces like Sindh and Punjab have large underdeveloped pockets. Comparison with the shares in the early 1970s reveals that the share of Baluchistan has increased, while that of the other provinces has declined somewhat. This points to the possibility that the gap between Baluchistan and the rest of the country has widened even further.

Profile of Backwardness

The next task after the identification of areas which are relatively underdeveloped is to determine the respects in which they are backward. This is achieved by quantifying the degree of correlation between the individual and group indicators with the composite development indicator. However, a caveat is necessary at this stage. No conclusions about causality in either direction ought to be reached from the analysis. This point is made clearly by Pasha and Hasan (1982), as follows:

> "Determination of the sectoral profile of backwardness does not necessarily imply that in future allocations of investment funds to underdeveloped areas higher priority should be attached to these sectors. Arriving at this conclusion would require an understanding of the development impact of different types of investments ..... Only to the extent that regional equity is an important goal with regard to access to basic services, and considerations of efficiency are of secondary importance can the results be of some use in guiding investment allocations in different regions of the country."

Results of the correlations are presented in Table 4. The first conclusion can be reached by the comparison of sectoral correlation coefficients with the overall WFS. It is striking that the correlation of the income and wealth indicator is relatively low at 0.756. This underscores the basic point that development has to be seen as a multidimensional phenomenon. Merely focusing on income and wealth differences is

TABLE 4

Correlation Coefficients of Overall Ranking
with Sectoral and Individual Indicators

Indicators		Sectors	
VCROP	0.360*		
LSTOCK	0.062	Income and Wealth.	0.756**
MVA	0.622**	Housing.	0.934**
BNK	0.876**	Health.	0.659**
CAR	0.552**	Education.	0.907**
IRIG	0.282	Modernization of Agriculture.	0.527**
FRT	0.459**	Communication.	0.874**
TRC	0.666**	Gender in equility.	0.619**
ELE	0.879**	Labour Force.	0.631**
WAT	0.835**		
GAS	0.778**		
MTW	0.861**		
ROF	0.843**		
PROOMT	0.564**		
MRD	0.803**		
URD	0.640**		
PASN	0.634**		
TLF	0.852**		
POS	0.560**		
TGR	0.054		
RAILWAY	0.598**		
DOT	0.653**		
BED	0.559**		
PENR	0.754**		
MENR	0.638**		
HENR	0.810**		
IDNER	0.887**		
LTL	0.872**		
LTFM	0.802**		
LABFM	0.320*		
INDLAB	0.631**		

Note: One-tailed Significance: * = 0.01, ** = 0.001.

likely to distort conclusions about the extent of spatial variation in the quality of life. For example, Badin district does well in the national ranking in income and wealth with sixth position, whereas it achieves only the 39th position in the overall weighted factor score. As opposed to this, Gujrat does poorly in terms of former i.e., occupying the 33rd rank. However, its position improves significantly in the overall weighted factor score to the 14th rank.

The highest group correlation with the development indicator is observed in the case of housing and education indicators, with coefficients of 0.934 and 0.907 respectively. Within the former, the highest correlations are at 0.879 of ELEC (percentage of households with electric connections) and 0.861 of MTW (percentage of dwelling units with pucca walls). A useful conclusion is that, in field research in Pakistan, a quick proxy of the level of development of an area can be obtained by observing the type of materials used in walls of housing units.

Within the education sector, highest correlations are observed in the case of IDNER (rate of college enrollment) and LTL (literacy rate) at 0.887 and 0.872 respectively. The latter, in particular, highlights the powerful association between literacy and development.

The transport and communication sector also appears to have strong interrelationship with the overall level of development of a region. The correlation coefficient is high at 0.874 and TLF (number of telephones per 1000 population), in particular, with the correlation of 0.852, is a good proxy for the composite indicator. The relatively low correlation of the health sector at 0.659 indicates that the government has adopted a basic needs approach to the provision of this service. It is, however, possible that if private medical facilities are included in the indicator, BED, then the correlation could become stronger.

The results also point to the imbalance between the role of women and the level of development. The correlation coefficient of the overall gender equality indicator with WFS is 0.619 and within the former the correlation of LABF (ratio of female to male labour force participation) is very low at 0.321. This imbalance is especially pronounced in the districts of NWFP, where development has yet not significantly enhanced the economic status of women. For example, Peshawar, the leading district of the province, with a national rank of sixth manages only the 31st position in gender equality.

The profile of backwardness which emerges from the analysis is one of the low quality of housing with poor access to municipal services like electricity and water; low levels of literacy and low rates of enrollment at the secondary and college levels and an underdeveloped transport and communications network especially of metalled roads and telephones. As emphasised above, if regional equalisation in the levels of provision of these services is a national objective, then the physical planning and housing, power, education, transport and communications sectors would merit enhanced share in future ADP allocations to the backward areas of the country.

V. Changes in Development Rank Orderings

In this section, we finally take up the analysis of the change in the development rank orderings of districts from the early 1970s to the early 1980s. For a proper comparison, however, the indicators of development should be similar to the extent possible in both periods, techniques for constructing composite development indicators should be same and changes in district boundaries must be controlled for. The benchmark study for the early 1970s is that by Pasha and Hasan. As mentioned earlier, this study covers the 46 districts of Pakistan (excluding Malakand Agency in NWFP) that were in existence at the time and has 27 indicators. These district boundaries have also been applied to the 1980s data. In most cases, new districts have been created during the 1970s by upgrading the status of a tehsil/taluka to that of a district. As such, merger of a new district to the old district to which it originally belonged takes us back to the district boundaries prevailing in the early 1970s.[15] Out of the 31 indicators used in this study, 24 are common with that the Pasha and Hasan.[16] These indicators are used to construct a new development ranking (by principal components analysis) of the regions corresponding to the reconstituted district boundaries of the early 1970s.

The ranking of each of the 46 districts in the two periods are given in Table 5. In addition, rankings generated by Helbock and Naqavi (1976) for the 1960s are also presented in the table. These are useful in identifying long-term changes in the profile of regional development in Pakistan.

The overall correlation coefficient between district ranks in the early 1970s and 1980s is 0.939. This implies that rankings have not altered dramatically, particularly at the upper and the lower tails of the distribution. However, many significant changes are visible in the rankings of intermediate districts. Altogether, eight district have experienced no change in their rankings, eight have an absolute change of one position, nine of two positions, ten of three to five positions and the remaining eleven of more than five positions.

Changes at the Regional Level

Table 5 makes it possible to identify at a more aggregated level regions which have exhibited dynamism by improving their relative position during the decade of

[15] The correspondence of district boundaries in the 1980s with those in the 1970 is available from the authors on request.

[16] The three indicators which were included in the study by Pasha and Hasan but were dropped for the early 1980s either due to lack of data or because of very limited spatial variation are extent of commercialisation of agriculture, percentage of industrial labour force in capital and intermediate goods industries and ratio of female to male school enrollment rate. All the three indicators are not of major importance, however, because they are not included in the first factor of the principal components analysis undertaken by Pasha and Hasan.

TABLE 5

Shifting Patterns in Developmental Rank Ordering of Districts, 60s to 80s

S. No.	District*	60s**	70s	80s
1.	KARACHI.	1	1	1
2.	LAHORE.	2	2	2
3.	RAWALPINDI.	4	3	3
4.	HYDERABAD.	6	6	4
5.	PESHAWAR.	3	5	5
6.	QUETTA.	5	4	6
7.	FAISALABAD.	7	7	7
8.	GUJRANWALA.	14	8	8
9.	SUKKUR.	19	21	9
10.	SANGHAR.	10	18	10
11.	MARDAN.	15	13	11
12.	SIALKOT.	26	10	12
13.	MULTAN.	8	9	13
14.	BHAWALPUR.	20	17	14
15.	JEHLUM.	9	16	15
16.	GUJRAT.	13	23	16
17.	LARKANA.	32	27	17
18.	NAWABSHAH.	22	22	18
19.	RAHIM YAR KHAN.	12	15	19
20.	DERA ISMAIL KHAN.	35	11	20
21.	SHEIKHUPURA.	21	12	21
22.	KHAIRPUR.	28	26	22
23.	SARGODHA.	15	20	23
24.	DADU.	30	25	24
25.	SAHIWAL.	17	14	25
26.	KOHAT.	29	32	26
27.	THARPARKER.	34	19	27
28.	JHANG.	33	24	28
29.	BANNU.	11	29	29
30.	BHAWALNAGAR.	18	28	30
31.	THATTA.	37	30	31
32.	CAMBELPUR/ATTOCK.	27	33	32
33.	MIANWALI.	23	34	33
34.	MANSEHRA/HAZARA.	36	36	34
35.	JACOBABAD.	24	37	35
36.	DERA GHAZI KHAN.	25	35	36
37.	MUZAFFARGARH.	31	31	37
38.	CHAGHI.	38	40	38
39.	LASBELA.	46	45	39
40.	SIBI.	40	41	40
41.	ZHOB.	41	38	41
42.	LORALAI.	43	39	42
43.	KALAT.	42	43	43
44.	KACCHI.	45	46	44
45.	KHARAN.	39	44	45
46.	MEKRAN.	44	42	46

* Given in descending order or rankings in the 80s.

** These are based on Helbock and Naqavi (1976) and are based on a different set of indicators then used for the 70s and 80s. Inter-temporal comparisons with respect to 60s should, therefore, be made with caustion.

the 1970s, and those which have not performed so well. Within the former are districts like Dadu, Larkana, Jacobabad in the right bank of river Indus in the province of Sindh. These were relatively backward areas of the province in the early 1970s. All have improved their position in the more recent ranking, with Larkana district, in particular, showing exceptional buoyancy and rising from the 27th position nationally to the 17th. In addition, on the left bank, districts like Sanghar, Nawabshah, Khairpur, characterised by relatively modern agriculture, have shown fast growth.

Another region of the country which has made visible progress consists of the north western districts of the Punjab. Rawalpindi, Cambellpur, Jhelum, Gujrat, Mianwali have all gone up in the national rankings. These districts have shown substantial increases in industrial value added and in the share of the urban labour force in industry. In the NWFP, the central region, constituted by districts like Peshawar, Hazara, Mardan and Kohat, has experienced rapid development. Therefore, the 1970s have led to the identification of the contours of pockets of fast regional development in the country.

As opposed to this, clusters of districts with a declining trend have also emerged during the decade. In the south eastern part of Sindh, districts in the arid and delta zones, like Tharparkar and Thatta, have fallen behind. The former district, in particular, has suffered a major deterioration in its position from 19th to 27th position.

A major feature of the profile of regional development during the 1970s is the decline of the south of the Punjab. All districts, with the solitary exception of Bahawalpur, have fallen in the national rankings, Multan district has declined from the 9th to the 13th position. Muzaffargarh from the 31st to 37th, Dera Ghazi Khan from 35th to 36th, Bahawalnagar from 28th to 30th and Rahim Yar Khan from 15th to19th. A large portion of the area cultivated in many of these districts is based on barani agriculture. The relative stagnation experienced in the agricultural sector during the 1970s has clearly hindered development of this region. The fact that this area has always been relatively backward and is continuing to decline in comparison to the more prosperous districts in the north of the province highlights the potential problem of increasing regional inequalities in the Punjab. This will mitigate against the relatively balanced pattern of regional development historically in the province.

Some of the central districts of the Punjab like Sargodha, Sahiwal and Jhang have also tended to lag behind. These are among the major agricultural districts of the province and the low growth of output in this sector against appears to be the principal factor behind the lack of dynamism. The southern part of the NWFP also has been relatively stagnant. The district of Dera Ismail Khan has fallen from the 11th to the 20th position. In addition, the northern part of the province consisting of Malakand division remains backward. On top of all this is the persistent backwardness of virtually all districts of Baluchistan, excluding the Quetta district.

Sectoral Pattern of Change by Region

The standardised data (in terms of district boundaries and indicators) for the early 1970s and the early 1980s respectively have been used to construct sectoral rankings of indicators.[17] The sectors correspond to those described in Section II. A more or less, clear pattern is visible of sectoral development by provinces during the 1970s.

A high proportion of the districts of Sindh and the Punjab have improved their rankings according to the income and wealth indicators. These include CROP, MVA, CAR, BNK, etc. Given the dominant role of the private sector in the first two indicators, this highlights the consequences of the operation of market forces in the country. There are indications that the productive base of the economy is getting concentrated in the two large provinces of the country, especially since the large public sector industrial investments during the 1970s have also been located in these provinces. Districts of Sindh (excluding Karachi) also show a relative fast pace of absorption of technology in agriculture, in terms of the development of irrigation facilities and the use of fertilizer and tractors. In the 1980s, three of the districts of the province, viz., Hyderabad, Sanghar and Nawabshah, for the first time entered the group of top ten districts of the country in terms of the level of modernization of agriculture.

Districts of the Punjab have generally improved their rankings in the education sector and gender equality and labour force indicators as well. The relatively high priority attached to human resource development by the government of the Punjab during the 1970s is clearly visible. Also, while causality relationships are difficult to derive, it appears that both urban and rural areas of the province are experiencing rapid social change as reflected by the enhancement in the status of women. The large gains in the industrial labour force indicator is primarily a reflection of the boom in the small-scale industrial sector during the decade, with fast expansion of both the international and domestic (including rural) markets.

Further, a dichotomy is observed in the pattern of regional development between the north and south of the Punjab. The former has improved its position in housing and access to municipal services indicators, while the latter has experienced a deterioration. As opposed to this, the south has experienced significant increases in health indicators while the north has suffered a relative decline. As highlighted earlier, regional equity and basic needs appear to have been important factors in the development of the network of health services in the Punjab.

The sectoral pattern of development in the NWFP is fundamentally different. There is a decline in the relative position of most of the districts of the province in indicators of productive activities related to income and wealth, modernisation of

[17]The sectoral rankings of districts are available with the authors on request.

agriculture and labour force. As opposed to this, these districts have generally moved up in the national rankings in essentially consumptive sectors like housing, health, education and transport and communications. It appears that the province is acquiring the characteristics of an emigrant economy, with a low domestic productive base and high inflow of factor incomes (remittances) which have led to improvements in housing stock and higher demand for services. In addition, the higher ADP per capita resulting from the sharing formula announced in 1974 has contributed to faster rates of expansion in social and physical infrastructure in the province.

As far as the province of Baluchistan is concerned, there is evidence that it has continued to fall behind the rest of the country during the 1970s. This is despite the substantially higher development allocations per capita, due perhaps to leakages in the utilisation of funds or higher unit costs of serving a sparsely populated area. In fact, even districts with a relatively high ranking in some sectors have tended to lose their positions. For example, the district of Sibi with irrigated agriculture (in the Pat Feeder area) ranked 21st in the level of modernisation of agriculture. By the early 1980s, it had fallen to the 35th position. Similarly, the district of Loralai ranked 11th in income and wealth indicators, which dropped to the 40th position in the early 1980s.

Dynamic and Declining Districts

Finally with the help of Table 5 we are in a position to identify districts of Pakistan which have exhibited dynamism on a sustained basis (excluding the high developed districts) and those which have shown a persistent declining tendency. The former districts represent the growth centers of the country and are likely to have a higher success rate in diverting the flow of migrants from the rural areas of the country to the metropolitan areas of Karachi and Lahore, and thereby contribute to a more balanced pattern of urban development with lower attendant social costs arising from congestion, pollution, crime rate, etc.

The criterion used for identifying a district as being 'dynamic' is either that it has consistently improved its ranking from the 1960s to the 1970s and from the 1970s to the 1980s, or that it moved up at least from the 1970s to the 1980s, such that its ranking in the beginning of the 1980s was higher than that in the 1960s. On this basis, the progressive districts of Pakistan are Larkana, Nawabshah, Khairpur, Sukkur and Sanghar in Sindh; Rawalpindi, Gujranwala and Bahawalpur in the Punjab; Hazara and Kohat in the NWFP; and Lasbela in Baluchistan.

'Declining' districts are those which either experienced a decline in the ranking from the 1960s to the 1970s and from the 1970s to the 1980s or have experienced a large enough fall during the 1970s such that the ranking in the early 1980s is lower than in the 1960s. Districts included in this category are Rahim Yar Khan, Multan, Sargodha, Bahawalnagar, Dera Ghazi Khan, Muzaffargarh, Sheikhupura and Sahiwal

in the Punjab; Bannu in the NWFP; and Kalat, Kharan, Mekran and Zhob in Baluchistan.

VI. Conclusions

The decade of the 1970s has witnessed significant institutional, demographic and social changes which are likely to have had major spatial consequences. On top of this, changes in the sectoral composition of growth and introduction of fiscal policies for development of backward areas may have contributed to changes in the profile of regional development in Pakistan. The paper demonstrates that there are, in fact, marked changes in the development ranking of a number of districts from the early 1970s to the early 1980s. This is especially pronounced in the case of districts at an intermediate level of development. This helps in the identification, first, of regional clusters which have exhibited dynamism and those which have tended to lag behind, and, second, of the sectoral profile of backwardness in the country.

It is expected that the forthcoming censuses of population, housing, livestock, agriculture, etc., will make it possible to determine if the emerging regional trends of the 1970s have been reinforced during the 1980s or whether the patterns have been reversed in recent years.

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