

SOCIAL AND ECONOMIC DEVELOPMENT

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SOCIAL POLICY AND DEVELOPMENT CENTRE

RESEARCH TEAM

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SOCIAL AND ECONOMIC DEVELOPMENT RANKING OF DISTRICTS OF PAKISTAN

1. INTRODUCTION

International comparisons reveal the lack of correlation between the ranking of countries in terms of levels of economic and social development. Pakistan is an example of a developing country with relatively high per capita income but extremely poor social/human development indicators. The objective of this paper is to examine in the spatial context for Pakistan at the district level how strong the relationship is between levels of economic and social development. This will help us, in particular, in identifying districts which have a low ranking within the country in terms of the level of social development. These districts can be targeted for special development allocations within the SAP to reduce the extent of regional disparity in terms of access to basic services like primary education, health, water supply, etc. If it emerges that the socially underdeveloped districts are also economically backward then the underlying reason may be the absence of a strong private sector or the absence of a local tax base or income affordability to finance the provision of these services.

Earlier research at the district level in Pakistan by Pasha, Mallik and Jamal [1990] has, in fact, demonstrated that education and housing indicators are highly correlated with the overall level of development. Districts which have a relatively developed/underdeveloped education sector in terms of literacy and primary enrollment rates generally appear to have higher/lower ranking in terms of the composite level of development. Although it is difficult to come to any definitive conclusions about the direction of causality, this finding tends to substantiate the view that regions of the country which have made greater progress are endowed with higher levels of human development.

The paper is organised as follows: Section 2 gives the choice of social and economic development indicators. Section 3 gives the methodology for derivation of the composite indicator of social and economic development. Section 4 gives the resultant ranking of districts in social development while Section 5 presents the profile of each province in terms of the level of social development. Similarly sections 6 and 7 present respectively the ranking and provincial profile interms of the economic development. Finally, in Section 8 are given the conclusions.

2. CHOICE OF INDICATORS

The choice of development indicators at the district level is governed by a number of considerations. First, an attempt has been made to achieve as wide a sectoral coverage as possible. As such indicators have been selected to highlight development of sectors like education, health, water supply, income and wealth, housing conditions, modernisation of agriculture, transport and communication and labour and employment. Second, two alternatives were available regarding the choice of indicators: we could concentrate on measuring the consequences of development or the level of development inputs. Greater reliance in this study is on the latter primarily because of the lack of districtwise data on the former. For example, if the output approach had been adopted to measure development of the education sector, the indicators used would have been, for example, school graduates as a percentage of the labor force both in stock and in flow. But since data is not available on this magnitude the alternative chosen is to quantify the level of inputs in the form of teachers, schools, hospitals, beds, etc. Therefore, while there may be some loss of precision in the quantification of the level of development, the results are perhaps more useful and operational in character from the planning view point.

The lack of data has not only constrained the approach to the construction of social and economic development but it has limited the number of indicators. Nevertheless, it has been

possible to identify 37 indicators, 11 relating to social and 16 to economic development. The social development indicators relate to the three key social sectors, namely, education, health and water supply while the economic indicators relate to five sectors relating to income and wealth, agriculture, transport and communication, housing conditions and labour force. Diverse sources of data have been used for quantifying the indicators. Firstly, data has been taken from the last census of population, housing survey by the FBS, census of manufacturing, agriculture and livestock, and development statistics of the provincial governments. Secondly, relevant data has also been collected from other published documents of the Federal, Provincial governments and FBS.

Described below are first the social and then economic indicators chosen in each sector.

SOCIAL INDICATORS

Education

Both stock and flow measures have been defined for the education sector. The stock measure is the literacy rate by gender which indicates the level of literacy among the population aged ten years and above in a district which has been taken from district census report of 1981. Measures of flow of output from the education sector relate to enrollment rates at the primary and secondary level (male and female separately). Information regarding enrolments at different levels has been taken from development statistics of the province. The relevant school age going population in each district have been projected on the basis of intercensal growth rates for purposes of deriving the enrollment rates. However, the distribution of census population has been adjusted according to newly formed districts which has been reported in Administrative Units of Pakistan, a publication of the Population Census organisation.

Health

Three types of indicators of development of the health sector have been defined. The first relates to health personnel i.e doctors and nurses per 10,000 population, second, to hospital and rural health centre beds per 1,000 population while the third to number of patients treated in relation to total population. The last indicator is essentially an output measure. The information regarding the number of district-wise doctors and nurses for the year 1991/92 was not available for Punjab. Therefore, it has been estimated on the basis of extrapolation of figures given in Health Statistics, a publication of provincial governments.

Water Supply

Only one indicator has been used to measure the level of social development, that is, access to water supply. The particular indicator used is percentage of households with inside water connections. As the data on water supply was not available for the latest year, the analysis has been done on the information reported in the Housing Survey of 1989 carried out by the FBS.

ECONOMIC INDICATORS

Economic sector indicator are selected from diverse sectors like industry, agriculture, housing, transport and communication and labour force, along with the traditional income indicators. Altogether, 16 indicators have been included in the study. These are described below.

Income and Wealth

In the absence of an indicator with 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 of the rural population. 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.

Per capita industrial value added has been taken as the measure of income in the urban area of the district. Number of bank branches per 1000 population in the district acts as an indicator of the wealth level of a district. The assumption here is that of an 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. This is generally a good indicator of the size of the upper tail of the income distribution. Similar indicators are used in earlier studies [Pasha and Hasan (1982), Pasha et al (1990)].

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, cropped area fertilized and the use of tractors. [H.A. Pasha, et al., (1990)].

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, four indicators have been chosen to determine the standard of housing consumption and availability of related facilities. Rooms per person quantifies the access to housing in a district. Materials used in walls indicate the quality of the housing stock. Two other indicators, that is, percentage of households with electricity and gas respectively measure the access to basic services.

Transport and communications

Indicators include the level of development of the transport sector in a district. Metalled roads, unmetalled roads and railway mileage 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 per population is used.

Labour Force

Share of the industrial sector in the urban labour force of a district is the key labour force indicator. This variable reflects the extent of employment absorption.

Diverse sources have been used for obtaining data on the above indicators. These include the District Population Census of 1981, the Census of Agriculture of 1990, the Survey of Housing and Housing Facilities in Pakistan 1989, and the Census of Manufacturing Industries of 1991. In addition, the Provincial Development Statistics of 1992-93, 1951-81 Population of Administrative and Banking Statistics 1989-90 have been used.

Magnitude of indicators for each district is given in Table A-1 and A-2. Ninety four districts and thirty seven indicators have been included in the analysis. This includes 34 districts from Punjab, 15 from Sindh, 20 from NWFP and 25 from Balochistan. Out of the eleven social development indicators, 6 relate to education, 4 to health and 1 to water supply. In the case of economic indicators, five relate to income and wealth, 3 each to agriculture and transport and communication, 4 to housing conditions and 1 to labour force (See table 1).

TABLE 1
LIST OF INDICATORS

Heads
A. INDICATORS OF SOCIAL DEVELOPMENT
<i>Education</i>
Primary Enrollment Rate - Boys
Primary Enrollment Rate - Girls
Secondary Enrollment Rate - Boys
Secondary Enrollment Rate - Girls
Literacy Ratio - Male
Literacy Ratio - Female
<i>Health</i>
Doctors per 1000 population
Nurse per 100,000 Population
Number of Patients Treated per capita
Total Hospital Beds per 1000 Population
<i>Water Supply</i>
Percentage of Household with Inside Piped Water
B. INDICATORS OF ECONOMIC DEVELOPMENT
<i>Income and Wealth</i>
Value of Crop Output per Rural Population
Per Capita Industrial Value added
Number of Cars per 1000 population
Number of bank branches per 1000 Population
Per Capita Television licences
<i>Agriculture</i>
Cropped area irrigated
Cropped area fertilised
Use of Tractors
<i>Housing Conditions</i>
Rooms per person
Pucca material used in walls
Households with electricity
Households with gas
<i>Transport</i>
Road mileage
Railway mileage
Passenger load carrying capacity
<i>Labour Force</i>
Share of manufacturing in Urban labour force

Two summary measures, the mean and the variance, have been calculated to describe and compare the distributions of the indicators (see Annexure 1). By doing so we derive the extent of regional variation in social development. It needs to be pointed out that the means of the various indicators do not correspond to the national values of these indicators. This is because they are simple averages and not averages weighted by the population or area of the district depending on the indicator.

3. METHODOLOGY OF MEASUREMENT

In the literature on regional development, a number of techniques have been used to reduce the dimensions of the complex multi variate problem associated with the construction of 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 standardised score, which has zero mean and unit variance. The higher the Z-sum¹ the more developed the region [Pasha et. al (1990)].

The second technique computes the taxonomic distance [Khan and Iqbal (1983)and Nissan and Gracy (1988)], which is the Euclidean distance from the highest (standardised) values observed for different indicators². The lower the taxonomic distance of a region or district, the more

¹ *The Z-sum can be computed as follows:*

$$(Z \text{ sum})_i = \sum_{j=1}^n Z_{ij}$$

where $Z_{ij} = X_{ij} - \bar{X}_i / S_i$, n = numbers of indicators, \bar{X}_i = mean value of the i th indicator, S_i = Standard deviation of the i th indicator, X_{ij} = value of the i th indicator in the j th district.

² *The taxonomic distance can be derived as follows:*

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

where Z_{ij} =standardised (as described in the previous footnote) value of the i th indicator in the j th region, Z_{i*} =highest standardised value of the i th indicator in all 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.

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 phenomenon is 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:

$$X_i = a_{i1} F_1 + a_{i2} F_2 \dots + a_{ij} F_j$$

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 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 k th region and the j th factor,

Z_i is the standardised value of the i th indicator,

Σe_{ij} is the factor loading of the j th factor and the i th indicator.

To compute weighted factor score (WFS), these individual factor scores are derived from 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 district 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), Pasha et al (1990) also used these two techniques.

Table 2 and 3 respectively present the loading of each social and economic development indicator on different factors. In addition, these gives the eigen values of each factor. Four factors emerge from the principal components analysis of social development while in the case of economic development there are six factors. These factors are described below:

SOCIAL DEVELOPMENT INDICATORS:

Factor 1

Five out of 11 indicators load highly on this factor. It is by far the most important factor and includes most of the indicators from the education sector. As such education can be interpreted the most important service capturing variation in the level of social development.

**TABLE 2
FACTOR LOADING MATRIX**

Indicators	Factor 1	Factor 2	Factor 3	Factor 4
Secondary Enrollment Rate-Girls	0.88133	0.14516	0.30654	0.1646
Literacy Rate-Female	0.83926	0.27829	0.24511	-0.07239
Literacy Rate-Male	0.80951	0.11763	0.30996	0.27688
Primary Enrollment Rate-Girls	0.79726	0.10043	0.20128	0.40248
Secondary Enrollment Rate-Boys	0.71632	0.15801	0.20314	0.47522
Share of Households with Piped Water	0.40003	0.84549	0.06185	-0.10853
Patients Treated to Population	0.07031	0.80268	0.21396	0.22458
Hospital Beds per 10,000 Population	0.0549	0.75256	0.3051	0.35518
Doctors per 1000 Population	0.35292	0.24332	0.86359	0.0883
Nurses per 1000 Population	0.37494	0.24848	0.85231	-0.02692
Primary Enrollment Rate-Boys	0.37031	0.26334	-0.03524	0.88133
Eigenvalues	6.19901	1.99286	1.14938	0.61098

Factor 2

This factor includes three indicators. It essentially comprises of health and water supply and sanitation.

Factor 3

The two indicators in this factor also relate to health. It is essentially a continuation of factor 2 and reflects the same underlying phenomena.

TABLE 3
FACTOR LOADING MATRIX

Indicators	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Sale of Fertiliser/Cropped Area	0.7036	0.0592	-0.0588	0.5782	0.2338	-0.0221
Pucca Material Used In Walls	0.7579	0.1712	0.3660	-0.2627	0.1141	0.1003
% of Households with Gas	0.8982	0.1767	0.1590	0.1475	-0.1138	0.1229
Passenger load Carrying Capacity/ Capita	0.7819	0.0213	0.0659	-0.0121	0.3029	-0.1139
Per Capita Industrial Value Added	0.1272	0.8090	-0.2071	-0.2458	0.0567	-0.1973
Bank Branches per 1000 population	0.3456	0.5855	0.2455	-0.0477	0.3183	0.2256
Railway Mileage/Geographical Area	0.0730	0.5436	0.4308	0.2557	0.1435	0.0939
% share of Manufacturing in Urban Labour Force	-0.0268	0.7103	0.3412	0.1951	-0.2418	-0.0882
% households with Electricity	0.4655	0.0566	0.6847	-0.0456	0.1165	0.0998
Road Mileage/Geographical Area	0.1354	0.1304	0.8270	0.1027	0.1164	-0.1502
Value of Crop Output/Rural Population	0.0987	-0.0050	0.0676	0.8449	0.3328	0.1335
Irrigated Area/Cropped Area	-0.0749	-0.0195	0.1149	0.7878	-0.2537	-0.1829
No of Cars/1000 Urban Population	0.0797	0.0215	0.1127	0.0586	0.8763	-0.0192
Rooms per Person	0.0090	-0.0919	-0.0677	-0.0501	0.0191	0.8914
Eigen Value	4.7251	2.0261	7.7748	1.2635	1.1413	1.0366

Factor 4

This factor includes only one indicator, primary boys enrollment rate. This indicator represents the most basic level of education and, therefore, variation in its magnitude is not strongly correlated with the overall level of social development.

Economic Indicators

Factor 1

Four out of the sixteen indicators relating to housing, transport and development/ modernisation of agriculture load highly in this factor. Housing and transport have loaded in this factor in earlier studies also [Pasha and Hasan (1982) and Pasha et al (1990)]. Pasha et al (1990) have

considered this first factor as capturing variations in the quality of life, partially reflected by the levels of service provision by the public sector.

Factor 2

Two of the four indicators loading in this factor relate to income and wealth namely per capita industrial value added and bank branches per 100 population. The high loading of the former alongwith the share of manufacturing in urban labour force implies that the process of industrialisation is correlated with the process of development. This conclusion though in conflict with the findings of Pasha et al (1990) is consistent with the perception that large scale manufacturing sector acts as a leading stimulus for economic growth.

Factor 3

Two out of the total sixteen indicators load in this factor consisting of indicators relating to housing and transport. It is essentially a continuation of factor 1 and probably reflects the some underlying phenomena.

Factor 4

Both the indicators in this factor relate to agriculture. As such this factor reflects the process of agricultural development.

Factor 5

This factor includes only one indicator, number of cars, capturing the link between wealth and the level of development.

Factor 6

This factor consists of rooms per person - a housing indicator which does not significantly explain variations in the level of development.

The above analysis highlights the importance of income and wealth, and investment in physical and social infrastructure in the improvement of quality of life. To the extent that is provided by the public sector it, this underscores the importance of the role of the public sector in the process of development.

4. RANKING OF DISTRICT IN SOCIAL DEVELOPMENT

The rank ordering of districts in 1990/91 is presented in Table 4. The table gives rankings generated by the principal components analysis (weighted factor score) and the Z-sum technique respectively. The correlation between the two rankings is 0.988. This indicates the robustness of the results which is also highlighted by the fact that except for Gujranwala, the top ten districts in WFS are also in the list of top 10 districts indicated by the Z-score.

Karachi and Rawalpindi are the most developed districts in Pakistan in terms of social indicators according to the WFS while in Z-score ranking Lahore and Quetta displace Karachi and Rawalpindi as the most developed districts. Besides these the list of top 10 districts include Chakwal, Jhelum, Gujrat, Faisalabad, and Sialkot. Gujranwala and Peshawar rank 10th in the WFS and Z-score rankings respectively. These top ten districts account for almost 25 percent of the country's population. It may be noted that according to both the techniques most of the top districts are located in the province of Punjab with one each in the other three provinces. This tends to indicate that Punjab is ahead of the other provinces in terms of social development.

At the lower end of the distribution, seven out of ten districts are the same in both the rankings. According to WFS, Dera Bugti and Jalmagsi are the least developed districts while Kohistan and Nasirabad emerge as the lowest two districts in Z-score ranking. The other least developed districts according to both the rankings include Zhob, Khuzdar, Kalat, Kharan, Turbat, Bolan, Panjgur, Awaran and Killa Saifullah, all districts of Balochistan. Estimates are that about 5 percent of the national population resides in these districts. Nine of these districts are in Balochistan. This implies that Balochistan is least socially developed province in the country.

Table 4 also classifies the 94 districts according to the level of development. Relatively developed districts are those in which the top quartile of population lives. Districts at the intermediate level are those in which the second and the third quartile lives while the relatively under developed districts account for the bottom 25 percent of the population.

According to Z-score ranking, the top quartile consists of 10 districts. All the provincial capitals are in this category. Besides, Faisalabad, Rawalpindi, Gujrat, Sialkot and Jhelum are districts with high rate of urbanisation and buoyant industrial activity. Their high ranking confirms the close link between the extent of urbanisation and industrialisation and economic development and in turn the link between economic and social development. Except of one district each in Sindh, NWFP and Balochistan all the other districts in this quartile are from Punjab.

The second quartile of population resides in 20 districts. Here again we observe the dominance of Punjab, with eleven out of these districts belonging to this province. Among the top are Gujranwala, Toba Tek Singh, Sahiwal and Multan. Out of the remaining, seven districts are from NWFP, including Haripur, Abbottabad, Nowshera, Kohat, Charsadda, D.I. Khan and Tank. The relatively high enrollment rates at primary level alongwith access to water supply facilities are the prime reason for the relatively high ranking of districts in the province.

Nine each out of 25 districts in the third quartile are from NWFP and Punjab respectively while six are from Sindh. The last quartile which consists of 38 districts is dominated by Balochistan, with 22 districts belonging to this province, followed by Punjab with seven districts and Sindh with six districts.

TABLE 5					
PERCENTAGE SHARE OF PROVINCES IN POPULATION QUARTILE BY LEVEL OF DEVELOPMENT					
Quartile	Punjab	Sindh	NWFP	Balochistan	Total
Top Quartile	61.1	31.5	5.6	1.8	100.0
Second Quartile	55.8	23.6	20.4	0.2	100.0
Third Quartile	55.8	23.6	20.4	0.2	100.0
Bottom Quartile	33.4	31.5	8.7	26.3	100.0

The population shares of each province in each quartile are presented in Table 5. The share of Punjab in the top two quartiles is larger than its share in national population, implying that Punjab, by and large, has a high to intermediate level of social development. Sindh has a high share in the third and the fourth quartile, indicating the lower-middle to low level of social development in the province. NWFP has an intermediate level of development while Balochistan is the most backward province in terms of social development in the country. It is, however, important to note that even the relatively developed provinces have pockets of low development like the districts in the south of Punjab. Alternatively, even a relatively backward province has some areas with high level of social development. The best example of this is Quetta district in Balochistan.

Table 6 presents the profile of social development in the country. The table shows the ten most and the ten least developed districts in each indicator. It appears that Lahore and Quetta have

the most extensive coverage of health services in the country. Lahore has the highest number of health personnel (both doctors and nurses) relative to population while Quetta has the best coverage of hospital beds and the most number of patients treated. In education, Rawalpindi and Karachi are on the top. Karachi has the highest female literacy rate and girls secondary enrollment rate. Rawalpindi has the highest male literacy rate and boys secondary enrollment rate. Quetta and Jhelum have the highest primary male and female enrollment rates respectively. The dominance of Punjab in almost all of the indicators, particularly in those related to health, in the top districts is striking. Similarly, the poor performance of districts in Balochistan in most indicators is noticeable.

Table 7 gives the correlation matrix between different indicators. High correlation is observed between doctors and nurses, primary and secondary enrollments, literacy rates and enrollment rates. In particular, girls primary and secondary enrollment rates are strongly related to the male and female literacy rates. There also appears to be a degree of correlation between different sectors. Linkage exists between water supply and health services and education and health services, specifically health personnel. This correlation is a reflection of the spillover and externalities generated by different social services and highlights the presence of synergies between sectors. On the whole, in the profile of development, the key sector appears to be education, in particular, female primary and secondary enrollment rates.

5. PROVINCE-WISE PROFILE OF SOCIAL DEVELOPMENT

Province wise ranking of districts in terms of social development is presented in Table 8. Within Punjab, the top five districts according to the Z-score include Lahore, Rawalpindi, Jhelum, Faisalabad and Chakwal while the five most lagging districts are Pakpattan, Rajanpur, Lodhran, Muzaffargarh and D.G. Khan. The last two fall in the barani areas with underdeveloped economic base and therefore, lag behind in social development also. Also, noticeable is the

skewness in the level of development in Punjab. According to the Z-score out of the 34 districts, 14 have a negative score indicating that these districts are well below the national average.

In Sindh, the five most backward districts include Tharparker, Jacobabad, Badin, Sanghar and Thatta. These districts have a weak economic base with hardly any industrialisation. Tharparkar, in particular, lies in the arid zone of the province and is difficult to service because of accessibility problems. As such it ranks the lowest in almost all of the indicators. Eight out of the fifteen districts in Sindh have a negative Z-score.

Backward areas in NWFP include Kohistan, Dir, Mansehra, Mardan, and Swabi. These districts alongwith Bunnu have a negative Z-score indicating a low level of development. Except for Quetta and Sibi, all the districts in Balochistan have a very low level of development, with the most backwardness being Nasirabad, Turbat, Zhob, Panjgur and Kalat.

6. RANKING OF DISTRICTS IN ECONOMIC DEVELOPMENT

Turning now to the ranking of districts in terms of economic development, Table 9 gives ranking generated both by the (WFS) and the Z-sum score. Like in the case of social indicators there is a high correlation, of 0.94, between the two rankings, with common top ten and nine bottom (least developed) districts.

Quetta, Karachi and Peshawar unambiguously emerge as the most economically developed districts in the country followed by Lahore. Besides these, the other top ten districts include Rawalpindi, Jhelum, Hyderabad, Ziarat, Sialkot Faisalabad and Gujrat. Notice that the list includes the four provincial capitals besides important industrial centres of the country. These top ten districts account for 25 percent of the country's population. Also, noticeable is the commonality in most developed districts in terms of social and economic indicators. The

correlation coefficient between the economic and social development ranking of districts is estimated to be 0.81 for z-sum and 0.74 for WFS. This substantiates the view that regions highly developed in terms of the former are likely to have a high level of development in the latter also.

The ten most backward districts in the country in terms of economic development according to both WFS and z-score include Kharan, Dera Bugti, Awaran, Turbat, Khuzdar, Killa Saifullah, Jhal Magsi, Kohlu, Bolan, Jaffarabad and Zhob. All of these, accounting for about 4 percent of the national population, are part of the province of Balochistan. As such, Balochistan is not only the most socially but also the most economically backward province in the country.

Quartile-wise ranking of districts is also presented in Table 9. According to the z-sum score, the top quartile includes ten districts, five of these being from Punjab. This quartile has two districts each from Sindh and Balochistan while one district is from NWFP. Besides the provincial capitals, this quartile includes districts which have the largest cities in the country like Faisalabad, Hyderabad, Rawalpindi, Sialkot within their boundaries. To the extent that the provision of services have economies of scale and is more efficient and cost effective in larger cities, there exists a high degree of correlation between urbanisation and regional economic development, which is confirmed by our results. Existence of similar linkages has also been identified in earlier studies [Pasha et al (1990)]. Also, these are districts with buoyant industrial bases. Therefore, our earlier conclusion regarding a close link between urbanisation, industrialisation, social and economic development is substantiated.

Overtime there appears to be some alteration in the spatial profile of regional development in the country. According to our results, Quetta heads the ranking of districts while in the previous studies Karachi was on the top followed by Lahore. Lahore appears to have slipped down a bit over the last few years. The new entrant in the first quartile is the district of Ziarat. Because of

the high ownership of vehicles and relatively high ranking in terms of agricultural development and modernisation, Ziarat emerges in the top districts. It is striking to note that the most developed district in the country belongs to the most backward province - with the maximum number of least development district. This highlights the dichotomy in the process of development in the country and in the province of Balochistan in particular.

Districts with intermediate level of development essentially fall in the second and the third quartile. Half of the country's population lives in these two quartiles. The second quartile covers 14 districts in Punjab, 2 in Sindh, 9 in NWFP and one in Balochistan; according to the Z-score. District of Multan, Gujrat, T.T. Singh, Narowal, Hafizabad, Vehari, Shaikhupura, Mandi Baha Uddin, Sahiwal, Attock, Kasur, Okara and Lodhran fall in this quartile highlighting the relatively strong standing of the province of Punjab in the development ranking. Punjab is followed by NWFP with Mardan, Abbottabad, Nowshera, Haripur, Bannu, Kohar, Tank, Lakki and Charsadda in the second quartile.

Likewise, eleven out of the twenty districts in the third quartile belong to Punjab. Five districts in this quartile are from Sindh, three from NWFP and one from Balochistan. The last quartile which captures the least economically developed districts in the country is dominated by Balochistan with 21 out of a total of 38 districts, followed by NWFP with 7 districts, Sindh with 6 districts and lastly Punjab with 4 districts. Broadly speaking, it thus appears like in case of social development, Punjab ranks high in terms of economic development followed by NWFP and Sindh, while in general Balochistan lags behind substantially.

The above conclusion is substantiated by Table 10 which presents share of provinces in population quartiles by level of development. It is clear that bulk of the population in the top and intermediate quartiles belong to Punjab while NWFP accounts for a substantial share in the two

intermediate (second and third) quartiles. Their share in these quartiles is much high than that in the national population. Sindh has bulk of its population either in the top or the bottom quartile highlighting the duality in its development profile. Balochistan preforms poorly with bulk of its population in the lowest quartile.

TABLE 10
PERCENTAGE SHARE OF PROVINCES IN POPULATION QUARTILE
BY LEVEL OF DEVELOPMENT

Quartiles	Pakistan	Punjab	Sindh	NWFP	Balochistan
Top Quartile	24.7	50.3	42.3	5.7	1.7
Second Quartile	23.2	62.4	9.7	27.6	0.4
Third Quartile	23.7	63.4	18.7	14.6	3.3
Bottom Quartile	28.5	22.2	36.8	10.7	30.3

Table 11 presents the profile of economic development in the country. It shows the ten most and least developed districts in each indicator. It appears that Quetta's high ranking can be attributed to its better performance in housing indicators, agricultural modernisation and transportation. It ranks high in households with gas and electricity, in value of agriculture per capita, sale of fertilizer and passenger load carrying capacity. Likewise, Karachi ranks high in housing indicators and ownership of television - indicating high wealth and better quality of life while Peshawar, ranks high in transportation and an important indicator of wealth namely bank branches. The profile of development in Lahore is similar to Karachi with better housing indicators and higher wealth indicators.

Table 12 shows that variations in economic development are indeed highly correlated with the above indicators. Table 12 gives the correlation coefficient of overall ranking with individual indicators. It appears that variations in economic development are highly correlated with variations in housing indicators (access to electricity, gas, pucca structures), indicators of wealth

(television ownership and bank branches), modernisation of agriculture (use of fertilizer) and transportation (especially railway mileage and passenger carrying capacity).

7. PROVINCE-WISE PROFILE OF ECONOMIC DEVELOPMENT

Province-wise ranking of districts in terms of economic development is given in Table 13. According to the z-sum score economically developed districts in Punjab include Lahore, Sialkot, Jhelum, Rawalpindi and Faisalabad, all belonging to the Northern region in Punjab. Four of these, with the exception of Sialkot, are also the most developed districts in terms of social indicators. The bottom five districts include Rajanpur, D.G. Khan, Bhakkar, Layyah, Muzaffargarh. All of these districts have a negative score indicating that these fall well below the national average. In fact according to the z-sum score almost one-third of the districts in Punjab have a negative score, indicating that substantial pockets of underdevelopment exist in the most developed province of the country. These underdeveloped regions lie largely in the Southern belt, in the baran areas.

Karachi, Hyderabad, Nawabshah, and Sukkur are the most developed regions in Sindh. With the exception of these urbanised and industrialised districts all other districts, have a negative score exhibiting a dismal picture of economic development in the province. Even though the second largest province in the country, in terms of population, only 51 percent of its population is living in above average conditions in terms of economic indicators. The least developed districts include Tharparkar, Mirpurkhas, Dadu, Jacobabad/Khairpur and Thatta. Largely due to accessibility problems (desert areas in Arid Zones) these districts do not appear to be well provided by the public sector with electricity, gas and telecommunications.

Peshawar, Mardan, Abbotabad, Nowshera and Haripur are the most developed districts in NWFP partially because of their proximity to the developed belt in the Punjab province. These are

better served areas by the public sector with a high level of coverage of key services like electricity, telecommunication and gas. Karak, Kohistan, Dir, Bannu and Manshera, located in the north-most parts of the country are the least developed districts in the province. Besides these over half of the province's population live in below national average conditions.

Likewise, with the exception of Quetta, Ziarat, Lasbela and Sibi, the other districts in Balochistan, accounting for about 92 percent of the provincial population, fall below the national average in terms of economic development. It appears that the high level of development of Ziarat and Sibi is partially because of the better public provision attributable to proximity to the provincial capital. The high level of industrialisation of Lasbela and its spatial closeness to Karachi, the largest and the most industrialised city of the country, has lead to its high level of economic development. On the other side, are the districts of Kharan, Dera Bugti, Jal Masgi, Kholu and Awaran which exhibit extreme levels of underdevelopment. These constitute regions which have not be able to attract active public as well as the private sectors.

Classification of Districts in Social and Economic Development

Given the social and economic development ranking of districts, we are now in the position to classify district in terms of both social and economic development. Table 14 classifies the 94 districts of Pakistan in the following four categories; districts with high economic and social development; districts with high economic and low social development; districts with low economic and high social development and finally districts with low economic and social development. Given the high correlation between the level of social and economic development, bulk of the districts, (72 out of 94) fall in the first and the last categories. A district is classified as high development district if it is in the top half while districts in the bottom half are classified as low development districts.

Thirty six out of the 94 districts are included in the category of high economic and social development. These account for 53 percent of the country's population. 22 of these are from Punjab, 9 from NWFP, 4 from Sindh and one from Balochistan. In terms of population shares, 68 of Punjab's population resides in this category while the share of the other provinces is 40 percent for NWFP, 48 percent for Sindh and 4 percent for Balochistan.

There are eleven districts, accommodating 8 percent of the national population, which rank high in economic but low in social development. Most of these are from the province of NWFP, Three are from Balochistan, two from Punjab and one from Sindh. As opposed to this, six districts in Punjab, three in Sindh and two in NWFP exhibit high level of social but low level of economic development. The share of population in this category is about 13 percent. These 22 districts constitute examples of lopsided development in which either economic or social indicators have shown improvement but others have not. Also, it may be noted that the maximum number of districts which show high economic but low social development belong to the NWFP province. Contrary to this, maximum number of districts with high social but low economic development are located in Punjab. As such, it appears that to some extent a higher relative priority is given to social as opposed to economic development in Punjab while the opposite appears to hold true in NWFP.

26 percent of the country's population, spread over 36 districts live in low level of economic and social development. 21 of these belong to the province of Balochistan, 7 to Sindh and four each to Punjab and NWFP. In terms of population share, 92 percent of Balochistan's population resides in this category alongwith 33 percent of Sindh's, 29 percent of NWFP's and 10 percent of Punjab's Population.

8. CONCLUSIONS

The paper has used 37 indicators relating to the education, health, water supply income and wealth, agriculture, housing transportation and labour force sectors to rank districts of Pakistan in terms of the level of social and economic development. The paper demonstrates the importance of education indicators in determining the overall level of social development, especially in terms of female literacy and enrollment rates. On the other hand variations in economic development are highly correlated with indicators of housing wealth, modernisation of agriculture and transportation. Also, the ranking demonstrate a close correlation between levels of social and economic development spatially with Pakistan. Overall, Punjab appears to have the highest level of social and economic development followed by NWFP, Sindh and Balochistan. However, the results indicate substantial variation among districts within a province in the level of both social and economic development. Least developed districts within each province are identified as targets for special development allocations within SAP.

BIBLIOGRAPHY

- Adelman, I., and G. Dalton, 1971, A factor analysis of modernisation in village India, *Economic Journal*, 81(323).
- Hicks, L.N., and P. Streeten, 1979, Indicators of development: The search for a basic needs yardstick, *World Development*, 7(6).
- Jamal, Haroon, and Salman Malik, 1988, Shifting patterns in development rank ordering: A case study of the districts of Sindh Province, *Pakistan Development Review*, 27(2).
- Kemal, A.R., 1984, Incentive structure for manufacturing industry in Pakistan, Paper presented at the annual general meeting of the Pakistan Society for Development Economists, Islamabad, Pakistan.
- Khan, M.H., and M. Iqbal, 1982, Socio-economic indicators in rural Pakistan: Some evidence, *Pakistan Development Review*, 21(3).
- Lee, M.L., and B. Liu, 1988, Measuring socio-economic effects when using income as a quality of life indicator, *American Journal of Economics and Sociology*, 47(2).
- McGranahan, D., 1972, Development indicators and development models, *The Journal of Development Studies*, 8 (April).
- Pasha, Hafiz A., and Tariq Hasan, 1982, Development ranking of the districts of Pakistan, *Pakistan Journal of Applied Economics*, 1(2).
- Pasha, Hafiz A., Salman Malik, and Haroon Jamal, 1990, The changing profile of regional development in Pakistan, *Pakistan Journal of Applied Economics*, 9(1).
- Ram, R., 1980, Physical quality of life index and inter-country inequality, *Economics Letters*, 5(2).
- Tobbarah, R.B., 1972, The adequacy of income: A social dimension in economic development, *The Journal of Development Studies*, 8(April).

