An Analysis of the Spatial Dimensions of Poverty in the Punjab

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Chapter 1

Introduction

According to the World Bank (2000), "poverty is pronounced deprivation in wellbeing." This of course raises the questions of what is meant by well-being and what is the threshold against which to measure deprivation. One approach is to consider well-being as the command over commodities in general. Hence, better-off people have a greater command over resources. The main focus of this approach is on whether households or individuals have sufficient resources to fulfill their needs. Typically, poverty is then estimated by comparing individuals' income or consumption with some well-defined reference point below which they are considered poor. This is the most conventional view of poverty which sees poverty largely in monetary terms.

A second approach to poverty is to ask whether people have the ability to obtain enough of a specific group of consumption goods such as food, shelter, health care or education. In this case, the analyst goes beyond the more traditional monetary measures of poverty. Nutritional poverty, for example, might be estimated by examining whether children are stunted and educational poverty might be measured by asking whether people are literate or illiterate and how much formal education they have received.

Perhaps the broadest approach to poverty is the one suggested by Amartya Sen (1987), who argues that wellbeing rises from a capability to function in society. Thus, poverty originates when people lack key capabilities and, as a result, they have insufficient income, education, health, security, self-confidence, power and basic rights. Higher average income reduces monetary poverty, but, according to Sen's approach, a host of other measures to improve

economic as well as social wellbeing of the poor must accompany it. This makes poverty a multidimensional phenomenon and which is not acquiescent to simple solutions. Though conceptually more sound and comprehensive, this approach is rarely used in practice as it requires extensive data and cumbersome aggregation and measurement techniques. Most national and international poverty measures rely on the monetary approach for measuring poverty.

Nations around the world appear to be more resolute to eradicate poverty now than ever before. This resolution is reflected through their act of defining the Millennium Development Goals (MDGs), a set of eight international development goals that all the United Nations member states have agreed to achieve by the year 2015. The first goal of this set is to eradicate extreme poverty and hunger from the world. A large proportion of the population of the developing countries is living below the poverty line. They are deprived of their basic needs. They have to face difficulty even in getting minimum required amount of calories through food. Malnutrition caused by poverty gives rise to health problems. These problems are difficult to handle because the health facilities available to the poor population are often quite inadequate. Therefore disease and poverty reinforce each other.

It is often observed that poverty and lack of basic facilities go together hand in hand. This is particularly true for educational facilities. Poor people have limited access even to basic education, and the quality of education available to them is also poor. This deprivation of human capital severely limits their ability to increase their income. Other millennium development goals such as achieving universal primary education and reducing infant mortality are therefore closely linked to the first goal of alleviating poverty.

Most of the population in the developing countries lives in the rural areas. Ironically, high levels of poverty are also observed in these areas. Agriculture and livestock are the main sources of livelihood of the people living in rural areas. However, productivity of these two sectors is often very low in the developing countries. Poor housing, lack of facilities, unemployment and illiteracy are common features of poor population of these regions.

Although governments, donor agencies and a number of private organizations are engaged in poverty reducing programs in the developing countries, the accuracy with which these programs target the poor is a debatable issue. One of the difficulties that arise while targeting poverty is that usually poverty is scattered across the region in the form of small pockets. Surveys are regularly conducted in most of the developing countries to estimates the level of poverty. However, the data obtained through these surveys is generally good enough to calculate poverty figures for large geographical units only such as the country as a whole or its provinces. These indicators often conceal significant spatial differences that are found at lower administrative levels such as district, tehsil and village. As a result, poverty of smaller geographical regions remains hidden under the cover of aggregate figures. The main reason for this appears to be the difficulty in gathering accurate and statistically representative information on poverty for such small administrative entities. Sample size constraints generally prevent the use of household survey data for estimating poverty at the village, tehsil, or even district level.

To achieve Millennium Development Goals, it is crucial to improve poverty targeting by locating the smaller geographical regions where poverty is concentrated. This can be done by using district and tehsil level poverty estimates rather than relying on province or country level figures to allocate resources for poverty reduction. If poverty figures for smaller geographical regions are not used for poverty targeting, the scarce resources allocated for poverty reducing

programs would be misallocated to non-poor regions. Such inefficient use of funds would delay the achievement of the number one millennium development goal.

In Pakistan, levels of poverty are commonly estimated by using Household Integrated and Economic Survey (HIES).The sample size of HIES is more than 15000 households, covering both rural and urban areas of the country. However, it provides representative estimates only up to the rural and urban areas of the provinces. It makes the existing household survey data sets insufficient for obtaining estimates of poverty at the district or tehsil level, depriving policy makers of an important tool for accurate targeting of the poor.

Although, census data do not suffer from small sample problems mentioned above, they usually have no direct information on household income or expenditure, which is crucial for estimating poverty. This lack of information has motivated researchers and policy makers to explore new and alternative welfare indicators to estimate poverty and inequality at the desired regional and geographical level. Attempts have been made to fill this gap by developing a number of basic needs indicators. However, these indicators do not always conform well to consumption or income based poverty measures (Grosh and Glinskaya 1997). Imputing value of consumption on the basis of a number of assumptions and using it for calculating poverty is also an option but this approach is criticized on the basis of a number of theoretical and empirical considerations. Cheema et *al* 2008 is an example of such a study for Pakistan.

A more promising approach in this respect is called poverty mapping and involves combining detailed information obtained from household surveys with the extensive information of census data to find spatial dimensions of poverty. First, household consumption behaviour is modelled using variables that are common to the sample and census data. The resulting coefficient estimates are then used to predict consumption from the census data. Finally,

consumption based regionally representative poverty indices are calculated that can be interpreted just like the conventional measures of poverty.

The information obtained from this poverty mapping exercise can be combined with the Geographical Information Systems (GIS), making it amenable to spatial analysis and can be used for developing detailed maps showing spatial distribution of poverty and other related indicators. In addition to being a handy visual device, these maps may help target the poor more accurately and make poverty alleviation efforts of various public and private organizations more effective. Leakage of resources to non-poor families can also be reduced by using these maps. There are different causes of poverty in different geographical regions. These maps may be helpful in detecting locality-specific causes of poverty. Area-specific plans can then be developed to provide a better and quick remedy of the problem. Clearly, planning, allocation of resources and monitoring of the effectiveness of poverty alleviation programs can all benefit from carefully developed poverty maps.

The flexibility and usefulness of this approach has made it very popular. It has been applied to a number of countries such as Guatemala, Nicaragua, Panama, Peru, South Africa, Ecuador, Mozambique, Malawi, Cambodia and Vietnam. A number of international organizations such as World Bank, IFPRI, and FAO are constantly using this technique for their poverty alleviation and food security programs. In many developing countries, poverty maps have become the first step of their anti-poverty campaign.

The importance of poverty mapping cannot be overemphasized for Pakistan where several household level poverty alleviation measures such as Benazir Income Support Program (BISP), Zakat distribution, micro financing, food aid and rural support programs have been undertaken at different times. Some of these programs are currently in operation. If the intensity

of these programs increases in the poorest localities, it is likely to go a long way in reducing the poverty of these localities and hence overall poverty in the country. Poverty mapping, no doubt, can serve as an important tool for locating these pockets of poverty.

In Pakistan, a number of development projects such as establishment of new schools and hospitals, construction of roads, up gradation of schools, colleges and hospitals are always in progress. These projects are made for the wellbeing of the local people. Generally, while providing such kind of facilities, related government departments and nongovernmental organizations do not keep in view the clear picture of the economic condition of the local people. If a poverty map is available, these facilities can be provided to most deserving people. In this way, the effectiveness of these programs and projects in reducing poverty might increase a lot.

The pioneering work of Cheema (2010) is the first and the only significant effort so far to the best of our knowledge that has addressed the need of poverty mapping in Pakistan. In this study, the spatial dimensions of poverty in Pakistan have been discussed and the districts of Pakistan are ranked according to the level of poverty. The data used in this study has been taken from HIES 2004–05 and Core Welfare Indicators Questionnaire (CWIQ) Survey 2004–05 conducted by the Federal Bureau of Statistics.

Although it is a major first step towards measuring spatial dimensions of poverty in Pakistan at district level, need is still there for understanding poverty at smaller geographical level. District is too large a unit to locate pockets of poverty accurately. If significant variations in the incidence of poverty exist within the tehsils of a district, poverty rates at district level will hide the degree and extend of poverty as well as characteristics of the poorest areas. Hence there is a need to carry out poverty mapping at smaller geographical level.

The main objectives of the present study are:

- to estimate poverty at both district and tehsil level in the province of Punjab[1].

- to present a complete picture of poverty within districts of Punjab and to study the pattern of the spatial distribution of poverty at tehsil level.

- to analyze and compare some of the main characteristics of the poor and non-poor districts and tehsil of Punjab.

Punjab is the most populous province of Pakistan where approximately 56% of the total population of Pakistan lives. It is the second largest province of Pakistan with an area of about 205,345 square kilometers (79,284 square miles). Second and third largest cities of Pakistan are also located in this province. Industrial sector is well established in the Punjab. It also generates a large portion of government revenue for the country.

In the Punjab, the largest administrative unit is division, followed by district and tehsil. There are nine divisions in the Punjab, namely, Rawalpindi, Lahore, Faisalabad, Gujranwala, Sargodha, Sahiwal, Multan, Bahawalpur and D G Khan. The divisions are further sub-divided into 35 districts and 143 tehsils.

The districts of the Punjab can be divided into four geographical regions. North Punjab consists of the districts of Rawalpindi, Attock, Chakwal and Jhelum. Faisalabad, Jhang, TobaTak Singh, Nankana Sahib, Gujranwala, Gujrat, Hafizabad, Mandi Bahauddin, Narowal, Sialkot, Kasur, Okara, Sheikhupura, Pakpattan, Sahiwal, Sargodha and Lahore constitute central Punjab. The districts of southern Punjab are Bahawalpur, Bahawalnagar, Rahimyar Khan,

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[1] The administrative distribution of divisions, districts and tehsils used in the present study is in accordance with the Punjab Development Statistics 2009 published by the Government of the Punjab. In this document, all towns are considered to be tehsils. Same classification of administrative units has been followed by the MICS 2007 report.

Multan, Khanewal, Lodhran and Vehari. D.G. Khan, Layyah, Muzaffargarh, Bhakkar, Khushab, Rajanpur and Mianwali are located in the western Punjab.[2]

Map1 **Regional Distribution of Punjab Province**
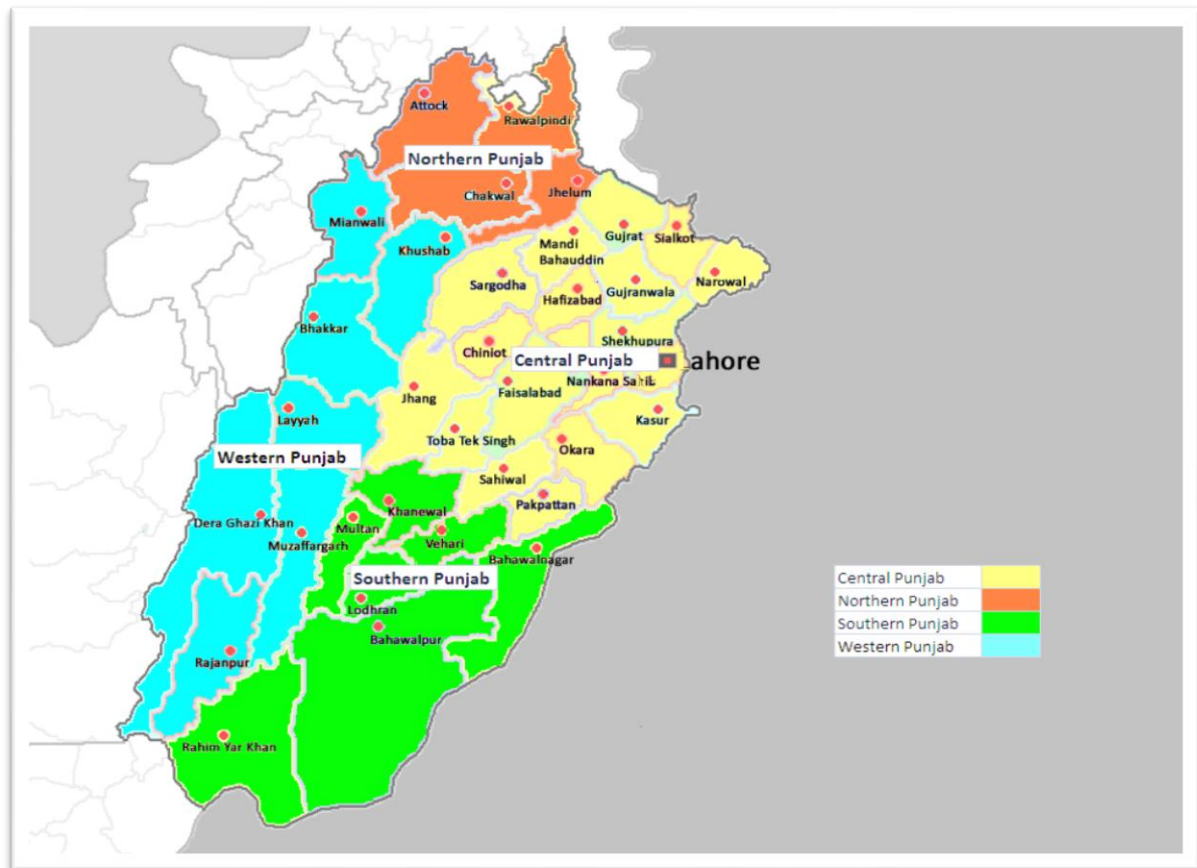
Punjab is a widely diverse province too. Geographically, it has vast stretches of mountains, deserts and fertile planes. Here rich and poor, educated and uneducated, rural and urban, all kinds of people live in large number. It has a broad industrial base but at the same time, its agriculture sector is also large. Any economic or political change in Punjab affects the whole country. These are some of the reasons that make Punjab an ideal case for studying

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[2] See Wilder, 1999 and Haq, 2010

poverty at the level of small geographical regions. Unavailability of relevant data for other provinces is another and arguably more compelling reason for limiting the scope of analysis in this study to the province of Punjab.

The poverty mapping exercise undertaken in this study is aimed at generating geographically disaggregated estimates of poverty in Punjab at *tehsil* level. The results of this study are likely to be beneficial for locating poverty spatially and hence providing policy makers with a tool to improve planning of poverty alleviation programs. It will also enhance the usefulness and scope of poverty maps in the perspective of Pakistan. A comparison of the salient features of the poor and non-poor districts and tehsils is also likely to improve our understanding of poverty at these levels.

The study is organized as follows. The next chapter consists of a brief review of the relevant literature. Data sources and methodology used in this study are explained in Chapter 3. Chapter 4 presents estimation results and tests robustness of the model. Divisions, districts and tehsils are ranked according to headcount ratios calculated by applying small area estimation technique in Chapter 5. The main focus of Chapter 6 is an analysis of some of the key variables that are likely to influence poverty at regional level. This chapter is expected to enhance our understanding of the spatial and regional dimensions of poverty as well as our ability to formulate adequate poverty alleviation policies. Conclusion and policy suggestions born out by this study are delineated in Chapter 7.

Chapter 2

Review of Literature

To put the present study in perspective it is appropriate to present a brief review of the existing literature on the subject. Most of the studies reviewed in the following paragraphs have followed slightly different variants of a two-step approach for poverty mapping. In the first stage, per capita expenditure is regressed on a number of variables obtained from a household survey such as household size and composition, education, occupation and access to utilities. The parameter estimates hence obtained are then used to predict poverty for the census data, using same variables as were used in the first stage and are also present in the census data. Developing poverty indicators for small geographical units from census data is then a straightforward matter.

Hentschel et al (1998, 2000) have modelled consumption behaviour from a household survey in Ecuador, using a set of explanatory variables which are also available in the Ecuadorian census. The resulting parameter estimates are applied to census data. They explain how the probability that a given household in the census is in poverty is calculated and how detailed geographical poverty rates are estimated. The importance of making different kind of maps has also been emphasized as a method of taking full advantage of this technique.

The two studies explore the possibility of combining the best parts of two different sources of data to construct a disaggregated poverty map. Poverty maps that are constructed on the basis of census data, but using an ad hoc weighting scheme may not be a better way to locate households deemed poor on the basis of their consumption. Poverty alleviation programs based on such maps might entail considerable leakage of the fund and resources to the non poor. So the authors advocate an income or consumption based measure of welfare.

They use a small but high quality household living standard survey dataset for Ecuador to model consumption as a function of explanatory variables that are also found in the census. Although only a few explanatory variables are found common to both the census and the Ecuador Encuesta Sobre Las Condiciones de Vida (ECV), yet they explain much of the variation in household consumption in the ECV. The incident of poverty estimated from the census on the basis of this imputed consumption figure, is close to that estimated from the ECV. Poverty rates calculated in this study are higher in rural areas as compare to urban areas. The province of Orienta is an extreme in this regard. Its rural areas have the highest poverty rate in the country, whereas urban areas are least poor.

In the study by Minot and Baulch (2000), the Vietnam Living Standards Survey (VLSS) data and Agricultural Census data have been used. The Vietnamese State Planning Committee (SPC) and the General Statistical Office (GSO) conducted VLSS in 1992-93. The VLSS sample size was 4,800 households, of which 3,840 were rural households while 960 were urban households. Information was collected about household members, housing, fertility, assets, employment, agricultural production, income, and expenditure. In 1994, the GSO organized an Agricultural Census covering 11.5 million rural households and gathered Information about household members, housing facilities, land use, animal ownership, and assets. Although information on income or expenditure was not collected in the census, it provided data on a number of household characteristics that were likely to be correlated with poverty.

`   First of all a probit regression was done with the VLSS data to estimate the probability that a rural household was poor. Nineteen household characteristics and six regional dummy variables were used as correlates in this analysis. In the next step the estimated equation obtained from the regression analysis was combined with the district-level mean values of the same

poverty indicators of the Agricultural Census to generate a poverty index for every district. The resulting information was used to generate a map classifying 543 rural districts of Vietnam according to poverty level. In addition, 8,800 rural communes were also classified, providing a more detailed view of the geographic patterns of poverty. The study showed that household characteristics were very accurate predictors of rural poverty. Rural poverty in Vietnam was also strongly associated with distance from the main cities and the coast.

This study highlights the importance of census data in estimating the geographic distribution of poverty. To make this data more useful, it suggests that a census should include a variety of questions on household characteristics that are correlated with the income of a household. The study also emphasizes the need to use same definitions of variables in the census and the household budget surveys to improve the accuracy of poverty mapping exercises.

As noted above, normally household surveys are too small to be representative at lower administrative level, whereas most census data do not contain the required information to estimate poverty. However, the 1996 South African census is different in the sense that it contains income information for each individual in the household. In the paper by Alderman *et al* (2002), it is shown that the income from the census data provides just a weak proxy for the average income or poverty estimates at either the provincial level or at lower levels of aggregation such as district councils. The study demonstrates a simple method of estimating expenditures for each household in the census, utilizing information in the October Household Survey (OHS) and the Income Expenditure Survey (IES) in 1995. The predicted household consumption values are reasonable and closed to the IES data. It also shows that poverty headcount can be estimated with fair precision for Magisterial Districts and for Transitional Local Councils. Finally, this paper reminds the importance of comparing various data sets for

external validation and emphasizes the need to increase the use of census data which is underutilized in most of the developing countries. In South Africa, highest poverty rate is found in Free State province which is 53.7 and lowest head count ratio is observed in Western Cape which is just 11.4.

Minot and Baulch (2002) also combine household expenditure survey data and census data to estimate the incidence of poverty for 61 provinces in Vietnam. The results show that poverty is greatest (Over 60 percent) in the northern mountain regions and in the provinces located in the North Central Coast and Central Highlands. The major cities and the rural areas surrounding Ho Chi Minh City, followed by the intensively cultivated Red River Delta and Mekong Delta are the least poor areas.

The results presented in this paper demonstrate that even if household-level census data are not available, it is still possible to produce reasonably accurate estimates of the incidence of poverty and inequality using aggregated census data. These estimates can be used to rank provinces by poverty rates and to produce high-resolution maps showing spatial patterns of poverty. Nonetheless, the problems associated with aggregation bias cannot be ignored. It is imperative to explore the problems associated with using aggregated census data, as national statistics agencies in Vietnam are often reluctant to provide household-level census data.

The analysis suggests that the use of aggregated data underestimates the incidence of poverty when the rate is below 50 percent and overestimates it when the rate is above 50 percent. The magnitude of the error changes with the estimated incidence of poverty. It is smallest when the poverty rate is close to zero, 50 percent, and 100 percent. It is also found that error is proportional to the variance in estimated per capita expenditure within the aggregated geographic units. Empirical results using the Vietnam data show that, if census data are aggregated to the

level of Census enumeration area (each of which has about 85 households), the errors in estimating the incidence of poverty are relatively small. Errors grow larger as the level of aggregation increases. The moral of the story is that use of disaggregated data not only generates more accurate estimates of the incidence of poverty, but also permits estimation of various other measures of poverty and inequality along with their standard errors, a feat that cannot be accomplished with aggregated census data.

The study compares the semi-log regression model with that of the probit regression model. The incidence of poverty estimated from the probit equation is found to differ from that obtained from the semi-log equation by about 1.4 percentage points. The use of the probit model adds one percentage point in error when using the aggregated census data.

Betti (2003) derives poverty and inequality map for Albania. The Republic of Albania is geographically divided into 12 Prefectures. These Prefectures are further subdivided into 36 Districts which, in turn, are divided into 384 Communes. Generally the communes contain rural villages and very small cities. The Capital of Albania, Tirana, is also divided into 11 Mini-municipalities. The three main data sets which are used in the study are The Population and Housing Census (PHC) – 2001, The Living Standard Measurement Study (LSMS) 2002 and The General Census of Agricultural Holdings 1998. This analysis is based on the methodology adopted by Elbers, Lanjouw and Lanjouw (2003) and commonly known as small area estimation technique.

Geographically, high poverty rates are found in the Mountain region of the country.In the rural areas of both Coastal and Central regions more than one third of the population is poor. The region of Tirana shows higher inequality in the distribution of per capita consumption as measured by the Gini coefficient. In the Prefecture of Vlore, the highest per capita consumption

and the lowest percentage of poor people (16.57%) are observed along with a high value of the Gini coefficient for consumption. On the other hand, the Prefecture of Diber seems to be the worst off with per capita consumption of only 6211 leks per month, and the highest percentage of poor individuals (42.10%).

Local Estimation of Poverty and Malnutrition in Bangladesh (2004) is a study prepared by close collaboration between the Bangladesh Bureau of Statistics and the World Food Program with the technical support of the Statistics Research and Consulting Centre, Massey University, New Zealand. Bangladesh is among the poorest countries of the world: approximately half of its 126 million citizens live in deprivation, while about half of all children under six years exhibit evidence of severe malnutrition. In this study Indicators of poverty and malnutrition are estimated by applying the small area estimation technique popularized by the World Bank. A five percent sample of the 2001 population census and 2000 Household Income and Expenditure Surveys are used to find estimates of the poverty incidence, gap and severity at the sub-district level. Various estimates of malnutrition are obtained using 2000 Child Nutrition Survey.

The estimated poverty and malnutrition indices are used to produce poverty and malnutrition maps. These maps present a graphical summary of those areas which are suffering from a relatively high level of deprivation. The main purpose of producing such maps is to enhance the planning of social intervention programs for eliminating poverty. They may also prove useful as a research tool. The maps show that the poorest areas are located in the Northwest, and in the districts of Mymensingh, Netrakona, Bhola and Bandarban. The study reports two estimates of malnutrition of children less than five years age namely, stunting (low height-for-age) and underweight (low weight-for-age).. On the basis of these two indicators it is

found that malnutrition is particularly severe in the coastal areas as well as in the Northern districts of Mymensingh, Netrakona and Sunamganj.

Union level poverty maps and resource allocation maps are also derived. Resource allocation maps are obtained by multiplying the average poverty gap with the total sub-district population and represent total monthly resource requirement to wash out extreme poverty in all sub-districts. It is assumed that no additional costs are involved in transferring these resources to the extreme poor.

Kam *et al* (2004) study the spatial variation of rural poverty in Bangladesh and the relationship of people's livelihood assets with their ability to procure food. The dataset used for this study is a sample survey conducted in 2000-01 by the International Rice Research Institute using a nationally representative sample originally drawn by the Bangladesh Institute of Development Studies. This dataset is combined with the household data provided by the Bangladesh Bureau of Statistics for a 5% sample of the 2001 Population Census.

By using these data sets, three poverty indices implied by the Foster, Greer and Thorbeck (1984) equation, namely the Head Count Index (HCI), the Poverty Gap Index (PGI) measuring the intensity of poverty and the Squared Poverty Gap Index (SPGI) measuring its severity are computed. The maps of poverty indices for a total of 415 rural sub districts reveal ecologically distinct areas with high poverty incidence.

An analysis based on geographically weighted regressions indicates spatial differences in the relative importance of a number of poverty-influencing factors. However, livelihood influencing factors such as education and access to services are significantly correlated with the incidence of poverty. This shows that there is a need to keep continued focus on providing at least basic education and access to income generating opportunities to make the poor better off.

Multivariate clustering of the local parameter estimates indicates distinct spatial relationships that have implications for poverty reduction interventions specific to the different geographical regions.

The study advocates agriculture related research and development in the environmentally constrained northern poverty bet. In this belt natural calamities like heavy flooding in the northeast, drought in the northwest and erosion along the major rivers are very common. A risk-averting, diversified production system that gradually stabilizes and increases food production is essential. Modern innovative approaches to manage the dual saline and freshwater regimes in the south-western coastal areas for the cultivation of crops and aquaculture development would boost household food security and add value to agricultural production.

Lanjouw (2004) discusses the geography of poverty in Morocco. In this research, poverty map of Morocco has been developed on the basis of the 1994 population census and the 1998 EPM household survey. These two surveys are conducted with a gap of more than three years, which raises serious questions about the validity of the results obtained by combining them. Poverty is estimated at regional, provincial and commune level. Results f this study reveal a marked degree of heterogeneity of poverty across communes in Morocco. The study also uncovers a remarkably high degree of heterogeneity in consumption inequality, particularly in the rural areas. This heterogeneity is attributed to differences between geographic units. The upshot is that geographic differences play an important role in understanding consumption inequality in the rural areas of the country. The rural areas of Gharb-Chrarda-Beni-Hssen, Meknes-Tafilalet, and Fes-Boulemane are found to be the poorest where the head count ratio is 27 percent. Urban Grand Casablanca is the richest region of the country with a head count ratio of just 4.1 percent. Poverty is high in the rural areas of Morocco as compared to its urban areas.

Gibson et al (2004) created disaggregate maps of rural poverty in Papua New Guinea by combining information from a 1996 Household Survey with data from the 2000 Census, and Resource and Agricultural Mapping databases with national coverage. Predicted poverty rates are calculated at Provincial, District and Local Government level. Average predicted poverty rate for all provinces is about 37 percent. It is significantly highest in the province of Sandaun (West Sepik) where the poverty rate is about 63 percent. Madang, New Ireland, Western Province, Southern Highlands and Western Highlands Provinces are also prominent by having predicted poverty rates exceeding 40 percent. The predicted poverty rates are the lowest in the Gulf, Eastern Highlands, Manus, Enga, and East and West New Britain. These lowest rural poverty areas are located close to Port Moresby, Highlands Highway, the coastal areas famous for oil palm, and major mining projects like Ok Tedi.

Labbate et al (2004) combined household and census data to estimate poverty for disaggregated geographical units for the first time in Georgia. They prepared maps of different welfare indicators such as poverty headcount ratio, poverty gap, severity of poverty and income inequality at the district level. Their poverty maps show a southeast-northwest diagonal of districts with above the national average poverty rates. Values of poverty gap and severity of poverty are also significantly above the national average in this region. The most affected regions are Adjara, Samtskhe-Javakheti, Mtskheta-Mtianeti and Shida Kartli. This diagonal of poverty includes 17 districts and comprises 23.9% of all the poor in Georgia. Nonetheless, this diagonal does not show the greatest concentration of poverty in Georgia. Rather, poverty is more concentrated in the towns of Kutaisi, Batumi and Rustavi, the Tbilisi districts of Isani-Samgori, Gldani-Nadzaladebi, and Vake-Saburtalo, and the districts of Gori and Zugdidi. Altogether, these areas account for 32.5 percent of all the poor in this country.

Kenneth et al (2005), carry out a poverty mapping analysis of Mozambique useing household survey data from the Mozambique *Inquérito Nacional aos Agregados Familiares sobre as Condições de Vida* 1996–97 (National Household Survey of Living Conditions). It is the first national level survey of living conditions in Mozambique and provides a welfare measure based on comprehensive expenditure data. The survey covers 8,250 households. They combine this dataset with the *II Recenseamento Geral de População e Habitação* (Second General Population and Housing Census), which was conducted in August 1997. The census provides information on different socioeconomic variables, including education, employment, dwelling characteristics, and selected household assets. Small area estimation technique is used to produce disaggregated poverty estimates, which are presented in the form of poverty maps for 128 districts and 420 subdistricts (*postos administrativos* or PAs). The maps show a considerable intra-provincial and intra-district variation in poverty rates.

High concentrations of poor people are found along the southern coast and along the east-west Beira corridor in the middle of the country. The pattern is different in Nampula and Zambézia Provinces in north-central Mozambique, where poverty rates are below the national average but account for 40 percent of the national population. The poor population is almost evenly distributed within these two provinces, but pockets of extreme poverty exist side by side with the non-poor areas. Such patterns enhance the usefulness of the poverty mapping technique and enable policy makers to target poverty more accurately.

The report titled "A Poverty Map for Sri Lanka—Findings and Lessons" (2005) is a collaborative effort of the Department of Census and Statistics (DCS), Sri Lanka and World Bank. In this study data from Census of Population and Housing 2001, is combined with household survey data, HIES 2002 to obtain a poverty map of Sri Lanka. Due to security issues

in Northern and Eastern Provinces, the census fully covers only 17 southern districts out of a total of 25 and the coverage of the remaining districts is only partial. HIES (2002) covers only 17 districts of the South. Hence the poverty map presented in the report is applicable only to the 17 districts covered by both HIES and the census.

Sri Lanka is a unique country of South Asia that has shown outstanding performance in the area of human development with a primary school enrolment rate of above 95 percent and an infant mortality rate of 11 per 1,000 live births. Despite these achievements, the national poverty headcount ratio remains high in Sri Lanka (22.7 percent in 2002). The pace of poverty reduction has also been slow despite the steady growth rate of the country. Many pockets of severe poverty remain or are emerging even in the districts like Colombo that is a centre of development and growth. A map of the poverty headcount ratios at the DS Division level portrays some interesting geographical features of the incidence of poverty. One, poverty headcount ratios are found to be generally low in Colombo district and its neighboring areas. Two, high rates of poverty are much more common in the Deep South (Southern Uva and Sabaragamuwa provinces) than in areas more to the centre and north of the country (North-West and North Central provinces). Three, the map indicates that pockets of extreme poverty exist in almost all parts of Sri Lanka, including the relatively better off districts. Four, extreme poverty seems to be mainly concentrated in the Sabaragamuwa and Uva provinces. In this regard, it is interesting to note that accessibility to markets declines as we move further away from the economic growth centre of Colombo. High orrelation between drought and poverty incidence is also found in certain areas of the country.

Small Area Estimation of Poverty, Caloric Intake and Malnutrition in Nepal (2006) is the report jointly produced by Central Bureau of Statistics, Nepal, United Nations World Food Program and The World Bank. It is the first time that small area estimation exercise is done in

Nepal. In this report, estimates of poverty, caloric intake and malnutrition at regional, district and sub district (ilaka) level are provided. To achieve this objective, small area estimation technique of poverty mapping has been extended to include measures of caloric intake, stunting, wasting, and underweight. The methodology involves detailed analysis of the Nepal Living Standards Survey 2003-04 Project (NLSS-II) and Nepal Demographic and Health Survey 2001 (NDHS). The data from these two sample surveys have been regressed against the data obtained from the National Population Census 2001. Highest level of poverty is found in the Mid-West and Far-West areas of Nepal. These are mostly mountainous areas, away from the centers of growth and development. Rural areas of the country are also marred with high level of poverty, a phenomenon also common in other South Asian countries. Low calorie intake and malnutrition is also a common feature of the poor areas of Nepal. Level of poverty is low in the urban areas of the country, especially in urban Kathmandu.

Tarozzi and Deaton (2007) argue that efforts to calculate welfare estimates for small areas by merging survey and census data are worthwhile, yet the current literature does not sufficiently emphasize the limitations of the methodologies used in current literature that are based on strong assumptions. Policymakers should also be aware of these limitations while using poverty maps to allocate funds and improve targeting of the welfare programs. In their view, a model of income or expenditure estimated by employing household survey data for a large region may not be good enough to predict welfare for smaller regions comprising it unless the entire region is quite homogenous. Differences in tastes and prices violate the assumption of homogeneity. They further argue that an assumption of homoskedastic and independent and identically distributed cluster random effects is very difficult to hold in real life.

To take care of these caveats, they use 10.6% random extract of the 2000 Mexican Census data. In addition to a measure of individual income during the last thirty days, this dataset contains many predictors of income and expenditure such as housing characteristics, household composition, asset ownership, and occupation and education of each household member. First, relatively large regions (the states of Chiapas, Oaxaca, and Veracruz) are identified, from which a random sample of households is selected and information on income and other household-related variables is collected. This sample is used to calculate the parameters of a model for predicting the probability of being below a fixed poverty line conditional on a set of predictors. Then these parameters are merged with census information on the predictors for the entire population in the given region. This allows the authors to find point estimates and standard errors of prediction of income based poverty measures associated with small areas within the large regions.

Municipios are the smaller geographical units that constitute States in Mexico. Municipio-specific poverty estimates show that there is considerable heterogeneity in the distribution of poverty in all the three states of Mexico. Veracruz is the least poor state, with a median headcount equal to .41 while the other two states of Chiapas and Oaxaca are found to be much poorer with median poverty rates close to 70%.

Although the small-area estimation technique developed for producing poverty maps has been applied in a large number of developing countries, opportunities to formally check the validity of this methodology remain rare due to lack of related detailed data. In the paper by Elbers *et al* (2008) a set of predicted welfare estimates based on this methodology are compared with their true values in a setting where these true values are available. Theirs results for the states of Minas Gerais, Brazil, show that the small-area estimation approach is able to produce

estimates of welfare that are quite close to their already available true values even though the setting considered here seem unlikely to meet the homogeneity conditions that have been claimed to be necessary for the validity of this method. Confidence intervals for the poverty estimates also appear to be quite reasonable. However, this conclusion holds only if community-level factors are carefully controlled as those are correlated with household level welfare.

In short, the poverty mapping technique is found to be useful in a number of developing countries. It works reasonably well under a variety of circumstances if applied with care. When the above methodology is used with a high degree of dispersion, it is advisable to support it by complementary sources of information.

Cheema (2010) studies the spatial dimensions of poverty for Pakistan. He calculates headcount ratio up to district level and ranks districts according to their headcount ratios. To the best of our knowledge, this is the only study so far that uses poverty mapping approach to estimate poverty level of the districts of this country. His general approach is similar to the one proposed by Hentschel et al. (1998, 2000) who use census and survey data for their study[3]. However, instead of combining sample and survey data, he links data from a broader survey (CWIQS) to the data from a smaller but more extensive survey (HIES).

According to this study, overall headcount ratio for the province of Punjab is 24 percent in the year 2004-05 the lowest incidence of poverty is in the federal capital Islamabad and is just 8 percent. Chakwal, Lahore, Rawalpindi and Jhelum are the next three least poor districts of the country in the same order where the headcount ratio ranges between 12 and 16 percent. The district of Muzaffargarh has the highest level of poverty with a headcount ratio of 37 per cent. The next poorest district is Rahim Yar Khan, where the level of poverty has been calculated to be 34 per cent, followed by Dera Ghazi Khan and Bahawalpur with headcount ratios of 33 per cent

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[3] These studies are reviewed at the beginning of this section.

and 31 per cent respectively. Poverty is higher in rural areas as compared to urban areas, except for the district of Chakwal where poverty rate is the same for urban and rural areas. Districts with relatively high poverty rates are located in the southern and western divisions of the province i.e. Multan, Dera Ghazi Khan and Bahawalpur.

The overall headcount ratio for Sindh is found to be 19 percent. Poverty rates have also been calculated for the sixteen districts of Sindh. The percentage of the population below the poverty line ranges from 9 to 29 in Sindh. Poverty rate is the lowest in Karachi and the highest in Larkana. Dadu, Thatta and Shekarpur districts also exhibit high levels of poverty.

In Baluchistan, the overall headcount ratio is estimated to be 28 percent. The districts of Dera Bughti and Kohlu are not included in this analysis as it was not possible to conduct survey in these two districts due to the poor law and order situation. Among the remaining 24 districts of Baluchistan, Gwadar, Quetta and Kalat are the least poor districts whereas Chaghi, Jhal Magsi and Pishin are the poorest.

The overall headcount ratio for KPK province is 31. The incidence of poverty has also been reported the 24 districts of this province. According to these figures, Abbottabad is the least poor district with a headcount ratio of at 22 percent. The poorest districts are Shangla and Upper Dir. Both have a headcount ratio of 41 per cent. Poverty is also high in Bonair, Kohistan and Battargam.

At the national level, the lowest poverty rates are observed in Islamabad, followed by Karachi, Lahore, Chakwal and Rawalpindi. Islamabad is the federal capital adjacent to Rawalpindi in the Punjab and Karachi is the capital of Sindh province. The remaining three districts are located in the Punjab. On the other extreme are the districts of Shangla, Upper Dir, Bonair, Chaghi and Kohistan, all in the KPK province except for Chaghi which is in Baluchistan.

It can be seen from these figures that no district of KPK and Balochistan belongs to the five least poor districts of Pakistan. On the other hand, no district of Punjab and Sindh lies among the five poorest districts of the country.

Being the first study in Pakistan that employs the small area estimation technique to estimate the spatial dimension of poverty at district level, the importance of the study reviewed above cannot be overemphasized. Yet robustness of the technique used in this study needs to be checked by applying it to some other dataset in Pakistan. Moreover, districts themselves are large administrative units. It is quite possible that district level poverty estimates may conceal significant variations in poverty within the districts. Therefore, there exists a strong need for estimating poverty at sub-district (tehsil) level for more precise targeting of poverty and to improve efficiency of poverty alleviation scheme.

Chapter 3

Data Sources and Methodology

3.1 Data Sources:

The two datasets used in this study are the 2007-08 the Household Integrated Economic Survey (HIES) and the 2007-08 Multiple Indicator Cluster Survey (MICS) for the Punjab. Whereas HIES contains detailed information on household consumption, it is statistically representative only up to the rural and urban areas of the provinces of Pakistan. On the other hand, the MICS dataset does not contain information on household consumption, but it is representative up to tehsil level in the Punjab. The two datasets make a classical case for the application of the poverty mapping technique. Therefore these datasets have been selected for achieving the objectives of this study. The following paragraphs describe salient features of these datasets.

3.1.1 The Household Income and Expenditure Survey (HIES) 2007-08:

The total size of the HIES sample is 15512 households, comprising of 9257 rural and 6255 urban households. The total HIES sample size for the Punjab is 6636 households, out of which 3868 households are located in rural areas while there are 2768 urban households in the sample. This sample size is sufficient to produce estimates of key variables at national and provincial level at 95% level of confidence (GOP, 2009).

A two stage stratified random sample design is used for the HIES survey. In the first stage, enumeration blocks in urban areas and villages, mozas or dehs in rural areas are treated as the Primary Sampling Units (PSU), which are selected with Probability Proportional to Size (PPS) method of sampling scheme. In the second stage, households within each sample PSU are

selected as Secondary Sampling Units (SSUs). 16 and 12 households are sampled from each sample village and enumeration block respectively (GOP, 2009).

The urban areas of Karachi, Lahore, Gujranwala, Faisalabad, Rawalpindi, Multan, Sialkot, Sargodha, Bahawalpur, Hyderabad, Sukkur, Peshawar, Quetta and Islamabad get special treated as independent self representing large sized cities. Each of these cities constitutes a separate stratum and is further sub-stratified according to low, middle and high-income groups based on the information collected from each enumeration block. Remaining urban population in each administrative district of all provinces is grouped together and is treated as a separate stratum. In the rural areas, the population of each the district in the Punjab, Sind and N.W.F.P provinces has been grouped together to establish a stratum. For the rural areas of Baluchistan province each of the administrative division is treated as a stratum. The following three tables show the distribution of primary and secondary sampling units across the provinces and the rural and urban areas of the country and the summary statistics for the HIES variables used in this study.

Table 3.1.1   **Regional Distribution of PSU's and SSU's in the HIES 2007-08**

Province/Ara	Sample PSUs			Sample SSUs (households)		
	Urban	Rural	Total	Urban	Rural	Total
Punjab	240	244	484	2768	3868	6636
Sindh	140	131	271	1672	2093	3765
NWFP	88	118	206	1049	1888	2937
Baluchistan	64	88	152	766	1408	2174
Total	532	581	1113	6255	9257	15512

Table 3.1.2   Descriptive Statistics HIES 2007-08 (Rural Punjab)

Variables	Minimum	Maximum	Mean	Std. Deviation
Household size1	0.00	1.00	0.05	0.22
Household size2	0.00	1.00	0.20	0.40
Household size3	0.00	1.00	0.42	0.49
Primary	0.00	1.00	0.21	0.41
Middle	0.00	1.00	0.16	0.37
Matric	0.00	1.00	0.20	0.40
F.A & higher	0.00	1.00	0.13	0.34
Elderly people Proportion	0.00	1.00	0.05	0.10
Female proportion	0.00	1.00	0.53	0.17
Young people proportion	0.00	0.89	0.48	0.21
Per capita room	0.08	6.50	0.38	0.26
Ownership of agri. Land	0.00	1.00	0.08	0.27
Domestic remittances	0.00	1.00	0.15	0.36
Foreign remittances	0.00	1.00	0.06	0.23
Main source of drinking water	0.00	1.00	0.51	0.50
Type of toilet	0.00	1.00	0.50	0.50
Gas connection	0.00	1.00	0.09	0.28
Electricity connection	0.00	1.00	0.90	0.30
Television	0.00	1.00	0.51	0.50
Refrigerator	0.00	1.00	0.32	0.47
Air cooler	0.00	1.00	0.88	0.32
Air conditioner	0.00	1.00	0.01	0.12
Personal computer	0.00	1.00	0.04	0.19
Motor cycle	0.00	1.00	0.20	0.40
Car	0.00	1.00	0.03	0.17
Cooking range	0.00	1.00	0.00	0.05
Sewing machine	0.00	1.00	0.59	0.49
Washing machine	0.00	1.00	0.30	0.46

Table 3.1.3   **Descriptive Statistics HIES 2007-08 (Urban Punjab)**

Variables	Minimum	Maximum	Mean	Std. Deviation
Household size1	0.00	1.00	0.05	0.23
Household size2	0.00	1.00	0.20	0.40
Household size3	0.00	1.00	0.45	0.50
Primary	0.00	1.00	0.13	0.34
Middle	0.00	1.00	0.13	0.33
Matric	0.00	1.00	0.23	0.42
F.A & higher	0.00	1.00	0.38	0.49
Elderly people proportion	0.00	1.00	0.04	0.09
Female proportion	0.00	1.00	0.52	0.16
Young people proportion	0.00	0.89	0.42	0.22
Ownership of agri. Land	0.00	1.00	0.05	0.23
Domestic remittances	0.00	1.00	0.09	0.29
Foreign remittances	0.00	1.00	0.05	0.23
Type of toilet	0.00	1.00	0.85	0.36
Gas connection	0.00	1.00	0.72	0.45
Electricity connection	0.00	1.00	0.99	0.10
Television	0.00	1.00	0.81	0.39
Refrigerator	0.00	1.00	0.63	0.48
Air conditioner	0.00	1.00	0.12	0.33
Personal computer	0.00	1.00	0.16	0.37
Motor cycle	0.00	1.00	0.30	0.46
Car	0.00	1.00	0.09	0.29
Cooking range	0.00	1.00	0.05	0.22
Washing machine	0.00	1.00	0.70	0.46
Per capita room	0.07	8.00	0.42	0.30

3.1.2 The Multiple Indicators Cluster Survey (MICS) 2007-08:

MICS 2007-08 was conducted from December 2007 to April 2008 by the Bureau of Statistics (BOS), Planning and Development Department, Government of the Punjab. It was designed and implemented by the Punjab Bureau of Statistics with technical collaboration from UNICEF. It is a provincial level survey of households, women and children. With a sample size is 91,280 households. The survey provides information on more than 70 indicators for the province, its 9 divisions, 35 districts and 143 *tehsils* or towns. Areas of military installations and the homeless are not included in the survey.

The universe of the survey consists of all the households and their members in all urban and rural areas of Punjab according to the 1998 Census of Population and Housing (CPH) as changed and updated subsequently. The Federal Bureau of Statistics has developed an updated sampling frame by performing a quick counting of all the urban areas of the Punjab. The quick count technique allows updating a sampling frame by counting all the households and housing units within an Enumeration Block.

Every city and town is divided into a number of enumeration blocks consisting of small compact areas comprising on average 200 to 250 households with well-defined boundaries. Each urban enumeration block is classified into low, medium and high-income areas using information on quality of housing and living standards of the households that make up the block. The enumeration blocks have also been classified as residential, commercial or industrial according to the predominance of the activity inside the area of the block. At present, there are 14,654 enumeration blocks in the province of Punjab. Some further details are given in the table 2.1.4:

Table 3.1.4 **Classification of MICS 2007-08 Sample**
by Types of Constituting Units

Name of Sampling Unit	Number
Households	3,096,348
Villages	25,869
Establishments	1,122,986
Enumeration Blocks (total)	14,654
Self-representing	7,435
Other urban areas	7,219
Tehsils	143
Districts	35
Divisions	9

Each administrative district constitutes an independent stratum for sampling purposes both in the urban and rural domains, whereas tehsils within a district are treated as substrata. As discussed above, urban areas are further sub-stratified into low, medium and high income areas on the basis of the socioeconomic characteristics of the enumeration block. No explicit socioeconomic stratification has been done in the rural domain since the rural domain in the Punjab is fairly homogeneous with respect to socioeconomic characteristics. However, an implicit stratification scheme is used while selecting the sample when socioeconomic differences in the rural domains are observed.

The eight largest cities of the Punjab are classified as independent self representing large sized cities and are treated a bit differently for sampling purposes. They are subdivided into

towns, each of which constitutes a substratum of the district. The towns are further subdivided into low, medium and high income areas. These eight largest districts are Lahore, Faisalabad, Rawalpindi, Gujranwala, Multan, Sargodha, Sialkot and Bahawalpur.

District wise sample size and household allocation is given in the table 3.1.5. This table shows that all over the Punjab a total of 91,280 households were selected, among them 10464 were from the major cities, 21360 were from the remaining urban areas, and 59456 were from the rural areas. The next two tables 3.1.6 and 3.1.7 present summary statistics for the variables used in this study.

Table 3.1.5   Allocation of MICS 2007-08 Sample Households Across Districts and Regions

Sr. No.	District	Households			
		Major City	Other Urban	Rural	Total
	Punjab	10464	21360	59456	91280
1	Bahawalpur	348	636	2768	3752
2	Bahawalnagar	-	1080	2880	3960
3	RY Khan	-	864	2800	3664
4	DG Khan	-	540	1584	2124
5	Layyah	-	468	1152	1620
6	Muzaffargarh	-	720	2496	3216
7	Rajanpur	-	660	1728	2388
8	Faisal abad	1836	780	3040	5656
9	Jhang	-	864	2240	3104
10	TT Singh	-	648	1584	2232
11	Gujranwala	1164	1068	1632	3864
12	Gujrat	-	540	1584	2124
13	Hafizabad	-	360	768	1128
14	M. Bahauddin	-	540	1296	1836
15	Narowal	-	360	864	1224
16	Sialkot	264	372	1248	1884
17	Lahore	3240	0	640	3880
18	Kasur	-	864	1728	2592
19	Nankana	-	540	1840	2380
20	Okara	-	540	1728	2268
21	Sheikhupura	-	900	2160	3060
22	Multan	1656	240	1536	3432
23	Khanewal	-	732	2496	3228
24	Lodhran	-	576	1152	1728
25	Pakpattan	-	384	864	1248
26	Sahiwal	-	360	1152	1512
27	Vehari	-	540	1872	2412
28	Attock	-	900	2000	2900
29	Chakwal	-	540	1296	1836
30	Jhelum	-	540	1152	1692
31	Rawalpindi	1632	936	2032	4600
32	Sargodha	324	648	2688	3660
33	Bhakkar	-	720	1536	2256
34	Khushab	-	360	768	1128
35	Mianwali	-	540	1152	1692

Source: MICS 2007-08 Provincial Report, Government of the Punjab, Planning and Development Department

Table 3.1.6   Descriptive Statistics MICS 2007-08 (Rural Punjab)

Variables	Minimum	Maximum	Mean	Std. Deviation
Household Size1	0.00	1.00	0.05	0.22
Household Size2	0.00	1.00	0.17	0.38
Household Size3	0.00	1.00	0.43	0.50
Primary	0.00	1.00	0.20	0.40
Middle	0.00	1.00	0.16	0.37
Matric	0.00	1.00	0.23	0.42
F.A and higher	0.00	1.00	0.17	0.37
Elderly people Proportion	0.00	1.00	0.05	0.10
Female proportion	0.00	1.00	0.50	0.14
Young people proportion	0.00	1.00	0.46	0.22
Per capita rooms	0.00	9.00	0.31	0.18
Ownership of agri. Land	0.00	1.00	0.48	0.50
Domestic remittances	0.00	1.00	0.07	0.26
Foreign remittances	0.00	1.00	0.04	0.20
Type of toilet	0.00	1.00	0.42	0.49
Gas connection	0.00	1.00	0.05	0.22
Electricity connection	0.00	1.00	0.89	0.31
Television	0.00	1.00	0.53	0.50
Refrigerator	0.00	1.00	0.29	0.45
Air cooler	0.00	1.00	0.82	0.38
Air conditioner	0.00	1.00	0.02	0.13
Computer	0.00	1.00	0.03	0.18
Motorcycle	0.00	1.00	0.22	0.41
Car	0.00	1.00	0.08	0.27
Cooking range	0.00	1.00	0.02	0.13
Sewing machine	0.00	1.00	0.66	0.47
Washing machine	0.00	1.00	0.34	0.47

Table 3.1.7   Descriptive Statistics MICS 2007-08 (Urban Punjab)

Variables	Minimum	Maximum	Mean	Std. Deviation
Household Size1	0.00	1.00	0.05	0.21
Household Size2	0.00	1.00	0.19	0.39
Household Size3	0.00	1.00	0.44	0.50
Primary	0.00	1.00	0.12	0.32
Middle	0.00	1.00	0.12	0.33
Matric	0.00	1.00	0.26	0.44
F.A & higher	0.00	1.00	0.41	0.49
Elderly people proportion	0.00	1.00	0.04	0.09
Female proportion	0.00	1.00	0.50	0.14
Young people proportion	0.00	1.00	0.42	0.22
Ownership of agri. land	0.00	1.00	0.12	0.32
Domestic remittances	0.00	1.00	0.03	0.18
Foreign remittance	0.00	1.00	0.04	0.21
Type of toilet	0.00	1.00	0.88	0.32
Gas connection	0.00	1.00	0.63	0.48
Television	0.00	1.00	0.82	0.38
Refrigerator	0.00	1.00	0.62	0.49
Air conditioner	0.00	1.00	0.15	0.35
Personal computer	0.00	1.00	0.18	0.38
Motorcycle	0.00	1.00	0.34	0.47
Car	0.00	1.00	0.11	0.31
Cooking range	0.00	1.00	0.13	0.34
Washing Machine	0.00	1.00	0.79	0.41
Per capita room	0.00	5.00	0.34	0.20

3.2-Methodology:

3.2.1 The Model:

A variety of methods are available for spatial location of poverty. This study uses small area estimation method for this purpose. Small-area Estimation is a statistical technique that combines survey and census data to estimate some welfare indicator for small geographical units such as municipalities or rural communities that are then used to designate these areas as poor or non-poor. This technique has been applied to a number of developing countries for poverty mapping purposes.[4]

As noted above, this method requires a minimum of two sets of data: household level census data and a representative household survey reporting, among other things, household consumption expenditure corresponding approximately to the same period as the census.[5]Although an up-to-date survey dataset that provides detailed information on household consumption is available in the form of HIES 2007-08, last time the census was conducted in Pakistan, was about thirteen years ago in 1998. Suitability and usefulness of such an old dataset for estimating current levels of poverty is questionable.

Fortunately, MICS 2007-08 dataset described in the previous section offers a viable alternative to the census data for the Punjab, the most populous and industrialized province of the country. Not only it provides data on the required variables for predicting household consumption, it is also representative up to the tehsil level.

The survey data provided by HIES is used in this study to estimate per capita consumption expenditure as a function of a variety of household characteristics and regional dummies. In symbols:

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[4] See Section 1.2 for a review of literature on small area technique and poverty mapping.
[5] The maximum allowable time difference may vary by the rate of economic change in a given country

$$Ln\ (y) = X\beta + e \qquad\qquad (2.1)$$

Where y is per-capita consumption expenditure, X is a vector of household characteristics, β is a vector of estimated coefficients, e is the error term, and Ln is natural log operator.

Next, the estimated coefficients obtained from equation (2.1) above are applied to the vector of same household characteristics present in census or some other dataset that is representative at smaller geographical level compared to the dataset used for estimating these coefficients (the MICS data in the context of this study). In this way, estimates of per-capita consumption expenditure are obtained for each household in the MICS data.

The values of per-capita consumption hence obtained are then used to calculate probability P_i that a household i is poor as follows[6]:

$$P_i = \Phi\left[\frac{Ln\ (\mu) - X_i^{\ c}\beta}{\sigma} \right] \qquad\qquad (2.2)$$

Where Φ is the cumulative normal function, $X_i^{\ c}$ is a vector of household characteristics taken from the census (MICS), β is a vector of the coefficients estimated from the survey data in the first stage, μ is the poverty line, and σ is the standard error of the regression from the first stage.

If region r contains N households labeled i=1…N, the expected value of the poverty rate for the region P_r, is simply the average of the probabilities that the individual households are poor.

$$P_r = \frac{1}{N}\Sigma\Phi\left[\frac{Ln\ (\mu) - X^{\ c}\beta}{\sigma} \right] \qquad\qquad (2.3)$$

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[6] See Hentschel *et al* (1998, 2000) and Cheema (2010).

In the present study, equation (2.1) will be estimated using HIES 2007-08 data, the coefficients β hence obtained will be used to calculate per-adult-equivalent consumption expenditure for each household in the MICS 2007-08 data, and then probability of being poor will be calculated by using equation (2.2). After obtaining tehsil and district level poverty rates by applying equation (2.3), districts and tehsils will be ranked according to their poverty level. This will pave the way for a discussion of the geographical pattern of poverty in the Punjab and some salient features of the poor areas. Following two sections give some further detail of how the above methodology is implemented in the context of this study.

3.2.2 Identifying the Candidate Variables:

Variables that are common in both data sets are the candidate variables for the regressions that result in the estimates of β coefficient. The criteria for the selection of candidate variables include:

- Do both the data sets use the same definitions for the common variables?
- Are the questions that generate these variables same (or at least very similar) in the questionnaires of both data sets?
- Are the options for the expected answers same or similar in the two datasets?

The two surveys used in this study were conducted by two organizations, namely, the Federal Bureau of Statistics, and the Bureau of Statistics (BOS), Planning and Development Department, Government of the Punjab. The questionnaires of these datasets with respect to social indicators and household roster are not exactly identical but they are quite similar. Despite some minor differences, these surveys provide an opportunity to obtain a number of common candidate variables.

The variables chosen for this study either directly meet the criteria mentioned in the preceding paragraphs or they have been modified in such a way as to meet them. Some variables have been generated from the two datasets while keeping in view the criteria for compatibility. While identifying candidate variables, many categorical variables have been recoded into compatible dummy variables.

Some idea of the compatibility of the two datasets can be obtained by noting similarities between them. Both data sets ask similar questions on the demographic characteristics of the households such as household size, age and gender of the household members and their relationship with the head of the household. Similarly, the information about literacy and educational attainment of the household members found in the two datasets is almost identical. This information permits estimating the quality and level of human capital of the households, a very important correlate of economic welfare. These surveys also provide compatible information about the labor market indicators such as employment and occupational status of each household member. A lot of information about the ownership of assets and durables is also available in these surveys.

The sections of the two surveys that relate to the housing conditions have detailed information about housing characteristics including source of drinking water and availability of electricity and gas. In addition to serving as a proxy for the level of welfare of a household, these variables are likely to capture unobserved location effects because usually clusters of households within a neighborhood enjoy identical levels of access to these facilities. Ignoring these cluster effects would have reduced the precision of the coefficient estimates.

Despite the similarities between the two datasets, the candidate variables were rigorously tested to make sure that they represent same or at least very similar magnitudes. First of all,

tables of summary statistics were generated from both the datasets for all the candidate variables (see Tables 2.1.2, 2.1.3, 2.1.6 and 2.1.7). Means and standard deviations the candidate variables obtained from the two datasets were compared and the variables having widely disparate means and standard deviations were dropped from analysis as they could have very dissimilar statistical properties across the datasets.

Absence of sufficient variation in the dummy variables has serious implications for the robustness of the estimated coefficients. An example of such variables is the dummy for availability of electricity in the urban areas which has a mean of 0.99. To rule out such situations all the dummy variables with a mean of less than 0.03 and more than 0.97 were excluded from the analysis. Similarly variables like air conditioner and cooking range are removed from regression of rural consumption model as their means were reported less than 3 percent.

All the above mentioned tests were applied to each domain, rural and urban, separately across both data sets. This was done to ascertain that the statistical properties of the candidate variables were similar across datasets as well as across regions.

Chapter 4
Estimation and Robustness of the Model

4.1 Estimation of consumption models:

Estimation results for equation 2.1 are presented in this section. The equation can be written as:

$$Ln\ (y) = X\beta + e \qquad (2.1)$$

Where y is a measure of consumption expenditure in per-capita form, X is a vector of household characteristics and other independent variables common in HIES and MICS datasets, β is a vector of estimated coefficients, e is the error term, and Ln is natural log operator.

The dependent variable is per-adult equivalent consumption expenditure calculated from the household consumption data available in HIES. The household figures are converted into per-adult equivalent consumption expenditure by using the following formula:

$$AE=1+0.7(n-1) +0.5Children$$

Where AE is per adult equivalent consumption, n is the number of adults in the household. Children are those family members whose age is less than 14 years. Family members of age greater than or equal to 14 years are considered adult. In this formula, the first adult is given a weight of 1, all remaining adults are weighted by a factor of 0.7 to take care of the economies of scale in consumption, and children are weighted by 0.5.[7]

Two separate consumption equations are estimated for rural and urban areas of the Punjab. This approach allows the β coefficients to vary across rural and urban areas and is warranted by the substantial differences in consumption pattern and its determinants across the

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[7] This method of calculating adult equivalent is standard and is frequently used in the literature on poverty. For more details see 'The OECD List of Social Indicators (1982)'

regions. This is also likely to capture at least part of the unexplained location effects, hence increasing the precision of the poverty estimates. Keeping in mind the predominant view in the existing literature[8], all the estimates in this study are weighted by household size. The regression results are reported in Tables 4.1.2 and 4.1.3.

Table 4.1.1 Definition of Variables Used in the Regression Analysis

Variables	Thpe	Definition
Household Size1	Dummy	Household size(1-3 persons)=1
Household Size2	Dummy	Household size(4-5 persons)=1
Household Size3	Dummy	Household size(6-8 persons)=1
		bench mark: Household size(>=9 persons)=0
Education		
Primary	Dummy	Highest completed grade in the household(5-7)=1
Middle	Dummy	Highest completed grade in the household(8-9)=1
Matric	Dummy	Highest completed grade in the household(10-11)=1
F.A & higher	Dummy	Highest completed grade in the household F.A & higher=1
		Bench mark: No person in the household has passed class 5=0
Other Household Characteristics		
Female proportion	Continuous	Females aged>=18 years as a proportion of household members aged >= 18 years
Elderly people proportion	Continuous	Household members aged >= 65 years as proportion of household size
Young people proportion	Continuous	People aged < 18 years as proportion of household size
Domestic remittances	Dummy	If the household receives domestic remittances = 1, otherwise=0.
Foreign remittances	Dummy	If the household receives foreign remittances = 1, otherwise=0.
Per capita rooms	Continuous	Number of rooms divided by household size
Type of toilet	Dummy	If flush connected with sewerage or tank=1, otherwise=0.
Electricity connection	Dummy	If a household has an electricity connection=1, otherwise=0.

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[8] See e.g. Hentschel (2000), Cheema (2010)

Gas connection	Dummy	If a household has a gas connection=1, otherwise=0.
Main source of drinking water	Dummy	If tapped water or motor pump is the main source of drinking Water=1, otherwise=0.
Ownership of agriculture land	Dummy	If the household owns agriculture land =1, otherwise 0.

Durables

Air conditioner	Dummy	If the household owns an air conditioner=1, otherwise=0.
Air cooler	Dummy	If the household owns an air cooler or a fan=1, otherwise=0.
Car	Dummy	If the household owns a car=1, otherwise=0.
Cooking range	Dummy	If the household owns a cooking range=1, otherwise=0.
Motorcycle	Dummy	If the household owns a motorcycle=1, otherwise=0.
Personal computer	Dummy	If the household owns a personal computer=1, otherwise=0.
Refrigerator	Dummy	If the household owns a refrigerator=1, otherwise=0.
Sewing machine	Dummy	If the household owns a sewing machine=1, otherwise=0.
Television	Dummy	If the household owns a television give=1, otherwise=0.
Washing machine	Dummy	If the household owns a washing machine=1, otherwise=0.

A glance through these tables shows that the estimated regressions meet standard criteria of a good fit. All the variables are significant at 99% level of confidence. Considering the fact that we are dealing with the cross-section data here, the value of R^2 that is 0.6651 for urban and 0.5569 for the rural ares, is reasonably high for both the regression equations. It also compares favourably with the R^2 of similar equations estimated for other countries.[9]

The coefficients of the household size variables show that larger household size is associated with lower per capita consumption. This result is well established in the literature. The regression results also confirm another fairly standard result, which is a strong positive association between per capita consumption and educational attainment of the household members. .Coefficients of different educational levels indicate that as the educational level of any member of the household increases, the positive effect of education on the welfare of the household also grows in magnitude.

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[9] The value of R-square for similar regressions is 0.336 for Papua New Guinea (Gibson 2005), 0.56 for Brazil (Elbers 2008), 0.42 to 0.54 for Bulgaria (Ivaschenko 2004) and ranges from 0.24 to 0.64 for Madagascar (Mistiaen 2002).

Higher proportion of elderly people and women is associated with lower per capita household expenditure, whereas the proportion of young people has a positive sign. In our culture, women usually commit themselves to household activities and do not work for money. People aged 65years or more are often those who have retired from earning activities and are more likely to face health problem. This phenomenon is common in both rural and urban domains.

Table 4.1.2 Regression Results for Per-Adult Equivalent Consumption Expenditure in Urban Punjab HIES 2007-08

Dependent Variable	Per-adult equivalent consumption expenditure
R-Square	0.6651
Adjusted R-Square	0.6646
Regression Standard Error	0.3409

Variables	Coefficients	Std. Error	t-statistic	Significance
(Constant)	9.421	0.015	638.387	0.000
Household size1	0.469	0.014	32.459	0.000
Household size2	0.347	0.008	42.735	0.000
Household size3	0.180	0.006	28.683	0.000
Primary	0.027	0.010	2.626	0.009
Middle	0.064	0.011	6.036	0.000
Matric	0.112	0.010	11.357	0.000
F.A & higher	0.208	0.010	20.107	0.000
Elderly people proportion	-0.258	0.029	-8.779	0.000
Female proportion	-0.174	0.017	-10.067	0.000
Young people proportion	0.112	0.014	8.119	0.000
Per capita rooms	0.274	0.011	24.082	0.000
Ownership of agri. land	0.080	0.012	6.823	0.000
Domestic remittances	0.083	0.009	8.881	0.000
Foreign remittances	0.162	0.012	13.566	0.000
Type of toilet	0.069	0.008	8.857	0.000
Gas Connection	0.094	0.006	14.579	0.000
Television	0.093	0.007	12.756	0.000
Refrigerator	0.173	0.007	24.647	0.000
Air conditioner	0.280	0.011	26.526	0.000
Personal computer	0.213	0.008	25.438	0.000
Motorcycle	0.126	0.006	19.729	0.000
Car	0.375	0.012	32.512	0.000
Cooking range	0.243	0.014	17.497	0.000
Washing machine	0.053	0.006	8.306	0.000

Table 4.1.3 Regression Results for Per-Adult Equivalent Consumption Expenditure in Rural Punjab HIES 2007-08

Dependent Variable	Per-adult equivalent consumption expenditure
R-Square	0.55690
Adjusted R-Square	0.55644
Regression Standard Error	0.34386

Variables	Coefficients	Std. Error	t-statistic	Significance
(Constant)	9.060	0.013	700.253	0.000
Household size1	0.422	0.012	34.237	0.000
Household size2	0.322	0.007	46.986	0.000
Household size3	0.175	0.005	33.425	0.000
Primary	0.059	0.006	9.037	0.000
Middle	0.098	0.007	13.238	0.000
Matric	0.118	0.007	15.936	0.000
F.A & higher	0.224	0.009	24.483	0.000
proportion of Elderly people	-0.181	0.023	-7.905	0.000
Female proportion	-0.059	0.015	-4.000	0.000
Young people proportion	0.027	0.013	2.075	0.038
Per capita rooms	0.240	0.010	23.190	0.000
Ownership of Agri. Land	0.063	0.008	7.582	0.000
Domestic remittances	0.082	0.006	12.670	0.000
Foreign remittances	0.132	0.010	13.175	0.000
Main source of drinking water	0.063	0.005	12.221	0.000
Type of toilet	0.028	0.005	5.519	0.000
Gas connection	0.142	0.008	17.851	0.000
Electricity connection	0.108	0.014	7.745	0.000
Television	0.094	0.005	17.975	0.000
Refrigerator	0.141	0.006	21.883	0.000
Air cooler	0.091	0.013	7.081	0.000
Personal computer	0.221	0.013	17.099	0.000
Motorcycle	0.217	0.006	35.412	0.000
Car	0.534	0.014	38.437	0.000
Sewing machine	0.055	0.005	10.636	0.000
Washing machine	0.075	0.006	12.644	0.000

Higher per capita availability of rooms indicates higher standard of living of the household and is positively associated with the welfare of the household. Similarly, ownership of a piece of agriculture land also adds to the prosperity of a household, but this phenomenon is

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more relevant to the rural areas. Domestic and foreign remittances improve the economic wellbeing of a household and are expected to be associated with higher per capita consumption both in rural and urban areas.

Availability of safe drinking water, in addition to being an indicator of the overall wellbeing of the household, is also likely to result in lower incidence of disease. The positive sign of the variable for the main source of drinking water seems to point in this direction. The dummy variable for the type of toilet in the above regressions may also be interpreted in a similar way.

Gas and electricity connections are also important variables as they also reflect the capacity of the household for consuming energy resources and the ability to pay the bills and have a positive sign in the regressions reported above. The dummy variable for electricity could not be included in the regression for urban areas because most urban households had electricity connections so that this variable showed little variation across households.

Ownership of durables such as television, refrigerator, air cooler, air conditioner, sewing machine, washing machine, cooking range, motorcycle, car, and personal computer are a strong indicator of the level of wellbeing of a household. Coefficients of all the dummy variables for ownership of these assets by the households have a positive sign that is logical. Variables related to air conditioner and cooking range are not included in the regression for the rural areas as less than 3 per cent households were found to own these durables. [10]

4.2 Predicting poverty:

Once parameter estimates are obtained from above regressions using HIES 2007-08 data, the next step is to apply them to the corresponding variables in the MICS survey 2007–08 to

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[10] The results discussed above are fairly consistent with those reported by Cheema (2010)

obtain an imputed value for the log of per adult equivalent consumption expenditure for each household in this survey. The probability of a household being poor is then estimated by using equation 2.2 which is written as:

$$P_i = \Phi \left[\frac{Ln(\mu) - X_i^c \beta}{\sigma} \right]$$ (2.2)

where σ is the standard error of the regression, μ is the poverty line and Φ □is the cumulative distribution function of the normal density function. [11]

Finally, the incidence of poverty as the mean of the household specific estimates for the population in a given division, district and tehsil is calculated by using equation (2.3) as repeated below:

$$P_r = \frac{1}{N} \Sigma \Phi \left[\frac{Ln(\mu) - X^c \beta}{\sigma} \right]$$ (2.3)

Where N is the number of households in region r and P_r is the expected value of the poverty rate for the region. These figures are used to rank different regions in the order of poverty, with the poorest region receiving the rank 1. The results of this exercise are discussed in detail in the following chapters. Nonetheless, some aggregate results are presented in the next section to check the robustness of the model.

4.3 Checking the Robustness of the Model:

In order to verify the performance of the model, first the actual incidence of poverty computed from HIES 2007–08 is compared with the predicted incidence of poverty for the same dataset. As is evident from Table 4.3.1, the headcount ratios obtained from actual and predicted

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[11] Since the official poverty line for the year 2007-08 is not available, the official poverty line for the year 2005-06 of Rs.948.47 was inflated to obtain the poverty line for this study. The new poverty line for the year 2007-08 hence obtained is at Rs. 1144.88

figures are fairly close both in the rural and urban areas. In case of rural Punjab, the difference between the actual and predicted headcount ratios is less than 1 percent while in case of urban Punjab it is a bit higher than 1 percent. The difference between the overall actual and predicted headcount ratios is also less than 1 percent. This is a testimony to the excellent predictive power of the model. The headcount ratios obtained from MICS 2007-08 dataset are also not much off the mark. This shows that the mapping procedure used in this study has worked fairly well.

Table 4.3.1 Actual and Predicted Headcount Ratios in the Punjab				
Region	Actual Headcount Ratio		Predicted Headcount Ratio	
	HIES 2007-08		HIES 2007-08	MICS 2007-08
Rural Punjab	27.50		28.10	26.88
Urban Punjab	6.40		7.74	8.25
All Punjab	18.80		19.69	20.48

Chapter 5

Division, District and Tehsil Level Poverty Estimates

This chapter presents division, district and tehsil level poverty estimates which were obtained by using equation (2.3). In the Punjab, the largest administrative unit is division, followed by district and tehsil. There are nine divisions in the Punjab, namely, Rawalpindi, Lahore, Faisalabad, Gujranwala, Sargodha, Sahiwal, Multan, Bahawalpur and D G Khan. The divisions are further sub-divided into 35 districts and 143 tehsils. The chapter also attempts to provide a general profile for the districts and divisions along with their poverty ranks. The objective here is to develop a general picture of the districts and divisions in terms of their salient geographical and socioeconomic features. A more detailed analysis of the various characteristics of these units and their association with the poverty rank is left for the next chapter.

5.1 Division Level Poverty Estimates:

Table 5.1.1 presents ranks of divisions by level of poverty. Highest levels of poverty are found in DG Khan followed by Bahawalpur and Multan where the headcount ratios are 31.4, 29.13 and 23.46 percent respectively. Lowest poverty rates are observed in Rawalpindi, Gujranwala and Lahore Divisions with headcount ratios of 10.8, 12.87 and 15.79 percent respectively. This table also shows a huge urban-rural divide in poverty levels. Rural areas are far poorer as compared to urban areas. It is a general pattern and can be seen throughout the province. The poverty gap between rural and urban areas is wider in the poorest divisions.

Next table shows poverty profile of the divisions. It reports population, area and population density of the divisions. To get some idea of the level of urbanization of the divisions,

percentage of population living in the urban areas has also been calculated. Percentage share of the population of the division in the province reflects the relative size of the division.

Table 5.1.1 Poverty Ranking and Headcount Ratio of the Divisions

Rank	Division	All Areas	Urban	Rural
1 (poorest)	D.G.Khan	31.47	12.43	38.13
2	Bhawalpur	29.13	11.77	35.02
3	Multan	23.46	09.34	30.76
4	Sahiwal	23.18	08.85	28.10
5	Sargodha	21.80	11.18	26.28
6	Faisalabad	19.04	08.40	25.44
7	Lahore	15.79	06.27	23.40
8	Gujranwala	12.87	07.34	16.28
9	Rawalpindi	10.81	03.77	15.81

Table 5.1.2 Population Profile of the Divisions

Rank	Division	Total Area (Sq. K. M)	Total Population (thousands)	Population Density	% of Punjab Population	% Urban Population
1	D.G.Khan	38780	6504	168	8.83	13.47
2	Bhawalpur	45588	7635	167	10.37	21.94
3	Multan	15211	8447	555	11.47	25.86
4	Sahiwal	10302	5362	520	7.28	18.63
5	Sargodha	26358	5680	215	7.72	24.05
6	Faisalabad	17917	9886	552	13.43	33.26
7	Lahore	11729	12016	1024	16.32	55.11
8	Gujranwala	17207	11431	664	15.53	31.13

9	Rawalpindi	22253	6660	299	9.05	36.79
	Punjab	205345	73621	359	100.00	31.3

Source: Punjab Development Statistics 2009, Issued by Bureau of Statistics, Statistical Division, Govt. of Punjab and based on 1998 census report.

The two poorest divisions of Punjab have least population densities among all divisions whereas two out of the three least poor divisions have very large population densities. Rawalpindi is an exception, being the least poor division of the province but having relatively low population density. The least poor divisions are far more urbanized compared to the poorest ones.

Geographically, Punjab is divided into four zones (see Map 1). According to this geographical zoning scheme, the three poorest divisions are located in the western and southern Punjab, whereas the three least poor divisions fall in the northern and central Punjab.

High level of poverty in western and southern Punjab is a well-known phenomenon. Geology of these areas indicates mostly dry, hilly and sandy landscape along with fertile planes famous for cultivation of cotton. In the mountainous and desert parts of this region cultivation of crops and human survival are difficult and population density is normally very low. Illiteracy and low level of urbanization are also common. Only a few well known universities are located in this region. This area is also away from major hubs of industrialization in the country.

On the other hand, the least poor division of Rawalpindi in the north is a famous garrison area and is located near the federal capital Islamabad. Its large part is hilly and difficult to live. A significant proportion of people are engaged in government and private service. Military service is a common profession of the people living in this division and a major source of employment. Literacy rate is high. A large number of people also work abroad. Their remittances play a very important role in the wellbeing of the local people (MICS 2009).

Gujranwala and Lahore divisions are located in the central Punjab. Fertile land, high quality ground water, and well-developed irrigation system make agriculture a highly profitable profession in these divisions. Central Punjab is also one of the Industrial hubs of the country. Gujranwala division is famous for its engineering cottage industry. Impact of cottage industry is very important for the economic life of the people as it is labor intensive and provides employment to a large number of people.

Some further details of the geographical pattern of poverty emerge as we look at the poverty ranking and location of the divisions (Map 5.1.1). Three poorest divisions, DG Khan, Bahawalpur and Multan are located at the bottom of the map toward south of the Punjab. At the top toward north, we find the three least poor Divisions, Rawalpindi, Gujranwala and Lahore. Faisalabad, Sargodha and Sahiwal appear to be sandwiched between the two extremes. Hence poverty steadily increases as we move from north to south, from the mountains of northern Punjab through the plains of central Punjab, toward the deserts of southern Punjab.

It is important to note that each division comprises a number of districts while each district consists of several tehsils. Hence a division is a large territory consisting of a number of smaller heterogeneous units. This aggregation conceals a number of facts that can only be understood if the phenomenon of poverty is studied at lower level of disaggregation. The following section looks at the level of poverty across the districts.

Map 5.1.1 **Poverty Ranking and Geographical Location of the Divisions of Punjab**
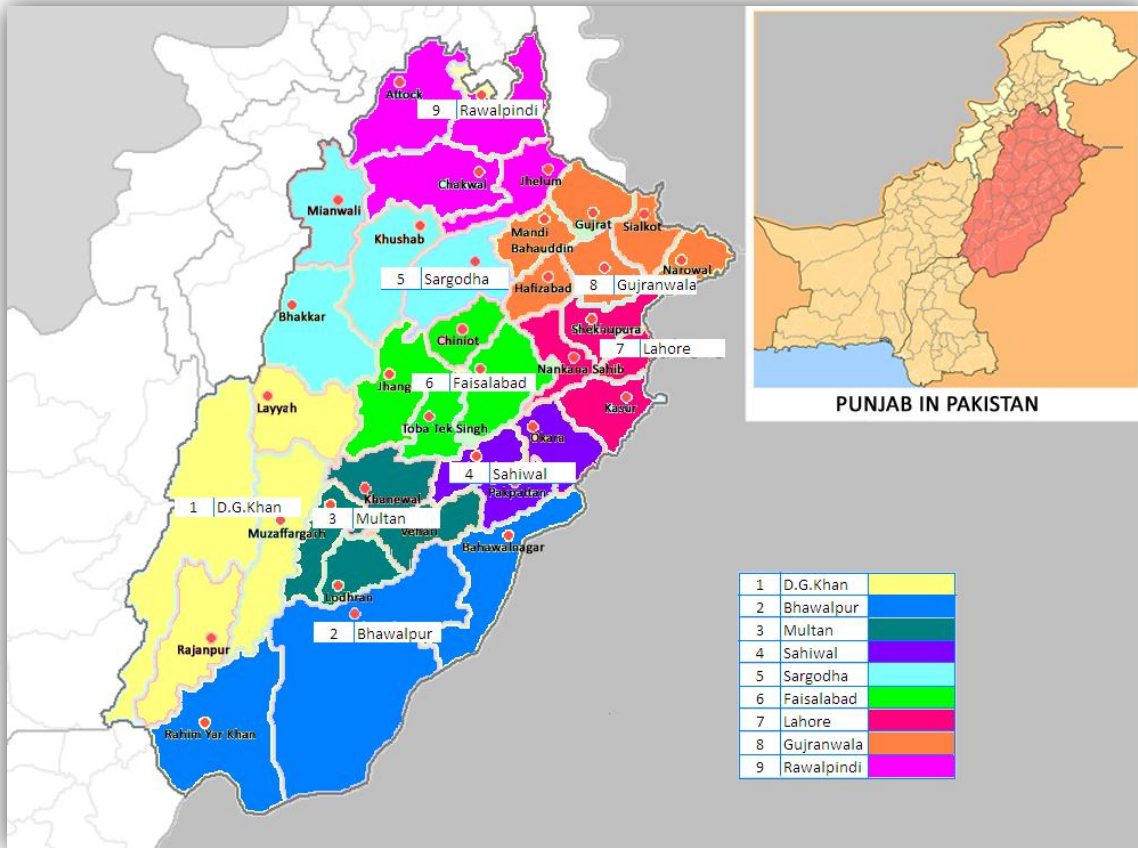
5.2 Poverty across Districts:

Districts are very important units in the administrative setup of the provinces. Local governments operate at the district level and take a number of important decisions that affect lives of ordinary people. Steps taken to implement the devolution plan of the Musharaf regime have transferred more decision making power to the district and their stake in the wellbeing of their constituents and ability to improve it has increased. Therefore study of poverty at district level is likely to offer viable policy options and better opportunities for policy intervention to the local governments.

The district level poverty estimates reported in Table 5.2.1 show that the highest poverty rate is observed in Muzaffargarh where head count ratio is 33.36. Rajan Pur comes next with headcount ratio 33.31 while. RY Khan occupies the third Position with a headcount ratio of 30.98. There are 15 districts that have an overall head count ratio that is less than the headcount ratio of the province.

The lowest poverty rate is found in Lahore where the headcount ratio is 5.9. Next is Rawalpindi with a headcount ratio of 8.21 followed by Gujrat which has a headcount ratio of 9.45. Sialkot, Gujrat, Rawalpindi and Lahore are the only four districts that have single digit headcount ratio. Table 4.2.1 also reports poverty rank and headcount rates for the rural and urban areas separately. These figures reinforce the findings at the division level that poverty is predominantly a rural phenomenon in the Punjab and rural-urban divide is more pronounced in the poorer districts.

Table 5.2.1. Poverty Ranking and Headcount Ratios of the Districts				
Rank	**Districts**	**All District**	**Urban**	**Rural**
1	MuzaffarGarh	33.36	13.75	39.18
2	RajanPur	33.31	15.90	40.51
3	RY Khan	30.98	09.00	37.13
4	Bahawalpur	29.96	11.76	36.29
5	LayyAh	29.37	10.76	36.47
6	Jhang	28.87	11.34	35.58
7	DG Khan	28.02	07.38	35.07
8	Khanewal	26.79	11.10	31.39
9	Bahawalnagar	26.47	13.95	31.46
10	Lodhran	25.12	12.73	31.72
11	Bhakkar	25.01	12.45	31.30
12	Vehari	24.55	11.38	28.33
13	Pakpattan	23.96	08.27	30.90
14	Okara	22.96	09.44	27.38

15	Sahiwal	22.89	08.50	27.12
16	Khushab	22.79	12.42	27.82
17	Mianwali	21.36	12.14	25.61
18	Kasur	21.14	11.55	25.69
19	Nankana Sahib	21.13	09.20	24.61
20	Sargodha	19.81	09.16	23.50
21	Narowal	19.68	11.18	22.98
22	Hafizabad	19.67	12.00	23.49
23	Sheikhupura	18.85	08.07	23.08
24	Multan	18.17	06.70	31.91
25	TT Singh	17.28	09.24	20.37
26	Mandi Bahauddin	16.11	07.50	19.70
27	Faisalabad	14.58	07.30	20.89
28	Attock	14.37	04.71	18.70
29	Chakwal	11.45	03.95	14.36
30	Jhelum	11.29	04.39	14.70
31	Gujranwala	10.53	07.09	14.97
32	Sialkot	09.57	05.11	11.64
33	Gujrat	09.45	04.47	11.05
34	Rawalpindi	08.21	03.28	14.60
35	Lahore	05.94	03.73	15.49

Table 5.2.2 presents area, population, population density and percentage of population living in the urban areas of these districts. It also reports the share of each district in the overall population of the Punjab, an indicator of the relative size of the district. About half the population of Punjab lives in the districts where headcount ratio is higher than the provincial headcount ratio. The share of ten poorest districts in overall population of the province is 27.46. These districts cover nearly 49 percent area of the province which implies that population density in these districts is very low.

On the other hand, population density of the least poor districts is generally very high. Population density of Lahore, the richest district in the Punjab is 3566 person per square km while this magnitude is just 320 for Muzaffargarh, the poorest district of the province. Within the ten least poor districts of the Punjab, the population density in the districts of Northern

Punjab is generally low, Rawalpindi being an exception. The districts of central Punjab falling in this category have much higher population density.

Rank	Districts	Total Area	Total Population	Population Density	% of Punjab Population	% Urban Population
	Table 5.2.2		**Population Profile of the Districts**			
1	Muzzaffargarh	8249	2636	320	3.58	13
2	Rajanpur	12318	1104	90	1.50	14.6
3	RY Khan	11880	3141	264	4.27	19.6
4	Bahawalpur	24830	2433	98	3.30	27.3
5	Layyah	6291	1121	178	1.52	12.8
6	Jhang	8809	2834	322	3.85	23.4
7	DG Khan	11922	1643	138	2.23	13.9
8	Khanewal	4349	2068	476	2.81	17.5
9	Bhawalnagar	8878	2061	232	2.80	19.1
10	Lodhran	2778	1172	422	1.59	14.4
11	Bhakkar	8153	1051	129	1.43	16
12	Vehari	4364	2090	479	2.84	16
13	Pakpattan	2724	1287	472	1.75	14.2
14	Oakara	4377	2232	510	3.03	23
15	Sahiwal	3201	1843	576	2.50	16.4
16	Khushab	6511	906	139	1.23	25.3
17	Mianwali	5840	1057	181	1.44	20.8
18	Kasur	3995	2376	595	3.23	22.8
19	Nankana Sahib	2720	1273	468	1.73	14.6
20	Sargodha	5854	2666	455	3.62	28.1
21	Narowal	2337	1265	541	1.72	12.2
22	Hafizabad	2367	833	352	1.13	27.4
23	Sheikhupura	3242	2048	632	2.78	32.4
24	Multan	3720	3117	838	4.23	42.2
25	TT Singh	3252	1622	499	2.20	18.9
26	M B Din	2673	1161	434	1.58	15.2
27	Faisalabad	5856	5430	927	7.38	42.7
28	Attock	6857	1275	186	1.73	21.3
29	Chakwal	6524	1084	166	1.47	12.2
30	Jhelum	3587	937	261	1.27	27.6

31	Gujranwala	3622	3401	939	4.62	50.5
32	Sialkot	3016	2723	903	3.70	26.2
33	Gujrat	3192	2048	642	2.78	27.7
34	Rawalpindi	5285	3364	637	4.57	53.2
35	Lahore	1772	6319	3566	8.58	82.4

Source: Punjab Development Statistics 2009, Issued by Bureau of Statistics, Govt. of Punjab and based on 1998 census report.

The geographical distribution of poverty at district level is shown in Map 5.2.1. The districts of the Punjab can be divided into for geographical regions. North Punjab consists of the districts of Rawalpindi, Attock, Chakwal and Jhelum. Faisalabad, Jhang, TobaTak Singh, Nankana Sahib, Gujranwala, Gujrat, Hafizabad, Mandi Bahauddin, Narowal, Sialkot, Kasur, Okara, Sheikhupura, Pakpattan, Sahiwal, Sargodha and Lahore constitute central Punjab. The districts of southern Punjab are Bahawalpur, Bahawalnagar, Rahimyar Khan, Multan, Khanewal, Lodhran and Vehari, D.G. Khan, Layyah, Muzaffargarh, Bhakkar, Khushab,Rajanpur and Mianwali are located in the western Punjab.[12]

In addition to showing poverty rank of each district, Map 4.2.1 highlights 10 poorest and least poor districts in the province. This map further refines the geographical pattern of poverty discovered at division level with the help of Map 4.1.2. Two exceptions to the general observation made at division level that the poorest areas of the province are located in the south are clearly visible in Map 4.2.1. Multan is located in the southern Punjab and is surrounded by some of the poorest districts but being the 12th least poor district, it is closer in rank to the least poor districts. The second exception is the district of Jhang. Geographically, it is a part of central Punjab and is located in the vicinity of some relatively less poor districts, Nonetheless, Jhang ranks 6th among the poorest districts of the province.

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[12] See Wilder, 1999 and Haq, 2010

The map clearly shows that Western and Southern Punjab is the poorest region of the province. Cholistan and Thal Deserts are also located in these regions, which make living conditions very harsh. Sulaiman Range consisting of dry and barren mountains is also located in the Western Punjab. Most of the land is these two regions is uninhabited though it comprises a large area of the province. These factors at least partly explain low population density of these regions. Eight of the ten richest districts of the province are located in the north. The remaining two district of Faisalabad and Lahore are situated in the central Punjab. The level of urbanization is also very low in the southern and western regions as compare to Central and Northern Punjab.

Map 5.2.1 Poverty Ranking and Geographical Location of the Districts of Punjab
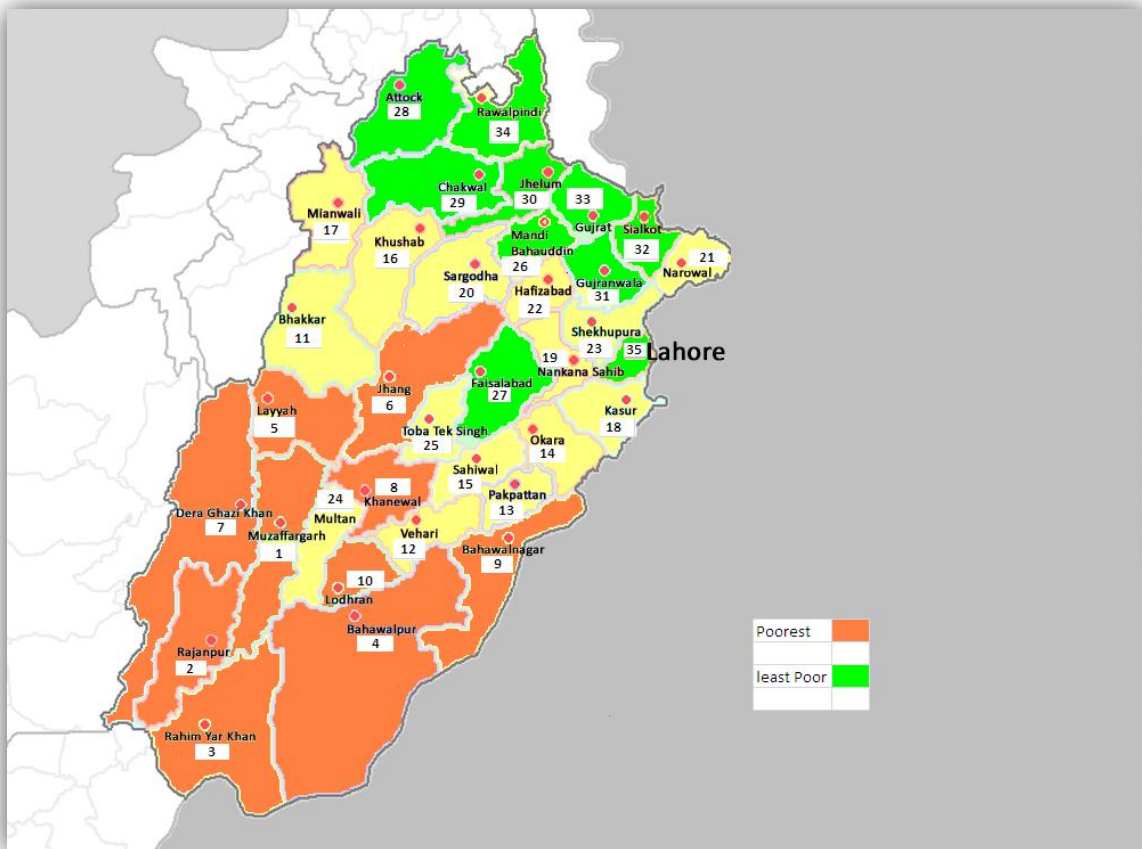
As noted earlier, poverty ranking of a division is likely to hide a lot of heterogeneity across its districts. To see if this is actually the case it would be instructive to look at the poverty ranking of districts within division. The following table provides this information.

The table shows that poverty ranking of the districts varies considerably within most of the divisions, though in a few divisions such as Rawalpindi and Sahiwal, poverty is distributed fairly evenly. In the Faisalabad division, the district of Jhang is the sixth poorest district of the province while other two districts TT Singh and Faisalabad rank 25th and 27th respectively in terms of poverty. Similarly, in Lahore Division, Lahore itself is in a significantly better position in terms of poverty as compare to other districts of the division. This situation demands further investigation.

Table 5.2.3. Poverty Ranking of the Districts by Division			
Division Ranks	**Division**	**District Ranks**	**District**
1	D.G.Khan	1	Muzzaffargarh
		2	Rajanpur
		5	Layyah
		7	DG Khan
2	Bhawalpur	3	RY Khan
		4	Bahawalpur
		9	Bhawalnagar
3	Multan	8	Khanewal
		10	Lodhran
		12	Vehari
		24	Multan
4	Sahiwal	13	Pakpattan
		14	Oakara

		15	Sahiwal
5	Sargodha	11	Bhakkar
		16	Khushab
		17	Mianwali
		20	Sargodha
6	Faisalabad	6	Jhang
		25	TT Singh
		27	Faisalabad
7	Lahore	18	Kasur
		19	Nankana Sahib
		23	Sheikhupura
		35	Lahore
8	Gujranwala	21	Narowal
		22	Hafizabad
		26	Mandi Bahauddin
		31	Gujranwala
		32	Sialkot
		33	Gujrat
9	Rawalpindi	28	Attock
		29	Chakwal
		30	Jhelum
		34	Rawalpindi

This variation in the level of poverty within the divisions demands that the measures to alleviate poverty and to uplift the social wellbeing of the people must be targeted at the district level at least. If funds for this purpose are spent at division level without regard to the heterogeneity within the division, a large portion of the funds is likely to slip into the hands of the non-poor population, while the deserving poor segments of the society will be neglected. To further refine targeting of the poverty reduction measures, it would be advisable to look at the

distribution of poverty at even smaller geographical level of tehsils that comprise districts. The next section studies poverty at tehsil level.

5.3 Poverty at Tehsil Level:

Districts headcount ratios provide good information about the level of poverty in a region. However, district itself is a large geographical unit for measuring poverty so that uneven distribution of poverty within a district is quite possible. Therefore it is a worthwhile exercise to calculate poverty at sub district or *tehsil* level that would lead us to a better understanding of poverty. The results of this exercise are presented in Table 5.3.1.

An interesting finding of the tehsil level analysis is that the tehsil in which district headquarter is located, is generally one of the least poor tehsils of the district. In large districts like Lahore, Faisalabad and Rawalpindi this effect is hard to detect since district headquarters offices are scattered in different tehsils. However, small and medium size districts of the Punjab bear testimony to this fact. Headcount ratios indicate that the tehsils of Rajanpur, DG Khan, Bhawalpur, Okara, Sahiwal, Bhakkar, Khushab, Mianwali, Jhang, TT Singh, Kasur, Hafizabad, Mandi Bahauddin, Gujrat, Sialkot, Attock, Chakwal and Jehlum, which are district headquarters too, are the least poor tehsils of the district. One may think of at least two possible reasons for this observed fact. One reason appears to be that normally well established and relatively prosperous tehsils are selected as district headquarters. The other reason is that top bureaucracy and elite of the district stay in the district headquarters and attract more resources toward this tehsil. This conjecture is supported by the finding of a recent study (Sikandar 2010) that as the distance of a district from provincial headquarter (Lahore) increases, access to basic services like education, health, telephone and gas decreases. Existence of such a situation is an indicator of the

uneven distribution of resources across tehsils of a district and points to the need for their even and need-based distribution.

Some of the conclusions reached from the district level poverty estimates are generally further reinforced by the figures of tehsil level headcount ratio. The rural-urban divide is more evident at tehsil level. In general, poverty is centered in rural areas whereas urban areas are far less poor. Top seven least poor tehsils of the Punjab are those that are totally urbanized and have no rural population. On the other hand, Choubara tehsil of Layyah district, the second poorest tehsil in the province has no urban population.

Table 5.3.1. Poverty Ranking and Headcount Ratios of Tehsils
Rank	Tehsils	Over all Headcount	Rural	Urban
1	Rojhan	43.59	46.98	24.02
2	Choubara	40.86	40.86	00.00
3	Ahmadpur East	39.28	46.10	11.43
4	Jatoi	34.71	39.28	18.87
5	Ali pur	33.77	42.55	09.74
6	Khairpur Tamewali	33.67	40.60	14.25
7	Muzaffargarh	33.27	38.64	12.88
8	Bhawalpur Sadar	33.07	34.21	15.38
9	Minchinabad	32.99	37.96	14.39
10	Ahmadpur Sial	32.92	36.25	18.17
11	RY Khan	32.76	41.26	06.48
12	Liaqatpur	32.26	35.47	11.55
13	Sadiqabad	32.05	39.45	8.93
14	Jampur	31.76	38.51	15.17
15	Shorkot	31.42	37.75	10.88
16	Jalalpur Pirwala Town	31.19	37.90	16.84
17	Kot Addu	30.54	37.13	13.40
18	Taunsa	30.26	33.75	11.52
19	Bahawalnagar	30.19	37.38	14.60
20	Rajanpur	30.11	38.80	14.95
21	Kabirwala	29.84	34.40	10.72

22	Hasilpur	29.17	35.46	13.42
23	Kehror Pacca	28.82	34.87	14.67
24	Kotli Sattian Town	28.69	28.69	00.00
25	Fort Abbas	28.65	31.92	17.65
26	Noorpur Thal	28.40	31.09	15.81
27	Shujabad Town	28.07	37.19	08.07
28	Mankera	27.80	29.59	13.68
29	Chinniot	27.44	34.75	10.30
30	Mian Channu	27.31	30.81	09.61
31	Jhang	27.06	34.82	10.57
32	DG Khan	27.00	35.79	06.38
33	Darya Khan	26.76	35.52	15.35
34	Mailsi	26.69	29.25	14.65
35	Depalpur	26.62	31.42	12.75
36	Layyah	26.45	38.51	10.16
37	Khanpur	26.22	31.16	10.89
38	Vehari	25.97	29.77	09.39
39	Khanewal	25.93	30.50	14.51
40	Pakpattan	25.34	32.85	07.71
41	Pindi Bhattian	25.15	29.87	14.93
42	Kallur Kot	25.13	29.56	16.06
43	Chichawatni	24.25	27.84	07.52
44	Essa Khel	23.54	26.68	15.40
45	Safdarabad	23.47	25.95	14.24
46	Karor Lal Easan	23.44	29.02	11.73
47	Chunian	23.33	25.64	13.63
48	Piplan	23.13	27.81	13.61
49	Lodhran	22.98	33.08	10.55
50	Chishtian	22.95	27.20	13.29
51	Nankana Sahib	22.88	27.97	07.53
52	Tandlianwala Town	22.66	27.62	12.46
53	Dunya Pur	22.62	25.92	14.32
54	Arifwala	22.56	28.87	08.80
55	Shahpur	22.46	23.57	16.84
56	Kot Momin	22.31	25.93	13.22
57	Bhakkar	22.17	31.22	08.24
58	Sahiwal	21.79	26.47	09.02
59	Yazman	21.43	24.29	11.76
60	Pattoki	21.31	25.32	09.11
61	Sillanwali	21.31	22.99	11.43

62	Burewala	21.26	25.82	10.64
63	Shangla Hill	21.21	24.42	10.09
64	Sahiwal	20.94	24.70	11.01
65	Renala Khurd	20.84	23.87	07.30
66	Jahanian	20.61	26.82	07.39
67	Narowal	20.23	23.91	12.98
68	Ferozwala	20.21	23.89	11.32
69	Okara	20.11	25.12	06.76
70	Kamalia	20.07	24.82	12.34
71	Kasur	19.83	25.99	11.78
72	Jaranwala Town	19.82	22.95	08.42
73	Sheikhupura	19.48	23.87	07.54
74	Haroonabad	19.28	22.89	11.73
75	Shakargarh	19.10	22.15	08.26
76	Khushab	18.78	24.42	11.44
77	Phalia	18.32	21.64	09.39
78	Sohawa	18.27	20.40	08.39
79	Sargodha	18.21	23.53	04.57
80	Mianwali	18.08	22.85	08.67
81	Gojra	17.84	22.58	08.49
82	Muridke	17.73	21.89	08.17
83	Boson Town	17.70	30.58	05.51
84	Pindigheb	17.44	23.04	03.50
85	Sharaqpur Sharif	17.35	21.74	05.90
86	Jand	17.24	21.14	04.90
87	Bhalwal	16.2	20.83	07.77
88	Shah kot	16.17	18.72	06.42
89	Malakwal	16.16	21.59	05.72
90	Hasanabdal	15.97	18.89	06.83
91	Bahawalpur City	15.96	28.91	09.84
92	Hafizabad	15.72	18.70	10.08
93	Sumundari Town	15.68	18.17	09.59
94	Sambrial	15.62	15.62	00.00
95	Chak Jhumra Town	15.32	21.09	08.37
96	Nowshera Virkan Town	15.17	17.40	10.57
97	Choa Saidan Shah	14.89	16.50	06.43
98	TT Singh	14.84	16.73	05.00
99	Sher Shah Town	14.79	27.97	06.52
100	Fateh Jang	14.69	18.66	03.11
101	Kahuta Town	14.64	19.78	02.78

102	Talagang	14.19	16.61	04.50
103	Mandi Bahauddin	13.48	16.02	07.08
104	Pind Dadan Khan	12.86	15.16	04.77
105	Mumtazabad Town	12.69	27.41	06.12
106	Wahga Town	12.66	14.41	06.62
107	Kamoke Town	12.50	14.50	09.90
108	Shah Rukn-e-Alam Town	12.47	27.15	04.44
109	Muree Town	12.30	16.18	06.40
110	Hazro	11.88	14.81	06.99
111	Lyallpur Town	11.70	16.54	05.54
112	Kallar Sayaddan Town	11.04	11.04	00.00
113	Daska	10.92	13.94	04.98
114	Jinnah Town	10.74	20.74	04.23
115	Gujjar Khan Town	10.55	12.75	05.98
116	Attock	10.44	16.41	02.39
117	Wazirabad Town	10.33	12.22	06.86
118	Nishtar Town	10.33	17.23	05.21
119	Khiali Shahpur Town	10.25	15.27	08.26
120	Potohar Town	10.20	10.20	00.00
121	Madina Town	10.16	18.45	06.60
122	Sara-e-Alamgir	10.09	11.58	05.88
123	Kharian	10.02	11.42	03.38
124	Iqbal Town	09.90	15.48	07.52
125	Qila Didar Singh Town	09.53	15.9	07.15
126	Gujrat	08.81	10.55	04.33
127	Allama Iqbal Town(L)	08.07	16.31	05.02
128	Aroop Town	07.98	14.23	04.82
129	Nandipur Town	07.96	16.21	03.81
130	Dina	07.87	09.85	05.18
131	Chakwal	07.74	10.76	03.18
132	Pasrur	07.47	00.00	07.47
133	Sialkot	06.65	07.94	03.34
134	Taxila Town	05.80	10.75	03.89
135	Jhelum	05.70	09.45	02.09
136	Aziz Bhatti Town	05.23	15.77	03.52
137	Ravi Town	05.20	00.00	05.20
138	Data Ganj Bukhsh Town	04.06	00.00	04.06
139	Shalimar Town	03.65	00.00	03.65
140	Lahore Cantt	03.07	00.00	03.07

141	Rawal Town	02.54	00.00	02.54
142	Gulberg Town	02.25	00.00	02.25
143	Samanabad Town	00.94	00.00	00.94

Table 5.3.2 which gives poverty ranking and headcount ratios of the tehsils along with the ranking of the districts they belong to, reinforces some more conclusions reached earlier with the help of division and district level poverty estimates. One such conclusion is that poverty decreases as we move from south toward the north of Punjab. The tehsils of the southern districts are among the poorest in the province. Tehsil level analysis also shows that there is a great deal of variation in poverty within districts. A less poor district may have some tehsils that are very poor whereas some tehsils of the poorest districts may be relatively better off in terms of poverty. To cite some examples of this occurrence, in Muzaffargarh, the poorest district of Punjab, Kot Addu tehsil is much less poor as compared to the tehsils of Jatoi and Ali pur. Similarly in the Rajanpur district, tehsils Rajanpur and Jampur are in a much better position as compare to Rojhan, the poorest tehsil of the Punjab. Same situation is seen in Layyah district where Choubara is at number 2 in poverty ranking of tehsils while Karor Lal Easan is at number 46. Poverty rate in Choubara is 40.86 while in Karor Lal Easan it is 23.44. In Bhawalnagar, the tehsils of Chistian and Haroonabad are at number 50 and 74 respectively and are in a better condition with respect to poverty as compare to Minchinabad, Bhawalnagar and Fort Abbas tehsils of the district, which are at number 9, 19 and 25 respectively in the overall ranking of the tehsils. Even in the prosperous district of Multan in the south, Jalalpur Pirwala Town is at number 16 in the overall poverty ranking of the tehsils while Shah Rukn-e-Alam Town is at number 108.

A classical example of extreme variation in poverty ranking is Bhawalpur district which is the 4th poorest district of Punjab. However, when poverty within the district is analyzed

on the basis of tehsil headcount ratios, an interesting situation appears. At one extreme Ahmadpur East is at number 3, Khairpur Tamewali is at number 6, Bhawalpur Sadar at 8 and Hasilpur is at number 22 in terms of poverty ranking. On the other extreme Bhawalpur City is at position 91 and Yazam is at 59. These two tehsils are in much better position as compare to the other tehsils of the district. Overall headcount ratio in Ahmadpur East is 39.28 while it is just 15.96 in Bhawalpur City.

Variation in the level of poverty is not limited to the poor southern divisions. This phenomenon can also he observed even in the affluent central Punjab though the degree of variation is often not so severe. Still, a case of wide variation of poverty can be observed in Faisalabad district located in central Punjab, where Tandlianwala Town is at number 52 with a poverty rate of 22.66 while Iqbal Town is standing at the 124th position with an overall poverty rate of just 9.90.

Table 5.3.2. Poverty Ranking and Headcount Ratio of the Tehsils by Districts

Ranks	District	Ranks	Tehsils	All areas	Rural	Urban
1	Muzzaffargarh	4	Jatoi	34.71	39.28	18.87
		5	Ali pur	33.77	42.55	09.74
		7	Muzaffargarh	33.27	38.64	12.88
		17	Kot Addu	30.54	37.13	13.40
2	Rajanpur	1	Rojhan	43.59	46.98	24.02
		14	Jampur	31.76	38.51	15.17
		20	Rajanpur	30.11	38.80	14.95
3	RY Khan	11	RY Khan	32.76	41.26	06.48
		12	Liaqatpur	32.26	35.47	11.55
		13	Sadiqabad	32.05	39.45	08.93
		37	Khanpur	26.22	31.16	10.89

4	Bahawalpur	3	Ahmadpur East	39.28	46.10	11.43
		6	Khairpur Tamewali	33.67	40.60	14.25
		8	Bhawalpur Sadar	33.07	34.21	15.38
		22	Hasilpur	29.17	35.46	13.42
		59	Yazman	21.43	24.29	11.76
		91	Bahawalpur City	15.96	28.91	09.84
5	Layyah	2	Choubara	40.86	40.86	00.00
		36	Layyah	26.45	38.51	10.16
		46	Karor Lal Easan	23.44	29.02	11.73
6	Jhang	10	Ahmadpur Sial	32.92	36.25	18.17
		15	Shorkot	31.42	37.75	10.88
		29	Chinniot	27.44	34.75	10.30
		31	Jhang	27.06	34.82	10.57
7	DG Khan	18	Taunsa	30.26	33.75	11.52
		32	DG Khan	27.00	35.79	06.38
8	Khanewal	21	Kabirwala	29.84	34.40	10.72
		30	Mian Channu	27.31	30.81	09.61
		39	Khanewal	25.93	30.50	14.51
		66	Jahanian	20.61	26.82	07.39
9	Bhawalnagar	9	Minchinabad	32.99	37.96	14.39
		19	Bahawalnagar	30.19	37.38	14.60
		25	Fort Abbas	28.65	31.92	17.65
		50	Chishtian	22.95	27.20	13.29
		74	Haroonabad	19.28	22.89	11.73
10	Lodhran	23	Kehror Pacca	28.82	34.87	14.67
		49	Lodhran	22.98	33.08	10.55
		53	Dunya Pur	22.62	25.92	14.32
11	Bhakkar	28	Mankera	27.80	29.59	13.68
		33	Darya Khan	26.76	35.52	15.35
		42	Kallur Kot	25.13	29.56	16.06
		57	Bhakkar	22.17	31.22	08.24
12	Vehari	34	Mailsi	26.69	29.25	14.65

		38	Vehari	25.97	29.77	09.39
		62	Burewala	21.26	25.82	10.64
13	Pakpattan	40	Pakpattan	25.34	32.85	07.71
		54	Arifwala	22.56	28.87	08.80
14	Oakara	35	Depalpur	26.62	31.42	12.75
		65	Renala Khurd	20.84	23.87	07.30
		69	Okara	20.11	25.12	06.76
15	Sahiwal	43	Chichawatni	24.25	27.84	07.52
		58	Sahiwal	21.79	26.47	09.02
16	Khushab	26	Noorpur Thal	28.40	31.09	15.81
		76	Khushab	18.78	24.42	11.44
17	Mianwali	44	Essa Khel	23.54	26.68	15.40
		48	Piplan	23.13	27.81	13.61
		80	Mianwali	18.08	22.85	08.67
18	Kasur	47	Chunian	23.33	25.64	13.63
		60	Pattoki	21.31	25.32	09.11
		71	Kasur	19.83	25.99	11.78
19	Nankana Sahib	45	Safdarabad	23.47	25.95	14.24
		51	Nankana Sahib	22.88	27.97	07.53
		63	Shangla Hill	21.21	24.42	10.09
		88	Shah kot	16.17	18.72	06.42
20	Sargodha	55	Shahpur	22.46	23.57	16.84
		56	Kot Momin	22.31	25.93	13.22
		61	Sillanwali	21.31	22.99	11.43
		64	Sahiwal	20.94	24.70	11.01
		79	Sargodha	18.21	23.53	04.57
		87	Bhalwal	16.20	20.83	07.77
21	Narowal	67	Narowal	20.23	23.91	12.98
		75	Shakargarh	19.10	22.15	08.26
22	Hafizabad	41	Pindi Bhattian	25.15	29.87	14.93

		92	Hafizabad	15.72	18.70	10.08
23	Sheikhupura	68	Ferozwala	20.21	23.89	11.32
		73	Sheikhupura	19.48	23.87	07.54
		82	Muridke	17.73	21.89	08.17
		85	Sharaqpur Sharif	17.35	21.74	05.90
24	Multan	16	Jalalpur Pirwala Town	31.19	37.90	16.84
		27	Shujabad Town	28.07	37.19	08.07
		83	Boson Town	17.70	30.58	05.51
		99	Sher Shah Town	14.79	27.97	06.52
		105	Mumtazabad Town	12.69	27.41	06.12
		108	Shah Rukn-e-Alam Town	12.47	27.15	04.44
25	TT Singh	70	Kamalia	20.07	24.82	12.34
		81	Gojra	17.84	22.58	08.49
		98	TT Singh	14.84	16.73	05.00
26	Mandi Bahauddin	77	Phalia	18.32	21.64	09.39
		89	Malakwal	16.16	21.59	05.72
		103	Mandi Bahauddin	13.48	16.02	07.08
27	Faisalabad	52	Tandlianwala Town	22.66	27.62	12.46
		72	Jaranwala Town	19.82	22.95	08.42
		93	Sumundari Town	15.68	18.17	09.59
		95	Chak Jhumra Town	15.32	21.09	08.37
		111	Lyallpur Town	11.70	16.54	05.54
		114	Jinnah Town	10.74	20.74	04.23
		121	Madina Town	10.16	18.45	06.60
		124	Iqbal Town	9.90	15.48	07.52
28	Attock	84	Pindigheb	17.44	23.04	03.50
		86	Jand	17.24	21.14	04.90
		90	Hasanabdal	15.97	18.89	06.83
		100	Fateh Jang	14.69	18.66	03.11
		110	Hazro	11.88	14.81	06.99
		116	Attock	10.44	16.41	02.39
29	Chakwal	97	Choa Saidan Shah	14.89	16.50	06.43
		102	Talagang	14.19	16.61	04.50

		131	Chakwal	7.74	10.76	03.18
30	Jhelum	78	Sohawa	18.27	20.40	08.39
		104	Pind Dadan Khan	12.86	15.16	04.77
		130	Dina	7.87	09.85	05.18
		135	Jhelum	5.70	09.45	02.09
31	Gujranwala	96	Nowshera Virkan Town	15.17	17.40	10.57
		107	Kamoke Town	12.50	14.50	09.90
		117	Wazirabad Town	10.33	12.22	06.86
		119	Khiali Shahpur Town	10.25	15.27	08.26
		125	Qila Didar Singh Town	9.53	15.90	07.15
		128	Aroop Town	7.98	14.23	04.82
		129	Nandipur Town	7.96	16.21	03.81
32	Sialkot	94	Sambrial	15.62	15.62	00.00
		113	Daska	10.92	13.94	04.98
		132	Pasrur	7.47	00.00	07.47
		133	Sialkot	6.65	07.94	03.34
33	Gujrat	122	Sara-e-Alamgir	10.09	11.58	05.88
		123	Kharian	10.02	11.42	03.38
		126	Gujrat	8.81	10.55	04.33
34	Rawalpindi	24	Kotli Sattian Town	28.69	28.69	00.00
		101	Kahuta Town	14.64	19.78	02.78
		109	Muree Town	12.30	16.18	06.40
		112	Kallar Sayaddan Town	11.04	11.04	00.00
		115	Gujjar Khan Town	10.55	12.75	05.98
		120	Potohar Town	10.20	10.20	00.00
		134	Taxila Town	5.80	10.75	03.89
		141	Rawal Town	2.54	00.00	02.54
35	Lahore	106	Wahga Town	12.66	14.41	06.62
		118	Nishtar Town	10.33	17.23	05.21
		127	Allama Iqbal Town(L)	8.07	16.31	05.02
		136	Aziz Bhatti Town	5.23	15.77	03.52
		137	Ravi Town	5.20	00.00	05.20
		138	Data Ganj Bukhsh Town	4.06	00.00	04.06
		139	Shalimar Town	3.65	00.00	03.65

		140	Lahore Cantt	3.07	00.00	03.07
		142	Gulberg Town	2.25	00.00	02.25
		143	Samanabad Town	0.94	00.00	00.94

In the northern Punjab, variation in poverty levels and rankings is relative low though exceptions exist here too. Rawalpindi district is such a case in which Kotli Sattian Town is at number 24 in overall ranking of the tehsils of Punjab while the ranking of other towns ranges between 101 and 141. Poverty rate of Kotli Sattian Town is 28.69 while it is just 2.54 for Rawal Town in the district of Rawalpindi.

These examples show how present study can be helpful in locating cases of extreme poverty hidden behind the aggregate headcount ratios of the districts. In fact the basic purpose of the study of poverty at tehsil level is to locate these hidden poor areas so that poverty reduction strategies can be devised with a focus on these pockets of poverty. Knowing tehsil level poverty figures would also help in avoiding leakage of poverty alleviation funds to non-poor areas.

Tehsil is a very small unit as compare to the district and division. Variation in the level of poverty increases as we move from a bigger to a smaller geographical unit. This situation is evident from Table 5.3.3 which reports ranks of tehsils and headcount ratios by divisions. Some cases of extreme tehsil level poverty can be found in almost every division. Similarly, some relatively better off tehsils are also present in virtually every division. This Table presents the overall picture of divisions in terms of tehsil level poverty.

Rank	Division	Ranks	Tehsils	All areas	Rural	Urban
1	D.G.Khan	1	Rojhan	43.59	46.98	24.02
		2	Choubara	40.86	40.86	0.00
		4	Jatoi	34.71	39.28	18.87
		5	Ali pur	33.77	42.55	9.74
		7	Muzaffargarh	33.27	38.64	12.88
		14	Jampur	31.76	38.51	15.17
		17	Kot Addu	30.54	37.13	13.40
		18	Taunsa	30.26	33.75	11.52
		20	Rajanpur	30.11	38.80	14.95
		32	DG Khan	27.00	35.79	6.38
		36	Layyah	26.45	38.51	10.16
		46	Karor Lal Easan	23.44	29.02	11.73
2	Bhawalpur	3	Ahmadpur East	39.28	46.10	11.43
		6	Khairpur Tamewali	33.67	40.60	14.25
		8	Bhawalpur Sadar	33.07	34.21	15.38
		9	Minchinabad	32.99	37.96	14.39
		11	RY Khan	32.76	41.26	6.48
		12	Liaqatpur	32.26	35.47	11.55
		13	Sadiqabad	32.05	39.45	8.93
		19	Bahawalnagar	30.19	37.38	14.60
		22	Hasilpur	29.17	35.46	13.42
		25	Fort Abbas	28.65	31.92	17.65
		37	Khanpur	26.22	31.16	10.89
		50	Chishtian	22.95	27.20	13.29
		59	Yazman	21.43	24.29	11.76
		74	Haroonabad	19.28	22.89	11.73
		91	Bahawalpur City	15.96	28.91	9.84
3	Multan	16	Jalalpur Pirwala Town	31.19	37.90	16.84
		21	Kabirwala	29.84	34.40	10.72
		23	Kehror Pacca	28.82	34.87	14.67
		27	Shujabad Town	28.07	37.19	8.07

Table 5.3.3. Poverty Ranking and Headcount Ratio of the Tehsils by Divisions

		30	Mian Channu	27.31	30.81	9.61
		34	Mailsi	26.69	29.25	14.65
		38	Vehari	25.97	29.77	9.39
		39	Khanewal	25.93	30.50	14.51
		49	Lodhran	22.98	33.08	10.55
		53	Dunya Pur	22.62	25.92	14.32
		62	Burewala	21.26	25.82	10.64
		66	Jahanian	20.61	26.82	7.39
		83	Boson Town	17.70	30.58	5.51
		99	Sher Shah Town	14.79	27.97	6.52
		105	Mumtazabad Town	12.69	27.41	6.12
		108	Shah Rukn-e-Alam Town	12.47	27.15	4.44
4	Sahiwal	35	Depalpur	26.62	31.42	12.75
		40	Pakpattan	25.34	32.85	7.71
		43	Chichawatni	24.25	27.84	7.52
		54	Arifwala	22.56	28.87	8.80
		58	Sahiwal	21.79	26.47	9.02
		65	Renala Khurd	20.84	23.87	7.30
		69	Okara	20.11	25.12	6.76
5	Sargodha	26	Noorpur Thal	28.40	31.09	15.81
		28	Mankera	27.80	29.59	13.68
		33	Darya Khan	26.76	35.52	15.35
		42	Kallur Kot	25.13	29.56	16.06
		44	Essa Khel	23.54	26.68	15.40
		48	Piplan	23.13	27.81	13.61
		55	Shahpur	22.46	23.57	16.84
		56	Kot Momin	22.31	25.93	13.22
		57	Bhakkar	22.17	31.22	8.24
		61	Sillanwali	21.31	22.99	11.43
		64	Sahiwal	20.94	24.70	11.01
		76	Khushab	18.78	24.42	11.44
		79	Sargodha	18.21	23.53	4.57
		80	Mianwali	18.08	22.85	8.67
		87	Bhalwal	16.20	20.83	7.77
6	Faisalabad	10	Ahmadpur Sial	32.92	36.25	18.17
		15	Shorkot	31.42	37.75	10.88
		29	Chinniot	27.44	34.75	10.30

		31	Jhang	27.06	34.82	10.57
		52	Tandlianwala Town	22.66	27.62	12.46
		70	Kamalia	20.07	24.82	12.34
		72	Jaranwala Town	19.82	22.95	8.42
		81	Gojra	17.84	22.58	8.49
		93	Sumundari Town	15.68	18.17	9.59
		95	Chak Jhumra Town	15.32	21.09	8.37
		98	TT Singh	14.84	16.73	5.00
		111	Lyallpur Town	11.70	16.54	5.54
		114	Jinnah Town	10.74	20.74	4.23
		121	Madina Town	10.16	18.45	6.60
		124	Iqbal Town	9.90	15.48	7.52
7	Lahore	45	Safdarabad	23.47	25.95	14.24
		47	Chunian	23.33	25.64	13.63
		51	Nankana Sahib	22.88	27.97	7.53
		60	Pattoki	21.31	25.32	9.11
		63	Shangla Hill	21.21	24.42	10.09
		68	Ferozwala	20.21	23.89	11.32
		71	Kasur	19.83	25.99	11.78
		73	Sheikhupura	19.48	23.87	7.54
		82	Muridke	17.73	21.89	8.17
		85	Sharaqpur Sharif	17.35	21.74	5.90
		88	Shah kot	16.17	18.72	6.42
		106	Wahga Town	12.66	14.41	6.62
		118	Nishtar Town	10.33	17.23	5.21
		127	Allama Iqbal Town(L)	8.07	16.31	5.02
		136	Aziz Bhatti Town	5.23	15.77	3.52
		137	Ravi Town	5.20	0	5.20
		138	Data Ganj Bukhsh Town	4.06	0	4.06
		139	Shalimar Town	3.65	0	3.65
		140	Lahore Cantt	3.07	0	3.07
		142	Gulberg Town	2.25	0	2.25
		143	Samanabad Town	0.94	0	0.94
8	Gujranwala	41	Pindi Bhattian	25.15	29.87	14.93
		67	Narowal	20.23	23.91	12.98
		75	Shakargarh	19.10	22.15	8.26
		77	Phalia	18.32	21.64	9.39
		89	Malakwal	16.16	21.59	5.72

		92	Hafizabad	15.72	18.70	10.08
		94	Sambrial	15.62	15.62	0.00
		96	Nowshera Virkan Town	15.17	17.40	10.57
		103	Mandi Bahauddin	13.48	16.02	7.08
		107	Kamoke Town	12.50	14.50	9.90
		113	Daska	10.92	13.94	4.98
		117	Wazirabad Town	10.33	12.22	6.86
		119	Khiali Shahpur Town	10.25	15.27	8.26
		122	Sara-e-Alamgir	10.09	11.58	5.88
		123	Kharian	10.02	11.42	3.38
		125	Qila Didar Singh Town	9.53	15.90	7.15
		126	Gujrat	8.81	10.55	4.33
		128	Aroop Town	7.98	14.23	4.82
		129	Nandipur Town	7.96	16.21	3.81
		132	Pasrur	7.47	0.00	7.47
		133	Sialkot	6.65	7.94	3.34
9	Rawalpindi	24	Kotli Sattian Town	28.69	28.69	0.00
		78	Sohawa	18.27	20.40	8.39
		84	Pindigheb	17.44	23.04	3.50
		86	Jand	17.24	21.14	4.90
		90	Hasanabdal	15.97	18.89	6.83
		97	Choa Saidan Shah	14.89	16.50	6.43
		100	Fateh Jang	14.69	18.66	3.11
		101	Kahuta Town	14.64	19.78	2.78
		102	Talagang	14.19	16.61	4.50
		104	Pind Dadan Khan	12.86	15.16	4.77
		109	Muree Town	12.30	16.18	6.40
		110	Hazro	11.88	14.81	6.99
		112	Kallar Sayaddan Town	11.04	11.04	0.00
		115	Gujjar Khan Town	10.55	12.75	5.98
		116	Attock	10.44	16.41	2.39
		120	Potohar Town	10.20	10.20	0.00
		130	Dina	7.87	9.85	5.18
		131	Chakwal	7.74	10.76	3.18
		134	Taxila Town	5.80	10.75	3.89
		135	Jhelum	5.70	9.45	2.09
		141	Rawal Town	2.54	0.00	2.54

In case of DG Khan, the overall ranking of its tehsils confirms that it is the poorest division of the Punjab. Its best performing tehsil Karor Lal Easan is on 46th position in overall ranking table of the tehsils. Except two tehsils of Karor Lal Easan and Layyah, all other tehsils of the division are lying in the first quarter of the overall ranking table of the tehsils, indicating that they are very poor.

Although in Bhawalpur division situation is better than DG Khan, yet most of its tehsils are lying in the upper half of the tehsil ranking table. Performance of two tehsils (Bhawalpur City and Haroonabad) is exceptionally better than the others.

In Multan Division there are 16 tehsils, just four of them are lying in the second half of the tehsils overall ranking table and all of them are from Multan district, though its overall performance of this division is much better than the above two.

Sahiwal Division is a smaller division, having just 7 tehsils. There is low variation in the tehsils with respect to the level of poverty. All tehsils of the division are lying in the first half of the table with one lying in the 1st quarter of the table. So it is a poor division but not extremely poor.

Sargodha Division have 15 tehsils, 4 of them are placed in the 2nd half of the overall tehsils ranking table, while just 3 tehsils are ranked in the 1st quarter of the table.

In Faisalabad Division there are 15 tehsils, out of which 4 are ranked in the first quarter of the table and all of them are from the District Jhang. If District Jhang is excluded, the tehsils of the remaining division perform much better in terms of poverty. Four of its tehsils are in the fourth quarter of the tehsil ranks and are the least poor tehsils of the province. All these four tehsils are from Faisalabad district which is famous for cotton textile industry.

Lahore is one of the largest divisions of Punjab having 21 tehsils in it. Ten of its tehsils are in the 4th quarter of the table and all of them are from Lahore district which is provincial headquarter as well as a centre of business and trade. Large scale industry is also found there. Table shows better performance of the division is primarily because of better performance of the tehsils of the Lahore District.

Gujranwala Division also has 21 tehsils and just 3 of them are ranked in the 1st half of the table. All the remaining tehsils are in the second half of the ranking table. Most of the tehsils occupy a place in the 3rd and 4th quarter of the table. Gujranwala, Gujrat and Sialkot are famous for their industry and tehsils of these districts are one of the richest within the division.

Rawalpindi Division also has 21 tehsils in it. All the tehsils are at least in the second half of the table except one tehsil which is Kotli Sattian Town which in the first quarter of the table. Its overall ranking among tehsils is 24. All other towns are in much better condition. In the division, the town nearest to Kotli Sattian is Sohawa which is at 78th position. Presence of such a poor tehsil as Kotli Sattian in the richest division of the Punjab is quiet surprising. As stated earlier, to discover such a poor tehsil hidden behind the aggregate headcount ratio of the district is one of the main objectives of the present research.

At the end of this chapter, a comprehensive table is presented that combines poverty rankings of divisions, districts and tehsils.

Table 5.3.4. Poverty Ranking and Headcount Ratios by Divisions, Districts and Tehsils

Rank	Division	Ranks	District	Ranks	Tehsils	Headcount Ratios		
						All areas	Rural	Urban
1	D.G.Khan	1	Muzzaffargarh	4	Jatoi	34.71	39.28	18.87
				5	Ali pur	33.77	42.55	9.74
				7	Muzaffargarh	33.27	38.64	12.88
				17	Kot Addu	30.54	37.13	13.4
		2	Rajanpur	1	Rojhan	43.59	46.98	24.02
				14	Jampur	31.76	38.51	15.17
				20	Rajanpur	30.11	38.8	14.95
		5	Layyah	2	Choubara	40.86	40.86	0
				36	Layyah	26.45	38.51	10.16
				46	Karor Lal Easan	23.44	29.02	11.73
		7	DG Khan	18	Taunsa	30.26	33.75	11.52
				32	DG Khan	27	35.79	6.38
2	Bhawalpur	3	RY Khan	11	RY Khan	32.76	41.26	6.48
				12	Liaqatpur	32.26	35.47	11.55
				13	Sadiqabad	32.05	39.45	8.93
				37	Khanpur	26.22	31.16	10.89
		4	Bahawalpur	3	Ahmadpur East	39.28	46.1	11.43
				6	Khairpur Tamewali	33.67	40.6	14.25
				8	Bhawalpur Sadar	33.07	34.21	15.38
				22	Hasilpur	29.17	35.46	13.42
				59	Yazman	21.43	24.29	11.76
				91	Bahawalpur City	15.96	28.91	9.84
		9	Bhawalnagar	9	Minchinabad	32.99	37.96	14.39
				19	Bahawalnagar	30.19	37.38	14.6
				25	Fort Abbas	28.65	31.92	17.65
				50	Chishtian	22.95	27.2	13.29
				74	Haroonabad	19.28	22.89	11.73

3	Multan	8	Khanewal	21	Kabirwala	29.84	34.4	10.72
				30	Mian Channu	27.31	30.81	9.61
				39	Khanewal	25.93	30.5	14.51
				66	Jahanian	20.61	26.82	7.39
		10	Lodhran	23	Kehror Pacca	28.82	34.87	14.67
				49	Lodhran	22.98	33.08	10.55
				53	Dunya Pur	22.62	25.92	14.32
		12	Vehari	34	Mailsi	26.69	29.25	14.65
				38	Vehari	25.97	29.77	9.39
				62	Burewala	21.26	25.82	10.64
		24	Multan	16	Jalalpur Pirwala Town	31.19	37.9	16.84
				27	Shujabad Town	28.07	37.19	8.07
				83	Boson Town	17.7	30.58	5.51
				99	Sher Shah Town	14.79	27.97	6.52
				105	Mumtazabad Town	12.69	27.41	6.12
				108	Shah Rukn-e-Alam Town	12.47	27.15	4.44
4	Sahiwal	14	Oakara	35	Depalpur	26.62	31.42	12.75
				65	Renala Khurd	20.84	23.87	7.3
				69	Okara	20.11	25.12	6.76
		13	Pakpattan	40	Pakpattan	25.34	32.85	7.71
				54	Arifwala	22.56	28.87	8.8
		15	Sahiwal	43	Chichawatni	24.25	27.84	7.52
				58	Sahiwal	21.79	26.47	9.02
5	Sargodha	11	Bhakkar	28	Mankera	27.8	29.59	13.68
				33	Darya Khan	26.76	35.52	15.35
				42	Kallur Kot	25.13	29.56	16.06
				57	Bhakkar	22.17	31.22	8.24
		16	Khushab	26	Noorpur Thal	28.4	31.09	15.81
				76	Khushab	18.78	24.42	11.44
		17	Mianwali	44	Essa Khel	23.54	26.68	15.4

				48	Piplan	23.13	27.81	13.61
				80	Mianwali	18.08	22.85	8.67
		20	Sargodha	55	Shahpur	22.46	23.57	16.84
				56	Kot Momin	22.31	25.93	13.22
				61	Sillanwali	21.31	22.99	11.43
				64	Sahiwal	20.94	24.7	11.01
				79	Sargodha	18.21	23.53	4.57
				87	Bhalwal	16.2	20.83	7.77
6	Faisalabad	6	Jhang	10	Ahmadpur Sial	32.92	36.25	18.17
				15	Shorkot	31.42	37.75	10.88
				29	Chinniot	27.44	34.75	10.3
				31	Jhang	27.06	34.82	10.57
		25	TT Singh	70	Kamalia	20.07	24.82	12.34
				81	Gojra	17.84	22.58	8.49
				98	TT Singh	14.84	16.73	5
		27	Faisalabad	52	Tandlianwala Town	22.66	27.62	12.46
				72	Jaranwala Town	19.82	22.95	8.42
				93	Sumundari Town	15.68	18.17	9.59
				95	Chak Jhumra Town	15.32	21.09	8.37
				111	Lyallpur Town	11.7	16.54	5.54
				114	Jinnah Town	10.74	20.74	4.23
				121	Madina Town	10.16	18.45	6.6
				124	Iqbal Town	9.9	15.48	7.52
7	Lahore	19	Nankana Sahib	45	Safdarabad	23.47	25.95	14.24
				51	Nankana Sahib	22.88	27.97	7.53
				63	Shangla Hill	21.21	24.42	10.09
				88	Shah kot	16.17	18.72	6.42
		18	Kasur	47	Chunian	23.33	25.64	13.63
				60	Pattoki	21.31	25.32	9.11
				71	Kasur	19.83	25.99	11.78
		23	Sheikhupura	68	Ferozwala	20.21	23.89	11.32
				73	Sheikhupura	19.48	23.87	7.54
				82	Muridke	17.73	21.89	8.17

				85	Sharaqpur Sharif	17.35	21.74	5.9
		35	Lahore	106	Wahga Town	12.66	14.41	6.62
				118	Nishtar Town	10.33	17.23	5.21
				127	Allama Iqbal Town(L)	8.07	16.31	5.02
				136	Aziz Bhatti Town	5.23	15.77	3.52
				137	Ravi Town	5.2		5.2
				138	Data Ganj Bukhsh Town	4.06		4.06
				139	Shalimar Town	3.65		3.65
				140	Lahore Cantt	3.07		3.07
				142	Gulberg Town	2.25		2.25
				143	Samanabad Town	0.94		0.94
8	Gujranwala	21	Narowal	67	Narowal	20.23	23.91	12.98
				75	Shakargarh	19.1	22.15	8.26
		22	Hafizabad	41	Pindi Bhattian	25.15	29.87	14.93
				92	Hafizabad	15.72	18.7	10.08
		26	Mandi Bahauddin	77	Phalia	18.32	21.64	9.39
				89	Malakwal	16.16	21.59	5.72
				103	Mandi Bahauddin	13.48	16.02	7.08
		31	Gujranwala	96	Nowshera Virkan Town	15.17	17.4	10.57
				107	Kamoke Town	12.5	14.5	9.9
				117	Wazirabad Town	10.33	12.22	6.86
				119	Khiali Shahpur Town	10.25	15.27	8.26
				125	Qila Didar Singh Town	9.53	15.9	7.15
				128	Aroop Town	7.98	14.23	4.82
				129	Nandipur Town	7.96	16.21	3.81
		33	Gujrat	122	Sara-e-Alamgir	10.09	11.58	5.88
				123	Kharian	10.02	11.42	3.38
				126	Gujrat	8.81	10.55	4.33
		32	Sialkot	94	Sambrial	15.62	15.62	0
				113	Daska	10.92	13.94	4.98
				132	Pasrur	7.47	0	7.47

			133	Sialkot	6.65	7.94	3.34
9	Rawalpindi	28	Attock	84	Pindigheb	17.44	23.04	3.5
				86	Jand	17.24	21.14	4.9
				90	Hasanabdal	15.97	18.89	6.83
				100	Fateh Jang	14.69	18.66	3.11
				110	Hazro	11.88	14.81	6.99
				116	Attock	10.44	16.41	2.39
		29	Chakwal	97	Choa Saidan Shah	14.89	16.5	6.43
				102	Talagang	14.19	16.61	4.5
				131	Chakwal	7.74	10.76	3.18
		30	Jhelum	78	Sohawa	18.27	20.4	8.39
				104	Pind Dadan Khan	12.86	15.16	4.77
				130	Dina	7.87	9.85	5.18
				135	Jhelum	5.7	9.45	2.09
		34	Rawalpindi	24	Kotli Sattian Town	28.69	28.69	0
				101	Kahuta Town	14.64	19.78	2.78
				109	Muree Town	12.3	16.18	6.4
				112	Kallar Sayaddan Town	11.04	11.04	0
				115	Gujjar Khan Town	10.55	12.75	5.98
				120	Potohar Town	10.2	10.2	0
				134	Taxila Town	5.8	10.75	3.89
				141	Rawal Town	2.54	0	2.54

Chapter 6

Spatial and Regional Dimensions of Poverty in the Punjab

It has been shown in the previous chapter that poverty rates are very high in the tehsils of southern and central Punjab. This finding corroborates and fine-tunes the findings of the divisional and district level analysis. However, the major new insight that we gain from tehsil level analysis is the discovery of substantial variation in poverty rates within districts, which could not have been made without tehsil level analysis.

Once districts and tehsils are ranked according to the level of poverty, the next step is to look at some of the key variables that are likely to influence poverty at regional level. This exercise is expected to enhance our understanding of the spatial and regional dimensions of poverty as well as our ability to formulate adequate poverty alleviation policies. The following section provides a detail exposition of the analytical framework used in this chapter to achieve the above mentioned objective.

6.1 The Analytical Framework:

One can think of a large number of variables that appear to be associated with regional poverty. To keep the choice of these variables manageable, they can be divided into four broad categories, namely, overall economy, government assistance in reducing poverty, health, and education. The choice of variables in each of these categories is constrained by the availability of data.

Overall economic situation of a region is closely related to the wellbeing of the people living there, as opportunities for income generation and investment depend on the state of the

economy. A study of spatial variation in economic condition is likely to add to our understanding of the spatial variation of poverty. The variables selected for this purpose at district level are percentage of urban population, number of industrial units, percentage of households receiving remittances and number of cantonment boards. At tehsil level, number of industrial units and number of cantonment boards are not available. It does not limit our analysis in a big way as economic impact of these variables is not limited to a single tehsil and therefore, district appears to be a natural unit of analysis for these variables. Population of tehsils has been reported to give some idea of the size of a tehsil's economy and its relative position in the district.

Percentage of urban population tells us the level of urbanization of a district or tehsil. Urbanization is associated with the availability of a number of facilities and job opportunities that are not available in the rural areas. The number of industrial units in a region gives an idea of the level of industrialization in that region. Industry plays a major role in the wellbeing of people by creating job and investment opportunities. Foreign remittances measure the flow of external resources into the economy of a region. People who are working abroad send money to their family, which directly helps in reducing poverty by raising their standard of living through consumption and investment (Arif 2009). Even small sums of foreign currency can make a big difference in this regard due to the exchange rate pattern of Pakistani Rupee in relation to the currencies of the countries where most Pakistanis are working. In the special circumstances of Pakistan, presence of cantonments in a district gives a major boost to its economy. Military spending is one of the biggest items on the national budget and a significant proportion of this money is spent where cantonments are located. The high quality health, education and other facilities provided to the armed forces are at least partly open to the civilians. In addition, people living near cantonments are more likely to be recruited for military service.

The role of government in reducing poverty cannot be overemphasized. It provides direct assistance to the poor, creates jobs and makes available facilities that indirectly help in reducing poverty. Government is also a major player in formulating and implementing poverty reduction measures. The variables selected to capture this aspect include percentage of households benefitting from pensions, utility stores, Zakat and government schemes of social protection. Although the choice of these variables is limited by data availability, it is possible to develop a fair idea of the influence of government in reducing poverty in the region with the help of these variables.

Pension not only adds directly to the resources of the most vulnerable people and their households, it is also an important indicator of the availability of pensionable jobs in the region. Most such jobs are in the public sector. Utility stores are government run super markets. These are considered a source of government assistance to middle and lower middle class families as they provide different commodities of everyday use at a subsidized rate. Zakat is levied on the savings of the non-poor people and is distributed among the poor and the needy. It is an income redistribution measure prescribed by the religion. The percentage of households receiving Zakat and the poverty rank of districts or tehsils together provide information about the coverage as well as targeting of this measure. Same can be said about the government schemes of social protection as a whole.

Education plays role in the well being of people. It opens up better job opportunities for people and extends the scope of their earning activities as educated people are more innovative. High level and quality of education are considered to be an important factor behind the high living standards in the developed countries. The role of education in increasing earnings is well documented in the literature on human capital. Adult literacy rate, net primary school enrolment

and number of degree colleges are the variables that are selected to study the educational profile of the districts. Number of persons per Degree College has also been calculated. Tehsil level figures on this variable could not be found. However, the fact that a degree college normally serves at least the whole district can be of some comfort in this regard.

Adult literacy rate and net primary school enrolment are broadly accepted as good indicators of the state of education of a region. Net primary school enrolment rate also gives some idea of the attitude of adult people towards education as decision to enroll in a primary school is often made by the parents. This variable is also a mirror in which one can see future of adult literacy. Presence of degree colleges in a district provides an estimate of the facilities for higher education available to local people.

Health is closely linked to the wellbeing of persons and households. Health status influences a person's income by influencing his productivity and is considered to be a human capital variable. Poor health is one of the important factors that push a household below the poverty line. A sick person incurs costs both in terms of the money spent on treatment and in terms of forgone earnings. Sickness is also seen as a negative signal in the job market. Access to hospital, percentage of households using properly treated water and washing hands after going to toilet, percentage of malnourished children and infant mortality are variables which are used to study the association between health and poverty ranking of a district. Figures for access to hospital and infant mortality could not be found at tehsil levels.

Distance to the nearest health facility is a good indicator of the health facilities available to the residents of a region. Percentage of the households that have physical access to health facility within half an hour distance from their residence is used in this study as a measure of access to health facilities. Water is a basic need of life. Its quality directly affects the health of a

person. Percentage of households using properly treated water indicates the ability as well as will of the households to take care of their health. Percentage of people who properly wash their hands after going to latrine is indicative of their awareness and general attitude towards health. This simple habit is very helpful in avoiding a number of illnesses. It gains more importance in Pakistan where water born diseases are very common. Weight with respect to age is a measure of both acute and chronic malnutrition. Children whose weight-for-age is more than three standard deviations below the median are considered severely underweight in the MICS data. The present study uses this variable as a measure of malnutrition of the children. Infant mortality is a variable that is generally considered as an indicator of health, especially of women and newborn children.

After looking at different socioeconomic features and their association with the poverty ranks of the districts, it would be interesting to present a picture of overall association between the poverty ranks and the quality of life in the districts. Fortunately, a recent study based on the same dataset as used in this study is likely to prove very helpful in this regard. Haq et al (2010) has compiled an index of the quality of life for the districts and tehsils of the Punjab using Principal Components Analysis. The index is based on 35 characteristics of persons and conditions including access to middle and secondary education, access to health facilities, availability of various household utilities and housing characteristics. She has then ranked the districts and tehsils according to her quality of life index. A comparison of poverty ranks of the present study and the quality of life ranks compiled by Haq will be presented at the end of this chapter.

6.2 Poverty Profile of the Districts and Tehsils:

6.2.1 Economy:

We already know from the previous chapter that high levels of poverty are mostly observed in the western and southern Punjab. Nine out of ten poorest districts of the province are located in these regions. These are mostly Sariki speaking areas with significant presence of big landlords who enjoy immense political influence. Feudalism is deeply rooted in these areas. Only less than half of the rural households own any agriculture land while 2.5 percent households account for over 40 percent of the ownership of land. Gini coefficient for land distribution is high in these districts (Cheema 2010, Haq *et al*, 2010). Agricultural self-employment through share-cropping and land leasing is also found there.

Only one of the ten poorest districts, namely Jhang, is located outside the two regions mentioned above. It is located in the central Punjab and is the sixth poorest district of the province. However, in all other respects, Jhang resembles the other nine poorest districts of the southern Punjab. It is a *Saraiki* speaking area and is geographically attached with the other districts of the *Sariki* belt. It also has some of the main characteristics of feudalism mentioned above.

Multan is a unique case in a different way. Despite being in the *Saraik*i belt and sharing many of its socioeconomic characteristics, it is at twelfth position among the least poor districts, a much higher ranking as compare to its neighboring districts. It may sound strange but one can think of several reasons for this. Multan is the largest district of Southern Punjab and has historically been an important city. Practically, it is the capital of this region. It has a big army cantonment there. So a large number of people of the district can benefit from the facilities such as availability of military jobs and good quality educational and health institutes that are

normally associated with a military town. In addition, high profile political personalities belong to Multan, who play their role in the development of their political constituency. It is also more industrialized than other districts of the southern Punjab. Level of urbanization is also high in this district as compare to adjacent areas.

Tables 6.2.1 and 6.2.2 present the economy related variables discussed in the previous section. To give some idea of the degree of association between the economic indicators discussed above and the poverty rank of the districts, the last row of these tables reports Pearson's rank correlation coefficients. These coefficients indicate a positive association between the poverty ranks and the economic indicators. The value of the coefficients is greater than 0.5 in most cases.

A glance at the percentage of rural population reported in Table 6.2.1 shows that poverty is predominantly a rural phenomenon in the Punjab. The level of urbanization is generally low in its ten poorest districts. Moreover, poverty is far higher in the rural areas as compared to the urban areas. No surprise then that Muzaffargarh is the poorest district of the province with only 13 percent urban population and 39 percent rural poverty.

This phenomenon is evident at tehsil level too. Though the town of Kotli Sattian is located in Rawalpindi district, a major urban center, it has no urban population. On the other hand, seven least poor tehsils have no rural population at all and all of these are from Lahore and Rawalpindi districts. This is indicative of an inverse association between poverty and urbanization. Pearson's Rank Correlation also indicates a strong association between the poverty ranks and percentage of urban population. There are exceptions of course, like Potohar town in Rawalpindi which has no urban population but ranks among the thirty least poor tehsils of the Punjab.

Rural population heavily depends on agriculture sector for employment. Higher levels of poverty in the rural areas point to low productivity in the agriculture sector. Productivity of this sector needs to be enhanced to reduce poverty in the poorest regions of the province. As a bonus, this policy would also reduce rural-urban migration which is considered a major problem now-a-days.

As noted in the last chapter, some of the least poor districts of the Punjab are located in the north. With the exception of Rawalpindi, these northern districts have relatively low level of urbanization among the ten least poor districts. However, some other factors go strongly in their favor. These are traditionally considered to be martial areas. A significant number of people living in these districts are employed by the armed forces and receive pensions, salaries and other benefits from their employers. One or more cantonment boards are located within seven out of the ten least poor districts, compared to only two poorest districts that have cantonment boards. In fact the ten least poor districts have 15 out of 20 cantonment boards in the Punjab. Rawalpindi alone has five cantonment boards, while Attock has three. Large military settlements are located in these districts. This shows that economies of least poor districts are more likely to benefit from the defense budget, which is one of the largest expenditure items of the federal government spending.

Industrialization is associated with lower poverty levels in the Punjab. Poverty is very low in the highly industrial districts of Lahore, Faisalabad, Gujranwala and Sialkot, which are among the ten least poor districts of the province. Faisalabad is a prominent example of the strong negative association between poverty and industrialization as other factors associated with low poverty such as presence of cantonments and receipt of significant amount of foreign remittances by the household are not present in this metropolitan city. This indicates that

industrialization may turn out to be a key to reducing poverty though it is not necessarily an easy task. Scarcity of skilled labor, water shortage, and distance from the big cities are some of the hurdles that do not allow industrialization in the poorest districts. As a result, employment opportunities in the industrial and services sector remain small in these areas.

Mandi Bahauddin makes an interesting case as despite being among the ten least poor districts of the Punjab, it has only 12 industrial units, its urban population is only 15 percent of the total and no cantonment is present in this district. However, one feature that makes its economy stands out in the whole province is the high percentage of the households that receive foreign remittances. This district enjoys the 2nd highest position in the province in this regard, while Gujrat, Jhelum and Sialkot stand at 1st, 3rd and 4th position respectively. Remittances from overseas migrants play an important role in the living standard of the people of Pakistan. Recent statistics show that sixty percent Pakistanis working in the Middle East migrated from only 20 districts, with a heavy concentration of the migrant households in Rawalpindi, Lahore, Gujrat, Mandi Bahauddin and Gujranwala (Haq *at al* 2010). In the ten poorest districts of the Punjab, less than 2 percent households receive money from abroad.

Considerable variation can be seen within districts in this regard. In Gujranwala district, 8.2 percent households receive foreign remittances but within this district, 16.7 percent households of Wazirabad town benefit from them while this ratio is just 4.2 for Kamoke town. Similarly 17.3 percent households of Kahuta receive foreign remittances in Rawalpindi District, while in the same district, only 4.3 percent households in Taxila Town benefit from foreign remittances. Similar examples can be found in other districts too.

In the thirty least poor tehsils, the percentage of households receiving foreign remittances is generally high even if they have a small proportion of urban population. For example, Gujjar

Khan has 13.6% urban population but about 12.1 percent households of this tehsil are getting foreign remittances. Similarly Chakwal has just 13.4 % urban population but 9.1% of its households are getting foreign remittances. Pearson's Rank Correlation coefficient supports a positive association between low poverty and foreign remittances.

To summarize the key findings of this section, high level of urbanization, presence of military and industrial establishments and inflow of foreign remittances indicate strength of the economy of a region and are associated with lower levels of poverty.

Table 6.2.1 Poverty Ranking and Economic Profile of the Districts					
Poverty Rank	Districts	% of Urban Population	# of Industrial Units	% of Households Receiving Foreign Remittances	# of Cantonment Board
1 (Poorest)	MuzaffarGarh	13	106	1.0	-
2	RajanPur	14.6	27	1.8	-
3	RY Khan	19.6	189	2.6	-
4	Bahawalpur	27.3	237	1.7	1
5	LayyAh	12.8	49	1.0	-
6	Jhang	23.4	102	1.3	1
7	DG Khan	13.9	55	5.0	-
8	Khanewal	17.5	122	1.6	-
9	Bahawalnagar	19.1	102	1.4	-
10	Lodhran	14.4	68	1.2	-
11	Bhakkar	16	15	0.7	-
12	Vehari	16	177	2.1	-
13	Pakpattan	14.2	54	1.6	-
14	Okara	23	43	1.0	1
15	Sahiwal	16.4	138	2.8	-
16	Khushab	25.3	28	2.7	-
17	Mianwali	20.8	24	1.1	-
18	Kasur	22.8	289	0.5	-
19	Nankana Sahib	14.6	N.A	2.1	-
20	Sargodha	28.1	71	3.6	1

Rank					
21	Narowal	12.2	9	4.3	-
22	Hafizabad	27.4	14	2.9	-
23	Sheikhupura	32.4	462*	1.6	-
24	Multan	42.2	275	1.2	1
25	TT Singh	18.9	76	5.8	-
26	Mandi Bahauddin	15.2	12	17.0	-
27	Faisalabad	42.7	763	3.3	-
28	Attock	21.3	53	4.2	3
29	Chakwal	12.2	40	6.5	-
30	Jhelum	27.6	34	12.5	2
31	Gujranwala	50.5	646	8.2	1
32	Sialkot	26.2	325	12.6	1
33	Gujrat	27.7	262	24.3	1
34	Rawalpindi	53.2	200	7.1	5
35	Lahore	82.4	1454	2.7	2
	All Punjab	31.3	6521	4.0	20
	Pearson's Rank Correlation	0.585	0.427	0.589	0.507

* Nankana Sahib included

Source: Punjab Development Statistics 2009 and MICS 2007-08, Issued by Bureau of Statistics, Govt. of the Punjab

Table 6.2.2 Poverty Ranking and Economic Profile of Thesils			
Rank	Tehsils	Population (thousands)	% of Urban Population	% of Households Receiving Foreign Remittances
1	Rojhan	209.0	5.3	0.3
2	Choubara	161.0	0.0	1.3
3	Ahmadpur East	718.0	16.3	0.7
4	Jatoi	447.0	11.9	2.0
5	Ali pur	398.0	7.3	0.5
6	Khairpur Tamewali	185.0	14.6	1.1
7	Muzaffargarh	983.0	14.2	1.3
8	Bhawalpur Sadar	339.0	60.2	0.9
9	Minchinabad	354.0	10.7	0.0
10	Ahmadpur Sial	296.0	15.5	1.1

11	RY Khan	986.0	27.9	2.7
12	Liaqatpur	699.0	4.7	2.1
13	Sadiqabad	772.0	20.6	1.8
14	Jampur	485.0	14.0	3.2
15	Shorkot	374.0	14.2	2.0
16	Jalalpur Pirwala Town	358.0	8.9	1.0
17	Kot Addu	808.0	14.9	0.3
18	Taunsa	365.0	10.4	0.5
19	Bahawalnagar	542.0	24.7	0.9
20	Rajanpur	396.0	20.7	0.5
21	Kabirwala	659.0	15.0	1.0
22	Hasilpur	318.0	22.4	2.3
23	Kehror Pacca	362.0	20.7	0.9
24	Kotli Sattian Town	82.0	0.0	7.8
25	Fort Abbas	285.0	12.2	1.3
26	Noorpur Thal	175.0	8.6	1.0
27	Shujabad Town	427.0	13.3	0.1
28	Mankera	170.0	5.3	0.2
29	Chinniot	965.0	26.8	1.9
30	Mian Channu	616.0	14.4	0.8
31	Jhang	1199.0	25.4	0.7
32	DG Khan	1152.0	16.6	6.8
33	Darya Khan	233.0	23.2	0.3
34	Mailsi	705.0	12.6	2.1
35	Depalpur	1030.0	20.4	0.4
36	Layyah	591.0	17.9	0.5
37	Khanpur	684.0	21.9	3.8
38	Vehari	655.0	14.4	0.9
39	Khanewal	543.0	28.0	1.6
40	Pakpattan	684.0	15.9	0.7
41	Pindi Bhattian	348.0	23.0	1.0
42	Kallur Kot	224.0	16.1	0.3
43	Chichawatni	785.0	9.3	2.7
44	Essa Khel	257.0	17.1	2.1
45	Safdarabad	228.0	20.6	3.7
46	Karor Lal Easan	369.0	10.3	1.8
47	Chunian	585.0	10.4	0.4
48	Piplan	268.0	27.2	1.2

49	Lodhran	472.0	13.8	0.5
50	Chishtian	498.0	20.5	1.8
51	Nankana Sahib	684.0	10.1	0.8
52	Tandlianwala Town	541.0	11.6	2.2
53	Dunya Pur	338.0	8.6	2.5
54	Arifwala	603.0	12.3	2.6
55	Shahpur	274.0	18.6	1.6
56	Kot Momin	344.0	0.0	3.0
57	Bhakkar	424.0	16.2	1.3
58	Sahiwal	1058.0	21.6	2.9
59	Yazman	406.0	5.2	4.1
60	Pattoki	634.0	18.1	1.3
61	Sillanwali	255.0	9.0	4.0
62	Burewala	730.0	20.8	2.9
63	Shangla Hill	170.0	29.4	4.1
64	Sahiwal	236.0	21.2	2.4
65	Renala Khurd	340.0	9.4	1.4
66	Jahanian	250.0	10.0	1.4
67	Narowal	627.0	16.4	3.1
68	Ferozwala	428.0	27.8	2.0
69	Okara	862.0	31.6	1.7
70	Kamalia	510.0	25.1	4.3
71	Kasur	1157.0	31.6	0.3
72	Jaranwala Town	1055.0	13.0	3.1
73	Sheikhupura	1049.0	35.7	1.3
74	Haroonabad	382.0	22.0	3.4
75	Shakargarh	638.0	8.0	5.4
76	Khushab	731.0	29.3	3.4
77	Phalia	400.0	8.0	14.1
78	Sohawa	156.0	7.7	10.6
79	Sargodha	1081.0	42.4	3.6
80	Mianwali	532.0	19.4	0.7
81	Gojra	495.0	23.8	5.6
82	Muridke	420.0	24.0	1.6
83	Boson Town	571.0	49.8	0.6
84	Pindigheb	196.0	15.3	4.2
85	Sharaqpur Sharif	151.0	18.5	2.4
86	Jand	228.0	7.5	1.2
87	Bhalwal	476.0	20.4	4.8

88	Shah kot	191.0	20.4	3.4
89	Malakwal	299.0	10.4	13.5
90	Hasanabdal	136.0	27.9	4.5
91	Bahawalpur City	467.0	87.4	2.0
92	Hafizabad	465.0	30.5	4.3
93	Sumundari Town	516.0	10.7	5.1
94	Sambrial	298.0	24.5	9.9
95	Chak Jhumra Town	255.0	12.6	3.5
96	Nowshera Virkan Town	415.0	8.2	5.3
97	Choa Saidan Shah	214.0	13.4	5.6
98	TT Singh	617.0	9.7	7.2
99	Sher Shah Town	541.0	50.0	1.6
100	Fateh Jang	214.0	12.1	2.8
101	Kahuta Town	154.0	12.3	17.3
102	Talagang	380.0	10.0	3.6
103	Mandi Bahauddin	462.0	24.5	22.3
104	Pind Dadan Khan	264.0	17.8	3.7
105	Mumtazabad Town	560.0	53.0	1.1
106	Wahga Town	481.0	41.8	1.0
107	Kamoke Town	414.0	37.4	4.2
108	Shah Rukn-e-Alam Town	598.0	51.7	2.5
109	Muree Town	176.0	11.9	4.4
110	Hazro	239.0	17.6	9.3
111	Lyallpur Town	758.0	56.3	1.5
112	Kallar Sayaddan Town	159.0	0.0	15.3
113	Daska	563.0	21.8	11.7
114	Jinnah Town	767.0	70.6	4.7
115	Gujjar Khan Town	494.0	13.6	12.1
116	Attock	262.0	45.0	3.4
117	Wazirabad Town	644.0	33.1	16.7
118	Nishtar Town	734.0	54.9	1.0
119	Khiali Shahpur Town	477.0	55.1	5.7

120	Potohar Town	518.0	0.0	4.5
121	Madina Town	774.0	72.7	3.7
122	Sara-e-Alamgir	175.0	21.1	22.8
123	Kharian	780.0	21.5	28.7
124	Iqbal Town	764.0	65.3	3.4
125	Qila Didar Singh Town	486.0	82.9	6.4
126	Gujrat	1093.0	33.2	22.1
127	A. Iqbal Town(L)	567.0	38.4	2.0
128	Aroop Town	469.0	63.3	7.1
129	Nandipur Town	403.0	65.8	8.4
130	Dina	165.0	N.A	18.5
131	Chakwal	490.0	13.4	9.1
132	Pasrur	612.0	N.A	6.4
133	Sialkot	1250.0	35.1	15.0
134	Taxila Town	371.0	73.0	4.3
135	Jhelum	352.0	38.7	17.5
136	Aziz Bhatti Town	414.0	63.8	3.2
137	Ravi Town	1163.0	100.0	2.8
138	D G Bukhsh Town	712.0	100.0	3.4
139	Shalimar Town	389.0	100.0	2.3
140	Lahore Cantt	566.0	100.0	2.7
141	Rawal Town	782.0	100.0	4.9
142	Gulberg Town	571.0	100.0	4.9
143	Samanabad Town	722.0	100.0	5.3
	Pearson's Rank Correlation		0.583	0.508

: Punjab Development Statistics 2009 and MICS 2007-08, Issued by Bureau of Statistics, Government of the Punjab.

6.2.2 Role of Government Assistance in Reducing Poverty:

Analysis of the role of government in poverty alleviation is based on the variables reported in Tables 6.2.3 and 6.2.4. The reasons for the choice of these variables have been discussed in Section 6.1.

Although the figures for pension include some portion of private pensions too, the major contribution to this head comes from the government. The share of the households receiving pension ranges between 0.7 and 3.7 percent in the ten poorest districts, while this range is between 3.9 and 31.0 percent in the ten least poor ones. The sign and the magnitude of the rank correlation coefficient also indicate that broader coverage of pension benefits is associated with lower poverty levels.

Within the ten least poor districts, the percentage of pension receiving households is relatively lower in the industrial cities, as industry rather than government jobs forms the core of their economies. This figure is 3.9 percent for Gujranwala, 4.2 percent for Sialkot, and 5.3 percent for Faisalabad. On the other hand, a high percentage of household in Rawalpindi, Chakwal, Jehlum, Attock and Gujrat receive pension benefits. All these districts have cantonment areas in them except Chakwal. Like most other northern districts of the Punjab, Chakwal is a major recruiting area for the armed forces and is likely to have a significant proportion of ex-servicemen among its residents. Proximity of these districts to the federal capital Islamabad appears to be another reason for having larger proportion of pension recipient households as retired government employees are likely to reside there.

In contrast, ten poorest districts are those which are far away from national as well as provincial capitals and have fewer chances to get jobs in the public sector. Only two cantonments are located in this region and its share in the armed forces is believed to be relatively small. These appear to be the two most important reasons for fewer households receiving pension benefits. Cantonments apparently play a key role in reducing poverty because they not only result in better job opportunities, but also bring better health, education and infrastructural facilities to the areas. While building more cantonments may not be a reasonable poverty

reducing policy, increasing share of the poorest districts in the armed forces may go a long way in achieving this goal. Doors of civilian government employment opportunities also need to be opened wider for the residents of the poorest districts.

The table 6.2.4 shows that tehsils of northern Punjab are benefitting the most from pensions. Talagang is at the top where 35.2 percent households are receiving pensions followed by Kotli Sattian Town with 33.5 percent households and Gujjar Khan with 32.5 percent households receiving pensions. All the thirteen towns with highest ratio of pension receiving households belong to northern Punjab. Tehsils of central Punjab also rank high in this respect.

On the contrary, the ratio of pension receiving households is very small in the tehsils of southern Punjab. Rojhan is the poorest tehsil of Punjab. Only 0.1 percent households in this tehsil receive pension benefits. Even in Jalal Pur Pirwala tehsil of relatively less poor southern district of Multan, only 0.7 percent households benefit from pension. The tehsil itself is the poorest tehsil of Multan.

Significant variation within the district is also found in the distribution of pension benefits. In district Attock, tehsil Hazro has only 5.3 percent households that receive pension, whereas in Jand this figure is 21.4 percent. In district Gujrat, 21.2 percent households in Sara-e-Alamgir receive pensions as compare to tehsil Gujrat where this figure is 10 percent. Similar disparities can be found even in the tehsils of prosperous districts like Lahore and Rawalpindi. Person's Rank Correlation between poverty ranks of the tehsils and pension is 0.442.

. Benefits of the government schemes of social protection include dearness allowance, health and education related benefits, distribution of free school books, cash grants, food subsidy, marriage grants and Zakat. Among these schemes, the coverage of the education subsidy in the form of books was the largest in 2007-08, the year the MICS data was collected.

The distribution of these benefits across the districts appears to be slightly in favor of the least poor districts, but the association between the poverty ranks of the districts and the coverage of these benefits is very weak as is evident from the rank correlation coefficient.

Tehsil level results paint more or less the same picture. More than 50 tehsils are those in which less than 10 percent households are getting any kind of assistance from government. Tehsils of Central Punjab are getting more coverage as compare to southern and western Punjab, where poverty is centered. Targeting issues are also present. Pearson's Rank Correlation coefficient between ranks of tehsils and the coverage of the government schemes of social assistance is just 0.069, with a wrong sign.

Utility stores provide commodities of daily use at lower price with a view to helping low and middle income families. Data show that more households of the least poor districts are benefitting from these stores as compare to the households of the poorest districts. Chakwal, Rawalpindi, Gujrat and Jhelum are the three districts of the Punjab that benefit the most from these stores. Respectively, 38, 33, 33 and 30 percent households of these districts benefit from the utility stores, whereas this figure is 11 percent or less for the ten poorest districts. The association between the poverty ranks and the coverage of utility stores is strongly in favor of the least poor districts, as indicated by the sign and the magnitude of the rank correlation coefficient.

The tehsil level data tells almost the same story. Among tehsils, highest ratio of households that are getting benefits from the utility stores is found in Rawal town of Rawalpindi district where about 49.4 percent households are availing of this opportunity. Four tehsils where highest percentage of households is getting benefits from utility stores belong to the northern Punjab. In general, a higher percentage of households located in less poor tehsils benefits from utility stores. It is interesting to note that in the tehsils where number of pensioners is large, a

higher percentage of households are found to be benefitting from utility stores. It is not clear whether more retired persons go to the utility stores to buy grocery or more utility stores are located in the areas where more pensioners live.

Within the district variation is also found in the percentage of households benefitting from the utility stores. In Bhawalpur district, just 2.2 percent households located in tehsil Khairpur Tamewali are benefitting from utility stores. This tehsil is the 6th poorest in the province. On the other hand, in Bhawalpur City 24.6 percent households are getting these benefits. This city is the 91st poorest tehsil of the Punjab. In tehsil Chishtian of district Bhawalnagar, 14.6 percent households are buying goods from Utility Stores and its poverty rank is 50. In the same district just 3 percent households of Minchinabad are enjoying benefits of Utility Stores and the poverty ranking of this tehsil is 9. Similar situation is observed in the tehsils of many other districts like Lahore, Faisalabad, Layyah, and Lodhran. Pearson Rank Correlation between the ranks of the tehsils and the Percentage of households buying from Utility Stores is 0.563, which is strongly in favor of less poor tehsils.

To summarize, there are serious issues associated with both the coverage and targeting of the government assistance for the poor. Punjab is sharply divided between the privileged and non-privileged areas in this regard. This situation needs to be rectified to reduce the poverty gap between the rich and the poor regions of the province.

Before moving to the next subsection, it would be instructive to look at the case of Faisalabad district which offers an interesting case in point both with respect to economy and the role of government in reducing poverty. It is among the ten least poor districts of the Punjab. Nevertheless, it does not excel in any of the features associated with the less poor districts such as presence of cantonment boards, flow of foreign remittances, access to utility stores or pension

earnings. The only feature that makes it stand out is a strong industrial base as indicated by the number of industrial unit located in this city. The case of Faisalabad indicates how industry alone can propel a city out of poverty even when other factors associated with low poverty levels are not present.

Rank	Districts	Percentage of Households Benefitting from		
		Pension	Utility Stores	Govt. Schemes of Social Protection
1	MuzaffarGarh	2.3	6.0	10.0
2	RajanPur	0.7	5.0	2.0
3	RY Khan	1.9	11.0	2.2
4	Bahawalpur	3.1	11.0	3.0
5	LayyAh	2.4	10.0	10.0
6	Jhang	3.7	5.2	20.0
7	DG Khan	3.0	8.0	2.0
8	Khanewal	3.4	7.0	29.0
9	Bahawalnagar	3.1	10.0	4.0
10	Lodhran	2.6	7.7	5.7
11	Bhakkar	4.0	16.0	13.0
12	Vehari	1.5	5.0	34.0
13	Pakpattan	1.5	1.6	14.0
14	Okara	2.2	7.0	29.0
15	Sahiwal	4.3	7.0	16.0
16	Khushab	12.0	11.0	4.0
17	Mianwali	14.5	25.0	28.0
18	Kasur	2.0	1.6	27.0
19	Nankana Sahib	4.2	4.0	22.0
20	Sargodha	10.0	16.0	20.0
21	Narowal	11.0	5.0	34.0
22	Hafizabad	2.6	9.0	11.0
23	Sheikhupura	3.3	9.0	16.0
24	Multan	2.2	12.0	24.0
25	TT Singh	4.2	10.0	2.2

Table 6.2.3 Poverty Ranking and the Degree of Government Assistance to the Districts

26	**Mandi Bahauddin**	5.8	15.0	3.4
27	**Faisalabad**	5.3	9.0	19.0
28	**Attock**	14.0	19.0	3.3
29	**Chakwal**	31.0	38.0	2.0
30	**Jhelum**	25.2	30.0	26.0
31	**Gujranwala**	3.9	12.0	15.0
32	**Sialkot**	4.2	5.1	6.9
33	**Gujrat**	12.4	33.0	12.0
34	**Rawalpindi**	21.0	33.0	5.0
35	**Lahore**	8.6	15.0	26.0
	All Punjab	6.2	12.0	16.0
	Pearson's Rank correlation	0.553	0.532	0.111

Source: Punjab Development Statistics 2009 and MICS 2007-08, Issued by Bureau of Statistics,   Govt. of the Punjab.

Table1 6.2.4 Poverty Ranking and Level of Government Assistance to the Tehsils				
Rank	**Tehsils**	**Percentage of Households Benefitting from**		
		Pension	**Govt. Schemes of Social Protection**	**Utility Stores**
1	**Rojhan**	0.1	1.9	0.8
2	**Choubara**	1.9	1.2	5.4
3	**Ahmadpur East**	2.1	1.6	9.0
4	**Jatoi**	1.6	20.5	5.2
5	**Ali pur**	2.9	11.6	7.5
6	**Khairpur Tamewali**	1.7	2.5	2.2
7	**Muzaffargarh**	2.5	10.6	2.1
8	**Bhawalpur Sadar**	2.8	3.6	10.8
9	**Minchinabad**	1.0	0.2	3.0
10	**Ahmadpur Sial**	2.1	24.5	2.9
11	**RY Khan**	2.8	1.5	9.1
12	**Liaqatpur**	1.3	3.8	7.7
13	**Sadiqabad**	1.5	1.9	13.4
14	**Jampur**	0.6	1.0	5.6
15	**Shorkot**	3.4	18.6	3.1
16	**Jalalpur Pirwala Town**	0.7	12.3	4.2

17	Kot Addu	2.0	3.7	11.1
18	Taunsa	4.7	0.9	5.1
19	Bahawalnagar	3.5	1.8	10.8
20	Rajanpur	1.1	2.3	5.0
21	Kabirwala	3.5	18.6	5.5
22	Hasilpur	2.2	7.0	2.7
23	Kehror Pacca	1.6	5.1	4.5
24	Kotli Sattian Town	33.5	20.5	11.7
25	Fort Abbas	2.0	4.3	6.1
26	Noorpur Thal	6.5	4.3	0.9
27	Shujabad Town	1.7	32.2	3.4
28	Mankera	2.8	21.2	11.3
29	Chinniot	3.7	10.7	6.4
30	Mian Channu	2.5	41.1	7.7
31	Jhang	4.2	27.2	5.2
32	DG Khan	2.3	2.1	9.7
33	Darya Khan	4.7	11.6	11.0
34	Mailsi	1.6	30.5	2.6
35	Depalpur	1.0	21.5	3.0
36	Layyah	1.6	4.7	9.5
37	Khanpur	1.5	1.6	12.8
38	Vehari	2.1	42.0	5.6
39	Khanewal	4.1	25.8	7.6
40	Pakpattan	1.5	13.5	1.3
41	Pindi Bhattian	2.1	11.0	7.5
42	Kallur Kot	3.3	12.8	16.3
43	Chichawatni	3.1	16.2	5.5
44	Essa Khel	11.1	23.6	20.3
45	Safdarabad	6.0	32.8	5.0
46	Karor Lal Easan	4.2	21.9	12.2
47	Chunian	1.1	29.5	1.0
48	Piplan	9.0	30.9	20.1
49	Lodhran	2.8	3.9	11.7
50	Chishtian	3.6	2.7	14.6
51	Nankana Sahib	2.6	17.2	2.5
52	Tandlianwala Town	3.3	29.5	5.1
53	Dunya Pur	3.3	9.0	5.4
54	Arifwala	1.6	14.6	2.0
55	Shahpur	12.8	35.9	15.3
56	Kot Momin	4.4	17.6	6.8

57	Bhakkar	4.0	10.3	19.9
58	Sahiwal	5.1	15.5	8.3
59	Yazman	1.6	4.6	9.0
60	Pattoki	3.4	33.5	2.8
61	Sillanwali	7.1	16.2	15.8
62	Burewala	1.0	29.9	6.4
63	Shangla Hill	6.3	34.0	8.0
64	Sahiwal	9.0	29.7	16.0
65	Renala Khurd	4.6	41.3	8.5
66	Jahanian	3.4	37.8	8.1
67	Narowal	7.8	26.2	7.3
68	Ferozwala	2.6	19.4	12.0
69	Okara	2.9	35.4	10.7
70	Kamalia	3.6	3.0	10.1
71	Kasur	1.9	22.9	1.6
72	Jaranwala Town	6.7	34.1	5.8
73	Sheikhupura	3.8	13.4	7.9
74	Haroonabad	4.9	12.6	12.2
75	Shakargarh	14.2	42.0	2.2
76	Khushab	14.3	3.6	15.3
77	Phalia	5.0	5.3	13.6
78	Sohawa	29.0	35.0	17.7
79	Sargodha	5.9	15.1	20.0
80	Mianwali	19.0	28.8	29.1
81	Gojra	5.1	0.5	9.0
82	Muridke	3.5	20.8	9.0
83	Boson Town	1.9	20.6	9.2
84	Pindigheb	15.3	2.6	27.0
85	Sharaqpur Sharif	1.8	13.5	6.1
86	Jand	21.4	2.9	17.6
87	Bhalwal	13.8	20.9	15.4
88	Shah kot	6.0	21.5	4.9
89	Malakwal	7.6	5.0	18.2
90	Hasanabdal	15.0	2.0	16.0
91	Bahawalpur City	7.6	1.2	24.6
92	Hafizabad	2.9	10.5	10.4
93	Sumundari Town	7.0	17.5	4.3
94	Sambrial	4.0	9.8	8.8
95	Chak Jhumra Town	4.9	14.1	3.9
96	Nowshera Virkan Town	3.4	34.7	8.1

97	Choa Saidan Shah	31.5	2.0	40.3
98	TT Singh	4.0	3.1	10.9
99	Sher Shah Town	3.3	30.0	17.9
100	Fateh Jang	16.7	4.6	15.6
101	Kahuta Town	33.2	10.3	18.9
102	Talagang	35.9	2.5	32.2
103	Mandi Bahauddin	5.4	0.7	14.0
104	Pind Dadan Khan	24.5	24.1	24.5
105	Mumtazabad Town	1.3	21.6	13.1
106	Wahga Town	6.4	31.1	3.9
107	Kamoke Town	2.5	25.3	13.1
108	Shah Rukn-e-Alam Town	3.5	25.8	17.4
109	Muree Town	13.9	6.9	20.1
110	Hazro	5.3	5.0	17.9
111	Lyallpur Town	4.1	10.5	12.7
112	Kallar Sayaddan Town	27.1	8.5	24.8
113	Daska	3.0	7.9	3.0
114	Jinnah Town	3.8	16.8	11.4
115	Gujjar Khan Town	32.5	9.2	17.4
116	Attock	12.0	1.9	19.2
117	Wazirabad Town	5.6	2.5	17.6
118	Nishtar Town	3.2	27.0	9.3
119	Khiali Shahpur Town	4.8	14.6	9.6
120	Potohar Town	28.3	2.4	28.4
121	Madina Town	6.6	12.2	13.2
122	Sara-e-Alamgir	21.2	5.6	19.9
123	Kharian	14.3	5.4	32.4
124	Iqbal Town	5.0	10.0	10.4
125	Qila Didar Singh Town	2.1	16.5	11.0
126	Gujrat	10.0	17.0	35.5
127	Allama Iqbal Town(L)	7.1	26.2	13.6
128	Aroop Town	3.6	13.2	14.3
129	Nandipur Town	4.6	6.7	9.7
130	Dina	28.6	28.1	31.3
131	Chakwal	27.2	1.8	42.1
132	Pasrur	5.8	6.4	1.6
133	Sialkot	5.1	4.8	5.3
134	Taxila Town	15.2	2.4	30.1
135	Jhelum	22.1	21.1	40.0

136	**Aziz Bhatti Town**	15.9	34.2	14.7
137	**Ravi Town**	7.9	24.4	12.8
138	**Data Ganj Bukhsh Town**	7.4	19.0	18.1
139	**Shalimar Town**	8.4	27.2	13.6
140	**Lahore Cantt**	14.1	23.1	22.2
141	**Rawal Town**	12.5	2.3	49.4
142	**Gulberg Town**	9.1	20.0	27.3
143	**Samanabad Town**	9.9	24.5	18.9
	Pearson's Rank Correlation	**0.442**	**0.069**	**o.563**

Source: MICS 2007-08, Issued by Bureau of Statistics, Govt. of Punjab

6.2.3 Education:

Tables 6.2.5 and 6.2.6 report the variables related to the state of education in the districts and tehsils of the Punjab along with their poverty ranks. A detailed discussion on the choice of these variables can be found in the previous section of this chapter.

It is evident from the Table 6.2.5 that adult literacy rate for the 15 years and older age group is considerably different in the poorest and the least poor districts of the Punjab. In the ten poorest districts it ranges between 30 and 51 percent, whereas this range is 59 to 68 percent in the ten least poor districts. Even the most illiterate district among the ten least poor districts has a literacy rate which is higher than the literacy rate in the most literate district of the ten poorest districts. The overall adult literacy rate of the province is just 56 percent and leaves much to be desired. The ten poorest districts do not reach even this not so respectable average.

Adult literacy rate at tehsil level is also very low in the thirty poorest tehsils of the Punjab. It ranges from 14.1percent to 76.8 percent in these tehsils. The lowest literacy rate is found in Rojhan the poorest tehsil of Punjab. Literacy rate of 76.8 in Kotli Sattian Town is a peculiarity among the thirty poorest tehsils. This figure is below 51 percent in all other thirty poorest tehsils.

In thirty least poor tehsils the range of adult literacy is from 56.2 percent to 87 percent. Both the tehsils with the literacy rates of 56.2 percent and 87 percent belong to a single district, Lahore. This is another incident of wide variations among tehsils within a district. In Faisalabad the lowest literacy rate is 40.9 in Tandlianwala Town compared to 70.5 in Iqbal Town. Pearson's Rank correlation between the poverty ranks of the tehsils and the adult literacy rate is 0.889 which is exceptionally high.

Net enrolment at primary schools among the age group of 5 to 9 years also presents a similar picture. It ranges from 27 to 54 percent in the ten poorest districts as compare to 59 to 77 percent in the ten least poor districts. Here again, the ten poorest districts fall below the provincial average of 53 percent. Net primary school enrolment rate is the lowest in Rajanpur, the second poorest district of the Punjab and stands at just 27 percent.

At tehsil level, net primary school enrolment rate is also found to be the lowest in Rojhan, the poorest tehsil of the Punjab and stands at an alarming low of just 17.1 percent. Its range among the thirty poorest tehsils is from 17.1 percent in Rojhan to 67.5 percent in Kotli Sattian Town. In the least poor tehsils, this range is 52.2 to 76.2 percent. Even this is far from the targeted figure of 100 percent and indicates that even in relatively less poor areas a large proportion of children are staying away from schools.

Variation within the districts is also found in the net primary school enrolment rates. For example within Lahore it varies between 52.2 and 75.8 percent. Similar situation can be observed in other districts such as Multan, Muzaffargarh and Rajanpur. Pearson Rank Correlation of 0.827 for districts and 0.789 for tehsils indicates a strong association between the poverty ranks of the districts and net primary enrolment rate. These figures leave little hope for increase in adult literacy rate in the poorest districts in near future.

Number of Colleges ranges from 5 to 18 in the ten poorest districts. In the ten least poor districts this range is 9 to 61. It may be argued that just number of colleges is not an adequate indicator as population of the districts is not the same. To take care of this potential critique, number of persons per Degree College has also been calculated. The general pattern of this magnitude also appears to be in favor of the less poor districts. In the ten least poor districts, there is a degree college for 71 to 148 thousand people. On the other hand, a single degree college fulfils the higher education needs of 118 to 288 thousand people living in the ten poorest districts. Add to this the fact that colleges in the poorer districts have less capacity and lower level of facilities. The rank correlation between these two variables and the poverty ranks has expected direction but its magnitude is smaller as compared to that for the net primary school enrolment and adult literacy.

In conclusion, a close association exits between lack of education and poverty. This association is stronger in case of literacy and primary education. This finding is in line with the human capital theory of education.

Table 6.2.5 Poverty Ranking and the Educational Profile of the Districts					
Rank	Districts	Adult Literacy (%)	Net Primary School Enrolment (%)	# of Degree Colleges	Persons per Degree College (000)
1	MuzaffarGarh	41	40	12	283
2	RajanPur	30	27	5	282
3	RY Khan	41	37	15	266
4	Bahawalpur	42	43	18	170
5	LayyAh	48	47	12	118
6	Jhang	47	47	16	208
7	DG Khan	40	33	9	234
8	Khanewal	51	54	11	226
9	Bahawalnagar	46	46	14	176
10	Lodhran	41	42	5	288

11	Bhakkar	64	54	9	143
12	Vehari	46	54	6	427
13	Pakpattan	43	50	4	388
14	Okara	47	54	17	158
15	Sahiwal	52	61	7	310
16	Khushab	53	44	8	132
17	Mianwali	53	53	8	158
18	Kasur	44	46	11	263
19	Nankana Sahib	50	54	6	243
20	Sargodha	56	50	30	103
21	Narowal	63	68	10	147
22	Hafizabad	53	60	4	247
23	Sheikhupura	56	53	8	314
24	Multan	49	51	26	147
25	TT Singh	59	60	15	127
26	Mandi Bahauddin	59	61	9	148
27	Faisalabad	62	59	56	117
28	Attock	59	67	12	126
29	Chakwal	69	77	9	140
30	Jhelum	74	69	9	122
31	Gujranwala	68	60	22	191
32	Sialkot	69	65	12	273
33	Gujrat	71	69	33	73
34	Rawalpindi	78	68	58	71
35	Lahore	72	61	61	134
	Pearson Rank Correlation	0.871	0.827	0.489	-0.444
	All Punjab	56	53	567	158

Source: Punjab Development Statistics 2009 and MICS 2007-08, Issued by Bureau of Statistics, Govt. of Punjab.

Rank	Tehsils	Adult Literacy (%)	Net Primary School Enrolment (%)
	Table 6.2.6 Poverty Ranking, Adult Literacy and Net Primary School Enrolment in Tehsils		
1	Rojhan	14.1	17.1
2	Choubara	40.7	47.6
3	Ahmadpur East	29.3	28.4
4	Jatoi	35.8	37.0
5	Ali pur	34.1	25.0
6	Khairpur Tamewali	31.1	30.4
7	Muzaffargarh	39.2	42.0
8	Bhawalpur Sadar	35.6	45.6
9	Minchinabad	30.5	35.7
10	Ahmadpur Sial	42.8	40.5
11	RY Khan	46.5	36.3
12	Liaqatpur	35.4	40.6
13	Sadiqabad	38.5	31.7
14	Jampur	31.0	22.7
15	Shorkot	47.1	40.2
16	Jalalpur Pirwala Town	28.2	31.5
17	Kot Addu	49.1	48.5
18	Taunsa	44.8	40.6
19	Bahawalnagar	39.7	41.9
20	Rajanpur	35.1	38.1
21	Kabirwala	49.1	50.8
22	Hasilpur	42.6	43.3
23	Kehror Pacca	37.9	35.7
24	Kotli Sattian Town	76.8	67.5
25	Fort Abbas	47.6	46.6
26	Noorpur Thal	47.2	39.9
27	Shujabad Town	34.8	47.1
28	Mankera	43.6	44.7
29	Chinniot	43.3	52.1
30	Mian Channu	50.4	55.0
31	Jhang	49.8	48.1
32	DG Khan	38.4	29.5
33	Darya Khan	42.5	43.4

34	Mailsi	42.6	48.7
35	Depalpur	38.0	49.1
36	Layyah	47.7	45.2
37	Khanpur	43.4	39.8
38	Vehari	46.7	53.9
39	Khanewal	54.1	54.1
40	Pakpattan	42.7	49.2
41	Pindi Bhattian	45.9	56.0
42	Kallur Kot	45.1	55.8
43	Chichawatni	49.6	62.3
44	Essa Khel	44.0	43.4
45	Safdarabad	49.6	51.1
46	Karor Lal Easan	52.0	50.8
47	Chunian	42.1	49.6
48	Piplan	55.4	56.3
49	Lodhran	37.2	36.6
50	Chishtian	54.3	47.3
51	Nankana Sahib	44.2	53.9
52	Tandlianwala Town	40.9	45.4
53	Dunya Pur	47.6	56.9
54	Arifwala	44.1	50.1
55	Shahpur	50.5	52.2
56	Kot Momin	46.6	43.0
57	Bhakkar	49.3	59.3
58	Sahiwal	53.6	60.6
59	Yazman	53.5	62.0
60	Pattoki	46.8	45.6
61	Sillanwali	53.0	49.3
62	Burewala	48.1	58.6
63	Shangla Hill	56.9	56.0
64	Sahiwal	53.5	53.9
65	Renala Khurd	54.6	61.3
66	Jahanian	54.4	59.0
67	Narowal	60.3	65.8
68	Ferozwala	51.0	53.4
69	Okara	54.2	57.9
70	Kamalia	52.7	56.6
71	Kasur	43.0	44.6
72	Jaranwala Town	51.8	51.8
73	Sheikhupura	57.9	54.5

74	Haroonabad	55.3	60.3
75	Shakargarh	66.0	69.3
76	Khushab	55.9	45.3
77	Phalia	55.7	58.6
78	Sohawa	68.9	71.9
79	Sargodha	59.6	48.2
80	Mianwali	55.8	55.9
81	Gojra	61.3	59.8
82	Muridke	59.6	49.6
83	Boson Town	47.6	54.7
84	Pindigheb	54.7	72.8
85	Sharaqpur Sharif	50.2	48.9
86	Jand	58.4	70.6
87	Bhalwal	58.2	52.2
88	Shah kot	63.8	55.2
89	Malakwal	55.4	59.8
90	Hasanabdal	59.5	59.6
91	Bahawalpur City	61.9	65.4
92	Hafizabad	57.4	62.6
93	Sumundari Town	59.7	66.4
94	Sambrial	59.8	61.8
95	Chak Jhumra Town	59.7	59.7
96	Nowshera Virkan Town	59.3	57.2
97	Choa Saidan Shah	69.4	77.7
98	TT Singh	61.8	61.4
99	Sher Shah Town	53.7	55.6
100	Fateh Jang	60.8	69.9
101	Kahuta Town	74.5	71.6
102	Talagang	64.2	76.9
103	Mandi Bahauddin	65.1	64.1
104	Pind Dadan Khan	62.7	63.9
105	Mumtazabad Town	55.0	61.2
106	Wahga Town	60.2	61.2
107	Kamoke Town	67.4	65.4
108	Shah Rukn-e-Alam Town	60.6	54.1
109	Muree Town	78.9	70.4
110	Hazro	54.5	64.9
111	Lyallpur Town	65.2	65.8

112	Kallar Sayaddan Town	75.0	71.7
113	Daska	67.9	61.6
114	Jinnah Town	73.5	62.0
115	Gujjar Khan Town	75.3	62.7
116	Attock	64.1	64.8
117	Wazirabad Town	71.4	58.1
118	Nishtar Town	56.2	52.2
119	Khiali Shahpur Town	64.5	56.6
120	Potohar Town	71.6	67.4
121	Madina Town	71.1	64.8
122	Sara-e-Alamgir	70.5	71.3
123	Kharian	68.3	70.6
124	Iqbal Town	70.5	61.0
125	Qila Didar Singh Town	71.9	63.2
126	Gujrat	71.9	68.2
127	Allama Iqbal Town(L)	62.0	53.4
128	Aroop Town	70.1	60.3
129	Nandipur Town	72.6	58.3
130	Dina	76.4	70.3
131	Chakwal	72.2	76.2
132	Pasrur	74.0	70.4
133	Sialkot	72.6	67.9
134	Taxila Town	75.8	70.7
135	Jhelum	82.9	71.7
136	Aziz Bhatti Town	75.9	66.7
137	Ravi Town	70.6	59.6
138	Data Ganj Bukhsh Town	76.7	53.9
139	Shalimar Town	81.9	70.8
140	Lahore Cantt	73.1	66.9
141	Rawal Town	83.8	68.2
142	Gulberg Town	84.3	68.6
143	Samanabad Town	87.0	75.8
	Pearson Rank Correlation	0.889	0.789

Source: MICS 2007-08, Issued by Bureau of Statistics, Govt. of Punjab.

6.2.4 Health:

Table 6.2.7 and 6.2.8 provide data on the variables representing state of health in the districts and tehsils of the Punjab as discussed in the previous section. About 75 per cent of the households in various districts of the Punjab have health facilities available to them within half an hour distance from their residence. According to the published MICS repot (Punjab 2009), out of these, 57 percent households have access to a government health facility, whereas remaining 43 percent households are located close to private hospitals. Ninety-five percent of the urban population can readily access health facilities within half an hour, whereas only two-thirds (66 percent) of those living in rural areas have this opportunity. In the rural areas, 62 present of the accessible hospitals are in the public sector while this figure for the urban areas is 46 percent. The reason for this difference appears to be the availability of a large number of rural health centers and limited use of private hospitals both due to accessibility and affordability reasons.

Less than half the households in Rajanpur and Pakpattan, the 2nd and 13th poorest districts respectively, are within half an hour distance from the nearest health facility. This figure for the 1st, 3rd, 5th and 9th least poor districts, namely Lahore, Gujrat, Gujranwala and Faisalabad respectively, is above 90 percent. In the ten poorest districts it ranges from 47 to 70 percent as compare to 61 to 96 percent for ten least poor districts. Southern poor districts include desert areas with low population density, where human settlements are widely scattered. This could be one possible reason for limited accessibility to the health facilities in these districts. The rank correlation between the accessibility of health facilities and the poverty rank of the district is 0.72.

Properly treated water is defined in the MICS dataset as boiled, bleach added, chlorinated, disinfected by solar rays, filtered and kept for settling particle. An "others" category

is also added to take care of other less common methods of water treatment. About 94 per cent of the population of Punjab uses untreated water. In an environment where chances of contamination are high, this represents an alarming situation. Most common methods of water treatment include boiling and using a water filter.

Use of properly treated water varies across areas of residence with the highest percentage occurring in big cities (21 percent) followed by other urban areas (7 percent) and is negligible in rural areas (under 1 percent). This indicator varies significantly with the education level of the head of the household and wealth index. Appropriate water treatment is also associated with the level of education of the heads of households (MICS 2009).

Significant variations exist across districts in terms of the use of properly treated water. People in Lahore make the highest use of the appropriately treated water (total 24 percent, boiling 13 percent, filtration 11 percent), followed by Rawalpindi (13 percent) and Sialkot (10 percent). These are the 1st, 2nd and 4th least poor districts in the province. Use of properly treated water in other districts ranges from 8 percent to less than 1 percent with the lowest percentage observed in Bahawalnagar, followed by Mianwali, Layyah and Bhakkar. In the ten poorest districts this practice is followed by 0.5 to 2 percent households while corresponding figure for the ten least poor districts is between 1.2 and 24 percent.

Use of properly treated water shows considerable variation across among tehsils within the same district. In Attock it varies from zero to 4.1 percent, in Bhawalpur from 0.5 to 7.1 percent and in Jehlum from 0.6 to 13.5 percent. This variation is even greater in big cities. In Lahore it ranges from 9.6 percent to 41.6 percent, in Rawalpindi from zero to 29.8 percent and in the tehsils of Sialkot it ranges from 1 percent to 21.2 percent. Tehsils of Gujranwal seem to be an

exception where this figure varies from 75 percent to 93.4 percent and shows a consistently high prevalence of this practice.

In most of the thirty poorest tehsils less than one percent of the households use properly treated water. Among the thirty least poor tehsils the percentage of households following this practice ranges from 2.2 to more than 91 percent. Huge gap in the prevalence of this health related precautionary measure between the poorest and less poor tehsils as well as within the tehsils of the same district is pretty obvious from these figures. Pearson's Rank Correlation between the poverty rank of the districts and the percentage of households using properly treated water is 0.660, and reduces to 0.463 for tehsils.

The ten poorest districts show a poor record on washing hands after going to toilet. The prevalence of this practice is between 36 and 72 percent in these districts, whereas corresponding figures for the ten least poor districts are 53 and 90 percent.

About 29.6 to 86.8 percent people of the poorest tehsils wash hands after going to latrine. In the thirty least poor tehsils this figure ranges from 73 percent to 97.4 percent. Compared to other indicators discussed in this chapter, the gap between the least poor and the poorest tehsils is smaller on this count. This could be due to the fact that cleanliness is an important part of Islamic faith and practice, which is followed by a great majority of the rich and the poor.

Within the district variation among the tehsils in this practice is also noticeable. In Bhawalpur District the percentage of people who wash hands after going to latrine ranges from 36.6 percent to 78.7 percent. In Khushab this ranges is from 37.7 percent to 66.7 percent. Similar situation is found in many other districts too. Sargodha is a district of central Punjab but in its tehsils tendency among the people to wash hands after going to latrine is very low and ranges from just 19.5 percent to 43.8 percent. Gujranwala stands prominent on this count. In its tehsils

from 75 percent to 93.4 percent households follow this practice. The rank correlation between this variable and the poverty ranks is a 0.651 and 0.617 respectively for districts and tehsils. It is possible to popularize this practice by using mass media, which is likely to result in better health of people and therefore in reduced poverty.

The table 6.2.7 reports percentage of severely underweight children of age 5 years or less in the different districts of the Punjab. Although difference is found between the ten least poor and poorest districts, the overall association of the rank of the districts and the percentage of underweight children as seen by the rank correlation coefficient is not very strong. The reason for this appears to be the fact that food intake is linked to cultural norms and habits that do not necessarily vary with income or wellbeing of the household.

Children are considered malnourished if they are underweight, according to the standard set by the United Nation. Underweight children are more likely to get sick as compared to other children. As severity of this condition increases, the probability of survival of these children decreases. In the thirty poorest tehsils 7.3 to 21.6 percent children are severely underweight, while this figure for the thirty least poor tehsils is 3.3 percent to 17.1 percent. Choubara is unique example in that it is the second poorest tehsil of the Punjab but only 7.3 percent children are malnourished there. In the tehsils of DG Khan District, the percentage of malnourished children is more than 20 percent which is alarmingly high. Variation among the ratio of malnourished children is also found in the tehsils of same district. For example in the tehsils of Sialkot, this percentage varies from 3.3 to 17.6 percent. Pearson's Rank Correlation between the poverty ranks and percentage of underweight children indicates the expected inverse association between the two variables, though this association is week.

Infant mortality is another variable that serves as an indicator of health, especially of women and newborn children. It is much higher in the ten poorest districts of the Punjab as compared to the ten least poor districts. Whereas 40 to 78 newborns die per 1000 live births in the ten least poor districts, this figures is 72 to 110 deaths in the ten poorest districts. The average for the province is 77 deaths per 1000 live births. As indicated by the value of 0.787 for the rank correlation coefficient, infant mortality is closely associated with the poverty rank of districts.

In a nutshell, most indicators of health discussed above show a strong association with the poverty ranks of the districts and tehsils. Providing more health facilities and increasing awareness about health related issues can improve general standard of health in these regions which in turn is likely to reduce regional poverty.

Table 6.2.7 Poverty Ranking and Health Profile of the Districts						
		% of Households			% of Malnaur-ished Children	Infant Mortality (per 1000 live births)
Rank	District	Access to Hospital (within half an hour distance)	Using Properly Treated Water	Washing Hands After Toilet		
1	MuzaffarGarh	57	0.5	51	14	86
2	RajanPur	47	0.6	36	15	110
3	RY Khan	55	0.9	72	14	98
4	Bahawalpur	64	2	62	12	110
5	LayyAh	58	0.2	39	7	72
6	Jhang	67	1.9	55	13	88
7	DG Khan	59	1.3	49	21	78
8	Khanewal	70	1.1	51	10	92
9	Bahawalnagar	51	0.5	49	11	84
10	Lodhran	51	1.5	52	15	108
11	Bhakkar	63	0.1	78	12	82
12	Vehari	81	0.7	59	17	82

13	Pakpattan	41	0.8	63	19	109
14	Okara	70	0.9	47	12	83
15	Sahiwal	89	2.4	72	10	89
16	Khushab	79	1.2	58	18	95
17	Mianwali	59	0.3	51	13	78
18	Kasur	70	1.4	62	4	77
19	Nankana Sahib	76	1.7	83	10	81
20	Sargodha	89	1.4	36	15	71
21	Narowal	90	0.6	65	14	82
22	Hafizabad	92	4.2	52	9	67
23	Sheikhupura	78	4.8	87	10	79
24	Multan	72	2.9	59	12	54
25	TT Singh	69	3.6	67	9	64
26	Mandi Bahauddin	77	2.4	53	9	78
27	Faisalabad	90	2.9	68	11	75
28	Attock	61	1.2	74	12	45
29	Chakwal	82	2	73	7.2	60
30	Jhelum	87	6.5	83	7.1	51
31	Gujranwala	96	7.9	85	10	67
32	Sialkot	83	10	90	14	52
33	Gujrat	94	8.1	79	5	70
34	Rawalpindi	82	13	81	6	40
35	Lahore	92	24	88	9	53
	All Punjab	75	4.8	66	11	77
	Pearson Rank Correlation	0.720	0.660	0.651	-0.484	-0.787

Source: MICS 2007-08, Issued by Bureau of Statistics, Govt. of Punjab

Rank	Tehsils	% of Households		% of Malnaurished Children
		Using Properly Treated Water	Washing Hands After Toilet	
1	Rojhan	0.3	45.7	16.5
2	Choubara	0.5	45.7	7.3
3	Ahmadpur East	0.9	59.9	10.9
4	Jatoi	0.4	54.0	12.5
5	Ali pur	0.1	57.0	16.3
6	Khairpur Tamewali	0.5	74.3	17.9
7	Muzaffargarh	0.5	48.0	14.1
8	Bhawalpur Sadar	0.5	54.0	12.2
9	Minchinabad	0.0	51.5	11.1
10	Ahmadpur Sial	0.1	50.0	15.6
11	RY Khan	1.3	86.8	14.5
12	Liaqatpur	0.5	75.4	14.3
13	Sadiqabad	0.7	59.5	15.6
14	Jampur	0.2	29.6	12.3
15	Shorkot	0.5	57.0	19.9
16	Jalalpur Pirwala Town	0.2	35.1	13.9
17	Kot Addu	0.8	51.0	12.7
18	Taunsa	0.8	45.7	21.6
19	Bahawalnagar	0.7	49.4	10.9
20	Rajanpur	1.4	40.0	18.2
21	Kabirwala	0.0	46.2	10.5
22	Hasilpur	1.6	71.0	15.7
23	Kehror Pacca	0.6	54.4	16.6
24	Kotli Sattian Town	0.0	72.0	8.7
25	Fort Abbas	0.2	46.5	12.9
26	Noorpur Thal	0.0	37.7	17.9
27	Shujabad Town	1.0	59.4	18.4
28	Mankera	0.0	65.8	10.3
29	Chinniot	4.6	52.0	9.7
30	Mian Channu	1.4	66.7	10.5
31	Jhang	0.6	58.0	12.7
32	DG Khan	1.6	50.4	20.9

Table 6.2.8 Poverty Ranking and Health Profile of Tehsils

33	Darya Khan	0.0	78.4	14.5
34	Mailsi	0.2	64.1	21.1
35	Depalpur	0.6	57.6	13.6
36	Layyah	0.2	45.7	6.5
37	Khanpur	1.0	63.2	9.7
38	Vehari	0.8	59.9	16.0
39	Khanewal	1.7	40.7	11.0
40	Pakpattan	0.2	58.8	22.7
41	Pindi Bhattian	3.0	52.4	7.6
42	Kallur Kot	0.3	77.8	13.7
43	Chichawatni	2.1	68.6	7.8
44	Essa Khel	0.2	40.1	14.4
45	Safdarabad	0.8	79.3	8.5
46	Karor Lal Easan	0.1	26.2	6.8
47	Chunian	0.4	56.5	3.3
48	Piplan	0.2	55.1	10.7
49	Lodhran	2.6	41.7	13.8
50	Chishtian	0.7	67.9	7.6
51	Nankana Sahib	1.0	83.2	11.0
52	Tandlianwala Town	1.1	42.5	18.0
53	Dunya Pur	0.7	65.2	14.3
54	Arifwala	1.5	67.3	14.6
55	Shahpur	1.2	28.8	17.4
56	Kot Momin	0.7	43.8	13.2
57	Bhakkar	0.0	82.2	10.4
58	Sahiwal	2.6	74.2	11.7
59	Yazman	0.6	36.6	8.5
60	Pattoki	1.0	59.4	7.2
61	Sillanwali	0.2	24.4	13.6
62	Burewala	1.0	54.7	16.2
63	Shangla Hill	2.7	81.6	8.0
64	Sahiwal	0.3	19.5	18.0
65	Renala Khurd	0.8	34.2	11.2
66	Jahanian	1.5	51.6	8.7
67	Narowal	0.7	60.4	15.0
68	Ferozwala	3.9	82.5	11.7
69	Okara	1.2	37.7	10.6
70	Kamalia	1.8	71.4	10.7
71	Kasur	2.1	65.9	3.8
72	Jaranwala Town	0.7	40.3	8.9

73	Sheikhupura	5.2	89.7	9.6
74	Haroonabad	0.3	24.1	15.1
75	Shakargarh	0.6	69.6	13.5
76	Khushab	1.8	66.7	18.0
77	Phalia	2.8	49.8	8.7
78	Sohawa	0.6	70.5	9.1
79	Sargodha	1.8	37.8	12.7
80	Mianwali	0.4	54.1	14.6
81	Gojra	2.3	84.1	8.6
82	Muridke	3.8	83.9	8.5
83	Boson Town	3.1	52.2	9.5
84	Pindigheb	0.5	62.7	17.9
85	Sharaqpur Sharif	6.3	84.1	7.5
86	Jand	0.0	64.8	13.6
87	Bhalwal	1.9	42.6	15.9
88	Shah kot	3.9	85.7	9.5
89	Malakwal	0.6	50.3	10.0
90	Hasanabdal	2.2	78.2	5.4
91	Bahawalpur City	7.1	78.7	13.6
92	Hafizabad	4.9	51.0	9.3
93	Sumundari Town	0.1	68.2	7.8
94	Sambrial	1.0	77.1	11.7
95	Chak Jhumra Town	1.5	74.5	6.3
96	Nowshera Virkan Town	75.3	75.3	10.1
97	Choa Saidan Shah	2.4	60.4	3.3
98	TT Singh	6.1	49.9	8.7
99	Sher Shah Town	2.5	53.6	13.6
100	Fateh Jang	0.4	83.5	13.8
101	Kahuta Town	2.9	74.1	4.0
102	Talagang	0.9	74.1	6.1
103	Mandi Bahauddin	3.2	57.2	7.6
104	Pind Dadan Khan	2.2	72.5	8.1
105	Mumtazabad Town	4.2	68.2	10.1
106	Wahga Town	10.5	75.5	8.5
107	Kamoke Town	75.0	75.0	6.5
108	Shah Rukn-e-Alam Town	4.9	75.3	7.5
109	Muree Town	2.0	77.1	1.7
110	Hazro	0.5	68.5	12.1
111	Lyallpur Town	4.5	77.7	9.7

112	Kallar Sayaddan Town	1.1	80.8	8.4
113	Daska	1.8	97.8	11.3
114	Jinnah Town	7.2	76.0	9.9
115	Gujjar Khan Town	2.2	76.1	4.5
116	Attock	4.1	86.5	10.4
117	Wazirabad Town	91.1	91.1	11.0
118	Nishtar Town	9.6	79.2	6.9
119	Khiali Shahpur Town	85.7	85.7	8.9
120	Potohar Town	4.6	73.0	6.8
121	Madina Town	4.3	78.7	12.2
122	Sara-e-Alamgir	6.3	92.5	4.6
123	Kharian	5.5	80.0	3.3
124	Iqbal Town	2.5	88.9	12.6
125	Qila Didar Singh Town	75.3	92.0	5.8
126	Gujrat	9.8	75.5	6.2
127	Allama Iqbal Town(L)	12.0	84.4	14.5
128	Aroop Town	76.0	76.0	10.5
129	Nandipur Town	93.4	93.4	17.1
130	Dina	4.7	90.9	4.5
131	Chakwal	2.9	75.4	9.3
132	Pasrur	4.9	97.4	3.3
133	Sialkot	21.2	90.2	17.6
134	Taxila Town	5.6	83.2	5.5
135	Jhelum	13.5	93.4	6.7
136	Aziz Bhatti Town	29.5	90.2	11.7
137	Ravi Town	18.6	90.8	7.5
138	Data Ganj Bukhsh Town	35.5	87.5	6.4
139	Shalimar Town	31.1	92.1	6.3
140	Lahore Cantt	28.2	93.9	13.3
141	Rawal Town	29.8	90.5	7.9
142	Gulberg Town	40.2	95.8	10.5
143	Samanabad Town	41.6	96.2	4.2
	Pearson Rank Correlation	0.463	0.617	-0.476

Source: MICS 2007-08, Issued by Bureau of Statistics, Govt. of the Punjab.

6.2.5 The Overall Picture:

Now that an analysis of regional poverty in terms of variables falling under four broad categories has been presented, it would be appropriate to try to relate poverty ranks of the districts and tehsils of the Punjab with the overall quality of life in these regions. To achieve this objective, the following paragraphs are devoted to a comparison of the poverty ranks of the districts and tehsils with their ranks in terms of the quality of life index developed by Haq *et al* (2010).

Tables 6.2.9 and 6.2.10 show that some of the findings of the Haq study referred to above strongly corroborate the findings of the present study e.g. districts which are big cities, are also regions of "good" quality of life and the districts in the south and west rank very low in terms of the quality of life whereas the central and northern districts rank at the top. The variation in the quality of life index across the districts is indicative of regional disparities in terms of the quality of life and so is the case with poverty as found out in the present study.

Table 6.2.9 Poverty and Quality of Life Ranking of Districts		
Poverty Rank	**District**	**Quality of Life Rank***
1 (poorest)	MuzaffarGarh	1 (lowest quality of life)
2	RajanPur	2
3	RY Khan	9
4	Bahawalpur	12
5	LayyAh	7
6	Jhang	5
7	DG Khan	6
8	Khanewal	16
9	Bahawalnagar	3
10	lodhran	11
11	Bhakkar	10

12	Vehari	15
13	Pakpattan	4
14	Okara	13
15	Sahiwal	25
16	Khushab	14
17	Mianwali	8
18	Kasur	17
19	Nankana Sahib	18
20	Sargodha	24
21	Narowal	19
22	Hafizabad	20
23	Sheikhupura	27
24	Multan	28
25	TT Singh	21
26	M B Din	22
27	Faisalabad	30
28	Attock	23
29	Chakwal	26
30	Jhelum	29
31	Gujranwala	33
32	Sialkot	31
33	Gujrat	32
34	Rawalpindi	34
35	Lahore	35

*Source: Haq (2010).

The Pearson's Rank Correlation between the two rankings = 0.913

In Table 6.2.9 poverty ranks of the districts calculated in the present study are reported side by side with Haq's quality of life ranks. The comparison of the two rankings reveals that the regions having high poverty rates also have a very poor quality of life. These results are not astonishing as low quality of life is naturally associated with poverty. Even a cursory look at the table shows that the two ranks are very similar. A value of 0.913 for the Spearman's rank correlation coefficient between the two rankings is a testimony to this fact, the fact that also points to the robustness of the present study. A similar comparison at tehsil level also indicates a

close association between the two magnitudes. Pearson's Rank Correlation coefficient of 0.931 further highlights the strength of association between the two types of ranks.

Table 6.2.10 Poverty and Quality of Life Ranking of Tehsils		
Poverty Rank	**Tehsils**	**Quality of Life Ranking[*]**
(least poor) 1	Samanabad Town	1(highest quality of life)
2	Gulberg Town	2
3	Rawal Town	5
4	Lahore Cantt	8
5	Shalimar Town	4
6	Data Ganj Bukhsh Town	3
7	Ravi Town	6
8	Aziz Bhatti Town	7
9	Jhelum	22
10	Taxila Town	11
11	Sialkot	13
12	Pasrur	18
13	Chakwal	36
14	Dina	24
15	Nandipur Town	14
16	Aroop Town	15
17	Allama Iqbal Town(L)	16
18	Gujrat	21
19	Qila Didar Singh Town	10
20	Iqbal Town	17
21	Kharian	34
22	Sara-e-Alamgir	31
23	Madina Town	12
24	Potohar Town	41
25	Khiali Shahpur Town	20
26	Nishtar Town	28
27	Wazirabad Town	27
28	Attock	32
29	Gujjar Khan Town	46
30	Jinnah Town	9

31	Daska	33
32	Kallar Sayaddan Town	45
33	Lyallpur Town	30
34	Hazro	39
35	Muree Town	37
36	Shah Rukn-e-Alam Town	23
37	Kamoke Town	19
38	Wahga Town	38
39	Mumtazabad Town	25
40	Pind Dadan Khan	61
41	Mandi Bahauddin	42
42	Talagang	70
43	Kahuta Town	56
44	Fateh Jang	63
45	Sher Shah Town	26
46	TT Singh	50
47	Choa Saidan Shah	68
48	Nowshera Virkan Town	35
49	Chak Jhumra Town	77
50	Sambrial	59
51	Sumundari Town	54
52	Hafizabad	49
53	Bahawalpur City	29
54	Hasanabdal	95
55	Malakwal	71
56	Shah kot	65
57	Bhalwal	57
58	Jand	91
59	Sharaqpur Sharif	58
60	Pindigheb	92
61	Boson Town	47
62	Muridke	44
63	Gojra	53
64	Mianwali	97
65	Sargodha	43
66	Sohawa	55
67	Phalia	81
68	Khushab	79
69	Shakargarh	60

70	Haroonabad	104
71	Sheikhupura	40
72	Jaranwala Town	78
73	Kasur	89
74	Kamalia	73
75	Okara	64
76	Ferozwala	67
77	Narowal	62
78	Jahanian	74
79	Renala Khurd	87
80	Sahiwal	86
81	Shangla Hill	51
82	Burewala	69
83	Sillanwali	76
84	Pattoki	72
85	Yazman	66
86	Sahiwal	48
87	Bhakkar	88
88	Kot Momin	102
89	Shahpur	106
90	Arifwala	116
91	Dunya Pur	82
92	Tandlianwala Town	117
93	Nankana Sahib	100
94	Chishtian	85
95	Lodhran	83
96	Piplan	112
97	Chunian	94
98	Karor Lal Easan	93
99	Safdarabad	75
100	Essa Khel	123
101	Chichawatni	52
102	Kallur Kot	113
103	Pindi Bhattian	111
104	Pakpattan	120
105	Khanewal	80
106	Vehari	96
107	Khanpur	103
108	Layyah	99
109	Depalpur	121

110	Mailsi	114
111	Darya Khan	109
112	DG Khan	107
113	Jhang	108
114	Mian Channu	98
115	Chinniot	101
116	Mankera	125
117	Shujabad Town	128
118	Noorpur Thal	118
119	Fort Abbas	122
120	Kotli Sattian Town	126
121	Kehror Pacca	127
122	Hasilpur	115
123	Kabirwala	90
124	Rajanpur	119
125	Bahawalnagar	124
126	Taunsa	132
127	Kot Addu	110
128	Jalalpur Pirwala Town	133
129	Shorkot	130
130	Jampur	138
131	Sadiqabad	105
132	Liaqatpur	137
133	RY Khan	84
134	Ahmadpur Sial	131
135	Minchinabad	140
136	Bhawalpur Sadar	135
137	Muzaffargarh	129
138	Khairpur Tamewali	134
139	Ali pur	143
140	Jatoi	139
141	Ahmadpur East	141
142	Choubara	142
143	Rojhan	136

*Source: Haq (2010)

The Pearson's Rank Correlation between the two rankings = 0.931

Chapter 7

Conclusions and Policy Suggestions

7.1 Conclusions

World Bank (2000) views poverty as pronounced deprivation in wellbeing. Traditionally, poverty is estimated by comparing an individuals' income or consumption with some defined reference point below which they are considered to be poor. This is the most conventional view of poverty that defines poverty purely in monetary terms. A second approach to poverty is to ask whether people have the ability to obtain enough of a specific category of consumption goods such as food, shelter, health care or education. Amartya Sen (1987) views poverty in much broader terms and argues that well-being rises from a capability to function in society. Thus, poverty originates when people lack key capabilities, and thus have inadequate level of income, education, health, security, self-confidence, power, or rights. Measuring poverty defined in this way is a formidable task. Therefore, most national and international poverty measures rely on the monetary approach for measuring poverty.

Eradication of extreme poverty by 2015 as set out in The Millennium Development Goals (MDGs) is supposed to be an important policy objective in Pakistan, where a large proportion of population is living below the poverty line. It is often observed that poverty and lack of basic facilities go to together hand in hand. This is particularly true for health and educational facilities. Resulting deprivation of human capital severely limits the ability of poor people to increase their income.

One of the difficulties that poverty reduction programs face is that usually poverty is scattered across the region in the form of small pockets. This makes targeting of these programs very complex as reliable measures of poverty for small geographical regions are often not available. The present study combines detailed information obtained from HIES 2007-08 data with the extensive information of MICS 2007-08 data to estimate poverty at division, district and tehsil level. To the best of our knowledge, it is for the first time that tehsil level poverty has been estimated for Pakistan.

In addition to shedding light on the geographical pattern of poverty in Pakistan, this poverty mapping exercise can serve as an important tool for locating pockets of poverty that are hidden inside districts. Clearly, planning, allocation of resources and monitoring of the effectiveness of poverty alleviation programs can all benefit from this information. This study also analyzes and compares some of the main characteristics of the poor and non-poor districts and tehsils of the Punjab. This comparison is likely to deepen our understanding of the phenomenon of poverty and the factors associated with it.

A clear geographical pattern emerges as we look at the poverty estimates across divisions, districts and tehsils of the Punjab. Three poorest divisions DG Khan, Bhawalpur and Multan are lying in the south of the province. Geology of these areas indicates a dry, hilly and sandy landscape along with fertile planes famous for cultivation of cotton. In the mountainous and desert parts of this region cultivation of crops and human survival are difficult and population density is normally very low. Three least poor Divisions Rawalpindi, Gujranwala and Lahore are located in the north of Punjab. Remaining three divisions, Faisalabad, Sargodha and Sahiwal are sandwiched between these two regions and comprise central Punjab. Thus the Punjab is divided into three distinct regions in terms of poverty namely, the least poor northern

Punjab, less poor central Punjab and the poorest southern Punjab. District and tehsil level poverty estimates further refine this geographical pattern, though the overall picture does not change dramatically. A well defined Geographical pattern of poverty is not unique to the Punjab. Studies of other regions such as Vietnam, Nepal, Sri Lanka and Bangladesh also reveal interesting geographical patterns.

Poverty often shows wide variation within large geographical units. Therefore district level head count figures are likely to hide a lot of variation in poverty within a district. The tehsil level poverty estimates presented in this study have been successful in detecting such pockets of poverty in the districts which are otherwise classified as less poor on the basis of aggregate poverty measures. This discovery has practical applications as it can help policy makers target their poverty reduction policies more accurately and avoid leakage of precious resources dedicated for poverty alleviation to the non-poor areas.

An interesting finding of the tehsil level analysis of poverty is that the tehsil in which district headquarter is located, is generally one of the least poor tehsils of the district. This phenomenon is more evident in the small and medium size districts of the Punjab where offices of district headquarter are usually not scattered across more than on tehsils. One may think of at least two possible reasons for this observed fact. One reason appears to be the fact that normally well established and relatively prosperous tehsils are selected as district headquarters. The other reason is that top bureaucracy and elite of the district stay in the district headquarters and attract more resources toward this tehsil. Existence of such a situation is an indicator of the uneven distribution of resources across tehsils of a district and points to the need for their even and need-based distribution.

A sharp rural-urban divide in poverty rates is observed across districts, which becomes sharper at tehsil level. In general, poverty is centered in rural areas whereas urban areas are far less poor. This rural-urban divide is a main cause of rural-urban migration.

Distribution of job opportunities and high quality services associated with the military spending appear to play a major role in improving the economic conditions and reducing poverty in a district.

Industrialization plays a key role in the prosperity of nations as well as regions. It is associated with lower poverty levels in the districts of the Punjab. Faisalabad, where other factors associated with low poverty such as presence of cantonments and significant inflow of foreign remittances to the household are not present, provides an example of how far industrialization alone can go in reducing poverty.

Remittances from abroad add directly to the income of the individuals and the households and raise the living standard of the recipients. In general, a higher percentage of households in the less poor districts benefits from foreign remittances.

Government policies influence regional poverty levels in a significant way through their actions and policies. The distribution of government jobs across the region as captured by the distribution of pension receiving households in this study has a negative association with the poverty levels of the districts and tehsils. More government jobs are likely to be located near the federal capital, close to the least poor districts of the Punjab, as federal government secretariat, the parliament, the Supreme Court and head offices of most public sector organization are all located there. The least poor districts of south are too far away from Islamabad to benefit from these opportunities.

This study points to serious shortcomings in the targeting as well as regional coverage of the government schemes of social assistance including Zakat, which is solely meant for the poor and the needy. It is observed that less poor regions are benefitting more from these schemes as compared to the poorest ones. In addition, the coverage of these schemes is very limited. To utilize full potential of these poverty reducing measures, it is essential to expand their coverage to more areas and to improve their targeting. The findings of this study can help the policy makers in this regard.

Utility stores are government run super markets that sell items of daily use at lower prices with a view to helping people belonging to the lower and middle income class. The analysis in this study shows that more households of the least poor areas are benefitting from these stores as compare to the households of the poorest areas. In other words, the problem of targeting is present in this case too.

Education, being a human capital asset, plays a central role in the well-being of people. It opens up opportunities for people to get better jobs and extends the scope of their earning activities. High level and quality of education are considered to be an important factor behind the high living standards in the developed world. Unfortunately, people living in the poorest regions of the Punjab are in a dismal state of education as indicated by the adult literacy rate and net primary school enrolment. Low net primary school enrolment rates further indicate that the future prognosis for the state of education for these regions is also not good. Moreover, distribution of degree colleges across the districts is tilted against the poorer districts. The overall adult literacy rate of 56 percent and the net primary enrolment rate of 53 percent for the province leave much to be desired.

Health is another important human capital variable which is linked to the wellbeing of persons and households. Poor health is considered to be one of the important factors that push a household below the poverty line. A sick person incurs costs both in terms of the money spent on treatment and in terms of forgone earnings. This study considers variables related to the state of health, availability of health facilities and the attitudes towards health issues to present a detailed picture of association between health and regional poverty. It is noted that limited accessibility of health facilities, low standards of health and unhealthy practices are often more common in the poorer regions

The results discussed above are further supported by the fact that the district and tehsil ranks based on the overall quality of life index are almost the same as the poverty ranks produced by this study.

7.2 Policy Suggestions

The results of this study inevitably lead to certain policy recommendations. Keeping in view the findings of this study, some suggestions are summarized below for the consideration of policy makers.

- Poverty rates are found to be very high in rural areas where population mostly depends on agriculture. Hence, measures to increase agricultural productivity such as loans to small farmers for buying fertilizers, seeds, and pesticides, and provision of research and extension services are likely to have substantial impact in terms of poverty reduction.

- Cantonment areas are relatively more prosperous areas of Pakistan. While location of cantonments is dictated by defense needs of the country, it is still possible to increase

the share of the poorest areas in the military recruitment. This step alone has significant potential for reducing poverty in these areas. Opening up the health and educational institutions reserved for the servicemen to the poor and the needy is another possibility in this regard.

- Industrialization and prosperity go hand in hand together. Scarcity of skilled labor, water shortage, and absence of necessary infrastructure are some of the hurdles in the industrialization in the poorest regions of the Punjab. Removing these obstacles and promoting industrialization in these areas is still a worth considering option for reducing poverty in these areas. Establishing tax free industrial zones, building infrastructure, opening technical training institutes and offering special incentives to foreign investors may prove to be useful for this purpose.

- Foreign remittances play a key role in reducing poverty. A number of measures can be recommended for increasing inflow of foreign remittances to the poorest areas of the province and hence helping to reduce poverty there. Perhaps the most important of these measures are to make available the information about foreign job opportunities to the residents of these areas and to train them in the skills most demanded in the foreign job markets. Lobbying for Pakistani workers in these markets is also a viable strategy.

- This study finds a close association between poverty and access to job opportunities and other facilities provided by the government. A fairer distribution of government jobs and other opportunities is likely to improve poverty situation in the poorest districts. Strict adherence to constitutional quotas and merit and decentralization of

government offices may prove to be helpful in this regard. Regional harmony is expected to be an additional benefit of these measures.

- Currently, less poor households are benefitting more from services of utility stores that provide items of daily use at subsidized prices..An obvious remedy from a poverty reduction perspective is to open more utility stores in the poorest areas.

- Better education is crucial for poverty elevation. A long wish list of policies for improving education in the poorest regions can be prepared but the small educational budget cannot provide for even the very basics. For the sake of completion, bringing highly qualified teachers into the education system, provision of free books, reduction in tuition fees, and banning corporal punishments and child labor can be recommended here.

- Like education, better health is also found to be closely associated with lower levels of poverty. Some of the steps to improve general health standard of the people living in the poor areas of the province are establishing more hospitals and other health facilities and making them more affordable, and increasing awareness about health related practices and issues through media campaigns. These measures can prove to be useful for the uplift of these regions.

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