

**Determinants of Poverty in Pakistan**

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**Abstract**

This study comprises two parts. Based on per adult monthly household expenditure, it first divides the population of Pakistan into four categories: non-poor, vulnerable, poor, and extremely poor. The individuals' demographics, household composition and residential characteristics within each economic category are discussed. The second part of the paper aims to identify the characteristics and determinants of these four categories of poverty status. A multinomial logit model is estimated for this purpose. The study is based on two nationwide surveys, the 2001/02 Pakistan Integrated Household Survey and the 2004/05 Pakistan Social and Living Standards Measurement Survey conducted by the Federal Bureau of Statistics. The results of the study can be helpful for a fuller characterization of poverty dynamics and for informing policy formulation to reduce poverty.

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*A small peasant and a landless laborer may both be poor, but their fortunes are not tied together. In understanding the proneness to starvation of either we have to view them not as members of the huge army of the "poor", but as members of particular classes, belonging to particular occupational groups, having different endowments, being governed by rather different entitlement relations. The category of the poor is not merely inadequate for evaluative exercises and a nuisance for causal analysis, it can also have distorting effects on policy matters. (Sen 1981)*

## **1. Introduction**

Recently, the focus of policies to prevent poverty has moved from income supplement toward providing routes to drag the households and individuals out of poverty. The later type of policies also became very popular in many advanced countries including Britain (Cappellari and Jenkins 2002). Before any such policy implication it is important to find out the determinants and characteristics of a particular type of economic status. Poverty is a dynamic phenomenon and it has been observed that the individuals' status within different economic groups changes over time. A functional preliminary point for an analysis of this dynamic phenomenon is to find out the determinants or characteristics which are associated with each category of economic status. Such analysis helps to understand questions as: What are the determinants of being extremely poor, poor or vulnerable? And what are the characteristics of individuals within each category of economic status?

The determinants and characteristics of different economic statuses help to identify the factors which increase individuals' risk and vulnerability. It has been observed through many empirical studies that different individuals and households within an economic group have almost the same type of characteristics (Hulme and Shepherd 2003), thus there is need to develop comprehensive, consistent, and sustained interventions that support the individuals of each category in overcoming their condition. As Amartya Sen's opening quote notifies, viewing poor people as a homogeneous group can both weaken the analysis and distort policy. Thus the present study is particularly focused toward the construction of four different categories of economic status based on their income and then identifying the determinants and characteristics of these four different economic classes. This empirical piece of work is different from most other studies available on different Pakistani household data sets, because it is more focused toward different economic groups rather than exploring the issue in general. A multinomial approach has been adopted to find out how different demographic, human capital and residential characteris-

tics make an individual fall into a certain economic class. The comparison of two consecutive surveys helps to formulate the results in a more generalized manner and also strengthens the analysis.

Based on these premises, the objectives of the study are as follows:

- (1) To divide the whole sample into four different economic groups.
- (2) To explore the overall characteristics of individuals in each class of economic group.
- (3) To identify those particular variables which determine whether an individual belongs to the poor or extremely poor

## **2. Background of the study**

The economy of Pakistan has been badly affected by the “War on Terror” and the slow-down of foreign direct investment. It is evident that the economy of Pakistan has a fluctuating growth performance. These fluctuations are due to many internal and external factors. These internal and external factors may include weak political, legal, financial and educational institution, as identified by Qayyum et al. (2008) and many other factors like the “War on Terror”, conflicts in neighboring countries and now the global financial crisis.

The average real GDP growth rate during the last six years was 4.6 percent. According to a most recent economic survey of Pakistan, the literacy rate is 56 percent (69 percent for males and 44 percent for females) which is very low. A person is considered literate if she can read and write her name. Therefore these rates are quite alarming.

The total population of the country is 164 million. Among the working population, 18 million individuals are employees, 17 million are self-employed, and 14 million are unpaid family workers. The government employs a number of strategies to reduce poverty, of which the most significant one is the *Poverty Reduction Strategy Programme* (PRSP). The PRSP formulation process took off in Pakistan with the finalization of the Interim Poverty Reduction Strategy Paper (I-PRSP) in November 2001, which after further refinement was evolved into the Poverty Reduction Strategy Paper (PRSP) in December 2003 for the period up till 2006. The PRSP since then has been the key strategic document of the government for the social development of the country. Apart from the PRSP there have been many more efforts on part of NGOs and civil society but the number of poor people still does not seem very encouraging.

After discussing some of the stylized facts about the country, we will now discuss some empirical evidence. Poverty or income inequality is a phenomenon which usually requires Panel data for its dynamic and comprehensive analysis. During the past few decades researchers have become more interested in exploring the determinants which trap the individuals or households in the vicious trap. Multivariate analysis and hazard regression techniques are used by many researchers to measure the length of the duration of poverty spell (see, for example, Devicienti 2002 or Stevens 1999 for the United States). For social scientists working on poverty, a big concern is to distinguish between transit and chronic poverty and their determinants<sup>1</sup>. Javan and Ravallion (1998) estimated the determinants of poverty for a Chinese data set. Their approach suggests first the construction of a pseudo-panel and then the estimation of the determinants of poverty at different quantiles.

A modest amount of literature on poverty profiles, particularly in Pakistan, is available and has been analyzed (for example Cheema 2005; Arif and Bilquees 2006; Kurosaki 2003; Qureshi and Arif 2001; McCulloch and Baulch 1999, 2000; Mansuri and Healy 2002; Sawada 2003; Younus 1999). McCulloch and Baulch (2000) used the IFPRI<sup>2</sup> household food security panel which tracked 686 households from rural Pakistan between 1986/87 to 1990/91. The study distinguishes between transitory and chronic poverty, and its findings confirm that a large part of the poverty in rural Pakistan during this period is transitory. The study also suggests that the most appropriate ways of smoothing incomes will clearly depend upon the nature of market failures in specific contexts. Kurosaki (2003) analyzed a two period panel dataset (300 households) collected from the North-West Frontier Province (NWFP) to explore the vulnerability to risk as a characteristic of dynamic poverty. He found that sample households are subject to high transient poverty in terms of income, and that the dynamically vulnerable group includes households led by aged individuals, those with little land, and without regular remittance receipts. Although the IFPRI data provide useful insights into poverty, these studies are based on a small rural sample drawn from a few districts of the country and it is therefore hard to generalize these findings (Arif and Bilquees 2006).

<sup>1</sup> This requires panel or longitudinal data both of which are not available for Pakistan.

<sup>2</sup> IFPRI stands for International Food Policy Research Institute. The four districts covered by the IFPRI panel were: Attock and Faisalabad in Punjab, Badin in Sind and Dir in NWFP. the IFPRI team had also planned to include one least developed district (Kalat) from Pakistan's fourth province, Baluchistan, but survey work had to be suspended in this district after one year due to 'special logistic conditions in that province' (Adams and He 1995).

Qureshi and Arif (2001) estimated the incidence of poverty for the period from 1998 to 1999 using two techniques, a calories intake approach and a basic needs approach. Poverty differentials across urban and rural areas are also examined within different socio-economic groups. The main data source used in this study is the household survey carried out by the MIMAP (Micro Impact of Macroeconomic Adjustment Policies) project of the PIDE<sup>3</sup> named “the 1998-99 Pakistan Socio-economic Survey” (PSES). They suggest that particularly schooling and employment creation are important factors that must be addressed for poverty reduction.

Cheema (2005) presented a brief profile of poverty in Pakistan and a significant contribution to the literature of the topic for Pakistan. The study confirmed that measurement of poverty is increased over time. The paper concludes with the message that social spending on human capital aspects, including education and health, can play a central role in poverty reduction. Based on a true panel data set collected from rural areas of the North-West Frontier Province (NWFP) of Pakistan, Kurosaki (2003) provided a comparison of poverty measures developed by Foster et al. (1985) and Clark-Watts poverty measure provided by Clark et al. (1981). Using the poverty line estimated by Qureshi and Arif (2001) for the year 1998-99, Arif and Bilquees (2006) estimated the magnitude of the chronic, the transitory poor and the permanently non-poor by using data from two rounds of the Pakistan Socio-economic Survey (PSES). The following table presents their findings regarding the distribution of poverty statuses.

**Table 1: Percentages of households by poverty status and place of residence**

Change in poverty status	Place of residence		
	Total	Urban	Rural
Chronically poor	11.9	28.2	22.4
Transitory poor	22.0	32.5	28.8
Enter into poverty	12.6	18.9	16.7
Exit from Poverty	9.4	13.6	12.1
Always non-Poor	66.1	39.3	48.8
N (Households)	970	1782	2752

Source: Arif and Bilquees (2006)

Acknowledging the valuable research already done in this field, the present study is an attempt to identify different demographic and economic characteristics of individuals in different dimensions of the poverty profile and to explore the most significant determi-

nants of different poverty statuses. The structure of the study is now outlined. After having presented an introduction and some discussion of the literature, the next section will present the methodology. The following section describes the data characteristics within four categories of economic status. Lastly, conclusions will be presented followed by the discussion of determinants of different poverty status.

### **3. Methodology**

There are a large number of methodologies available in the literature to measure the degree of poverty and its determinants. The debate in terms of methodologies is different in developed countries from developing societies. The difference is not only dependent on the extent of poverty but also on the availability of information. This study is different from many others that estimate the determinants of poverty with cross-sectional data. The approach adopted in this paper puts particular emphasis on individual and household characteristics. The primary aim of the paper is not to estimate the magnitude of poverty, rather it is to estimate the size of different income groups (see below), and then to estimate the probability of falling in these categories of different economic statuses. This section is divided into two main parts; first it presents the construction of poverty profiles, and then identifies the determinants of these.

#### **3.1. Construction of poverty bands**

The availability of data with rich information is a crucial point for the inquiry of poverty and its determinants. Due to the non-availability of longitudinal data, this study adopts an approach which is suitable for cross-sectional data and relies on two nationwide surveys, the Pakistan Integrated Household Survey (PIHS) from 2001/02, and the Pakistan Social and Living Standard Survey (PSLM) from 2004/05. The inclusion of two data sets permits better estimates. The study is based on the standard poverty line as declared by the Planning Commission (Government of Pakistan), that is, Rs<sup>4</sup> 723.40 and Rs 878.64 per month per adult equivalence consumption<sup>5</sup> for the years 2001-02 and 2004-05 respective-

<sup>3</sup> Pakistan Institute of Development Economics

<sup>4</sup> Rs is the abbreviation for Pakistani Rupees.

<sup>5</sup> A system of weights has been developed by the government of Pakistan based on the basic consumption level, where each member of the household is counted as a fraction of an adult person. The

ly. The cost of identified basic needs is taken as the poverty line estimation. The basic needs package consists of food, clothing, housing, health, education, transport, social interaction and recreation facilities. The poverty bands are thus defined as follows:<sup>6</sup>

*Non poor*: consumption greater than 125 percent of the poverty line

*Vulnerable*: consumption between 100 and 125 percent of poverty line

*Poor*: consumption between 75 and 100 percent of the poverty line

*Extremely Poor*: consumption less than 75% of the poverty line

### 3.2. Multinomial logit model

Since the study deals with four poverty status categories (non poor, vulnerable, poor, and extremely poor) in the total population and these four categories are independent of each other, the paper adopts the multinomial logit approach<sup>7</sup>.

Let  $y_{ij} = 1$  if the  $i^{\text{th}}$  individual chooses the  $j^{\text{th}}$  alternative and  $y_{ij} = 0$  otherwise, where  $j = 1, 2, 3, 4$ .

$\text{Prob}[y_{ij} = 1] = P_{ij}$  and since the probabilities must sum to unity we have:

$$P_{i1} + P_{i2} + P_{i3} + P_{i4} = 1. \quad (2.1)$$

In its more general form with  $j$  alternatives, the multinomial logit is expressed as:

$$P_{ij} = \frac{\exp[\alpha_j + \beta_j X_j]}{\sum_j^k \exp[\alpha_j + \beta_j X_j]} \quad (2.2)$$

where  $k$  is the number of outcomes being modeled. This, in general terms, expresses the probability that an individual with characteristics  $X_i$  will lie in  $j^{\text{th}}$  category of poverty. A normalization is however required. This is achieved by setting  $\alpha_2$  and  $\beta_2$  to zero (intercept and estimated coefficient for the poor category), which is usually referred to as the *Theil*

adult equivalent scales are then used for the transformation of the number of persons in a household to adult equivalents.

<sup>6</sup> This methodology has been used by Sadiq (2007) to construct the poverty band.

<sup>7</sup> Before adopting the multinomial logit model the Hausman tests of independent irrelevant alternative was applied and confirmed the irrelevance of four categories.

*Normalisation.* In our four-outcome-model the restriction implies that the probabilities are re-expressed as:

$$P_{i1} = \frac{\exp[\alpha_1 + \beta_1 X_i]}{1 + \exp[\alpha_1 + \beta_1 X_i] + \exp[\alpha_3 + \beta_3 X_i] + \exp[\alpha_4 + \beta_4 X_i]} \quad (2.3)$$

$$P_{i2} = \frac{1}{1 + \exp[\alpha_1 + \beta_1 X_i] + \exp[\alpha_3 + \beta_3 X_i] + \exp[\alpha_4 + \beta_4 X_i]} \quad (2.4)$$

$$P_{i3} = \frac{\exp[\alpha_3 + \beta_3 X_i]}{1 + \exp[\alpha_1 + \beta_1 X_i] + \exp[\alpha_3 + \beta_3 X_i] + \exp[\alpha_4 + \beta_4 X_i]} \quad (2.5)$$

$$P_{i4} = \frac{\exp[\alpha_4 + \beta_4 X_i]}{1 + \exp[\alpha_1 + \beta_1 X_i] + \exp[\alpha_3 + \beta_3 X_i] + \exp[\alpha_4 + \beta_4 X_i]} \quad (2.6)$$

since  $\exp(0) = 1$ .

If, for convenience, we suppress the  $i$  subscript in the preceding set of equations described in (2.3) to (2.6), we can also construct expressions for various permutations of the log odds ratios. These log odds ratios can be expressed relative to any of the three categories under consideration. For example, ignoring the individual subscripts:

$$\log_e\left[\frac{P_1}{P_2}\right] = \alpha_1 + \beta_1 X, \log_e\left[\frac{P_3}{P_2}\right] = \alpha_3 + \beta_3 X, \text{ and } \log_e\left[\frac{P_4}{P_2}\right] = \alpha_4 + \beta_4 X$$

Given the expressions for the log odds ratios of  $\log_e\left[\frac{P_1}{P_2}\right]$ ,  $\log_e\left[\frac{P_3}{P_2}\right]$  and  $\log_e\left[\frac{P_4}{P_2}\right]$  are in terms of the normalized category, the coefficients  $\alpha_1$ ,  $\alpha_3$  and  $\alpha_4$  are thus interpreted relative to the normalized category's (=poor) coefficients, as are the  $\beta_1$ ,  $\beta_3$  and  $\beta_4$  coefficients.

### 3.3. Independent variables

*Individual Characteristics.* Based on a huge amount of literature identifying the crucial role of individual characteristics in determining the economic status of individuals, this study includes age, age squared, gender, marital status (3 dummies), education (6 dummies) and employment status<sup>8</sup> (8 dummies) to capture the effect of individual's demographic characteristics. To capture the marital status we formed three categories: married, never married, widowed/divorced (widowed and divorced are not very common in Pakistani culture and very few individuals are in these two categories, thus are merged). The formal education system in Pakistan is usually not depicted by the number of years of schooling; rather we account for different grades. In our analysis, we use six educational levels: no schooling, primary schooling (7 years), middle level (10 years), matric level (12 years), intermediate (14 years), and degree and above (18 years and above).

*Household Characteristics.* The definition of household may vary in different societies and contexts (see Dungumaro 2008 for a more detailed discussion) but in the present study household refers to a group of individuals sharing food, shelter, income and the like, and having blood relationship and strong family ties with each other. Household characteristics include the number of children under five, of adolescents, adults and elderly within a household. The inclusion of these variables will help to understand how the demographic composition of a household contributes for an individual's economic status.

*Head of the Household's Characteristics*<sup>9</sup>. There is empirical evidence that the head of the household's characteristics are very important in determining the poverty status (see,

<sup>8</sup> Employed persons are divided in the following categories: employer, paid employee, self-employed and own account worker, unpaid family helper, and agricultural laborers (owner cultivators, share croppers, and contract cultivators). An employer is a person who owns an enterprise and works himself as well as employs individuals for pay to help him/ her in his/her enterprise but may have others working for him/ her without pay. An employee is a person who works for others in exchange for wages and a salary that is paid in cash or in kind. A self-employed or own account worker is a person who, though owning an enterprise, does not employ any other person for pay, to help him/ her in his/ her enterprise but may have others working for him/her without pay, such as family helpers. The self-employed are divided into two categories: (1) Those who run their own business or enterprise themselves without the help of any other person; (2) Those account workers who run their own business or enterprise with the help of unpaid family helpers only.

<sup>9</sup> If a person lives alone, that person is considered as the head of the household. If a group of persons live and eat together as defined above, the head of the household is that person who is considered as the head by the household members. In practice, when husband, wife, married and unmarried children form a single household, the husband is generally reported as the "head". When parents, brothers and sisters comprise a household, either a parent or the eldest brother or sister is generally reported as the head by the household. When a household consists of several unrelated persons either the respondent or the eldest household member is selected as the "head". In special dwelling units the resident person in-charge (e.g. manager) may be reported as the "head".

for example, Klasen 2000; Maitra and Roy 2002). Therefore, our model specification also tries to capture this effect through the variables age, gender and education for the head of the household.

*Residential Characteristics.* A huge group of social scientists believe that characteristics of neighborhood and localities have a causative relationship with economic status. To capture the residential effect, dummy variables for urban or rural residence are introduced. Moreover, four dummy variables represent provinces in Pakistan: Punjab, Sind, Balochistan, and the North West Frontier Province. Since there are huge inequalities in income, education, and employment among these regions, it is important to examine the effect of residing in those areas.

#### 4. Data characteristics

The data comprise 14708 and 15453 households during the years 2001/02 and 2004/05 respectively. The income and consumption data of the HIES Survey is being collected by adopting a team approach of both male and female enumerators. Female enumerators in each field team interview the female household members and male enumerators collect the data from the male respondents. For the measurement of consumption, both food and non-food items are included. A stratification scheme has been adopted which keeps in view the geographical level of estimates to build up and to control the variation in the under study characteristics of the survey population. With respect to the urban areas, the large cities of Karachi, Lahore, Gujranwala, Faisalabad, Rawalpindi, Multan, Sialkot, Sargodha, Bahawalpur, Hyderabad, Sukkur, Peshawar, Quetta and Islamabad have been treated as an independent stratum each. These cities have further been sub-stratified according to low, middle, and high-income groups based on the information collected in respect of each enumeration block.

**Table 2: Distribution of population in poverty bands**

Poverty Band	PIHS 2001/02			PSLM 2004/05		
	Urban	Rural	Total	Urban	Rural	Total
Non Poor	64%	38%	49%	71%	48%	58%
Vulnerable	16%	24%	21%	15%	22%	19%
Poor	14%	25%	20%	10%	20%	16%
Extremely Poor	6%	13%	10%	4%	10%	7%

In rural areas, the population of each district in the Punjab, Sindh and NWFP provinces has been grouped together to constitute a stratum. For the Balochistan province, each of the defunct administrative divisions has been taken as a stratum. The distribution of the population among the four groups based on economic status according to the poverty line mentioned in the second section of this paper is given in table 2. It is apparent that a decline in poverty has occurred between 2001/02 and 2004/05. The smallest decline of only two percent has been observed for the vulnerable group, while the proportion of the non poor category increased during this time period. Also, the incidence of poverty is moderately higher in rural areas as compared to urban areas.

**Table 3: Descriptive statistics for all variables, PIHS 2001/02**

	<b>Non Poor</b>	<b>Vulnerable</b>	<b>Poor</b>	<b>Extremely Poor</b>
Mean age	30.9	29.8	29.4	29.8
Mean age squared	1249	1187	1162	1197
Male	51.0%	50.9%	50.6%	50.5%
<b>Education</b>				
No formal education	36.7%	54.0%	61.0%	70.5%
Primary	20.3%	22.7%	21.4%	18.4%
Middle	13.7%	10.6%	8.6%	6.1%
Matriculation	15.1%	8.7%	6.5%	3.6%
Intermediate	7.6%	2.7%	1.7%	0.9%
Degree or higher	6.6%	1.2%	0.7%	0.4%
<b>Marital status</b>				
Married	45.5%	45.5%	45.3%	42.4%
Never married	49.6%	50.1%	50.1%	52.9%
Widowed or divorced	4.8%	4.4%	4.6%	4.8%
<b>Employment status</b>				
Employer	0.6%	0.4%	0.2%	0.3%
Paid employee	18.6%	17.4%	19.2%	19.7%
Self-employed	5.7%	4.9%	4.4%	4.7%
Agriculturist	4.8%	6.2%	5.6%	5.5%
Unpaid family helper	7.8%	12.6%	13.9%	17.8%
Unemployed	2.6%	2.8%	3.0%	3.1%
Other work	1.9%	1.6%	1.8%	2.2%
Out of labor force	58.0%	54.0%	51.9%	46.7%
<b>Head of household characteristics</b>				
Male	92.8%	95.0%	96.2%	97.6%
Mean age	48.3	47.5	47.4	46.0
Mean number of years in school	5.9	3.2	2.6	2.1
<b>Household composition</b>				
Mean number of children under five	0.8	1.2	1.5	1.8
Mean number of adolescents	3.0	3.8	4.2	4.5
Mean number of adults	3.6	3.7	3.8	4.0
Mean number of elderly persons	0.4	0.4	0.4	0.5
<b>Regional categories</b>				
Punjab	42.0%	35.7%	37.0%	44.9%
Sindh	25.5%	24.9%	27.8%	33.2%
NWFP	17.4%	23.0%	21.0%	15.3%
Balochistan	15.2%	16.3%	14.2%	6.5%
Urban residence	51.8%	30.7%	25.9%	21.1%
<b>N</b>	<b>35538</b>	<b>15166</b>	<b>15108</b>	<b>7470</b>

Note: agriculturalists are owner cultivators, share croppers, contract cultivators, and live stock holders; adolescents are individuals from six to 18 years, elderly are defined as 61 years and above.

Tables 3 and 4 present the descriptive statistics for the two time points under consideration. The mean age of the individuals in our data set is 30 years. The data set shows a balance between male and female. The education affects the poverty through many direct and indirect channels.

To capture the effect of human capital, the study includes six educational categories starting from illiterate to graduates or individuals with higher education. The highest proportion of illiterate individuals (70 percent) is in the extremely poor group however this proportion decreased in 2004-05 by 10 percent. The proportion of individuals keeps on decreasing with increased level of higher education.

**Table 4: Descriptive statistics for all variables, PSLM 2004/05**

	Non Poor	Vulnerable	Poor	Extremely Poor
Mean age	30,2	29,0	28,9	29,0
Mean age squared	1196	1117	1127	1138
Male	51,8%	51,0%	50,0%	50,5%
<b>Education</b>				
No formal education	36,4%	52,9%	59,1%	61,2%
Primary	20,3%	22,7%	22,4%	21,9%
Middle	14,2%	11,7%	9,6%	8,1%
Matriculation	16,1%	9,2%	6,4%	6,3%
Intermediate	5,6%	1,9%	1,3%	1,5%
Degree or higher	7,5%	1,6%	1,2%	1,1%
<b>Marital status</b>				
Married	45,7%	46,7%	46,1%	45,6%
Never married	50,7%	50,0%	50,6%	51,0%
Widowed or divorced	3,6%	3,3%	3,3%	3,4%
<b>Employment status</b>				
Employer	0,2%	0,0%	0,1%	0,1%
Paid Employee	15,6%	15,1%	16,0%	16,1%
Self-employed	8,0%	6,7%	6,4%	5,6%
Agriculturist	5,8%	6,9%	6,2%	5,9%
Unpaid family helper	8,2%	9,7%	9,7%	9,4%
Unemployed	0,2%	0,1%	0,1%	0,2%
Other work	0,3%	0,6%	0,7%	0,8%
Out of labor force	61,8%	60,8%	60,9%	61,9%
<b>Head of household characteristics</b>				
Male	93,7%	94,7%	95,9%	96,0%
Mean age	48,0	47,7	48,5	51,2
Mean number of years in school	6,0	3,4	2,5	2,2
<b>Household composition</b>				
Mean number of children under five	0,7	1,1	1,3	1,7
Mean number of adolescents	2,9	3,8	4,3	4,6
Mean number of adults	3,5	3,6	3,7	4,2
Mean number of elderly persons	0,3	0,3	0,4	0,5
<b>Regional categories</b>				
Punjab	41,4%	36,2%	39,4%	48,7%
Sindh	24,0%	22,6%	20,6%	21,5%
NWFP	19,3%	26,4%	28,1%	20,4%
Balochistan	15,4%	14,8%	12,0%	9,4%
Urban residence	50,3%	31,9%	26,1%	23,7%
<b>N</b>	<b>41581</b>	<b>13815</b>	<b>11589</b>	<b>5292</b>

Note: agriculturalists are owner cultivators, share croppers, contract cultivators, and live stock holders; adolescents are individuals from six to 18 years, elderly are defined as 61 years and above.

Apart from our results, there is sufficient empirical evidence that education is closely associated with economic conditions of the population (Barro 1999; Birdsall and Londono 1998). More specifically, Yaqub (2003) reports on recent data from 23 developing countries, showing that upward mobility was correlated with increased landholdings and level of education, as well as starting level of education; downward mobility correlated with increased household size and the number of dependents. However, the present study is limited and does not present the assessment regarding the share of individuals with access to education but unable to afford it due to extreme poverty.

Marital status is divided into three categories; the highest proportion during both years among the four economic groups is that of never married and married individuals. The third category is widowed or divorced and its proportion is negligible. Still, it is included in the model. Eight dummy variables are introduced to capture the effect of the employment status. The incidence of poverty changes from one employment status category to another. Within two poverty status groups, poor and extremely poor, the highest proportion is that of paid workers and unpaid family workers. The largest of all categories is obviously comprised of those out of the labor force. This category also indicates a demographic feature of Pakistan's population which consists largely of children, students, elderly and females (not willing to work). The percentage distribution of unpaid family helpers has decreased from 17 percent to 9 percent between the two time points at which the surveys were conducted.

The characteristics of the head of the household are very important in the determination of the poverty status. To capture this effect the model incorporates three important variables: gender, age, and schooling of the household head. Almost 96 to 97 percent of the heads of the households are male. With regard to these figures, the literature maintains that in most cases female-headed households have limited access to resources, are disadvantaged and tend to be poor (Mbugua, 1997). According to Peters (1983), this has been identified as one of the major policy issues in developing countries. Small variation has been observed among the different economic groups during the two years under consideration in the head's age. The estimated average years of schooling of head of the household are quite low.

The provincial categories show that highest proportions of extremely poor and poor are located in Punjab and Sindh. Moreover, the incidence of poverty is higher in rural areas than in urban areas.

## 5. Multinomial Logit Analysis

This section examines the relationship between socio-demographic variables and individuals' poverty status by using a multinomial logit model. The dependent variable is defined by one of three mutually exclusive outcomes of the change in poverty status during 2001/02 and 2004/05: non poor, vulnerable, poor and extremely poor. Vulnerable is used as a reference category in the analysis.

**Table 5: Multinomial logistic regression: poverty status in Pakistan, PIHS 2001/02**

	Non Poor	Poor	Extremely Poor
<b>Individual characteristics</b>			
Age	0.01	-0.01	-0.02***
Age squared	0.00	0.00	0.00***
Male (0 = female)	-0.02	0.06*	0.18***
<b>Education</b> (reference = no formal education)			
Primary	0.22***	-0.24***	-0.62***
Middle	0.39***	-0.33***	-0.82***
Matriculation	0.56***	-0.36***	-1.07***
Intermediate	0.80***	-0.48***	-1.26***
Degree or higher	1.17***	-.53***	-1.23***
<b>Marital Status</b> (reference = never married)			
Married	-0.12***	0.04	0.01
Widowed or divorced	-0.02	0.14**	0.15*
<b>Employment Status</b> (reference = employer)			
Paid employee	-0.30**	0.96***	0.65**
Self-employed	-0.11	0.76***	0.44*
Agriculturist	0.02	0.61***	0.05
Unpaid family helper	-0.15	0.75***	0.41
Unemployed	-0.30**	0.93***	0.69**
Other work	-0.27	1.00***	0.81***
Out of labor force	0.06	0.75***	0.29
<b>Head of the household characteristics</b>			
Head male	-0.43***	0.27***	0.63***
Head age	0.01*	-0.02***	-0.02***
Head age squared	0.00*	0.00***	0.00*
Head schooling (years)	0.09***	-0.03***	-0.07***
<b>Household characteristics</b>			
Number of children under five	-0.40***	0.32***	0.57***
Number of children under five squared	0.03***	-0.05***	-0.07***
Adolescents	-0.28***	0.17***	0.25***
Adolescents squared	0.01***	-0.01***	-0.01***
Adults	-0.34***	0.01	0.05
Adults squared	0.03***	0.00	0.00
Elderly	-0.30***	0.11**	0.22***
Elderly squared	0.05***	-0.06**	-0.02
<b>Regional characteristics</b>			
Punjab	0.09***	0.31***	1.01***
Sindh	0.20***	0.23***	0.69***
Balochistan	0.39***	-0.12***	-0.61***
Urban (0 = rural)	0.58***	-0.19***	-0.42***
<b>Constant</b>	1.61***	-0.34***	-1.87***

Number of observations = 73282

LR chi(99) = 26167.9

Prob > chi<sup>2</sup> = 0.00

Log likelihood = -77447.3

Note: Multinomial logistic regression, reference group is vulnerable; \*\*\* for p < .001, \*\* for p < .01, \* for p < .05 using two-tailed test; all estimates are White heteroscedastic consistent.

**Table 6: Multinomial logistic regression: poverty status in Pakistan, PSLM 2004/05**

	Non Poor	Poor	Extremely Poor
<b>Individual characteristics</b>			
Age	0.00	-0.01*	0.00
Age squared	0.00	0.00	0.00
Male	-0.05*	0.02	0.20***
<b>Education</b> (reference=no formal education)			
Primary	0.23***	-0.15***	-0.33***
Middle	0.39***	-0.26***	-0.60***
Matriculation	0.56***	-0.32***	-0.52***
Intermediate	0.90***	-0.23**	-0.28**
Degree or higher	1.18***	-0.13	-0.37***
<b>Marital Status</b> (reference=never married)			
Married	-0.11***	-0.04	-0.01
Widowed or divorced	-0.05	0.03	0.17*
<b>Employment Status</b> (reference=employer)			
Paid employee	-1.49***	-0.57	-1.22**
Self-employed	-1.28***	-0.71	-1.54***
Agriculturist	-1.15***	-0.89	-1.67***
Unpaid family helper	-1.03**	-0.83	-1.67***
Unemployed	-1.72***	-0.44	-0.55
Other work	-1.96***	-0.58	-1.06
Out of labor force	-1.22**	-0.71	-1.29**
<b>Head of the household characteristics</b>			
Head male	-0.32***	0.35***	0.15*
Head age	0.01***	-0.01	0.00
Head age squared	0.00	0.00	0.00
Head schooling (years)	0.08***	-0.04***	-0.06***
<b>Household characteristics</b>			
Number of children under five	-0.37***	0.24***	0.45***
Number of children under five squared	0.04***	-0.03***	-0.03***
Adolescents	-0.31***	0.00***	0.34***
Adolescents squared	0.02***	-0.01***	-0.02***
Adults	-0.24***	0.11***	0.35***
Adults squared	0.02***	-0.02***	-0.03***
Elderly	-0.07	0.16***	0.43***
Elderly squared	-0.04	-0.04	-0.12***
<b>Regional characteristics</b>			
Punjab	0.18***	0.20***	1.06***
Sindh	0.18***	-0.06	0.56***
Balochistan	0.49***	-0.26***	0.05
Urban (reference category=rural)	0.50***	-0.23***	-0.41***
<b>Constant</b>	1.62***	-0.94***	-3.68***
Number of observation = 72277			
LR chi(99) = 21170.7			
Prob > chi <sup>2</sup> = 0.00			
Log likelihood = -70311.6			

Note: Multinomial logistic regression, reference group is vulnerable; \*\*\* for  $p < .001$ , \*\* for  $p < .01$ , \* for  $p < .05$  using two-tailed test; all estimates are White heteroscedastic consistent.

Higher age decreases the probability of poverty in both studies. All human capital categories have the expected signs and magnitudes. Education decreases the odds of being associated with the poor and extremely poor groups, and it significantly raises the chances of being in the non poor group. Nevertheless, the present study does not provide further investigation about factors such as the quality of schooling, innate abilities and cognitive attainment of individuals. Still, the results clearly indicate that investment in quality edu-

cation and access to education can be worthwhile poverty reduction policies. The level of investment in human capital is not sufficient in Pakistan; especially in the rural households education is sometimes considered as a risky investment due to low returns on it. Also, there are very high dropout rates. Thus, both providers and beneficiaries of education are not performing efficiently. Finally, the education system, particularly the public school system is not very productive. Such evidence is more common in rural areas and the present study confirms the relation between education and poverty status; it is also important to mention that the evidence of poverty is high in rural areas.

There is a growing emphasis on marriage as the route to exiting welfare and poverty in developed societies (Horn and Sawhill 2001; Lichter 2001; Murray 2001). Being married does not have a significant impact to be associated with any of the poverty categories, but the widowed and divorced are significantly associated with both of the poorer categories. In the socio-cultural system of Pakistan a married man has a lot of responsibilities to provide every requirement to his female counterpart and her siblings. Even though family members of men and women both help them to meet their ends, widowed and divorced are still disadvantaged. Thus the family system in Pakistan is not very favorable for widowed and divorced individuals.

Employment status is an important variable to determine the incidence of poverty. To capture the effect of individuals' employment status we used eight different categories of which employers are used as the reference category. The results present different trends during both of the two years under consideration. In the 2001/02 survey, paid employees and self-employed are significantly and positively associated with the poor categories as compared to employers. The results totally changed in the years 2004 and 2005. A plausible explanation for this has earlier been presented by Sadiq and Akhtar (2006) who state that during this particular period within the employee category, the availability of credit and the efficiency of the capital market improved. Moreover, funds like the "golden shake hand" also affected this category.

The estimated coefficient for agriculturists shows that the highest probability for this category is associated with the vulnerable category during the years 2004/05. For unemployed individuals the probability to be in the non poor group is less as compared to be in the poor categories. The coefficients are insignificant for these two categories during the later years. Being out of the labor force decreases the probability to be in the non poor or extremely poor categories.

There are three variables included to capture the effect of head of the household's characteristics. Firstly, male-headed households are more likely to be in the poor groups as compared to female-headed households. The possible reason for this is that usually those household headed by females are receiving help from close relatives and other people in the society. In the United States the poverty rates for people living in families headed by a female with no husband present, and people living in other types of families, have been highly correlated with the overall poverty line, although none has shown a consistent trend over a period of thirty years (Rodgers 1990). In another study based on United States data Swanson (1995) argues that strategies designed to help female-headed households get out or stay out of poverty should address the education and employability of potentially contributing adult members of the household, as well as boost women's skills. Increasing age of the head of the household reduces poverty. Similar findings are reported by McCulloch and Baulch (1999, 2000). The years of schooling of the household head significantly decrease the probability to be in either poor category. This result is clearly consistent with Qureshi and Arif (2001).

A larger number of children under five increases the likelihood to be in the poor category as compared to the vulnerable group. A study conducted with British data shows that a higher number of children in a family may slow down the increase in household income (Angeriz and Chakravarty 2005). The results are similar for the other categories, yet the squared number of children has a negative sign for poor categories, which indicates that, as the number of individuals increases beyond a certain level, the probability to be poor decreases. This outcome is in line with findings by Qureshi and Arif (2001).

For the geographical variables the reference category is NWFP. Living in Punjab and Sindh increases the probability for being in all economic groups as compared to the vulnerable category. And while incidences of poverty prevail in both, urban and rural areas, the probability for being poor or extremely poor increases if the individual is living in a rural area and engaged in the agricultural sector. The characteristics of neighborhood and locality, that is, poor housing, low employment opportunities, low human capital attainment and the like, lead toward poverty. Similar results have been reported by Wilson (1987), Ricketts and Shawhill (1988), and Ricketts and Mincy (1990).

## 6. Conclusion

This article estimates the determinants of poverty for four different categories of economic status in Pakistan. The analysis is carried out for two nationwide surveys, the 2001/02 PIHS and the 2004/05 PSLM conducted by the Federal Bureau of Statistics of Pakistan. The inclusion of two data sets in the analysis broadens the horizon and helps to generalize the results. It is evident that a decline in poverty rates has occurred between 2001/02 and 2004/05. The incidence of poverty is moderately higher in rural areas as compared to urban areas.

The above results also shed light on very important policy issues; a higher premium on the level of education, for instance, suggests that higher education and employment status are important factors that can lead to a significant reduction of poverty. Thus access to education for poor households is the key determinant of poverty reduction. Employment status is another very important variable, as casual paid employees, unpaid family workers, seasonally employed and the like have a higher probability to fall into the poor or vulnerable groups.

The distinguishing feature of this article is a special emphasis on the characteristics of households and household heads. The numbers of adolescents, of children below the age of five and of working age individuals in a household play a very important role in defining the economic status of a household. It is thus recommended to create awareness of the importance of family planning among the household members. Additionally, it is important to boost the skills of the head of the household and to introduce the head of the household to different income generation methods, with a particular focus on those who fall in the vulnerable group.

The analysis of different poverty statuses and their respective determinants shows that there is requirement for targeted policy to provide quick relief through employment opportunities especially in rural areas, as the employment status plays an important role in this context. To address the root causes of poverty, the key issue is to provide quality education.

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