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## Determinants of Household Poverty: Empirical Evidence from Pakistan

M. TARIQ MAJEED and M. NAUMAN MALIK

### 1. INTRODUCTION

The Millennium Development Goals (MDGs) aim at halving the percentage of world population in 1990 with income less than US \$ 1 a day and halving the share of people who suffer from hunger by 2015. Being a developing nation, poverty reduction should be our foremost obligation. An appreciable decline has occurred recently, headcount decreased from 34.46 percent in 2000-01 to 23.94 in 2004-05 [Pakistan (2006-07)]. However, seeing only the statistics and the trends in poverty we can just observe that what happened to poverty in different periods and also the decomposition of poverty in different years gives us a more appropriate picture of the incidence of poverty. This knowledge is useful because it informs us whether poverty is increasing or decreasing overtime. However, this information does not provide us the details of the causes of poverty. For instance, is poverty high due to low education attainment or large family size or due to any other reason? Here is a need of research about the determinants of poverty that are positively or negatively linked with the poverty status. This is the area where research can be most useful because firstly we have to understand the main determinants of poverty before designing the most efficient policy to reduce poverty in the country.

A logistic regression technique has been used to evaluate the determinants of poverty in Pakistan. An important determinant of household poverty is education of the head of the household. In the Millennium Development Goals (MDGs), originated from the United Nations (UN) summit 1999, and the Poverty Reduction Strategy Paper (PRSP), promoted by the World Bank and the IMF, education is considered as a weapon against poverty. Therefore the idea that education is a determinant of poverty has occupied much attention in the recent years. Since 1960s when Shultz (1961) and Becker (1962) emphasised upon the attainment of education and skills for human development, education's role in the economic growth and development became prominent and its importance in poverty reduction increased manifold. We have to seek out such vital channels (both qualitatively and quantitatively) between education and poverty reduction that will help us in policy formulations for poverty reduction and educational expansion.

M. Tariq Majeed <[m.tariq.majeed@gmail.com](mailto:m.tariq.majeed@gmail.com)> is Assistant Professor, Quaid-i-Azam University, Islamabad. M. Nauman Malik is Lecturer, University of Sargodha, Sargodha.

Along with educational deprivation we will also analyse some other personal and household characteristics. In this regard experience, age, gender and employment status of the head of the household are important. In most of developing countries gender discrimination is widely prevalent. Females have less educational and earning opportunities as compared to males. That's why female/male headed households can be an important determinant of poverty. Region (urban/rural) as a determinant of poverty is important in developing countries where usually agriculture sector is dominant. Moreover, the rise of industrialisation coupled with migration problems persuades us to consider the region in poverty determinants. We will also extend the location variable to cover the different provinces of a country. Moreover, household size and remittance receiving status of household will also be explored.

The main objective of this study is to determine the effect of different educational levels upon the probability of being poor of households (considering the expenditure side) in Pakistan. Similarly, some other personal characteristics such as gender, age, experience and employment status of the head of the household and some household characteristics such as the household size, remittance receiving status, regional and provincial location will also be analysed.

The study is structured as follows: Section 2 provides review of the literature on determinants of poverty. Section 3 is related with the data and methodology details while Section 4 includes the description of regression technique and construction of variables. Section 5 provides descriptive analysis of poverty assessment. Section 6 includes the logistic estimations and interpretation of the results and finally, Section 7 concludes with some recommendations.

## 2. REVIEW OF LITERATURE

After the contribution of Mincer (1958) in finding the role of education in wage earnings, Schultz (1961) and Becker (1962) both viewed investment in education attainment and in skill enhancement as the necessary component of human capital accumulation. As human capital formulation is necessary for poverty reduction that's why education becomes the vital and prominent factor in reducing poverty both at income level and also at other social and capability levels.

Coulombe and McKay (1996) used multivariate analysis to analyse the determinants of poverty in Mauritania based on household survey data for 1990. They estimated a multinomial logit model for the probability of being poor depending on household specific economic and demographic explanatory variables. The authors found that low education, living in a rural area and a high burden of dependence significantly increase the probability of being poor of the household.

Gundlach, *et al.* (2001) did a study on 102 countries using the quality adjusted broader measure of human capital, which depends upon the social returns of educational levels and an index of quality. The findings show that the income of the poor (lowest quintile) increases with the rising quality-adjusted human capital. They estimate that a 10 percent increase in the stock of quality adjusted human capital per worker increases the average income of the poor by 3.2 percent.

Tilak (2002) has conducted a comprehensive analysis of the approaches of development and well-being with respect to the education's reflections upon poverty. He points out that the inverse relationship between education and human poverty is well

recognised in many prominent approaches of development such as the human capital approach, the basic needs approach, the human development approach and the capability approach. The author argues that at micro level incidence of poverty is greatest among the illiterate households and tends to decline at higher levels of education in developing countries. Moreover, (at macro level) the decline in poverty is possible through higher level of education of the population. He also notes that a mutually reinforcing relation persists between education poverty (lack of education) and income poverty because income deprivation resists persons from attaining education and absence of education causes low-income level. Tilak vehemently mentions the direct linear relationship between education and earnings. This relation is well recognised universally i.e. with the rise of education earnings also rise considerably.

Okojie (2002) further goes in to the details of educational levels that affect the household's income poverty and the human poverty using household data of 1980, 1985, 1992 and 1996 for Nigeria. In the poverty model, the logistic regression was used and it was found that all levels of education (primary, secondary and tertiary) are significant in reducing the probability of being poor of the households. The results show that male-headed households are less likely to be poor than female-headed households. In the welfare model, the mean per capita expenditure was used as dependent variable and educational variables found to be significant in increasing the per capita expenditure of the household.

Bundervoet (2006) conducts a study upon the household data of 1998-99 of Burundi. The results show that the incidence of poverty (headcount measure), poverty gap and poverty severity are worse for the female headed families as compared to male headed families, however, the worse off element decreases as the head's educational achievement increases. The binary logistic regression results show the poverty status of household using explanatory variables of household and community characteristics. At rural level higher educational level of the head of the household significantly reduces the likelihood of being poor. A literate mother in the household reduces the probability of being poor. The probability of poor rises up to the age of 42 of the head and then declines. The possible reason could be the accumulation of assets for old age.

Zuluaga (2007) conducts a study on the 31,745 households of Colombia to find the monetary and the non-monetary effects of education upon income poverty and human poverty, respectively. The results show that an additional year of schooling of the head of the household increases total income of the household by the amount of 14.1 percent. Female-headed household is more likely to have less income as compared to male-headed but a rise in income quintile (towards non-poor) diminishes such disadvantage. Residents of rural areas are significantly poorer than those in urban areas. The interesting finding is this that the effect of education is not same in affecting all income quintiles. The return of education is bigger for the lowest quintile and decreases as the quintile increases. This shows that people from the lowest quintiles benefit more from the skills through formal education. In other words poor persons benefit more from the education attainment. For the non-monetary effects of education upon human poverty the author considers housing and health. The results show that education improves health through modifying the behaviour and decisions of persons with respect to health. Housing conditions also improve with the increasing educational level because education improves its decisions and behaviour regarding housing and it can avail credit facility in a better way.

Abuka, *et al.* (2007) estimate the determinants of poverty in the case of Uganda using logistic regression technique and the data from *Uganda National Household Survey (UNHS)*. The results showed that an increase in the schooling of household heads not only has a positive impact on the productivity and earnings but also enhances the productivity of other members of the household. The household size and being in rural areas significantly increase the likelihood of being poor.

A further analysis of educational levels by Tilak (2007) has shown noteworthy results. He argued that it would be wrong to say that for growth, development and poverty reduction we should wait for the universalising of primary education rather we should work on the post-primary education because it has the same role as primary education. Primary education is the threshold of human capital but secondary and higher education, and investment in science and technology gives rise to acceleration and sustenance in economic growth and development. The coefficient of correlation in India suggests that illiteracy, literacy and primary education are positively related with the poverty ratios. While, on the other hand middle, secondary and higher education levels are negatively related with poverty.

The above mentioned studies consider education as a vital weapon against poverty but Dollar and Kraay (2002) argue that education doesn't have any substantial or measurable effect on the income of the poor except its effect upon the overall average growth. They conduct a macro level study based upon the data of 137 countries for the years 1950-99. They reported that income of poor raises one for one with average income (growth) but the primary education attainment has a very limited impact upon the income of the poor. They conclude that economic growth is a prominent factor in eliminating poverty and primary education completion is not so much important.

The similar conclusion was proposed by Tilak (2007) in studying the correlation coefficients between the poverty ratios of 1999-00 and percentage of population having different educational levels in 1995-96 in India. The results show that illiteracy, literacy and primary education are positively related with the poverty. Hence it casts doubt upon the role of primary education in poverty reduction.

Majeed (2010) shows the poverty reducing effect of human capital in the case of Pakistan using the data over the period 1970-2004. In a recent study, Majeed (2012) finds mixed evidence for the relationship of poverty and human capital using a sample of sixty five developing countries over the period 1970-2008.

Through analysing different studies we can see that it is necessary that we must know the determinants of poverty for an effective poverty reduction strategy. Rather than focusing on macro level and cross country analyses we have to go for the micro level research for the proper evaluation of the poverty determinants. Dealing with micro level data we are engaging in the ground realities and micro circumstances of any particular country. Micro level data approach is very much relevant for the poor developing countries whose main problems are widely prevalent at grass root levels while macro data based studies do not represent the effects of those problems in their data with aggregates or averages.

### 3. METHODOLOGY

This study evaluates the personal and household characteristics as determinants of poverty in Pakistan. We show that how the occurrence of any particular event will affect

the likelihood of the household being poor. For instance, in what proportion the acquisition of primary education will increase or decrease the likelihood of being poor with respect to 'no education'.

Education is the most important factor regarding poverty reduction. The attainment of education enhances the earning potential of individuals and consequently, the increased earnings help reduce the poverty. There are also non-pecuniary effects of education that are effective in other dimensions of poverty such as deprivation in decision making abilities, and awareness about the surrounding. Hence it is expected that education is negatively linked with the poverty status and higher levels of education are more effective in poverty reduction.

Experience can be taken as the improvement in expertise and skill enhancement, which have positive implications for poverty elimination. The 'feminisation of poverty' means women are much more deprived and facing severe hardships in pulling themselves out of poverty as compared to men therefore it is expected that being female-headed household will increase the likelihood of the household being poor. The age of the head of the household is going to be seen in non-linear relation. Generally, in the working age of the head of the household when one can accumulate human capital there are more chances to be non-poor as compared to the old age. However, in the opposite case it is said that until the old age (or after retirement) one can accumulate enough resources or assets to be non-poor in old age as compared to the working middle age.

A large portion of population in Pakistan is directly or indirectly linked with our traditional agriculture sector hence its important to find out that whether the agriculture employment status as compared to non-agriculture employment status of the household head is effective in reducing household poverty or not. Population is a resource but its huge size and high growth rate in developing countries appeared to be a problem due to low level of human capital. Hence usually family size is positively related with the poverty status of the household.

Remittance, whether domestic or foreign, is a source of income for the household and reduces household poverty. It is a widely prevalent idea that in Pakistan the incidence and severity of poverty is high in rural areas as compared to urban areas hence to verify such statement we have to see whether the rural location of the household is associated with being poor or not. In the same way we can analyse the provincial location of the household as well.

Having been provision of theoretical consistent arguments, we have developed this model with choice variables comprising of the personal characteristics of the head of the household and household characteristics. In this regard, education, experience, gender, age and employment status of the household head are considered as personal characteristics of the household while household size, provincial location, regional location and remittance receiving status are considered as the household characteristics.

$$POVERTY = f(EDU, GEN, AGE, EXP, EMP, HS, REM, REG, PRO)$$

Dichotomous dependent variable:  $Poor = 1, Non-poor = 0$

**Explanatory Variables: Personal Characteristics of the Household Head**

▪ **Education (EDU)**

Primary Education

Primary = 1, Otherwise = 0

Middle Education

Secondary = 1, Otherwise = 0

<i>Matric Education</i>	<i>Matric = 1, Otherwise = 0</i>
<i>Intermediate Education</i>	<i>Intermediate = 1, Otherwise = 0</i>
<i>Bachelors Education</i>	<i>Bachelors = 1, Otherwise = 0</i>
<i>Professional Education</i>	<i>Masters or above education=1, Otherwise=0</i>
<i>No Education</i>	<i>Reference Category</i>
▪ <i>Gender (GEN)</i>	<i>Male = 1, Female = 0</i>
▪ <i>Employment Status (EMP)</i>	<i>Agriculture = 1, Not agriculture = 0</i>
▪ <i>Experience (EXP)</i>	<i>Age-School starting age-Years of schooling</i>
▪ <i>AGE</i>	<i>Age, Age<sup>2</sup> (Square of Age)</i>
<b><i>Household Characteristics</i></b>	
▪ <i>Region (REG)</i>	<i>Urban = 1, Rural = 0</i>
▪ <i>Remittances (REM)</i>	<i>Remittance = 1, Not = 0</i>
▪ <i>Household Size (HS)</i>	<i>Number of individuals in family</i>
▪ <i>Province (PRO)</i>	
<i>Punjab</i>	<i>Punjab = 1, Otherwise = 0</i>
<i>Sindh</i>	<i>Sindh = 1, Otherwise = 0</i>
<i>KPK</i>	<i>KPK = 1, Otherwise = 0</i>
<i>Balochistan</i>	<i>Reference Category</i>

#### 4. DATA, CONSTRUCTION OF VARIABLES AND ECONOMETRIC TECHNIQUE

The data for this study is taken from Household Income and Expenditure Survey (HIES) 2001-02 which is conducted by the Federal Bureau of Statistics (FBS) of Pakistan. It's the available gigantic and meaningful source of information of its kind that has the household level information in Pakistan. The selected data used for this study covers the four provinces of Pakistan (Punjab, Sindh, Balochistan and KPK).

The very first thing is to clarify the criteria through which we classify the households into poor and non-poor. In other words we can say that how we assign value of one (poor) or zero (non-poor) to the dependent dichotomous variable. For this task, there are different approaches such as the basic needs approach or the calorie-based approach; but here we use the method of quartile. We make four quartile of households depending upon the monthly per adult household expenditure. The lowest quartile (25 percent) will have the households with the lowest monthly per adult household expenditures. The households in the lowest quartile are considered poor and consequently dependent variable takes value one for them whereas each household in other three quartiles take the value zero. The household expenditure variable is the monthly per adult expenditure of the household considering all the food and non-food items. To calculate the adult equivalents we make use of the official calories chart (2003) with respect to age, provided by the Government of Pakistan.

Table 1

*Construction of Explanatory Variables*

Categories	Variables	Explanation
<b>Education</b>	Primary	1= primary, 0= otherwise

(Dummy)	Middle Matric (Matriculation) Inter (Intermediate) Ba (Bachelors) Prof (Professional) No education (reference category)	Similarly, we make other education variables.
<b>Age</b>	Age Age <sup>2</sup>	Age Square of age
<b>Experience</b>	Exp	EXP = Age - years of schooling - school starting age
<b>Household Size</b>	Mem	Number of family members
<b>Employment Status</b> (Dummy)	Agri Non-agri. status (reference category)	1=agriculture status, 0=otherwise.
<b>Remittances</b> (Dummy)	Rem Without remit. (reference category)	1=remittance receiver, 0=not receiver.
<b>Gender</b> (Dummy)	Male Female (reference category)	1=male, 0=not male (female).
<b>Province</b> (Dummy)	Punjab Sindh KPK Balochistan (reference category)	1=Punjabi, 0=not Punjabi Similarly, we construct the Sindh and KPK variables.
<b>Region</b> (Dummy)	Urban Rural (reference category)	1=Urban, 0=otherwise (rural).

Considering the explanatory variables of our model the personal characteristic variables will be used for the head of the household. The educational variables are dummy variables and one of them will get the value one in response to the household head's highest educational attainment. It means the educational level of the household's head will either fall in primary, secondary, matriculation, intermediate, bachelors or professional (masters and above) category. Here 'no education' is used as reference category. Other variables include age, experience and employment status of the household's head. Here the employment status is characterised into two broad categories whether the status is related to the agriculture sector (owner cultivator, share cropper, contract cultivator, livestock) or non-agriculture sector (employer, self-employed, paid employee-reference category). The experience variable is attained through subtracting the years of schooling and school starting age from the age of a person. It is not the actual but the potential experience. The personal characteristics include male/female headed households where female headed will be the reference

category, household size\*, whether the household is remittance receiver or not where having no remittances is the reference category, regional variable with rural as the reference category and provincial location of the household with Balochistan as the reference category.

The dependency ratio also matters as a correlate of poverty, since our main focus has been to investigate the role of human capital for which we have introduced different categories. We followed a parsimonious approach in selecting other control variables and have chosen control variables which are closely related to poverty incidence.

This study takes the Logistic Regression Technique to identify some determinants of poverty in Pakistan at household level. The model is estimated using the information of the four provinces of Pakistan. The binary logistic regression is used to identify the effect of explanatory variables upon the probability of being poor of the household. The dependent variable is dichotomous in which the value 1 for the poor household and 0 for the non-poor household. The results will not be interpreted through the coefficients but we will use the odd ratios in logistic regression to see that the occurrence of any particular event will increase or decrease the probability being poor of household and with what proportion as compared to the reference category.

## 5. POVERTY ASSESSMENT: A DESCRIPTIVE ANALYSIS

This study examines the personal characteristics and household characteristics as the determinants of poverty in Pakistan. Therefore it would be convenient to understand the results if we see the graphical representation of the poverty assessment in selected dimensions. The descriptive analysis is based upon the demonstration of average number of poor households in the particular dimensions. Hence the dimensions, which are going to be demonstrated, are the education, gender and regional location.

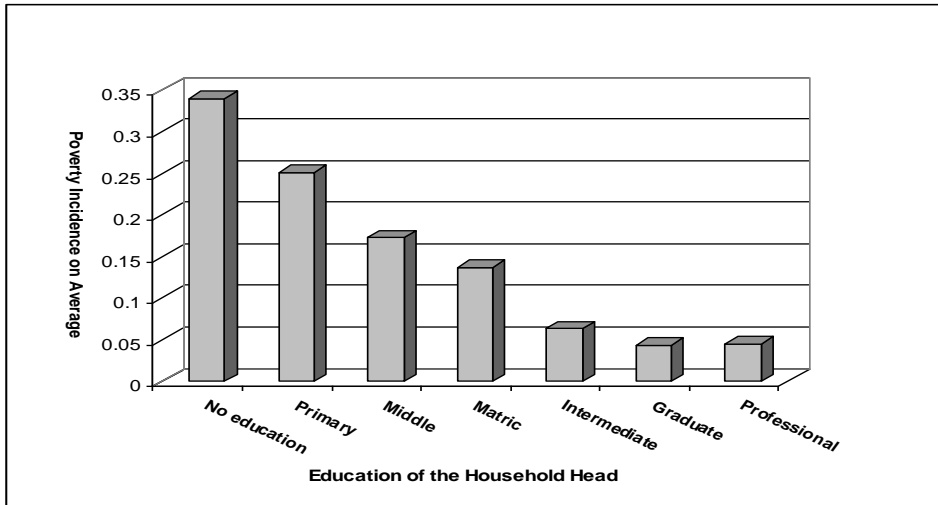
### 5.1. Poverty and Education

Investment in education is considered as the main source of human capital accumulation, which is the least developed sector of many developing countries including Pakistan. The acquisition of education helps an individual to overcome the multi-dimensional poverty prevalence and the education of the household head is also beneficial for other family members. Through education availability we can break the mutually reinforcing relationship between poverty and lack of education (education poverty). In Figure 1, we can see that as the educational level of the household head increases, on average the number of poor households declines. There is a consistent reduction in poverty from no education to the bachelor's level.

**Fig. 1. Education Dimension of Poverty**

\* Haughton and Khandker (2009) argue that household size is also an important correlate of poverty.



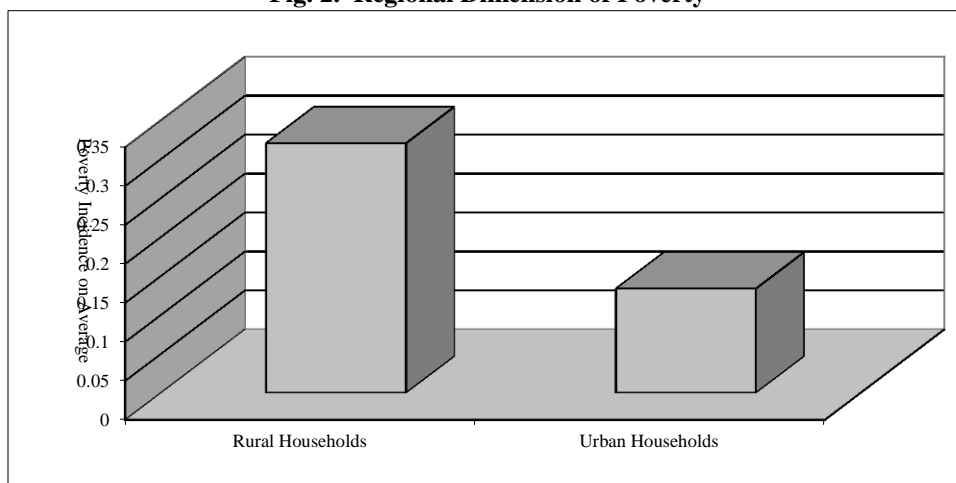


**5.2. Poverty and Regional Location**

Rural areas are much deprived as compared to the urban areas in Pakistan. One of the important reasons is the low productivity and consequently, the low incomes in the rural areas. Moreover, rural areas are much more vulnerable to natural calamities especially the floods and droughts. There is a huge gulf between the rural and urban areas in terms of facilities and opportunities that shows the biased government policies against rural areas. That’s why we observe the regional migration phenomenon especially for quality education and employment opportunities.

Incidence, depth and severity of poverty are high in rural areas as compared to urban areas in Pakistan [Jamal (2005)]. Our graphical demonstration of the data in Figure 2 shows that on average poor households are much more in rural areas as compared to urban areas.

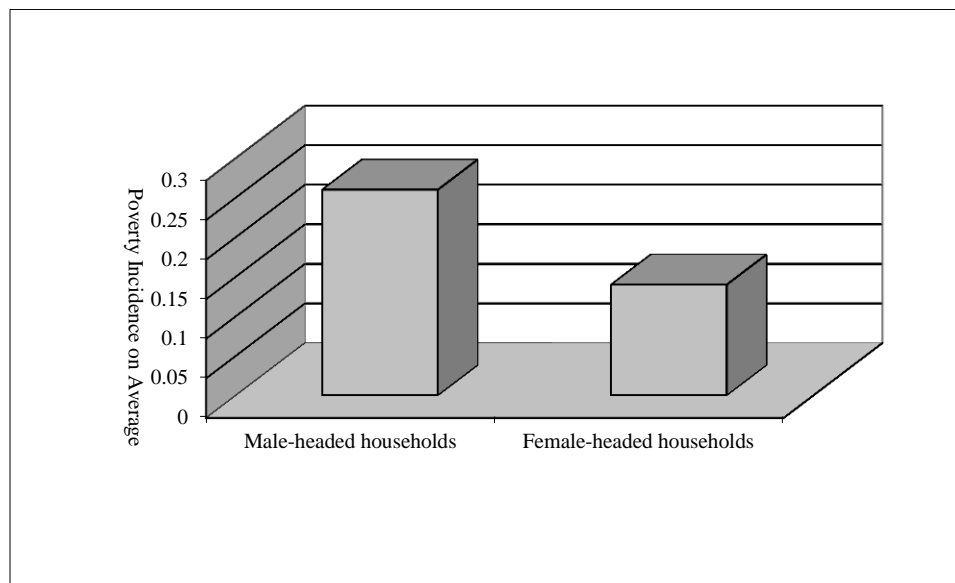
**Fig. 2. Regional Dimension of Poverty**



### 5.3. Poverty and Gender

It is generally perceived that our society is characterised with gender bias or gender discrimination. Women have unequal opportunities in education attainment and earnings as compared to men. Generally, female participation in society is low and it is observed that female-headed households face difficult circumstances to escape the poverty. The descriptive analysis in Figure 3 shows the surprising result that on average the poor female-headed households are small as compared to male-headed households. One reason behind this result could be the under-representation of female-headed households because there are cultural reasons to believe that many of the households that showed themselves male-headed are actually the female-headed households.

**Fig. 3. Gender Dimension of Poverty**



The graphical activity demonstrates the results about poverty incidence on average or aggregate basis. Cognizant of this descriptive analysis, now we are able to relate this information with our regression results to have a more vivid picture about the poverty determinants.

## 6. RESULTS

The logistic regression technique has been applied to evaluate the personal characteristics of the household's head and household characteristics as the determinants of household poverty in Pakistan. The personal characteristics include education, gender, age, employment status and experience. The household characteristics include regional location, provincial location, household size and remittances.

Table 2 reports the result for four provinces. The separate provincial and regional results are reported in the appendix. The Wald test is used to test the significance of coefficients and interpret the results using odd ratios. All the educational variables of the

household head are highly significant in reducing the probability being poor of the household. The primary, middle, matriculation, intermediate, bachelors and higher studies (professional category) education of the household head reduce the likelihood of the household being poor by 22 percent, 54 percent, 64 percent, 87 percent, 90 percent and 89 percent respectively as compared to the reference category of 'no education'.

It is noteworthy that the chances of escaping poverty of the household increase consistently as we increase the educational level of the household head. However, little improvement is observed beyond the attainment of intermediate education. All the educational variables in the separate provincial regressions provided in the appendix show that education is significantly and negatively related with the poverty status of the household except the primary education in Sindh, KPK and Balochistan. The same situation is with the middle and matric in Balochistan. However, all coefficients have negative signs as expected. Considering the separate regional regressions we observe that primary education of the head of the household is significant in reducing poverty in rural areas. In the rural areas primary education reduces the chances of poverty by 29 percent in comparison to the base category of no education. Moreover, all educational levels have shown that all levels are reducing the chances of poverty in greater proportion in urban areas as compared to the rural areas except the primary education.

Table 2

*Logistic Estimates of Poverty Determinants of Pakistan*

Variables	Coefficients	P-values	Odd Ratios
Age	.038	.000*	1.039
Age <sup>2</sup>	-.001	.000*	.999
Primary	-.243	.063***	.784
Middle	-.769	.000*	.463
Matric	-1.026	.000*	.358
Inter	-2.020	.000*	.133
Ba	-2.340	.000*	.096
Prof	-2.227	.000*	.108
Urban	-.906	.000*	.404
Male	.597	.000*	1.816
Punjab	.661	.000*	1.937
Sindh	.267	.000*	1.306
KPK	.647	.000*	1.909
Exp	-.009	.008***	.991
Mem	.196	.000*	1.216
Rem	-.554	.000*	.575
Agri	-.316	.000*	.729
Constant	-3.269	.000*	.038

\* denotes statistically significant at the 1 percent level.

\*\* denotes statistically significant at the 5 percent level.

\*\*\* denotes statistically significant at the 10 percent level.

If the employment status of the household head falls in the category of agriculture status (owner cultivator, share cropper, contract cultivator or livestock owner) then this reduces the probability of household being poor by 27 percent as compared to the base category of non-agriculture status. For age of the household head, we observed the positive sign for the variable age and the negative correlation is found between the poverty status of household and square of age. The age variable shows that as the age of the head increase by one year the chances of the household being poor will significantly increase by 3.9 percent. However the age-square variable shown negative sign which means in the older ages of the household head likelihood of the household being poor declines by 0.1 percent. Although the experience has a little effect but as the experience of the head of the household increases by one year then it reduces the chances of the household being poor by 0.9 percent.

The residence in urban areas was negatively associated with the poverty status. If the household is situated in the urban region then this reduces the likelihood of household being poor by 60 percent as compared to the reference category of rural areas. This result is significantly consistent in all separate provincial regressions given in the appendix. The male-headed household significantly increases the probability of that household to fall in poverty by 82 percent as compared to the female-headed household. The overall result's negative sign of the male-headed households also holds for the separate provincial and regional regressions. A household is more likely to be poor if it has a large number of members. If the family size increases by one person then it increases the probability of the household being poor by up to 22 percent. The same increase we observe for household size in the separate provincial and regional results. If the household is remittance receiver whether the remittances come from abroad or within the country then it decreases the probability of the household being poor by 43 percent than non-receiving households. In appendix the remittance effect in the separate urban and rural regressions reduces the chances of poor by 36 percent and 43 percent respectively. Considering the provincial location variables, being in Punjab, Sindh and KPK increases the chances of the household being poor by 94 percent, 31 percent and 91 percent respectively as compared with the base category of Balochistan. In appendix one additional determinant is evaluated considering the data of four provinces of Pakistan. The additional variable named as earners, which counts the number of earners per household that have any level of education. With the increase of one educated earner significantly reduces the probability of household being poor by 11 percent. However, almost all other results remain intact except the experience variable, which becomes insignificant.

## 7. CONCLUSION

The purpose of this study was to estimate the determinants of household poverty in Pakistan. The data used for this task is taken from the *Household Integrated Economic Survey (HIES 2001-02)* conducted by the Federal Bureau of Statistics. The determinants of poverty are explored using the logistic regression technique.

The main findings of our analysis can be concluded as follows: First, poverty is greatest among the less literate households and declines as education level increases—primary, middle, matriculation, intermediate, bachelors and higher studies. Therefore, educational attainment is a critical determinant of the incidence of poverty and should be

considered closely in implementing poverty alleviation programs. Second, the role of remittances appeared significant in reducing probability of being poor and this is more striking in rural areas. Third, the probability of being poor reduces in urban area implying that incidence and severity of poverty is more pronounced in rural areas.

Finally, the variables that are negatively related with the probability of being poor are: experience, age square and agriculture employment status. While the variables that are positively related with the probability of being poor are: household size, age of the household head, male-headed households and the provincial residence.

This analysis has certain limitations: First, it is a cross-sectional analysis using household survey data and it does not take into account time dynamics. Second, this study mainly focuses on the different levels of education and some selected control variables. Some control variables such as dependency ratio and training are missing. Future research can make a comparison of poverty determinants between different household surveys. In addition, research can be extended to incorporate more control variables. Similarly, a time series analysis can be conducted.

This analysis purposes following policy implications:

- There is a need to implement an appropriate policy measure in order to achieve the negative impact of education on poverty through increasing share of education expenditures at all levels.
- It is recommended that policy makers need to focus more on facilitating the remittances flows in rural areas through increasing financial access and reducing the costs associated with transfers of money.

**APPENDIX**

Table 3

*Separate Gender Level*

Gender	Explanatory Variables												
	Age	Age <sup>2</sup>	Primary	Middle	Matric	Inter	BA	Prof.	Urban	Exp.	Mem.	Rem.	Constant
<b>Male</b>													
Coefficient	.035	.000	-.299	-.727	-.980	-1.966	-2.387	-2.162	-.786	-.007	.181	-.329	-2.290
P-values	.000	.000	.087	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Odd Ratios	1.036	1.000	.795	.484	.375	.140	.092	.115	.456	.993	1.199	.719	.101
<b>Female</b>													
Coefficient	.55	-.001	.146	-.133	-7.288	-7.203	-6.918	-7.194	-.850	-.028	.199	-.604	-2.228
P-values	.155	.075	.809	.841	.553	.709	.725	.780	.000	.156	.000	.002	.013
Odd Ratios	1.057	.999	1.157	.875	.001	.001	.001	.001	.427	.973	1.220	.546	.108

Table 4  
*Separate Provincial Level*

Province	Explanatory Variables														
	Age	Age <sup>2</sup>	Primary	Middle	Matric	Inter	BA	Prof.	Urban	Male	Exp.	Mem.	Rem.	Agri.	Constant
<b>Punjab</b>															
Coefficient	.040	-.001	-.328	-1.092	-1.556	-2.728	-2.526	-2.812	-.849	.865	-.005	.224	-.384	-.596	-2.931
P-values	.007	.000	.095	.000	.000	.000	.000	.000	.000	.000	.361	.000	.000	.000	.000
Odd Ratios	1.041	.999	.720	.336	.211	.065	.080	.060	.428	2.376	.995	1.251	.681	.551	.053
<b>Sindh</b>															
Coefficient	.007	.000	-.302	-.627	-.822	-1.594	-2.208	-2.459	-1.40	.238	-.007	.246	.150	-.051	-2.396
P-values	.692	.352	.225	.023	.001	.000	.000	.000	.000	.577	.300	.000	.722	.610	.000
Odd Ratios	1.007	1.000	.739	.534	.439	.203	.110	.085	.246	1.268	.993	1.279	1.161	.950	.091
<b>KPK</b>															
Coefficient	.73	-.001	-.246	-.432	-.725	-1.915	-1.963	-1.831	-.650	.350	-.013	.131	-.681	-.199	-3.066
P-values	.002	.000	.478	.187	.016	.000	.000	.001	.000	.053	.127	.000	.000	.095	.000
Odd Ratios	1.075	.999	.782	.649	.484	.147	.140	.160	.522	1.419	.987	1.140	.506	.820	.047
<b>Balochistan</b>															
Coefficient	.58	-.001	.166	.022	-.151	-1.137	-1.870	-1.384	-.778	.658	-.029	.171	-.370	-.255	-3.623
P-values	.030	.010	.683	.957	.642	.025	.001	.015	.000	.189	.010	.000	.286	.059	.000
Odd Ratios	1.060	.999	1.180	1.022	.859	.321	.154	.251	.459	1.932	.972	1.186	.690	.775	.027

Table 5  
*Separate Region Level*

Region	Explanatory Variables													
	Age	Age <sup>2</sup>	Primary	Middle	Matric	Inter	BA	Prof.	Urban	Exp.	Mem.	Rem.	Agri.	Constant
<b>Urban</b>														
Coefficient	.047	-.001	-.220	-.812	-1.107	-2.261	-2.555	-2.739	.528	-.009	.186	-.443		-2.679
P-values	.007	.000	.310	.000	.000	.000	.000	.000	.001	.113	.000	.000		.000
Odd Ratios	1.048	.999	.802	.444	.331	.104	.078	.065	1.696	.991	1.205	.642		.069
<b>Rural</b>														
Coefficient	.027	.000	-.340	-.647	-1.06	-2.211	-2.384	-1.763	.454	-.006	.186	-.552	-.288	-2.831
P-values	.019	.001	.037	.000	.000	.000	.000	.000	.001	.159	.000	.000	.000	.000
Odd Ratios	1.027	1.000	.712	.523	.345	.110	.092	.172	1.575	.994	1.204	.576	.750	.059



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### Comments

It is a nice effort to emphasise the importance of education in poverty but has serious issues which are to be addressed by the author. The issues are listed below:

- (i) Surprisingly the study presented in December 2015 is based on data of 2001-02. After 2001-02, five data sets of HIES are released by FBS and a lot research is carried out with new available data sets, then what is the significance of analysis based on 14 years old data.
- (ii) Employment status is taken as Agriculture and non-agriculture. This is industry rather than employment status. Moreover the study is based on rural as well as urban areas of Pakistan. As per HIES used in present study only 6.46 percent earners from urban areas are employed in agriculture. So this classification makes no sense for employed persons of urban areas.
- (iii) One of the explanatory variables is Household size. It is measured by household members. In poverty analysis absolute number is not important; it is rather age and gender composition which is important. Moreover in poverty analysis merely household size does not matter, it is dependency ratio that matters.
- (iv) The household belonging to lowest quintile are considered as poor. (it 5th quintile (not 4<sup>th</sup>) means lowest 20 percent households ). It means around 20 percent households are considered as poor, which is vague, as all studies reported that for 2001-02 around 35 percent population was below poverty line.
- (v) On page 13 “If employment status falls in agriculture then it reduces the probability of being poor by 27 percent as compare to base category of non-agriculture”.
- (vi) This result does not match with the published data of HIES for 2001-02. As per data average monthly income in Agriculture is 2062 and for non-agriculture it is 3303. Moreover it is less than all other industries. Almost same is true for all quintiles
- (vii) As per data 62.25 percent earners in rural areas belongs to agriculture that why poverty is more intensive in rural areas, On the other hand only 6.46 percent earners from urban areas are engaged in agriculture. What does these results indicates for urban people.
- (viii) Taking the variables of age and experience of head at the same time makes no sense, as experience is down scaling of age, i.e., age minus four or five. AND surprisingly both variables have different signs.
- (ix) Households are categorised in two groups as receivers of remittances or non-receivers. This is too broader classification, as volume of remittances do matter. Secondly the micro analysis of data shows that overwhelming majority of household belonging to top quintile are not receivers of remittances.
- (x) The results on one side show that education of head has negative impact on poverty, on the other side households with agriculture industry are better off. These findings are again contradicting as mostly educated people are engaged in non-agri industry.

**Muhammad Idrees**

Quaid-i-Azam University,  
Islamabad.