

The Whimsical Trends of Rural Poverty in Pakistan: Some Diversifications

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Abstract

Poverty is the most concerned topic of Pakistan's economy. The issue has gathered an immense importance since it has been placed among the central issues of millennium development goals set by IMF. The poverty trends in Pakistan have never been found stable. The declining trends of poverty during the periods of 70's and 80's were reversed in 90's. These ever changing trends of poverty reveal the inconsistent and unsuitable policies for poverty reduction in Pakistan. The aim of the present study is to analyze the determinants of rural poverty by using simple regression model. The study is based on primary data sets. The main purpose of the study is to analyze the impact of various socio-economic and demographic variables on economic status of rural households. Poverty has been measured in terms of per capita income and wealth index. The Wealth Index (WI) is constructed from the household survey conducted for the present analysis. It is concluded that the number of earners, school going children, number of rooms, room per member, source of drinking water, number of children, number of females, per month income of households have significant positive impact on the wealth of a household. The results suggest that poverty can be alleviated by improving wealth status of rural households in real term by providing better health, education and employment opportunities both for males and females in rural areas.

Keywords: Rural Poverty, Wealth Index, Regression analysis, Per Capita Income, Pakistan

I. Introduction

At international level, poverty has been declining at the rate of one percent point a year. Poverty has declined from 52 percent to 26 percent from 1981 to 2005 and the number of poor has reduced by about five hundred million in this period. According to the Center for Research on Poverty Reduction and Income Distribution (CRPRID), Pakistan's 22.3 percent population was poor in 2005-06.

Like many other developing countries, Pakistan has also made significant efforts to attain a significant level of economic growth and trying to integrate its economy with rest of the world through foreign investment and international trade. In spite of all these efforts, the GDP growth declined from 1998-99 to 2000-01 due to economic sanctions and sluggish economy. Furthermore, the performance of our agriculture sector was also poor, as a result, percentage of poverty headcount ratio increased from 35.1 percent to 39.3 percent in 1998-99 to 2000-01. However, as a result of our continuous efforts and struggles we have attained higher GDP growth in a row in 2001-02 to 2004-05 and our economic growth was at higher rate of 9 percent. Due to higher growth rate the living standards of the people improved and also reduced poverty among the population. Poverty headcount decreased from 34.5 percent to 23.9 percent at national level.

During 2005-06 to 2006-07, we have experienced high inflation and slow growth rate as compared to real GDP growth in 2004-05. Despite of the poor performance in the past two years, we have attained valuable improvement in poverty headcount both in rural and urban areas.

In nut shell, historical poverty perspective indicates that only agriculture sector has not alleviated rural poverty in past years due to polarization process emergence, which is making the rich more richer and the poor more poorer. Most of the previous studies on rural poverty have elaborated poverty on the basis of headcount index, poverty gap index or squared poverty gap index and try to analyze the poverty on the basis of income or expenditure but Wealth Index (WI) has seldom been included in the assessment of poverty. As mostly the poor reside in rural areas and experiencing poverty more severely than urban poor. The poverty alleviation strategies must be focused on the rural economies. However, the question remains why the effects of these poverty alleviation strategies did not trickle down at gross root level?

In present paper, we have tried to focus on poverty, particularly poverty prevalence in rural areas where majority of people are bearing the burden of this nemesis. Here, we have elaborated how different variables affect the poverty level of rural household with respect to their wealth status.

The paper divided into six sections. First section presents the introduction, second will discuss the review of literature and in third section, the profiles of poverty are discussed. In section four, we have described the estimation techniques, type and source of data and variables. The results of estimation are briefly illustrated in the fifth section. Finally, in section six, we offer some concluding remarks and policy recommendations.

II. Literature Review

There have been a number of studies on the measurement of poverty by using variety of definitions and poverty lines in Pakistan and the choice of one specific definition has major effects on the results. While in poverty research, usually one definition is used at one time and all others are disregarded. Poverty is multidimensional social phenomenon and has always aroused the interest of researchers, international organizations, public authorities and their aim was to elaborate adequate strategies to find out an appropriate solution to get rid of this flail.

The history of research work on poverty issues in Pakistan started emerged with the pioneer work of Naseem (1973, 1977). In his later study (1977), instead of choosing the poverty lines arbitrarily, he tried to estimate the poverty line in terms of per capita expenditure with respect to 1959-60's prices, which afforded a consumption basket yielding 2100 calories per person per day. He also introduced three different levels of incomes which permitted the intake of 95%, 92% and 90% of the minimum required food calories. While his results were still sensitive to different poverty lines, they

perhaps were not as sensitive as witnessed in the earlier study of 1973. The main reason could be that the range of poverty lines was lower for caloric based studies. Finally his study showed that poverty declined between 1963-64 and 1969-70 and then showed an increasing trend in 1971-72.

These trends were similar to other different studies. Ercelawn in (1986) used poverty lines that were constructed by Naseem (1973). To find out the inflation rate, these poverty lines were adjusted for inflation. Results of study showed that 40% increase in per capita income was required to cross the poverty line. Intensity of poverty in barani villages was far greater than irrigated villages. He suggested that wage employment, non farm enterprise and credit schemes for low income groups were the best mean to eliminate poverty particularly for those who did not have access to land. Havinga, IC, et. al (1989) have used Two poverty lines that were based on caloric intake. Using data of Household Income and Expenditure Survey as a proxy for household income, he found that results of poverty measurements are highly sensitive to the unit of measurement and extent of urban poverty is higher than rural poverty, particularly in Sindh and Punjab.

However, some studies have used FGT measure such as Malik (1992) estimated headcount measures in his paper, the poverty gap and FGT measure and showed that rural poverty was highest in Baluchistan than Sindh and Punjab and lowest in NWFP. Rural poverty in barani (rainy areas) Punjab was lowest and close to urban areas of Punjab, while poverty in cotton and wheat zone of the Punjab was 29.3% which was much higher than barani Punjab. Result of headcount measures of rural poverty were similar as Ercelawn's (1990) study. Results also showed decline of rural poverty and decline in gap between poverty line and expenditure of household below poverty line which stated that poor were getting better off. Jafri (1997) discussed briefly how poverty had been measured in Pakistan by the government sponsored poverty alleviation program. Initially, poverty lines were constructed by using calories intake as the norm while a few used per capita expenditure, however the BNA (Basic Needs Approach) to measure the incidence of poverty is a most recent development. Then, Kathleen et al. (1998) in their report changed the definition of both poverty threshold and resources that were used to measure poverty. They determined that changes in poverty rates based on official and experimental measures were similar over time. The poverty rates using SIPP data were below those using CPS for 1991 poverty rates. By using the official definition with SIPP, data was smaller than official CPS based poverty rates and the difference between SIPP and CPS was due to the effect of many taxes and transfer policies. So the choice of an equivalence scale had a greater effect on the composition of the poverty population.

Qureshi and Arif's (2001) study was based on total poverty line and on food poverty line. They have used caloric intake of 2550 per adult for rural and 2295 for urban areas (Food poverty line). They have also used cost of food, clothing, education, health, housing and transportation to determine the total poverty line. Their study showed that overall poverty was 35.2 percent, and urban poverty was 31.7 percent in 1998-99. Anwar et al. (2004) examined the landlessness and rural poverty in Pakistan by using primary data of Household Integrated Economic Survey (HIES) for the year 2001-02. For estimation, population is divided into sub-population, each of which is sampled independently. The results of these independent samples combined to examine the entire population. Results showed that 26.04 percent population in urban areas and 42.93 percent population in rural areas were poor in 2000-02. Study showed that an Unequal land ownership was very important cause of poverty in rural Pakistan. Then Chaudhry et al. (2006) investigated some related concepts and issues of rural poverty by looking at agricultural and rural economy, rural poor, features of rural areas, special dimension and trends of rural poverty. However, macro variables used by author were similar as Kemal (2001). They have stated that incidence of poverty in rural areas was 40 percent as compare to 32 percent in urban areas. Poverty declined rapidly in 1970s and 1980s in Pakistan and had returned in 1990s. According to the study the growth rate, inflation and employment are major variables affecting rural poverty.

Finally, Herani et al. (2008) analyzed the reasons of poverty and identified poverty reduction strategies developed in Pakistan. Their study shows that rural poverty estimates in Pakistan are higher than urban poverty estimates. So, the majority of population, particularly in Pakistan, resides in rural

areas and their livelihood mostly depends upon cultivation or handicraft. All the studies are being carried out for a particular area and stipulated time frame by using different methods of research. All studies produced best results although their methods of research were different.

III. Profile of Poverty

Recently, due to multidimensional feature the problem of defining and measuring poverty has received a lot of attention from the last two decades. To define poor and the construction of an overall index to measure the extent and severity of poverty is a bone of contention between the researchers. Problem involved in identification of the poor has been described by Townsend (1979), Desai (1985) and Hagenaars (1986).

Basically, all definition of poverty can fit into one of the following categories:

- A Poverty is having less than an objectively defined absolute minimum.
- B Poverty is having less than others in society.
- C Poverty is a feeling that you do not have enough to get along.

Here A and B define poverty objectively and C defines poverty subjectively. First category defines poverty in absolute term; second category defines poverty in relative term while third category is a combination of both. Most important point is that poverty estimates obtained from these three categories are different. Hence we can conclude that choice of some specific vdefinition while doing research on poverty has major influence on results and conclusions. Choice of certain definition can be made on the basis of pragmatic arguments of available data. In poverty research, usually only one definition is used at one time.

In general, poverty is a complex problem in its political or moral concept. Furthermore, poverty and inequality are not same, although both are closely related with each other. Main difference between poverty and inequality is that poverty or absolute poverty is a prescriptive concept while inequality is a descriptive concept.

While discussing about poverty lines, difference between poverty measure and poverty line must be cleared that poverty measure is the mean by which the extent of poverty is generalized into a single statistic, whereas, a poverty line is a definition which is being used to identify the poor. So poverty lines state cut-off points which separate the poor from the non-poor and these poverty lines can be categorized into absolute poverty lines and relative poverty lines.

In Pakistan, the reason of high prevalence of rural poverty is a result of socio-demographic characteristics (high infant mortality, high fertility rate, poor sanitation and illiteracy) and distribution of assets ownership. Land is the principal asset in the rural areas and landlessness appears to be one of the most important causes of rural poverty in Pakistan. In rural areas, the landless people largely depend on non-agricultural sources of income. Moreover, in rural areas employment is mainly seasonal and at the low wage rates. So proportion of rural poverty largely exists in landless households in rural areas.

The importance of rural poverty is not always understood because the urban poor are more visible and vocal than rural poor. So the present study is under taken in the rural area, as poverty imposes a repressive weight on Pakistan, particularly in rural areas.

IV. Data sources and Measurement

Mostly, earlier studies of rural poverty analysis have largely emphasized the measurement of poverty in term of head-count measure and on the basis of income or expenditure approaches. Here, we will use primary data collected from five villages and try to find the relationship (by using Ordinary Least Square method) of different variables/factors with poverty through Wealth Index (WI). We will also examine how different variables influence wealth and exert pressure on poverty particularly in rural areas.

Profile of Study Area

The household survey was conducted by a questionnaire. The respondents were directly interviewed. The survey of five villages, called C121, C123, C127, C135 and C34-k, were conducted in August to September, 2008, for eight to nine continuous weeks. The format of the questionnaire was very simple such that the information could easily be transformed on an individual basis. The villages under study are 12 to 15 km away from main cities (in southern Punjab Pakistan). In these villages about seven hundred households are residing and fifty percent (approximately) of the total households have been interviewed.

There are many possible approaches to analyze the rural poverty. Mostly earlier studies of rural poverty analysis have largely emphasized on measurement of poverty in term of head-count measure and on the basis of income or expenditure. Here, we have used primary data and tried to find the relationship of different variables or factors with poverty through Wealth Index. We have also examined that how different variables influence Wealth Index and exerted pressure on poverty, particularly in rural areas.

To know about the economic condition of the households, we have introduced Wealth Index. It was originally constructed from the survey data on the bases of household's assets, services, and amenities in order to tabulate health, population, education and other indicators according to their economic status. Now we will examine the extent of different factors or variables causing variations in the wealth level and pushing a rural household inward or outward from poverty. We will further elaborate how Wealth Index works in poverty analysis?

There are few limitations of Wealth Index in our analysis which can be stated as;

- Minimum value of goal post is equal to zero means having not a single attribute/ item that we have taken while calculating wealth index.
- Maximum value of goal post is equal to 10 means; a household has all attributes that we have taken into account.

We can give different weights to different attributes but here we have given equal weight to all attributes while constructing Wealth Index. The possession of these attributes shows us that how much a household tend towards or outwards from poverty. Further, we have assumed that an underlying continuum status exists in relation to the wealth of household.

The general methodology used to calculate the Wealth Index has been described by Filmer and Pritchett (2001) and by Rutstein and Johnson (2004) as well. Both suggest that Wealth Index is similar to more traditional indices of consumer expenditure. It presents economic status of household for long-term period and also much easier to implement.

For healthier Wealth Index, questions included in the standard questionnaire should be specifically designed to know the precise wealth level of households and to distinguish among the poor. For example, the question about the size of land holdings, house ownership and number of farm animals by type are helpful in measurement of store of wealth. Then for better distinction among the poor, the questionnaire asks about the possession of some very basic items like they use what type of stove, type of bath room (pit, attach to public sewerage or any other), type of house (kachaa, kachaa/pakaa, pakaa)¹.

In practice, a household's wealth level is very difficult to measure directly and would take up most of interviewing time in a survey. Moreover, many households may be reluctant to give the necessary information. Therefore, to overcome these difficulties we interviewed many indicators that can be treated as wealth/economic standard of household. For this purpose, a proper understanding of those different variables is inevitable. In this way we will be able to collect information from respondents very easily and in a position to elaborate how these variables work.

- a) Type of toilet and type of flooring or house types (kachaa, kachaa/pakaa, and pakaa)¹ also present the severity of poverty because mostly poor people have no toilet facility in their houses; they use ground water and reside in mud (kachaa) houses.
- b) As proportion of households in developing countries (like Pakistan), use surface water source (lake, pond, well, river) is likely to decrease with the increase in wealth and shifted towards developed source (tap-water).
- c) Proportion of household with refrigerator or TV is likely to increase with wealth.
- d) Having motorcycle is likely to peak or mid-level of wealth because poor household likely to have bicycles only or no vehicles.
- e) Wealthier households in village areas have tractor or mini-truck.
- f) Size of land holding and ownership of house indicates the high and moderate level of wealth respectively.
- g) Number of farm animals also indicates high, moderate and low level of wealth dependent on their numbers and types.

Methodology and Model Specification

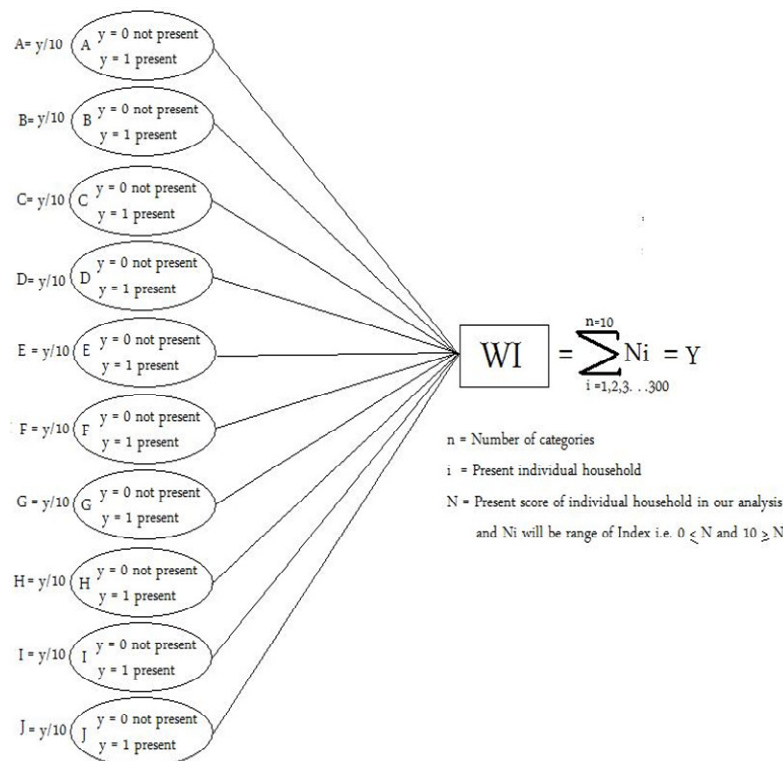
The present study is based on the multivariate data we have used Ordinary Least Square Method (OLS) to estimate the multivariate relationships. The multiple regression equation is given as follows;

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \mu_i$$

Here ‘Y’ stands for vector of ‘n’ observations of dependent (X’s) variable and β ’s is the coefficient vector of X’s represents the explanatory variables and ‘ μ ’ represent stochastic error term. Our specified model is specified as;

$$WI = f(INC, SGC, SDW, ROM, EAR)$$

Figure 1: Present the construction of Wealth Index (WI) in detail.



¹ Kachaa : constructed with mud
 Kachaa /Pakaa: Constructed with bricks and mud
 Pakaa: Constructed with cement and bricks

In order to avoid from specification errors we have adopted bottom-up approach. According to that approach we start with smaller model and expand it as one goes along. Primary objective of bottom-up approach is to develop the best model after several diagnostic tests and the model finally chosen is a good model in the sense that all the estimated coefficient have the right sign and statistically significant on the bases of 't' and 'F' test (James Davidson, 2000) and (M.Lovell,1983). Therefore, we have the following three specifications.

$$WI = \alpha_0 + \alpha_1 EAR + \alpha_2 SGC + \alpha_3 \frac{ROM}{MEN} + \alpha_4 ROM + \mu_i \quad (1)$$

$$WI = \beta_0 + \beta_1 EAR + \beta_2 SGC + \beta_3 ROM + \beta_4 FML + \beta_5 MAL + \varepsilon_i \quad (2)$$

$$WI = \gamma_0 + \gamma_1 SGC + \gamma_2 ROM + \gamma_3 FML + \gamma_4 MAL + \gamma_5 INC + \gamma_6 SDW + e_i \quad (3)$$

Table 1: List of Variables

Name of Dependent Variables	
WI	Wealth Index
Name of Explanatory Variables	
EAR	Number of Earners in a Households
SGC	School Going Children in a Household
MEM/ROM	Members per Room
ROM	Number of Room in a House
FML	Number of Female Member in a Household
MAL	Number of Male Member in a Household
INC	Per Month Income of Households in Rupees
SDW	Source of Clean Drinking Water (if present =1 , Otherwise = 0)

V. Estimation and Results

We have carried out descriptive and empirical analysis of rural poverty. The descriptive analysis in table 2 shows the detail of all four groups of independent variables. In first group, we have taken household related variables which consist of gender, size of household, number of males, females, children and rooms in a house. Second group consists of economic variables i.e. number of earners, monthly and per capita income of a household. Third group consists of health related variables as source of drinking water while fourth group contains education related variables which provide detail of school going children in a household. Finally, we have described the dependent variables i.e., Wealth Index (WI). In second column we have taken the total number of observations. It indicates the total number of households in our observed sample (consist of 304 households). Third column indicates the mean or an average value of each variable. Finally, column four indicates the standard deviation of each adjacent variable from the mean value.

Table 2: Descriptive Statistics of Dependent and Independent variables

Variables	N	Mean	St. Dev
Household Related Variables (Group I)			
Gender	304	0.986842	0.114139
Size of Household	304	5.729097	2.610676
Male	304	3.100671	1.732031
Female	304	2.617450	1.497910
Children	304	1.779605	1.805961
Rooms	304	2.250836	1.336362
Economic Variables (Group II)			
Earners	304	0.246711	0.508984
Income of Household	304	5565.132	3863.082
Per capita Income	304	1251.718	1234.138

Table 2: Descriptive Statistics of Dependent and Independent variables - continued

Basic Health Variables (Group III)			
Source of Drinking Water	304	0.776316	0.417400
Educational Variables (Group IV)			
School going Children	304	1.779605	1.805961
Wealth Index (dependent Variable)			
Wealth	304	4.007122	1.973347

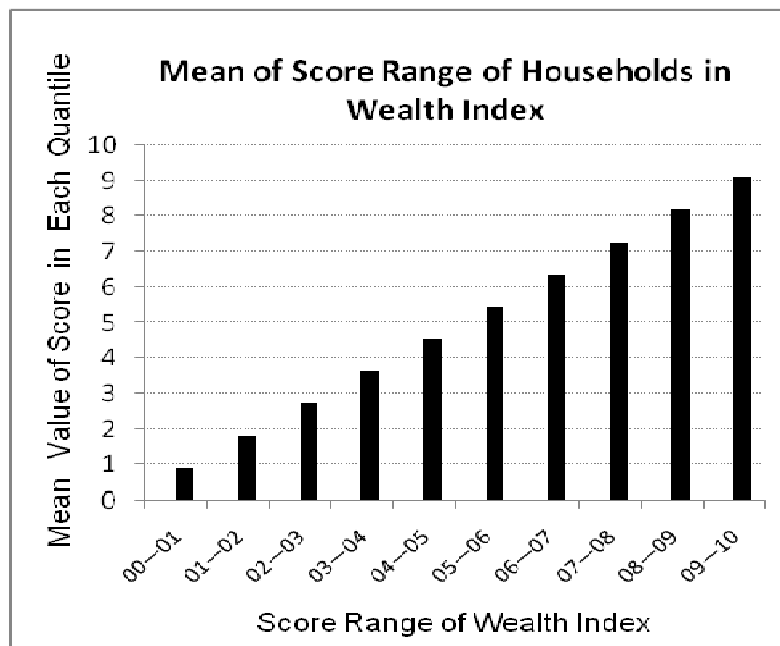
Source: calculated from survey data by the authors

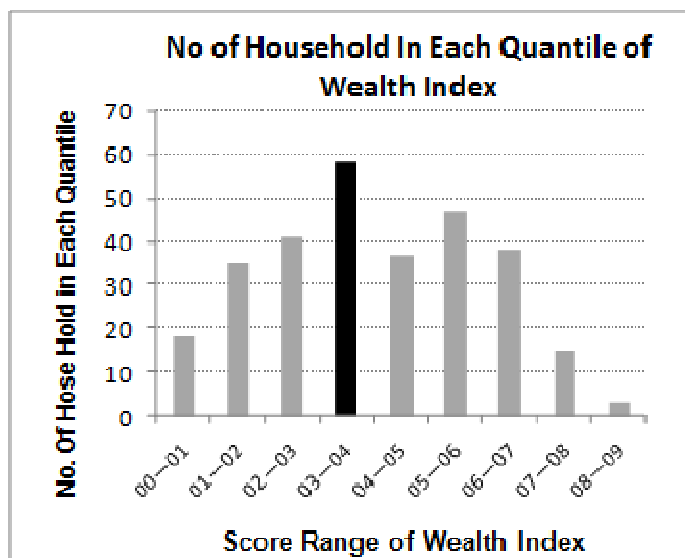
In table 3, we describe the statistics of Wealth Index (WI). First column of right hand side indicates the different quintile of wealth index and second column indicates the number of households which fall in each adjacent quintile range while third column (right hand side graph) indicates the mean value of score attained by different household groups with respect to their correspondence Wealth Index quintile.

Table 3: Statistics of Wealth Index

Score Range of Households In Wealth index	No. Of Households	Mean
00—01	18	0.909
01—02	35	1.818
02—03	41	2.727
03—04	58	3.636
04—05	37	4.545
05—06	47	5.455
06—07	38	6.364
07—08	15	7.273
08—09	3	8.182
09—10	2	9.091

Source: calculated from survey data conducted by the authors





Second column of table 3 and left hand side graph shows that majority of households (about 58) fall in fourth quintile and mean value of their score is 3.636, 18 households fall in lowest quintile with rang 0 to 1 with an average score of 0.9 while on other hand only two households lie into top score quintile with range 9 to 10 and with average score of 9.091. So, we can observe the wealth status of surveyed sample in just one look of table 3. It further shows that households with low quintile have greater chances to fall into poverty.

The regression estimation has been carried out keeping in view the bottom-up approach at three stages and results of equation 1, 2 and 3 are presented in table 4.

Table 4: OLS Estimates of Wealth Index

Variables	Equation A	Equation B	Equation C
C	10.45104 (2.460659)	8.863721 (2.445794)	3.428182 (1.080636)
EAR	3.081317 (0.621407)*	2.824638 (0.570552)*	--
SGC	3.583876 (0.251756)*	2.428282 (0.180067)*	3.550724 (0.236279)*
ROM/MEM	1.872453 (0.676893)**	--	--
ROM	3.582230 (0.352286)*	6.872443 (0.545091)*	6.448807 (0.466736)*
FML	--	2.752958 (0.220441)*	2.770186 (0.196903)*
MAL	--	-3.043404 (-0.195272)*	-2.553338 (-0.146652)*
INC	--	--	8.939096 (0.000213)*
SDW	--	--	2.030251 (0.440768)*
R-square	0.420768	0.535544	0.663827
F-Statistics	38.99457	51.87094	63.33677
Probability	(0.000000)	(0.000000)	(0.000000)

(Source: Author's calculation by using e-views - 5)

* 1% Level of Significance, ** 5% level of Significance, *** 10% Level of Significance

Results of equation A show that all the variables are statistically significant having expected signs. As results show that one unit change in earner's income (EAR) will lead to 0.62 units change in Wealth Index (WI) and coefficient of earners is statistically significant at 1 percent level. SGC (School going children) is also statistically significant at 1 percent level of significance and one unit change in school going children will cause WI to increase 0.25 units. Similarly, Rooms per member (ROM/MEM) have also expected sign and a unit increase in Rooms per member will increase to 0.67 units in WI and Rooms per member is statistically significant at a level of 5 percent of significance. Number of Rooms (ROM) in a house is also significant at 1 percent level and a unit change in rooms will improve to 0.35 units change in Wealth Index (WI). All these explanatory variables collectively show their positive relationship with wealth. The betterment in these variables will reduce the severity of poverty.

According to equation B, all the variables are statistically significant at 1 percent level and have expected signs. Unit increase in earner's income (EAR) improves 0.57 units change in WI. School going children (SGC) have also positive impact on WI and analysis shows that one unit change in School going children will cause WI to increase by 0.18 units and one unit increase in Rooms (ROM) and the number of females (FML) in a household will lead to a change of 0.54 units and 0.22 units in WI respectively. The variable number of males (MAL) in a household is also statistically significant and has negative sign which shows negative relationship. A unit increase in a number of male in a household will exert reverse (negative impact) effect up to 0.19 units on Wealth Index. The negative sign shows that male may be unemployed or dependent on the earners of the households.

Finally, Result of equation C shows that all the variables are statistically significant at level 1 percent and have expected signs. In this equation, we have introduced one new variable, source of drinking water (SDW) which has positive impact on the WI and a unit change of this variable will cause 0.44 units change in WI. School going children (SGC), number of rooms in a house (ROM), number of females (FML) in a house hold, and income (INC) have positive relationship and a unit change in these variables causes 0.23, 0.46, 0.19 and .0002 units change in WI respectively. Number of males (MAL) in a household has negative relationship with Wealth Index (WI), it is because of unemployment or increase in number of dependents on earner of household due to constant livelihood opportunities in rural areas. A unit increase in this variable will lead to a downward change of 0.14 units in dependent variable i.e. Wealth Index.

VI. Conclusion

The present study has concluded that by using Wealth Index (WI) as a proxy variable for poverty, variables like EAR, SGC, MEM/ROM, ROM, FML, MAL, INC and SDW have strong influence on wealth of rural households. These variables play an important role in poverty alleviation in rural areas. For example, betterment in independent variables can remarkably decrease poverty level. We can have effective control over diseases by providing better health facilities i.e. basic health centers with efficient staff, installation of water purification plant, introducing flush toilet system and by giving knowledge about basic health related problems to the rural households.

In Pakistan, the larger proportion of rural households has low level of education, the households with higher education level have low incidence of poverty as compare to those households with no or very low education level. Government and other NGOs may make an effort to provide educational facilities not only to males but also to females as well. It is also found from a large number of other studies in Pakistan that primary education has a paramount importance in extreme poverty reduction. Therefore, government may at least provide free primary educational facilities in all rural areas of Pakistan. It is also concluded that a large household size is a hurdle in the improvement of household's living standard and also their livelihood. The study shows that three members per room in a household which present lower living standard. Government may solve this problem by providing better housing opportunities for rural households. Government may improve their wealth standard through the means

of transportation and construction of roads. It will insure the access of rural people to the market of the nearest big cities; this will improve the income and employment opportunities. Mostly, the effects of poverty alleviation strategies do not trickle down at gross root level in rural areas. Government may control this problem by introducing the research based poverty alleviation strategies and then the poverty alleviation strategies will not only achieve their target, but also will be effective at gross-root level.

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