Trends and Determinants of Rural Poverty: A Logistic Regression Analysis of Selected Districts of Punjab

AMARA AMJAD HASHMI, MAQBOOL H. SIAL, and MAAIDA HUSSAIN HASHMI

I. INTRODUCTION

Poverty has many dimensions, like malnourishment, no shelter, being ill and not having ability to visit a doctor, no facility to go to school, unemployment, uncertainty of tomorrow, surviving only one day at a time. Poverty is losing a kid to illness due to the infected water. Powerlessness, lack of representation and freedom is another name of poverty. Poverty is of many types varying from place to place and time to time, and, has been portrayed in various manners. Poverty is the "incapability to maintain a minimum living standard anticipated with respect to basic consumption needs or some amount of income required for satisfying them [World Bank (2006)].

The bulk of the global poor are rural and will linger on thus for numerous decades. The major portion of their expenditure is generally on staple food. They have little assets such as land and others, lack of schooling and face lots of interconnecting obstacles to develop. Approximately 1.2 billion people globally expend less than a standard; "dollar-a-day"; and are in "dollar poverty"; 44 percent in South Asia about 24 percent each in Sub-Saharan Africa and East Asia and 32 percent in Latin America and the Caribbean. Almost 75 percent of the dollar poor lived and worked in rural areas in 2001. Projection made in 2001 suggested that 60 percent would continue to be in this state in 2005 [IFAD (2001)].

Pakistan's population is estimated at around 155 million, and is growing at 1.9 percent per annum. Nearly 61 percent of the country's populations live in rural areas. While 65 percent of the rural population is directly or indirectly linked with agriculture sector, it constitutes only 45 percent of their income [Pakistan (2006)]. According to the official statistics, poverty in the rural areas has gone down form 39 percent in 2001-02 to 28 percent in 2005-06. [Pakistan (2006)]. However, some studies have contradicted these contentions and argue that in contrast, the rural poverty has remained unchanged or even been trending higher over this period or at least not decreased as much as shown in official statistics. [Kemal (2003); Malik (2005); World Bank (2006); Anwar (2006)]. There is also a huge disparity in

Amara Amjad Hashmi <amara_hashmi@hotmail.com>, Maqbool H. Sial <maqsial@yahoo.com> are Graduate Student and Maaida Hussain Hashmi <maaidahashmi@hotmail.com> is Professor, Department of Economics, University of Sargodha.

poverty incidence among rural versus urban sector of Pakistan. According to the 2006 Economic Survey of Pakistan, poverty levels in urban and rural areas stood at 15 percent and 28 percent respectively, suggesting that a rural household was twice as likely to be a poor as its urban counterpart [Pakistan (2006)].

Moreover, the rural areas have witnessed much higher rate of increase in poverty levels than the urban areas. This has prompted a debate on growth and productivity trends in the agriculture sector. There is a concern regarding the apparent paradox of relatively good reported agriculture growth accompanied by increasing level of rural poverty during 1990s. Proportion of population below poverty line, drawn at minimum calorific intake requirement of 2350 calories, increased from 25 percent in 1990 to 39 percent in 2001. The growth apparently did not trickle down. A similar phenomenon was also observed during some earlier decades in Pakistan as well, poverty increased in the 1960s despite growth rates exceeding 6 percent [Kemal (2003)].

Overview of Rural Poverty in Pakistan

There are numerous studies, which stated poverty trends existing in Pakistan since the 1960s [see for example, Kemal (2001); Arif and Ahmed (2001)]. All of these studies put up with the instinctive flaws in evaluating the poverty over time and place. But, it is feasible to draw some general conclusion from the results of these studies. The general consensus rising from this literature is that poverty increased in rural areas. This occurred regardless of high growth rates in the agricultural sector at the same time. According to Arif and Ahmed (2001) this trend was due to the fact that the preliminary recipients of agricultural subsidies during this period were generally large farmers. Therefore the increased agricultural growth could not be translated into decreased levels of poverty. During the period of the seventies and the early eighties there was significant decrease in incidence of rural poverty. It was the period in which private investment in agriculture was highest. There was also a remarkable migration at domestic and overseas level from the rural areas, resultantly, foreign remittances increased, which oftenly has been referred as one of the main causes at the back of the declining poverty rates during this period in the country. Since the late 1980s however, there is consensus in the available literature and among researchers that the, rural poverty is rising. Malik (1994, 2005); Amjed and Kemal (1997); Ali and Tahir (1999); ADB (2002) and CRPRID (2003).

In brief, in the 1980s rapid growth in agriculture GDP of 3.9 percent contributed to a steady decline in rural poverty from 49.3 percent in 1984-85 to 36.9 percent in 1990-91. In spite of substantial growth in agriculture real GDP in the 1990s (4.6 percent), however, rural poverty did not decline. Instead of, the percentage of poor was essentially unchanged between 1990-91 (36.9 percent) and 1998-99 (35.9 percent), and may have risen slightly in 2001 to 38.9 percent. Several factors help to explain the stagnation in rural poverty in the 1990s, in-spite of substantial agriculture growth, including overestimates of the livestock income growth, a rise in real consumer price of major staples, and the skewed distribution of returns to land coupled with a declining share of the crop sector in overall GDP [Malik (2005); Dorosh, Niazi, and Nazli (2003)]. The following Tables show the poverty estimates in Pakistan.

Table

Headcount Measure (% below Poverty Line) for Pakistan—1992-93 to 2004-05

Poverty Lines	FBS (2001) Rs 682 in 1998-99 Prices	World Bank (2002) Urban Rs 767 Rural Rs 680 in 1998-99 Prices	Planning Commission (2003) Rs 748 in 2001-02 Prices	Anwar and Qureshi (2003) Rs 735 in 2001-02 Prices	Planning Commission/ CRPRID (2006)[1] Rs 723 in 2001-02 Prices
Overall					
1992-93	26.6	25.7	–	–	–
1993-94	29.3	28.6	–	–	–
1988-99	32.2	32.6	30.6	30.4	–
2001-02	–	–	32.1	35.6	34.5
2004-05	–	–	–	–	23.9*
Rural					
1992-93	29.9	27.7	–		
1993-94	34.7	33.4	–		
1988-99	36.3	35.4	34.6	32.1	
2001-02	–	–	38.9	41.0	39.3
2004-05	–	–	–	–	22.7*
Urban					
1992-93	20.7	20.8	–	–	–
1993-94	16.3	17.2	–	–	–
1988-99	22.4	24.2	20.9	26.39	–
2001-02	–	–	22.6	26.47	22.7
2004-05	–	–	–	–	14.9*

Source: *Anwar (2006).

The Pakistan (2006) has stated a reduction of 10.6 percent in the poverty incidence of the country during 2001-05, based on the latest available household survey data by using inflation adjusted poverty line for the year of 2004 -05. According to official estimates poverty declines from 34.46 percent during 2001, to 23.94 percent in 2005. It further indicates that in urban areas, the incidence of poverty reduced from 22.69 percent during 2001, to 14.94 percent in 2005, while rural poverty decreased 28.1 percent during 2005, compared to 39.26 percent in 2001. On the other hand, the World Bank (WB) report on Pakistan's poverty criticise to use CPI for inflating 2000-01 poverty line and instead suggests using the survey based prices index—Tornqvist Price Index (TPI). Thus by utilising this methodology report declared a poverty headcount of 29.2 percent. These results suggested a decline in poverty of 5.2 percent between 00-01 and 04-05 rather than to 10.6 percent. The Anwar's (2006) estimates are also consistent with World Bank estimates. According to this study poverty declines 5 percent in the period of 2001-02-2004-05.

Thus rural poverty analysis, policy formation, implementation, and reduction are extremely important and require redirection of attention and expenditure towards agricultural development.

Path Ways Out of Rural Poverty

The overview indicates a substantially high prevalence of rural poverty in Pakistan compared to the urban region. The next question arises, what accounts for causes and

[1]Planning Commission/CRPRID (2006), based on inflation (CPI) adjusted official poverty line of Rs 878.64 in 2004-05.

persistence of high prevalence of rural poverty in rural area. This study also attempts to address this question.

Education of the household head, per capita acreage cultivated, changes in household size, value of livestock owned and mean time to services and residential region were significantly related to the probability of being poor [Bokosi (2006)].

The main factors responsible for this outcome were found to be favourable/ unfavourable distribution by size of landholding, household size, educational attainment, dependency ratio, participation rates, female-male ratio, and age of the household head. The landless households getting out of poverty, however, remained in a low income category. Whereas our analysis highlighted the importance of institutional setting for a better distribution of assets and access to resources, at the same time it pointed to the fact that numerous non-farm activities also enable the rural households to generate incomes and thus avoid poverty [Malik (1996)].

This study explores these questions related to agricultural growth and rural poverty trends and path ways out and in to poverty using household panel data and secondary data sources to examine income dynamics in four districts of Pakistan from the late 1980s to 2002. Section II of the paper describes the data and methodology, in Section III the results of regressions on the determinants of household Poverty status, incorporating data on levels of infrastructure across villages and over time, are discussed and in Section IV and last section there are summary and policy recommendation.

II. DATA AND METHODOLOGY

The household data set used in this analysis was made up of 14 rounds of the International Food Policy Research Institute (IFPRI) sample from 1986-87 to 1990-91, together with a sub-sample of panel data households included in the 2001-02 Pakistan Rural Household Survey (PRHS).In this analysis, the data set for Punjab province (Attock and Faisalabad) was taken because of the time limitation. The second notable thing was that only a sub-sample of PRHS data was used. It was noted that 103 households that had data for all five years of the IFPRI survey could not be traced after 11 years. The 571 household traced out after 11years but households that have split off from the base household were not included in this analysis. Among these 571 households, 252 households of Punjab were taken. Thus the analysis included data set of 6 years (5 years IFPRI data include, data for 2001-02 PRHS data) and on average, these households were poorer than the average household that could be traced.

Summary statistics for important variables in the dataset, particular showed that households in this sample are poorly educated, with 88 percent of mother's illiterate and 46 percent of children under 15 currently enrolled, predominantly landless with 48 percent of households reporting no land ownership and report a poverty profile that is comparable to those obtained from the Pakistan Integrated Household Survey, with 35.6 percent of the households falling below the poverty line of Rs 690 per capita per month. There are also important differences among communities in access to health care and medical facilities—only 37.5 percent of the villages report a health facility within 5 kms, and a portion of households (12 percent) report using surface water (as opposed to well or piped water sources) as their primary drinking water source.

Estimation of Poverty Trends

To estimate the trends for poverty different techniques are used, such as Foster Greer and Thorbeck measures. But in the present study the trends in incidence of poverty is calculated through headcount poverty measure. This is the simplest approach to estimate the trends in poverty, while Depth and Severity of Poverty Gap is left for future study due to the time limitation. The other note able factor is the gap of 11 years in the available data; because the data set is used in the study is unique panel data, which is rarely available in Pakistan. However the IFPRI Panel data is in exceptions. The IFPRI households visited after 11 years in 2001-02 under the survey of the PRHS. It may be considered as the limitation of the study. The second important point to be noted that there is a data gap between recent years and the data available for analysis that is why the analysis is limited up till to 2001-02.

The poverty trends are calculated for four different categories,[2] full sample, bottom 40 percent, farmers and non-farmers. The disaggregated analysis with respect to different categories is more useful to understand the incidence of poverty among different groups of households.

The correlates of poverty status are usually analysed by using either a poverty profile or a poverty status regression. Poverty profile explores the characteristics of the poor using a tabulation approach and usually do not allow more than one correlate of the poor to vary simultaneously. In contrast, poverty status gives us opportunity to asses the correlates of poverty in a multivariate frame work [Baulch and McCulloch (1998)].

Poverty status regressions are usually applied by using a Probit or Logit model. In Probit or Logit model a dichotomous variable is used which represents whether a household is poor or not. This dichotomous variable is regressed on a set of supposed explanatory variables like region of residence, asset ownership, household size and composition and educational levels of households etc. Specifically certain explanatory variables could be identified which are significantly associated with being poor or non poor. The results of such type of poverty status are oftenly used in policy framing. Results of poverty status indicate that on which features policy makers should emphasised to enhance the factors which are associated with being not poor and to reduce the factors which are associated with being poor. When framing anti-poverty policies it is, however, important to be careful in interpreting the results of poverty status regression. Strictly speaking the explanatory variables included in poverty regression should be exogenous of a household's poverty status. Yet it is clear that poverty status regressions often identify strong association between poverty and certain explanatory variables (such as household size or asset ownership) which, at least in the medium to long term, are as much consequences as the causes of poverty. [Baulch and McCulloch (1998)]. In this study to find out the determinants of rural poverty with the help of

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[2]The bottom 40 percent is defined according to the 5-year average of real income per adult equivalent from 1987 to 1991.

Farmer households have a minimum average of 0.5 acres of land in operation (on average) over the 1987 to 1991 period

Designation as non-farmer merely denotes an average over 5 years of less than 0.5 acres of land in operation and does not necessarily rule out the possibility of having up to 2.5 acres of land in operation in any given year. Also, because this designation is based on operation in 1987-1991, it may no longer be accurate in 2002.

poverty status Logit model was used (as reported above). Therefore it was important to discuss Logit model in detail. Therefore it was important to discuss Logit model in detail. A Logistic model is a univariate binary model. For dependent variable *Yi*, there are only two values one and zero, and a continuous independent variable *Xi*, that

$$P_r(Y_i = 1) = F(x'_i \ b) \quad \dots \qquad \dots \qquad \dots \qquad \dots \qquad \dots \qquad \dots \qquad (1)$$

Here is *b* is a parameter which needs to be estimated and *F* is logistic cdf. Logit model may be preferable due to its lower computation cost as compare to other techniques of such type. The basic formula application of Logit model is:

$$P_1 = F(\alpha + \beta xi) = \frac{1}{[1 + e^{-(\alpha + \beta xi)}]} \quad \dots \qquad \dots \qquad \dots \qquad \dots \qquad \dots \qquad (2)$$

Where *xi* is the probability that *i*th households will be poor given *Yi*, where a is a vector of explanatory variables. *e* is the base of natural logarithm.
Equation 2 can be written as:

$$Pi[1 + e^{-(\alpha + \beta xi)}] = 1 \qquad \text{Or}$$

$$\alpha + \beta xi = \log\left(\frac{Pi}{1 - Pi}\right) \quad \dots \qquad \dots \qquad \dots \qquad \dots \qquad \dots \qquad \dots \qquad (3)$$

The ratio $\left(\frac{Pi}{1 - Pi}\right)$ is called the log odd or Logit, which acts as the dependent

variable. This ratio will give the odd that a household is poor. A positive sign of estimated coefficients would mean that the probability of being poor is higher than reference category and vice versa keeping all other characteristics constant. Putting in an other way "A number greater than one of log odds indicates a positive association between independent and dependent variable, while a number between Zero and one indicates negative association among both" [Hoffmann (2004)]. One of the major econometric problems is the specification of the variables to identify the determinants of poverty. As discussed before, the variable specified should be exogenous to the households and its poverty status. This is truly difficult and complex matter. Some poverty related variables such as amount of land owned related to the factors that are largely exogenous to the household's decision-making process. However other variables, for example those which are related to the households sex ratio, education and migration—reflect series of more or less internal choices made by the household at some point of time. However, since the management and taste factor should be fixed, it is not likely they will seriously biased estimates.

Selection of Appropriate Poverty Line

One most important methodological issue is to choose the best suitable and free of measuring error poverty line. To account for changes in cost of living, National Poverty line of Rs 3,648 per adult equivalent per year in 1991 was adjusted to an equivalent of Rs 8,743 in 2002 for determine poverty status among the sample household.

III. RESULTS AND DISCUSSION

This section presents empirical results based on the estimation of econometric model and trend in rural poverty using poverty head counts, the main objective of the econometric model was to determine the factors affecting poverty status in the rural Punjab. Therefore the section presents a detailed discussion on the trends in rural poverty from late 1980s to 2001-02 for four categories of households and determinants of poverty status through logistic model. For this, logit model was estimated for the IFPRI (International Food and Policy Research Institute) five years panel (1986-87-1990-91) while an other logit model was also estimated for the sub-sample of PRHS (2001-02) but the data showed poor results that is why not shown in paper. The dependent variable was one if the household was poor[3] and zero otherwise

Trends in Rural Poverty

The full sample results showed the general rising trend of poverty in sample households. The poverty headcount in three years were significantly high. In 1988-89 (48 percent), 1989-90 (46 percent) and the 2001-02(57 percent), which was the highest. In bottom 40 percent sub-sample the poverty incidence (poverty headcount) was highest followed by non-farmer category. In farmer households sub-sample the poverty incidence was comparatively less than other categories.

Incidence of Poverty (Headcount Ratio)

Years	Full sample	Bottom 40%	Non-farmer	Farmer
1986-87	35 %	70 %	36 %	34 %
1987-88	39 %	73 %	36 %	41 %
1988-89	48 %	82 %	54 %	46 %
1989-90	46%	81%	57 %	42 %
1990-91	38%	70%	51 %	34 %
2001-02	57%	67%	61 %	52 %

Rural Poverty Trends from 1986-2001/02 (Poverty Headcounts)
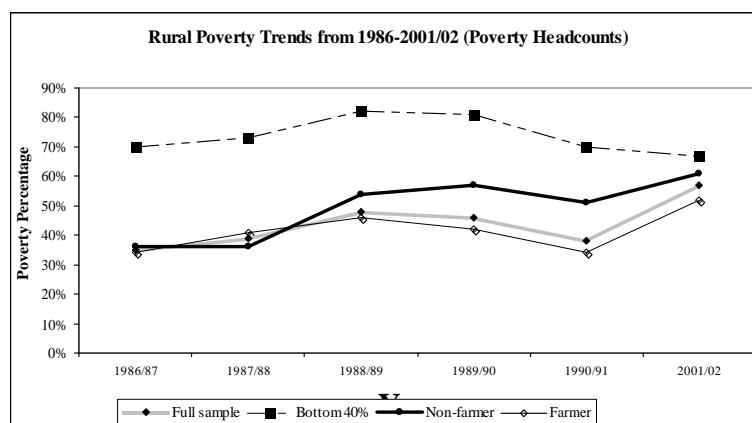
[3]Poverty is defined relative to the national poverty line of 3,648 (1991) Rs/adult equivalent/year. The discussant Dr Talat Anwar at PIDE conference May, 2009 Islamabad suggested to use rural poverty line instead of national poverty line, but unfortunately the rural poverty line is not available for 1991. Therefore it is left for future study.

Over all we can conclude that rural poverty is rising in the first five year of panel but it significantly increased in year 2001-02. However the results of bottom 40 percent showed that poverty incident significantly decreased in 2001-02 as compare to previous years specially '89 and '90. The disaggregated analysis showed that farming is an important factor to fight against poverty. On the other hand households who were non-farmer obviously landless were facing higher incidence of poverty. The estimates were two selected districts of Punjab due to data limitation; hence the results are following the general trends of poverty estimated by previous studies for national and provincial level but showing much higher estimates of poverty than other studies. This aspect stress to need have more disaggregated analysis at national and provincial level, because most of the studies have done the analysis at aggregate level accept few studies. Theses studies have done the analysis on the basis of agro ecological zones and found a significant difference in poverty among theses areas [see Malik (1994, 2005); Arif and Ahmad (2001) and Kemal (2003)].

Determinants of Rural Poverty

Logistic regressions on the poverty status of households for the first period (1986-87 to 1990-91) are similar to the results of Baulch and McCulloch (1998) and Adams and He (1995).Coefficients on household structure (number male and female adults, household size and dependency ratio), education (number of males and females with primary and secondary education), land (irrigated and non-irrigated) and capital (tractor) are all significant at the 95 percent confidence level.

The results revealed that likelihood event of being poor were more if a household had large number of the member (household size). There was higher chance of being poor for a household if they had large dependency ratio.

Where percent of male adults and female adults which were aged between 16 to 64 has strong negative relation with poverty status. This showed that male and female adults involved in income generation activities; therefore they became the cause to escape from poverty. Hence more the adults member, more the chance to escape from poverty. That's why one can say the household characteristics and composition play an important role to determine its poverty status.

The education variables also showed a significant negative relation ship with poverty status. That's meant, education is vital factor which influence the chance of being poor and not poor, there is less (more) chance to trip into poverty (exit from poverty) if the house hold head has primary education and the number of household members with primary and secondary school education. One other important aspect of this result is that the basic education both for male and female has more strong negative impact on poverty status, because the coefficient magnitude for primary education is greater than secondary education. On the other hand the male education works more strongly to get out of poverty than females education.

Owner ship of assets, such as land owned, value of live stock and capital assets (value of tractor) were also negatively correlated with poverty status. Rain fed land and irrigated land both showed the strong negative association with the chance of being poor. Therefore intuitively one can say, owner ship of land (though total acres of land owned is not included in analysis) reduces the risk to enter in to poverty. But the owner ship of rain

fed land owned is also cause of greater transitory poverty [see McCulloch and Baulch (2000)]. Where the value of livestock was a vital factor among the other assets of households. Value of livestock also negatively associated with poverty status. A household which had a tractor was also less likely to be poor than a household not had tractor.

The dummy for Farmer (=1 if household operating on 0.5 acres otherwise 0) also strongly negatively correlated with poverty status. Living in Attock which was the district with rain-fed land increased the chance of being poor for a household. Most probably it was due to the rain fed land which appeared as major factor of transitory poverty [see Adams and He (1995); Baulch and McCulloch (1998); McCulloch and Baulch (2000)].

It is useful to compare these results with results obtained by Adams and He (1995) and Baulch and McCulloch (1998) on the same data. But Adams and He's results consisted on the three years analysis of the same data which was available at that time. Secondly both of results for four districts of IFPRI panel, but study in hand can be compared with them on the basis of the general trend of the particular variables in the IFPRI panel and poverty correlates in Pakistan.

They also explored that dependency ratio and household size significantly enhance the risk to trip in to poverty. Both of the studies found that the male and female having primary and the secondary education significantly reduced the risk poverty, where the value of livestock also reduced the risk of poverty according to both studies. Adams and He found that owner ship of irrigated land was significantly eliminated the chance of living in poverty, which was also consistent with results of the Baulch and McCulloch's dummy variable of land ownership (though, it was not significant). Finally both of them, found that living in Attock strongly increased the chance of being poor. All these results were consistent with the results discussed in the present study before.

The results of the study are also in line with the general established economic theory. Having a large number of households is commonly correlated with poverty status, while a high dependency ratio decreases earning potential; in relation to needs and therefore increases the risk of poverty [Baulch and McCulloch (1998); McCulloch and Baulch (2000) and Sen (2003)]. Similar is the case with the households with basic and primary education, it is widely accepted concepts that education plays vital role to exit from poverty. In other words education reduces the chance to fall in to poverty. Real income showed positive relation ship with the education [see Baulch and McCulloch (1998); McCulloch and Baulch (2000); Sen (2003); Bokosi (2006); Bhatta and Sharma (2006)].

Land owned (irrigated and rain-fed both) and assets owner ship (value of livestock and vehicles; like tractor) also reduced the risk of being poor. Livestock income is the fourth important source of income for the rural households. However the incidence of poverty is found to be higher for those who depend solely on livestock income and lower for those who have both farming and livestock activities. FBS (2001) observes that a majority of the non-poor depends on crops while the poor depend on livestock. The percentage of households that depend on both crops and livestock is substantially higher for the non-poor. But the livestock income worked as a shock observer in bad years of cropping [see Baulch and McCulloch (1998); McCulloch and Baulch (2000); Malik (2005); Adams and He (1995, 1996, 2002)].

It is important to note that the problem of endogeneity can arise here. Prosperous household would be supposed to have higher land and assets ownership than poor. However there is large number of transitory poor in this data, therefore these assets can be used to smooth consumption between good and bad years. Possibly not necessarily are good indicators of poverty [see Baulch and McCulloch (1998); McCulloch and Baulch (2000); Malik (2005)]. Taking the other side of the picture, landlessness and lack of assets may be consequences rather than causes of poverty.

IV. SUMMARY AND RECOMMENDATIONS

This study has attempted to look into rural poverty trends and determinants of rural poverty in two selected districts if Punjab in Punjab by using a unique five year panel data set together with the sub-sample of PRHS from the late 1980s to 2002. The main purpose of this study was to explore the questions related to agriculture growth and magnitude of rural poverty and the factors, which determine the poverty status.

The incidence of poverty showed the increasing trends of rural poverty in panel over the periods of 16 years. The disaggregated analysis of the households with reference to different categories revealed that poverty incidence was highest in Bottom 40 percent category.

Finally this study identified the factors responsible for path ways out and in among rural households or associated with the poverty status. For this purpose the variable associated with the poverty status and poverty line used in this study were compared. A logistic regression model was estimated with a wide range of households characteristics (explanatory variables) to explore the determinants of poverty status.

The results showed that the chance of a household being poor increased due to its household size, dependency ratio and residential district. The chance of being poor is higher for a household living in Attock. The probability of being poor decreased with a greater number of adults male and female members of households. More adult members mean less poverty. The male and female having primary and secondary education also had very strong negative relationship with poverty. The level of the household heads basic education had also negative relationship with poverty. This showed that education was an important factor to get rid of poverty for a household. Where the household assets such as land owner ship, value of livestock also reduced the chance of being poor, while the household operating 0.5 acres and more also less poor. This emphasised on the redistribution of the land (irrigated and rain-fed both) because land distribution pattern is much skewed in rural Pakistan, that's why the agriculture income contributes most in the income inequality. The analysis also pointed out the location specific factor involved in deriving rural incomes, not only because of agro-ecological region but also because of the difference in infrastructure and even social net works for the migrants [see Malik (2005); Adams and Alderman (1992); Adams and He (1995)]. Remittances also reduced the chance to trip in to poverty (both domestic and foreign).

Therefore one can conclude from the results reported above that:

- Despite the high growth rate in agriculture sector rural poverty in Pakistan is increasing.
- The non farmer households had higher trends of poverty than Farmer households.

- The lowest four deciles (income groups) are in severe poverty.
- Income and employment multipliers of agriculture growth were insufficient to lead to substantial gains in rural form and non-farm incomes.
- Diversifications of the sources of income other than agriculture are needed in rural areas.
- Location is an important factor in determining real income and poverty status; not only because of agro-ecological factors but also because of the difference in infrastructure and even social net works for the migrants.
- Education, livestock ownership, remittances and farming status had strong impact on the chance of exiting from poverty.
- Large household size and high dependency ratio increased the chance to tip into poverty.

Policy Recommendations

The analysis undertaken in this study leads to the following policy implications:

- Agriculture growth alone with out any specific strategy is in sufficient to reduce the level o rural poverty; therefore a comprehensible strategy should be developed to trickle down the growth at the grass root level.
- Non agriculture sector should be developed to diversify the income sources of poor households, because analysis highlights the fact that income and employment multipliers of agriculture growth were insufficient to lead to substantial gains in rural form and non-farm incomes.
- Education should be given to every individual, because education plays a vital role in the exit from poverty.
- Land should be redistributed, because the pattern of land holding in Pakistan is very much skewed; and lack of assets make it very difficult for poor households to smooth their consumptions in bad years.
- Infrastructure must be improved, because location specific factors are also involved in determining the poverty status.
- The results showed the need of more disaggregated analysis and also there is need of more recent data to capture the recent trends in poverty.

Appendices

Appendix Table 1

Descriptive Statistics

Explanatory variables	N	Minimum	Maximum	Mean	Std. Deviation
Adult males, age 16-64 (% of household size)	1260	.00	.80	.3060	.14271
Adult females, age 16-64 (% of household size	1260	.06	.83	.2920	.12619
Dependency Ratio (dependants/adults)	1260	.00	5.00	.9235	.82332
Headcount of members in household size	1260	2.00	27.00	8.3643	3.44430
Males with at least primary or middle school education (% of males)	255	.00	1.00	.3501	.29725
Females with at least primary or middle school education (% of females)	255	.00	1.00	.1280	.20080
Males with secondary or college education (% of males)	255	.00	1.00	.1393	.23018
Females with secondary or college education(% of females)	255	.00	.50	.0203	.08484
=1 if household size head has basic education	1260	.00	1.00	.4762	.49963
Real adult equivalent remittances	1260	.00	125462.13	1643.6765	6156.79914
Value of livestock	1260	.0000	132200.0000	5632.642123	13640.2657379
Tractor value	1260	.0000	256000.0000	6977.857165	30198.8668371
Acres of rain-fed land owned	1256	.00	143.00	5.2432	16.98153
Acres of canal- or well-irrigated land owned	1256	.00	50.00	2.4243	6.20188
=1 if household size operates >=0.5 acres; =0 otherwise	1260	.00	1.00	.7341	.44197
Valid N (list wise)	254				

Appendix Table 2

Results of Logistic Regression for Determinants of Poverty Status

Variables in the Equation.	B	S.E.	Sig.	Exp(B) or Odd Ratios
Madlt	−.264*	.143	.065	.768
Fadlt	−.668*	.156	.000	.513
Depend	.256*	.032	.000	1.291
Hhsize	.057*	.003	.000	1.059
Headeduc	−.431*	.023	.000	.650
Mbasic	−.244*	.074	.001	.784
Fbasic_1	−.640*	.104	.000	.527
Msec_1	−1.320*	.093	.000	.267
Fsec_1	−1.740*	.263	.000	.176
Tracval1	−.189*	.015	.000	.828
lstokval1	−.060*	.012	.000	.942
rae_remit1	−1.178*	.041	.000	.308
rainLD	−.028*	.001	.000	.972
irrigLD	−.036*	.003	.000	.964
Farmer	−.098*	.026	.000	.907
Attock	1.236*	.027	.000	3.443
Constant	−.321*	.121	.008	.725

* Shows that the coefficient is significantly different from zero at 0.05 probability level.

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Comments

The paper analyses the trends and determinant of rural poverty which is important to know since rural region is home to the poor and bulk of the population is employed in rural areas. The paper needs some revisions. First of all, the introduction and review of literature section needs to be written separately as authors have mixed up these two sections. It needs to be done rather carefully as it present arguments in a misleading way. For example, at page 2 authors review that Malik (2005) and Kemal (2003) have contradicted official clams of decline in poverty between 2001 and 2006. It is noteworthy that these two studies were conducted earlier than the official claims of substantial decline in rural poverty. I suggest that they should also include World Bank and other analysts' work on rural poverty which contradicted official results. In addition, few references are not reported correctly, they should also write the correct references for the benefits of readers.

The authors have used the household level data which was made up of 14 rounds of the International Food Policy Research Institute (IFPRI) from 1986-87 to 1990-91, together with a sub-sample of household panel data included in the 2001-02 Pakistan Rural Household Survey (PRHS). While reporting the sample size of panel data over time, the authors should also report the initial sample size of panel data.

In poverty analysis, two methods are normally used to analyse correlates of poverty status (a) poverty profile; (b) poverty status regression. The authors have used logistic regression model to determine the trends in rural poverty in some selected districts of Punjab which provide an opportunity to assess the correlates of poverty in a multivariate framework. In this context, the most important methodological issue is the choice of poverty line. Surprisingly, the paper selected to use national poverty line to estimate rural poverty which is likely to overestimate the rural poverty as national poverty line is about 10 percent higher than the rural poverty line. There is a need to interpret the results carefully as paper concludes that rural poverty is rising in the first five years but increased significantly in 2002. This is not the case, if you look at the table. Rather rural poverty has a mixed trend in the first five years but increased significantly in 2002

The logistic regressions on the poverty status of households for the first period (1986-87 to 1990-91) are similar to the results of McCullough and Baulch (1998) and Adams and He (1995). However, it would be interesting to know how the characteristics of the poor based on logistic regression model are comparable to poverty profile methodology.

In conclusion, authors make argument for land reform as land distribution is much skewed in rural Pakistan. This may be true but it should be supported by the evidence that can be obtained from previous issues of PDR. In the end, the authors should discuss the theme of the conference, economic sustainability in globalised world and try to link the paper with theme.

Talat Anwar

Canadian International Development Agency,
Islamabad.