

Determinants of Small Farmers Poverty in the Central Punjab (Pakistan)

HAZOOR M. SABIR¹, ZAKIR HUSSAIN[†] AND ABDUL SABOOR[†]

Ayub Agricultural Research Institute, Faisalabad, Pakistan

[†]Department of Agricultural Economics, University of Agriculture, Faisalabad–38040, Pakistan

¹Corresponding author's e-mail: hazoorsabir@yahoo.com

ABSTRACT

This paper presents the empirical findings on the poverty status and its causes among small farmers in the Central Punjab. The data used in this paper are based on the survey conducted for the year 2003-04. A sample of 300 small farmers from the three districts of Central Punjab was selected. A logistic regression approach was used to estimate the parameters of poverty causing factors. The National poverty line of Rs. 748 per person per month was used as the yardstick. Results of the Head Count Index (HCI) revealed that 48, 59 and 56% of the respondents were below poverty line on the head count basis in Faisalabad, Jhang and T.T. Singh, respectively. The corresponding poverty gap across districts was 65, 53, and 57%. Logistic model estimates revealed that among many, the lower farm productivity, old age of the head, lower prices of the outputs, bigger household size, lack of infrastructure, and high dependency ratio were the major determinants of poverty, while education of the head was the poverty-reducing factor.

Key Words: Determinants; Small Farmers; Poverty; Central Punjab

INTRODUCTION

In Pakistan, more than 45% people generate their income from agriculture sector and 85% of them are small farmers. The number of small farms has increased over time from 82% in the year 1990 to 86% in the year 2000 (Anonymous, 2000).

In Pakistan, small farms are not only becoming smaller, but land distribution is also skewed and concentrated more among larger farms. Nearly 14% of the large farms own 54% of the area and 86% cultivates 46% of the farm area. Small farmer is operating less than 12.5 acres of irrigated land or less than 25 acres of un-irrigated land (Anonymous, 2000).

The predominance of small-farms (over 90%) is a critical factor in agricultural development of South Asian countries. Small farms contribute 30-35% to total agricultural output. Thus small farmers are a significant and vital segment of farming community. Sustainable intensification of smallholder agricultural production should be a key component of national anti-poverty strategies. Sustainable intensification means that smallholders are able to raise crop yields or livestock production without depleting the natural resource base on which their production depends (Peacock & Jowett, 2004).

The most prominent studies carried out on poverty include those of Rodríguez (2000), Barbosa and Kathleen (2001), Elsheikh *et al.* (2002), Ayalneh (2002) and Figueroa (2003). In Pakistan, poverty has been higher in rural areas (38.65%) than urban areas, i.e. 22.39% (Anonymous, 2003). The majority of these rural poor are

the small farmers. The gap between rural poor and urban poor is becoming wider over time which calls for corrective action. Thus, targeting of small farms seems imperative in alleviating rural poverty. The empowerment of small farmers is sine qua non for the development of agriculture and hence reduction of rural poverty. The objective of this study was to determine poverty profile of the small farms in central Punjab and identification of the factors responsible for small farmer's poverty.

METHODOLOGY

The data used in this paper are based on the survey conducted for the year 2003-04. A random sample of 300 respondents from the mixed cropping zone of Central Punjab was taken. A well structured questionnaire was used to gather data on farm management practices, cropping pattern, input use, farmer's perceptions regarding their social status (Poor/Non poor), knowledge about growing of vegetables, and rearing of livestock etc.

In order to arrive at farm net income, the gross income and total costs were estimated. The gross income included the income from crops, livestock's and farm inventory. The total cost included the cost of various inputs being used on the farm for crops and livestock. The farm net revenue was estimated by subtracting the total farm cost from the farm gross revenue. Then Income per person per month was estimated. In order to estimate the extent of poverty, the National poverty line i.e. Rs.748 per person per month (Govt. of Pakistan) was taken as the yardstick to measure the poverty.

RESULTS AND DISCUSSION

The results reveal the incidence, depth and severity of the poverty of small farms in Faisalabad Division. The results in Table I revealed that 48, 59 and 56% of the respondents were below poverty line on the head count basis in Faisalabad, Jhang and T.T.Singh respectively. The corresponding poverty gap across districts was 65, 53, and 57% in Faisalabad, Jhang and T.T. Singh, respectively. The severity of poverty was 42, 28 and 32% in Faisalabad, Jhang and T.T. Singh, respectively. Nearly 54% of the respondents were below the poverty line, poverty gap and severity were 58 and 34%, respectively, in Division.

Determinants of Poverty. There are several approaches that are applied in determining the causes of poverty. The income approach to poverty is attributed to the reduced command of economic resources available to the household. Thus, in general terms, poverty is thought, as limited assets owned by the poor and the low productivity of these assets.

Several variables are considered as the determinants of income, and thus, of poverty. These variables are divided into two general areas: the characteristics associated with the income generating potential of individuals and the characteristics associated with the geographic context in which the individual lives.

However, there are severe problems in determining the direction of causality. The causality runs both ways i.e. poverty causes the characteristic or the presence of a given characteristic, which causes poverty? For instance poverty causes large households or a large household causes poverty.

In order to determine correlates of poverty and testing the corresponding hypotheses, a probability Model i.e. binary logistic model was used.

Mathematically model is:

$$Y_i = X_i\beta + u_i$$

Where:

Y_i : dependent variable that indexes the measure of Poverty;
 X_i : independent variables; u_i is the stochastic error term and β is the parameter to be estimated.

In this model, the response variable was binary, taking values as one if the household was poor, zero otherwise.

Following Greene (1993) and assuming that the cumulative distribution of u_i was Logistic, a logistic model was employed. In this case, the probability of being poor was estimated by using the logistic probability model given as:

$$\Pr ob(Y_i = 1) = \frac{\exp(X_i\beta)}{1 + \exp(X_i\beta)}$$

The variables included in the model are defined as follows:

Dependent variable:

PLN: Binary variable taking the value as one if household is below the poverty line, zero otherwise.

Independent variables:

Lowyld: Binary variable taking the value as one if household poverty was due to low farm productivity, zero otherwise.

Headage: Age of the household head in years.

Lwoppric: Binary variable taking the value of one if the poverty was due to low farm product prices zero otherwise.

Hinppric: Binary variable taking the value of one if the household poverty was due to high prices of inputs or zero otherwise.

Tflysize: Size of the household.

Headedu: Indicating the education of head as years of schooling.

Poorbase: Binary variable taking the value of one if the poverty of the household was due to poor resource base or zero otherwise.

Infrastr: Binary variable taking the value as one if the household's poverty was due to non-access to farm infrastructures otherwise zero

Child12: Nos. of children below the age of 12 years

The estimated logistic regression results are shown in Table II. The results revealed that the coefficients of independent variables have expected sign and consistent with the logic of economic theory.

In order to identify the determinants of the poverty following null hypotheses (H_0) and alternate hypothesis were formulated and tested.

Hypothesis 1. It was envisaged that farm's lower productivity lead to poverty. Statistically the coefficient of low yield was significantly different from zero at 5% probability level indicating that low yield of crops was a poverty causing factor. Thus the H_0 cannot be accepted and hence low farm productivity causes poverty.

Hypothesis 2. The coefficient of "Headage" was significantly different from zero at .01% level of probability, indicating Null Hypothesis is not accepted and hence old age is the cause of poverty. The results are consistent with the study of Elsheikh *et al.* (2002).

Hypothesis 3. The coefficient (β_3) of low prices was highly significant and different from zero, indicating that low prices of output is one of the causal factors of poverty. So the Null Hypothesis is not accepted. Thus low prices of output are another poverty causing factor.

Table I. Indices (%) of Poverty in Faisalabad Division

| Poverty indices | Faisalabad | Jhang | T.T.Singh | Division |
|---------------------|------------|-------|-----------|----------|
| Head count index | 48 | 59 | 56 | 54.33 |
| Poverty gap | 65 | 53 | 57 | 58 |
| Severity of poverty | 42 | 28 | 32 | 34 |

Table II. Logistic Estimates of Poverty Determinants in Faisalabad

| Variables | B | SE | t-value |
|-----------|---------|--------|-----------|
| LOWYLD | 0.5922 | 0.0336 | 17.62*** |
| HEADAGE | 0.216 | 0.014 | 15.42*** |
| LWOPPRIC | 1.049 | 0.045 | 23.311*** |
| HINPPRIC | 0.547 | 0.418 | 1.308 |
| TFLYSIZE | 0.1293 | 0.0731 | 1.771* |
| HEADEDU | -0.0953 | 0.034 | 2.802*** |
| POORBASE | 0.2973 | 0.027 | 11.011*** |
| INFRASTR | 0.5691 | 0.287 | 1.982** |
| CHILD12 | 0.2758 | 0.1229 | 2.244** |
| Constant | -5.080 | 1.075 | 4.725*** |

Hypothesis 4. The sign of coefficient input prices was positive but not significantly different from zero showing that this variable could not be considered as poverty causing factor. So the null hypothesis can not be rejected that high input prices are not the causing factors of the poverty.

Hypothesis 5. The coefficient for the variable House hold size has positive sign and statistically different from zero at 0.01% level of probability, indicating that this variable was the cause of poverty. So the Null Hypothesis is not accepted that the bigger house hold size was not the cause of poverty. Thus the household size affects the poverty.

Hypothesis 6. The results revealed that coefficient for the education of head had negative sign, showing inverse relation with poverty. When the validity of coefficient (β_6) was statistically tested, it was significantly different from zero at .01% level of probability indicating that Null hypothesis being incorrect cannot be accepted. The results are consistent with Szekely (1998) who also concluded that education of the house hold head reduces the poverty.

Hypothesis 7. The coefficient "poorbase" has positive sign and is significantly different from zero at .01% probability level, indicating that poor resource base is the cause of poverty.

Hypothesis 8. The sign of the coefficient is positive and is significantly different from zero at 5% level of probability, indicating that lack of infrastructure may be the cause of poverty thus suggesting that null hypothesis cannot be accepted. So the lack of infrastructure is the cause of poverty.

Hypothesis 9. The results showed that coefficient for dependency ratio had positive relation with poverty. Further more the coefficient was significantly different from zero at 95% confidence interval suggesting that null hypothesis can not be accepted. So the high dependency ratio was a poverty-causing factor. Rodriguez (2000) made similar conclusion regarding dependency ratio.

CONCLUSIONS

The study showed that a large majority of the small farmers are living below the official poverty line. The results showed that 48, 59 and 56% of the respondents were below poverty line on the head count basis in Faisalabad, Jhang and TT.Singh respectively. The corresponding poverty gap across districts was 65, 53 and 57% in Faisalabad, Jhang and TT Singh. The severity of poverty was 42, 28 and 32% in Faisalabad, Jhang and TT Singh respectively. Nearly 54% of the respondents were below the poverty line, poverty gap and severity were 58 and 34% in the Faisalabad Division, respectively.

In all nine hypotheses were tested to determine the causal factor of poverty. The major poverty causing factors were low productivity of crops, bigger family size poor resource base, lack of infrastructures and dependence ratio. The education of head was a poverty reducing factor.

Recommendations. The major emphasis should be given to increase productivity at the farm level, expand the resource base of farmers through crop diversification and development of infrastructure. The literacy rate and level of education should be a priority to help alleviate poverty. The education of the household would go a long way in alleviating poverty.

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