

PalArch's Journal of Archaeology  
of Egypt / Egyptology

## FACTORS AFFECTING RURAL INCOME IN PAKISTAN: A MICRO STUDY

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**Prof. Dr M. Zahir Faridi , Mah Rukh Shabbir , Ukasha Kirn , Dr. Khawaja Asif  
Mehmood , Zahida Niaz , Factors Affecting Rural Income In Pakistan: A Micro  
Study , Palarch's Journal Of Archaeology Of Egypt/Egyptology 17(15), 110-124.  
ISSN 1567-214x.**

**Keywords: Land holding, Livestock, Log-Linear Model, Marital status,  
Employment status.**

### **Abstract**

The basic purpose of the study is to examine the determinants of rural income in Pakistan. Generally, it was considered that cultivation of crops and livestock ranching are the main source of rural income. But there are many other factors that affect the rural income. In order to examine determinants of rural income, we have used Log-Linear Model for the analysis. Estimated results are demonstrating the mixture of positive and negative relationship with our targeted variable. Rural income presents negative relationship with family setup, major diseases and marital status while age, education, gender, employment status, land holding, no of livestock, availability of roads is directly linked with the rural income. It is suggested that Government should brought changes in livestock-based industries.

### **1. Introduction**

Pakistan listed as underdeveloped country with total population 220 million (Pakistan Bureau of Statistics, 2017). Almost 68% of population is living in rural areas and are associated with agriculture sector while almost 32 % of people resides in urban areas. They are working in Industrial sector. Because majority of the people are linked with rural areas. Rural income contributes more in GDP in Pakistan. Rural income is based on farm and non-farm activities. Farm activities include crop production, shifting cultivation, nomadic herding, livestock ranching etc.

On the other hand, non-farm activities are non-agricultural work belong to education, services, casual labour etc. With the passage of time, agriculture sector has shown growth in production but still the people associated with it facing lot of problems like, cruel feudal system, low wage rate, high poverty rate, high illiteracy rate, low standard of living and uneven landholding. 67 percent households are landless and only 0.1 percent household are just holding 1-acre land and above (Anwer et.al, 2004).

Ymeri et al (2020) examined the determinants of household rural income. The study was based on primary data. Data had been collected from 203 households. Linear regression and one-way ANOVA model had been applied for analysis. According to the estimated results one quarter households were dependent on non-farm activities while 75 % households were dependent on farm-activities. So, study suggested that regulators should make good policies and plans, not only for those whose income was dependent on farm-activities but also for those whose income was dependent on non-farm activities.

Rais et al (2016) studied the income pattern of small farmers of district Dadu Sind. Primary data was used for analysis whereas education, age, farm size were taken as independent variable. Study shows that micro finance had positive impact on rural income. As farmer's ability and efficiency to earn income increases due to accessibility of small credit. Study showed that education, age, farm size had positive relation with rural income. Fadipe et al. (2014) examined the determinants of rural income of Kwara state, Nigeria. The study was based on primary data. For analysis 93 rural households were questioned and interviewed. The study used multiple regression techniques for analysis. This study showed that major part of household rural income was generated by farm activities. Whereas education, farm size, gender, electricity had direct impact on rural income.

The basic purpose of the study is to determine the factors that influence the household's income in rural areas. After introducing the research problem, the rest of the study is arranged as follows. The second section discusses the methodology and data sources. Elementary data analysis including statistical properties of the data are made in the section 3<sup>rd</sup>. The section 4<sup>th</sup> explains the econometrics results. In the last section, we have concluded the present research with policy recommendation.

## 2. Data and Methodology

The present study focuses on the primary source of data. The data is collected through questionnaire by conducting survey. A village from Tehsil Taunsa Sharif of District Dera Ghazi Khan is chosen for collecting the data. Survey is conducted considering the nature of the data. To collect data, 200 households including 78 females and 122 males were interviewed and questioned.

The appropriate method for estimation is Ordinary Least Square (OLS) that minimizes the difference of sum of squares. Ordinary Least Square was applied to find out the relation and effects of independent variables on dependent variable that is rural income.

General form of multiple regression is given below

$$Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \dots + \alpha_n X_n + \varepsilon$$

Where Y is dependent variable,  $X_i$  are explanatory variables,  $\alpha_0$  is intercept term and  $\alpha_1, \dots, \alpha_n$  are coefficients. We have used Log linear form of regression keeping in view the nature of the data about regressed variable.

$$\ln Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \dots + \alpha_n X_n + \varepsilon$$

Based upon the above suggested methodology the operational model for the study is given below:

$$\ln RI = f(\text{AGE, GED, MAS, EDY, EMS, FAS, MMD, LAH, NOL, AOR})$$

Where,

AGE = Age of the households in years

GED = Gender 1, if male otherwise "0"

MAS = Marital status 1, if married otherwise "0"

EDY=Education of households in years

EMS =Employment status 1, if employed otherwise "0"

FAS = Family setup 1, if joint family system otherwise "0"

MMD = Major/Minor diseases 1, if major diseases otherwise "0"

LAH = Land holding 1,if yes otherwise "0"

NOL =Number of livestock

AOR = Availability of roads 1,if yes otherwise "0"

### 3. Elementary Analysis

An individual used income to meet daily needs of life like food, shelter, clothing etc. Most of the people get their income in terms of salaries and wages by taking part in some working activities. Rural income is actually the agricultural wage that individual received by doing work in the rural areas.

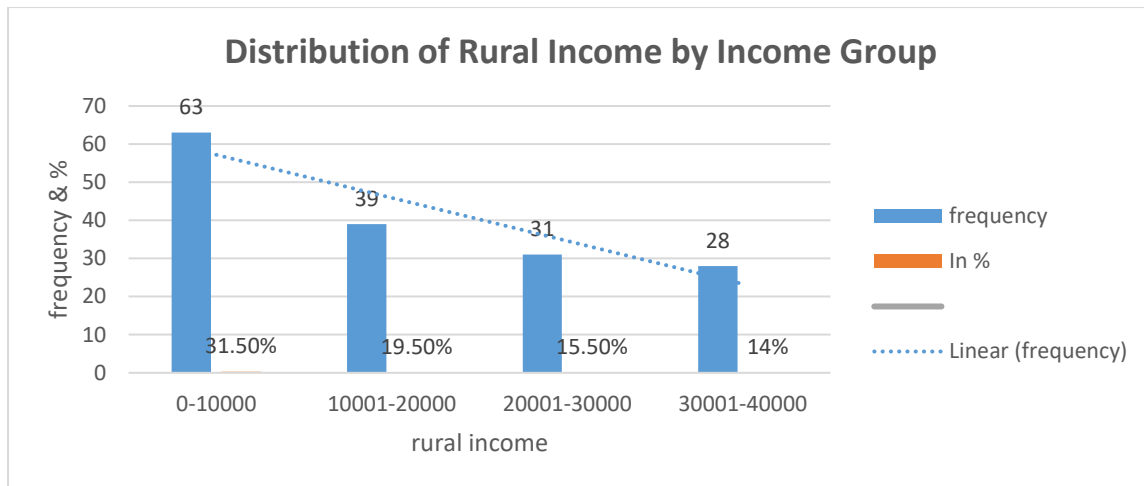
The elementary analysis is given in percentages.

**Table 1: Distribution of Rural Income by Income Group**

RI	Frequency	In Percentage
0-10000	63	31.5
10001-20000	39	19.5
20001-30000	31	15.5
30001-40000	28	14
40001-above	39	19.5
Total	200	100

Source: Authors field survey

Table 1 provides the percentages of that income of the rural people in different income groups. We have formulated five income groups. First two income groups are about low-income category while middle two income groups belong to middle income groups. The last group indicating the high income. We have observed the majority of the people belong to low income groups i.e. 31.5 percent and 19.5 percent. The following bar-chart describes the income distribution of rural people in various groups.



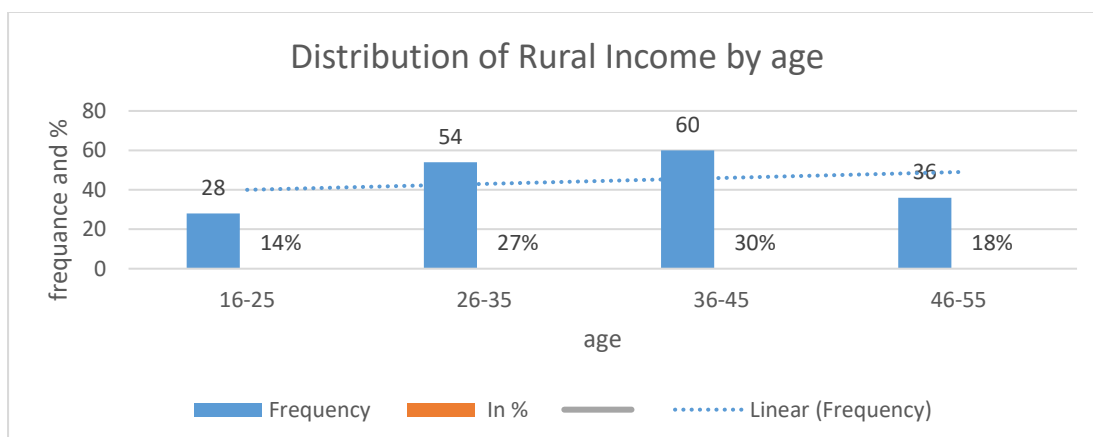
Source: Authors field survey

**Table 2: Distribution of Rural Income by Age**

Age	Frequency	In Percentage
16-25	28	14
26-35	54	27
36-45	60	30
46-55	36	18
55- 65	22	11

Source: Authors field Survey

Table 2 provides the percentages of age of the rural people in different age groups. We have formulated five age groups. The least number of people are associated with group 1 and 5. Group 1 belongs to younger households while group 5 belongs to the older households. Group 2 and 3 belong to middle age group. Only 18 percent people belong to group 4. We have observed majority of the people belongs to group 2 and 3 that belongs to middle age households i.e. 27 percent and 30 percent. The following bar-chart describes the age distribution of rural people in various groups.



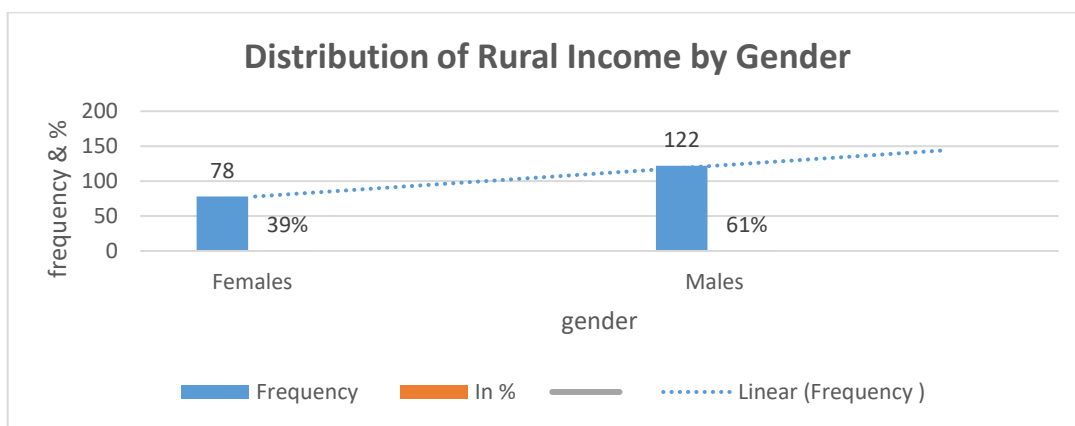
Source: Authors field Survey

**Table 3: Distribution of Rural Income by Gender**

GED	Frequency	In Percentage
Males (1)	122	61
Females (0)	78	39
Total	200	100

Source: Authorsfield survey

Table 3 develops percentages of gender in two different groups. First group belongs to male households while 2<sup>nd</sup> group belong to females. We have observed male workers are greater than females. It means the males contribution is larger than females in household’s income. The same facts may be examined by bar-chart.



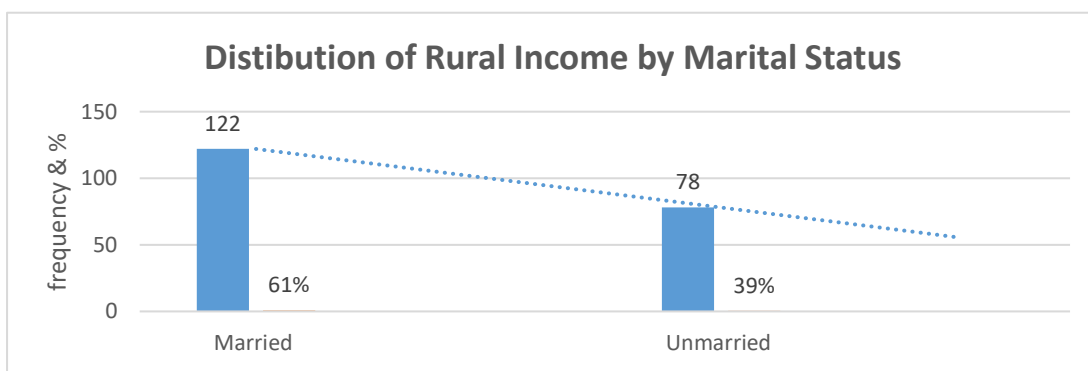
Source: Authorsfield survey

**Table 4 : Distribution of Rural Income by Marital Status**

MAS	Frequency	In Percentage
Unmarried (0)	78	39
Married (1)	122	61
Total	200	100

Source: Authors field survey

Table 4 provides percentages of material status of the households in two different groups. First group includes unmarried households while group 2 includes married households. We have observed from table4 that majority of the people belongs to group 2. It means majority of the households belongs to married group. The following bar-chart describes the marital status of households.



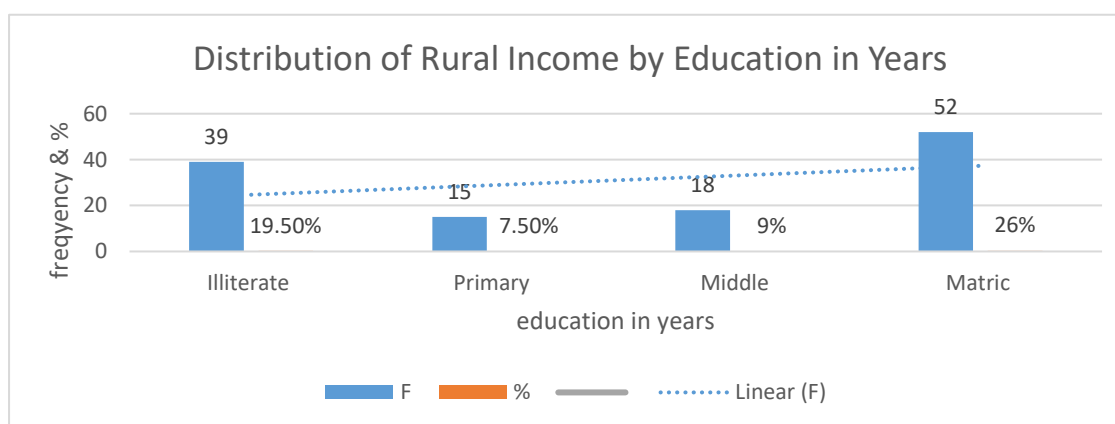
Source: Authors field survey

**Table 5: Distribution of Rural Income by Education in Years**

EDY	Frequency	In Percentage
Illiterate	39	19.5
Primary	15	7.5
Middle	18	9
Matric	52	26
Higher secondary	2	1
Graduation	39	19.5
Masters	33	16.5
M.Phil.	2	1
Total	200	100 %

Source: Authorsfield survey

Education is one of the most important determinants of income. Table 5 explains the percentages of education in years into 8 different groups. The majority of the households belong to group 4. It means majority of the households just have secondary level of education i.e.26 percent.19.5 percent people belong to group 1 and 6, which shows that one fifth of the households are illiterate and graduates respectively. Least no of households belong to Groups 2,3,5 and 8 while only 16 percent households have completed 16 years of education.The same results are depicted in the following bar-chart.

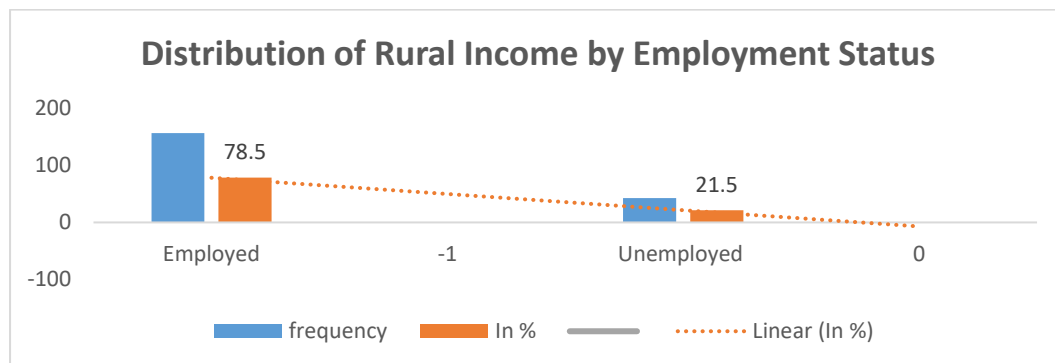


**Table 6: Distribution of Rural Income by Employment status**

EMS	Frequency	In Percentage
Unemployed (0)	43	21.5
Employed (1)	157	78.5
Total	200	100

Source: Authors field survey

Table 6 provides the percentages of Employment status of the households in two different groups. Group 1 belong to unemployed households while group 2 belong to employed households. We have noticed that mostly of the households are employed i.e. 78.5 percent while only 21.5 percent households are not employed. The following bar-chart describes the employment status of rural people.



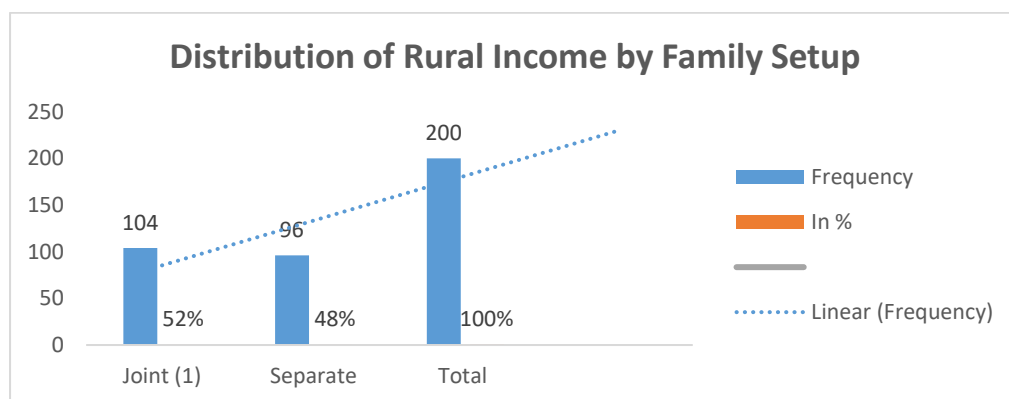
Source: Authors field survey

**Table7: Distribution of Rural Income by Family Setup**

FAS	Frequency	In Percentage
Joint (1)	104	52
Separate (0)	96	48
Total	200	100

Source: Authors field survey

Table 7 comprises the percentages of family setup of households in two different groups. Group 1 belongs to joint family system while group 2 belongs to nuclear family system. Mostly of the households belong to group 1 i.e. 52 percent while 48 percent households belong to group 2. The same facts are examined by bar-chart.



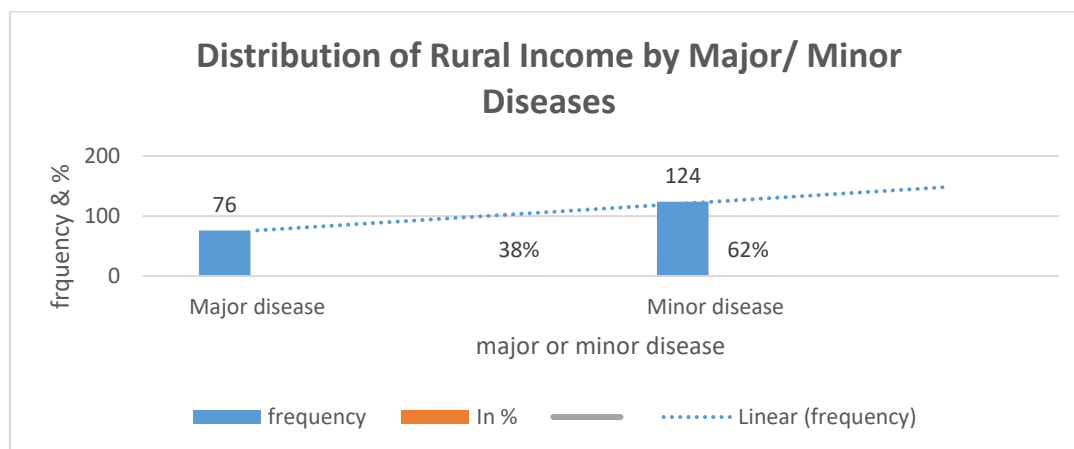
Source: Authors field survey.

**Table 8: Distribution of Rural Income by Major/minor Diseases**

MMD	Frequency	In Percentage
Minor disease (0)	124	62
Major disease (1)	76	38
Total	200	100

Source: Authors field survey

Table 8 shows the percentages of major/minor diseases of the respondents in two groups. According to the present study group 1 belongs to minor diseases while group 2 belongs to major diseases. From table 8 it is very clear that only 38 percent households are suffering from major diseases while majority of the belong to group 1 i.e. 62 percent. The same results are depicted in the following bar-chart.



Source: Authors field survey

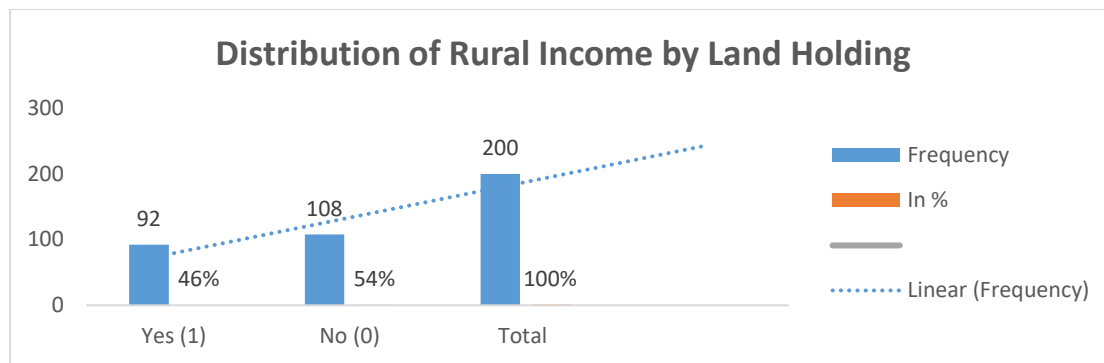
**Table 9: Distribution of Rural Income by Land holding**

LAH	Frequency	In Percentage
No (0)	108	54
Yes (1)	92	46
Total	200	100

Source: Authors field survey

Table 9 comprises the percentages of landholding of households in two different groups. Group 1 considers those household who do not have their own land while group 2 considers those households who have their own lands. From table 9 it is very clear that only 46 percent households have their own lands to do work while others are doing work on rented lands i.e. 54 percent. The same facts are examined by bar-chart.





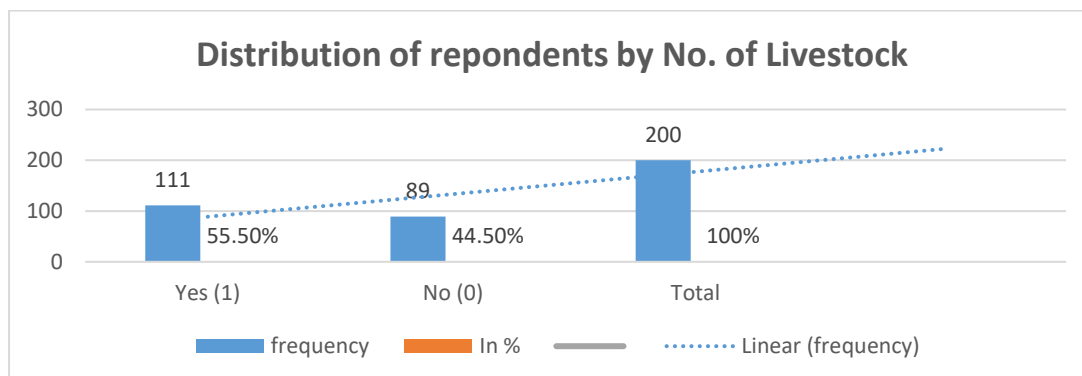
Source: Authors field survey

**Table 10: Distribution of Rural Income by Number of livestock**

NOL	Frequency	In %
0-10	178	89%
11-20	13	6.5 %
21-30	6	3 %
31-40	1	0.5 %
41-above	2	1%
Total	200	100 %

Source: Authors field survey

Table 10 provides the percentages of no. of livestock of households indifferent groups. We have formulated five groups. Majority of the households belongs to group 1. As mostly of the households just have limited number of animals between 1 to 10, while 6.5,3,0.5,1 percent household belongs to group 2,3,4 and 5 respectively. It means few households are having more than 10 animals. The same results are depicted in the following bar-chart.



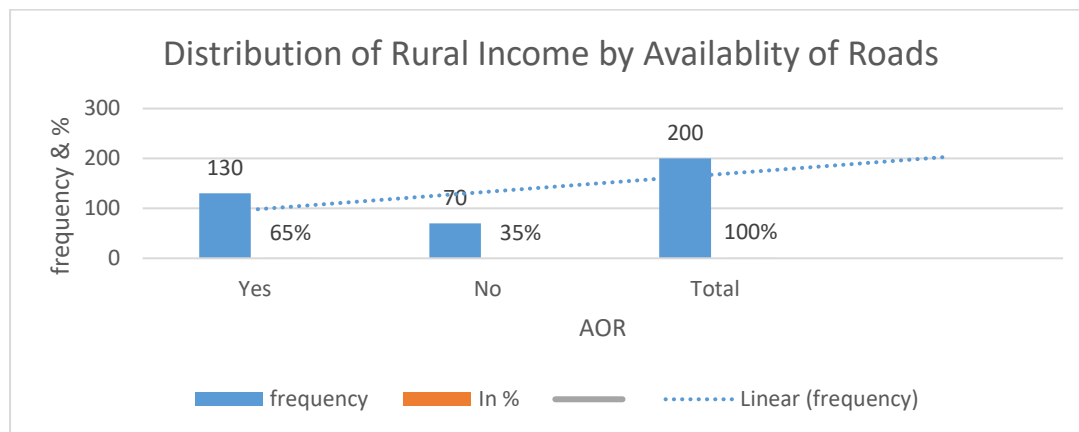
Source: Authors field survey

**Table 11: Distribution of Rural Income by Availability of Road**

AOR	Frequency	In Percentage
No (0)	70	35 %
Yes (1)	130	65 %
Total	200	100 %

Source: Authors filed survey

Table 11 develops percentages of Availability of roads in two different groups. First group belongs to unavailability of roads while group 2 shows availability of roads to households. We have observed from the table 11 that majority of the people belongs to group 2.i.e.65 percent. It means 65 percent households have the facility of roads.The same facts may be examined by the following bar-chart.



Source: Authors filed survey

### Statistical Analysis

The table12 provides the summary statistics of exogenous variables.

**Table 12: Descriptive statistics of some several variables**

Variables	Mean	Median	Maximum	Minimum	Std.Dev
Age	38.38	38.0	60.0	18.0	10.900
GED	0.61	1.00	1.00	0.00	0.488
MAS	0.61	1.00	1.00	0.00	0.488
EDY	9.39	10.00	18.00	0.00	5.557
EMS	0.78	1.00	1.00	0.00	0.415
FAS	0.52	1.00	1.00	0.00	0.500
MMD	0.38	0.00	1.00	0.00	0.486
LAH	0.465	0.00	1.00	0.00	0.500
NOL	3.95	1.00	50.00	0.00	7.537
AOR	0.65	1.00	1.00	0.00	0.478

Source: Authors own calculations

Total 200 observations are involved in the study. Below 16 and above 65 years old individuals are not considered in the study. As usually in developing countries below 16 years individuals are dependents and above 65 years old individuals, that are not taking part in working activities. The mean value of variable 'age' is 38.38 which shows that most of the people that are working lies between 38 to 39. The observed mean value of gender is 61 which shows male workers are greater than females. It means the males contribution is larger than females in household's income.

On the average 61 persons belongs to married people. Married persons are responsible to fulfil the basic needs of their partner. Moreover, the average value of Education, Employment

Status, Family Setup, Availability of health unit, Major/Minor diseases, Number of Livestock and Availability of roads are 9.39,0.78,0.52,0.46,0.38, 0.47,3.95 and 0.65 respectively.

#### 4. Estimation Analysis

**Table 13: Log-Linear Estimates of Rural Income Model**

Dependent Variable =LRI				
Independent Variables	Coefficient	Std. Error	t-Statistic	Probability
Age	0.096	0.028	3.37	0.0009*
GED	0.32	0.088	3.66	0.0003*
MAS	-0.16	0.108	-1.53	0.1276
EDY	0.055	0.0086	6.40	0.0000*
EMS	0.78	0.104	7.49	0.0000*
FAS	-0.23	0.099	-2.39	0.0178*
MMD	-0.043	0.102	-0.42	0.6741
LAH	0.357	0.096	3.70	0.0003*
NOL	0.018	0.0063	2.90	0.0041
AOR	0.074	0.087	0.852	0.3948
R-squared	0.745923		F-statistic	36.01266
Adjusted R-squared	0.725210		Prob(F-statistic).	
	0.000000			

\*= 1% significant    \*\*=5 % significant    \*\*\*= 10 % significant

Source: Authors own calculations

The rural income estimates are given in table 13. Table 13 explains the log-linear results of the rural income Model. The values of R-squared and adjusted R-squared are 0.75 and 0.73 respectively. The R-squared explains the explanatory power of the model. The overall significance of the rural-income model is described by the F-statistic. The value of F-statistic is 36.02 which is highly significant.

The coefficient of age is 0.096 and it is highly significant at one percent level of significance. The rural income increases about 0.096 percentage due to an increase of one year of age. It means the aged household experience brings rise in rural income. It is observed that the coefficient of gender is not only positively related to rural income but it is highly significant. This means rural income increases by 0.32 percentage points due to more involvement of the male in the economic activities. The reason may be that male is the main bread winner. The male contribution in rural family income is always considerable.

We have noted that the coefficient of material status is about -0.16 with t statistics -1.53. The value of the coefficient is negative but insignificant. In the present study material status is not important for determining the rural income. The coefficient value of education is 0.05 with t-statistic 6.4. It means education have significant impact on rural income. As education enhances skills of the households and provides better employment opportunities to households. Moreover, we have found that coefficient of Employment status is not only positively related to rural income but it is highly significant. Its means rural income increases by 0.78 percentage due to increase in employment opportunities to households. Employment opportunities is source of income, which brings prosperity for the households.

We have observed that the coefficient of family setup is about -0.23 with t statistics -2.39. The value of the coefficient is negative but insignificant. It means family setup is not important for determining the rural income. The coefficient value of major diseases is -0.04 with t-statistic -0.42. The value of the coefficient is negative but insignificant. Minor disease does not affect earning activities like flu, cough, etc. but major diseases like blindness, hepatitis etc. are hurdle in the way of employment. Health is an important factor of the life as people with good health can actively participate in economic activities.

We have noticed the coefficient value of landholding is 0.36 with t-statistic 3.7. The value of the coefficient is positive and highly significant. It means rural income increases by 0.78 percentage due to increase in landholding. With more acres of land households are able to enhance the productivity, which in return is the source of income.

The coefficient value of no. of livestock that is 0.018 at one percent level of significance. It means rural income increases by 0.018 percentage due to increase in no. of livestock. No. of livestock has significant impact on the rural income. As household receives additional income by selling additional milk. According to the results the coefficient value of availability of roads is 0.075 at one percent level of significance. It means rural income increases about 0.075 percentage due to increase in availability of road facilities to households. Roads are the only way that links the households to markets. Provision of roads, make it easier for the households to move from villages to cities to sell their products in the market.

## 5. Conclusions and policy Recommendations

The study elaborates the determinants of rural income in Pakistan. The study is based on the field survey. Data from 200 respondents has been collected from district Dera Gazi Khan for analysis. Traditionally it was believed that farmer's income is only based on cultivation and livestock, but there are many other factors that affect household incomes. To examine the effect of those determinants on rural income Log-Linear Model has been chosen for the analysis. According to the estimated results, variables like age, gender, education, employment status, land holding, no of livestock, availability of road have positive impact on rural income while other variables like major diseases, family setup and marital status shows negative relationship with the rural income.

Study under analysis suggests that Government should take initiatives to bring improvement in rural sector. Based on the findings it is suggested that Government should transfer the funds for the development of rural areas specially in education sector, health sector and infrastructure in the form of roads and provision of the livestock facilities. It is further suggested that rural employment opportunities should be created.

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