DEMOGRAPHIC AND ECONOMIC ASPECTS OF POVERTY: A CASE STUDY OF MULTAN DISTRICT, PAKISTAN

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Abstract. This study attempts to explore the demographic and economic determinants of poverty in Multan district by using the data of 300 households collected through random sampling technique. Ordinary least square method has been used. The study uses four poverty indices FGT, Sen Index, Sen-Shorrocks-Thon index, and Watts index to measure poverty. The findings reveal that the incidence, depth, and severity of poverty are higher in rural areas than that in urban areas of Multan district. Moreover, it is inferred that household size, physical disability, mental illness, migration, household head occupation, own house, remittances, and education have a significant impact on poverty.

Keywords: Poverty, Households, Punjab, Pakistan

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I. INTRODUCTION

The problem of poverty is as old as economic development. Poverty influences the economic condition of society adversely. Poverty limits the abilities and worsens the health of people as they do not contribute in the workforce effectively. Low levels of income lead to bad health, malnutrition and low education levels which lessen economic efficiency and performance (Dasgupta and Ray, 1987). In other words, the countries have to face many economic and political issues when its larger proportion of the population is poor, and the government is compelled to spend more to eradicate poverty. The poor have less physical and monetary assets, fewer investment opportunities, limited access to credit facilities, therefore they are unable to finance their children's education. They have more children as a source of old age financial security and resultantly these factors cause per capita growth to fall (Todaro & Smith, 2014).

Demographic variables are important to analyze the household poverty and these may also influence the economic growth of a country. The countries having high fertility rates and low child mortality rate lead to high youth dependency rate which in turn lowers the per-capita resources for investment in human capital, infrastructure, and economic growth. In these circumstances, it is difficult for the households to tackle the issues arising from poverty. Economic growth and household poverty are also influenced by adult mortality rates. Due to severe and fatal diseases, terrorism and armed conflicts, working age population of the countries declines which consequently upsurge the incidence of poverty not only at household level but also as whole at national level by boosting age dependency burdens and reducing the potential for economic growth (Buvinic et al. 2009).

According to the annual report of United Nations Development Program on poverty (2017), 650 million people were suffering from extreme poverty and about 16% of them lived in developing countries, while another 800 million people were at risk of falling back into poverty because of ethnicity, gender, and lack of opportunities where they live. Pakistan is also facing the problem of poverty as the estimates show that a fraction of population is living under a minimum standard line. Over the last decade, the incidence of poverty was observed a decline at

national level because incidence of poverty had decreased from 50.4% in 2005-06 to 24.3% percent in 2015-16. The incidence of poverty was about 12.5% and 30.7% in urban and rural areas respectively in 2015-16. The decline in poverty was more evident in urban areas than those of rural areas. The reasons for this decline were poverty alleviation program like "Benazir Income Support Program" (BISP), reasonable political stability, peace, reduction in terrorism, persistent rise in growth rate of 1.7% in 2008-09 to 5.5% in 2015-16 and inflows of remittances[1].

Poverty trends to vary with location to location. In developing countries, most of the population live in rural areas and connected with the agriculture sector to sustain themselves. The agriculture sector in rural areas plays a significant role in the economic development of rural areas. The conventional agrarian sector in the rural economy has been characterized in most developing economies, by dominant small land possession class, sharecroppers, and tenants that are suffering from poverty (Chaudhry et al. 2009). Pakistan's 63.6% population is living rural areas and incidence of poverty in these areas is estimated at 30.7% in 2015-16[2].

Multan district is located in the Southern Punjab of Pakistan. Multan district accounts for 2.28% of the country population. Most of the population of Multan district is residing in rural areas (56.62%) where people are facing the severe problem of poverty due to a lack of educational and health infrastructure, lack of employment opportunities etc. Multan district has received little consideration, especially in rural areas, at empirical work on poverty. So, the present study focuses on both rural and urban areas to find the determinants of poverty aiming at demographic and economic dimensions. The present study attempts to achieve three broad objectives. These are i) calculating the various poverty indices i.e. FGT, Sen Index, Sen-Shorrocks-Thon-Index, and Watts Index ii) analyzing the poverty profile of Multan district with respect to economic and demographic characteristics and iii) investigating the demographic and economic factors affecting household poverty status in Multan district.

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[1] See, Pakistan Economic Survey, 2016-2017

[2] See, Pakistan Population Census, 2017

The rest of the paper is structured as: Section two presents the profile of study area. Section three portrays the review of literature. Section four explains specification of model, data, and methodology, while section five illustrates the results and section six presents conclusions and policy implications

II. PROFILE OF STUDY AREA

Multan is bounded by the Khanewal district on the North and North East, Vehari district on East and Lodharan district on South. District Multan consists of four tehsils known as Multan city, Multan Saddar, Jalalpur Pirwala, and Shujabad. The Chenab river is on the western side of Multan district. The area of Multan district is 3721 square kilometers. The population density is 250 persons per square kilometer. The climate of Multan district is very hot. The agriculture land of the district is very productive and that's why Multan district is famous for high agricultural yield specifically cotton and Mango not only in Pakistan but also all over the world.

Multan is well known due to saints and Mausoleums because sufis and saints had stayed here for preaching Islam. Multan is the city of markets, mosques, and wonderfully designed tombs. The population of the district is largely the Muslim. The Christians are in a minority, while the Hindus and the Sikhs are negligible. The diverse spiritual groups have their own way of life customs and events, places of adorations.

According to the Pakistan census 2017, the inhabitants of Multan district is 4.745109 million, average annual population growth rate is 2.23 percent, and average household size is 6. About 6.62 percent of the total inhabitants are living in rural areas and 43.38 percent population are residing in urban areas of Multan district. In terms of population, Multan city is the largest tehsil comprising 47.6 percent population and Jalalpur Pirwala is the smallest tehsil comprising 11.68 percent of the population of Multan district.

III. LITERATURE REVIEW

This section is segmented into two sections. First section explains the concept and measurement of poverty while second section elaborates the review of assorted empirical studies.

POVERTY: CONCEPT AND MEASUREMENT

It is essential to understand the definition of poverty with the attention to examine the determinants of poverty. Poverty is a multifaceted phenomenon and there is no single delicate meaning and assessment of it.

World Bank (1990) defines the concept of poverty as "the inability to achieve a minimum standard of living". Later, World Bank (2000) defines poverty as "lack of resources in relation to wants, which leads to poverty. This definition is too wider and extends outside the food and nonfood objects by including assets and social position which are vital for the development of human capital. According to Lipton and Ravallion (1995) *"Poverty exists when one or more persons fall short of a level of economic welfare deemed to constitute a reasonable minimum, either in some absolute sense or by the standards of a specific society"*

Absolute poverty is defined as "lack of means in relation to needs" and relative poverty can be defined as "lack of means in relation to the means of others" (Chaudhry et al. 2009).

Poverty Lines

The poverty line indicates the income or expenditure yardstick, from which individuals or households fall below this line is counted as poor. This concept assumes that poverty is basically incapability to satisfy certain basic needs and these can only be fulfilled by income or expenditure. Poverty line are largely used to classify people either they are poor or not and this threshold has become the most preferred indicator for the quantitative measurement of the welfare of the people.

A poverty line differs from location to location and depends on the living condition of the people in that particular location. Poverty line separates the poor from the nonpoor. There are two broad procedures for estimating a poverty line: the first one is "relative" and another one is "absolute" poverty line.

The absolute poverty line is a minimum threshold that shows the minimum amount of income required by the people to obtain certain basic needs. Though, the absolute poverty is explicitly set at a specific welfare level. Developing countries relied on absolute poverty lines

rather than relative poverty lines as a large part of the population in such economies survive with minimum living standards. Sen (1981) asserts that when analyzing less developed economies absolute poverty threshold must be retained.

The relative poverty line is defined in terms of the proportion of population income smaller than a fixed percentage of mean or median income. These poverty lines can be constructed for each society in any time period based on the patterns of allocation of income. Normally it starts with a cutoff of fifty percent of the median income. (Shanahan and Tuma, 1994).

Poverty Measurements

Once the poverty line is estimated, the subsequent subject is the investigation of an adequate poverty measure. In Table 1, we explain the summary of different poverty indices.

TABLE 1

Summary of Poverty Measures

Measure	Formula	Definition and Features
Headcount Index	$$P_o = \frac{Q_p}{Q}$$	$0 \leq P_o \leq 1$ Count the number of poor Not obey the transfer axiom P_o is scaled invariant[3] P_o is translation invariant[4]
Poverty Gap Index	$$P_1 = \frac{1}{Q} \sum_{i=1}^{Q} \left(\frac{L - Y_i}{L} \right)$$	$0 \leq P_1 \leq 1$ Unresponsive to income transfers within the poor
Squared Poverty Gap Index	$$P_2 = \frac{1}{Q} \sum_{i=1}^{Q} \left(\frac{L - Y_i}{L} \right)^2$$	$0 \leq P_2 \leq \infty$ Sensitive to income transfers within the poor P_2 is Scale invariant P_2 is not translation invariant

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[3]If entire incomes and the poverty line are scaled by the equal proportional factor β, poverty measure would remain invariant.

[4]If entire the incomes and poverty line are increased by the equal sum of money say $10, P_o would remain the same because P_o is independent of income as it only encounters the number of poor.

Measure	Formula	Definition and Features
Sen Index	$$P_S = P_o[P_1 + (1-P_1)G_p]$$	$0 \le P_S \le P_o$ P_s satisfies a transfer principle P_s is not translation invariant Ps is scale variant
Sen-Shorrocks-Thon Index	$$P_{SST} = P_o P_1 (1 + G^P)$$	P_{SST} does not satisfy the focus axiom It satisfies the monotonicity axiom[5] P_{SST} satisfies a transfer axiom
Watts Index	$$P_W = \frac{1}{Q} \sum_{i=1}^{n} [\ln(L) - \ln(Y_i)]$$	P_W satisfies the focus axiom P_W satisfies the transfer principle It satisfies the monotonicity axiom

REVIEW OF EMPIRICAL STUDIES

In this section, efforts are made to review the literature regarding socio-economic and demographic determinants of poverty. These are as follows:

To figure out the factors of rural poverty in Pakistan, Malik (1996) investigated that the size of landholdings, educational attainment, dependency ratio, and household size influenced per-capita income level in a significant way. Dependency ratio and female-male ratio had a significant negative influence on per capita income. In another study, Mukherjee and Benson (2003) examined the various aspects that affect the poverty in Malawi. The results pointed out that level of education, employment, occupation, household size, agriculture landholdings, health care facilities and access to roads had a significant effect on poverty. To explore the profile and factoring causing poverty for Philippines, Albert and Collado (2004) indicated that the an addition of a child affects the household income negatively and the age of the household head along with housing conditions had also a significant impact on poverty. It was observed that most of the households facing poverty are engaged in agriculture. One study based on Multan city was conducted by Chaudhry et al. (2006) which pointed out that good governance influences urban

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[5] It requires that if income of the poor individuals increased, the poverty index should be decreased.

poverty. Household size, gender ratio, age of household head, female family unit head, dependency ratio, casual and informal worker and persons per rooms were positively related with poverty while participation ratio, female participation, literate household head, value of assets, owned house and governance were inversely correlated with poverty. In case of Lithuania, Misiunas and Binkauskienė (2007) uncovered the factors of poverty as household size, household head education, marital status, number of earners in a family, number of kids in family, and occupation of household head. Similarly, Chaudhry et al. (2009) determined the socio-economic and demographic characteristics of poverty in Muzaffargarh district. The findings exhibited that as land owned by household increased, the incidence of poverty decreased. Better education and economic conditions were linked with wage earners in a family and poverty fall as participation rate increased. Dependency ratio, sex ratio, and household head age were negatively connected with poverty. The study by Buvinic et al. (2009) found that gender inequality was linked to the significance of females in the household, family planning programs, genetic impartiality in education and employment and old age support. Moreover, liking for sons over daughters were normally observed as trouble for females. Another study that examined the factors of poverty in Zimbabwe conducted by Sakuhuni et al. (2011) pointed out that age squared, sex, education, occupation, migration status, secondary business engagement, loan accessibility and cultivated area of land were negatively associated with poverty while age and size of household were positively connected to poverty. The study by Akerele et al. (2012) estimated the socio-economic factors of poverty particularly amongst metropolitan households in South-West Nigeria found that educational grades of the head of household, household properties, dependency ratio, and profession of the head of household had a significant effect on poverty. Literacy of the household head had a negative influence on poverty. The micro-level factors of poverty was considered in a study by Khatun (2015) and pointed out that household size, household age and dependency ratio portrayed a negative impact on poverty whereas education, participation rate, assets and occupation of the household were positively associated with poverty.

To investigate the factors affecting the poverty status of households in Taiwan Chen & Wang (2015) confirmed that the incidence of poverty

differs across regions. Education attainment, household head age, family setup, earners in a family and, the number of dependents were associated with poverty status. Households headed by females had high probability to fall into poverty than the households headed by males. Significant associations were noticed between poverty and structural characteristics, including unequal distribution of income, economic escalation, structural change, and labor market. Similarly, Mekore and Yaekob (2018) determined the factors that influence the rural poverty in Ethiopia. Participation rate, use of high-quality seed, land size owned by the household, number of members in family, livestock, and remittance earnings were significant factors that influenced poverty negatively. Buba et al. (2018) examined the socio-demographic factors of poverty in Nigeria. The findings of this study exhibited that household head age, size, female-headed household, household head education, and employment status significantly affect the probability of being poor of households.

After reviewing this literature, we may summarize some points related to the determinants of poverty as follows: The incidence of poverty was more in rural regions in relation to urban areas, either in the case of Pakistan or other countries of the world. The policies suggested in the different analysis are varying from localities and based on the needs and living condition of households in particular areas. Most of the research exertions have based on estimating the households under the given poverty line and determining the aspects that affect the standard of living of households.

Numerous studies have pointed out the variables such as household size, education, participation rates, dependency ratio, educational attainment of household, location, and social infrastructure that affect the poverty status of households. Various macroeconomic indicators such as inflation rate, unemployment rate, GDP, and remittances etc. have also been discovered that affect poverty. In the existing literature, we have observed that poverty is mostly measured by FGT index. To measure poverty, we have employed four poverty indices FGT, Sen Index, Sen Shorrocks and Thon, and Watts indices. Multan district has been taken for the household survey because so far, no impressive and detailed research has been taken to observe poverty correlates in Multan district except one study by Chaudhry et al. 2006 with the limitation that it was

limited to Multan city only. In a nutshell, we may declare that this study is different from the preceding studies as it offers a comprehensive analytical and empirical work of many demographic and economic indicators that affect the poverty status in Multan district.

IV. MODEL SPECIFICATION AND DATA AND METHODOLOGY

MODEL SPECIFICATION

To explore the demographic and economic determinants of poverty, we have used atheoretic model by using household survey data. The econometric form of the model is given below:

$$PI_i = \beta_o + \beta_1(SEX) + \beta_2(MS) + \beta_3(HSIZE) + \beta_4(AGEH) + \beta_5(EDUC) + \beta_6(PD)$$
$$+\beta_7(OCC) + \beta_8(MI) + \beta_9(FR) + \beta_{10}(PR) + \beta_{11}(DR) + \beta_{12}(FMR) + \beta_{13}(MIG)$$
$$+\beta_{14}(RIM) + \beta_{15}(OH) + \beta_{16}(CRD) + u_i \tag{1}$$

Where PI_i is the poverty indices that we have used as dependent variables and variables in parenthesis are independent variables. We have used five poverty indices PGI, SPG, SI, SST, and WI alternatively as dependent variable in each analysis.

TABLE 2

List of the Variables for OLS Estimates of Demographic and Economic Factors Affecting Poverty

Variables	Description
Dependent Variables	
PGI	Poverty Gap Index
SPG	Squared Poverty Gap
SI	Sen-Index
SST	Sen-Shorrocks-Thon Index
WI	Watts Index
Independent Variables	
Demographic Variables	
SEX	1 if the household is headed by a male 0 otherwise
MS	1 if the head of the household is unmarried 0 otherwise

Variables	Description
AGEH	Age of the household head
HSIZE	Household size or total members of the family
DR	Dependency Ratio
FMR	Female-male Ratio
FR	Fertility Rate
PD	1 if the household has a physically disabled member 0 otherwise
PD	1 if the household has a physically disabled member 0 otherwise
MI	1 if the household has a mentally ill member 0 otherwise
MIG	1 if any member of a household or household migrates from rural to urban area 0 otherwise
Economic Variables	
PR	Participation Rate
RIM	1 if household receives remittances 0 otherwise
OCC	1 if the head of the household is working in the informal employment sector 0 otherwise
OH	1 if the household head has its own house 0 otherwise
CRD	1 if household took credit 0 otherwise
EDUC	Household head years of schooling

JUSTIFICATION OF VARIABLES

In this section, we have explained the demographic and economic variables that are linked with poverty. First, we explain the demographic variables which are as follows:

DEMOGRAPHIC DETERMINANTS OF HOUSEHOLD POVERTY

Demographic variables considerably affect the poverty status of households. In this section, we present concise definitions and details of in what manner these variables are associated with poverty. The important demographic variables are as follows:

Household Size

Household size means a total number of members in a household. A household with a greater number of healthy, educated and working-age members means more earners and can contribute to high household income whereas larger household size with a smaller number of healthy educated persons decreases the per capita income of the household.

Age of the Household Head

Age of household head plays a key role to determine the attitude towards work in a household. The probability of poverty is lower for the households that are in working age. However, poverty incidence may be higher for an old household head that cannot work. The link between household age and poverty can be positive or negative. Old age household heads have more experience and their earnings are higher. Similarly, young household heads may have more potential and power to work hard and can earn more income.

Dependency Ratio

The dependency ratio is defined as the ratio of the number the member's age less than 15 and age greater than 64 to the total members of the household. It shows the dependency burden in the working members within the household. Dependency burden lowers the per capita income of the household. We hypothesize that the dependency ratio is positively connected with the poverty status of households.

Female-Male Ratio

We have computed the female-male ratio of members whose age is less than 15 and greater than 64. Females in rural areas are typically forced to work outside the house. It implies that a high female-male ratio (as measured by the total number of females divided by the total number of males in a household) is negatively correlated to household poverty.

Physical Disability and Mental Illness

Physical disability or mentally illness of the members in a household lowers the participation rates and per capita income. Such households have to face higher health care costs, decrease efficiency, and poor

general health. This suggests that physically disable and mentally ill members in a household increase the probability of poverty.

Fertility Rate

High fertility affects the budgets of poor families, by reducing available resources to feed, increase educational, and health care costs. Lack of education of parents is generally associated with high fertility. In the current study, we have computed the fertility rate as the ratio of children under age one to the number of women of childbearing age (15<age<49). Higher fertility rates positively associated with poverty status of households.

Rural-Urban Migration

Migration can be defined as geographical mobility of people from one place to another for the reason of getting better economic and social opportunities. Rural to urban migration play an imperative role in poverty alleviation. Rural to urban migration takes place due to inadequate employment opportunities, insufficient healthcare infrastructure, production shocks and surplus labor in the agriculture sector.

ECONOMIC DETERMINANTS OF HOUSEHOLD POVERTY

There are many economic variables that are considerably associated with poverty. A brief detail and definition of some economic variables are given as follows:

Household Head Occupation

The household head occupation is an important determinant of household well-being. In the present study, we have distributed the occupations into two categories formal and informal employment sector. We use a dummy variable for occupation and used 0 if household head is working in the formal sector, otherwise used 1. One could presume that working of household head in the informal sector increase the probability of poverty.

Participation Rate

The participation rate is an employment variable. The higher participation rate lowers the poverty incidence as higher participation rate means more earners in a household. Participation rate is obtained by dividing the total number of members of the household who are eligible but not participating in the labor force to the total number of members of the household who are eligible to participate in the labor force.

Remittances

Foreign remittances significantly influence the well-being of the household. It directly affects the household welfare. As household income increases, consumption of food and nonfood items and investment in education also increases. Remittances indirectly affect the poverty through the GDP growth and increase foreign reserves. In the present analysis, we have used a dummy variable for remittance whether the household receives or not.

Credit

Credit facility can improve the efficiency of the households. When credit is used for investment purposes, it raises the household income. In our study, we have used the dummy variable for credit and attempts to know households who took credit from formal or informal resources are enjoying the better living standard or fall into poverty. The outcome of credit with poverty can be positive or negative depending on the use of credit. Normally in rural areas of Pakistan, poor households have a lack of income and they took credit to meet their basic needs or for the marriage of their children. In this situation, value of credit enhances the poverty incidence. On the other hand, if credit is invested for productive activities, it can reduce the probability of poverty of the household.

Own House

In our study, we have used a dummy variable for housing to determine whether the household has its own house or rented house. Poor households have low per capita income if they have not their own house, they must pay rent for house and resultantly their per capita income significantly shrinks and eventually they become poorer.

Education of Head of Household

Education is an important social determinant of poverty. Household heads with higher education have more employment opportunities as they are more efficient, skillful and they can make appropriate decisions regarding the budget of the family. In the present study, educational attainment is measured by years of schooling of the household head. It is evident from previous studies that household heads with a higher level of education have high per capita income in relation to households with no educational attainment.

DATA AND ESTIMATION PROCEDURE

To conduct the household survey, simple random sampling has been used in this study. There are four tehsils of Multan district namely Multan Saddar, Multan city, Shujabad, and Jalalpurpirwala. Data are gathered from both rural and urban areas of the Multan district. We have sampled 75 households from each tehsil and a total sample of respondents in this study is 300. For study, about 42 percent of the samples were collected from urban areas and the remaining 58 percent of samples obtained from rural areas.

In the descriptive analysis, we have constructed the profile of poverty of Multan district and then income distribution has been examined by Gini Index. In the second stage, we have built the profile of poverty based on various household characteristics using household survey data.

We have taken a poverty line ($1.90 per person per day) estimated by World Bank and used for four poverty measures such as FGT poverty index, Sen poverty measure, Sen-Shorrocks, and Thon index and, Watts poverty measure to calculate a detailed poverty profile of Multan district. For regression estimation of results, we have used ordinary least square (OLS) method.

V. RESULTS AND DISCUSSIONS

Firstly, we describe the poverty profile of district Multan along with poverty profile of households by demographic and economic characteristics. After that, we present the econometric analysis to determine the impact of demographic and economic variables on poverty.

Poverty Profile

This section portrays the profile of poverty of Multan district. A poverty profile illustrates how poverty measures vary across sub-groups of the population such as regions of residence, educational attainment, demographic and other characteristics of households. Table 3 illustrates the estimates of poverty measures of Multan district.

TABLE 3

Area-wise Poverty Measurement

Area	HI	PGI	SPG	SI	SST	WI
Multan District	43.67	21.57	12.88	41.96	14.14	34.1
Multan City	22.67	9.48	5.17	2.32	2.97	14.38
Multan Saddar	48.0	23.49	13.73	18.58	14.78	36.69
Shujabad	56.0	29.73	18.48	41.60	21.97	48.69
Jalalpur Pirwala	48.0	23.58	14.16	18.49	14.97	37.76

Source: Authors' calculations based on household survey data, 2018

The results of the poverty measures reveal that 43.67 percent of households are poor of Multan district. The value of the poverty gap index is calculated as 21.57 percent which implies that 21.57 percent of poor income is necessary to break away from poverty. The value of squared poverty indices is projected at 12.88 percent, suggesting that there is 12.88 percent disparity among the poor. In other words, more weight is given to those poor households who are farther from the minimum threshold. This points out that how much of a gap is among the poor and what amount of resources is required to get rid of poverty. The Sen Index, which captures the severity of poverty as well as the inequality of expenditure or income among the poor shows 41.96 percent are poor households. The SST-Index, which incorporates the severity of poverty as well as the inequality of income among the whole population, demonstrates that 14.14 percent are poor people. The value of SST-Index is high (21.97 percent) in Tehsil Shujabad indicates high inequality and Poverty among households. On the other hand, Watts-Index exhibits that 34.1 percent of the population of Multan district falls below the poverty line.

TABLE 4

Poverty Measurement by Rural-urban Areas

Area	HI	PGI	SPG	SI	SST	WI
Rural Areas	55.43	28.16	17.21	36.20	26.69	46.14
Urban Areas	27.20	11.74	6.37	7.82	5.02	17.68

Source: Authors' calculations based on household survey data, 2018

Table 4 shows that the incidence of poverty is higher in rural areas in comparison with urban areas of Multan district. Gini Index is used to measures income inequality that is mostly associated with the descriptive approach to inequality measurement. Gini coefficient lies between 0, which reveals perfect equality, and 1, shows perfect inequality. This index is rigorously linked to the demonstration of income inequality through the Lorenz Curve. In the current study, the Gini index is used only to observe the income inequality in the Multan district.
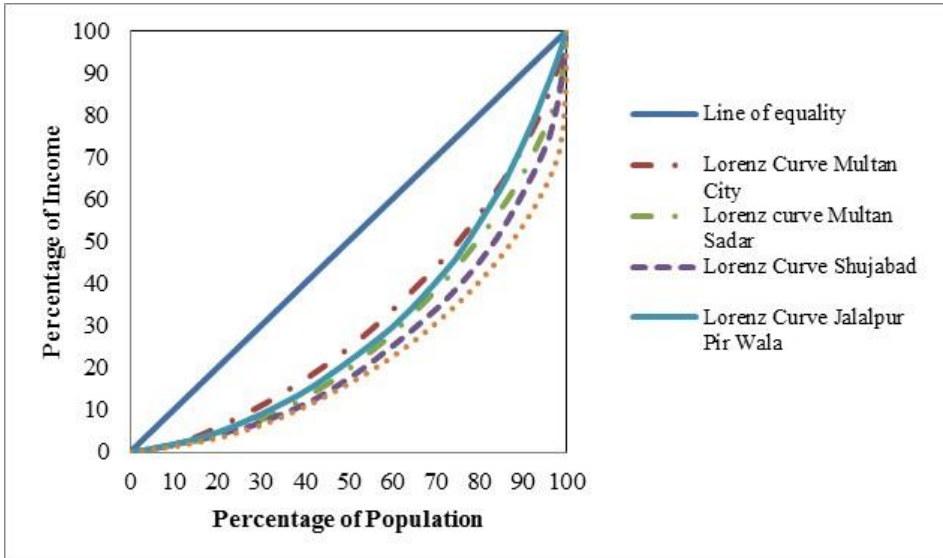
TABLE 5

Gini-Index Estimates of Multan District

Area	Gini-Index
Multan District	0.50
Multan City	0.34
Multan Saddar	0.31
Shujabad	0.37
Jalalpur Pir Wala	0.33

Source: Authors' calculations

Table 5 reports the estimates Gini Index of Multan district. The value of Gini coefficient of Multan district is 0.50 which implies that 50 percent income is distributed unequally. Among four tehsils of Multan district, high inequality of income is observed at Shujabad where the value of Gini index is 0.37. The graphical representation of Lorenz curves is portrayed in Figure 1.

FIGURE 1

Lorenz Curve Multan District

Source: Authors' calculations based on household survey data, 2018

**Poverty Profile of Households by Demographic and Economic
Characteristics**

TABLE 6

Poverty Measurement by Household Size

Household Size	Percent of Population	HI	PGI	SPG	SI	SST	WI
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1.67	40.0	15.39	6.39	6.70	6.31	16.71
3	2.34	0.00	0.00	0.00	0.00	0.00	0.00
4	16.67	32.0	15.93	9.62	28.77	6.21	25.04
5	21.0	49.20	26.02	15.78	19.08	16.24	40.43
6	18.34	27.27	12.16	7.08	5.33	6.63	18.78
7	14.67	47.72	19.85	11.29	13.98	12.30	31.18
8	8.67	57.69	31.52	19.29	21.58	20.16	51.23
9	5.0	46.67	42.30	25.29	20.89	21.03	40.0
10 & above	11.67	68.57	34.71	21.19	29.66	27.51	56.65

Source: Authors' calculations based on household survey data, 2018

Table 6 suggests that all poverty indices increase slowly as household size increase excluding those containing six and nine members. The outcome reveals that the household size that is mostly affected to poverty are those with 5, 7, 8 10 or above members of a household. In the survey study, no household was found comprising of only one member. Therefore, a household with two members (1.67% of the population) is also to be found be lie below the poverty threshold. The highest incidence of poverty is found in the household size of 10 or more members (11.67 percent of the total household population) indicating by all poverty measures.

Education and poverty are inversely related to each other. The higher level of education ultimately helps in the accomplishment of basic necessities, via high earning jobs; also influence the women's behavior in fertility decisions and family planning.

TABLE 7

Poverty Measurement by Household Head Education

Years of Schooling	Percent of Population	HI	PGI	SPG	SI	SST	WI
Illiterate	23	84.05	46.67	29.46	53.18	51.76	76.88
1-5	17.67	66.03	32.8	19.48	23.54	26.22	51.67
6-8	10.67	59.38	23.77	12.66	19.06	16.35	35.15
9-10	16.00	25.00	11.74	6.82	4.45	3.57	18.34
11-12	11.34	8.82	1.95	0.44	0.39	0.20	2.27
13 & above	21.34	6.25	1.88	0.79	0.60	0.16	2.24

Source: Authors' calculations based on household survey data, 2018

Table 7 explores the results of various poverty estimates at the basis of years of schooling completed by the household head. The result implies that poverty incidence is higher among those households with a household head no educational achievement. It can be seen from Table 7 that higher level of education negatively correlated by poverty status of households. Household heads with no education (comprising 23 percent of the population) are found to be poor indicating by all poverty measures.

The participation rate is the key economic variable and important determinant of poverty. The results portrayed in Table 8 expose that, as the number of members of household participates in income earning

activities, poverty declines as shown by headcount ratio, Sen Index, SST Index, Watts index.

TABLE 8

Poverty Measurement by Participation Rate

Participation Rate	Percent of Population	HI	PGI	SPG	SI	SST	WI
0.00-0.33	16.34	55.10	33.36	22.08	23.79	21.70	56.59
0.34-0.67	64.00	45.83	21.80	12.77	27.08	16.63	34.27
0.68-1.00	19.67	27.11	11.01	5.06	5.27	3.81	51.81

Source: Authors' calculations based on household survey data, 2018

When the participation rate is very low (0.00 to 0.33), poverty is much higher. The level of poverty is 27.11 percent when the participation rate is high (0.68 to 1.00).

A larger number of dependents indicate a smaller number of earners in the household which in turn lowers the per capita income that resultantly household fall into poverty. The results of poverty measurement based on the dependency ratio are presented in Table 9.

TABLE 9

Poverty Measurement by the Dependency Ratio

Dependency Ratio	Percent of Population	HI	PGI	SPG	SI	SST	WI
0.00-0.33	40.00	25.83	10.76	5.84	6.83	4.30	16.28
0.34-0.67	19.00	45.62	22.10	13.52	15.07	12.84	35.73
0.68-1.00	18.37	54.54	23.47	12.42	21.13	16.05	34.45
1.01 & above	22.67	64.70	38.63	25.13	34.54	31.07	64.70

Source: Authors' calculations based on household survey data, 2018

The results illustrate that as the dependency ratio rises from the first to the second group, poverty (Headcount, Sen Index, SST Index, and Watts index), depth and severity increases. From the field survey, it is found that 21.67 percent households have a high dependency ratio (1.01 or more) and these households are living below the poverty line.

The age of the household head also affects the poverty status of the household. Table 10 depicts the results of poverty measurement in terms of household head age. About 9.38 percent of household heads are in the

age group 20-30 and deprived. Interestingly, 23.67 percent of household heads lie in the age group 31 to 40 and show a high level of poverty in relation to other age groups. The level of poverty is low in the age group 51 to 60 because of greater work experience and income. However, poverty occurrence, depth, and severity increases in the age group 61 and above of household heads because of low efficiency and lack of power to work hard.

TABLE 10

Poverty Measurement by Household Head Age

Household Head Age (Years)	Percent of Population	HI	PGI	SPG	SI	SST	WI
21-30	9.34	42.85	19.83	11.53	10.84	9.63	30.75
31-40	23.67	64.78	35.01	21.70	32.71	29.48	56.80
41-50	27.0	44.45	21.02	12.41	16.22	12.54	32.91
51-60	27.34	29.26	12.85	6.98	7.26	5.11	19.30
61 & above	12.34	35.14	18.19	11.43	9.11	7.54	30.86

Source: Authors' calculations based on household survey data, 2018

Poverty estimates of household head occupation are reported in Table 11. Household heads working in informal sector are comprising 56.67 percent of the population are more prone to poverty because in the informal sector, less educated and unskilled workers are employed and as a result their income and productivity tend to lower in relation to formal sector workers.

TABLE 11

Poverty Measurement by the Occupation of Household Head

Employment	Percent of Population	HI	PGI	SPG	SI	SST	WI
Formal Sector	43.33	9.24	0.22	0.73	2.59	3.38	2.71
Informal Sector	56.67	69.42	35.93	21.84	53.36	41.57	58.42

Source: Authors' calculations based on household survey data, 2018

Econometric Analysis

OLS estimates of demographic and economic aspects of poverty are reported in Table 12. The independent variables include household head sex (SEX), marital status (MS), household size (HSIZE), age (AGEH), educational attainment by household head (EDUC), physical disability (PD), mental illness (MI), dependency ratio (DR), participation rate (PR), fertility rate(FR), remittances (RIM), migration (MIG), household head occupation (OCC), own house (OH) , and credit (CRD).

The empirical results in Table 12 shows the explanatory power of the regression equations, as measured by R2, to be 61.6 percent which shows that an average of 61.6 percent of the variation in the dependent variable of (PGI) in Model I is due to explanatory variables and remaining 38.4 percent are due to other variables which are not included in the model. The overall significance of the model is checked by F-statistic which is statistically significant. The variable of household head sex (SEX) does not turn out with a right sign and it is insignificant as well. Household size (HSIZE), household head age (AGEH), household head education (EDU), physical disability (PD), mental illness (MI), dependency ratio (DR), household head occupation (OCC), rural to urban migration (MIG), remittances (RIM), and own house (OH), are statistically significant while gender of household head (SEX), marital status (MS), fertility rate (FR), participation rate (PR), female-male ratio (FMR) and, credit (CRD) are not statistically significant.

The household size is an important demographic variable that has an impact on poverty. A household with many members and possess a high proportion of dependents are likely to be poor in relation to households with few members. This suggests that as the household size increases, the depth of poverty will also increase. The increasing family size advocates a larger number of dependents on fewer earners and this might show fewer earnings and lesser per capita income. The coefficient of household size shows that if other things are remaining the same, the size of household increases by one member which will increase the PGI by 0.010 units. A larger number of children and elderly members in a household would imply a smaller number of earners in the household. High dependency ratio would be correlated positively with the poverty status of the household. The coefficient of the dependency ratio (DR) is

positive and highly significant. Poverty mostly affects people who are under or above productive ages. Normally, young people have low income as their early experience in the labor market starts with low income and fewer hours of work. As individuals age increases, there is a gradual gain in education, work experience, and labor network. The value of the coefficient AGEH has a negative sign and statistically significant. Older heads of households are experienced and can improve the economic well-being of their families.

There is a strong link between education and poverty. A higher level of education ultimately affects the poverty inversely via high earning job opportunities, better decisions for their family, it also influences the women's behavior in fertility decisions and family planning. The educational level of the household is significant in explaining the poverty status of the household. This implies that more educated employed with higher earnings and make healthier decisions on spending; this in turn, reduces poverty. A household with a greater number of physically disables are more prone to poverty because it increases the dependency and affects the per capita income of household (Park & Nam, 2017; Jeon et al. 2017; Braithwait & Mont, 2009). Mental illness also increases one's risk of becoming poor when suffering from mental illness. The result of MI is statistically significant and exhibits households with more members suffering from the disease of mental illness are poorer. Those individuals suffering from mental illness face higher health care costs, decrease productivity and poor general health. Additionally, mental illness has a bidirectional relationship with poverty (See Chung et al. 2018; Anakwenze & Zuberi, 2013).

TABLE 12

OLS Estimates of Demographic and Economic Aspects of Poverty

Explanatory Variables	Model I	Model II	Model III	Model IV	Model V
	PGI	SPG	SI	WI	SST
SEX	0.026	0.023	-0.039	0.043	0.017
	(0.533)	(0.634)	(-1.092)	(0.488)	(0.533)
MS	0.006	0.010	-0.002	0.022	0.004
	(0.439)	(0.953)	(-0.224)	(0.901)	(0.439)
HSIZE	0.010	0.003	0.015	0.011	0.007
	(2.205)**	(0.880)	(4.472)*	(1.371)	(2.205)**
AGEH	-0.003	-0.001	-0.003	-0.004	-0.002
	(-2.981)*	(-1.996)**	(-4.407)*	(-2.227)**	(-2.981)*
EDUC	-0.015	-0.009	-0.011	-0.024	-0.010
	(-5.230)*	(-4.475)*	(-5.074)*	(-4.754)*	(-5.230)*

Explanatory Variables	Model I	Model II	Model III	Model IV	Model V
	PGI	SPG	SI	WI	SST
PD	0.106	0.082	0.055	0.204	0.070
	(3.042) *	(3.157)*	(2.111)**	(3.249)*	(3.042)*
MI	0.115	0.072	0.067	0.183	0.076
	(3.010)*	(2.503)**	(2.330)**	(2.637)*	(3.010)*
FR	0.043	0.041	-0.006	0.096	0.028
	(1.407)	(1.813)***	(-0.248)	(1.746)***	(1.407)
PR	-0.065	-0.064	0.003	-0.146	-0.043
	(-1.114)	(-1.477)	(0.070)	(-1.396)	(-1.114)
DR	0.077	0.062	0.032	0.152	0.051
	(4.738)*	(5.111)*	(2.647)*	(5.130)*	(4.738)*
FMR	-0.018	-0.014	-0.009	-0.035	-0.012
	(-1.363)	(-1.433)	(-0.870)	(-1.441)	(-1.363)
OCC	0.109	0.060	0.104	0.163	0.072
	(3.510) *	(2.588)*	(4.445)*	(2.891)*	(3.510)*
MIG	-0.062	-0.043	-0.038	-.106	-0.041
	(-2.070)**	(-1.926)***	(-1.690)***	(-1.944)***	(-2.070)**
RIM	-0.083	-0.039	-0.082	-.114	-0.055
	(-2.378)**	(-1.503)	(-3.130)*	(-1.797)***	(-2.378)**
OH	-0.131	-0.095	-0.081	-0.246	-0.086
	(-3.666)*	(-3.585)*	(-3.027)*	(-3.822)*	(-3.666)*
CRD	0.053	0.020	0.078	0.062	0.035
	(1.413)	(0.700)	(2.779)*	(0.912)	(1.413)
Intercept	0.418	0.272	0.359	.705	0.276
	(5.100)*	(4.433)*	(5.849)*	(4.746)*	(5.100)*
R2	61.6	55.0	60.8	57.9	61.6
F-Statistic	28.315	21.576	27.431	24.305	28.315

Source: Authors' calculations

Note: The values in the parenthesis are t-statistic values

'*' p-value < 0.01

'**' p-value < 0.05

'***' p-value < 0.10

One more significant factor that influences the household poverty is household head occupation (OCC). The OCC shows a significant coefficient with a positive sign indicating that people engage with the informal sector are more enduring from poverty as compare to formal sector households. As employment in the informal or casual sector is increasing by one percent, poverty gap index will enhance by 0.109 units. Because in the informal sectors, mostly unskilled laborers are engaged with low productivity and low earnings as in this sector wages are not extremely high, and workers have not any employment security they feel uncertainty about their income. The value of MIG coefficient is significant and suggests that as MIG is increased, PGI will decrease by -0.062 units. The main effect of migration is that it can increase the consumption and income of rural households (Harris and Todaro, 1970). The value of RIM coefficient is statistically significant and points out that

as remittance increases by one unit, the depth of poverty decreases by -0.083 units; other things remain the same.

In Model II, III, IV and V poverty indices are SPG, SI, WI, and SST respectively exercised as dependent variables. It can be seen from Table 12 that some of the explanatory variables are behaving differently at different levels of analysis. The coefficient of CRD is statistically significant in model III when SI is employed as a dependent variable since this variable is insignificant in all other models. Similarly, HSIZE is statistically significant in the model I, III, and V but it is statistically insignificant in model II and IV. The coefficient of RIM is statistically in significant in model II while it is statistically significant in all other models.

VI. CONCLUSION AND POLICY IMPLICATIONS

This study attempts to determine the demographic and economic factors that influence the poverty status of households of Multan district. This analysis is based on the household survey data that were collected from 300 households of Multan district. To measure poverty, we have used four poverty indices i.e. FGT, Sen Index, Sen-Shorrocks-Thon index, and Watts index. The incidence of poverty has been estimated by World Bank poverty line ($1.90). The results revealed that about 43.67 percent of households are poor. The incidence of poverty is higher in rural areas (55.43 percent) than urban areas (27.20 percent). Among the four Tehsils of Multan district, the incidence of poverty and inequality are found to be higher in Shujabad (56.0 percent and 0.37 respectively) while the incidence of poverty is low in Multan city (22.67 percent). While considering income inequality, it is concluded that there is a modest degree of income inequality among households of Multan district as the value of Gini Index is 0.50.

To find the demographic and economic aspects of poverty, OLS has been employed in the current analysis. We have estimated different models by using different poverty indices i.e. poverty gap index, squared poverty gap index, Sen Index, SST Index, Watts Index alternatively as dependent variables. We have found that some of the explanatory variables behaving differently at different levels of analysis. The variables household size, household head age, household head education, dependency ratio, household head occupation, own house, migration,

remittances, physical disability, and mental illness were found to be significant. All these variables have the correct signs. Household size, dependency ratio, household head occupation, physical disability, and mental illness have a positive relationship with poverty while household head education, migration, remittances, and own house are inversely related to poverty. The variables female-male ratio, credit, and fertility rate are found to be significant factors that influence poverty in some analysis.

Based on findings of our study, we suggest some policies to alleviate poverty in Multan district:

- It is evident from the present study that larger household size significantly affects the welfare of the household. Larger household size adversely affects the per capita income. So, people may be advised to reduce the size of household.

- Female education is one of the most important factors that affect fertility. It is always more essential than men's education in explaining not only reduced fertility but also better health and nutrition decisions within households. The government may take steps to increase female education programs so that women can take part in economic activities and which also affect the fertility within a household.

- It is found in the study that households with a higher level of education have a lower incidence of poverty. Better technical education enhances the productivity of the poor, and they become more effective and able to get better earning opportunities. The government may take steps to increase education and improvement in educational infrastructure, especially in rural areas of Multan and generally in Pakistan.

- It is empirically proved that most of the poor households are engaged in the casual and informal sector where they feel employment insecurity and get low wages. Steps may be taken to improve the informal sector for better earnings and job security to workers. Employment opportunities may be enhanced in Multan and Pakistan.

- A household with greater number of physically disabled and mentally ill members increases the dependency and reduces per capita income within a household and resultantly such households fall below the poverty line. The government may take steps to provide medical and financial assistance to these persons.

- The findings of our study suggest that remittances have a strong impact on poverty reduction. To increase the inflow of income from abroad, government may define appropriate channels and provide a conducive environment to the people in transferring remittances to the country.

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