Estimating the Impact of Transfer Payments on Poverty in Pakistan

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ABSTRACT

The main purpose of this study is to estimate the impact of transfer payments and other socioeconomic and demographic factors on the poverty in Pakistan. To assess the region wise and province wise disparities and the role of transfer payments on poverty, this study uses separate analyses for both regions (rural and urban) and for four provinces along with overall sample of Pakistan. Data on selected variables was obtained from the Pakistan Social and Living Standard Measurement (PSLM) survey 2013/14. Results indicate that the transfer payments have negligible impact on the poverty of the residents residing in overall Pakistan. However, province wise separate analysis revealed that transfer payments were useful to reduce poverty levels in Punjab and KP statistically and significantly. In Sindh and Baluchistan, the effect of transfer payments on poverty level is positive in both provinces albeit statistically significant only for Sindh. The inter-regional analysis reveals that the effect of transfer payments on poverty level is same across the regions. It is observed that female headed households have more chances of being poor while families big in size are prone to be poorer. The coefficient of the age of household head was found to be negatively related to the poverty.

Keywords: *Transfer Payments, Logit/Logistic model, Poverty*

JEL Classifications: *D6, H2, I13*

INTRODUCTION

According to the World Bank (2000) "*poverty is pronounced deprivation in wellbeing*". At Global level as per the World Bank Report, there has been marked progress in declining poverty that can be judged by the fact that the world accomplished its first Millennium Development Goal (MDGs) Target- to cut the 1990 poverty rate in half by 2015- well before in 2010. However, the fact remains the same that the number of individual living in extreme poverty remains very high. Against this backdrop, the target to eradicate extreme poverty by 2030 seems less likely to be achieved. In 2013, World Bank Group (WBG) agreed on two goals to measure the development progress of each country in suitable way. These two goals include eradication of extreme poverty and promotion of shared prosperity. The second goal is about growth in average expenditure/income of the lowest 40% in each country. The main idea behind considering the income/expenditure of lowest 40% is to focus on the most vulnerable people of the society.

Reduced from 11% in the year 2013, about 10% of the world's population earned about US$1.90 per day in 2015. Similarly, the poverty estimates of 2015 are almost 36% lower compared to that of 1990. These estimates also mean that about 1.1 billion fewer persons live in poverty than those in 1990s. Therefore, in 2015, the number of people who lived under the extreme poverty was down from 1.85 billion in 1990 to the 736 million. World Bank (2000)

In 1990s, the poverty was noticed with increasing trend, although, it showed a declining trend in 1970s and 80s. The same has also been depicted in the Asian Development Bank Report (2002) which asserts that the poverty increased from 26.6 % in the financial year of 1993 to the 32.2 % in the financial year of 1999. Also, this led to an increase of poor people to almost 12 million in Pakistan during that period. The report also confirmed that the level of poverty was high in 2002 as compared to the level in 1999. Post 2002, poverty decreased at a faster pace by almost 10.6 % points after 2001-2002 through 2004-2005. Poverty was 23.9 % in 2004-2005 compared 34.5% in 2001-2002 to [Pakistan Strategy Support Program, 2014]. According to Economic Survey of Pakistan 2013-2014 the poverty has declined by 5.1 percent within the periods 2005-2006 and 2007-2008. Further, poverty declined by 4.8 % points in the year 2010-11 (Government of Pakistan, 2014). In Pakistan, per capita income of individuals increased from $995.31 in 2010 to

$1443.67 in 2016. As per the latest report of World Bank, the poverty rate in Pakistan has been projected to decrease. Pakistan's Poverty measured by international poverty line at the $1.90 is estimated as 4.9 % in financial year 2018, that was 6.1% in the financial year 2013. Similarly, on a scale of $3.2 poverty line, a 12%decline in poverty is also projected. Furthermore, a lower improvement of 4%in the poverty measured at $5.5 poverty line is expected for the same period.

There are many socioeconomic and demographic factors responsible for causing poverty at national, provincial and at district levels. One of the many indicators accounting for poverty is transfer payments. These transfer payments include social safety programs such as social safety net programs from the government of Pakistan that includes Benazir Income Support program (BISP), Pakistan Bait-ul-Mal (PBM), Social Security & Welfare, *Zakat*, employees old-age benefit institution (EOBI) and finally the workers welfare fund (WWF). Pakistan Poverty Alleviation Fund (PPAF) constitutes the non-budgetary program (Economic survey of Pakistan 2017-18). To examine the impact of transfer payments many studies have been conducted like (Ahmed, Sugato, and Jha, 2010; Chen, Li, Lu and Xiong, 2017; Lee and Choi, 2015; Choi, Choi and Choi, 2016; Akram and Afzal, 2014; Malik, Hussain, Shirazi and Khan,1994; Qayyum, Javed and Arif, 2008). These studies showed that transfer payments play a key role in alleviating poverty. This can also be augmented by the fact that transfer payments in the form of social security &welfare have been increased over time that include expenditure on Benazir Income Support Program, Sustainable Development Goals and Pakistan *Bait ul Maal*. In the years 2013-14 to 2017-18, the expenditures incurred on social security and welfare in rupees were Rs. 93,481million, 155,725million, 173,532million, 259,759million, Quarter 1 (2017-18), 76,466million and Quarter 2 (2017-18) 111,744 million respectively (Economic Survey of Pakistan 2017-18).

The available literature has also identified various determinants resulting in affecting poverty which are conducted at urban, rural, district and provincial levels. Many Studies have been conducted to examine the impact of different socio-economic and demographic factors on poverty (Shirazi, 2005; Jamal, 2006; Khan, Rehman and Haq, 2015; Haq, Ayub, and Ullah, 2015; Sadiq, 2010; Abbas, Hassan, Asif, and Zainab, 2018; Arshed, Alamgir and Aziz, 2017; Pervez and Rizvi, 2014). These studies show that there are several socio-economic and demographic factors responsible for affecting the poverty in the urban and rural areas of Pakistan

either positively or even negatively. The imperative factors which increased the level of poverty in Pakistan include size of the family, number of earners, inflation, sectoral wage gap, terms of trade in favor of manufacturing, female to male ratio, dependency ratio, income inequality and age factor etc. Contrary to this, variables such as education level of the earner, Sadaqat, progressive system of taxation, investment in social services, remittances, availability of assets and livestock, and female labor participation all have a negative impact on poverty and are the driving factors in reducing poverty significantly.

Although different dimensions of human life have been investigated that can be a determinant of poverty, however all the above-mentioned studies have ignored the fact that survey data generally exhibit hierarchical structure which is important to consider while working on such issues. It is commonly known that inferences drawn from aggregate data especially when the data contains different levels (as in our case, within regions, provinces, and within the country) can be misleading that can harm the authentication of results. Keeping this in view, this paper considered these different levels by adopting fixed effect hierarchical modeling techniques. Moreover, firstly, the present study tried to reinvestigate the impact of transfer payments as well as some other socioeconomic and demographic determinants on poverty at micro (individual) level. This study focuses on the impact of transfer payments at individual level in case of Pakistan. Secondly, it is also obvious that the impact of determinants of poverty are not same across geographical and social regions. Therefore, the study also conducted separate analyses for urban and rural samples along with overall sample for Pakistan. To see the disparities among provinces, the study also carried out separate analysis for all four provinces. The study used the newly established poverty line based on Cost of Basic Needs (CBN) approach. For analysis, the study used the most recent available data set of Pakistan Social and Living Standard Measurement (PSLM) 2013/14.

LITERATURE REVIEW

Shirazi (1995) in his study analyzed the determinants of Poverty in Pakistan by using Household Income and Expenditure Survey (HIES)-1987/88. The study used Logit Model in order to evaluate the role of *Sadaqat*, Size of the Family, Educational level of the Earner and the number of Earners in declining poverty. The study concluded that Sadaqat, head of household education,

and the number of earners in a family have a negative relationship with poverty while size of the family has a positive relationship with Poverty.

Silva (2008) tried to examine the micro-level determinants and correlates of poverty by using the latest Sri Lanka Integrated Survey commissioned by the World Bank. The Partial correlates of poverty were calculated. Since the nature of data was if a household was in poverty or not, therefore a Logistic model was used. Various socio-economic and demographic factors were used as independent variable. To evaluate the correlates of per capita consumption, the quantile regression model was estimated at various points on the distribution. The study concluded that the household head education, employment status, and business ownership have significantly positive effect on poverty alleviation. Furthermore, household size, gender of household head, living in a rural area, and being a casual wage earner were found responsible to increase the level of poverty.

Sadiq (2010) used data from the Pakistan Integrated Household Survey (PIHS) for the period of 2001-2002, and the Pakistan Social and Living Standard Survey (PSLM) from 2004-2005. They study used the categories such as non-poor, vulnerable, poor, and extremely poor and therefore a multinomial Logit approach was used for estimation. It was found that the employment status and higher education are important determinants that can reduce the level of poverty significantly. Additionally, household composition and head of the household education were the other factors that contribute a great deal in the reduction of poverty and are thus negatively linked with each other.

Ahmed, Sugiyarto, and Jha (2010) showed the effect of remittances on the probability of someone being in poverty and to find out how remittances affect the household consumption expenditure and hence poverty in Pakistan by using a general equilibrium framework and micro econometric analysis. The model was developed using the SAM 2002 for Pakistan. For the micro econometric analysis, the household income and expenditure survey data for the period 2005–2006 used. This study examined the impact of remittances on income, consumption, and poverty levels in Pakistan. The study concluded that remittances play a positive role in alleviating poverty.

Nayab and Farooq (2012) studied the effect of unconditional cash transfer program of the Benazir Income Support Program (BISP) on the household welfare in Pakistan using the Pakistan Panel Household Survey. The welfare effect of the BISP was analyzed using the propensity score matching (PSM) method. The study concluded that the BISP provides some measures of relief as far as food and health expenditures are concerned.

Akram and Afzal (2014) analyzed the role of *Zaka*t disbursements along with other Islamic charities such as S*adaqa*t on the reduction or alleviation of people from the poverty. They used Autoregressive Distributed Lag (ARDL) model to look at the short and long-run effect of *Zakat* and other Islamic donations on the poverty. A time series data from the 1980-2013 was used to analyze the problem. The study found an inverse relation between Zakat and poverty.

Cheema and Sial (2014) tried to find economic determinants of poverty in Pakistan by estimating multiple OLS regression. The PSLM data for the period 2010-11was utilized for this purpose. They concluded that poverty has an inverse relationship with education and has a positive relationship with household size and dependency ratio.

Chen and Wang (2014) examined the family-level and regional-level determinants of poverty in Taiwan, using multiple data sources of the 2006 Survey of Family Income and Expenditure, the 2006 National Statistics, and the 2006 Manpower Utilization Survey. Multi-level logistic regression analysis, also called hierarchical generalized linear models (HGLMs was used to analyze the problem. It was concluded that high ratio of dependency, higher income inequality, greater spatial mismatch, lower job quality and households head being female exhibited higher rates of poverty whereas families with a greater number of earners and thus with human capital available are less likely to be poor.

Khan, Rehman and Haq (2015) used primary data collected through rural household survey and applied binary logistic model. They concluded that socioeconomic empowerment reduces the household poverty. In addition to this factor, remittances have a negative relationship with poverty whereas household employed in only agriculture, the female to male ratio in the household and the size of the household have a positive impact on rural poverty.

Lee and Choi (2015) tried to find out the impact of transfer payments on reduction of poverty in Korea using sample dataset from the 2016 Korean Welfare Panel Study. Poverty-rate, Poverty-

gap and Gini-coefficient were used as a mean for the estimation of the poverty. The means-tested income transfers were found to be more effective in reducing poverty levels than social insurance or private income transfers.

Arshed, Alamgir and Aziz (2017) used the Labor Force Survey 2010 of Pakistan and identified a total of 21 parameters using Principal Factor Analysis which are expected to affect the poverty profile of the individuals. Logit Model has been utilized to analyze the effect of indicators on $ 1.25 a day. It was concluded that the level of education, household size and job characteristics define who really the poor is.

Akhtar, Liu and Ali (2017) tried to explore the main influencing macroeconomic variables of poverty in Pakistan. Time series data from World Development Indicators (WDI) and the various issues of economic survey of Pakistan for the period from 1974-2014 were used. Johansen co-integration methodology was used in order to find whether or not there existed a long-term relationship. Finding of the study reveal that agricultural ratio to gross domestic product (GDP), ratio of Foreign Direct Investment (FDI) to GDP, ratio of the primary education ratio of the domestic credit to private sector have negative impact on poverty while military expenditure is positively associated with poverty.

Chen, Li, Lu and Xiong (2017) tried to analyze the role of government transfer payments on poverty reduction in China. They used the unbalanced panel data of China Health and Nutrition Survey (CHNS) for the period from 1989-2009. The Three Staged Linear Squared(3SLS) methodology was utilized for estimation. The study concluded that government transfer payments do not affect poverty; instead, the study suggested that adopting public services may play a significant role in poverty reduction.

METHODOLOGY

Data

To examine the impact of transfer payments and other determinants on poverty in Pakistan, PSLM data has been utilized. PSLM 2013/14 consists of sample from primary sampling units (PSUs) across four provinces of Pakistan. The PSLM is district level survey having individual

and household level information about expenditures, income, assets, transfer payments, employment, health, education, other socioeconomic & demographic issues etc.

Model

To examine the effect of the transfer payments on poverty level in Pakistan, the following model has been applied:

General form of the model is given as follows:

$$Poverty_i = \beta_\circ + \beta_1 TP_i + \sum_{j=2}^{n} \beta_j X_{ji} + \varepsilon_i \qquad (1)$$

In equation 1, $Poverty_i$is dependent variable used to measure poverty. $\beta_\circ$is the intercept while others $\beta_j s$ are the slope coefficients that measure the slope or explain the variations in dependent variable due to variations in the respective explanatory variable(s).TP_i is measure of transfer payment received by individual X_{ji} is the vector of individual level variables describing household and regional socioeconomic and demographic variables used in this study. The detail about all variables is given in table 1.

Table 1: Variables Descriptions

Variable	Definition and explanation
Poverty	It is a dummy variable taking value 1 when the household is below poverty line and 0 otherwise.
Transfer Payments (lntp)	Log of the amount of money received by individual in form of transfer payment from public or private per annum.
Gender_i	Gender of the individual measured as a dummy variable having value 1 if individual is male, 0 otherwise.
Age_i	Age of individual is a continuous variable measured in completed years
Education_i	The current or completed years of schooling
M.Status_i	A dummy variable having value 1 if individual is married and 0 otherwise.
Gender_H	Gender of the household head measured as a dummy variable having value 1 if head is male, 0 otherwise.
Age_H	Age of the household head
Education_H	The total years of schooling of household head
M.Status_H	A dummy variable having value 1 if head is married and 0 otherwise.
Employment_H	A dummy variable having value 1 if head is employed and 0 otherwise.
Family size	Total number of individuals in the household
Region	It is also a dummy variable taking value of 1 if household is located in urban region, 0 otherwise.
Province	We will use three different dummy variables for province:

	D_{KP} = Value 1 if household belongs to Khyber Pakhtunkhwa, 0 otherwise. D_{Punjab} = Value 1 if household belongs to Punjab, 0 otherwise. D_{Sind}= Value 1 if household belongs to Sindh, 0 otherwise. Baluchistan is used as reference category.

Methods

In equation (1), $Poverty_i$ is a binary variable taking value 1 if the individual is below poverty line, zero otherwise. Therefore, to estimate equation (1), Logistic probability model will be implemented. The nature of problem is that whether someone is in poverty or otherwise. Therefore, the dependent variable is dummy variable and hence a binary choice variable could be used. Generally, logit model is used to empirically analyze such a problem. Below is presented a short introduction to the model that is used in this research. The general problem is given as follows:

$$y = \begin{cases} 1 & In\ poverty \\ 0 & othrwise \end{cases} \quad (2)$$

where *y* is a random variable and the probability function for *y* is

$$f(y) = p^y(1-p)^{1-y} \ \ where\ y = 0,1 \quad (3)$$

p is the probability that *y* takes the value 1. This discrete random variable has expected value $E(y) = p$.

In regression analysis, dependent variable has a fixed component and a random component and given as follows:

$$y = E(y) + e = p + e \quad (4)$$

$$E(y) = p = \beta_1 + \beta_2 x \quad (5)$$

$$y = E(y) + e = \beta_1 + \beta_2 x + e \quad (6)$$

The cumulative distribution function of the logit model is given as:

$$P_i = \frac{1}{1+e^{-(\beta_1+\beta_2 x)}} \quad (7)$$

Where x is a set of the explanatory variables After substituting for the x, we get,

Where, $P_i$is the probability of that a household is in poverty. For ease of exposition, we can write the equation (6) as follows:

$$P_i = \frac{1}{1+e^{-Z_i}} = \frac{1}{1+\frac{1}{e^{Z_i}}} = \frac{1}{\frac{e^{Z_i}+1}{e^{Z_i}}} = \frac{e^{Z_i}}{1+e^{Z_i}} \quad (8)$$

Where $Z_i = (\beta_1 + \beta_2 x)$. The probability of a household not being in poverty is given as follows;

$$1 - P_i = 1 - \frac{e^{Z_i}}{1+e^{Z_i}} = \frac{1+e^{Z_i}-e^{Z_i}}{1+e^{Z_i}} = \frac{1}{1+e^{Z_i}} \quad (9)$$

Using equations (8) & (9) we can write the odd of someone being in poverty compared to not in poverty is given as follows:

$$\frac{pi}{1-pi} = \frac{1+e^{Zi}}{1+e^{-Zi}} = e^{Zi} \quad (10)$$

So finally, we can have our model as follows:

$$L_i = Ln[\frac{P}{1-P}] = Ln[e^{\left(\beta_\circ+\beta_1 TP_i+ \sum_{j=2}^{n} \beta_j X_{ji}+ \varepsilon_i\right)}] \quad (11)$$

Or

$$L_i = Ln\left[\frac{P}{1-P}\right] = \left(\beta_\circ + \beta_1 TP_i + \sum_{j=2}^{n} \beta_j X_{ji} + \varepsilon_i\right) \quad (12)$$

Equation 12 is called the logistic probability or logit model. The interesting property of the above equation (12) is that it is linear in variables and parameters both.

RESULTS AND DISCUSSIONS

Descriptive analysis of various variables

Descriptive statistics in table 2 show that out of the total 85171 sample size, the age of the household head varies from 15 years (minimum) to 99 years (maximum) while the average age of the household head is more than 48 years. The average size of household is about eight members in Pakistan. The minimum value of family size shows that there is at least one individual in the household and the highest number of individuals in the household is 47 in Pakistan. The standard deviation of family size is 4.021. The age of the individual ranges from 10 years to 99 years with the average age slightly more than 30 years. The standard deviation of the age of the individual is 17.310. The table show that the average level of education of the individual is 4 years of schooling while 0 being the lowest level of education and 20 years of education being the maximum level. The standard deviation of the education of the individual is 4.86040. The average education of the head of the family is 4 years of schooling while 0 is the lowest level of education and 20 years of education being the maximum level. The standard deviation of household head education is 5.052.

Frequency Distribution of Various Variables

The frequency distribution of dummies and categorical variables used in the study are presented in Table 3. Out of 85171, more than 92 percent (78961) individuals are headed by male individuals and more than 50 percent of the individuals are male. The marital status of head shows that 1549 (1.8 percent) are only unmarried while the remaining 98.2 percent heads are currently married. The table shows that more than 98 percent of the household are employed and only 18.4 are unemployed. The region wise data as depicted in the table show that massive population comprising more than 64 percent of the study belongs to rural area and the remaining belong to urban area. Provincial wise data in the table show that out of the total individuals, 21 percent totaling 17886 belonged to KP, 40.9 percent totaling 34834 belonged to Punjab, 27.1 percent totaling 23106 belonged to Sindh and 11 percent totaling 9345 belonged to Baluchistan.

Table 2: Descriptive Statistics of Various Variables

Variable	Sample Size	Minimum	Maximum	Mean	Std. Deviation
Age_i	85171	10	99	30.83	17.310
Education_i	85171	.00	20.00	4.5977	4.86040
Age_H	85171	15	99	48.13	13.330
Education-H	85171	0	20	4.70	5.052
Family Size	85171	1	47	8.05	4.021

Table 3: Frequency Distribution of Dummies and Categorical Variables

Variable	Category	Frequency	Percentage
Gender_Ind	Male	42095	50.6
	Female	43076	49.4
	Total	85171	100
Gender_Head	Male	78969	92.7
	Female	6202	7.3
	Total	85171	100.0
Employment_Head	Unemployed	15655	18.4
	Employed	83622	98.2
	Total	85171	100.0
M. Status_Head	Unmarried	1549	1.8
	Married	83622	98.2
	Total	85171	100.0
Region	Urban	30112	35.4
	Rural	55059	64.6
	Total	85171	100.0
Province	KP	17886	21.0

	Punjab	34834	40.9
	Sindh	23106	27.1
	Baluchistan	9345	11.0
	Total	85171	100.0

Association of gender and region with poverty

In table 4, the study discusses the association of gender of individual and region with poverty status (poor or non-poor) of individual. Chi-square statistics is used to see the associations among variables. The null hypothesis of the study is that there is no association among variables. The P-value is less than 0.05 in both cases hence the study rejects the null hypothesis of no association and concluded that there exists association of gender and region with poverty status of individual.

Table 4: Cross Tabulation of Association of Gender and Region with Poverty

Variable	Category	Non-Poor	Poor	χ^2 stat.	P-Value
Gender	Female	28574	14502	5.086	0.024
	Male	27615	14480		
Region	Rural	24343	30716	7195.627	0.000
	Urban	4639	25473		

Results of logistic regression at country level

The results of logistic regression for determinants of poverty in Pakistan are listed in Table 5. The coefficients of all variables have expected signs and consistent with the literature. The model consists of twelve variables, including province, region, age, gender, marital status, education head and household size. Overall, all the variables in this model are significant at the 5% level of significance. A unit increase in log of transfer payment reduces the chances of being below poverty by -0.0036 times and it is also evident from the odd ratio of 0.982663 that shows if the value increases, the poverty status of the public tends to decrease by a slight amount. As the base category is Baluchistan for province variable, two provinces, Sindh and Punjab, have positive signs and the province KP has negative sign. Positive signs of Sindh and Punjab show that people belong to these provinces have more poverty compared to Baluchistan whereas the situation is better in KP compared to the rest of the provinces.

The odd ratios of Sindh (1.51), Punjab (1.44) and KP (0.61) indicate lower odds for these provinces compared to the base category. As the base category used for the region is rural, the negative sign of urban coefficient suggests that people belong to this region are more likely to be

not poor. The odds ratio in this case is 0.32 indicating 68% lesser odd for individual living in urban to be poor compared to the residents residing in rural regions. Estimated sign of Age is negative however, the coefficient is too small indicating no effect of age on poverty.

Table 5: Results of Logistic Regression at Country Level for Overall Sample

Variable	Coefficient	Std. Err.	P>|z|	Odd Ratios
Lntp	-0.0036	0.0017	0.00	0.982663
Gender_i	0.0301	0.0197	0.00	1.15814
Age_i	-0.0022	0.0005	0.00	0.989188
edu_i	-0.0165	0.0021	0.00	0.922765
gender_head	0.0783	0.0574	0.00	1.511858
age_head	0.0024	0.0007	0.00	1.012165
edu_head	-0.0215	0.0019	0.00	0.900636
emp_head	0.0513	0.0323	0.00	1.29548
m_statust_head	-0.2579	0.0212	0.00	0.335636
F_size	0.0158	0.0023	0.00	1.080224
Region	-0.2313	0.0064	0.00	0.324585
D_KP	-0.0931	0.0199	0.00	0.616873
D_P	0.0763	0.0414	0.00	1.442721
D_S	0.0875	0.0429	0.00	1.507675
Intercept	-0.0036	0.2131	0.00	2.552716

The female gender has positive sign (odds ratio= 1.15) meaning females have more odds of poverty compared to males. Further, the gender of the head is highly significant variable. The odds ratio of being poor is quite higher (1.51) when a female is heading a household. This is a very interesting result, revealing a hidden feature of the society. The family size is also significant variable in this study. A family with more members has more odds of poverty compared to a smaller family size. The results also reveal that parental education negatively and

significantly affects the response variable. The children belong to the parents that have no schooling are more likely to be poor.

Interprovincial analysis of poverty

To better understand the impact of transfer payment and other social and demographic variables on the poverty level, it is logical to run separate regression for all four provinces and compare provincial disparities in our sample (see table 6).The explanatory variables are highly significant across all the provinces(at 5% level of significance). The coefficient of region urban is negative for the provinces. The coefficient of log of transfer payments is -0.043, which means that a unit increase in transfer payments reduce the log odds of poverty by 0.043 units significantly. Similarly, the odd ratios of log of transfer payments are 0.95 which means that a unit change in log of transfer payments will change odd ratio of poor to non-poor significantly. The value of odd ratio for log of transfer payments is less than 1 so it means that odd ratio decreases with increase in log of transfer payment. To better understand the analysis among the provinces, we will study the results under separate headings as mentioned below.

Province Punjab

The results of logistic regression for determinants of poverty for Punjab in Pakistan are listed in 2nd and 3rd column of Table6. A unit increase in log of transfer payment will reduce the chances of being below poverty by 0.04307 times and it is also evident from the odd ratio of 0.957846 that shows a meager reduction in coming below poverty line.

The female gender has positive sign, that is, females have less odds (1.15) of being poor as compared to males (odds ratio= 7.25). Further, the gender of household head is highly significant variable. The odds ratio of being poor is quite lower (1.26) when a female is heading a household. This is a very interesting result, revealing a hidden feature of the society. The family size is also significant variable in this study. A family with more members has less odds of poverty compared to a smaller family size. The results also reveal that parental education negatively and significantly affects the response variable. The children belong to the parents that have no schooling are more likely to be poor.

Province KP

The results of logistic regression for determinants of poverty for KP in Pakistan are listed in 4th and 5th column of Table 6. A unit increase in log of transfer payment will reduce the chances of being below poverty by 0.02875 times and it is also evident from the odd ratio of 0.9716635that shows a meager reduction in coming below poverty line.

The coefficients of all variables have expected signs and consistent with the literature. The model consists of twelve variables, including province, region, age, gender, marital status, education head, household size. Overall, all the variables in this model are significant at the 5% level of significance.

Estimated sign of age is negative however the coefficient is too small indicating of no effect of age on poverty. The gender (females) of a child has positive sign, that is, females have less odds (1.13) of poverty compared to males (odds ratio= 3.63). Further, the gender of the head is highly significant variable. The odds ratio of being poor is quite lower (2.26) when a female is heading a household. This is a very interesting result, revealing a hidden feature of the society. The family size is also significant variable in this study. A family with more members has less odds of poverty compared to a smaller family size.The results also reveal that parental education negatively and significantly affects the response variable. The children belong to the parents that have no schooling are more likely to be poor.

Province Sindh

The results of logistic regression for determinants of poverty for Sindh in Pakistan are listed in 6th and 7th column of Table 6. A unit increase in log of transfer payment will increase the chances of being poor by 0.042987 times and it is also evident from the odd ratio of 1.043924 that shows an increase in poverty.

Estimated sign of age is negative however the coefficient is too small indicating a smaller effect of age on poverty. The gender (females) of a child has negative sign, that is, females have less odds (0.991) of poverty compared to males (odds ratio= 2.91). Further, the gender head is highly significant variable evident from its odd ratios value for female (1.01) against male (2.91).

It has been observed in the study that families having big size are more likely to be poor as compared to the ones having small family size.

Furthermore, parental education is also inversely related with the poverty. Parents having more education are less likely to be poor and vice versa.

Province Baluchistan

The results of logistic regression for determinants of poverty in Baluchistan are listed in 8th and 9th column of Table6. A unit increase in log of transfer payment will increase the chances of being below poverty by 0.01152 times and it is also evident from the odd ratio of 1.011587 that shows an increase in poverty.

Females have less odds (1.16) of poverty compared to males (1.462). Further, the gender head is highly significant variable evident from its value of 0.955. A family with more members has less odds of poverty compared to a smaller family size.

The results also reveal that parental education negatively and significantly affects the response variable. The children belong to the parents that have no schooling are more likely to be poor.

It is worth mentioning concluding the effect of log of transfer payments on the poverty level of people of Pakistan at large, Rural, Urban, KP, Punjab, Sindh and Baluchistan. On national level log of transfer payment reduces the chances of being below poverty line as well as in urban rural areas. As for the impact of transfer payment on the provinces is concerned it is interesting to note that the impact of transfer payment is much more in reducing poverty as compared to the rest of the provinces.

Table 6: Results of Inter Provincial Analysis of The Poverty.

Variable	Punjab		KP		Sindh		Baluchistan	
	Coefficient	***Odd-Ratios***	***Coefficient***	***Odd-Ratios***	***Coefficient***	***Odd-Ratios***	***Coefficient***	***Odd-Ratios***
Constant	1.981598*	7.254323	1.291908*	3.639725	1.070911*	2.918036	0.380141	1.46249
	(0.891168)	(0.8911677)	(0.6662106)	(0.6662106)	(0.531897)	(0.5318971)	(0.45261)	(.4526097)
Lntp	-0.04307*	0.957846	-0.02875*	0.9716635	0.100671*	1.105913	0.01152	1.011587
	(0.001)	(.0025841)	(0.0038785)	(0.0038785)	(0.03559)	(0.0038869)	(0.007639)	(.0076394)
Gender_i	0.142306*	1.15293	0.122707*	1.130553	-0.0084*	0.991631	0.15572*	1.168499
	(0.030504)	(0.0305035)	(0.0483232)	(0.0483232)	(0.00093)	(0.0355901)	(0.0561)	(.0560996)
Age_i	-0.01348*	0.986607	-0.01108*	0.9889796	-0.06133*	0.940515	-0.00698*	0.993047
	(0.000791)	(0.0007908)	(.0012203)	(0.0012203)	(0.004319)	(0.0009304)	(0.001461)	(.0014605)
edu_i	-0.10228*	0.902777	-0.06103*	0.9407914	-0.04179*	0.959067	-0.0659*	0.936228
	(0.00336)	(0.0033599)	(0.0053083)	(0.0053083)	(0.098102)	(0.00431940)	(0.005506)	(.0055059)
gender_head	0.23533*	1.265326	0.816207*	2.261905	0.015803	1.015929	-0.0452	0.955804
	(0.066313)	(0.0663125)	(0.1868115)	(0.1868115)	(0.001369)	(0.0981024)	(0.224631)	(.2246312)
age_head	0.00997*	1.010019	0.008143*	1.008176	-0.09023*	0.913724	0.018353*	1.018523
	(0.001161)	(0.0011611)	(0.0017867)	(0.0017867)	(0.003597)	(0.0013694)	(0.002174)	(.0021736)
edu_head	-0.11581*	0.890647	-0.10819*	0.8974601	0.211199*	1.235158	-0.09546*	0.908955
	(0.003076)	(0.0030756)	(0.004679)	(0.004679)	(0.068432)	(0.0035973)	(0.005124)	(.0051237)
emp_head	0.177394*	1.194101	0.494639*	1.639905	-0.58099*	0.559347	0.020509	1.02072
	(0.046183)	(0.0461834)	(0.0886691)	(0.0886691)	(0.064422)	(0.068432)	(0.071654)	(.0716538)
m_statust_head	-1.12175*	0.32571	-1.96421*	0.1402671	0.104887*	1.110585	-0.83458*	0.434056
	(0.031769)	(0.0317687)	(0.0201406)	(0.0201406)	(0.005392)	(0.064422)	(0.081522)	(.0815223)
|								
F_size	0.068708*	1.071123	0.067446*	1.069773	-1.49233*	0.224848	0.064142*	1.066244
Region	(0.004372)	(0.0043718)	(0.0043216)	(0.0043216)	(0.009747)	(0.0053924)	(0.005257)	(.0052572)
	-1.05246*	0.349079	-1.28503*	0.2766417	0.100671*	1.105913	-0.64152*	0.526493
	(0.009996)	(0.0099961)	(0.0137943)	(0.0137943)	(0.03559)	(0.0097467)	(0.029752)	(.0297519)

*, **, *** is for 1%, 5%, 10% level of significance, respectively.

Inter-regional analysis

To see the disparities between regions, this paper used separate regression for these dimensions the results of which are listed in Table 7. almost all the variables are statistically significant The results of the regressions are explained in the sub heads below.

Rural

The results of logistic regression for determinants of poverty for rural region in Pakistan are listed in Table 7.

A unit increase in log of transfer payment will reduce the chances of being below poverty line by -0.02002 times and it is also evident from the odd ratio of 0.980176 that shows a slight decrease in coming below poverty line.

As the base category is Baluchistan for province variable, two provinces, Sindh and Punjab, have positive signs and the province KP has negative sign. Positive signs of Sindh and Punjab show that people belong to these provinces have more poverty compared to Baluchistan whereas the situation is better in KP than Baluchistan. In fact, the odds ratio Sindh and Punjab 1.6 and 1.7, respectively indicating higher odds for these provinces compared to the base category. On the other hand, the odds ratio of 0.71 for KP indicates that individual have 29% less odds of being poor compared to Baluchistan.

Estimated sign of age is negative however the coefficient is too small indicating of no effect of age on poverty. The gender (females) of a child has positive sign, that is, females have more odds of poverty compared to males (odds ratio= 1.19). Further, the gender of the head is highly significant variable. The odds ratio of being poor is quite higher (1.63) when a female is heading a household. This is a very interesting result revealing a hidden feature of the society. The family size is also significant variable in this study. A family with more members has more odds of poverty compared to a smaller family size.

The results also reveal that parental education negatively and significantly affects the response variable. The children belong to the parents that have no schooling are more likely to be poor.

Urban

The results of logistic regression for determinants of poverty for urban region in Pakistan are listed in Table 7.

A unit increase in log of transfer payment will reduce the chances of being below poverty by 0.02875 times and it is also evident from the odd ratio of 0.9716635 that shows a meager reduction in coming below poverty line.

Since the base category is Baluchistan for province variable, two provinces, Sindh and Punjab, have negative signs and the province KP has negative sign. But the coefficient of KP is greater than Sindh and Punjab as well as Bas category termed as Baluchistan reflecting that in case of Urban Baluchistan is most poor among all preceded by Punjab Sindh and KP also given by their odd ratios (0.85), (0.90), (0.71) and (0.344) respectively.

Estimated sign of age is negative however the coefficient is too small indicating of no effect of age on poverty. The gender (females) of a child has positive sign, that is, females have more odds (1.036) of poverty compared to males (odds ratio= 0.85). Further, the gender of the head is highly significant variable. The odds ratio of being poor is quite higher (1.14) when a female is heading a household. This is a very interesting result, revealing a hidden feature of the society. The family size is also significant variable in this study. A family with more members has more odds of poverty compared to a smaller family size. The results also reveal that parental education negatively and significantly affects the response variable. The children belong to the parents that have no schooling are more likely to be poor.

Table 7: Inter regional estimates

Variable	Urban		Rural	
	Coefficient	***Odd-Ratios***	***Coefficient***	***Odd-Ratios***
Constant	-0.15769 (0.144231)	0.854112 (.1442313)	-0.41753* (0.061443)	0.6586694* (0.0614434)
Lntp	-0.01088* (0.003791)	0.989176 (0.0037911)	-0.02002* (0.002045)	0.980176* (0.002045)

Gender_i	0.036218 (0.035996)	1.036882 (0.0359959)	0.182213* (0.023602)	1.19987* (0.0236023)
Age_i	-0.01391* (0.001122)	0.986182 (0.0011219)	-0.01012* (0.000562)	0.989933* (0.000562)
edu_i	-0.07928* (0.004141)	0.923786 (0.0041414)	-0.08086* (0.00254)	0.922327* (0.0025404)
gender_head	0.1369** (0.078477)	1.146713 (0.0784771)	0.492628* (0.074002)	1.636611* (0.0740018)
age_head	0.005121* (0.001664)	1.005134 (0.0016636)	0.014017* (0.000819)	1.014115* (0.0008192)
edu_head	-0.14603* (0.003718)	0.864134 (.0037184)	-0.0905* (0.002254)	0.913478* (0.002254)
emp_head	0.283038* (0.065761)	1.327156 (0.0657614)	0.217806* (0.036454)	1.243345* 0.0364535
m_statust_head	-0.68676* (0.064807)	0.503203 (0.0648066)	-1.22811* (0.022038)	0.292844* (0.0220379)
F_size	0.053662* (0.004752)	1.055128 (0.0047515)	0.082286* (0.002796)	1.085766* (0.0027958)
D_KP	-1.06602* (0.02356)	0.344377 (0.0235602)	-0.34162* (0.025884)	0.710615* (0.0258838)
D_P	-0.0996*** (0.053661)	0.905202 (0.0536613)	0.468849* (0.051861)	1.598154* 0.0518614
D_S	-0.33252* (0.046971)	0.717117 (0.0469712)	0.574211* (0.055951)	1.77573* (0.0559512)

*, **, *** is for 1%, 5%, 10% level of significance respectively

CONCLUSIONS AND RECOMMENDATIONS

The main purpose of this study is to estimate the impact of transfer payment on poverty in Pakistan. Apart from this, this study considers some other social and demographic variables which include provinces, regions, age, gender, marital status, education head and household size. The provinces comprise of KP, Punjab, Sindh, and Baluchistan where regions are divided into rural and urban areas. The results indicated that coefficients of all variables have expected signs and consistent with the literature and are significant at 5 % level of significance. The result shows that transfer payment has a negligible impact on the poverty of the residents of Pakistan. The positive sign of the estimates of Punjab and Sindh indicate that the level of poverty is high as compared to

Baluchistan and especially KP where the estimated value has a negative sign meaning that the level of poverty is low as compared to all the provinces. The inter-regional analysis reveals the fact that the value estimated for the urban region is negative meaning that the level of poverty is low as compared to rural region. The same fact is further augmented by comparing the odd ratios of the region in which case the value of the urban region is low (0.38).

The study sheds light on the importance of gender being included in the study. It can be clearly observed from the results that female leading the household have more chances of being poor as compared to the males heading the family. The same has been proven by the positive value of the coefficients and odd ratios being positive and lower respectively. Similarly, the families big in size are prone to be poorer as compared to the families having a smaller number of family members. Parental education is yet another factor contributing to the cause of poverty and can be observed that parents having no education are more likely to be poor as compared to educated parents. The estimates of the age have a negative sign reflecting the possibility of being not poor, however the value is too small to be considered in the study. The results also reveal that parental education negatively and significantly affects the response variable. The children belong to the parents that have no schooling are more likely to be poor.

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