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DETERMINANTS OF MULTIDIMENSIONAL POVERTY INDEX: MICRO ANALYSIS

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Abstract

The paramount concern of this study is to observe the prevalence of multidimensional poverty and to seek out the factors which may affect in Pakistan. For the purpose, two indices are generated on the basis of some indicators by using data of Pakistan Social and Living Standard. These are Multidimensional Poverty Index (MPI) and Household Development Index (HDI) which are created by using Principal Component Analysis (PCA). A sample of 6919 rural and urban households is selected to investigate the factors which determine multidimensional poverty in Pakistan. Descriptive analysis suggests that almost 63 percent of rural and urban households are facing multidimensional poverty in Pakistan. Empirical findings obtained from Probit and OLS regressions indicate that education has been observed a strong factor to cope with poverty and to sustain household well-being. Nonetheless, land holding especially commercial land ownership has significant effects on the likelihood of being well off. Some demographic variables used in empirical analysis such as household size which is to be negatively affecting the well-being of households. Some infrastructure variables are shown highly significant to aggravate the well-being or development of households. These infrastructure variables are access to electricity, gas, provision of clean water, and availability of toilet. Hence, infrastructure development is also important variable to increase the well-being of households or poverty alleviation in Pakistan.

Key words: Multidimensional Poverty, Household Development Index,

JEL Classification: I32, O15

1. INTRODUCTION

Globally, developing countries around 1.8 billion in 1990, almost 1.4 billion in 2005 and 920 million people in 2009-10 were found concentrating below threshold level of poverty as per international specified poverty line less than 1.25 dollar a day (Millennium Development Goal's Report, 2010) whereas in South Asia, virtually population of 300 million out of 550 have been living below the specified poverty line (UNDP, 2010). The World Bank report (2009) indicates that out of 1.42 billion, around 400 million people are poor in the South Asia region and this burden is going to increase with the passage of time and proving to be the fundamental predicament in the developing countries of the world.

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There are 65 percent of total population is dependent on agriculture living in rural areas as Pakistan is called an agricultural country. Out of which 45 percent of population is directly involved with Agriculture. Bourgeoning poverty is threatening in rural as well as urban areas of Pakistan. Therefore, poverty reduction is one of the dominant concerns for policy makers. There is a lot of work on poverty has been done in Pakistan, especially, in the perspective of uni-dimensional poverty and there is little work has been done on multidimensional poverty **(**Iqbal et al., 2009**;** Niazi and Khan, 2010; Arif et al, 2010; Khan et al 2011). To the best of our knowledge, less attention has been made on finding the determinants of multidimensional poverty in Pakistan and some provincial differences. This study may contribute in two ways to literature: a) construction of two multidimensional poverty or well-being indices by using Principal Component Analysis (PCA) for Pakistan, in which education and land holding has been categorized and their effects on poverty has been observed for overall Pakistan as well as for provincial differences by disaggregating the data. b) Household Development Index (HDI) has been constructed to generate multidimensional poverty index, for which we have utilized ten indicators. This Household Development Index (HDI) is based on the same idea, that has been used to construct macro level human development index for which three major indicators have been used i.e. child vaccination for health, mean year schooling of household and per capita income of household family. Our generated HDI is extended to ten indicators and a multidimensional poverty index is generated. It is found that almost 63 percent households are experiencing multidimensional poverty in Pakistan. Baluchistan has been found in almost 90 percent poverty while Sindh is facing 77 percent non-money metric poverty. Multidimensional poverty determines the major factors response for increasing the poverty in rural and urban areas of Pakistan all over the Pakistan, which helps in addressing in future to focus on and provide certain concrete solution.

This study aims at finding the socio-economic determinants of multidimensional poverty in Pakistan overall and for rural and urban separately as well.

2. LITERATURE REVIEW

Filmer and Pritchett (1997) have generated asset index using Principal Component Analysis (PCA). For the purpose, the study takes into account the data from multi-purpose surveys from different countries to have poverty estimation. Results of the study indicate that findings obtained from asset index are steadier than that of expenditures approach. Moreover, results demonstrate that asset index is suitable measurement to have child nutrition, is being positioned as key gauge of the child welfare.

On the other hand, Ki et al. (2005) have assessed the different approaches to estimate the multidimensional poverty. They took into account the construction of the composite poverty index on the wake of non-monetary indicators by covering basic provisions. A composite index has been generated for Senegal by

using Multiple Correspondence Index (MCA). Findings of this study illustrate that prevalence of the poverty among households is experienced in manifold as: 1) upsetting condition of the human capital and living standard of the households in Senegal, 2) shabby and tattered condition of the infrastructure and 3) deficiency of the basic provisions. Moreover, results indicate that rural households are most affected by multidimensional poverty.

While on the issue of rural poverty Chaudhry et al. (2006) has examined and dealt theoretically with the concepts and concerns of poverty by keeping in view the rural sector of Pakistan economy. This study explores the effect of macro variables on poverty and using the data from 1963 to 1999. For empirical analysis they have applied Ordinary Least Square (OLS) technique. Obtained results suggested that inflation, growth and unemployment were significantly affecting the rural poverty in Pakistan.

Njong and Ningaye (2008) have employed similar measure as Lawson (2007) did, to estimate the multidimensional poverty by using three different approaches and have done comparative analysis using PCA and MCA. A survey-based data had been undertaken to estimate poverty incidences for Cameroon in 2001. Estimated evidences illustrated that PCA based results are dominant over MCA and other indexes. Poverty incidences obtained from the application of the PCA indicated low poverty as compared to remaining two approaches. They recommended policy makers to pursue asset-based indices because they showed more poverty.

While Alkire and Summan (2009) have analyzed the multidimensional poverty in India by applying dual cutoff approach. This study extracts that virtually 60 percent people were acknowledged to be under poverty with Alkire and Foster (AF) measurement approach of multidimensional poverty. In this approach the groups which were under social assistance program of India that takes care of the poor households which are concentrating below officially declared minimum income approach were adjusted by incorporating the assistance factor.

While to analyze the wellbeing approach and estimate the poverty Batana and Duclos (2010) have applied Multidimensional Stochastic Dominance (MSD) approach to figure out wellbeing indicators when wellbeing is in discrete form. To have statistical conjecture, Likelihood Ratio (LR) has been applied to check strict dominance. Empirical results illustrate that there exist multidimensional dominance linkages among most of the countries. Additionally, a finding of the study exerts LR test can be beneficial for comprehending multidimensional poverty and wellbeing dominance wherever dimensions are in qualitative form.

Arif (2011)analyzed the synergy between education and poverty in Iran. Actually, this study aims at seeking the effects of education on poverty alleviation. For this purpose, they kept focus on having group argumentation by school teachers. Results obtained from empirical analysis showed that education had significant and positive effects on poverty reduction in Iran. The higher education level, the lower the poverty was observed in rural areas of Iran.

Kaleem R. and Hassan S. (2014) have observed poverty prevalence in relation with public defense spending and utilized ARDL Bounds testing approach from 1976-2012 by taking foreign direct investment, development expenditures, inflation, service sector, and industrial sector as controlled variables and it is witnessed that higher spending on defense aggravate the poverty problem while value addition in services sector and development expenditure have impact in poverty alleviation in the long run.

Similarly, Awan et al. (2015)has observed multidimensional poverty at provincial basis by employing PSLM dataset for year 2005-06 and to measure poverty incidence Alkire and Foster (2007) method is used. For this study nine dimensions are selected: Housing, electricity, water, asset, sanitation, education, expenditure, empowerment and land. On the basis of these variables it is found that rural and urban areas of Balochistan are the most affected by poverty and lack of necessities and after that follows KPK, Sindh and Punjab, while most pervasive dimension are housing, sanitation, assets, land and empowerment.

While Nasim S. (2015) has summed the socio-economic impact of microfinance on the borrowers in Pakistan for which difference of the difference approach is used and data is collected from Pakistan Poverty Alleviation fund in 2005. The study informs that microfinance contribution, though positive, but its marginal in poverty reduction and only 30 percent of the poor were recipient of the funds while a major proportion, about 70 percent, of the funds were benefitted by non-poor during study period. it further analyzes that only 3 percent of poor could surpass national poverty line and about 2 percent of the income could grow during study period.

Amao (2017) measured the MDP for Nigeria using Alkire-Foster approach. Finding showed that living conditions contributes maximum of 59.9% to MDP, followed by 14.3, 13.4 and 12.4 percent in education, health and assets respectively.

Roy et. al. (2018) estimated the MDP for West Bangal and found the public infrastructure plays a vital role in explaining MDP. Sulaimon (2020) found fast increase in fertility rate and ultimately enormous increase in population are major variables which cause increase in poverty in Nigeria.

By concluding the discussion, from above studies evidently someone can perceive that there are several methods and dimensions available to estimate the multidimensional poverty. Principal component Analysis (PCA), Multiple Correspondence Analysis (MCA) and Stochastic Dominance (SD) approaches are mostly used by researchers to construct multidimensional poverty. Further some important dimensions of the poverty can be seen through from above studies which are health, education, assets, living standard of the households and consumption made by the households. In addition, education, household characteristics of the households, infrastructure and some other important variables can be observed. From aforementioned literature review, it is evident that most of the studies encircled dimension of the multidimensional poverty and

its measurement but only few studies did work on finding the determinants of the under-consideration poverty especially regarding Pakistan's context.

3. DATA, VARIABLES AND MODEL

3.1. Description of Variables

A brief description of all variables is given in Table 3.1

Table 3.1: Summary of the Variables

Variables	Description of Variables	Units
Age	Age of household Head in years	years
Gender of Head	If household is male=1 otherwise 0	Dummy Variable
Family Size	Number of total family member	Numbers
Education	Five categories of education i.e. no education, middle, metric, graduation, above graduation	Dummy variables
Land Ownership	Four categories of land ownership i.e. agricultural land, commercial land, residential land and no ownership of land	Dummy variables
Multidimensional Poverty (MP)	If not poor, then MP=1 otherwise 0 for poor	Dummy variable
Household Development index	HDI is based on three indicators i.e. per capita income, mean year family schooling, vaccination ($1 \leq HDI \geq 0$)	Continuous variable
Infrastructure	Access to gas, electricity, clean water and toilet	Dummy variable
Area	If area is urban, it is equal to 1 otherwise 0	Dummy variable

3.2 Construction of Indices

This study constructs two indices to measure household well-being in Pakistan. These are Multidimensional Poverty (MP) or Multidimensional Well-being Index (MWI) of household and Household Development Index (HDI). Both of these indices capture well-being of rural and urban households on the basis of their respective indicators by employing Principal Component Analysis (PCA). Detailed discussion on construction is laid down below.

3.2.1 Construction of Multidimensional Poverty Index (MPI)

Contrary to one-dimensional poverty or money metric approach, MPI comprises of many other indicators which affect well-being of households and this study constructs it on the basis of ten indicators (see table 3.2). The logical reasoning of employing these variables are given and these questions are selected from PSLM/HIES (2010). Per capita income of a family is computed as total income

of a family divided by family size. Per capita income is also widely considered as an indicator of well-being because the higher per capita income of a family the more chances to be well off that particular household. Likewise, per capita income, mean years schooling of a family is also used as indicator of well-being and vaccination of child is used as the indicator of health. Remaining indicators access to electricity and gas, availability of clean drinking water, residence, availability of toilet and availability of rooms to per family member are the indicators of living standard of a household (Kemal, 2003; Jamal, 2009; UNDP, 2010; Khan et al., 2011).

Table 3.2: Multidimensional Poverty Index (MPI)

No.	Indicators for Multidimensional Poverty	Units
1	Per capita income of a household if household earns	Dummy variable
2	Mean year schooling of a family	Years
3	Does household have his own residence or not?	Dummy variable
4	Does wall of house is made by bricks or mud?	Dummy variable
5	Does the household have clean water to drink?	Dummy variable
6	Number of rooms available to a household (number of rooms / family size)	Ratio
7	Does household have the facility of electricity?	Dummy variable
8	Does the household have the facility of gas?	Dummy variable
9	Does the household have the facility of the toilet?	Dummy variable
10	Does the child ever been immunized or not	Dummy variable

This index is constructed by undertaking Principal Component Analysis (PCA) because it gives more weights to higher variation. STATA version 12, software has been used to generate this index. Wambugu (2010) also constructed a multidimensional poverty index on the basis of some indicators by employing PCA. After having used PCA, it is normalized at 1 to find threshold of poverty by dividing whole observations with their mean. It is interpreted as a household possessing value of index above one is considered well off or not poor whereas if value of index is below 1 is considered poor.

3.2.2 Construction of Household Development Index (HDI)

Basically, idea behind the calculation of household development index is same as macro level Human Development Index constructed by United Nations on the basis of three major indicators mean year schooling, infant mortality rate and per capita income of a country. This study pursues same idea and methodology to construct it i.e. Per capita income of a household, mean year schooling of family and child vaccination are employed to construct the index (see table 3.3). These indicators are normalized to scale up and after that PCA is employed to construct

it. Value of this index lies between 1 and 0 where 1 holds highly developed household and 0 holds worse off household. Hence value of it ranges from zero to 1.

Table 3.3: Household Development Index

No.	Indicators for Household Development Index	Units
1	Per capita income of a household if household earn	Dummy variable
2	Mean year schooling of a household	Years
3	Does the child ever been immunized or not	Dummy variable

3.2.3 Principal Component Analysis

Principal Component Analysis (PCA) is widely used to recapitulate the numerous variables into only factor. It comprises construction of a sequence of orthogonal and normalized linear arrangement of the original variables. It exhausts the whole variance which is defined as the trace of the covariance matrix. Optimally, first component contains higher variability of the total variance and at the end total proportion of the variability has been explained after having captured all possible components (Asseline, 2009).

To construct an index, the procedure is to standardize the variables first by applying Z-Score method or some other method of normalization then factor loadings are computed. PCA is proceeded to contain weights which is the vector of first component. Normally, standardized weights are used, computing relative frequency of the selected vector. Finally, these calculated weights are multiplied by respective variable and their grand sum retains reduced information of those variables (Rutstein and Johnson, 2004; Asseline, 2009).As, we are interested in to construct an index for multidimensional poverty to comprehend its determinants in Pakistan specifically, its formulation can be written as:

$$MP = \sum WI^{*}\sum_{i=1}^{K} W^{I.i} I_{J}^{*i} \qquad \text{where i= K and j=K} \qquad \ldots\ldots\ldots\ldots (1)$$

MP stands for Multidimensional poverty and K= number of indicators which are used to generate MP, and W= weights, whereas I is the indicators or variables for MP.

3.4. Model Specification

We have applied Probit model as it is considered as a powerful technique because it analyzes all types of independent variables (e.g. Discrete, Continuous or mix of both) Uzunoz & Ackay (2012)

Probit model can be written as:

Prob (MP = 1) = $\frac{e^z}{1+e^z}$

Where, y = 1 if not poor and y = 0 if poor, e = base to natural logarithm

Prevalence of Multidimensional Poverty Provincial Differences

We can gauge some provincial differences of prevalence of the multidimensional poverty from generated index which is based on our selected sample size. Figure of MP are showing alarmingly high poverty among provinces. Punjab is experiencing 48 percent MP which is not presenting a good sight. After that we can see KPK is observing 50 percent MP and Sindh is experiencing 77 percent MP whereas Baluchistan is facing most alarming and worst condition with 89 percent of MP(see table 4.1). On the whole, Pakistan is facing almost 63 percent MP. It shows ugly spectrum of Pakistan and demonstrates how people are deprived of basic necessities of life and majority of population has to live hand to mouth.

Table 4.1: Prevalence of Multidimensional Poverty

Province	Multidimensional Poverty (percentage)
Punjab	48
KPK	50
Sindh	77
Balochistan	89

Prevalence of Multidimensional Poverty Rural/Urban Differences

From provincial differences we come to know from our concerned data set that Pakistan is facing severe multidimensional poverty and, now, we see rural/urban differences of prevalence of MP. It is clear from figure 4.2 that situation in rural areas of Pakistan is not good and rural households are deprived of facility of good health facilities, poor in education, low per capita income and some other welfare oriented facilities.

Table 4.2: Prevalence of Multidimensional Poverty Rural/Urban Differences

Region	Multidimensional Poverty (percentage)
Urban	25
Rural	80

Contrary to the rural areas urban areas of Pakistan are in much better condition where 25 percent households are facing multidimensional poverty. Urban areas

have better facilities of education, health and improved infrastructure, and where per capita income is higher than that of rural households.

4. REGRESSION ANALYSIS

This section will discuss empirically obtained findings of this study from probit model and OLS regression. This study wants to investigate the determinants of multidimensional poverty in Pakistan by using PSLM/HIES, (2010). We estimated multidimensional poverty in two ways: 1) multidimensional poverty or well-being index of households and 2) household development index which is based on similar indicators as human development index has. So, now, we initially discuss results obtained from probit regression where sample size has been disaggregated on the basis of province from where provincial differences will be empirically observed.

4.2.1 Determinants of Multidimensional Poverty in Pakistan

It has been discussed in earlier part of the study that primarily, this study wants to find out the determinants of multidimensional poverty in Pakistan. In this section we will discuss empirically obtained results from probit regression for overall Pakistan.

Probit model has been used by employing the data of 6916 rural and urban households, collected from PSLM/HIES (2010). Our dependent variable is Multidimensional Poverty Index (MPI)calculated on the basis of ten indicators[2] by using Principal Component Analysis (PCA) which is further converted in dummy variable form where MPI=1 if household is not poor otherwise zero for poor. We opt for probit regression due to discontinuous form of dependent variable. This employs age, gender and family size of the household, education of household heads and land ownership as independent variables or determinants of multidimensional poverty to see their effects. Now, we give length to our discussion and interpret empirically obtained or estimated results. This model is a good fit because Likelihood Ratio Chi^2 statistic has been found highly significant which demonstrates strong confidence in our empirical model (see Table 4.4).

Household size has been found statistically significant and it is revealed from obtained results that the multidimensional poverty has negative relation with household size, other things remaining same, as the number of persons in a family rise, chances of well-being of a family deteriorates (see Table 4.4). The obvious reasons for this trend can be: (1) it is difficult for head of a household to bear the expense of making every member of the family to be productive and (2) there is an inability to raise capital to an extent that every member of a household could

work without disruption (see table 4.4) These findings are matched with the findings of Thorbecke (2005); Mariara et. al. (2010).

On the other hand, age, maintains a positive impact on well-being which is statistically significant at 1 percent. It can be interpreted as other things remaining same, as age of a household increases, it is more likely to be well off. Because with an increase in age of a household, the working skill also improves that consequently affect his/her productivity.

Table 4.4: Determination of Multidimensional Poverty in Pakistan (PSLM/HIES, 2010-11)

Explanatory Variables	Coefficients	Standard Error	t-value
Household Size	-.0043467	.0008899	-4.88
Age	.0054013	.0017412	3.10
Gender	-.3447467	.1198313	-2.88
Area	1.49553	.036871	40.56
*No Education	-.9100328	.1065158	-8.54
Below Matriculation	-.3530185	.1079277	-3.27
Matriculation	.0722633	.122199	0.59
Graduation	.385581	.2235765	2.05
*Agricultural Land	.0766348	.050359	1.52
Residential land	.0748685	.0514336	1.89
Commercial land	.1279338	.045578	2.81

Surprisingly, gender of a household has negative effects on well-being of a household and this effect is also strongly significant. Empirically obtained findings show that families whose head is female are likely to be better off as compared to its male counterparts while keeping other things remaining unchanged. This negative effect may suggest that female heads of a household are more watchful towards family well-being and may have been a good manager. They are not too much extravagant and well aware of the needs of family than their male equivalents (see table 4.4). Our findings are matched with Datt and Jolliffe (1999) and Khan et al. (2011).

Variable of education has been categorized into five categories: a) no education, b) middle education, c) matriculation, d) graduation and e) above graduation. Here, above graduation or master education has been kept as base category. No Education variable has been statistically significant and it leaves negative effects

on well-being of rural and urban households. It is evident from table 4.4 that other things kept the same; those households who are uneducated are less likely to be well off as compared to well-educated households. Below Matriculation will probably hit family well being seriously at a significance level of 1 percent. It is due to the fact that when a household does not strive for a working skill, this incapacity would not lead him/her earn a sufficient amount of money. Matriculation education has positive effects on well-being of the households but this finding is not statistically significant whereas Graduation and above directs towards a healthy well-being at 5 percent statistical significance level. Hence, in sum, overall effect of education on well-being is significant and positive because it makes the human capital more efficient and skillful to contribute towards the society and leads to a higher level of living standard. These findings are congruent with the results of Datt and Jolliffe (1999); Niazi and Khan (2010);Naveed and Islam (2010) Khan et al. (2011).

Area of household has been found positive and statistically significant. Households who are living in urban areas are more likely to experience the healthy well-being, other things remaining same, It is quite obvious that, urban areas have much improved and developed infrastructure as compared to rural areas which are usually neglected from government authorities sometime due to non-availability of funds and sometimes due to incapacity of the ruling class.

Likewise, education variable, land ownership has been divided into four categories: a) no land ownership, b) agricultural land ownership, c) residential land ownership, and d) commercial land ownership. No land ownership has been kept as base category. Agricultural land holding has positive effect on well-being of a household but it is statistically insignificant. It is may be due to lack of poor agricultural policies and it also shows farm households are facing struggling condition to improve their living standard. But commercial land holding and residential land holding are positive and have statistically significant effects on well-being of households (see table 4.4). Other things remaining same, it is more likely to be well off if households own commercial or residential property. It is quite justifiable because commercial property has higher returns and value. Especially in Pakistan, it has often been observed that due to commercial land property, people enjoy higher living standard.

Overall the spectrum of education in Pakistanis is found to be the most pervasive of all factors that hit wellbeing of household. Most effected families are below Matriculation, which is also evident from thisstudy that they have low standard of living due to poor education and lack of skill.

4.3 Determinants of Household Development Index (HDI) in Pakistan (OLS Regression)

This study has also constructed household development index, logic behind its construction is same as macro level human development index, undertaken by United Nation Development program (UNDP).It is constructed on the basis of

three indicators i.e. per capita income, mean year schooling of household, vaccination to children. Now, household development index is used as dependent variable and it is in continuous variable form, therefore, OLS regression has been employed to find its determinants in Pakistan. All independent variable used in earlier discussion plus some infrastructural variables like access to electricity, gas, availability of toilet and clean water are used as independent variables. Results of OLS regression are given in Table 4.9.

Table 4.9: Determinants of Household Development Index in Pakistan

Explanatory Variables	Coefficients	Standard Error	t-value
Household Size	-.0004005	.000022	-18.17
Age	-.0001912	.0000439	4.35
Gender	.0081205	.0030084	2.70
Area	.0009606	.0012074	0.80
Below Matriculation	.0208274	.0009796	21.26
Matriculation	.0538252	.0017779	30.28
Graduation	.0918289	.0046011	19.96
Master	.1048569	.0055561	18.87
*agricultural land	.0062387	.0012659	4.93
Residential land	.0032517	.0012863	2.53
Commercial land	.0013022	.0011498	1.13
Infrastructure:			
Electricity	.0090546	.0014723	6.15
Gas	.0129572	.0013240	9.79
Water	0067617	0011848	5.71
Toilet	.0087696	.0010850	8.08
Constant	.091152	.0037019	24.62

Likewise earlier discussion, here household size also found negatively affecting household development with high statistical significance. Other demographic variables such as age and gender of the household head are also found highly significant. Age of the household head has been found negatively affecting which suggests that younger households are enjoying more development whereas gender of the household head, now, contrary to earlier discussion or multidimensional poverty case, has positive effects on development of a

household. Male household heads are observing more development as compared to female households. These differences in results are may be due to indicators. Multidimensional poverty index entails ten indicators whereas household development index comprises three indicators. Locality of household is found insignificant in this regression. These results are commensurate with the findings of Hulme and Shephered (2003).

Contrary to probit estimation, here, we kept no education as reference category and found all categories of education below metric, metric education, graduation and above graduate education are found positively and highly statistically significant to affect the household development. It can be seen evidently from table 4.9 which contain information about it. Education is a strong reason that improves the level of development for respective households. These findings are congruent with the results of Datt and Jolliffe (1999); Niazi and Khan (2010); Naveed and Islam (2010) Khan et al. (2011).

Land holding variable has been found significant and in this case, agricultural land holding has been affecting positively and is statistically significant. Agriculture is a big source of livelihood in rural areas of Pakistan. Some people of rural areas migrated to urban areas and they rented their land even. It accumulates their income as well. Therefore, it increases the welfare of respective households. Residential land has also found significant and is positively affecting the welfare of households. It works as shelter for them and even a big source of income as well. That is the reason it has positive effects on development of rural households. Commercial land holding has positive effects on development but thee effects are statistically insignificant which is contrary to the results of probit regression (compare Table 4.9 with Table 4.4).

This model covers four additional independent variables which are access to gas, electricity, and provision of clean water and availability of toilet facility. All these variables are found statistically significant and these are affecting positively. These facilities also enhance the living standard or development of the households. These findings are matched with the findings of Datt and Jolliffe (2009); Niazi and Khan (2010).

Consequently, we have some factors which determine multidimensional poverty and household development index in Pakistan. Some demographic variables and education, land holding and some infrastructural variables are found significantly affecting the well-being of households. Now, shortly, we will discuss some provincial results on the basis of household development index and their findings are attached in appendix.

Provincially disaggregated data which is used to find determinants of household development, shows that education has been found as significant variable and has positive effects on household development for all provinces. Similarly, infrastructural variables also have positive and statistically significant effects on the development of households. Agricultural land holding has significant and positive effects for all provinces while commercial landholdings are found to be

positively affecting but these effects are insignificant in four provinces(for more detail see table 4.10, 4.11, 4.12, 4.13 in appendix).

The difference in results between two estimations might be due to number of indicators used. As in multidimensional poverty index we employed ten indicators while household development index only contains three indicators.

5. CONCLUSION AND POLICY RECOMMENDATION

The prime objective of this study is to find the determinants of multidimensional poverty in Pakistan and also gauge some provincial differences. To its objectives, this study constructed two indices representing multidimensional poverty: a) Multidimensional Poverty Index (MPI) or Well-being Index (WI) and b) Household Development Index (HDI). MPI is constructed on the basis of ten indicators such as per capita income of households, education, child vaccination, access to water, gas, and electricity, availability of house and structure of house of the rural and urban households whereas HDI contains three indicators i.e. per capita income, mean year schooling of households and vaccination of child. Data of these variables is taken from PSLM/HIES (2010). These indices are constructed by using PCA. For empirical analysis this study employs two regressions: 1) Probit regression has been used because dependent variable is in dummy variable form where MPI=1 for non-poor household and otherwise zero for poor. That is why; it can be termed as well-being index as well and 2) OLS regression is used because dependent variable household development index is in a continuous variable form. Overall sample size is 6919 rural and urban households.

In probit regression, demographic variables such as household size, age of the household head and gender of the household head shows their significant effects on well-being of households. Household size has been found negatively affecting well-being. Larger family size may put extra burden on a household to nurture his family. Therefore it is less likely for him to be well off. Age of household has positive effects on well-being whereas gender of household may have negative effects on well-being. Female household heads are more likely to be better off.

When we try to observe some provincial differences, household size remain negatively affecting but rest of variable are found differently affecting well-being. Age of household has been found positively affecting in Punjab, KPK and Baluchistan but its negative effects are observed in Sindh. Gender of household head is found statistically insignificant in Sindh and Baluchistan while it is found significant for Punjab and KPK. Female heads have more likely to be well off in Punjab whereas female heads may have less likelihood to be better off in KPK.

In OLS regression, infrastructure development related variables are incorporated. Household size has positive effects and statistically significant which are contrary to probit regression and rest of demographic variables are found highly significant. Education has been found highly significant factor to determine

household development in Pakistan. Agricultural landholding and residential are another key factors to determine rural and urban development. Further infrastructure variables have positive and significant effects on household development in Pakistan.

Education has been found the most strong as well as significant factor to elevate the living standard of households. It strongly recommended that concerned authority ought to make sure the provision of education to all. It is also an indicator of human capital and a quality education can change the fate of whole nation.

Rural areas have been found in poor level of well-being and there is dire need to launch some strong and feasible rural development agenda because most of population of Pakistan resides in rural areas. They need improved infrastructure. In sum, from empirically obtained findings education has been found most important factor which may invigorate the well-being of rural as well as urban households.

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