Medición multidimensional de la pobreza en Pakistán: análisis provincial

Multidimensional measurement of poverty in Pakistan: provincial analysis

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DOI: http://dx.doi.org/10.20983/noesis.2015.2.2

Fecha de recepción: 2 de julio de 2013
Fecha de aceptación: 16 de marzo de 2014

RESUMEN
En este trabajo se estimó la pobreza multidimensional para cuatro provincias de Pakistán utilizando, para ello, una encuesta que mide los estándares de vida y sociales para los años 2005-2006, desde la metodología propuesta por Alkire y Foster. Se seleccionaron nueve dimensiones: vivienda, electricidad, agua, activos, saneamiento, educación, gasto, empoderamiento y tierras. Los resultados fueron que, en general, la provincia de Baluchistán presenta las peores condiciones de pobreza, seguida de la Provincia Fronteriza Noroccidental, Sind y Punjab. En las zonas urbanas y rurales de Baluchistán, se encontró un mayor número de pobres multidimensionales, seguido de la Provincia Fronteriza Noroccidental, Sind y Punjab. La pobreza, en todos los casos, resulta ser más severa en las zonas rurales que en las urbanas. Al analizar la contribución de cada dimensión a la pobreza multidimensional, se encontró que las que más contribuyen están relacionadas con la tierra, el empoderamiento, la vivienda, así como los bienes y servicios de saneamiento. Para finalizar, este artículo presenta evidencia empírica de la no coincidencia en la identificación de pobreza usando el enfoque monetario o bien, multidimensional.

Palabras clave: Pakistán, pobreza multidimensional, análisis provincial.

ABSTRACT
This paper has estimated multidimensional poverty for four provinces of Pakistan using Pakistan social and living standard measurement survey dataset for years 2005-06 by applying Alkire and Foster methodology. Nine dimensions were selected for this study: Housing, Electricity, Water, Asset, Sanitation, Education, Expenditure, Empowerment and Land. Results found that overall Balochistan shows the worst picture followed by NWFP, Sindh and Punjab. Urban and rural areas of Balochistan are more multidimensionally poor followed by NWFP, Sindh and Punjab. Results show that the most pervasive level of poverty exists in rural areas of different provinces. The analysis of contribution of each dimension in multidimensional poverty at different cut-offs showed that the major contributors are Land, Empowerment, Housing, Assets and Sanitation. This study also presents an empirical evidence of significant lack of overlap in the identification by the monetary and multidimensional approach in the case of Pakistan.

Keywords: Pakistan, multidimensional poverty, provincial analysis.

1. Introduction

Poverty is one of the most familiar phenomena and fact of human societies. It has involved many of the most prominent social thinkers, specifically academia, researchers and policy makers from all over the world in debates about its origin, causes and types. Arouse of all this resist, till now a common man is incapable to answer a simple question: what is poverty, exactly? Even this most simple question is unlikely to produce a universally accepted answer, although most would agree it involves such concerns as hunger, unemployment, illiteracy, malnutrition, ill-being, incompetency, gaps between the different segments of society and combination of all these or something bigger than it. Precisely speaking the term "poverty" encompasses multiple aspects of human life. None is seems to disagree that deprivations exist in multiple domains and are often correlated. In order to understand the threat that the problem of poverty poses, it is necessary to know its dimension and the process through which it seems to be deepened. The measurement of correlated multiple domains with respect to poverty, fabricates the new concept, *i.e.* multidimensional poverty. Now theoretical and analytical evidence is ample, while remaining **insoluble** issues in poverty analysis are related directly or indirectly to the multidimensional nature and dynamics of poverty (Thorbecke, 2005: 3-30). Analysis on multidimensional poverty has occupied much attention of economists and policymakers, particularly since the writing (Sen, 1976: 219-231) and the rising of data availability for relevant research purpose. The justification behind this multidimensional measurement of poverty is based on the idea that income indicator is incomplete and its deficit leads to vague estimations of poverty (Díaz, 2003: 674-697). Having said that, alternative dimensions such as health, educational attainment, social exclusion, and insecurity are often weakly correlated with income or expenditure (Appleton and Song, 1999: 1-56). These poor correlations highlight the fact that measuring these additional dimensions enriches and provides additional information to the poverty picture (Calvo and Dercon, 2005: 1-29). However, the strength of measurement lies in the

construction of indexes that capture the relative importance of each indicator in the total poverty picture. The weighting of each indicator is meant to reflect the strength of the relationship with "wealth factor" for asset-based measurement as proposed by Sahn and Stifel (2000: 463-489). While the most important component in poverty measures is identification, there are two main approaches in identifying the poor in a multidimensional setting (Alkire and Foster, 2007: 77-89), *i.e.* "union" and "intersection" approach.

Alkire and Foster (2007: 77-89) proposed a counting approach for measuring the multidimensional poverty. This approach has a number of characteristics that deserve mention. First, the identification method mentioned in this approach is poverty focused, *i.e.* an increase in the achievement level of a non-poor person leaves its value unchanged. Second, it is deprivation focused, *i.e.* an increase in any non-deprived achievement leaves the value of the identification unchanged. Third, this approach can be meaningfully used with ordinal data. Fourth, this approach satisfies several desirable properties including decomposability. Fifth, we can also assign different weights to each dimension.

The main objective of the paper is to apply the above mentioned methodology to estimate multidimensional poverty in four provinces of Pakistan, which would complement the income poverty estimates performed by Planning Commission of Pakistan and other government agencies. This study also highlights the importance of each dimension because the beauty of this methodology is that: we find out the effect of each dimension in overall poverty

Rest study is balanced as, part two explains the data and methodology used in this paper; part three discusses the selected dimensions and cut-offs; part four presents the results, and part five concludes the study and also give some policy options to control the problem.

2. Data and methodology

The dataset used in this paper is the 2005-06 Pakistan social and living standard measurement survey (PSLM) conducted by Federal Bureau of Statistics (FBS) Pakistan. This is the second round of PSLM. The Household Integrated Economic Survey (HIES) [Part of PSLM] is

the main source of data for poverty estimates in Pakistan (Arif, 2003: 12-47). HIES Questionnaire was revised in 1990 in order to incorporate the requirements of the new system of national accounts. 1990-91, 1992-93, 1993-94 & 1996-97 surveys were conducted using revised questionnaire. In 1998-99 and 2001-02, the HIES data collection methods and questionnaire were changed to reflect the integration of the HIES with the Pakistan Integrated Household survey (PIHS). The HIES 2004-05 was conducted as part of first round of PSLM survey covering 14 708 household taken as sub-sample of the 77 000 households of PSLM survey. The current round of HIES has been carried out covering 15 453 households [FBS-2005-06].

In this paper we use a methodology for multidimensional poverty measurement proposed by Alkire and Foster's (2007: 77-89). First we define the notations which will be helpful to provide an outline of the measure.

Let $M\,n,d$ denote the set of all $n\times d$ matrices, and $y \in M^{n,d}$ represents an achievement matrix of n people in d different dimensions. For every $i = 1, 2,\ldots, n$ and $j = 1, 2,\ldots, d$, the typical entry y_{ij} of y is individual i's achievement in dimension j. The row vector $y_i = (y_{i1}, y_{i2}, ..., y_{id})$ lists individual i's achievements and the column vector $y_j = (y_{1j}, y_{2j}, ..., y_{nj}$ gives the distribution of achievements in dimension j across individuals. Let $z_j > 0$ represent the cut-off below which a person is considered to be deprived in dimension j, and z represent the row vector of dimension specific cut-offs. Following Alkire and Foster's (2007: 77-89) notations, any vector or matrix v, $_{v,}\left|v\right|$ denotes the sum of all its elements, whereas $\mu(v)$ is the mean of v.

Alkire and Foster (2007) suggest that it is useful to express the data in terms of deprivations rather than achievements. For any matrix y, it is possible to define a matrix of deprivations $g^0 = \left[g_{ij}^0\right]$, whose typical element g_{ij}^0 is defined by $g_{ij}^0 = 1$ when $y_{ij} < z_j$, and $g_{ij}^0 = 0$ when $y_{ij} \geq z_j$; g^0 is an $n\times d$ matrix whose ij^{th} entry is equal to 1 when person i is deprived in j^{th} dimension, and 0 when person is not; g_i^0 is the i^{th} row vector of g^0 which represent person i's deprivation vector. From g^0 matrix, define a column vector of deprivation counts, whose i^{th} entry $c_i = \left|g_i^0\right|$ represents the number of deprivations suffered by person i. If the variables in y are

only ordinally significant, g^0 and c are still well defined. If the variables in y are cardinal, then we have to define a matrix of normalized gaps g^1. For any y, let $g^1 = \left[g_{ij}^1 \right]$ be the matrix of normalized gaps, where the typical element is defined by $g_{ij}^1 = (z_j - y_{ij}) / z_j$ when $y_{ij} < z_j$, and $g_{ij}^1 = 0$ otherwise. The entries of this matrix are non-negative numbers less than or equal to 1, with g_{ij}^1 being a measure of the extent to which person i is deprived in dimension j. This matrix can be generalized to $g^\alpha = \left[g_{ij}^\alpha \right]$, with $\alpha > 0$, whose typical element g_{ij}^α is normalized poverty gap raised to the α-power.

After defining the notation, now we provide an outline of the class of multidimensional poverty measure suggested by Alkire and Foster (2007: 77-89). A reasonable starting point is to identify who is poor and who is not. Most of the identification method suggested in the literature normally follows the union or intersection approach. According to the union approach a person i is said to be multidimensionally poor if there is at least one dimension in which the person is deprived, whereas according to intersection approach a person i is said to be multidimensionally poor if that person is deprived in all dimensions. If dimensions are equally weighted, then the methodology to identify the multidimensionally poor proposed by Alkire and Foster (2007) compares the number of deprivations with a cut-off level k, where $k = 1, 2, \ldots, d$. Let us define the identification method ρ_k such that $\rho_k(y_i, z) = 1$ when $c_i \geq k$, and $\rho_k(y_i, z) = 0$ when $c_i < k$. This means that a person is identified as multidimensionally poor if that person is deprived in at least k dimensions. This is called dual cut-off method of identification because ρ_k is dependent on both the within dimension cut-offs z; j and across dimensions cut-off k. This identification criterion defines the set of the multidimensionally poor people as $Z_k = \{i : \rho_k(y_i; z) = 1\}$. A censored matrix $g^0(k)$ is obtained from g^0 by replacing the i^{th} row with a vector of zeros whenever $\rho_k(y_i, z) = 0$. An analogous matrix $g\alpha(k)$ is obtained for $\alpha > 0$, with the ij^{th} element $g_{ij}^\alpha(k) = g_{ij}^\alpha$ if $c_i \geq k$ & $g_{ij}^\alpha(k) = 0$ if $c_i < k$.

On the basis of this identification method, Alkire and Foster (2007) define the following poverty measures. The first natural measure is the percentage of individuals that are multidimensionally poor:

the multidimensional Headcount Ratio $H = H(y;z)$ is defined by $H = q/n$, where $q = q(y,z)$ is the number of people in set Z_k. This is entirely analogous to the income headcount ratio. This measure has the advantage of being easily comprehensible and estimable, and this can be applied using ordinal data. However, it suffers from the disadvantages first noticed by Sen (1976) in the unidimensional context, namely being insensitive to the depth and distribution of poverty, violating monotonicity and the transfer axiom. Where as in the multidimensional context, it also violates dimensional monotonicity (Alkire and Foster, 2007: 77-89). Alkire and Foster (2007) explain this as if a poor person already identified as poor become deprived in an additional dimension (in which this person was not previously deprived), *H* does not change.

To overcome this problem of multidimensional headcount, Alkire and Foster (2007) propose the dimension adjusted *FGT* measures, given by $M_\alpha(y;z) = \mu(g^\alpha(k))$ for $\alpha \geq 0$. When $\alpha = 0$, the measure is called Adjusted Headcount Ratio, defined by $Mo = \mu(g^0(k)) = HA$. The adjusted headcount ratio is the total number of deprivations experienced by the poor ($|c(k)| = |g^0(k)|$), divided by the maximum number of deprivations that could possibly be experienced by all people (*nd*). It can also be expressed as the product between the percentage of multidimensionally poor individuals (*H*) and the average deprivation share across the poor, which is given by $A = |c(k)|/(qd)$. In words, *A* provides the fraction of possible dimensions *d* in which the average multidimensionally poor individual is deprived. In this way, M^0 summarizes information on both the incidence of poverty and the average extent of a multidimensionally poor person's deprivation. This measure is easy to compute as *H*, and can be calculated with ordinal data and it is superior to *H* because it satisfies the dimensional monotonicity property.

The class of dimension adjusted *FGT* measure also yields the Adjusted Poverty Gap, give by $M_1 = \mu(g^1(k)) = HAG$, which is the sum of the normalized gaps of the poor ($|g^1(k)|$) divided by the highest possible sum of the normalized gaps (*nd*). It can also be expressed as the product between the percentage of multidimensionally poor

persons (*H*), the average deprivation share across the poor (*A*) and the average poverty gap (*G*), which is given by $G = \left|g^1(k)\right| / \left|g^0(k)\right|$. The poverty measure M_1 ranges in value from 0 to 1. If the dimension of poor person deepens in any dimension, then the respective $g^1(k)$ will rise and hence so will M_1. Consequently M_1 satisfies monotonicity.

Finally, when $\alpha = 2$, the measure is the Adjusted Poverty Gap, and it is represented by M_2 and $M_2 = \mu(g^2(k)) = HAS$ which is the sum of the squared normalized gaps of the poor ($\left|g^2(k)\right|$) divided by the highest possible sum of the normalized gaps (*nd*). It can also be expressed as the product between the percentage of multidimensionally poor persons (*H*), the average deprivation share across the poor (*A*) and the average severity of deprivations (*S*), which is given by $S = \left|g^2(k)\right| / \left|g^0(k)\right|$. M_2 Summarizes information on the incidence of poverty, the average range and severity of deprivations, and the average depth of deprivations of the poor. If a poor person becomes deprived in a certain dimension, M_2 will increase more the larger the initial level of deprivation was for this individual in this dimension. This measure satisfies both types of monotonicity and also transfer, being sensitive to the inequality of deprivations among the poor as it emphasizes the deprivations of the poorest.

All members of the $M_\alpha(y;z)$ family are decomposable by population subgroups. Given two distributions *x* and *y*, corresponding to two population subgroups of size *n*(*x*) and *n*(*y*) correspondingly, the weighted average of sum of the subgroup poverty levels (weights being the population shares) equals the overall poverty level obtained when the two subgroups are merged:

$$M\,(x,y;z) = \frac{n(x)}{n(x,y)}\,M\,(x;y) + \frac{n(x)}{n(x,y)}\,M\,(x;z)$$

All members of the $M_\alpha(y;z)$ family can also be broken down into dimension subgroups. To see this, note that the measures can be expressed in the following way: $M_\alpha(y,z) = \sum_{i=1}^{n} \mu(g^\alpha_{*j}(k))/d$, where g^α_{*j} is the j^{th} column of the censored matrix $g^\alpha(k)$. Strictly speaking, this is not decomposability in terms of dimensions, since the information on all

dimensions is needed to identify the multidimensionally poor. However, once the identification step has been completed, and the non-poor rows of g^{α} have been censored to obtain $g^{\alpha}(k)$ the above aggregation formula shows that overall poverty is the average of the d many dimensional values $\mu(g^{\alpha}_{*j}(k))$. Consequently, $(\mu(g^{\alpha}_{*j}(k))/d/M_{\alpha}(y,z)$ can be interpreted as the contribution of dimension j to overall multidimensional poverty.

The $M_{\alpha}(y,z)$ family adopts the neutral assumption of considering dimensions as independent. In this way, it satisfies a property, based on Atkinson and Bourguignon (1982: 183-201), called weak rearrangement. The concept is based on a different sort of "averaging" across two poor persons, whereby one person begins with weakly more of each achievement than a second person, but then switches one or more achievement levels with the second person so that this ranking no longer holds. In other words, we can say that a simple rearrangement among the poor reallocates the achievements of two poor persons, but leaves the achievements of everyone else unchanged. This is called an association decreasing rearrangement. Under such rearrangement one would expect multidimensional poverty not to increase. This is postulated by the weak rearrangement axiom and it is precisely satisfied by the $M_{\alpha}(y,z)$, which will not change under such transformation. Because of its completely additive form, it evaluates each individual's achievements in each dimension independently of the achievements in the other dimensions of other's achievements.

We use same weights for all dimensions but this $M_{\alpha}(y,z)$ family can be extended into a more general form, admitting different weighting structures (Awan, Waqas & Aslam, 2011: 133-144).

3. Selected dimensions and deprivation cut-offs

This section presents the dimensions, indicators and cut-offs for each dimension used in this paper. In the following table, we summarize the question asked in PSLM 2005-06, dimensions and the cut-offs that we want to apply for each indicator in this paper.

Table 1: Different dimensions along with questions (Over all Pakistan)[1]

Dimension	Questions in PSLM	Poverty line cut-off (The household is deprived if)
Housing	How many rooms does your household occupy?	Three or more than three persons are living in one room
Water	What is the source of drinking water for the household?	There is no access of clean drinking water, *i.e.* piped water, hand pump, motorized pumping/tube well, closed well
Sanitation	What type of toilet is used by your household?	Uses dry raised latrine, dry pit latrine, no toilet in the household
Electricity	Does your household have electricity connection?	If no access to electricity
Asset	Were/Are any of the following items owned by the household (List is in appendix)?	If does not own any of the following assets: refrigerator, freezer, air conditioner, geyser, washing machine, camera movie, car/vehicle, motorcycle, TV, VCR, vacuum cleaner, PC
Education	What was the highest class completed/What class are… currently attending?	Maximum year of education completed by any member is less than five years
Land	Did any of the household members own or had owned during the last one year any of the following property (List is in appendix)?	If value of property is less than RS: 300,000
Expenditure[1]	Expenditure of household on non-durables and food items	Household per adult equivalent expenditure < RS: 944.47 per month Pakistan's national poverty line
Empowerment	Who in your household usually make decision about the purchase of the following consumption items? Food, clothing, medical treatment, recreation and travel	If women is not consulted in basic decision about purchase of some basic consumption item

1 A household is considered as expenditure deprived if per adult equivalent household expenditure of this household is less than the poverty line of RS: 944.47 per month given by the government of Pakistan, according to the Economic Survey of Pakistan 2008.

4. Results and discussion

Table 2 presents the estimated multidimensionally poor headcount (*H*), adjusted headcount (M^0) and average deprivation (*A*) for different levels of cut-off, *i.e.* k = 3, 4, 5 & 6. Suppose k = 3, result shows that more than 89% of households in Balochistan are deprived in at least three dimensions and the Adjusted Headcount Ratio (M^0) is 0.6117. Where as in case of Balochistan rural, situation is even worst as Multidimensional Headcount Ratio is almost 96% and on average these households are deprived in 6.5 dimensions, so the Adjusted Headcount Ratio in this case is 0.6974. In case of Balochistan urban, almost 65% households are deprived in at least three dimensions and the value of the Adjusted Headcount Ratio is 0.2917. Almost 67% of household in NWFP overall 71% in rural NWFP and 43.5% in NWFP urban are deprived in at least three dimensions and the Multidimensionally Adjusted Headcount Ratios for these regions are 0.6673, 0.7129 and 0.4355, respectively. More than 38% of households of urban Sindh are deprived in at least three dimensions and the Adjusted Headcount Ratio in this case is 0.1613. More than 91% of rural households of Sindh are deprived in three or more than three deprivations and M^0 in case of rural Sindh is 0.5649. Almost 63% are deprived in at least three dimensions in case of Sindh overall and the corresponding Adjusted Headcount Ratio in this case is 0.3504. More than 57% households of overall Punjab are deprived in at least three dimensions and the Adjusted Headcount Ratio in this case is 0.2952. More than 70% households in case of rural Punjab and 29% in case of urban Punjab's households are deprived in three or more out of nine dimensions and their corresponding Adjusted Headcount Ratios are 0.3760 and 0.1221. Overall Balochistan shows the worst picture, followed by NWFP, Sindh and Punjab. In urban areas of different provinces, Balochistan is more multidimensionally poor followed by NWFP, Sindh and Punjab. As far as the rural area is concerned, Balochistan is multidimensionally poor followed by Sindh, NWFP and Punjab.

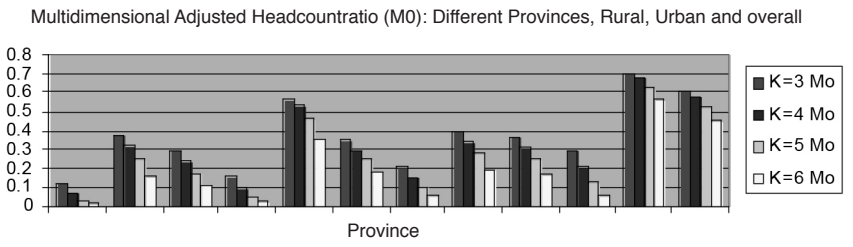
Figure 1 expresses the Multidimensional Poverty Index (M_0) at different levels of *K* along with the regional bifurcation. Figure shows

that rural Balochistan is the most deprived region of Pakistan, among all eight regions, for all levels of *K* while urban Sindh is the least deprived one.

Table 2: Multidimensional Headcount Ratio (*H*), Adjusted Headcount Ratio (M^0), and average deprivation (*A*) in rural and urban areas of Pakistan at different *K* values

Province	K = 3			K = 4			K = 5			K = 6		
	H	M^0	*A*	*H*	M^0	*A*	*H*	M^0	*A*	*H*	M^0	*A*
Punjab [U]	0.2912	0.1221	0.4192	0.1399	0.0716	0.5121	0.0584	0.0354	0.6064	0.0169	0.0124	0.7313
Punjab [R]	0.7094	0.3760	0.5301	0.5352	0.3179	0.5941	0.3654	0.2425	0.6636	0.2164	0.1597	0.7380
Punjab [O]	0.5763	0.2952	0.5122	0.4093	0.2395	0.5852	0.2677	0.1766	0.6597	0.1529	0.1128	0.7378
Sindh [U]	0.3808	0.1613	0.4236	0.1788	0.0940	0.5255	0.0791	0.0496	0.6278	0.0340	0.0246	0.7234
Sindh [R]	0.9196	0.5649	0.6142	0.8059	0.5270	0.6539	0.6583	0.4614	0.7008	0.4727	0.3582	0.7579
Sindh [O]	0.6332	0.3504	0.5533	0.4726	0.2968	0.6281	0.3505	0.2425	0.6921	0.2395	0.1809	0.7553
NWFP [U]	0.4355	0.2050	0.4707	0.2660	0.1485	0.5583	0.1568	0.1000	0.6376	0.0788	0.0566	0.7187
NWFP [R]	0.7129	0.3932	0.5516	0.5579	0.3416	0.6122	0.4071	0.2746	0.6744	0.2550	0.1900	0.7453
NWFP [O]	0.6673	0.3623	0.5429	0.5099	0.3098	0.6076	0.3659	0.2458	0.6718	0.2260	0.1681	0.7438
Baloch [U]	0.6469	0.2917	0.4509	0.3786	0.2022	0.5343	0.2036	0.1245	0.6115	0.0739	0.0525	0.7096
Baloch [R]	0.9616	0.6974	0.7253	0.9019	0.6776	0.7512	0.7878	0.6268	0.7957	0.6688	0.5607	0.8384
Baloch [O]	0.8950	0.6117	0.6834	0.7913	0.5771	0.7293	0.6643	0.5206	0.7838	0.5430	0.4533	0.8347

Figure 1: Multidimensional Poverty Index (M_0) in rural and urban areas of Pakistan at different levels of K



Dimensions of land, empowerment and housing are the major contributors to MPI in urban Punjab, while along with the three dimensions the sanitation adds up to 14% to MPI in rural Punjab. Similar is the case of province Sindh; the dimensions of empowerment, land, and housing constitute 72% of overall MPI in urban Sindh, while the same three dimensions contribute 50% to overall MPI in rural Sindh, which shows that intensity of multidimensional poverty is high in urban areas as compared to rural ones. Similar is the case with provinces of Balochistan and KPK. But in the province of KPK, dimension of sanitation is equally contributing to overall MPI.

Table 3: Percentage of poor in different dimensions in different provinces

	Punjab		Sindh		nwfp		Balochistan	
Dimension	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
0	517	7.7	73	1.9	101	3.4	10	.5
1	1241	18.6	491	13.0	472	16.0	107	5.2
2	1367	20.5	574	15.2	529	17.9	234	11.4
3	1117	16.7	590	15.6	463	15.7	301	14.7
4	873	13.1	520	13.8	426	14.4	311	15.2
5	690	10.3	483	12.8	396	13.4	283	13.8

Continúa...

	Punjab		Sindh		nwfp		Balochistan	
6	450	6.7	477	12.6	278	9.4	245	12.0
7	297	4.4	354	9.4	204	6.9	249	12.2
8	123	1.8	177	4.7	62	2.1	212	10.4
9	7	.1	33	.9	19	.6	96	4.7
Total	6682	100.0	3772	100.0	2950	100.0	2048	100.0

5. Conclusion

This paper has estimated multidimensional poverty for four provinces of Pakistan using PSLM dataset for years 2005-06 by applying Alkire and Foster (2007) methodology. Nine dimensions were selected for this study: Housing, Electricity, Water, Asset, Sanitation, Education, Expenditure, Empowerment and Land. Results found that overall Balochistan shows the worst picture followed by NWFP, Sindh and Punjab. In urban areas of different provinces, Balochistan is more multidimensionally poor followed by NWFP, Sindh and Punjab. As far as the rural area is concerned, Balochistan is multidimensionally poor followed by Sindh, NWFP and Punjab. Results show that the most pervasive level of poverty exists in rural areas of different provinces. The analysis of contribution of each dimension in multidimensional poverty at different cut-offs showed that the major contributors are Land, Empowerment, Housing, Assets and Sanitation. This study also presents an empirical evidence of significant lack of overlap in the identification by the monetary and multidimensional approach in the case of Pakistan.

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Annexure

Table 1: Dimension wise deprivation of Punjab province

	Urban Punjab				Rural Punjab			
Dimension	k =3	k =4	k =5	k =6	k =3	k =4	k =5	k =6
Electricity	0.017	0.025	0.033	0.066	0.046	0.053	0.064	0.080
Water	0.010	0.008	0.009	0.013	0.015	0.014	0.011	0.011
Sanitation	0.038	0.054	0.076	0.113	0.144	0.151	0.151	0.143
Asset	0.097	0.131	0.149	0.140	0.143	0.150	0.149	0.144
Housing	0.228	0.193	0.165	0.149	0.145	0.140	0.136	0.134
Education	0.081	0.105	0.123	0.131	0.092	0.100	0.108	0.117
Expenditure	0.068	0.0950	0.1031	0.104	0.060	0.068	0.077	0.089
Empowerment	0.220	0.179	0.159	0.129	0.160	0.146	0.139	0.130
Land	0.23	0.206	0.181	0.147	0.190	0.174	0.159	0.147

Table 2: Dimension wise deprivation of Sindh province

	Urban Sindh				Rural Sindh			
Dimension	*k* = 3	*k* = 4	*k* = 5	*k* = 6	*k* = 3	*k* = 4	*k* = 5	*k* = 6
Electricity	0.015	0.023	0.037	0.059	0.062	0.066	0.074	0.085
Water	0.031	0.034	0.033	0.028	0.032	0.034	0.037	0.044
Sanitation	0.038	0.061	0.090	0.121	0.154	0.155	0.151	0.144
Asset	0.085	0.124	0.141	0.139	0.133	0.140	0.145	0.142
Housing	0.231	0.192	0.165	0.139	0.143	0.137	0.131	0.127
Education	0.069	0.097	0.113	0.125	0.072	0.076	0.082	0.092
Expenditure	0.042	0.065	0.075	0.087	0.061	0.065	0.070	0.078
Empowerment	0.249	0.201	0.171	0.149	0.169	0.160	0.151	0.140
Land	0.235	0.200	0.172	0.151	0.169	0.164	0.155	0.144

Table 3: Dimension wise deprivation of NWFP province

	Urban NWFP				Rural NWFP			
Dimension	k =3	k =4	k =5	k =6	k =3	k =4	k =5	k =6
Electricity	0.005	0.007	0.010	0.016	0.020	0.022	0.028	0.035
Water	0.041	0.047	0.046	0.061	0.079	0.084	0.089	0.098
Sanitation	0.075	0.084	0.095	0.119	0.140	0.145	0.144	0.140
Asset	0.108	0.132	0.138	0.128	0.139	0.143	0.142	0.137

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	Urban NWFP				Rural NWFP			
Housing	0.195	0.169	0.155	0.136	0.147	0.140	0.134	0.129
Education	0.083	0.097	0.110	0.121	0.072	0.077	0.083	0.092
Expenditure	0.083	0.099	0.112	0.114	0.062	0.066	0.073	0.081
Empow-erment	0.218	0.189	0.170	0.152	0.182	0.166	0.155	0.143
Land	0.188	0.172	0.159	0.149	0.156	0.153	0.148	0.141

Table 4: Dimension wise deprivation of Balochistan province

	Urban Balochistan				Rural Balochistan			
Dimension	k =3	k =4	k =5	k =6	k =3	k =4	k =5	k =6
Electricity	0.013	0.014	0.015	0.024	0.100	0.103	0.107	0.112
Water	0.038	0.047	0.057	0.041	0.095	0.096	0.098	0.101
Sanitation	0.134	0.142	0.141	0.133	0.145	0.142	0.136	0.130
Asset	0.087	0.115	0.135	0.145	0.112	0.114	0.119	0.123
Housing	0.166	0.148	0.136	0.137	0.110	0.110	0.109	0.106
Education	0.057	0.063	0.082	0.105	0.090	0.093	0.097	0.102
Expenditure	0.072	0.090	0.096	0.115	0.061	0.062	0.065	0.068
Empow-erment	0.224	0.186	0.161	0.146	0.141	0.136	0.129	0.123
Land	0.205	0.191	0.173	0.150	0.142	0.139	0.135	0.130

Table 5: List of assets

S. No.	Assets
01	Refrigerator
02	Freezer
03	Air conditioner
04	Air cooler
05	Geyser
06	Washing machine
07	Camera movie
08	Cooking range
09	Car/vehicle
10	Motorcycle
11	tv
12	vcr
13	Vacuum cleaner
14	pc

Table 6: List of property items

S. No.	Property
01	Agriculture land
02	Non-agriculture land
03	Residential building
04	Commercial building