

Iulian Boldea, Dumitru-Mircea Buda (Editors)

**CONVERGENT DISCOURSES. Exploring the Contexts of Communication**

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## **A MULTIDIMENSIONAL APPROACH OF POVERTY - THE CASE OF ROMANIA**

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*Abstract: The purpose of this paper is to analyze the facets of poverty in an international context for the case of Romania. Using the most recent available data and the exploratory factor analysis as research technique, poverty is approached through its different dimensions, such as education, health and others. Economic implications are discussed, results are interpreted and policy measures are drawn as conclusions.*

*Keywords: poverty, principal component analysis, health, economic and social environment*

The reduction of the number of persons at risk of poverty or social exclusion in the European Union (EU) is one of the key targets of the Europe 2020 strategy while the first goal of the United Nations Millennium Development Goals is to eradicate extreme poverty and hunger. The EU's agenda for growth and jobs for the current decade emphasizes smart, sustainable and inclusive growth as a way to overcome the structural weakness in Europe's economy, to improve its competitiveness and productivity, and to underpin a sustainable social market economy. Poverty reduction is a key policy component stated by Europe 2020 strategy, and it can be targeted providing better opportunities for employment and education. Furthermore, the United Nations Millennium Development Goals (UN MDGs) have followed three targets: to halve, between 1990 and 2015, the proportion of people whose income is less than \$1.25 a day; to achieve full and productive employment and decent work for all, including women and young people and nevertheless, to halve, between 1990 and 2015, the proportion of people who suffer from hunger.

Poverty is a complex phenomenon, with many different causes and effects. Its determinants vary on a wide range, from regional and community characteristics, to household and individual ones, basically from general to specific, from macro environment to micro environment, from low to high controllable by people themselves. Table no 1 represents a classification of poverty key correlates, as presented by a World Bank Poverty Manual. Regional characteristics include the degree of isolation and access to markets and services, infrastructure, governance, land quality and environment, that are very little controllable by people. Community characteristics refer to land distribution and access to different facilities such as electricity, water, public schools, medical units, etc. Furthermore, household characteristics consider the size of the household, its employment status and income structure, household assets and its health and education on average. Individual causes refer to age,

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education, education, health and ethnicity of one. All these key features have to be considered when addressing the multifaceted problem of poverty.

Table no. 1 Main determinants of poverty

Regional characteristics	Isolation/remoteness, including less infrastructure and poorer access to markets and services Resource base, including land availability and quality. Weather (e.g. are typhoons or droughts common) and environmental conditions (e.g. frequency of earthquakes) Regional governance and management Inequality
Community characteristics	Infrastructure (e.g. is there piped water, access to a tarred road) Land distribution Access to public goods and services (e.g. proximity of schools, clinics) Social structure and social capital
Household characteristics	Size of household Dependency ratio (i.e. unemployed old and young relative to working age adults) Gender of head; or of household adults on average Assets (typically including land, tools and other means of production, housing, jewelry) Employment and income structure (i.e. proportion of adults employed; type of work – wage labor or self employment; remittance inflows) Health and education of household members on average
Individual characteristics	Age Education Employment status Health status Ethnicity

Source: Houghton and Khandker, Poverty Manual, pag.132

A multidimensional approach of poverty has been promoted by the specialized literature in the field for decades. No one indicator alone can capture the multiple aspects that constitute poverty, neither the income, nor consumption, either at a micro economical or macro economical level. Gebreslassie (2015) approaches poverty through its multidimensional sides, by measuring deprivation in ten dimensions: education, health condition, housing quality, electrification, and access to safe drinking water, sanitation, energy for cooking, per capita income, house congestion and child health.

Moreover, The Oxford Poverty and Human Development Initiative (OPHI) provides an yearly Global Multidimensional Poverty Index (MPI), by using different indicators. Multidimensional poverty is considered as made up of several factors that constitute poor people's experience of deprivation – poor health, lack of education, inadequate living standard, lack of income, disempowerment, poor quality of work and threat from violence. Stating that even poor people

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themselves describe their experience of poverty as multidimensional, the OPHI consider that the more policy-relevant information there is available on poverty, the better-equipped policy makers will be to reduce it. The Global MPI was updated in June 2016 and it currently covers 102 countries in total, with at most ten indicators included for each (Alkire S. et al., 2016).

Polin V. and Raitano M. (2012) use cluster analysis as research technique and apply it on the “old” and “new” EU countries in order to group them according to the income poverty mobility. Analyses of their paper are carried out grouping EU countries in the five usual geographical clusters. The results show that events related to the labor market are the most important in all clusters both because of their frequency and their relevant impact on poverty transitions.

Ferro-Luzzi G. et al. (2006) consider that poverty is much more than financial deprivation, so their paper integrates various components of poverty, related to health, schooling, living environment, psychological state as well as social tides, aggregating them for the case of Switzerland through factor analysis, and further using the resulted factors into cluster analysis to determine population's subgroups that are unevenly affected by the various dimensions of poverty, thus identifying the poor. Finally, a logit regression is run to find the determinants of poverty.

Principal components analysis and cluster analysis are also used for estimating the level of poverty by Xhafaj E. and Nurja I. (2015). Using data from Living Standards Measurements Surveys (LSMS) in 2012, the principal components analysis is firstly applied in order to create an asset index which gave the social economic status of each household, starting from 16 initial variables characteristic to each household. Secondly, the K means cluster analysis is used for segmenting the data in such a way that the within-cluster variation is minimized, in order to provide a full background of the partition of households according to the social-economic groups: low, medium and high. More than half of the households in this study have a low social-economic status.

Urean C.A. (2015) fundamentals her findings on the following statement: under certain conditions, any person, regardless of her/his particular situation, may become poor for a longer or shorter time. The study focuses on Romania and discusses the evolution of its relative poverty rates.

For Europe, poverty and its reduction has always been a top priority, governments fighting it continuously. In 2014, 122.3 million people, or 24.4 % of the population in the EU-28 were *at risk of poverty or social exclusion (AROPE)*, compared with 24.5 % in 2013, according to the Eurostat poverty statistics. This means that these people were at least in one of the following conditions:

- at risk of poverty after social transfers (income poverty);
- severely materially deprived or
- living in households with very low work intensity.

The at-risk-of-poverty rate has slightly decreased at EU-28 level between 2013 and 2014 by 0.1 percentage points (pp). Still, in 2014, more than a third of the European population was at risk of poverty or social exclusion in three EU Member States: Romania (40.2 %), Bulgaria (40.1 %) and Greece (36.0 %). A similar situation was registered in 2015, because according to the most recent available data on Eurostat, the Romanian population at risk of poverty or social exclusion was of

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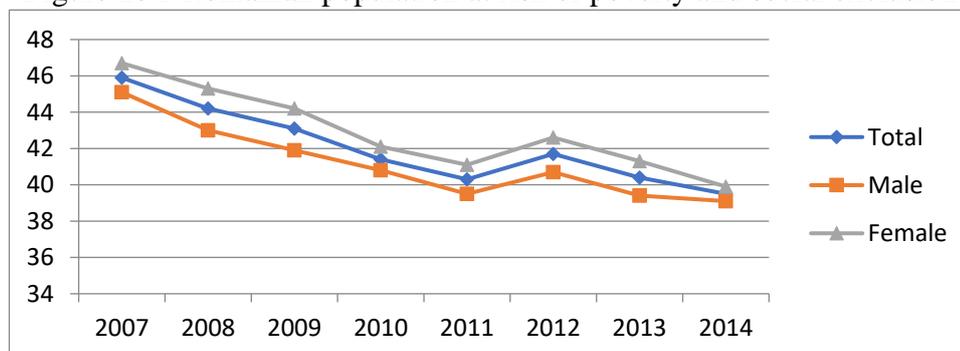
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37.3%, with a slightly higher prevalence among females, while Bulgaria had 41.3% of its population at risk of poverty and Greece had 35.7% of the total population respectively.

Romania is the second poorest European country, and just like with the rest of other social conditions', lifestyle and healthcare indicators, it finds itself at the very bottom of the European ranking, close to Bulgaria. Figure no 1 represents the Romanian AROPE population and its evolution for the 2007-2014 time interval. Its total level has almost maintained a decreasing trend, with the lowest level in 2014, the most recent available data. Poverty is more prevalent for women than for men. Despite the downward trend of Romania's AROPE population, Romania is one of the poorest European countries, just like Bulgaria and Greece.

Figure no 1 Romanian population at risk of poverty and social exclusion



Source: Author's processings based on data from insse.ro

On age groups, the AROPE Romanian population is unfortunately mainly represented by children and adolescents for the entire analyzed time period, as Figure no 2 points out. The evolution of the AROPE old age population is fluctuating. A possible explanation for the elder people to be the least poor in the recent years is that the 18-64 year old age group is highly affected by unemployment and they also have higher intellectual and material needs. Consumption is also higher for younger people than for elder people.

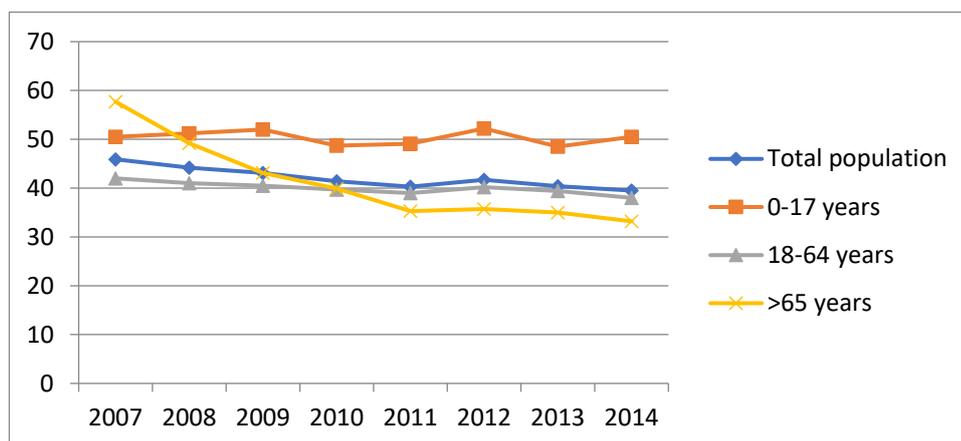
Figure no 2 Romania's AROPE population on age groups

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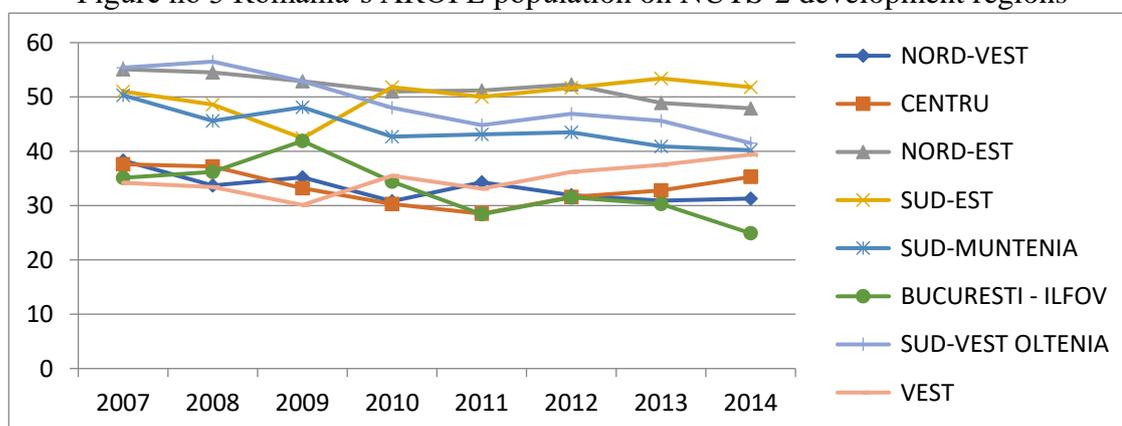
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Source: Author's processings based on data from insse.ro

According to Figure no. 3, there exists a disparity among the eight development regions of Romania from the point of view of its AROPE population. As expected, the richest parts have the fewest people at risk of poverty and social exclusion, such as the Bucuresti-Ilfov capital city region and the North-Western region. The most people at risk of poverty are to be found in The North-East and South-East regions.

Figure no 3 Romania's AROPE population on NUTS-2 development regions



Source: Author's processings based on data from insse.ro

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These data picture Romania as one of the poorest European countries. Still, within a worldwide context, the countries ranking high on poverty are African countries. As such, according to a recent Global Financial Magazine article, the poorest 25 countries ranked based on their 2015 per capita Gross Domestic Product (GDP at Power Purchasing Parity PPP) are from Africa. Thus the need to consider the global poverty problem the countries are facing and the multiple variables that define it.

The data used in following part of the study have been downloaded from the World Bank database on World Development Indicators' Statistics, by initially selecting 22 variables for all the 264 countries available. The study covers as many world countries as possible, including Romania, in order to evaluate poverty at a worldwide level. The most recent and complete data have been used, i.e. for the year 2013, in order to get a nowadays perspective on the poverty status determinants of the worldwide population. Some data were available for 2014 and very few for 2015, so out of the initial data bases, the data for the year 2013 were kept. Factor analysis requires a proportion of at least 5 times as many countries as number of variables to submit. As such, out of the initial observations, the variables with many missing observations were eliminated, and some countries as well. 161 countries were left, and 17 variables have initially been imported into the SPSS software: Children out of school (% of primary school age); Government expenditure on education, total (% of GDP); School enrollment, primary (% gross); Primary completion rate, total (% of relevant age group); Rural population (% of total population); Final consumption expenditure, etc. (% of GDP); GDP per capita (constant 2010 US\$); Gross capital formation (% of GDP); Population, female (% of total); Population ages 65 and above (% of total); Out-of-pocket health expenditure (% of total expenditure on health); Life expectancy at birth, total (years); Health expenditure, total (% of GDP); Internet users (per 100 people); Research and development expenditure (% of GDP); Employers, total (% of employment) and Vulnerable employment, total (% of total employment). These variables have previously been validated by the specialized literature as poverty correlates. The missing data existing in some variables were replaced with their mean value. As such, the descriptive statistics for the variables to undergo principal components analysis are to be found in Table no 2:

Table no 2 Descriptive statistics of the variables candidate to PCA

	N	Minimum	Maximum	Mean	Std. Deviation
Internet_users	161	1.1000	96.5468	43.501839	28.7616029
Life_expectancy_at_birth	161	48.9379	83.8317	71.259086	8.6301589
Out_of_pocket_health_exp	161	1.9971	74.8469	31.470395	17.3845468
Population_65+	161	.9419	25.0093	8.490771	5.8207933
Pop_fem	161	25.8840	54.2215	50.014540	3.2560148
Primary_completion_rate	161	38.0571	117.0110	90.894181	13.1680741

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R&D_exp	161	.0514	4.2133	1.220541	.6492273
Rural_pop	161	.0000	91.3340	42.285366	23.5084190
Vulnerable_employment	161	.2000	88.8000	24.053332	13.0504806
Children_out_of_school	161	.0500	42.9397	7.405984	7.5638572
Employers_total	161	.3000	83.9000	5.538461	6.9720087
Final_consumption_expenditure	161	25.7097	149.2039	81.434822	17.5631555
GDP_per_capita	161	219.5329	102241.9247	14040.243557	19218.9969220
Government_expenditure_education	161	1.9662	7.6999	4.283762	.9098005
Gross_capital_formation	161	6.4493	56.0206	24.117233	8.4516413
Gross_enrollment	161	67.2782	145.8816	105.408832	10.7696805
Health_expenditure	161	1.2868	16.8977	6.784694	2.4917520
Valid N (listwise)	161				

Source: Author's processings in SPSS

All these variables are ordinal variables, obtained by applying different measuring scales. Moreover, these variables are correlated, as the correlation matrix points out. The main objective of exploratory factor analysis is to reduce the data and their dimensions, in order to better interpret them, relying on the underneath correlations existing between the considered variables. The new resulting components would be linear combinations of the initial variables.

Table no 3 Variables' communalities, initial and extracted by PCA extraction method

	Initial	Extraction
Children_out_of_school	1.000	.873
GDP_per_capita	1.000	.740
Government_expenditure_education	1.000	.662
Gross_enrollment	1.000	.678
Health_expenditure	1.000	.675
Life_expectancy_at_birth	1.000	.838
Out_of_pocket_health_exp	1.000	.727
Population_65+	1.000	.852
Pop_fem	1.000	.861
Primary_completion_rate	1.000	.752
Rural_pop	1.000	.735

Source: Author's processings in SPSS

The principal component analysis technique was carried out, and for the dimension reduction of data, several factors were extracted. Table no 3 presents the communalities after extraction, i.e. how much of the initial information is further found within the reduced dimensional space. Some

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variables further had to be dropped in order to have a good extraction, because generally  $h^2$  values above 0.5 are to be considered. A communality represents the amount of variance in that variable accounted for by all the components. For example, all extracted components account for 87.3% of the variance in variable Children\_out\_of\_school ( $h^2 = .873$ ).

When deriving factors, several criteria may be applied in order to determine the number of factors to extract. The percentage of variance criterion applied in social sciences considers solutions that account for 60 percent of the total variance, or even less, as satisfactory. According to table no 4, four factors have the initial eigenvalues higher than 1, and for these four factors, the cumulative percentage in the extraction sums of squared loadings is above 76%.

Table no 4 Total variance explained by components in PCA

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.929	35.714	35.714	3.929	35.714	35.714
2	1.775	16.136	51.850	1.775	16.136	51.850
3	1.429	12.990	64.840	1.429	12.990	64.840
4	1.261	11.465	76.305	1.261	11.465	76.305
5	.848	7.710	84.015			
6	.505	4.593	88.608			
7	.366	3.324	91.932			
8	.327	2.976	94.908			
9	.230	2.095	97.003			
10	.185	1.683	98.685			
11	.145	1.315	100.000			

Source: Author's processings in SPSS

The scree test criterion indicates the maximum number of factors to extract, at the point at which the curve first begins to straighten out (i.e. factors before the inflection point). The scree plot is represented in Figure no 4.

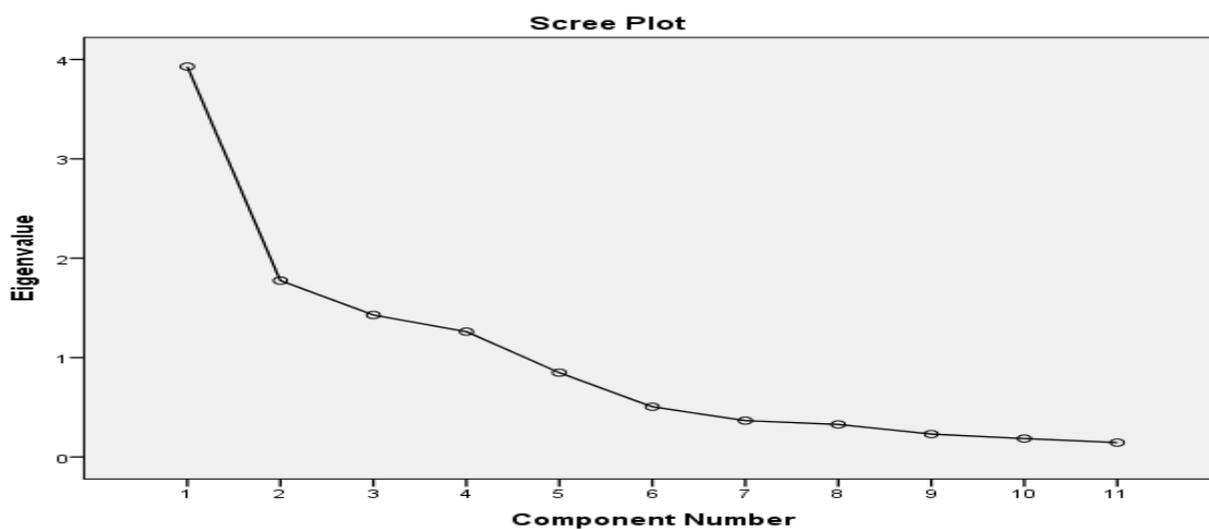
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Figure no 4 The scree plot



Source: Author's processings in SPSS

The component matrix with the four extracted components has the following heavy loadings for each variable, as presented in Table no 5. Factor loadings are the correlation of each variable and the factor. Higher loadings make those variables representative of the factor. Factor loadings are the means of interpreting the role each variable plays in defining each factor.

Table no 5 Component matrix

	Component			
	1	2	3	4
Life_expectancy_at_birth	.889			
Population_65+	.824			
Rural_pop	-.749			
GDP_per_capita	.745			
Primary_completion_rate				
Health_expenditure				
Gross_enrollment		.806		
Children_out_of_school	-.648	-.658		
Pop_fem			.854	
Out_of_pocket_health_exp				.709
Government_expenditure_education				-.697

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Source: Author's processings in SPSS

Several iterations have been carried out until a final solution has been achieved. *Cross loadings* are undesirable and they have been eliminated through deletion of variables and rotations. Finally, KMO and Bartlett's test of sphericity tests the null hypothesis of uncorrelated variables and a bad quality PCA to the alternative hypothesis of an existing correlation between variables and a high quality PCA. Essentially, the Kaiser-Meyer-Olking (KMO) statistic should be greater than 0.600 and the Bartlett's test should be significant (e.g.  $p < .05$ ). The closer the KMO measure of sampling adequacy is to 1, the better the analysis. A rule of thumb is to have a KMO of at least 0.5.

Table no 6 gives a KMO statistic of 0.723, which is good.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.723
Approx. Chi-Square		859.564
Bartlett's Test of Sphericity	df	55
	Sig.	.000

Source: Author's processings in SPSS

The Equamax solution proved best, and the following matrix has been obtained:

Table no 7 Component matrix after Equamax rotation

	Component			
	1	2	3	4
Rural_pop	-.848			
GDP_per_capita	.836			
Life_expectancy_at_birth	.803			
Population_65+	.649			
Children_out_of_school		-.888		
Primary_completion_rate		.805		
Gross_enrollment		.716		
Pop_fem			.885	
Health_expenditure			.655	
Out_of_pocket_health_exp				-.785
Government_expenditure_education				.775

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Extraction Method: Principal Component Analysis.

Rotation Method: Equamax with Kaiser Normalization.

Rotation converged in 5 iterations.

*Source:* Author's processings in SPSS

Factor rotation should simplify the factor structure. The rotated factor loadings are interpreted for each variable in order to determine the variable's role and contribution in determining the factor structure.

The total variance explained is of 76.305%, through four components. The first and most important component accounts for more than one third of the total variance explained (35.714%), while the following three components account for 16.136%, 12.990% and 11.465% respectively. The eigenvectors are orthogonal, so they're not correlated, hence 0 covariance. The rotated component matrix is used because variables have to mainly load on a single factor. Basically, the ultimate effect of rotating the factor matrix by using Equamax orthogonal factor rotation is to redistribute the variance from earlier factors to later ones, to achieve a simpler, theoretically more meaningful factor pattern.

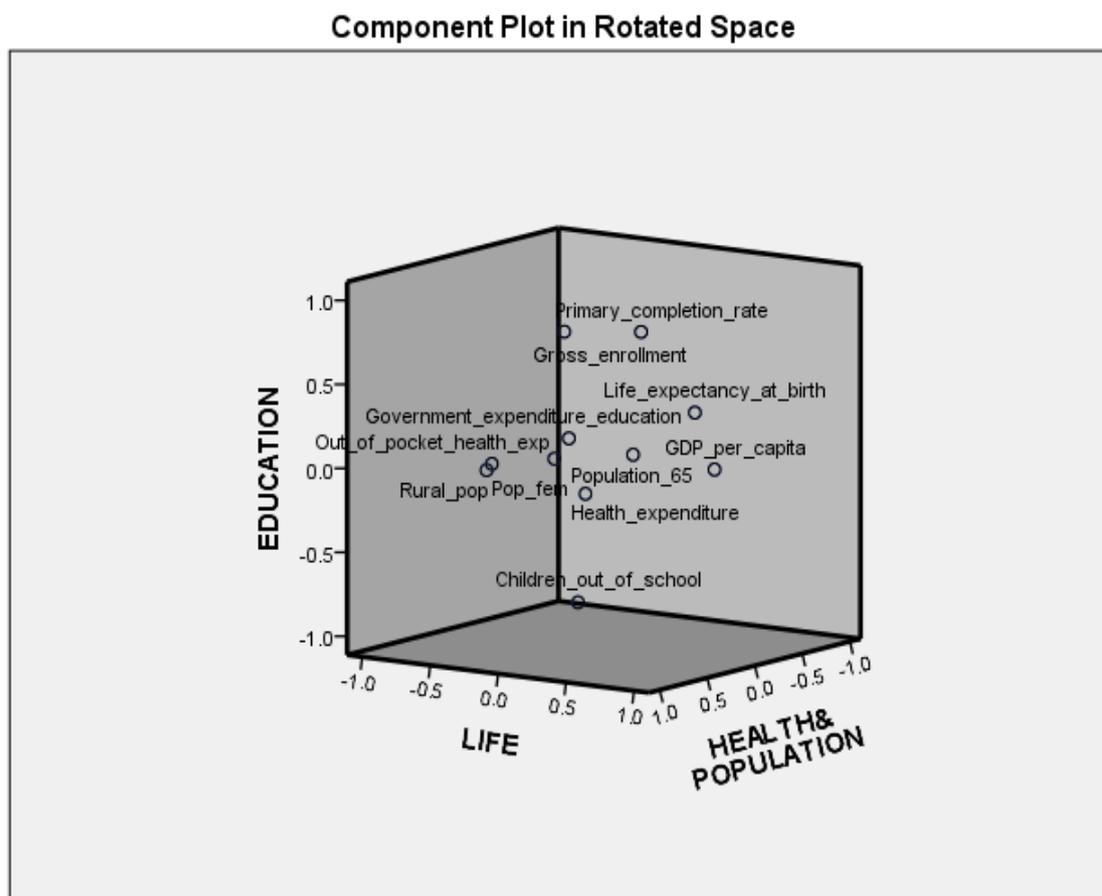
Figure no 5 The four dimensional factor model of Poverty

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Source: Author's processings in SPSS

The remaining 11 variables are found on a linear combination on each component, as Figure no 5 points out. For the first component, suggestively entitled *Life*, higher coefficients are held by the Rural population, the weight of the Population aged 65 and above within the total population, the Per capita GDP and nevertheless, the Life expectancy at birth, a set of key variables which characterize some main aspects of the quality of people's life. The second component, suggestively entitled *Education* is obtained as  $-0.888 \text{ Children out of school} + 0.805 \text{ Primary completion rate} + 0.716 \text{ Gross enrollment}$ . The third component, *Health&Population*, is given by Healthcare expenditures and The weight of the female population within the total population. To a certain extent, we may interpret that the total healthcare expenditures are higher for the female population of a country as females do live longer than males and imply maternity costs as well. The fourth component, *Expenses*, is defined mainly by the Governmental expenses on education and the Out of pocket healthcare expenses, and cannot be plotted within a three-dimensional space.

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These components are independent variables and may be used for some other multivariate data analysis. Future research perspectives would focus on using these factors as explanatory variables for the Poverty rates of the 161 countries, as the factors are orthogonal. Moreover, the same type of analysis may be applied for data covering different years, in order to evaluate the changes that occurred from one decade to another, depending on the availability of data.

These variables define several facets of *poverty*. If only one factor was extracted and it accounted for sufficient information out of the original variables, the result would be a complex poverty index. The existing debate on which variable to use first when addressing poverty (such as the poverty rate, the number of poor people, various poverty gaps, Gini index, etc) would be solved by the use of a composite poverty variable. Still, the principal component analysis carried out by this paper was not able to aggregate all these variables within a single factor with good results, as the extraction of a single factor only accounted for one third of the initial information contained by the considered variables. Such tasks have been previously performed through a more complex methodology and by aggregating a wide variety of variables. As such, the *multidimensional poverty index* is a country index that reveals the percentage of the population that is multidimensionally poor adjusted by the intensity of the deprivations, being calculated based on data on deprivations in education, health and living standards from ICF Macro Demographic and Health Surveys, United Nations Children's Fund Multiple Indicator Cluster Surveys and some national household surveys, by UNDP. The final purpose is to draw attention upon the persistent problem of world poverty and to come up with valid solutions for reducing and eradicating poverty, increasing people's access to better healthcare services and continuously improving their education level, in order to increase their life quality and standards.

### **Bibliography**

Alkire, S., Jindra, C., Robles, G., and Vaz, A. (2016). "[Multidimensional Poverty Index 2016: Brief methodological note and results](#)." *OPHI Briefing* 42, University of Oxford.

Ferro-Luzzi, Giovanni and Fluckiger, Yves and Weber, Sylvain, A Cluster Analysis of Multidimensional Poverty in Switzerland (July 2006). Available at SSRN: <http://ssrn.com/abstract=918744> or <http://dx.doi.org/10.2139/ssrn.918744>

Gebreslassie Gebretsadik Hishe, 2015, Comparison of Multidimensional Measurements of Poverty Analysis: Cross Sectional Data Evidence from Tigray, *Journal of Poverty, Investment and Development* [www.iiste.org](http://www.iiste.org), ISSN 2422-846X An International Peer-reviewed Journal, Vol.15, 2015, pag. 134

Houghton and Khandker, Poverty Manual, All, JH Revision 2005, Chapter 8 Understanding the determinants of poverty, <http://siteresources.worldbank.org/PGLP/Resources/PMch8.pdf>

Polin, Veronica and Raitano, Michele, Poverty Dynamics in Clusters of European Union Countries: Related Events and Main Determinants (March 2012). Available at SSRN: <http://ssrn.com/abstract=2025018> or <http://dx.doi.org/10.2139/ssrn.2025018>

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Urean Claudia Andreea, 2015, "POVERTY IN ROMANIA DURING THE PERIOD 2007-2013. DESCRIPTIVE ANALYSIS", Annals of the „Constantin Brâncuși” University of Târgu Jiu, Economy Series, Special Issue ECO-TREND 2015 – Performance, Competitiveness, Creativity, „ACADEMICA BRÂNCUȘI” PUBLISHER, ISSN 2344 – 3685/ISSN-L 1844 – 7007, page 186

Văidean Viorela-Ligia, Health, Nutrition and Population – A 3D Factor Model, Debates on Globalization. Approaching National Identity Through Intercultural Dialogue Studies and Articles Section: Social Sciences, Vol. Social Sciences, pg. 12, 2015, ISBN 987-606-93692-5-8

Khafaj Evgjeni and Nurja Ines, 2015, The Principal Components Analysis and Cluster Analysis as Tools for the Estimation of Poverty, an Albanian Case Study, International Journal of Science and Research (IJSR) ISSN (Online): 2319-7064, Volume 4 Issue 1, January 2015, page 1240.

Global Financial Magazine, The poorest countries in the world, April 2016, <https://www.gfmag.com/global-data/economic-data/the-poorest-countries-in-the-world?page=1>

Oxford Poverty and Human Development Initiative, OPHI, Policy – A Multidimensional Approach, <http://www.ophi.org.uk/policy/multidimensional-poverty-index/>

People at risk of poverty or social exclusion, [http://ec.europa.eu/eurostat/statistics-explained/index.php/People\\_at\\_risk\\_of\\_poverty\\_or\\_social\\_exclusion](http://ec.europa.eu/eurostat/statistics-explained/index.php/People_at_risk_of_poverty_or_social_exclusion)

United Nations Development Programme, Human Development Reports , “Human Development Report 2015: Work for Human Development" <http://hdr.undp.org/en/content/multidimensional-poverty-index>, <http://hdr.undp.org>