

## The dynamic of poverty measurement indexes, from HDI to MPI

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### Abstract

This study is focused on the dynamic poverty measurement from Human Development Index (HDI) to Multi Dimensional Poverty (MPI), as poverty indicators from Sen to Foster-Alkire indexes.

The HDI takes into consideration three dimensions and four indexes, the MPI goes further. The dimensions and indicators exceed the limits of classical measurements of poverty, creates the possibilities of measuring and comparing multidimensional poverty. Multidimensional Poverty Index helps to analyze the spectrum of poverty, understanding of sustainable development emergency, as well as it is a great help for reading poverty phenomenon on a three dimensional aspect and under the sub-meaning of 10 different indicators. MPI calculation offers further comparative analyses of MPI Albania and Eastern Balkan countries. Comprehensive indexes are generated and applied, but doesn't mean their conclusions are translated (converted) into comprehensive policies as well. The data and the indicators for poverty measurement in Albania are not frequently generated and calculated due to LSMS missing after 2012. So there is a big gap in poverty reports. Finally, we argue how the measures chosen to use in poverty measurement of course can lead or mislead towards the process of policy making due to the great practical relevance of measurement methodologies.

**Keywords:** poverty measurement, multidimensional poverty index HDI, MPI, deprivation, incidence of poverty.

### Introduction

Maybe, the most delicate point of discussion of poverty assessment is the measurement method and indexes. How can they highlight if an individual in a given place and time is poor or not? The poverty as a multidimensional phenomenon is one of the most delicate issues of policies related with social well being of a country. So on, it is an important part of debates by policy makers, decision makers, economists and academics. According to the World Bank Reports, Albania is one of the poorest countries of the south-east European Region. After a decreasing trend until 2008, LSMS 2012 made another time reconfirmation of increasing poverty threat. The definition of poverty is closely related with the method used to measure it. As we mentioned above, the result given by multidimensional poverty index (MPI) are different to INSTAT measurements which use LSMS – method. This difference confuses even policy makers, which is more accurate? The Poverty measurement until 2010 was focused on absolute or relative poverty indicators. The authors of multidimensional poverty measurement are based on Human Development Index (HDI). HDI is an

index created in 1990 by Amartya Sen and it is used by UNDP in its reports until 2010. HDI takes into consideration three dimensions and four indexes:

	Dimension	Index
HDI	Health	Life expectancy
	Education	Average years of education
		Expected years of education
	Standard of living	National income per person

**Table 1 :** HDI construction: three dimensions and four indexes

The HDI measure is a multidimensional index used for assessing the economic progress in a country. It has three important dimensions: Education, Health and Living Standard. Improving one of them or all together means better life a less poverty in a country. The Albania HDI goes in binary way with reduction of poverty from 2002 till 2012.

**Table A: Albania's HDI trends based on consistent time series data and new goalposts**

	Life expectancy at birth	Expected years of schooling	Mean years of schooling	GNI per capita (2011 PPP\$)	HDI value
1980	70.2	11.3	6.8	4,780	0.625
1985	71.4	10.5	7.1	4,698	0.623
1990	71.8	10.5	7.4	4,296	0.624
1995	72.2	9.4	8.0	4,037	0.619
2000	74.2	10.1	8.5	5,323	0.656
2005	75.9	11.1	8.8	7,251	0.695
2010	76.9	11.8	9.1	9,248	0.722
2011	77.1	11.8	9.3	9,614	0.728
2012	77.3	11.8	9.3	9,718	0.729
2013	77.6	11.8	9.3	10,004	0.732
2014	77.8	11.8	9.3	9,943	0.733

**Table 2:** Albania's HDI trends.

As we can see, from last column HDI increases from 0.625 to 0.733. But still level is under the 0.744 of high human development countries and less than the average of Europe and Asia countries, it is equal 0,748.

From 2010 UNDP has established for 191 countries an improved methodology and index Multi Dimensional Poverty Index MPI. One of the differences between HDI and MPI is that the last tends to measure not based in general indexes of the income. MPI is wider inclusive, gives wider information and is more flexible for economic politics, because it shows which of the indexes is deprived. It looks like, but HDI has been a head the MPI formulation.

MDP identifies those individuals who fail to achieve those needs generally accepted as minimum and functional freedom.

It is obviously clear, that the method of MPI, even though it is a recent approach, it

will be the base of the development of the theory and implementation in the future. This is a natural assumption, when we notice that the organizations focused on the poverty issue are using this approach (UNDP uses it in its reports since 2010). Based on the published report for Albania we have the following consideration for 2009.

<b>MPI</b>	Dimension	Index (weigh)	<i>Deprived if</i>
	H e a l t h (1/3)	Nutrition (1/6)	<i>A grown up/a child badly fed.</i>
		Infant/child mortality (1/6)	<i>A child dead in a family</i>
	Education (1/3)	Years of attending school (1/6)	<i>None of family members has completed five years of education</i>
		School attendance (1/6)	<i>Any of scholar age children doesn't attend school from 1 to 8 years.</i>
	Standard of living (1/3)	Cooking energy (1/18)	<i>Family cooks with wood energy</i>
		Hygiene (1/18)	<i>The family hygiene is not improved or is improved but shared with other families</i>
		Water (1/18)	<i>The family doesn't access drinking water, or the drinking water is 30 minutes far away</i>
		Electricity (1/18)	<i>The family doesn't have electricity</i>
		Floor (1/18)	<i>The family has got a dirty sandy floor</i>
	Assets (1/18)	<i>The family doesn't own more than one of the assets like radio, television, telephone, bicycle, motorcycle or fridge and doesn't own a car or a lorry.</i>	

**Table 3:** The structure of Multi-Dimensional Poverty (MDP) in 3 dimensions and ten indexes: - Reference: Alkire and Santos.

The Oxford Poverty & Human Development Initiative based on consideration and results of Alkire, Roche, Santos, & Seth report the main indexes of MPI for Albania.

Issue	Value
<b>MPI</b> (Multi Dimensional Index of Poverty)	0.005
<b>H</b> (Distribution of Poverty)	1.4%
<b>A</b> (The average concentration among the poor )	37.7%
The percentage of population affected by poverty	7.4%
The percentage of population in rough poverty	0.1%

**Table 4:** Summary of MPI report Albania

Source: Alkire, S., A. Conconi & J.M. Roche.

Thus, the percentage of population in rough poverty is considered to be 0.1%, the percentage of population affected by poverty is 7.4%, while the two components of MPI which are (H) and the average concentration between the poor (A) result in the level of 1.4% and 37.7% respectively. Knowing that:

$$MPI = H \times A$$

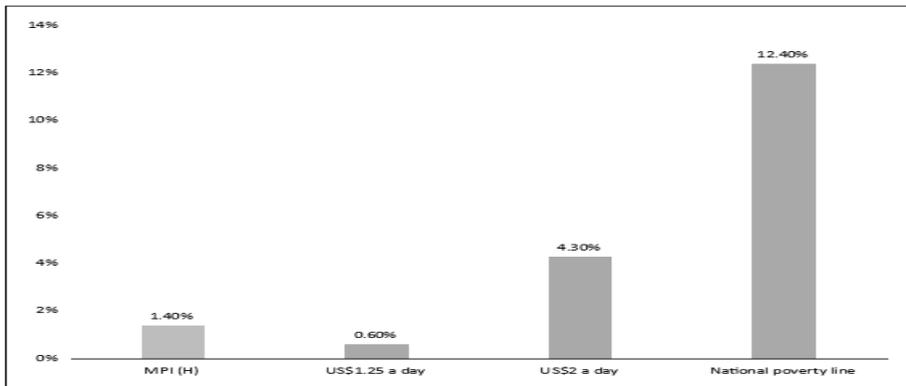
$$MPI = 1.4\% \times 37.7\%$$

it is estimated even the value of multi- dimensional poverty index which is 0.005.

These figures can be interpreted:

- ✓ For the poverty distribution (H=1.4%): 1.4% of the population is poor according to MPI ( they are deprived from at least 33.33% of the weigh index, according to the definition):
- ✓ For the average concentration among the poor (A=37.7%): those who are poor according to MPI suffer from deprivation in the level of 37.7% of indexes, as an average;
- ✓ The MPI Value is a figure which helps us to give a position to our country compared to others. The lower this figure the multidimensional poverty is.

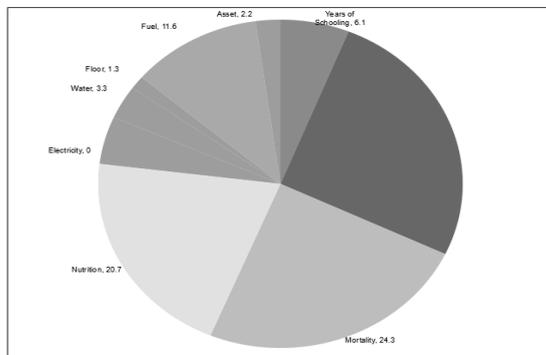
The results brought by MPI are better understood if they are compared with other applicative methods. So, if we showed in a chart the poverty distribution (H) and the poverty lines we would have the following figures.



**Figure 1:** The comparison of poverty values according to different measurements  
*Source of information: Alkire, Conconi & Roche*

This gives us the view which helps us to understand the difference between the methods used for poverty measurements. If we base on the poverty line method with 1.25 dollar per day, the poverty in Albania is 0.6%. Expressed differently, this means that 0.6% of the population lives with less than 1.25 American dollar per day. The poverty according to poverty line in the level of 2 dollar per day is naturally higher than that of 1.25 dollar per day, 4.3% or 4.3% of the population lives with less than 2 dollar per day. The national line of poverty is reported 12.4%, which is much higher than two previous lines. The report of poverty per person according to MPI (H) results to be 1.4% and this is higher than the value of poverty line in 1.25 dollar per day and lower than that of 2 dollar per day ( $US\$1.25 \text{ a day} < H < US\$2 \text{ a day}$ ). The last one is one of the finding of MPI method, where the value of multi-dimensional poverty shows that in Albania there are fewer poor than those expressed by National Lines of Poverty and the poverty line in 2 dollar per day. The difference between them is quite obvious.

The pie chart gives us information of how is poverty in Albania composed according to MPI index. This means that we can understand which the major factors of poverty are or which the poverty origin is. For example, the value 26 of school attendance by children shows that 26% of poor population and deprived in each index suffers from not school attendance as the biggest cause of poverty.

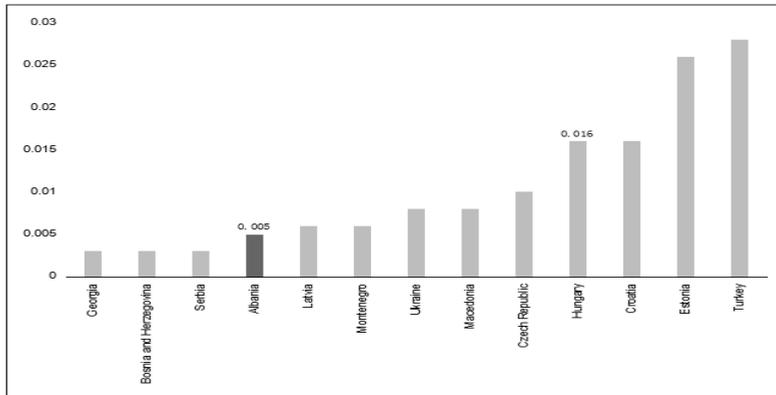


**Figure 2:** Distribution in percentage of poverty according to indexes.  
*Sources of information: Alkire, Conconi & Roche*

If we join the value of school years (6.1%) with that of school attendance by scholar age children (26%) than we have the value which corresponds the measure of education (32%) and implies that 32% of poor population has a problem with education as a cause of poverty. Furthermore, the measure of health reaches the value of 44.9% (24,3%+20.7%). The standard of living makes up the rest value of 23%. From this we noticed that health makes the biggest part or we can say that health is the biggest factor as a cause multidimensional poverty in Albania. To sum up, the index of school attendance by children is the biggest cause of poverty, while health is the measure which forms and causes the biggest part of the poverty. Electricity index is the only one which has the value of 0%. So, there is no poverty caused by electricity.

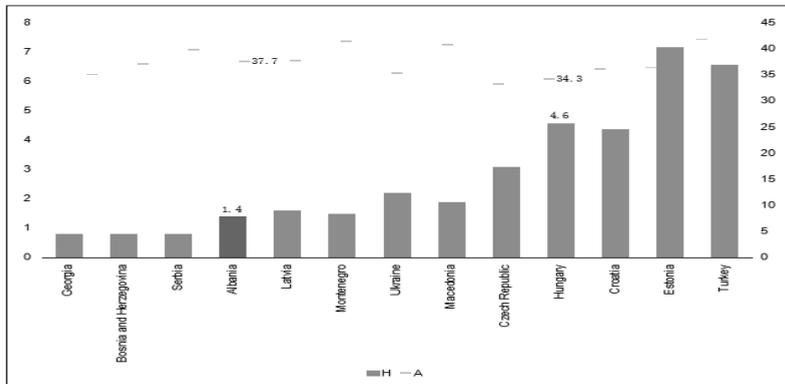
One of the advantages of MPI is; it creates the orientation of policies exactly where the poverty arises. If we stop and analyze the MPI composition in indexes we will understand that despite the fact which is the origin of poverty, it may be necessary to concentrate only on one factor and not spend energy and efforts on factors which may not have urgent need to be improved. Thus, in Albanian case according to MPI the efforts of policy makers facing the poverty should be focused on the measure of health. So making the biggest part in MPI. On the other hand, if we are further interested, the school attendance index by scholar age children has the highest value of depriving cases, a value which helps us to put it first in the "struggle" against the phenomena of the school abundance. This helps even the government agency clarifying where the problem is. This index is followed by that of nutrition, having a high level of deprivation in population. Still clearer, the economic politics related to struggle against poverty there is no necessary to focus on electricity index because it is reported to be a non-deprived index in Albania.

Now, let us focus on the analyses of MPI in region. Firstly the ranking. Based on the found data by the Oxford University, we can rank countries under development with low level income, where Albania is positioned better than countries like Check Republic, Hungary and Croatia.



**Figure 3:** Ranking of several regional countries according to MPI  
 Source of information: Alkire, Concon & Roche.

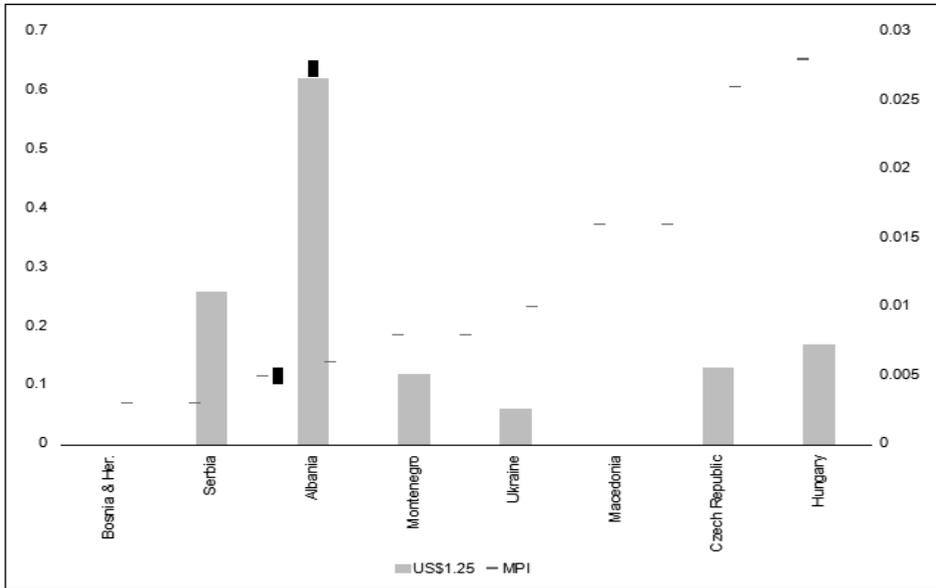
What happens with ranking based on poverty distribution and its intensity? As far as poverty distribution is concerned (H), there isn't much difference compared with ranking based on MPI. Albania has got a low level of this measure when we compare it with chosen countries. Concerning the poverty concentration, the rank has got some differences where Albania passes to countries with higher poverty.



**Figure 4:** Ranking of some regional countries according poverty shown by H (Distribution) and A(intensity)  
 Source of information: Alkire, Concon & Roche.

The illustration of ranking according to MPI and poverty line in 1.25 dollar per day helps us understand how assessments of these two poverty measurements differ. If we refer to poverty line measurement, Albania is the poorest country among others with a value in a level 0.6. But, MPI poverty assessment classifies it much better,

0.005. At this point, many governments are skeptic with figure of MPI. But on the other hand, the assessment of poverty only by income has got its own drawbacks. Anyway, the clash between these two measures is because of MPI considers ten indexes and measures them as quality variable thus widening the poverty body.



**Figure 5:** Ranking of some regional countries according to MPI (right side) and poverty line in 1.25 dollar per day (left side).

Source of information: Alkire, Concon & Roche.

Let's come back again to the composition of MPI, but this time according to the countries analyzed. Let us try to understand that the poverty origin varies from one economy to another. Exactly this is one of the undisputable advantages of multi-dimensional method, where the governments are presented with the profile of the poverty origin of their own country and from here on they achieve to orientate their policies in accordance to the urgency rank. So, if for Albania the most problematic index is school attendance by scholar age children, in other countries this index may be not. Concretely, Bosnia and Herzegovina suffers from bad nutrition and then is followed by years of education. Serbia and Macedonia suffer more from nutrition and it's followed by school attendance. And so on and so forth.

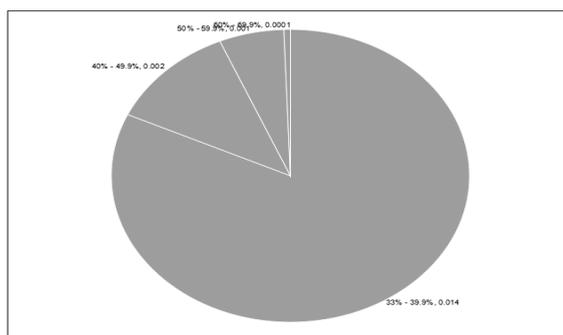
Albanian situation focused on MPI shows the level 0.005, which one is a lower level among countries under development and with poor income. The index of health is reported more problematic than two other indexes, while that of school attendance is the most deprived index. These findings are not uniform among poor countries. And now we come to the conclusion that many authors have previously emphasized: poverty is caused and has a different nature for different countries, even inside the

country.

Country	MPI	Contribution of each measure in poverty			Living Standard (10 indicators)									
		Education	Health	Living Standards	Years of Education	School Attendance	Mortality (each age)	Nutrition	Electric Power	Hygiene	Water	Floor	Energy for cooking	Property
Bosnia and Herzegovina	0.003	29.2	<u>51.8</u>	19.0	19.8	9.4		<u>51.8</u>	1.2	2.7	1.4	0.8	8.6	4.3
Serbia	0.003	30.5	<u>40.1</u>	29.4	21.3	9.2		<u>40.1</u>	1.1	3.9	1.8	5.8	11.0	5.7
Albania	0.005	32.0	<u>44.9</u>	23.0	6.1	<u>26.0</u>	24.3	20.7	0.0	4.7	3.3	1.3	11.6	2.2
Montenegro	0.006	37.5	<u>47.6</u>	14.9	17.5	20.0		<u>47.6</u>	0.4	3.2	1.9	0.4	8.0	1.0
Ukraine	0.008	4.7	<u>91.1</u>	4.2	1.2	3.5		<u>91.1</u>	0.1	1.0	0.4	0.2	1.8	0.7
Macqdonia	0.008	59.9*	12.8	27.3	28.9	<u>30.9</u>	10.5	2.4	1.1	5.5	2.6	4.6	10.3	3.3
Czech Republic	0.010	0.0	<u>99.9</u>	0.1	0.0			<u>99.9</u>	0.0	0.0	0.1	0.0	0.0	0.1
Hungary	0.016	1.8	<u>95.6</u>	2.7	1.8			<u>95.6</u>	0.0	0.0	0.0	2.0	0.0	0.7
Croatia	0.016	45.0	<u>46.7</u>	8.3	45.0			<u>46.7</u>	0.0	1.0	0.3	0.2	4.3	2.4
Estonia	0.026	<u>91.2</u>	1.2	7.6	<u>91.2</u>		0.0	1.2	0.0	1.2	0.6	0.0	5.1	0.8
Turkey	0.028	<u>42.3</u>	38.4	19.2	9.1	33.2	30.0	8.4	0.0	7.8	4.9	3.3		3.2

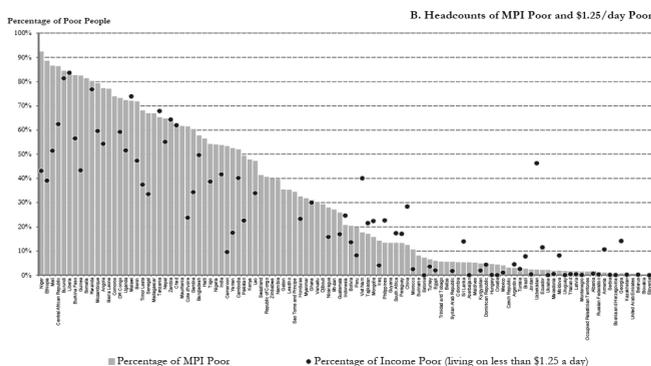
**Table 4:** The contribution of MPI elements on poverty  
 Source of information: Alkire, Concon & Roche.

Concerning the poverty intensity among multidimensional poor, we have to mention that its interpretation is closely related to the fact that a family, a 100% deprived at poverty indexes faces bigger poverty intensity than a family 40% deprived. Based on this logic, the poverty intensity analysis is built. Let us concentrate in the following chart which is a part of report for Albania. The identified part 33%-39.9% forms that part of population which suffers 39.9% of the poverty indexes. This is the biggest part of multidimensional poverty in Albania. According to MPI 1.4% is the percentage of poor population with this intensity, or 0.2% which represents the percentage of people who are deprived in 40% of poverty indexes.



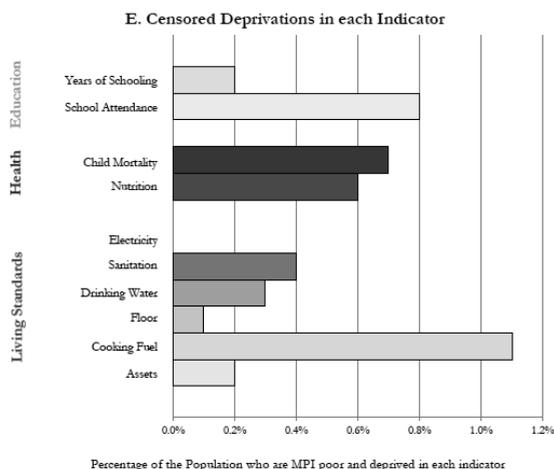
**Figure 6:** Illustration of poverty intensity analyses  
 Source of information: Alkire, Conconi & Roche

Trying to go further in our analyze about MPI we notice that, if we refer both MPI and poverty line at 104 countries (list of UNDP, MPI calculation) mostly countries show off more deprivation type poverty, than monetary poverty (Figure 13). According the same comparison 1,4 %of Albanian are multidimensional deprive-ted when poverty line signs 12,4% of all population (Figures 7).



**Figure 7:** MPI calculation on 109 Developing Countries  
 Source of information: Alkire, Conconi & Roche

Using MPI indicators the policy makers can easily decided which will be the future priorities Dimensions of MPI 2012 highlights: Education and health are easily noticeable in deprivation and policies need to focus right there.



**Figure 8:** MPI poor deprived in each indicator  
 Source of information: Alkire, Conconi & Roche

The third dimension divided in 6 equal sections called indicators highlights the highest level of deprivation is in a cooking fuel follow by Nutrition, Child Mortality

and School Attendance.

J. Multidimensional Poverty across Sub-national Regions

Region	MPI (H x A)	H (Incidence) k ≥ 33.3%	A (Intensity)	Percentage of Population:				Inequality Among the MPI Poor	Population Share
				Vulnerable to Poverty k = 20%-33.3%	In Severe Poverty k ≥ 50%	Destitute			
Albania	0.005	1.4%	37.7%	7.4%	0.1%	0.3%	0.021	100%	
Urban	0.003	0.8%	37.7%	3.0%	0.0%	-	-	45.1%	
Rural	0.007	1.9%	37.7%	11.0%	0.1%	-	-	54.9%	

**Table 5: MPI result**

Source of information: [www.ophi.org.uk](http://www.ophi.org.uk)

**Conclusions**

In an effort to more qualitative approach in measuring poverty HDI was a first step for measuring multidimensional way. A step which was followed by the construction of a more comprehensive index as it is MPI.

MPI looks to be more suitable measure. It integrates a multidimensional analysis, identifies which of the included factors as an index influences on the poverty, by presenting with the poverty profile correspondingly and this orientates the policies against it. Of course, as a relatively new method, this needs a further consolidation especially the chosen of suitable indexes for representing the respectively concepts.

The founders of this method are of the opinion that the discussion about the right operation of some concepts in variables can be open meaning, thus the further perfection of MPI method. Also, considerations are being given to include even other aspects of social character. A problematic issue is the difficulty of finding and collecting the data. For example, due to the lack of data in Albanian case, the infancy mortality is measured with mortality for every age, bringing different information from the theoretic one.

In Albanian case, MPI shows the level 0.005 which is a lower level among countries under development and with poor income. The index of health is reported more problematic than two other indexes, while that of school attendance is the most deprived index. These findings are not uniform among poor countries. And now we come to the conclusion that many authors have previously emphasized: poverty is caused and has a different nature for different countries, even inside the country.

If we can show a consideration, after reading the meaning of MPI figures, the policies with school attendance focus would be an urgent need in response to poverty, as well as health focus.

**References**

Alkire, S., & Foster, J. (2010). Counting and multidimensional poverty measurement. *Journal of Public Economics*, 476-487.

- Alkire, S., & Santos, M. E. (2013). Measuring Acute Poverty in the developing World: Robustness and Scope of the Multidimensional Poverty Index. *OPHI Working Paper No. 59*.
- Alkire, S., A. Conconi, & J.M. Roche. (2013). *Multidimensional Poverty Index 2013: Brief Methodological Note and Results*. Oxford Poverty and Human Development Initiative, Oxford University. Gjetur në <http://www.ophi.org.uk/multidimensional-poverty-index/mpi-data-bank/>
- Alkire, S., Roche, J. M., Santos, M. E., & Seth, S. (2011). *Albania Country Briefing*. Oxford Poverty and Human Development Initiative (OPHI) Multidimensional Poverty Index Country Briefing Series. Gjetur në <http://www.ophi.org.uk/multidimensional-poverty-index/mpi-data-bank/mpi-country-briefings/>
- Banka Botërore. (2007). *Shqipëria: zhvillimi urban, migrimi dhe ulja e varfërisë*. Tiranë.
- Celso, N. (2008). Poverty Measurement: The Development of Different Approaches and Its Techniques. *Working Paper ECINEQ Society for the Study of Economic Inequality*.
- Instituti i Statistikave (INSTAT). (a.d.). *Databaza statistikore: Anketat e Matjes së Nivelit të Jetesës (LSMS)*. Gjetur 2014, nga Instituti i Statistikave: <http://www.instat.gov.al/al/figures/statistical-databases.aspx>
- Kura, S. Y. (2012). Qualitative and Quantitative Approaches to the Study of Poverty: Taming the Tensions and Appreciating the Complementarities. *The Qualitative Report*, 17. Gjetur në <http://www.nova.edu/ssss/QR/QR17/kura.pdf>
- Orsheansky, M. (1965). Counting the Poor: Another Look at the Poverty Profile. *Social Security Bulletin*, 3-23.
- Oxford Poverty & Human Development Initiative. (2013). *Albania Country Briefing*. Albania Country Briefing. Oxford Poverty and Human Development Initiative (OPHI) Multidimensional Poverty Index Country Briefing Series. Gjetur në <http://www.ophi.org.uk/multidimensional-poverty-index/mpi-data-bank/mpi-country-briefings/>
- Sachs, J. D. (2005). *Fundi i varfërisë. Mundësitë ekonomike të kohës sonë*. Tirana: Papirus.
- Sen, A. (2009). *Zhvillimi si liri*. (P. Pojani, Përkth.) Tiranë: Botimet DUDAJ.
- Townsend, P. (1979). *Poverty in the United Kingdom: A Survey of Household Resources and Standards of Living*. Berkeley: University of California Press.
- UNDP. (2012). *Human Development Index (HDI)*. Gjetur prill 2012, nga <http://hdr.undp.org/en/statistics/hdi/>
- World Bank. (2007). *More than a pretty picture: Using poverty maps design better policies and interventions*. Washington: World Bank.