HUMAN DEVELOPMENT - A ROMANIAN REGIONAL ANALYSIS

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Abstract: *The article focuses on the analysis of Romania's performance in the field of human development (HD), as it is presented in the Human Development Reports. This performance is understood as a process of broadening the possibilities of people's choices, and as the level of people's welfare. The year 2010 brought with it changes not only in terms of the HDI calculation but also in terms of a favorable change of Romania's situation. In highlighting these changes, it is also brought into attention the aspect of inequalities in human development.*

The article also contains a comparison regarding the development regions of Romania and also an analysis between Romania and other European countries, in terms of Human Development Index and the Modified Human Development Index. The analisys is accompanied by explanations of the differences coming from the two calculation methods and which is more advantageous for the countries presented in a global rank in according to the level of development.

Keywords: human development Index, education, life expectancy, income.

JEL Classification: E23, I21, O10.

Introduction

Further, I will analyze Romania's performance in human development,,based mainly on the information derived from the reports of human development (Human Development Report) prepared under the United Nations Development Programme but also on my own calculations in identifying the Modified Human Development Index.

HDI (Human Development Index) reflects the achievements through primary human resources in three basic dimensions: a suitable education, a long and healthy life and a decent living standard. On the other hand, to determine the Modified Human Development Index are used, together with the indicators used in the HDI, employment and the level of democracy.

In 2011 there were carried out changes into the structure of HDI, so we are dealing with a new reporting metrics. Precisely for this reason, both tracking indicator values used in the construction of the HDI and on HDI as a whole, are interesting, and we report them to the average of the group of the countries with the highest human development, possibly at the maximum worldwide,as well as certain groups of countries, like European ones and other country neighboring Romania that had communist regimes. There will also been visaged elements that define the processes of inequality in human development in Romania in the international context.

If the second chapter is focused on the comparison between HDI and Modified HDI and equally analyzes Romania's performance compared with European countries, using mainly data from the Human Development Reports (HDR 1990-2015), the last chapter contains a regional analysis of Romania. The development regions are in fact statistical sizes without legal personality, eight in number in Romania's case and have been created by the association of county councils to coordinate the regional development. They correspond to NUTS II level divisions in the EU.

A secondary objective is of a methodological perspective, and there will be made some comments on the indicators used as part of HDI and the concerned methodologies. Before proceedingto the analyzes that I have previously mentioned, I will expose a short history of the human development and the indicators used, in order to retain their significance.

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I. Human development – an evolving concept

The Human Development Index (HDI) is a quantitative measure of a country's success level to develop its human capital. HDI is an innovative, mostly arbitrary but interesting index, and as time passes it has proved to be extremely useful in broadcasting the information, analyzes and the possible orientations for the public policies at the worldwide and national level [4]. The introduction of this index in the early 1990s has been caused by the need to measure human progress, measurement that is centered around people, not around economy. [5]

A country is no longer evaluated only in terms of GNP, but by his achievements in education, health, etc. Human development is supplemented by a series of conceptual frameworks which share motivations underlying similar basis, but add value in different ways.

Even if statistical calculation means to reach a certain score for each country, the HDI is a problem for the statisticians. Human Development Report, highlights a ranking of countries according to the Human Development Index. The countries are divided into groups - (A) high human development; (B) medium human development, and (C) low human development.

There are critics in electing or omitting dimensions series such as political freedom, cultural values, the environment [3]. The included variables have been changed over the time; health has always been represented by life expectancy at birth, but education and income are different in various reports. Initially, the knowledge was measured by a single variable named adult literacy rate. Later, the adult literacy rate was combined with the average of the years of schooling, in 1991.

This combination remained basically unchanged until 1995, when the average of the years of schoolinghas been replaced by school enrollment rate of children and youths', on the three educational levels: primary, secondary and university education.Since 2010, both adult literacy rate and enrollment of children and youths' have been replaced by the average of the years of schooling. In terms of income, failing any other variables that capture it, this index was measured by real GDP per capita during 1990-2009. After 2009, this variable is replaced with real gross national income per capita.

In specialized literature, there are more and more studies attempting to build a real Human Development Index and take into consideration many variables.

Anto [1] built the Islamic Human Development Index for 56 countries. For this index, they have been used variables, such as: material welfare, non-material welfare, Islamic values, Islamic environment, expectations of life, education, family relationships, social relationships, religion, possession of property. The author found that Islamic index calculated for 2007 has a higher value of HDI (2007) and it is more representative.

The International Futures model of The Pardee Center for designing scenarios of human development has been used in the Human Development Report in 2011, to design scenarios for long-term environmental trends and to assess their impact on human development. [2] It aims to produce a set of data, with the population distributed to groups of four levels of education for over 50 years, from 2000 to 2050, at every five years, gender groups and age groups of five years (from ages 15-20 years to the age of 100 years and over).This model of long-term human development is based on policy issues, including income, health, education, poverty, social change (instability and risk) and the sustainability of the environment for the more than 180 countries interacting in the global system.

Lutz and KC's model is based on the premise that population's growth trends are affected by the improvement of the quantity and of the quality of education and it is used to design demographic trends by 2050 [3]. Thus, the model has a set of data covering 120 countries, with their populations broken down by age, gender and level of education. Lutz

and KC's multi-country approach of modeling the population was developed in 1970 at the International Institute for Applied Systems Analysis in Austria. The idea behind the projection is simple: considering 2000 as a given year (the last year for which comparable data are available for most countries at the international level) and assuming that the education level remains constant after a certain age, women's percentage aged 50-54 years without any kind of formal education in 2005 can be directly derived from the women's percentage aged 45-49 years without any formal education in 2000. The project aims to produce a set of data with distributed population to five years age groups (starting with the age of 15-20 years up to age 100 and older), gender groups and four levels of education above 50 years, starting with the year 2000 (base year) to 2050, at every five years.

II. Romania within the context of European human development

This chapter covers a review of the indicators of Human Development Index and the changes that have passed through over the years. It explains also the causes that led Romania to the basement of a global ranking in terms of human development.

I also made a comparison between the HDI and the Modified HDI regarding the countries of E.U. We calculated the MHDI for each country (in Figure 4) and we presented their trend. What is interesting is that there are differences that arise following the two different ways of calculating of the human development index and which of these methods are profitable both for Romania and for other countries[10].

Human Development Index (HDI) - is a comparative measure of life expectancy, literacy, education and standard of living.In this way, it is better used to compare a country's level of development than GDP per capita, which measures only material prosperity not other economic indicators. Human development index for the most of UN member states [9], is updated every year by the United Nations Development Programme and published in the Human Development Report.

The range of variation for human development index is [0, 1] and includes three groups of values corresponding to the human development level in 182 countries [7]:

a) high human development (0.800- 1.000);
b) medium human development (0.500- 0.799);
c) low human development (0.000 to 0.499);

From the very beginning, the HDI was a composite indicator aggregating three dimensions into a single index: health, education and income. While the main conceptual elements of HDI remained unchanged over the years, the basic methodology has changed.

Table 1: Calculation of HDI

Year	Bounds	Health	Knowledge	Income	Pillar aggrega
1990			Adult literacy rate	Real GDP per capita (log transformed with a cap)	
1991-1993	Observed		(2/3) Adult literacy rate	Real GDP per capita (adjusted using Atkinson's formula with threshold value)	
			(1/3)Mean years of schooling		
1994		Life expectancy at birth	(2/3) Adult literacy rate	GDP per capita (adjusted using Atkinson's formula with threshold value derived from global averages	Arithmetic mean
			(1/3)Mean years of schooling index		
1995-1998	Fixed		(2/3) Adult literacy rate		
1999				Real GDP per capita(log transformed with a cap)	
2000-2009			(1/3) Combined gross enrollment ratio with a ca	Real GDP per capita(log transformed with a cap)	
2010-onwards	Maximum observed;minimum fixed		(1/2)Mean years of schooling index	Real GNI per capita(natural logarithm)	Geometric mean
			(1/2)Expected years of schooling index		

Source: Human Development Report, 2011

1. Regarding the **income indicator**, Romania seems to have been through amazing changes in recent years, if we look at the numbers.

Table 2: Income level in Romania

Year	2009	2010	2011	2012	2013	2014	2015
GNP per capita (PPC $)	11,917	12,131	12,983	13,928	14,933	15,955	16,982

Source: Human Development Report, 2009-2015

Despite the financial crisis from 2008-2010, the country's development has been a positive one[6]. While the medium salary doubled, the purchasing power of Romanians increased only by 33%. Regarding the medium salary, Romania has increased by 237% (in 2005 it was 774 RON and the end of 2015 it was 1833 RON), our country is the second lowest in the EU in terms of power purchase, which is revealed by European Commission statistics[6]. A Romanian consumes goods and services half, compared to the European average and it is bad too in terms of Gross Domestic Product per capita (GDP per capita), the main indicator of purchasing power. However, Eurostat data show that the inflation rate reached a minimum of 0.6%in 2015,while the unemployment rate remained steady, around 7%.

2. For "**Life expectancy at birth**" there is a modest situation, in Romania's case. The values of the indicator are significantly reduced after 1990 and only after 2000 the difference from early 1980 will be recovered. Despite that, Romania has a gap of 7-8 years life expectancy compared to other countries in Western Europe.

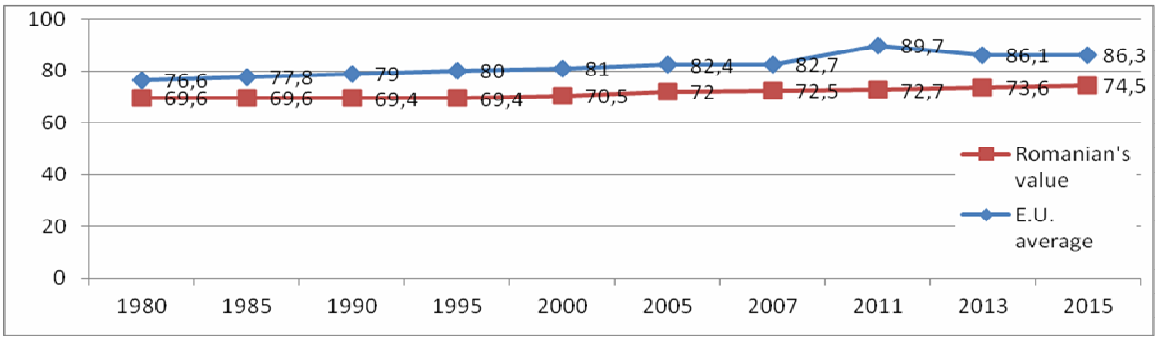

Chart 1: Life expectancy at birth

Source: https://ourworldindata.org/life-expectancy/

An analysis for the period 1960 - 2015 shows that, in the ex communist countries, the life expectancy of the population has decreased over the period 1975 - 1990, which means that this was the period when the regime has reached social, economic or medical limits and this is a typical case where a social and political system leaves its mark on life expectancy at birth[8]. One of the main factors that generated the increased life expectancy was "cardiovascular revolution". Medical factors (discoveries in surgery, development of emergency services etc.), the economic (costs associated with healing of chronic diseases and reforming health), but also social ones (decrease alcohol and tobacco) formed the basis for increasing life expectancy in the last years, but the developed countries had a stronger advance from this point of view.

Regarding the average of life expectancy, Romania was ranked 80th in the world in 2013 with a value of 74.16 years. The highest value of this worldwideindicator (82.7 years) was recorded in Japan and the smallest in Afghanistan (43.6 years). Without any doubt,

improving the value of Life expectancy at birth in Romania is an emergency and it is linked to the allocation of enhanced resources for training and paying specialised staff, equipping hospitals, the population's access to healthcare, prevention and health education.

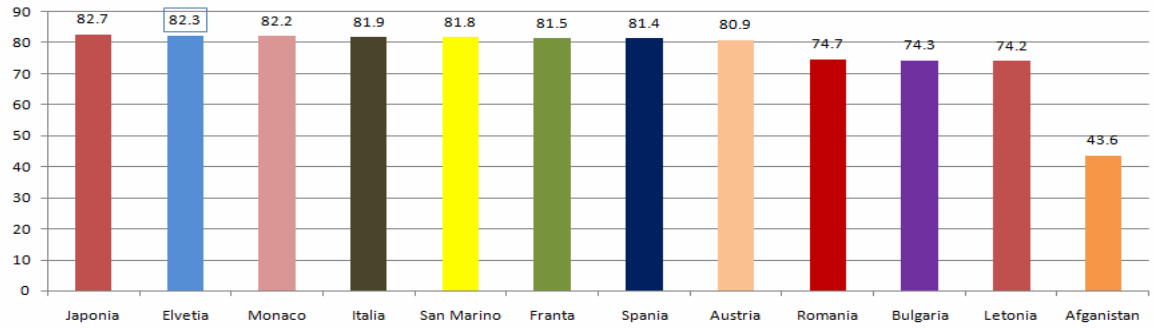

Chart 2: Life expectancy worldwide (2013)
Source: Human Development Report, 2014

3. **Education index,** calculated as a weighted arithmetic average between the degree of adult literacy (two-thirds) and the gross enrollment rate for primary (third), shows a relatively low internal consistency.

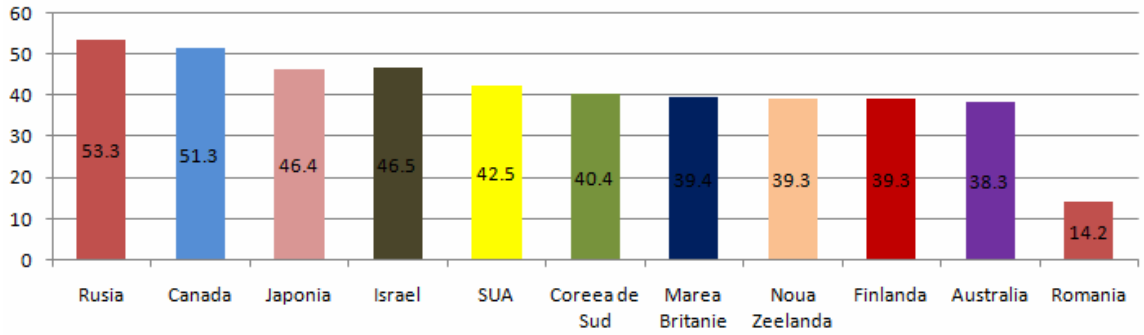

Chart 3: index Education (2013)
Source: Eurostat

A European Commission report places Romania first in the top of illiteracy and fifth in the world, because more and more parents withdraw their children from school because of poverty and lack of material resources. Cultural and social causes andthe absence of values in the society also matter. Therefore, 6% of Romanian are illiterate, more than in Bulgaria (2%) and Hungary (1%).

In this context, the school dropout rate is increasing.

In the E.U., the school abandonment has long-term negative effects on social development and economic growth. Innovation and economic growth rely on a qualified workforce: reducing the European average of early school leaving by one percentage point would provide the European economy each year, almost half a million of potential qualified young people.

In Romania, the main factors of abandonment are represented by the financial difficulties of the family, entering the labor market (involving students during the school in such income generating activities is an element of risk which leads almost always to the premature quitting of education), circular migration (doesn't seem to be a risk factor but there are major issues of reintegration for the children of migrants leaving the system and then return at higher ages).

The ***Human Development Index*** is calculated as the geometric average of the three dimensions: education, health and income:

HDI (1) where

- Health subindex is estimated on the basis of life expectancy at birth;
- Education subindex is estimated on the basis of the geometric average of the years of schooling of adults and the expected years of education for children;
- Income subindex is estimated on the basis of gross national income (GNI) per capita.

The formula is a quantitative approximation of the creation of human capabilities as measured by education, choices, as measured by the possibility of acquiring goods and services and opportunities, as measured by health.

Table 3: Minimum and maximum values of HDI component indices

Dimension	Indicator	Minim	Maxim
Health	Life expectancy	20	85
Education	Average years ofschooling	0	18
	Expected years of schooling	0	15
Income	GNI per capita(PPC $)	100	75,000

Source: Human Development Report, 2015

$$\text{Health.sub} = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}} \quad (2)\ ;$$

$$\text{Average years ofschooling} = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}} \quad (3);$$

$$\text{Expected years of schooling} = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}} (4);$$

Education.sub = + (5);

$$\text{Income.sub} = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}} (6);$$

Calculation of the MHDI (Modified Human Development Index) is based on the methodology of human development index of the United Nations Development Programme (UNDP). Modified HDI is an indicator made up of six components, each component having equal weight in the calculation: health, education, income, democracy, vulnerable employment and non-employment.

$$\text{MHDI} = \sqrt[6]{\text{Health.sub} * \text{Education.sub} * \text{Income.sub} * \text{Democracy.sub} * \text{Employment.sub} * \text{non vulnerable employment}}$$

(7);

$$= \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}} (8);$$

$$\text{Employment.sub} = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}} (9);$$

$$\text{Non vulnerable employment} = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}} (10);$$

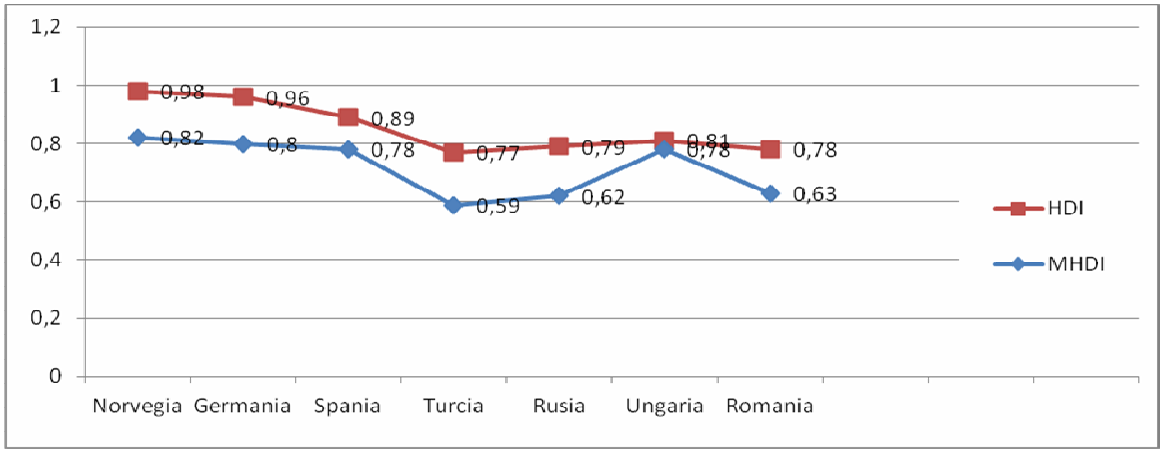

Chart 4: HDI and MHDI

Source: own compilation based on UNPD

It can be seen that in the European countries, the differences between HDI and HDI values are significantly. If the level of human development is calculated using MHDI, all countries records a lower score. According with the calculation above, the biggest increase happens due to the health index while the fastest decreasing is caused by employment.

The countries with higher HDI such as Norway and Germany have a lower MHDI due to the influence of employment. Although these countries have the highest rates of employment, they are the least able to guarantee jobs for citizens of working age. Small and medium HDI countries, such as Romania or Hungary, deal with deficiencies in their ability to provide jobs.

III.Analysis of the human development indicators at the regional level

Measuring human capital and human development is difficult whether quantitative or qualitative. The problem is quite complicated if the approach is regional. MHDI can be used to track long-term development of a country or several countries, regions, counties and local administrative units.

After analyzing and introducing the methodology described in the previous chapter, this article focuses on how can the values of MHDI at regional level be estimated. For this, I have calculated the index values in each of the years presented in the table below, so the evolution of the human development can be observed.

Table 4: MHDI

MHDI	2004	2007	2015
Nord-Vest	0.35	0.45	0.61
Centru	0.34	0.46	0.62
Nord-Est	0.32	0.40	0.56
Sud-Est	0.32	0.41	0.54
Sud-Muntenia	0.30	0.39	0.48
Bucuresti-Ilfov	0.55	0.74	0.88
Sud-Vest-Oltenia	0.31	0.40	0.51
Vest	0.36	0.47	0.63

Source: own compilation based on Eurostat

It is known that the regions of Romania are among the least developed countries compared to E.U.

If we analyze the regions of Romania, comparing the years 2004, 2007 and 2015 there are significant differences in terms of human development. The factors contributing to

maintaining these regional discrepancies are represented primarily by income but also by infrastructure development, geographic location, regional human resources, quality of education, the level of research and development. The only region of the eight development regions of Romania which recorded a level of income well above other regions is Bucharest-Ilfov region, which is the most developed. There are regional disparities in terms of employment, in addition to economic performance.

The difference between Bucharest-Ilfov region and other regions of Romania is otherwise visible. An important aspect of the European integration process is to reduce the discrepancies in development between countries and regions and also to help underdeveloped countries and regions to reduce the gap.

From the calculation for each of the three years, it results each time, that the most developed region is Bucharest-Ilfov region. Instead, the region that recorded the lowest levels of development is each time South region. The low level of human development is supplemented by high unemployment, insufficient knowledge and poor economic performance.

IV. Conclusion

After analyzing the Human Development Index, we have seen that the most developed countries in human terms are those that have a more developed economy.

Therefore, we find that Romania has a human development not very close to the group of top-level world and a what pulls it down is, firstly, the value of GNP. The first years of transition in the development of human ended with costs, not only because of the economic restructuring, but also due to some wrong decisions, such as the reduction of compulsory education to eight years, even though graduates aged 14-15 years could not enter the labor market.

If the level of human development is calculated using Modified HDI, all countries recorded a lower score. The biggest increase is produced because of health while the fastest decreasing is caused by employment. Therefore, life expectancy at birth can be increased through better healthcare and promote a healthy lifestyle. In education, the main issue is to maintain the current level of participation, possibly increasing them in future with improved competence.

Due to the fact that the regions in Romania are among the least developed E.U., we observe significant differences in terms of human development. There are regional discrepancies depending on the income first but depending on the quality of education and human resources. The most developed region of the eight development regions of Romania is Bucharest-Ilfov region, which recorded an income level significantly above the other regions. Conversely, it is the South region. Besides that, it has the lowest human development, it has a high unemployment rate due to the insufficient knowledge and poor economic performance.

The level where a country is situated at a given time depends very much on what happens to the other countries. It is very unlikely to be the most developed country for Romania, even in the long term, but we should aim a highest position in the top of the most developed countries and the outcome should be more and more favorable and it should characterize the entire population.

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