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Measuring the development of human resources with the usage of Human Development Index in selected CEE countries

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Abstract:

In the theoretical part of the research, the authors will define the category of human resources and identify its similarities and differences in relation to similar categories. Furthermore, they will provide a brief overview of theoretical and methodological achievements in the measuring of the value of human capital at the macro level, i.e. development of human resources. In the empirical part of the research, development of human resources will be evaluated through the HDI in selected countries, with particular emphasis on CEE countries. Human resource development rank of CEE countries in 2014 will be established, and the change in the index in the period 1990-2014 presented and analysed. In conclusion, it will be identified which countries achieved the greatest change in human development in the period 1990-2014.

Keywords: human resources; economic growth; development; HDI; CEE
JEL codes: O10, O15

1. THEORETICAL AND METHODOLOGICAL FRAMEWORK

In a knowledge-based economy, that has become a generally accepted development model, there is a visible shift of national development policies from a predominantly sectorial to factorial approach to development. Therefore, the focus of economic interest has become knowledge, i.e. human resources that are its creator and promoter. Therefore, in all the countries that plan their long-term economic gain, it is necessary to devise a national strategy of human resource development.

The term "human resources" is often used in domestic and foreign literature parallel with the terms "human capital" and "intellectual capital". Also used are the terms "population" and "labour force". Although seemingly similar, these terms are not synonyms.

In the studies of economic flows, the basic category is population, because it is a historical and substantial source of labour force and a precondition for the formation of human capital, intellectual capital and human resources.

The term ”population“ usually implies total number of inhabitants who reside or are currently located in a certain area (Dragičević, 1991).

The size and characteristics of the population, i.e. demographic factors, along with economic, technological, social, political, and environmental factors, make a set of conditions, causes and effects of the unique process of social development. The total number and structure of the population have an impact on the share of working-age and economically active population or labour force. The working-age population is the population of working age, and it is regulated by a country's constitution or legislation. Labour force implies the entire employed population and the unemployed seeking employment. The population is a source of labour force and, with its developmental characteristics, it primarily determines the pace of a country's economic development (Wertheimer-Baletić, 1973).

In the scientific and professional literature that covers the research of the significance and contribution of the human factor to production and development of enterprises, local and regional communities or the national economy, commonly used categories are ”human capital“ and ”human resources“. They are often identified in terms of content and used as synonyms. Following the historical course of research and measuring the value of investment in people and the values that people bring into the business process through labour, it can be concluded that it is necessary to make a distinction between the two categories. In the process of studying human capital, the focus is on the value of investment in people through education and health care as well as all other activities that contribute to human development. These investments represent individual and social cost and increase human capabilities, knowledge and skills. By contrast, in the studies of human resources, we analyse the contribution of the people to the creation of a new value by bringing their capabilities, knowledge and skills into the business process. When a person, i.e. an employee, enters the human capital into a business process, the capital becomes the key component of human resources.

Alfred Marshall argued that the most valuable of all capitals is the one invested in people, and he pointed out the importance of industrial training, labour organisation and business management for production (Marshall, 1956). He pointed out that there are different types of labour costs: because of labour as labour, labour as an idea and as an organisation. Other civil economists also pointed to the importance of the human factor in production, especially emphasising a different reflection of unequal individual and total educational, professional and qualifying characteristics of the population on the gain of a national economy.

One of the first significant contributions to quantification of the human capital was made by Alfred Sauvy (Sauvy, 1952). He formulated a method for the calculation of the value of human capital that consists of the accumulation of costs for maintenance and education of people until their working age.

In recent years, significant progress has been achieved in the efforts to measure human capital. The main representative of the Chicago School, Nobel laureate Theodore Schultz, based his budget on the accumulation of investment in the quality of components, i.e. their improvement (through education and professional training as well as health care), but his calculation also included various losses as, e.g., those that occur due to mortality (Schultz, 1985).

The content of these calculations indicates what **human capital** really is. It is a value invested in people (employees), primarily through education and health care, in order to create knowledge, skills and work capabilities. Economic literature primarily studies investment in education, because it is simpler to determine their effectiveness from an individual's perspective. Such a calculation for an investment in health is much more complex, because the effects of the investment are difficult to quantify. However, calculation of the effectiveness of investment in education at the macro level is also very complex, and the contribution of Gary Becker should be pointed out in particular. He analysed the relationship between costs and benefits of investing in secondary and tertiary education in the USA (Becker, 1964).

According to Par (2016) human capital is a concept that highlights the crucial importance of education, knowledge, skills and capabilities of people (labour force) for economic development, treating them as capital. Investment in the development of human capital is mainly achieved through education that increases labour productivity and entrepreneurship. Such an investment is specific, because it always results in individual ownership that contributes to the wealth of enterprises and society. It is considered to be the most important dimension of **intellectual capital**.

Intellectual capital is a relatively new, complex economic category that represents all the business factors that are not explicitly expressed in the traditional financial statements; however, they provide added value to the organisation and significantly affect long-term profitability and competitiveness of the company. The term intellectual capital implies creative application of knowledge in production and any other creative activity, the ability to convert invisible assets like knowledge into products and services that deliver value (Sundać, 2009). Human capital is a component and the driving force behind intellectual capital that also comprises structural (or organisational) capital and relational (or customer) capital.

Human resources imply total psychological and physical capacities at the disposal of enterprises, which they can use to achieve their business goals (Bahtijarević Šiber, 1999).

The above text is the basis for the conclusion that psychological and physical capabilities depend on investing in people, which means human capital. Greater human capital potentially means more human resources.

During working life, human capital and human resources can be increased by investing in psychological and physical health as well as investing in knowledge, skills and competences through life-long learning. However, not only are human re-

sources increased by acquiring new knowledge and skills, but also through the promotion of employees, implementation of quality motivational systems i.e. a good combination of material and immaterial compensations, more successful combination and management of the production factors. This means that the size of the contribution of the human factor to the creation of new value in enterprises does not only depend on the value of human capital and human resources, but also on the organisation of the business process, management of the production and development factors, and activities of the function of human resources in an enterprise. All of this is, ultimately, a result of accumulated human capital and human resources.

At the national level, human resources can be defined as total psychological and physical energy owned by the residents of a country, i.e. that is at the disposal of the society and can be used for the achievement of its development goals. At preworking age, society has a crucial influence on the formation and development of human resources, primarily through education and health care, but also through other activities, e.g. child care, sports and cultural activities.

Human resources cannot be directly expressed in terms of value, so their value and development level are measured indirectly. The literature offers different criteria for the estimation of value and development of human resources at the macro level.

W. Petty was the first to attempt to quantitatively evaluate human resources for England in the 17th century (Vinski, 1977). Petty carried it out in the form of a budget of total earnings of the population and the appropriate size of capital these earnings would bring if they were invested at a certain interest rate.

Friedrich and Johann von Thunen used two methods to estimate the value of human capital. They are capitalising on the net value of future earnings per market interest rate and the total cost of human development at a certain age (Jarvis, 2000). They found that the value of human capital in Great Britain in 1891 was five times higher than the value of the stock of physical capital.

Bowman argues that human resources should be estimated as the total value of services the employees will provide in the foreseeable working life discounted by the corresponding number of years (Bowman, 1974).

In their work Education, Labour Force and Economic Growth (Harbison, Myers, 1964), Harbison and Myers developed quantitative indicators for measuring development of human resources after they had found that economists neglected the studies of the human factor and its significance and contribution to economic growth. They estimated that the reason is primarily the inability to identify the input-output relationship that is indisputable in physical capital, because this capital is directly measurable in terms of value. Harbison and Myers calculated the composite Human Development Index with the following seven partial indicators: 1. The number of teachers in primary and secondary schools per 10,000 inhabitants; 2. The number of engineers and scientists per 10,000 inhabitants; 3. The number of doctors and dentists per 10,000 inhabitants; 4. Children aged 5 to 14 in primary school education; 5. Average enrollment quotas in primary and secondary education; 6. Percentage of the population aged 5 to 14 enrolled in secondary education; 7. Percentage of the population aged 20 to 24 enrolled in tertiary education.

The interest in studying human capital grew in the second half of the 20th century, which is primarily the credit of Nobel laureates Theodore Schultz and Gary Becker. However, it should be noted that this was already a time when development of national economies was impossible without increasing the education level of the population. Therefore, both Schultz and Becker primarily studied investment in education, which they treated as an investment in human capital, although Schulz identified several groups of activities and flows that affect increase in human capital. These are: improvement of health services, formal education, workplace learning, adult education outside the company as well as individual and family migrations due to better employment opportunities (Mervar, 2003).

The OECD publications cite three methods for measuring human capital: through education and training costs; through competency assessment tests; through ”achievement“ indicators: wages, job security, job status.

In the past 10 to 15 years, there has been a significant shift in the understanding of the connection between economic growth and development, human resources, research, innovation and technology. Unambiguous explanations of technological development or human resource development as the basic moving force of economic growth have been abandoned. Some authors believe that HDI alone is not a sufficient measure for determining economic growth and that analyses should include a whole range of other indicators (Bagolin, 2008).

2. MEASURING THE DEVELOPMENT OF HUMAN RESOURCES THROUGH HDI

The UN has recently calculated the index of human development (HDI), i.e. Human Development Index. Taking into account the content of the HDI, it can be used as a good indicator of development of human resources, although HDI is also an indicator of a country's level of development. The index was contructed in the early 1990s by Amartya Sen (Nobel laureate), Mahub ul Hak, Gustav Ranis (Yale University), Meghan Desai (London School of Economics), and the UN has used it ever since; it is released in the annual Human Development Report.

The UN defines the very concept of human development in a broader sense as development of the people, development for the people and development by the people (Human Development Report, 1993). HDI is calculated as a composite index combined of the following three indicators: 1. Life expectancy and health condition of the population measured by life expectancy at birth; 2. Knowledge and education of the population; 3. Purchasing power, i.e. standard of living of the population measured by GDP per capita. The first two indicators indirectly show development of human resources, while the third is preferred in showing the achieved level of development of a country.

However, it should be noted that in the second half of the 20th century, numerous economists stressed the importance of education and education level of the population for economic growth as well as progress and development of individuals.

Until 2009, all countries of the world were categorised in three groups according to HDI value: (0,000-0,499 low HDI countries; 0,500-0,799 medium HDI countries; 0,800-1,00 high HDI countries.

Since 2009, the UN has classified the countries into four groups:

- Very high HDI countries (0,9-1,00).
- High HDI countries (0,8-0,899).
- Medium HDI countries (0,5-0,799).
- Low HDI countries (0-0,499).

Since this is a relatively new indicator composed of multiple components, it is constantly complemented, and thus, its contents change. Since 2010, the World Bank has introduced a new methodology for calculating the Human Development Index. According to the methodology of the calculation, by 2010, knowledge and level of education were expressed through the composite Adult Literacy Index and the share of relevant population groups in primary, secondary and tertiary education. Since 2010, this indicator has been replaced with a new indicator of level of education that shows access to knowledge and is measured by mean and expected years of schooling of the population.

Table 1. Comparison of Old and New Methodology for Calculating the Human Development Index

Old methodology (until 2009)	New methodology (since 2010)
1. $LEI = \frac{LE - 25}{85 - 25}$	**1.** $LEI = \frac{LE - 20}{83{,}2 - 20}$
2. $EI = \frac{2}{3} xALI + \frac{1}{3} xGEI$	**2.** $EI = \frac{\sqrt{MYSIxEYSI}}{0{,}951}$
ALI = $\frac{ALR}{100}$	$MYSI = \frac{MYS}{13{,}2}$
$GEI = \frac{CGER}{100}$	$EYSI = \frac{EYS}{20{,}6}$
3. $GDP = \frac{\ln(GDPpc) - \log(100)}{\log(40000) - \log(100)}$	**3.** $II = \frac{\ln(GNIpc) - \ln(163)}{\ln(108{,}211) - \ln(163 =}$
HUMAN DEVELOPMENT INDEX	**HUMAN DEVELOPMENT INDEX**
$HDI = \frac{LEI + EI + GDP}{3}$	$HDI = \sqrt[3]{LEIxEIxII}$

Note: LEI – Life Expectancy Index, EI – Education Index, ALI – Adult Literacy Index, GEI – Gross Enrollment Index, ALR – Adult Literacy Rate, CGER – Combined Gross Enrollment Index, HDI – Human Development Index, MYSI – Mean Years of Schooling, EYSI –Expected Years of Schooling.
Source: Authors according to the Human Development Report 2009 and Human Development Report 2011.

Since 2010, new criteria for ranking of the countries have been applied taking into account the Human Development Index. All countries are classified into four groups, so that each of the groups includes ¼ of the observed countries:

- 25% of the highest-ranked countries are countries with very high level of human development;
- the other 25% of the ranked countries are countries with high human development;
- the third 25% are countries with medium human development;
- the final 25% are countries with low human development (Human Development Report, 2011).

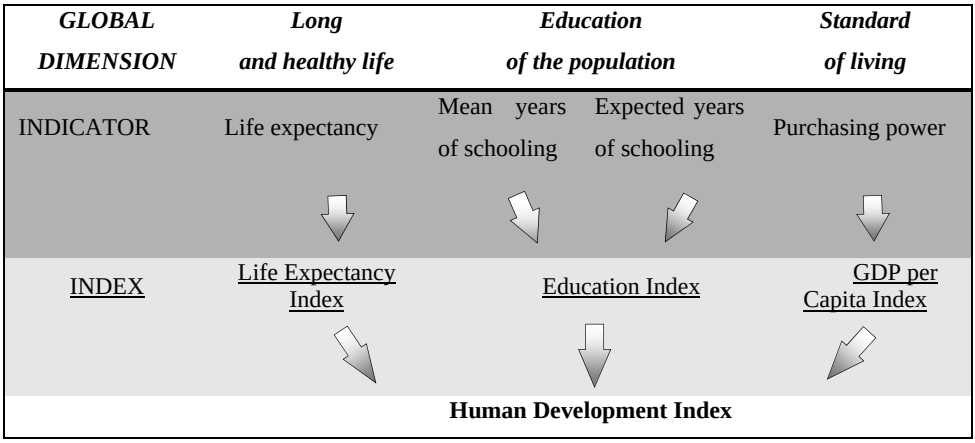

Figure 1. Human Development Index (HDI)
Source: own study.

In 2014 and 2015, countries were categorised into four groups according to the new methodology (http://hdr.undp.org/sites/default/files/hdr2015_technical_notes.pdf):

- Very High HDI countries (0,800-1,000).
- High HDI countries (0,700-0,799).
- Medium HDI countries (0,550-0,699).
- Low HDI countries (0-0,549).

Regarding its content, HDI can be used a Human Development Index, and is calculated as an index composed of three indicators: life expectancy, purchasing power of the population and education of the population.

The greatest change in the calculation of the Human Development Index has occured in the category of the population's education. While in 2010 the calculation of the Human Development Index included adult literacy and enrollment in education, since 2010, the Education Index has consisted of mean and expected years of schooling.

3. DEVELOPMENT OF HUMAN RESOURCES IN CEE COUNTRIES

The term CEE includes all the Eastern bloc countries west of the post-World War II border with the former Soviet Union, the independent states in former Yugoslavia (which were not considered part of the Eastern bloc), and the three Baltic states –

Estonia, Latvia, Lithuania – that chose not to join the CIS with the other 12 former republics of the USSR. The transition countries in Europe are thus classified today into two political-economic entities: CEE and CIS. The CEE countries are further subdivided by their accession status to the European Union (EU): the eight first-wave accession countries that joined the EU on 1 May 2004 (Estonia, Latvia, Lithuania, Czech Republic, Slovakia, Poland, Hungary, and Slovenia), the two second-wave accession countries that joined on 1 January 2007 (Romania and Bulgaria) and the third-wave accession country that joined on 1 July 2013 (Croatia). According to the World Bank (2016), "the transition is over" for the 10 countries that joined the EU in 2004 and 2007. It can be also understood as all countries of the Eastern Bloc.

The following table shows HDI in the selected countries in 2014. In addition to CEE countries, the table also includes the first six countries ranked according to the Human Development Index: Norway, Australia, Switzerland, Denmark, the Netherlands and Germany. The first CEE country on the list in 2014 was Slovenia (ranked 25th), followed by: the Czech Republic (28th), Estonia (30th), Slovakia (35th), Poland (36th), Latvia (37th), Hungary (44th), Lithuania (46th), Croatia (47th), and Montenegro (49th). All of these countries rank among those with a very high Human Development Index. Romania, Bulgaria, Serbia, Macedonia, Albania and Bosnia and Herzegovina are, according to the UN methodology, countries with a high HDI (Table 2).

The countries in the table are grouped according to HDI rank. Except for Human Development Index, the table also shows its components: life expectancy at birth, expected and mean years of schooling, and gross national product expressed according to purchasing power parity in prices in 2011.

Table 3 shows HDI deviation of the observed countries from the HDI average for countries with very high HDI, the average of countries with high HDI, the world average, and the countries of Europe and East Asia.

All CEE countries have a negative HDI deviation compared to the average value of HDI countries with a very high Human Development Index (ranging from -1,75% to -18,24%). Compared to the countries with a high Human Development Index, all CEE countries, with the exception of Albania and Bosnia and Herzegovina, have a positive deviation (of +23,13 to +3,56). When the average deviation of the Human Development Index is calculated in relation to the world, CEE countries record a positive deviation, and when the observed countries are compared with the average for Europe and Central and East Asia, to which these countries gravitate according to the World Bank methodology, Macedonia, Albania and Bosnia and Herzegovina record a negative deviation.

Table 4 shows the change in HDI in the selected countries in the period 1990-2014, change in rank of the country in the period 2009-2014 (since the new methodology has been in use), and the index of HDI change (based in the year 2000). The highest positive deviation of the rank is recorded in Estonia and Slovakia (increase of 3 places), while Latvia had the greatest developmental lag (decrease of five places) and Hungary (decrease of four places). Croatia also recorded a decrease; its rank fell from the 46th to 47th place. However, it should be

noted that, in the period between 1990 and 2014, the Republic of Croatia achieved the largest HDI increase of all the observed CEE countries (+0,83), which also represents the largest human development growth in the world in the observed period. This growth would have been even higher had there not been a slowdown of growth in the period 2000-2014.

Table 2. HDI in the Selected (CEE) Countries in 2014

HDI rank	Country	Human Development Index (HDI)	Life expectancy at birth	Expected years of schooling	Mean years of schooling	Gross national income (GNI) per capita
		Value	(years)	(years)	(years)	(2011 PPP $)
		2014	2014	2014	2014	2014
	VERY HIGH HUMAN DEVELOPMENT					
1	Norway	0,944	81,6	17,5	12,6	64.992
2	Australia	0,935	82,4	20,2	13,0	42.261
3	Switzerland	0,930	83,0	15,8	12,8	56.431
4	Denmark	0,923	80,2	18,7	12,7	44.025
5	Netherlands	0,922	81,6	17,9	11,9	45.435
6	Germany	0,916	80,9	16,5	13,1	43.919
25	Slovenia	0,880	80,4	16,8	11,9	27.852
28	Czech Republic	0,870	78,6	16,4	12,3	26.660
30	Estonia	0,861	76,8	16,5	12,5	25.214
35	Slovakia	0,844	76,3	15,1	12,2	25.845
36	Poland	0,843	77,4	15,5	11,8	23.177
37	Lithuania	0,839	73,3	16,4	12,4	24.500
44	Hungary	0,828	75,2	15,4	11,6	22.916
46	Latvia	0,819	74,2	15,2	11,5	22.281
47	Croatia	0,818	77,3	14,8	11,0	19.409
49	Montenegro	0,802	76,2	15,2	11,2	14.558
	HIGH HUMAN DEVELOPMENT					
52	Romania	0,793	74,7	14,2	10,8	18.108
59	Bulgaria	0,782	74,2	14,4	10,6	15.596
66	Serbia	0,771	74,9	14,4	10,5	12.190
81	The former Yugoslav Republic of Macedonia	0,747	75,4	13,4	9,3	11.780
85	Albania	0,733	77,8	11,8	9,3	9.943
85	Bosnia and Herzegovina	0,733	76,5	13,6	8,3	9.638

Source: Authors according to HDR 2015, United Nations.

Table 3. HDI Deviation in the Selected (CEE) Countries from the Average of Individual Groups of Countries

Country	VHHD = 100	HHD = 100	World = 100	E&CA = 100
VERY HIGH HUMAN DEVELOPMENT				
Norway	105,34	126,87	132,75	126,19
Australia	104,35	125,67	131,50	124,99
Switzerland	103,75	124,95	130,75	124,28
Denmark	103,05	124,10	129,86	123,44
Netherlands	102,88	123,90	129,65	123,23
Germany	102,24	123,13	128,84	122,47
Slovenia	98,25	118,32	123,81	117,68
Czech Republic	97,11	116,95	122,38	116,32
Estonia	96,08	115,70	121,07	115,08
Slovakia	94,15	113,38	118,65	112,78
Poland	94,05	113,26	118,52	112,66
Lithuania	93,69	112,83	118,06	112,22
Hungary	92,45	111,34	116,50	110,74
Latvia	91,38	110,05	115,16	109,46
Croatia	91,24	109,88	114,98	109,30
Montenegro	89,53	107,82	112,83	107,25
HIGH HUMAN DEVELOPMENT				
Romania	88,48	106,56	111,50	105,99
Bulgaria	87,24	105,06	109,94	104,50
Serbia	86,07	103,65	108,46	103,09
The former Yugoslav Republic of Macedonia	83,40	100,44	105,10	99,90
Albania	81,78	98,49	103,06	97,96
Bosnia and Herzegovina	81,76	98,46	103,03	97,93
Human development groups				
Very high human development	100,00	120,48	126,07	119,84
High human development	83,02	100,00	104,63	99,45
Medium human development	70,31	84,68	88,61	84,23
Low human development	56,37	67,89	71,04	67,53

Source: own study.

Table 3. HDI Change in the Selected Countries in the Period 1990-2014

HDI rank	Country	Rank Change	HDI change				HDI INDEX 2000=100						
		2009-2014	1990-2000	2000-2010	2010-2014	1990-2014	1990	2000 =100	2010	2011	2012	2013	2014
VERY HIGH HUMAN DEVELOPMENT													
1	Norway	0	0,77	0,25	0,11	0,44	92,64	100,00	102,51	102,60	102,77	102,78	102,95
2	Australia	0	0,36	0,33	0,20	0,32	96,43	100,00	103,33	103,58	103,86	104,00	104,17
3	Switzerland	0	0,67	0,40	0,14	0,47	93,57	100,00	104,10	104,13	104,40	104,55	104,69
4	Denmark	1	0,76	0,53	0,41	0,61	92,68	100,00	105,40	106,81	106,88	107,08	107,14
5	Netherlands	0	0,56	0,36	0,34	0,44	94,57	100,00	103,70	104,82	104,98	104,98	105,13
6	Germany	3	0,66	0,58	0,26	0,56	93,65	100,00	106,00	106,48	106,97	107,01	107,12
25	Slovenia	-1	0,73	0,61	0,13	0,58	92,94	100,00	106,32	106,49	106,54	106,58	106,86
28	Czech Republic	0	0,76	0,50	0,21	0,56	92,73	100,00	105,08	105,49	105,55	105,73	105,98
30	Estonia	3	0,73	0,71	0,69	0,71	93,00	100,00	107,32	108,84	109,51	110,02	110,30
35	Slovakia	3	0,34	0,82	0,48	0,56	96,69	100,00	108,46	109,01	109,57	110,04	110,57
36	Poland	1	0,99	0,53	0,41	0,70	90,64	100,00	105,46	106,02	106,53	106,84	107,19
37	Lithuania	-1	0,32	0,93	0,38	0,58	96,84	100,00	109,66	110,17	110,48	111,03	111,33
44	Hungary	-4	0,90	0,67	0,21	0,69	91,44	100,00	106,87	107,05	107,10	107,38	107,76
46	Latvia	-5	0,49	1,09	0,25	0,70	95,19	100,00	111,47	111,68	111,77	112,17	112,58
47	Croatia	-1	1,12	0,75	0,32	0,83	89,42	100,00	107,77	108,69	109,01	109,09	109,14
49	Montenegro	1	..	..	0,32	..	..	..	100,00	100,70	100,76	101,12	101,29
HIGH HUMAN DEVELOPMENT													
52	Romania	-1	0,04	1,06	0,26	0,50	99,59	100,00	111,08	111,27	111,55	111,97	112,25
59	Bulgaria	0	0,26	0,81	0,29	0,49	97,40	100,00	108,35	108,70	109,09	109,26	109,60
66	Serbia	-1	-0,05	0,65	0,45	0,32	100,55	100,00	106,73	107,27	107,32	108,63	108,66
81	The former Yugoslav Republic of Macedonia	-2	..	..	0,31	..	..	..	100,00	100,55	100,68	100,88	101,25
81	Ukraine	2	-0,54	0,92	0,51	0,24	105,57	100,00	109,56	110,50	111,21	111,60	111,80
85	Albania	2	0,50	0,96	0,35	0,67	95,10	100,00	110,07	110,91	111,13	111,55	111,63
85	Bosnia and Herzegovina	2	..	..	0,78	..	..	..	100,03	101,92	102,21	102,72	103,17

Source: Own study.

4. CONCLUSIONS

Human resources imply total psychological and physical capacities at the disposal of enterprises which they can use to achieve their business goals. The category of human resources is often identified with the category of human capital although they should be substantially differentiated. Human capital is a value invested in people (employees), primarily through education and health care, to create knowledge, skills, and work capabilities.

The role of human resources in the development of enterprises and national economies has recently increased, and so have the attempts of their presentation and measurement of their impact on growth and development. The Human Development Index has increasingly been used as an indicator of human development, and this paper explains why this index is a good indicator of development of human resources. The research has shown that CEE countries largely belong to countries of very high human development (with the exception of Romania, Bulgaria, Serbia, Macedonia, Ukraine, Albania, and Bosnia and Herzegovina). Slovenia is ranked highest of all the CEE countries according to the Human Development Index (ranked 25th), and the Republic of Croatia lags behind by 22 places (and is ranked 47th). However, it should be noted that Croatia, of all the observed countries, achieved the largest positive shift in the Human Development Index (1,12) from 1990 until 2014, which is primarily a result of education of the population.

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