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THE SIGNIFICANCE OF EDUCATION AND SOCIAL EXPENDITURES FOR SOCIETY DEVELOPMENT

ZNAČAJ OBRAZOVANJA I SOCIJALNIH DAVANJA NA RAZVOJ DRUŠTVA

ABSTRACT

Study has shown that variables Human Development Index, average time of education and social expenditures have mutually positive impact and also positive impact on dependent variable Gross Domestic Product per capita. It can be seen that a very significant impact on dependent variable has variable Human Development Index, while significant impact on dependent variable has an average time of education. It should be emphasized that very significant impact on Human Development Index has variable average time of education.

Study has also found that in interaction of observed variables, variable Human Development Index has a positive and significant effect on dependent variable Gross Domestic Product per capita, while variables average time of education and social expenditures have negative impact on dependent variable. Variable average time of education has significant effect on dependent variable, in contrast to effect of social expenditures, that is not significant. The aim of the research show that social benefits may negatively affect the development of society and the standard of living of the population.

Key words: education, social welfare, Human Development Index, Gross Domestic Product per capita, dependency culture

SAŽETAK

Istraživanje je pokazalo da varijable Human Development Index, prosječno vrijeme školovanja i socijalna davanja imaju međusobno pozitivan utjecaj kao i pozitivan utjecaj na zavisnu varijablu bruto domaćeg proizvoda per capita, pri čemu se pokazalo da vrlo značajan utjecaj na zavisnu varijablu ima varijabla Human Development Index, dok značajan utjecaj na zavisnu varijablu ima prosječno vrijeme školovanja. Također treba izdvojiti vrlo značajan utjecaj varijable prosječno vrijeme školovanja na Human Development Index.

Istraživanje je također pokazalo da, u interakciji promatranih varijabli, varijabla Human Development Index ima pozitivan i značajan utjecaj na zavisnu varijablu, bruto domaći proizvod per capita, dok varijable prosječno vrijeme školovanja i socijalna davanja imaju negativan utjecaj na zavisnu varijablu, pri čemu varijabla prosječno vrijeme školovanja ima značajan utjecaj na zavisnu varijablu, za razliku od utjecaja varijable socijalna davanja koji nije značajan. Cilj je istraživanja pokazati da socijalna davanja mogu negativno utjecati na razvoj društva i životnog standarda stanovništva.

Ključne riječi: obrazovanje, socijalna davanja, Indeks ljudskog razvoja, bruto domaći proizvod po stanovniku, kultura ovisnosti

1. Introduction

This paper presents analysis of Human Development Index (HDI, 0-1), average time of education (number of years, primary and secondary school), social expenditures (as a percentage of GDP) and Gross Domestic Product per capita (GDP p.c., purchasing power parity [PPP], in US dollars [USD]) in year 2013., for observed 39 countries (39 countires listed in Table 1.).

HDI measures poverty, literacy, education, life expectancy and other factors for all countries in the world. With measuring HDI, countries can be classed in developed countries (first world countries), developing countries (second world countries) and underdeveloped countries (third world countries). HDI measures average achievements countries in three fundamental factors of human development: long and healthy life, measured by life cycle from birth to death, then knowledge, measured by literacy (takes into account primary and secondary education and enrollment ratio) and decent standard of living, measured by the GDP p.c.

Social expenditure is the provision by public (and private) institutions of benefits to, and financial contributions targeted at, households and individuals in order to provide support during circumstances which adversely affect their welfare, provided that the provision of the benefits and financial contributions constitutes neither a direct payment for a particular good or service nor an individual contract or transfer. Such benefits can be cash transfers, or can be the direct ("in-kind") provision of goods and services.¹

Average time of education presents average duration of education in a country. It is calculated like a total education time of all residents divided by number of residents.

Positive or negative relationship between these variables will be considered. The first hypothesis is that countries which have shorter average time of education usually have higher GDP p.c. Another hypothesis is that countries which have less social expenditures on average have higher GDP p.c.

2. Analysis of economic indicators by country in the world

Country HDI		Average time of education (year)	Social expenditures (% of GDP)	GDP p.c. (PPP, USD)	
Argentina	0,808	9,8	21,0	18.600,00	
Australia	0,933	12,8	19,0	43.544,00	
Austria	0,881	10,8	28,3	45.493,00	
Belarus	0,786	11,5	20,1	17.620,00	

 Table 1 Economic indicators by selected countries in the world in 2013

¹ http://stats.oecd.org/glossary/detail.asp?ID=2485, (accessed 26.02.2015.)

Country	HDI	Average time of education (year)	Social expenditures (% of GDP)	GDP p.c. (PPP, USD)
Belgium	0,881	10,9	27,2	41.663,00
Brazil	0,744	7,2	16,0	15.037,00
Bulgaria	0,777	10,6	14,3	15.732,00
Canada	0,902	12,3	17,2	43.247,00
Croatia	0,812	11,0	19,2	21.366,00
Czech Republic	0,861	12,3	20,5	28.770,00
Denmark	0,900	12,1	30,2	43.445,00
Finland	0,879	10,3	30,6	39.812,00
France	0,884	11,1	32,0	37.872,00
Germany	0,911	12,9	25,6	44.469,00
Greece	0,853	10,2	24,3	25.705,00
Hungary	0,818	11,3	21,8	23.482,00
Iceland	0,895	10,4	17,1	41.939,00
Ireland	0,899	11,6	21,9	46.140,00
Italy	0,872	10,1	28,7	35.957,00
Japan	0,890	11,5	22,3	36.449,00
Latvia	0,810	11,5	24,4	22.560,00
Luxembourg	0,881	11,3	23,4	90.410,00
Mexico	0,756	8,5	7,4	16.463,00
Montenegro	0,789	10,5	12,1	14.132,00
Netherlands	0,915	11,9	24,3	46.298,00
New Zealand	0,910	12,5	20,8	34.826,00
Norway	0,944	12,6	22,0	65.461,00
Poland	0,834	11,8	20,7	23.649,00
Portugal	0,822	8,2	25,8	26.759,00
Romania	0,785	10,7	17,6	18.991,00
Russia	0,778	11,7	25,5	24.144,00
Serbia	0,745	9,5	13,5	13.020,00
Slovenia 0,874		11,9	23,8	28.996,00
Spain	0,869	9,6	27,3	32.925,00
Sweden	0,898	11,7	28,2	45.148,00
Switzerland	0,917	12,2	19,9	56.656,00
Turkey	0,759	7,6	12,5	19.020,00
UK	0,892	12,3	22,5	38.452,00
USA	0,914	12,9	18,6	53.042,00

Sources: http://data.worldbank.org/, http://stats.oecd.org/, http://hdr.undp.org/

According to Table 1, 19 countries can be taken as countries with high level of GDP p.c. (more than \$35,000.00), 6 as countries with a medium level of GDP p.c. (\$25.000,00-\$35.000,00), and 14 as countries with low level of GDP p.c. (less than \$ 25,000.00). Data shows that countries with high level of GDP p.c., on average, have shorter average time of education than countries with medium and low levels of GDP p.c. Assumption is that these countries require intensive and specialized education which enables early opting for a certain activity (or for specific area in case of continuing education to graduate studies, postgraduate specialist studies or doctoral studies). That allows earlier school start and training for a certain profession (vocational schools), thereby people finish school earlier, although vocational schools in countries with longer total education last same as in mentioned countries. It is obvious that in countries with high level of GDP p.c. vocational schools start earlier and therefore they finish earlier, which shortens total time of training (e.g. USA, Switzerland, Norway, Austria, Canada, etc.).

In countries with high level of GDP p.c. HDI is also higher. Average HDI for 19 countries with the highest level of GDP p.c. is 0.855 and is the highest in Luxembourg (.933), and the lowest in Netherlands (0.744). In group of countries with medium level of GDP p.c., average HDI is 0.871 and it is higher than average HDI in group of countries with high levels of GDP p.c. because most of the countries in group of countries with the average level of GDP p.c. are Mediterranean

countries with pleasant (warm) climate which affects longer life expectancy of population, and it automatically affects that HDI is higher (Spain, Portugal, Greece, New Zealand).

In a group of countries with high level of GDP p.c. percentage of GDP on social expenditure is on average 17.64%, where we assume that they are trying to avoid dependency culture which is about how high social expenditures negatively affect people's motivation to work. For example, if country provides high unemployment compensations, which at first glance looks like a good and positive measure in terms of care for unemployed persons, they operate in way that unemployed persons will not want to work for just a bit higher income and they will stay economically dependent on social compensations. This will have negative impact on country's economy and employment rate in country. Exceptions to this phenomenon are Scandinavian countries, which also have high percentages of GDP for social expenditures, but they have good system of social compensations. Their system is based on the fact that people immediately after losing their job receive social compensations slightly lower than salary they have had, but then they gradually reduce this compensations to a very low levels which. This forces unemployed persons to find job in short period of time and it doesn't have negative but positive influence on country's economy and unemployment rate. Also, group of countries with low GDP p.c. has low average percentage of GDP for social expenditures (17.56%) because these countries lack of financial resources for social compensations due to the bad economic situation in country, which also contributes to reduction of HDI in this group of countries.

Group of countries with low GDP p.c. has average time of education 10.91 years and it is a bit shorter than average time of education in group of countries with high level of GDP p.c. That is not because of pupils who early specialize or have quality school, but because of bad economic situation in which parents are not able to afford education for their children, so many of them start to work and leave school. For example, in Montenegro average time of training is 7.6 years, 8.2 years in Hungary, then in Belarus 9.8 years, 9.6 years in Mexico and in Argentina is 9.8 years. It can be noticed that in above-listed countries GDP p.c. is almost at the lowest level in observed sample.

Group of countries with medium level of GDP p.c. has average time of education 11.35 years which is higher than average time of education in group of countries with high and low levels of GDP p.c. Assumption is that in these developing countries economic situation is not yet stable and that they encourage further specialization after graduation and that education system is still in process of transformation.

3. Impact analysis of observed variables on living standard.

In analysis of linear correlation matrix mutual influences of variables: HDI, average time of education and social expenditures on GDP p.c.were observed.

Variables:	HDI	Average time of education (year)	social expenditures (% of GDP)	GDP p.c. (PPP, USD)
HDI	1,00	0,7	0,52	0,8
Average time of education (year)	0,7	1,00	0,3	0,5
social expenditures (% of GDP)	0,52	0,3	1,00	0,41
GDP p.c. (PPP, USD)	0,8	0,5	0,41	1,00

 Table 2 Linear correlation matrix

Source: made by authors

As can be seen in Table 2, all variables have mutually positive impact and positive impact on variable GDP p.c. Very significant impact on variable GDP p.c. has variable HDI, while significant impact on GDP p.c. has average time of education. It should also be emphasized very significant impact of variable average time of education on HDI.

In analysis of multiple linear correlation matrix influences of variables: HDI, average time of education and social expenditureson dependent variable GDP p.c. were observed.

constant:	- 160,5
squared coefficient:	0,74
standard error of regression:	9,1
number of observations:	39
degrees of freedom:	35
dependent variable:	GDP p.c. (PPP, USD)
variables:	coefficient:
HDI	2,45
average time of education (years)	- 1,1
social expenditures (% of GDP)	- 0,08

Table 3 Multiple linear correlation matrix

Source: made by authors

As can be seen in Table 2, in interaction of observed variables, variable HDI has positive and significant impact on dependent variable GDP per capita, while variables average time of education and social expenditures have negative impact on dependent variable GDP per capita. Variable average time of education has significant impact on dependent variable, in contrast to the effect of social expenditures which is not significant.

With presented results of research we can conclude that the first hypothesis that countries which have shorter average time of education usually have higher GDP per capita, is accepted, while the second hypothesis that countries which have lower social expenditures, on average, have higher GDP p.c., is rejected.

3.1. Analysis of sensitivity of living standards to observed variables

Problem of dependence analysis of dependent variable (GDP p.c.) and its alterations induced by changes of independent variables was observed and analyzed with help of program NeuroSolutions and construction of neural networks. With sensitivity analysis it is possible to see what is sensitivity of outputs to inputs in the model, and what is significance of each input variables for the model. Graphical analysis shows level of sensitivity of output variable to each of input variables. Values on graph's y-axis show how big is change of output variable if single input variable changes by one unit. Through input variables, with research we attempted to determine their impact on single output variable, mentioned GDP p.c., i.e. sensitivity of change of dependent variables to change of independent variables.



Chart	1 }	Results	of	sensitivity	, anai	lusis	of	observed	variah	les
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Sensitivity	AE
А	4.157,94
В	13,15
Р	1,57

Α	-	HDI (corrected for value of GDP, which it contains, by partial correlation)
В	-	average time of education
Р	-	social expenditures

Source: made by authors

We can see that, with correlation coefficient of 0.98 and standard error of 0.328, from all the variables, the highest sensitivity has variable HDI and it is several times higher than most of other variables, while high level of sensitivity also has variable average time of education. Remaining variable, social expenditures, has low coefficient and here has not been proven significant level of sensitivity to dependent variable.

4. Synthesis of research results

In conclusion, study has shown that at macroeconomic level, if impact of each of observed variables on development level of country or standard of living of its people seen through the GDP per capita is known, systematically planinng and programing investments in certain sectors can be done, which can cause significant impact on higher and faster rates of economic and social development of country. Research has also shown which variables have positive or negative impact, significance of their impact on development level and economic growth and, consequently, priorities of government (macroeconomic) investments can be determined.

Also, research has shown constant and very significant positive impact of variable investment in education and reducing average time of education, whereby influence of human factor in society is

getting stronger. It implies that a priority in running of national economic policy should be investing in people and their education. However, the research also shows that investment in education is not in itself sufficient to ensure high rates of economic growth. It is necessary to invest in other segments of society development related to education of the population. Also, costs of education system should not be observed as costs but as an investment, since it leads to positive economic and social trends.

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