THE ROLE OF CONTINUING EDUCATION / TRAINING ON QUALITY OF LIFE

Elena TEODORESCU (MANESCU), PhD student
IOSUD-SDSE Valahia University of Targoviste, Romania,
madalinaelena_teo@yahoo.com

Elena PIRVAN (OPRESCU), PhD student
IOSUD-SDSE Valahia University of Targoviste, Romania, teodorao@yahoo.com

ABSTRACT: *The importance of knowledge and learning has been recognized since the beginning of time in terms of social and economic development. The welfare of society depends on the welfare of its members. A low level of development has the effect of limiting investments in education and human resources, and diminishes the quality and productivity of work, regardless of the field of activity. In this paper, we present the link between the dependent variable Gross Domestic Product and the independent variable school life expectancy indicator for the period 2012-2019 using the simple regression model. The results stand out the influence of school life expectancy on the degree of the well-being of the population.*

Keywords: quality, education, human resources, social and economic development

JEL Classification: I21, I18, M410

1. INTRODUCTION

A common problem in contemporary society is quality, it generates the evolution and development of mankind. Quality is an objective both in social and professional life, but it is also reflected in personal life. Quality is, therefore, a concept that is found in all areas of activity. In the new economic context, characterized by instability, crises and competitive pressures, the quality of education in the formation of human capital becomes, therefore, an essential pillar, leading to economic growth and development, being recognized that it is one of the engines of economic development, both at social and community level, as well as at individual level.

2. PROBLEM STATEMENT

Over the years, researchers in the field have drawn attention to the increased importance of quality education in building human capital and achieving economic growth.

Schultz (1971) concluded from his research that the increase in income from work is due in an appreciable proportion to the increase of human capital and considers that education is the "main source" of social and economic development.

E.F. Denison (1974) tries to measure the effects of human capital on economic growth and demonstrates after long research that education and training determine the increase of national income.

In the literature, reference is often made especially to educational capital, emphasizing the idea of costs regarding investments in training and education (Lazar, 2005) and the fact that investments in human capital involve long-term benefits for the individual, company, and society as a whole. (Stoican, 2012)

School organizations that focus on increasing quality, pay special attention to improving education by perfecting curricula, introducing more modern teaching methods, using advances in contemporary science and technology. (Antohi, Bozbei, 2014)

Human capital is the fundamental force of a country's economic development. (Badea & Rogojanu, 2012)

Regardless of the level at which it takes place, education plays an important role in increasing competitiveness at the national level, which is why in this paper, in terms of a cross-sectional analysis of time series and development of the macro-econometric model of interdependence between Gross Domestic Product (GDP) and School Life Expectancy, we want to draw attention to the need for solid educational policies that not only lead to facilitating access to the education system, but also to aim at quality, as a perspective of economic and social development. At the same time, the study undertaken in this paper focuses on a comparative approach to the Human Development Index in our country compared to other countries in the world.

The Human Development Index (HDI) is a composite index that measures the average achievement in three basic dimensions of human development - a long and healthy life, knowledge, and a decent standard of living. (Overview Human Development Report, 2019)

Akbas, Senturk and Sancar (2013) present a study on the causality between several macroeconomic indicators, including the Gross Domestic Product.

Dumitrescu, Anghel and Anghelache (2015) present an analysis model designed to outline some of the Gross Domestic dependences, on the case of Romanian economy.

Cahil (2010) examines the correlation between various transformations of GDP and the other elements of the HDI, and the principal components method of factor analysis is used to construct HDI-like indexes with the alternative transformations of GDP.

Kabir (2008) examines the social-economic determinants of life expectancy for 91 developing countries using multiple regression frameworks.

3. RESEARCH QUESTIONS/AIMS OF THE RESEARCH

This paper aims to analyze the interdependence between education and economic and social development in our country. Research questions cover the following issues:

- does education have a strong impact on the macroeconomic results recorded at the state level?
- does the increase in the level of education lead to the increase of the GDP?

4. RESEARCH METHODS

For the analysis of the links between education and socioeconomic development, we developed and tested a linear macro-econometric model of simple regression. This model combines time-series with cross-section analyzes, using a data panel for the period 2012-2019, specific to Romania. The simple linear regression model has the following general form:

$Y=\beta_1 + \beta_2 X + \varepsilon$, where (1)

Y represents an endogenous variable, X represents an exogenous variable, and ε = random variable that summarizes the influence of other variables (unspecified in the model). Gross Domestic Product is the dependent variable, and the independent variable is School Life Expectancy (see Equation 1). We use Data Analysis from the Microsoft Excel program, to create the macro-econometric model described above.

5. FINDINGS

The degree of the well-being of the population of a country measured by the Human Development Index places Romania in the most recent top on the 49th position out of 189 countries considered. (Figure 2)

Regarding the evolution of the well-being of the Romanian population, in the last ten years, it had an ascending trend, the lowest value of HDI 0.709 being registered in 2000 and the highest HDI 0.828 corresponding to 2020. (Figure 1)

Reported at the level of 2019, the ranking shows that Romania registers a value of HDI of 0.828 and a value of the Gross National Income (GNI) per inhabitant, 29.497 dollars, respecting the rule of purchasing power parity.

At the top of the ranking are countries such as Norway with HDI 0.957, Ireland and Switzerland, both with HDI 0.955, as well as high values of Gross National Income per capita. At the bottom of the ranking is Niger with the lowest HDI value of 0.394 and a GNI value of $ 1.2 per capita, which indicates a low degree of population welfare. (Figure 2)

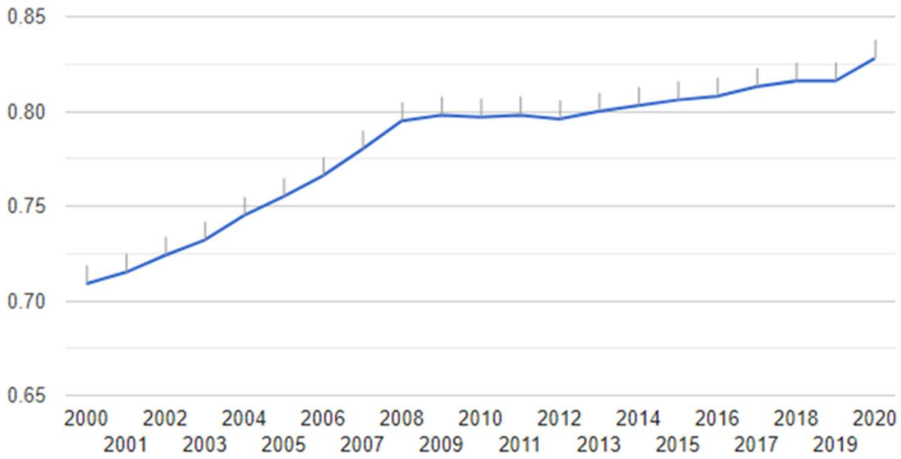
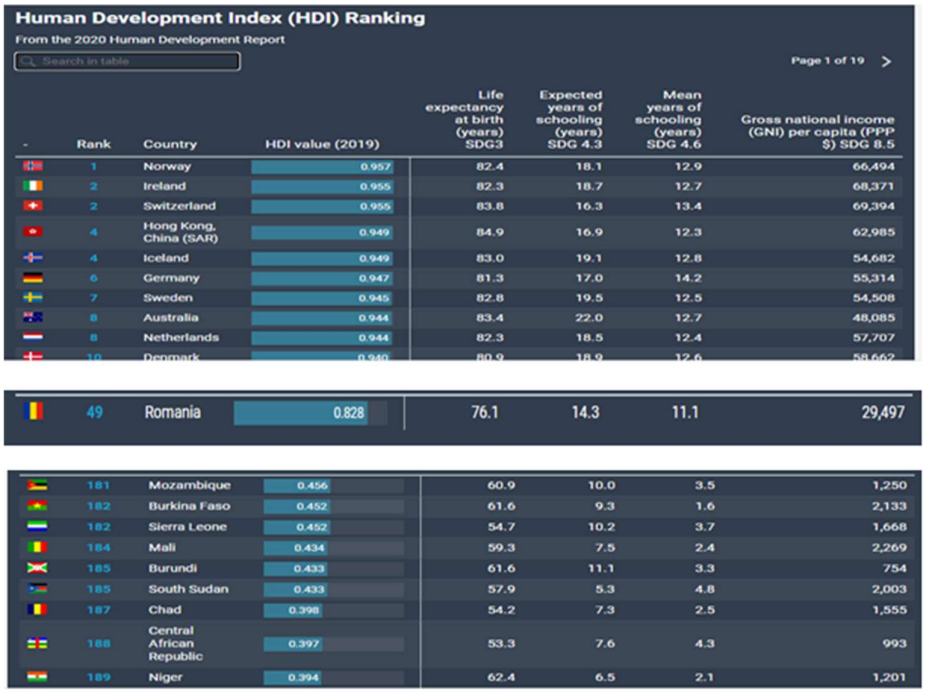


Figure 1. Romania Human Development Index 2000 – 2020

Source: adapted from http://www.theglobaleconomy.com/Romania/human_development/ visited at 26.03.2021, 11:32



Human Development Index (HDI) Ranking

From the 2020 Human Development Report

Search in table

Page 1 of 19

Rank	Country	HDI value (2019)	Life expectancy at birth (years) SDG3	Expected years of schooling (years) SDG 4.3	Mean years of schooling (years) SDG 4.6	Gross national income (GNI) per capita (PPP $) SDG 8.5
1	Norway	0.957	82.4	18.1	12.9	66,494
2	Ireland	0.955	82.3	18.7	12.7	68,371
2	Switzerland	0.955	83.8	16.3	13.4	69,394
4	Hong Kong, China (SAR)	0.949	84.9	16.9	12.3	62,985
4	Iceland	0.949	83.0	19.1	12.8	54,682
6	Germany	0.947	81.3	17.0	14.2	55,314
7	Sweden	0.945	82.8	19.5	12.5	54,508
8	Australia	0.944	83.4	22.0	12.7	48,085
8	Netherlands	0.944	82.3	18.5	12.4	57,707
10	Denmark	0.940	80.9	18.9	12.6	58,662
49	Romania	0.828	76.1	14.3	11.1	29,497
181	Mozambique	0.456	60.9	10.0	3.5	1,250
182	Burkina Faso	0.452	61.6	9.3	1.6	2,133
182	Sierra Leone	0.452	54.7	10.2	3.7	1,668
184	Mali	0.434	59.3	7.5	2.4	2,269
185	Burundi	0.433	61.6	11.1	3.3	754
185	South Sudan	0.433	57.9	5.3	4.8	2,003
187	Chad	0.398	54.2	7.3	2.5	1,555
188	Central African Republic	0.397	53.3	7.6	4.3	993
189	Niger	0.394	62.4	6.5	2.1	1,201

Figure 2. Human Development Index (HDI) Ranking of the world

Source: adapted from 2020 Human Development Report Office http://hdr.undp.org/en/content/latest-human-development-index-ranking visited at 26.03.2021, 10:32

The analysis of the data from the period 2000-2019 on the percentage evolution of Romania's economic growth, more precisely of the macro-indicator Gross Domestic Product, shows large fluctuations over the period considered. There is a negative value of economic growth in 2009, -7.5 percent compared to the previous year, then a steady growth that reaches its maximum value in 2017, of 8.9 percent compared to the previous year, after which the trend decreases until 2020, when it reaches the lowest value, of -10 percent compared to the previous year, due to the pandemic crisis worldwide. (Figure 3)

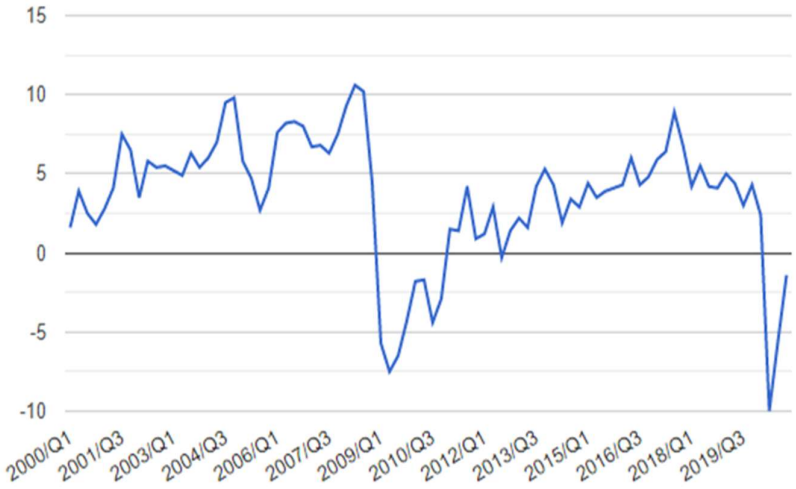


Figure 3. Romania Economic (GDP) growth percent 2000-2020

Source: http://www.theglobaleconomy.com/Romania/gdp_growth/ visited at 26.03.2021, 11:44

The analysis of the values of the school life expectancy of Romania, in the period 2012-2019, shows an ascending evolution from 14.4 in 2012 to 14.6 in 2016, when the maximum value is reached, after this year there is a downward trend up to 14.3 in the year 2019. Compared to the countries that occupy the first three places in the HDI ranking in the world, which register in the analyzed period exclusively an ascending trend of this indicator, Romania reaches a peak in 2016 and then decreases constantly. (Table 1)

Table 1. School Life Expectancy

	012	013	014	015	016	017	018	019
Norway	7.5	7.7	7.7	7.8	8.0	8.1	8.1	8.1
Ireland	8.0	7.9	8.2	8.7	8.8	8.8	8.8	8.7
Switzerland	5.8	5.9	6.0	6.2	6.2	6.2	6.3	6.3
Romania	4.4	4.5	4.5	4.5	4.6	4.3	4.3	4.3
Bulgaria	4.5	4.9	5.2	5.1	4.9	4.6	4.4	4.4

Source: adapted from http://www.hdr.undp.org/en/indicators/69706 visited at 26.03.2021, 11.50

In terms of economic growth, during the period under review 2012-2019, the highest growth was recorded in Ireland in 2015 when it reached a peak of 25.66 percent compared to the previous year. Norway and Switzerland are also experiencing upward economic growth until 2017 and then a slight decrease in 2018 in Norway compared to the previous year, while in Switzerland economic growth has a steady trend. Romania and Bulgaria have similar paths in terms of economic growth over the period considered, the lowest percentage value of economic growth in our country is recorded in 2015, after which the growth trend remains constant.

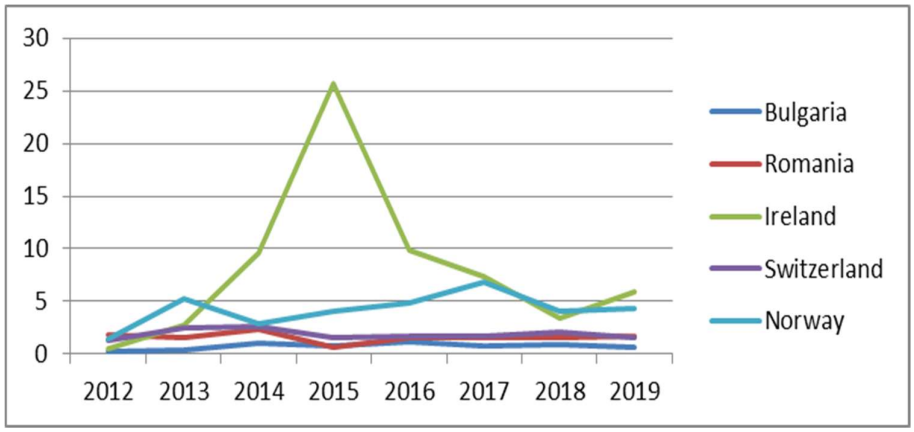


Figure 4. Economic growth, percent change in quarterly real GDP 2012-2019
Source: http://www.theglobaleconomy.com visited at 19.05.2021, 10.50

Before analysing the linear model, we can observe the similar tendency of the evolution of the two variables analysed over the statistical period making the subject of the analysis (Figure 5).

As noticeable from the following graphic, during the analysed period, 2012-2019, the evolution of the two variables is a sinuous one, but relatively similar.

The analysis performed in order to finalize the linear model have been achieved by utilizing the official data published by HDI Reports, hence the original data basis, without making the additional tests and implicitly, the first difference. In this case it has been assumed that the data series is stationary.

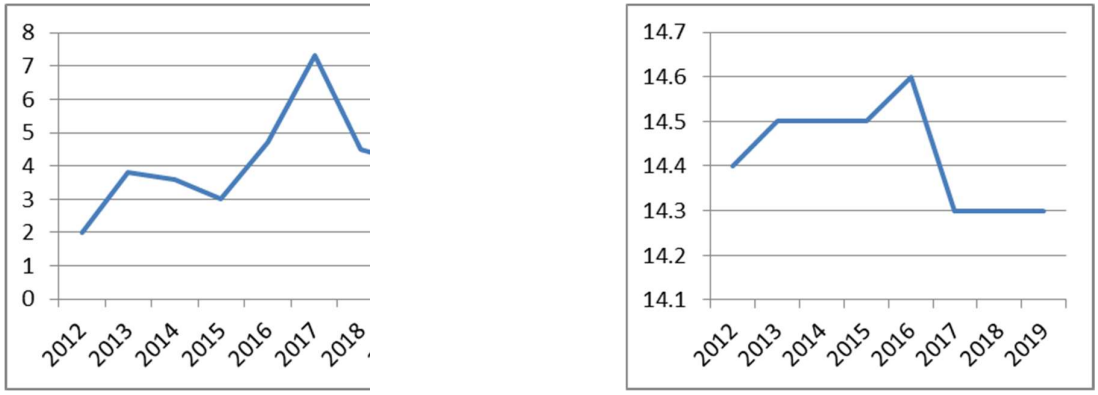


Figure 5. The evolution of the two variables analysed: Gross Domestic Product and School Life Expectancy

Source: adapted from http://www.hdr.undp.org/en/indicators/69706 and http://www.theglobaleconomy.com/Romania/gdp_growth/ visited at 26.03.2021, 11:44

The correlation coefficient between the two variables Gross Domestic Product growth rate and School Life Expectancy, taken into account in the realization of the macro-economic model, registers a negative value of -0.3452, which proves that there is an inverse link between the two variables. (Table 2)

Table 2. Correlation coefficient

	Gross Domestic Product- the growth rate	**School Life Expectancy**
Gross Domestic Product- the growth rate	1	
School Life Expectancy	-0.3452	1

Source: data processed by the author

Using the coefficients from the analysis summary (see Figure 6) we obtain for the macro-econometric model (see equation 1) the simple linear regression model below for Romania data panel:

$$Y = 70.1763157894739 - 4.57894736842107 X \quad (2)$$

The coefficient for the independent variable recorded the value of -4.57894736842107, a negative value which indicates a reverse link between Gross Domestic Product and expected years of schooling.

The free term equal to 70.1763157894739 represents the value of the dependent variable when the independent variable is equal to zero.

The coefficient of determination (R Square) being 0.1191 indicates that the variation of Gross Domestic Product is explained at a rate of 12% by the variation of School Life Expectancy.

The Adjusted R Square value is -0.027 which refers to the adjusted value of the determination coefficient.

The significance limit, F-test, in the ANOVA analysis validates the model since F is 0.811 and Significance F is 0.04023 (lower than 0.05) we conclude that the regression model is valid and we can use it to analyze the relationship between the two variables.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.3452028
R Square	0.1191649
Adjusted R Square	-0.0276409
Standard Error	1.56648
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.991842105	1.9918421	0.811718	0.040232666
Residual	6	14.72315789	2.4538596		
Total	7	16.715			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	70.176316	73.31473529	0.9571925	0.3754325	-109.2183789	249.57101	-109.218379	249.5710104
X Variable 1	-4.57895	5.082332296	-0.900954	0.4023267	-17.0149665	7.8570718	-17.0149665	7.857071759

Figure 6. Linear regression model
Source: data processed by the author

6. CONCLUSIONS

The issue of a nation's quality of life (well-being) can be interpreted from many points of view, but in this study, we chose to give more importance to the role of education and its quality in increasing the long-term well-being of a nation. The attention given to education is reflected in the obtained macroeconomic results. Increased spending on education will lead to sustainable growth in GDP.

As Teselios D., (2014) have studied the link between education and the social and economic growth of a country and Anghelache and Sacală (2016) studied and tested the applicability of macro-econometric models in the study of the dynamics of the Gross Domestic Product, this study continues the research of the interdependence between the two variables analyzed and described above.

The results of the analysis show that the variation of Gross Domestic Product is explained at a rate of 12% by the variation of School Life Expectancy. Although in this research approach we focused on the relationship between education, more precisely school life expectancy and Gross Domestic Product per capita, we admit that research limits are several possible variables of influence, and the possibility of building a multiple regression model leads to further research. Compared to international studies, reports on the association between population welfare and increasing school life expectancy in EU Member States - using individual states as units of analysis - have shown a more consistent pattern of association, and education has been proposed as one of the followed.

Increase of school life expectancy are found by simulation to be growth and welfare promoting. Knowledge, learning, savings and health care are complements in equilibrium, rising with economic development. The goal of developing any country is to create conditions in which people can live a long and healthy life and benefit from knowledge.

REFERENCES

[1] Anghelache, C., Sacală, C. (2016). Multiple linear regression is used to analyze the correlation between GDP and some variables. Romanian Statistical Review, Supplement, 9, pp. 94-99.

[2] Akbas, Y.E., Senturk, M., Sancar, C. (2013). Testing for Causality between the Foreign Direct Investments. Current Account Deficit. GDP and Total Credit: Evidence from G7. Panoeconomicus. Vol. 60. Issue 6 (December). pp. 791-812

[3] Antohi, L., Bozbei, V. (2014). Investițiile în capital uman în cadrul instituțiilor de învățământ superior [Investments in human capital in higher education institutions]. In Analele Ştiinţifice ale Universităţii de Stat "Bogdan Petriceicu Haşdeu" din Cahul [Scientific Annals of the State University "Bogdan Petriceicu Hasdeu" from Cahul], No. 10, pp. 212-220.

[4] Badea, L., Rogojanu, A. (2012). Controverse privind relaţia educaţie superioară– capital uman – competitivitate [Controversies regarding the relationship higher education - human capital - competitiveness]. In Revista Economie Teoretică şi Aplicată [Journal of Theoretical and Applied Economics], vol. XIX, No. 12, pp.122-139.

[5] Cahil, M. (2002). Diminishing returns to GDP and the Human Development Index. Applied Economics Letters,Vol. 9, Issue 13, pp. 885-887.

[6] Denison, E. (1974). Accounting for United States Economic Growth 1929-1969. Washington, DC: Brookings Institution Publishing.

[7] Dumitrescu, D., Anghel, M., Anghelache, C. (2015). Analysis Model of GDP Dependence the Structural Variables. Theoretical and Applied Economics, Volume XXII, No. 4(605), Winter, pp. 151-158

[8] Kabir, M. (2008). Determinants of Life Expectancy in Developing Countries. The Journal of Developing Areas, Vol. 41, No. 2 Spring, pp. 185-204

[9] Lazăr, L. (2005). Evaluarea capitalului uman – Strategii de ocupare a forţei de muncă [Human capital assessment - Employment strategies]. Cluj-Napoca: Risoprint Publishing.

[10] Schultz, Th. (1971). Investment in Human Capital, The Role of Education and Research. New York: The Free Press, Division of The Macmillan Company.

[11] Stoican, M. (2012). Dezvoltarea capitalului uman în condițiile formării economiei inovaționale [Development of human capital in the conditions of the formation of the innovative economy]. Chișinău: ASEM.

[12] Teselios, D., Savu, M., Mihai, I. (2014). The analysis of school expectancy influence on the gross domestic product at the level of the Romanian economy. Management strategies journal published by ″Constantin Brâncoveanu″ University, Pitesti, no.4, p.790.

[13] Overview Human Development Report. (2019). Beyond income, beyond averages, beyond today: Inequalities in human development in the 21st century. New York: UNDP Retrieved from http://hdr.undp.org/sites/default/files/hdr_2019_overview_-_english.pdf