JGPG (2020) 9: 79-91
DOI 10.14666/2194-7759-9-1-006

PAPER

Education and Its Impact in Economic Growth in Lower Middle Income Countries

Bekim Marmullaku[*] · Besnik Fetai[**] · Avni Arifi[***]

Abstract The objective of this paper is to link and assess the relationship between investment in education and economic growth in the of low middle income countries in Europe including Russia and Turkey for e period between 2000 – 2017 , and the effect of some of the main variables associated with this investment, such as government expenditure on education as percentage of total government expenditure; government expenditure per student on tertiary education as percentage of GDP and school enrollment on tertiary education. As a technique is employed a Hausman Taylor model with instrumental variables (IV) , to show the regression results of relationship between investment in education and GDP growth in surveyed countries. Also, for comparison reasons the paper shows the results from pooled OLS, fixed effects and random effects. Results from this empirical research shows a positive impact on government's investment in tertiary education, while school enrollment in tertiary education has a negativ effects in GDP growth in low middle income countries in Europe.

The study is original in nature and makes effort to promote investment in education in low middle income European countries, including Russian Federation and Turkey. The findings of this study will be of value to governments of above mentioned countries.

Keywords: Education; GDP growth; Low middle income countries; Investment**.**

1. Introduction

The link between education and economic growth of a country has always been a challenge for researchers in this field. Particularly challenging was the choice of an appropriate econometric model to produce accurate results about the extent of education's impact on a country's economic growth. The contribution of this study is twofold.

Bekim Marmullaku (✉)[*], Besnik Fetai[**], Avni Arifi[***]
[*] Fama College, Prishtina, Republic of Kosovo.
Email: bekimi05@yahoo.de
[**] South East European University, Tetovo, North Macedonia.
Email: b.fetai@seeu.edu.mk
[***] South East European University, Tetovo, North Macedonia.
Email: a.arifi@seeu.edu.mk

The main contribution of this research paper is the fact that it shows that "common" models are not suitable for extracting such research results due to endogenous problems. The results of this paper show that the link between investment in education and GDP growth is a complex empirical problem. Therefore, sophisticated methods should be used when trying to investigate this link. . For a long time there are debates about the importance and impact of a society's education in a country's economic development. Many authors have provided various arguments about the impact that education can have on developing a country's economy. Today there are contradictory thoughts about this impact. The role of improved schooling, a central part of most development strategies, has become controversial because expansion of school achievement has not guaranteed improved economic conditions. The objective of this study is to link and assess the relationship between investment in education and economic growth in some of low middle income countries in Europe including Russia and Turkey, which are seen in appendix 1, i.e., for a group of countries for which there are very few studies of this nature, based on hypothesis statement of the positive impact of education on a country's economic growth. Well-known classic and neoclassical economists, like Romer (1990), Lucas (1988) and Solow (1956), have emphasized the contribution of education to the development of their economic growth theories and have built models.

The theoretical approaches to modeling the relationship between education and economic performance are the models of neoclassical growth of Solow (1957) and the model of Romer (1990). In addition to the theoretical aspects, there are many empirical studies that have analyzed the impact of higher education on economic growth and development. Also, some authors have noted that economic growth rates also vary from developed to developing countries. Industrialized economies develop economically faster than less industrialized ones (Goodwin, Nelson, & Harris, 2007).

Higher education has been a motor of economic growth (Milne, 1999). For this reason, many higher education institutes have been set up to respond to the needs of industry and commerce (Gray, 1999). On the other side, development strategies and economic policies in many countries are dominated by the vision that education investment is an important factor of development and competitively of their economies (Lisbon Strategy, 2000), and creation of new opportunities for the unemployed and the poor. Budgets allocated to education in the countries of OECD (Organization for Economic Cooperation and Development - OECD Member States) have increased in the last decade, thereby reaching the rate of almost 6% of the GDP (Education at a Glance. OECD. 2007). Being a heavy burden on the state budget, education investments have turned into permanent debates of governments in these countries, due to dilemmas on their effects and their rates of return. If one refers to De la fuente &Ciccone, (2002) and European Competitiveness report, 2015, investments in education have a manifold return rate for the individual and society, in terms of increased productivity and strengthening of their economies. This paper is structured as follows: Literature Review; Research Methodology; Empirical Results; Conclusions.

2. Literature review

2.1 Impact of education on economic growth - general approach

Traditionally, education is understood as a process for achieving and advancing people's knowledge, skills and abilities, and improving tire behavior and communication. But beyond that, different authors like Zugaj (1991) think that the effects of education should also be reflected in work in the organization and in general in the organization where they work. Whereas, according to Barro (2013), education has the power to make the world a better place.

Before the 1960s, there have been many studies that have tried to find the most accurate ways and models to measure the impact of education on a country's economic development, either directly or indirectly. But these economies are focused only on exogenous factors (land, labor, capital) as factors to analyze growth. After this period, these theoretical economics began to advance studies by analyzing the endogenous factors that may affect this growth, which specifically include human capital and its education. Contribution to these theories was given by Becker (1964), Barro (2001), Lucas (2002) and Barro and Sala – i - Martin (2004).

Education has a positive and significant impact on GDP growth. This is also confirmed by the studies of Mankiw et al (1992) and Barro (1991) who analyzed the relationship between education and economic growth. This was done by examining variations in school enrollment rates, using a single cross section, one for developed countries and one for less developed ones. This is thought to be achieved through a more qualitative engagement of educated people and greater productivity at the workplace. Whether it is in their engagement in the enterprise and in the governing institutions. However, although there are numerous arguments in the economic literature that show the contribution of education to economic and social development, it is still not clear enough and is difficult to measure how and how much education actually makes individual more productive. Indeed, the relationship between science, education, population growth and economic growth is complex, especially those that are directed at socio-psychological research that try to transform their values and attitudes directly into their growth, and development. The contribution of education to a country's economic development consists in developing individuals' skills to translate their values and ideas from "traditional" to "contemporary" and thereby increasing the level of structural modernization in society can be reached the growth of the rate of economic and social development (Karavidic, 2012).

2.2 Human capital and endogenous growth

Different theories of economic growth, the role of human capital are valuating in different ways. The same thing is done for the education of human capital. In fact, there are two theoretical approaches that model the connection between economic growth and human capital. They are the neoclassical model of Solow (1957) and the Romer (1990) model. Analyzing endogenous growth models Aghiton and Howitt (1998) note that the role of human capital is divided into two categories. According to them, the

first category is based on the concepts of Solow and the concept of capital expansion, including human capital, where the growth of human capital over time influences sustainable growth. While the second category model of generating innovations and improving a country's capability to adapt to new technology, is attributable to stepping into the existing stock of human capital. And, as Romer says (1990), this leads to sustained growth and technological progress

To empirically test the theory of neoclassical growth and to measure the effect of accumulation of physical capital on productivity growth, different researchers use market analysis. Cortright (2001) points out Solow's lack of growth (1956), noting the lack of a precise definition of technological change. The most important influence of the Solow model is the convergence of income theory (Barro, 2001). This convergence was initially studied by Malthus and Ricardo and which is based on declining returns from equity. According to Mankiw (1995), another problem with the neoclassical model is that it fails to explain the changes in real rates of return from equity. Mankiw also finds that including physical and human capital, then the results resemble the predicted theories of the neoclassical model.

2.3 Communication and effective know-how transfer

Communication is a specific competence in developing the personality of an employee in the organization. Education plays a special role here too. A factor in a larger development of a country is the way and rationality of communication. This is to achieve a better flow of information and a more effective Know-How and it is concluded that this leads to greater and faster development. A better level of communication (thought to be achieved by higher education) reduces the costs in the process of transforming knowledge and other useful information in this process.

According to Mankiw, Romer, Weil (1992), workforce education increases human capital and labor productivity in an enterprise and leads to a higher level of output equilibrium. It can also increase the innovative capacities of the economy, products, and knowledge-based processes and thus stimulate growth (Lucas, Aghion, Howitt, 1998). Communication promotes growth by facilitating the dissemination and transmission of the knowledge needed to understand and process new information and to implement new technologies designed by others that also promote growth (Nelson, Phelps, 1996, Benhabib and Spiegel, 1994

2.4 Complementarities between the level of education and economic growth

For most people, the relationship between the value of schooling and its economic returns is important, also based on the different levels of achievement of education for individuals. All this makes sense if it leads to economic growth, whether through private or public roads. It is thought that private benefits to individuals are acceptable if prospects for better jobs, higher wages and more investment opportunities are achieved. A better life out of these benefits makes individuals work with higher productivity for a longer period of time. Even Jacob Mincer (1970, 1974) finds that investment in

different amounts affects individual earnings. A large number of such studies have been developed in the last decades in all over the world. Harmon, Oosterbeek and Walker (2003) have also done so, concluding that while assessment approaches may affect the correct accuracy of the return rate, it is clear that there is a strong causal impact on school achievement in incomes.

Many other authors with a large number and variety of studies on this topic, such as Psacharopoulos (1994), Card (1999), Harmon, Oosterbeek and Walker (2003), Psacharopoulos and Patrinos (2004)), and Heckman, Lochner and Todd (2006) estimated return rates.

Another approach is for government spending on education. Public benefits from these investments are less well-known. Therefore, this is considered as a reason for neglecting governments to invest in higher education. However, in their studies Barro and Sala-i-Martin (1995) accounted for a strong positive impact of these investments. Other studies conclude the discrepancy between expected learning outcomes in education and investment that a country makes in education. In connection with this Hanushek, Wößmann (2007) say that simply increasing educational spending does not provide improved student outcomes. For example, there are four countries in Europe that spend less than Greece, and have better results, such as Poland, Hungary, the Czech Republic and the Slovak Republic. (Source: OECD (2004, pp. 102 and 358). Individual benefits from a proper education can be translated into social benefits when higher-income individuals increase their consumption by allowing the producer to benefit , increase tax revenue for governments and facilitates the distribution of state finances.

In a knowledge economy, higher education can help economies develop and reach technologically advanced societies. Graduates in higher education are likely to be more aware and better able to use new technologies. They are also more likely to develop new tools and skills themselves. Their knowledge can improve skills, while the greatest confidence and know-how develops from higher education, which can generate entrepreneurship, and with positive job creation effects (Kule, 2015).

2.5 Impact of education quality on economic growth

Effects on economic growth may also have the level of individual education and the quality of its education. Many theories have tried to make this connection. Hanushek and Wößmann (2007) have also done so, giving results that show the impact of the quality of education on individuals' income, both for people of developed and low middle-income countries. Through standardized tests, different authors have been able to document how substantial the revenue priority is in achieving the highest achievement. The approach that links the profit log with years of schooling, work experience and other factors has been found by the United States analysis (analyzed in Hanushek (2002b)). See also Psacharopoulos and Patrinos (2004), Hanushek, Lavy, and Hitomi (2006), Nickell (2004), Dee (2004); Milligan, Moretti, and Oreopoulos (2004)

3. Research Methodology

There are different econometric models that researchers used to measure the ratio between investment in education and economic growth in a country. This study tends to link and assess the relationship between investment in education and economic growth in some of low middle income countries in Europe including Russia and Turkey. There are 13 countries (Appendix A1) that have full data on investments in higher education during the period 2000 - 2017, in order to make possible the results of this research by using an econometric model. This research will use data from OLS, fixed and random effects and estimation from Hausman –Taylor instrumental variables - IV (Baltagi, 2013). For the processing of datatest shows that the Hausman-Taylor model is more appropriate than fixed and random effects and this conclusion came during the the Hausman test which is used to decide between fixed effects, random effects and Hausman –Taylor model.

3.1 Econometrics modeling

OLS Model

First, we ignore the panel structure of the data. And estimate an OLS model which can be written as:

$$Y_i=\beta_0+\beta_1 GEG_i+\beta_2 GEE+\beta_3 ETE_i+\beta_4 GES_i+\beta_5 SE_i+\beta_6 ER_i+\beta_7 UR_i+\varepsilon_i \quad (1)$$

where real GDP is represented from dependent variable yit for each country *i* and the time index *t* represents years. The explanatory variables include yit-1 is the first lagged of dependent variable, *GEGit* government expenditure on education, total (% of GDP), *GEEit* government expenditure on education, total (% of government expenditure), *ETEit* expenditure on tertiary education (% of government expenditure on education), *GESit* government expenditure per student, tertiary (% of GDP per capita), *SEit* school enrollment, tertiary (% gross), *ERit* employment to population ratio, 15+, total (%), *URit* unemployment, total (% of total labor force). uit is exogenous disturbance

This model assumes that for any given X, there is no serial correlation between observations and, furthermore, errors are not heteroskedastic. In other words this assumption means that an individual's observations over time are observations from different countries. This approach might be reasonable, for example, in cases when the size of cross-sectional samples is too small. However, ignoring the panel structure of the dataleads to results that are not appropriate in many cases. Despite itspotential biases,OLS model will be used in this paper, because it offers a good starting point. Its results will be compared to results from other models that are better sophisticated for the analysis of panel data. Other models considered here are the random effects estimator, the fixed effects estimator as well as the Hausman-Taylor estimator.

Fixed and Random Effects Models

As mentioned above we mainly use more suitable models for analyzing panel data,

namely fixed effects, random effects model and the Hausman-Taylor model in order to eliminate the problem of heterogeneity in the OLS. We here start with the specification of the model:

We consider once more the above specified model now just accounting for panel structure of the data:

$$Y_{it}=\beta_0+\beta_{1t}GEG_{it}+\beta_2 GEE_{it}+\beta_3 ETE_{it}+\beta_4 GES_{it}+\beta_5 SE_{it}+\beta_6 ER_{it}+\beta_7 UR_{it}+\varepsilon_{ti} \quad (2)$$

Now, we should consider that in the case of these models the error term has the following structure

$$\varepsilon_i=\mu_i+\eta_{it} \quad (3)$$

where it is assumed that η_{it} is uncorrelated with explanatory variables. The first term of the decomposition, μ_i, is called an individual-specific effect; and the second part, corresponds to the common stochastic error term in, for example. In this formulation, the first part of the error term varies across countries but is constant across time; this part may or may not be correlated with explanatory variables. The second part, on the other hand, varies arbitrarily across time and countries.

Fixed effects model and random effects model differ on a crucial assumption about whether μ_i is or is not correlated with the set of explanatoryvariables. Random effects assume that μ_i is uncorrelated explanatory variables. While, Fixed effects model assumes that μ_i is correlated with explanatory variables cov($\mathbf{X}_{it}$, μ_i)[1] 0.

Random effects model and the fixed effects model, are used in this paper because of their nature, they are both are models designed to handle the specific structure of longitudinal or panel data. These models help us account for unobservable country heterogeneity.

Furthermore, fixed effects estimator produces consistent estimates even when random effects model is valid, therefore it is appealing to prefer fixed effects model over random effects model, another reason for this is that the assumption that individual-specific effects are uncorrelated with the relevant covariates is to strong to be believable.

However, we should note that in our study there are also downsides of relying on the fixed effects model only. The biggest one is that time-invariant variables cannot be used and measurement error in explanatory variables might lead to biased results.

As a result of what we argued, neither of them (random effects or fixed effects models) might be appropriate in our case but despite that we present the results of those models.

Therefore, the final model that we use is Hausman-Taylor estimation.

The Hausman-Taylor Model

Hausman and Taylor model combines the aspects of both the random-effects and fixed-effects estimators. It is an instrumental- variable technique that uses only information already contained in the model to eliminate the correlation between country specific effects and the error term.

Moreover, it does not elimination of time-invariant explanatory variables.

Hausman tailor takes this model of the form:

$$Y_{it}=X_{it}\beta+ Z_i\gamma+GEG_{it} + \mu_i+ \eta_{it} \quad (4)$$

Where the Zi are time-invariant covariates. In this formulation, all individual effects that are denoted as Zi are observed. As in the previous panel models, unobservable individual effects are contained in the person-specific random term, μ_i. Therefore, the Hausman and Taylor model offers is more appropriate method because it is always consistent and efficient. Consequently, results of this method should be taken more seriously compared to other methods.

Furthermore, the reason of applying the Hausman – Taylor IV model is endogeneity of variables. Determinates of growth could be determined by growth itself and that is because some of variables can be presumed as a endogenous variable.

Based on Hausman test we can consider that the Hausman - Taylor instrumental variable IV model is more efficient model than fixed effects or random effects to assess the relationship and to identify the causal link between the investment in education and economic growth for each of 13 low middle income European countries. Each countries data are used for period from 2000 -2017. For comparison purposes, this research will show also the results from pooled OLS, fixed effects and random effects.

3.2 Empirical Results

Table nr. 1. presents the results from several models such as OLS, fixed effects, random effects estimations and Hausman Taylor estimator. It is generally accepted that in papers like this one OLS produces biased estimators therefore we provide OLS results just for comparison with other models. Moreover, we applied the Hausman test in order to test which one between fixed and random effects is more appropriate. The Hausman test tests the null hypothesis that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator if they are (insignificant P-value, Prob>chi2 larger than .05) then it is safe to use random effects. Hausman test performed in this paper is 13.05*** which is an indication that that fixed effects estimator is better than random effects estimator. Because arguably the random effects estimator is inconsistent and less efficient. In addition to that this shows that the assumption that there is no correlation between unobservable individual-specific effect and explanatory variables does not hold.This same logic applies when deciding between using fixed effects model and the Hausman-Taylor estimator, the Hausman test to indicates that Hausman-Taylor estimator is a better and more efficient estimator. Therefore, the Hausman-Taylor instrumental variables estimator is used in this paper to assess the impact of a set of education determinants on the GDP growth another reason for this is that some of the variables are endogenously determined and this method is the best way to deal with that issue.

The regression tries to quantify how much the explanatory variables impact the growth rate of GDP for the thirteen countries studied. This paper investigates, for instance, if an increase in the percentage of government spending on education causes

an increase in the growth rate, or a decrease, or even if spending on education has no significant impact on economic growth at all.

The results from the OLS estimator are presented in Table 1. indicate that the impact of the explanatory variables in GDP growth is pretty huge for instance according to OLS a 1 percentage point increase in government spending in education increases GDP by around 0.55 percent, which is a huge impact but due to the presence of unobservable individual heterogeneity, the OLS estimator is biased.

Table 1. Regressions results

Variables	OLS gdp	Fixed effects gdp	Random effect gdp	Hausman – Taylor IV gdp
gdp				0.29544***
s.e				(0.000)
govexpedugdp	0.61291	-0.55639	0.60242	-0.56119
s.e.	(0418)	(0.577)	(0.427)	(0.521)
govexpedugov	0.54799***	0.72960***	0.54912***	0.65725***
s.e.	(0.006)	(0.005)	(0.006)	(0.005)
expteredu	0.33189***	0.26690	0.33072***	0.17423
s.e.	(0.003)	(0.127)	(0.003)	(0.250)
govexpstu	-0.38967***	-0.47700***	-0.38924***	-0.26060**
s.e.	(0.000)	(0.001)	(0.000)	(0.049)
schoolenroll	-0.1911***	-0.22821***	-0.19104***	-0.13865***
s.e.	(0.000)	(0.000)	(0.000)	(0.004)
emplpoprat	0.14685*	0.04077	0.14593*	0.04274
s.e.	(0.090)	(0.830)	(0.092)	(0.749)
unempl	-0.0787	-0.20752	-0.07986	-0.12272
s.e.	(0.472)	(0.241)	(0.467)	(0.427)
Nr. obs	195	195	195	195
R-squared	0.306	0.274		
F	11.80	6.54		
Chi^2			81.70	77.99

Notes: *Statistically significant at 10% level; ** statistically significant at 5% level; ***statistically significant at 1% level.
Source: Authors calculation

Almost the same results as those of the OLS are obtained using random effects model, which is another argument that random effects model is not consistent nor efficient and in this case is producing biased estimates. The fixed effects estimator on the other hand shows completely different results, it shows that only some of the variables have positive impact on growth, others have a small negative but usually insignificant impact

or even no effect at all. Fixed effects estimator provides results that are pretty similar to Hausman Tailor estimator, which is an indication that it is much more accurate than random effects model.

Despite the fact that fixed effects provided more accurate results, because of the nature of the data and endogeneity problems that are present in the data, a Hausman-Taylor estimator is calculated. In using Hausman-Taylor instrumental estimator, some of the variables that are considered as exogenously determined, therefore, are used as their own instruments are:

GDP growth first lag (gdpgrowth), government expenditure on education as a percentage of GDP (govexpedugdp), expenditure on tertiary education as percentage of government expenditure on education (expteredu), government expenditure per student on tertiary education as percentage of GDP (govexpstu) and school enrollment on tertiary education (schoenroll). On the other hand, the variables that we consider to be endogenously determined are instrumented by the deviation from their individual means. These variables are: Government expenditure on education as percentage of total government expenditure (govexpedugov), unemployment rate ILO definition (unempl), employment rate ILO definition (empl).

GDP growth first lag, this variable (Yit-1) is the first lag of the level of real GDP, and it is instrumented by the deviation from individual means. The estimated coefficient on (Yit-1), 0.29***, which shows that the growth of GDP has a positive significant impact on growth the following year for European emerging countries. Government expenditure on education as a percentage of GDP (govexpedugdp), this variable is endogenous and is instrumented by the deviation from their individual means, the estimated coefficient on (govexpedugdp), 0.65***, which means that one percentage point increase in government spending as a ratio of GDP across European emerging countries increases GDP by 0.65%, which is a pretty huge impact. Expenditure on tertiary education as percentage of government expenditure on education (expteredu), also has a positive impact, its coefficient is 0.17 but it is statistically insignificant, which means that no statistically traceable impact between an increase of government spending on tertiary education can be found. Moreover, both variables government expenditure per student on tertiary education as percentage of GDP (govexpstu) and school enrollment on tertiary education (schoenroll) have negative coefficients -0.26** and -0.13*** respectively, which means that an increase in expenditure per student as share of GDP by one percent decreases GDP growth by 0.26%, the same logic applies with the school enrollment. Finally, unemployment and employment variables are used as control variables, coefficients of both of them are as expected, for unemployment negative, while for employment positive.

4. Conclusions

The Hausman - Taylor instrumental variable IV model is more efficient model than fixed effects or random effects to assess the relationship and to identify the causal link between the investment in education and economic growth for each of 13 low middle income European countries. The reason of applying the Hausman – Taylor IV model is

endogeneity of variables. Determinates of growth could be determined by growth itself and that is because some of variables can be presumed as a endogenous variable.

The results of this paper show that the growth of GDP has a positive significant impact on growth the following year for European emerging countries. Government expenditure on education as a percentage of GDP is endogenous variable and is instrumented by the deviation from their individual means, the estimated coefficient shows a pretty huge impact. In another hand, expenditure on tertiary education as percentage of government expenditure on education also has a positive impact, but it is statistically insignificant, which means that no statistically traceable impact between an increase of government spending on tertiary education can be found. Moreover, both variables government expenditure per student on tertiary education as percentage of and school enrollment on tertiary education have negative coefficients, the same situation is with the school enrollment. An increase in the percentage of government spending on education causes an increase in the growth rate, or a decrease, or even if spending on education has no significant impact on economic growth at all.

In general, the impact of investment in education results to have a relatively high positive impact on the real GDP growth in the countries of the data set. The other two variables that measure investment in education ("govexpstu" and "schoolenroll") have negative impact. This may be due to the different situations (circumstances) in the countries included in this study, which are not accounted for the model. The results of this study are in line with the results of the authors' research like Harmon, Oosterbeek and Walker (2003), Psacharopoulos and Patrinos (2004)), and Heckman, Lochner and Todd (2006).

References

Aghion, Philippe, and Peter Howitt, (1998), Endogenous Growth Theory. Cambridge, MA: MIT Press.

Baltagi,B.H.(2013),EconometricsAnalysisofPanelData,JohnWiley&Sons,NewYork,NY.

Barro, R. J. (1991). Economic Growth in a Cross Section of Countries. The Quarterly Journal of Economics, 106(2),

Barro, R.J. (2001):"Human Capital and Growth", American Economic Review Papers and Proceedings, May, 113(2).

Barro, Robert J. (2001), Human Capital and Growth, The American Economic Review

Becker, Gray S. (Colombia University Press. 1964), Human Capital, New York

Benhabib, J. and Spiegel, M. M. (1994). The role of human capital in economic development: Evidence from aggregate cross-country data. Journal of Monetary Economics.

Card, D. (1999). "Causal Effect of Education on Earnings." In Orley Ashenfelter and David Card, eds., Handbook of Labor Economics. Amsterdam: North Holland.

Cortright, J. (2001). New growth theory, technology, and learning: A practitioner's gGuide. Reviews of Economic Development Literature and Practice. US Economic Development Administration.

Dee, Thomas S. 2004. "Are there civic returns to education?" Journal of Public Economics 88,

no. 9-10 (August):1697-1720.

De la fuente & Ciccone "Human capital in a global and knowledge – based economy". 2002. Europian Competitiveness report. 2002.

Education at a Glance. OECD. 2007. Education at a Glance. OECD. 2002.

Goodwin, N. R., Nelson, J. A., & Harris, J. M. (2007). Patterns of Economic Growth and Developmetn. In C. J. Cleveland (Ed.), Encyclopedia of Earth. Washington, DC: Environmental Information Coalition National Countil for Science and the Enrivonment.

Gray, H. (1999). Re-scoping the University. In H. Gray (Ed.), Universities and the Creation of Wealth (pp. 3-16). Buckingham: SRHE and Open University Press.

Hanushek, Eric A., Victor Lavy, and Kohtaro Hitomi. 2006. "Do students care about school quality? Determinants of dropout behavior in developing countries." Working Paper 12737, National Bureau of Economic Research, Cambrdige, MA, December.

Karavidić, S., , Čukanović Karavidić, M. , Jovančević, D. (2012). "Management in education as a function of socio-economic development of Serbia", International Scientific Conference MANAGEMENT 2012.

Kule, D. (2015). Ndikimi i Arsimit të Lartë në Rritjen Ekonomike - Rasti i Shqipërisë. University of Tirana.

Lisbon Strategy. 2000. European Strategy of Employment. European Union 2003.

Lucas, R. E. (1988). On the Mechanics of Economic Development. Journal of Monetary Economics.

Lucas, R.E. Jr. (2002): Lectures of Economic Growth, Cambridge Mass., Harvard College

Milligan, Kevin, Enrico Moretti, and Philip Oreopoulos. 2004. "Does education improve citizenship? Evidence from the United States and the United Kingdom." Journal of Public Economics 88, no. 9-10 (August):1667-1695

Milne, P. (1999). The Role of Universities in Economic Growth: the ASEAN Countries. In H. Gray (Ed.), Universities and the Creation of Wealth (pp. 80-92). Buckingham: SRHE and Open University Press

Mincer, J. (1974), Schooling, Earnings and Experience. NY Columbia U. Press

Nickell, Stephen. 2004. "Poverty and worklessness in Britain." Economic Journal 114, no. (March):C1C25.

Nelson, R., & Phelps, E. (1966). Investment in Humans, Technical Diffusion and Economic Growth. Amerian Economics Review.

OECD Member States: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxemburg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States. The Commission of European Communities takes part in the OECD workings..

Pacharapoulos, G. (1994), Returns to Investment in Education : a Global Update, World Development.

Peter Drucker "The Age of discontinuity". 1992, Business and Economics

Psacharopoulos G. & Patrinos H. A. (2004), Returns to Investment in Education: A Further Update, Education Economics, Vol. 12, No. 2.

Romer, Paul M, (1990), „Endogenous Technological Change,“ Journal of Political Economy

Solow, R. M. (1957) “Technical Change and the Agregate Production Function” Review of Economic and Statistics.

Solow, Robert M., (1956), „A Contribution to the Theory of Economic Growth.“ Quarterly Journal of Economics

Appendix A1

Nr.	Low middle income countries
1.	Slovenia
2.	Croatia
3.	Bulgaria
4.	Romania
5.	Moldova
6.	Ukraine
7.	Belarus
8.	Poland
9.	Czech Republic
10.	Slovakia
11.	Azerbaijan
12.	Russia
13.	Turkey