

Controversies concerning the connection higher education – human capital – competitiveness

Liana BADEA

The Bucharest University of Economic Studies
liana.badea@economie.ase.ro

Angela ROGOJANU

The Bucharest University of Economic Studies
angelarogojanu@yahoo.com

Abstract. *Based on human capital theory, initiated by some representatives of the new school in Chicago in the second half of the twentieth century (Th. W. Schultz, G. Becker and G. Stigler), we see that there is a theoretical vein-slogan: "Man is the most precious wealth of a country," and if we corroborate this slogan with an adaptation of what Adam Smith stated in the eighteenth century – "A country is rich if it has rich/educated individuals", we reason, based on the literature review, that between higher education, human capital and competitiveness there is an indestructible link, influencing, in its turn, the economic growth and development. This paper aims to highlight the main elements describing the link existing between higher education, human capital and competitiveness, bringing to the fore the Romanian reality.*

Keywords: human capital; competitiveness; higher education; economic growth; controversies.

JEL Codes: J24, A39, B00.

REL Code: 12C.

1. Introduction

Nowadays, it is globally observed the fact that the society as a whole is moving towards an era whose future essence will be determined by the ability of individuals to effectively use knowledge and skills in order to adapt to the changes of the economic and social environment. The economists of the twentieth century have shown the importance of investments in capital and infrastructure in growing the competitiveness. However, the failure of some countries to achieve significant growth, despite large investments in infrastructure and capital, prompted increased attention to other categories of factors. Scientists then turned their attention mainly to other factors that generate wealth, and therefore determines the level of competitiveness, such as human capital, technical progress, macroeconomic stability, corporate governance, law, transparent and efficient functioning of the institutions, lack of corruption, market orientation, modernization of firms, demand conditions, market size etc.

In the new economic environment characterized by instability, crises and competitive pressures, human capital turns into an essential pillar leading to economic growth and development, being recognized the fact that human capital is one of the engines of economic development, both in social, community and individual level. Closely related to human capital the importance of education is rediscovered in the academic world and not only, being well known that education systems practiced throughout the time have sought either to adapt to the imperatives of economic changes or to cause those changes which ensured the desired social cooperation. From the end to the used means and content, education has seen many changes, depending on the material and spiritual needs of society.

Nowadays, more than ever, education makes a difference; the general policy is increasingly focused on the power of education, in general, and on the higher education, in particular, in what concerns the improving of the welfare and hence the competitiveness of nations. During time, famous economists have shown that between the development of a nation and the education there is a closely interdependence, so that today if we go with what the "father of economics" (Adam Smith) said in the eighteenth century – "a country is rich if it has rich individuals" we could reach "a country is rich if it has educated individuals". In a sort of "lessons for the future" famous economists – J.S. Mill, A. Marshall, G. Stigler, G. Becker, etc. – tried to decipher the meaning of education and to bring more light on the complicated relationship existing

between the economic development and the education system development (Badea, 2012, pp.1-2).

Moreover, in the context of globalization, all the competent international institutions, along with a suite of scientists and policy makers, emphasize the role of universities and of graduates in the innovation processes, considered necessary to achieve the economic objectives (Badea, 2012, p. 1). In the same time, the education and the division of knowledge guide individuals towards savings and investment in human capital, education turning into an important vehicle of the social inclusion policy; the skills acquired by individuals are enabling them to significantly participate to economic and social development (ELLI, 2010).

At the EU level, the progress is more than visible; during time the increasing number of students was accompanied by the increasing number of institutions, which is easy to understand if we consider that we live in a knowledge economy and the demand for studies is normal to record an upward trend. Unfortunately, in our country the situation is not very encouraging, as we will discover in the last section of the present paper.

2. Human capital – a fundamental factor of competitiveness and economic growth?

2.1. Human capital over time

Over time the concept of human capital has generated a series of controversies, from its very definition and ending with the quantification and determining its components. Thus, among the promoters of the human capital theory are usually listed exponents of the new School of Chicago from the second half of the twentieth century: Th. W. Schultz, J. Mincer and G. Becker. Papers about human capital existed long before the exponents of Chicago School putting into the foreground at least one of the component of the human capital, and after, as can be seen in the table below.

Table 1

Temporal evolution of human capital approaches

No. crt.	The studied issues concerning the human capital	Economists concerned about the study of human capital
1	<ul style="list-style-type: none"> ▪ The development of the individual may be considered a part of the fixed capital. ▪ The individual production capacities constitute a part of the floating capital. 	William Petty (1623 – 1687)
2	<ul style="list-style-type: none"> ▪ The educational capital, defined as "acquired and useful abilities of all the inhabitants or members of society" comes from a previous investment that behaves as an element of the fixed capital. ▪ The division of labor has the advantage of increasing the individuals' skill. ▪ Investments in education are considered future sources of income. 	Adam Smith (1723 – 1790)
3	<ul style="list-style-type: none"> ▪ Emphasizes the role of education in shaping knowledge and experience. 	Leon Walras (1834 – 1910)
4	<ul style="list-style-type: none"> ▪ National wealth is the result of investment in education and training. 	Friedrich List (1789 – 1846)
5	<ul style="list-style-type: none"> ▪ The social emancipation could not be done without an educational emancipation; ▪ The vicious circle revealed by Marshall – people were poor because they were not educated, but were unable to be educated because they were poor – would be transformed into one virtuous circle if the state intervened to help those in difficulty and who could not identify their interests. 	Alfred Marshall (1842 – 1924)
6	<ul style="list-style-type: none"> ▪ Production capacity of the individual is an element of the floating capital; ▪ The relationship between training and wages; ▪ The role of intellectual capital in ethnic capital formation. 	Karl Marx (1818 – 1883)
7	<ul style="list-style-type: none"> ▪ Education is an investment that has the ability to influence the future income and is included in the concept of capital. 	Irving Fisher (1867 – 1947)
8	<ul style="list-style-type: none"> ▪ Highlights the role of the human capital in economic growth, human capital being seen as the stock of skills and knowledge; ▪ Human capital involves investment in health; ▪ Studies the relationship between education, training at work and income; ▪ Mincer found that the only cost of an additional year of school is the anticipated revenue, thus ignoring direct costs such as tuition fees. 	Jacob Mincer (1922 – 2006)
9	<ul style="list-style-type: none"> ▪ Question the notion of capital, focusing on the definition of capital as given allocation of time where one may find the human capital; ▪ In addition, for Schultz "... knowledge and skills are a form of capital ..."; ▪ Knowledge represents a very particular economic value, in other words, science is a rational activity reserved for those sufficiently trained to understand it; ▪ Expenditure on health and education has the potential to increase revenues of individuals. 	Theodore W. Schultz (1902-1998)

No. crt.	The studied issues concerning the human capital	Economists concerned about the study of human capital
10	<ul style="list-style-type: none"> ▪ Human capital is closely related to bearer; ▪ Has the lowest liquidity; ▪ Investments in education are long term investments. 	Lester C. Thrurow (n.1938)
11	<ul style="list-style-type: none"> ▪ Human capital represents monetary and non-monetary activities that influence the future monetary income of the individual; ▪ These activities include: school education, vocational training during work, medical expenses, migration, search for information about prices and income; ▪ The investment in human capital is influenced by a number of reasons: the main determinant is the profit/return that is expected from the amount invested in human capital and secondary remuneration depending on the amount invested in human capital, and they are determined at their turn by the comparison between costs and benefits. 	Gary S. Becker (n. 1930)
12	<ul style="list-style-type: none"> ▪ Uses "the procedure of production cost and capitalized earnings"; ▪ Identifies six reasons that led treating human beings as capital even before the 60s: <ul style="list-style-type: none"> - Demonstrating the power of a nation; - Determining the economic effects of education, investment in health and migration; - To propose equitable taxation systems; - To determine the total cost of war (in evaluating war losses, after the Second World War); - To alert people to the need for preservation of life and health and to highlight the importance of life of the individuals for the economy of the country they live in; - To support the establishment of compensation decided by the courts in the event of death or accident. 	Bill F. Kiker
13	Education is the essence of human capital, its importance being superior to the health related components.	Mark Blaug (1927-2011)
	<ul style="list-style-type: none"> ▪ Builds a model of the employee as investor in human capital; ▪ The number of highly specialized jobs increased for all levels of education, to the detriment of unskilled work, poorly specialized and of managers on lower levels, which makes lifelong learning to become a shield against unemployment. 	Thomas O. Davenport
14	Human capital represents "productive resources concentrated in labor resources, skills and knowledge."	OECD (1998)

Currently it seems that those theories which show that we can look at human capital as a factor of economic growth are starting to gain increasingly more importance (Lee, Kim, 2009, Keller, 2006, Kwabena et al., 2006, Petrakis, Stamakis, 2002, Krueger, Lindahl, 2001, Mankiw et al., 1992).

In addition, there is nowadays a subject of interest the quadratic education – human capital – economic growth. Thus, G. Bertocchi and M. Spagat (1998) showed that secondary education is positively related to GDP growth for poor countries. E.A. Hanushek and D.D. Kimko (2000) found that the scores obtained in the international tests in mathematics and science represent indicators of the labor quality, and these scores are strongly positively correlated with the economic growth (Hanushek, Kimko, 2000). However, S. Chen and M. Luoh (2009) argue that obtaining higher scores in mathematics and science only reflect an ability to prepare for exams and not necessarily an exceptional quality of human capital. In addition, they stated that "the number of researchers/capita" and "scientific and technical articles/capita" represent real indicators attesting the quality of workforce and to support economic growth (Tsai et al., 2010, p. 42).

In the 90s and not only, many models started from the observation made by R. Barro (1991) and used as a variable with significant influence for the economic growth the secondary education for both developed and developing countries.

Lately, however, economists are beginning to draw attention to the increasing importance of the higher education in human capital formation and in achieving economic growth (Stephan, 1997, Chatterji, 1998, Kwabena et al., 2006). For example, H.M. Richard (2006) demonstrated that growth is more pronounced in countries where there are well-developed higher education systems. Other researchers have been concerned about the link between the various specializations offered by higher education and economic growth. Among them there are:

- K. Murphy, A. Shleifer and R. Vishny (1991) found that higher technical education influences a greater growth than higher education in law;
- N.S. Tiago (2007) has shown that there is a direct link between the rate of enrollment to engineering, mathematics and computing studies and the economic growth;
- M.G. Colombo and L. Grilli (2005) have shown that in the case of the growth of firms, the number of graduates of scientific and technical studies have a significant positive effect;
- C-L.Tsai, M-C Hung and K. Harriott (2010) have revealed that a country should encourage high-tech fields of study because the percentage of graduates in science, engineering, mathematics and

computer science is an important indicator for determining the quality of the workforce.

The literature is diverse and approaches empirically different links existing between human capital and other important elements of the economy. Which is not a surprise to anyone is that academics began to emphasize the importance of higher education in determining the competitiveness of nations. Section 2.2. seeks to highlight these issues.

2.2. The connection higher education – competitiveness

2.2.1. At the national level

Apart from numerous studies and econometric models built over time to demonstrate the link between education and competitiveness, it is clear that its role was recognized by international bodies concerned with measuring the economic competitiveness of countries and to rank them according to the level and dynamics of their competitiveness. There are two international organizations (institutions) concerned in this regard:

- World Economic Forum (WEF), which is publishing since 1979 The Global Competitiveness Report;
- International Institute for Management Development (IMD), which is publishing since 1989 The World Competitiveness Yearbook.

The Global Competitiveness Index developed by the WEF is based on twelve analytical pillars, which include: public and private institutions, infrastructure, macroeconomic stability, health and primary education, higher education and training, goods market efficiency, labor market efficiency, financial market sophistication, technological readiness, market size, business sophistication and innovation (WEF, 2012).

If we analyze these twelve pillars, we find that education is reflected in many of them, even if this is not obvious in the case of some. Higher education is found directly or indirectly as various indicators in the case of the following pillars:

- P1. Institutions – the quality of the educational institutions and of those who serve the development and implementation of educational policies leaves its mark on the competitiveness of a nation.
- P5. Higher education and training

- P7. Labor market efficiency – the quality of the workforce heavily depends on the education system. In this pillar it can be found the brain drain phenomenon.
- P9. Technological readiness – the technological capacity of a country is determined by the quality of higher education processes conducted in universities.
- P12. Innovation – the innovation capacity cannot exist without research institutions, highly qualified workforce, scientists and engineers, research and development centers to exploit the collaboration links between universities and business environment and without intellectual property protection.

Table 2

Pillars on which higher education has a direct influence	
Pillar	Indicators related to higher education
P5. Higher education and training	Secondary education enrollment
	Tertiary education enrollment
	Quality of the educational system
	Quality of math and science education
	Quality of management schools
	Internet access in schools
	Availability of reasearch and training services
	Extent of staff training
P12. Innovation	Quality of scientific research institutions
	Company spending on R&D
	University – industry collaboration in R&D
	Availability of scientists and engineers
P7. Labor market efficiency	Brain drain
P9. Technological readiness	Availability of latest technologies

Source: adapted after Ramoniene, L., Lanskoronskis, M. (2011) and WEF (2012).

The International Institute for Management Development (IMD) uses four main criteria, which in turn include a number of sub criteria (IMD, 2012):

- Economic performance is analyzed on the basis of indices and indicators which involve some highlighting key issues: domestic economy, international trade, foreign investment, unemployment, prices;
- Government efficiency is analyzed from the perspective of the evolution of the following areas: public finance, fiscal policy, institutional framework, commercial law, social environment;
- Business efficiency is studied on the basis of indices and indicators aiming at how businesses are encouraged nationwide. Here there are

analyzed issues such as: productivity, employment, finance, management practices, attitudes and system of values;

- Infrastructure is analyzed in terms of some issues related to: basic infrastructure, technological infrastructure, scientific infrastructure, health and environment, education.
- Therefore, higher education influences the rank in the top conducted by IMD in terms of the following indicators:

Table 3

Competitiveness and Education – IMD	
Sub-factor	Issues related to higher education
Labor market	Skilled labor
	Finance skills
Scientific infrastructure	Total expenditure on R&D
	Total expenditure on R&D per capita
	Business expenditure on R&D
	Total R&D personnel nationwide, per capita, in business enterprise and in business per capita
	Basic research
	Science degrees – percentage of total first university degrees in science and engineering
	Scientific articles
Education	Higher education achievement – percentage of population that has attained at least tertiary education for person 25-34
	Student mobility inbound and outbound
	Language skills
	Management education
	Education in finance
	Knowledge transfer – development between universities and companies

Source: adapted after Ramoniene, L., Lanskoronskis, M. (2011) and IMD (2012).

From those shown up to this point, it appears that higher education plays an important role in increasing the national competitiveness, which is why solid educational policies are needed not only to lead to facilitate the access to the system, but also to focus on the quality.

2.2.2. At the individual level

Higher education increases not only the national competitiveness; it increases the individual one too. Also it has the ability to help increase the quality of life for the entire community, as it influences some aspects related to: increasing the social cohesion, decreasing the crime rates, increasing the level of culture, multiplying the human capital, supporting the technological

progress, increasing the productivity, lowering the pollution, increasing the social status, improving the health and longevity, changing the preferences of individuals, changing the constraints that individuals usually face, improving the information and knowledge on the basis of which individuals develop their consumer behavior and/or producer etc. Finally, bear in mind that higher education is an essential prerequisite for increasing the individual earnings as well as finding and keeping a job.

The report "Education at a glance 2012" (OECD) emphasizes that during the recession the wage differences between people with higher education and those with secondary education have widened. In 2008, in average in the OECD countries, a man with higher education could expect to earn 58% more than its counterpart with secondary education. By 2010, the difference increased to 67%. Similarly, in 2008, women with higher education earn on average 54% more than those with secondary education. By 2010, this difference increased to 59%. Such differences are not just a phenomenon of the industrialized world. Currently, the country with the largest differences recorded between earnings of university graduates and the secondary education is Brazil, where they get to be about three times higher than the average found in OECD countries. The same report states that those who wish to continue their studies because of the wage differences are especially evident among young people in the emerging economies. Brazil, Indonesia and Russian Federation are listed among the top ten countries with the highest percentage of individuals aged 15 years who aspire to careers requiring high qualifications (OECD, 2012).

Views on such wage differences are divergent. Thus, A. Weiss (1995) considered unrealistic the explanation in terms of wage variations determined only by the level of education of individuals who have a different number of years of professional experience.

Regarding the issue of finding and keeping a job, it is estimated that a higher level of education provides a signal to the labor market, which means an increase in the probability of employment of individuals with higher education. In addition, it is said that higher education provides individuals with an increased mobility in changing careers and in increasing the revenues. According to "Education at a glance 2012" (OECD), the higher education helped the individuals to keep their jobs during the recession or to be able to change those jobs. For example, between 2008 and 2010, the unemployment rate on average in the OECD countries jumped from 8.8% to 12.5% for those who did not completed some form of secondary education and for those with a

secondary education the unemployment rate increased from 4.9% to 7.6% (OECD, 2012). By the opposite, the unemployment rate for people with higher education remained lower; it increased from 3.3% to 4.7% during the same period (OECD, 2012).

3. The situation of higher education in Romania

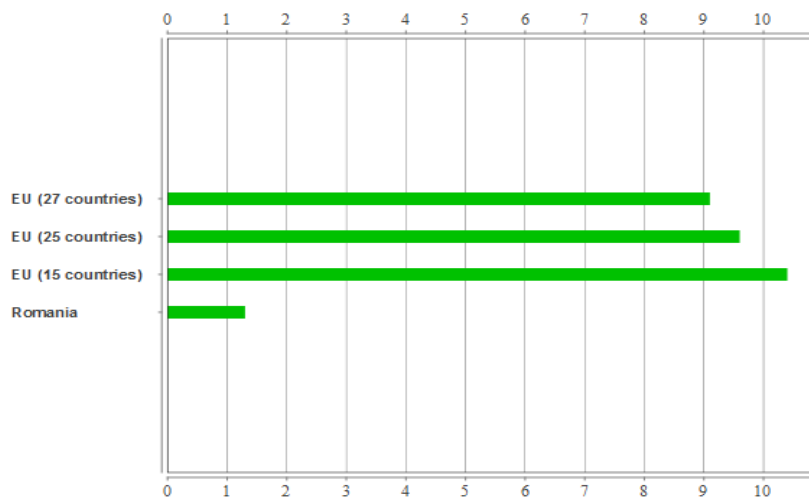
In the rankings realized by various international institutions, the places of Romanian education show that we need further sustained efforts to improve the way educational system works (Badea, 2012, pp. 6-10).

Thus one may notice that:

- in the top realised by The World Economic Forum-The Global Competitiveness Index, Romania occupies the 78th position, losing one comparing to the last year:
 - in the case of the fifth pillar, Higher Education and Training, Romania occupies the 59th position, with a score of 4.36, compared to 55 in 2011.
 - in the case of P7. Labor market efficiency, for the indicator Brain drain, our country is situated on the 136th position
 - for P12. Quality of scientific research institutions – position 84, Company spending on R&D – 87, University – industry collaboration in R&D – 113, Availability of scientists and engineers – 82.
 - for P9. Technological readiness. The availability of the latest technologies – 117
- in the Legatum Institute ranking, in the case of the Prosperity Index (eight sub-indices), at the sub-index called education, Romania ranks the 49th place (out of 110 countries analyzed), being worse than the previous year (43). Romania, the overall top, lost 10 positions (in 2009-48, 2010-51, 2011-58). Education sub-index emphasize: the access to education, the quality of education and the human capital.
- In the Human Development Report 2011. Sustainability and Equity: A Better Future for All, Romania is placed on the 50 position among countries with high human development, being in the ranking after countries like Uruguay and Palau; for higher education enrollment rate for the period in question, 2001-2010, this is only 67.1%, while primary enrollment rate is 99.3% and the enrolment rate for secondary education is 93.5%. These values are below those recorded by

countries that were classified in the category of countries with a very high human development.

- ELLI Index Results 2010 show that our country ranks the last in EU in terms of lifelong learning. As one can observe in the graph below, the percentage of population aged between 25 and 64 years participating in education and trainings in Romania is much lower than the EU average.

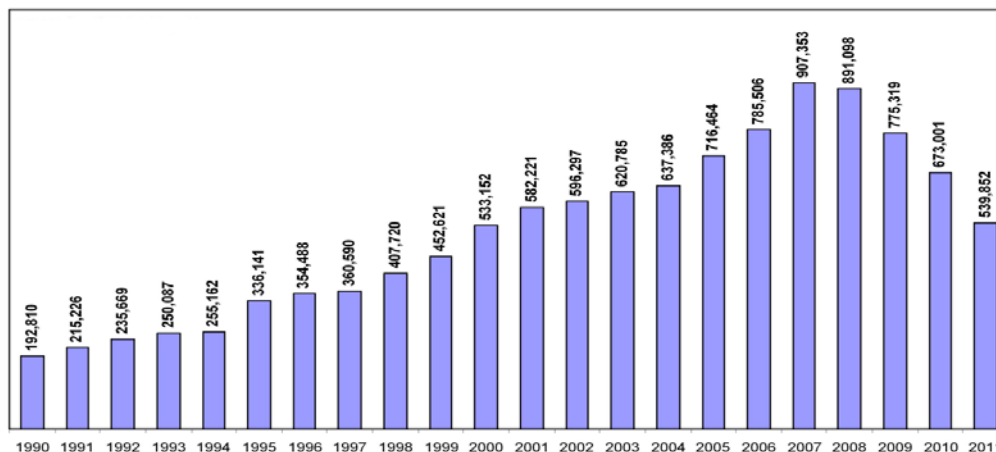


Source: Eurostat (tsiem080).

Figure 1. Lifelong Learning – comparison to the EU average (2010) (% of population aged between 25 and 64 years participating in education and training sessions)

This kind of rankings shows that the higher education system has to overcome a number of obstacles, including:

- The decrease of the number of young people interested to embrace an academic career, mainly because of insufficient rewards.
- The reduction of the number of students, mainly caused by demographic trends, the level of expenditure driven by student life, low graduation rate of the baccalaureate exam etc. According to data published by the National Institute of Statistics in the academic year 2011/2012, the number of students integrated into undergraduate programs (excluding Masters and PhD programs) was 539.852, showing a decrease of 133.149 (-20%) compared with 2010 and 367.501 (-40.5%) compared with its peak in 2007 (see Figure 2).



Source: INS (2011), Statistical Yearbook of Romania.

Figure 2. Evolution of the number of students (day classes, evening classes, part time and open to distance learning)

- Even if the trend for public expenditure in education was upward, there are still serious problems in financing the education system. Romania is still a part of the group of the countries that allocate a small percentage of GDP on education compared to other European countries.
- Public-private partnership in education remains, unfortunately, an exception.
- Investment in research and development remains at a fairly low level, as shows the majority of reports in Europe or globally.

In addition to the problems already outlined, the Romanian higher education also faces others, such as:

- a low level of living which can be a barrier to access the university education;
- a low rate of participation in training programs and professional development of employees, the European rankings placing Romania together with Bulgaria (1.3% versus 29.2% in Denmark, the highest value recorded in Europe). This is hardly encouraging, given that, for Romania, the degree of professional employability of the population between 15-64 years was 59% in 2008 compared to the EU-27 average of 65.9% (ARACIS, 2009, pp. 6-10);
- the gap between the national external system of quality assurance, positively evaluated at the European level and the ability of universities to implement the needed mechanisms to ensure and

improve the quality. According to ARACIS, several Romanian universities do not have active committees for the internal quality assurance and face difficulties in providing data and information about the quality certification;

- poor legislation, inaccurate, incomplete and in a continuous change in the educational area;
- a widening imbalance between the public and private higher education institutions, manifested even by differences in quality;
- plagiarism in the academic environment;
- the ageing population; according to some calculation made at the European level, the total population of Romania will decrease significantly by about 16% by 2050 due to the low birth rates and to a high level of emigration (European Commission, 2011);
- the ability to meet the criteria taken into account by international organizations to highlight the quality and quantity of scientific research;
- the transparency and administrative fairness in the academic environment;
- the corruption, which may take various forms. It may be related to the items of personal nature, such as an increase in the social status. As Steven Levitt and Stephen Dubner show in "Freakonomics", students/teachers can make use of specific instruments to avoid the correct selection mechanisms when the motivation is strong enough. Those involved may have short-term expectations of shaping a favorable social position by placing themselves in the best possible places in the rankings made by those entitled. If, in addition, there are also financial incentives, the propensity to resort to illegal practices seems to be higher. This phenomenon – corruption – has in education, as well as in other sectors, serious consequences such as: a bigger school dropout rate, a low quality of educational services, drawing a system facile to influence from the political, religious or other point of view; raising inequalities between the rich and the poor people, creating an unhealthy mentality under which bribery is perceived as a normal thing and the law enforcement as an exception (Badea, 2012);
- bureaucracy with which the teacher is dealing outside the teaching hours (Frâncu, Hociung, 2012);
- a new culture of learning, a culture of pragmatism and personal comfort: students attend university only to get a diploma; for them the free time is as valuable as life and learning experiences outside the university (Badea, 2012).

Over time arose the concept of student-centered university, therefore it cannot be ignored the characteristic elements of the reality and that is why university, generally speaking, is forced to constantly innovate, to adapt the curricula and teaching methods to cause students to spend more time in libraries and to be more involved in the academic life. Therefore, we need a new vision regarding teaching and institutional mechanisms to encourage universities to adapt to such a new culture.

It is also easy to see that the system revolves in a vicious circle, as Lord Acton said, preparing bureaucrats and their customers with bureaucratic mentality, while they arrived in any type of activity will do exactly what they learned in school (Rogojanu, 2010, pp. 206-212), which means that the system should be redesigned so that it has not the opportunity to shape clerks attitudes, just as Alexander D. Xenopol highlighted in the nineteenth century: "What produce our schools? Candidates for some posts and nothing more "(Xenopol, 1967, p. 103).

In the category of obstacles raised to the competitiveness of higher education is the fact that science-based services have undergone an intense process of bureaucratization!

Another element influencing the functionality of Romanian higher education is the fact that the act of education is dependent of the policy makers. Politicians recognize the value of education in combating a long list of problems, among which we may include poverty and threats to the global security. However, with the end of the election campaign politicians lose interest in the education system, perhaps because the rewards of the investment in education is visible only after a long time and are often collected by another generation of politicians. In addition, sometimes, science is seen by some as a new social ideology.

So we cannot say that we have discovered a universal recipe for obtaining functional higher education institutions, which draws our attention on the importance of identifying problems and subsequent recognition of their existence in finding solutions.

4. Instead of conclusions

Among the drawn conclusions one may observe that education is inextricably linked to the welfare and competitiveness, being influenced by a number of factors such as corruption, historical development, demographic evolution etc. Studies show that countries that have invested over time in the education system today are the ones reaping the rewards of development.

It is obvious that the role of education is extremely important and that is why Romania is trying to increase the access to higher education forms. According to the Memorandum on approval of final values of the objectives of Romania for Europe 2020, approved by the Government in July 2010, Romania aims at increasing the percentage of graduates of higher education compared to total population to 20.25% in 2013 and to 26.74% in 2020 (MECTS, 2010, p. 134).

However, nowadays higher education must meet several challenges: to achieve a quality that stand to the test of international comparison, to improve the management and to be more responsible, to increase funding and to diversify the funding sources. These goals involve major changes in higher education, as we are at a crossroads: either we admit that it's time for vigorous action to identify and stimulate the quality of education, where available, and to improve the quality, there where needed, or we preserve in a state of complacency, which may plunge us into a uniform consistency, characterized by a lack of perspective and competitiveness.

Acknowledgements

This work was cofinanced from the European Social Fund through Sectoral Operational Programme Human Resources Development 2007-2013, project number POSDRU/89/1.5/S/59184 „Performance and excellence in postdoctoral research in Romanian economics science domain”.

References

- ARACIS (2009). „Distribuții statistice, interpretări și opțiuni privind Starea Calității în Învățământul Superior, Barometrul calității”, București
- Badea, L. (2012). „Educația competitivă – pilon al calității vieții”, a doua conferință a Școlii Postdoctorale, *Provocările crizei și răspunsul științei economice*, contract nr. POSDRU/89/1.5/S/59184, Secțiunea I – Mutații teoretico-metodologice în știința economică, 16-17 martie 2012, ASE
- Barro, R. (1991). „Economic growth in a cross section of countries”, *The Quarterly Journal of Economics*, 106(2), pp. 407-443
- Bertocchi, G., Spagat, M. (1998). „The evolution of modern educational systems: Technical versus general education, distributional conflict and growth”, *CEPR discussion paper*, No. 1925

- Colombo, M.G., Grilli, L. (2005). „Founders’ human capital and the growth of new technology-based firms: A competence-based view”, *Research Policy*, No. 34, pp. 795-816
- Frâncu, G., Hociung, G. (2012). „Birocrația în contextul economic actual”, *Economie teoretică și aplicată*, Vol. XIX (2012), No. 6(571), pp. 143-151
- Hanushek, E.A., Kimko, D.D. (2000). „Schooling, labor-force quality, and the growth of nations”, *American Economic Review*, Vol. 90, Issue 5, pp. 1184-1208
- IMD (2012). *World Competitiveness Yearbook*,
<http://www.imd.org/research/publications/wcy/upload/scoreboard.pdf>
- Keller, K.R. (2006). „Investment in primary, secondary, and higher education and the effects on economic growth”, *Contemporary Economic Policy*, Vol. 34, Issue 1, pp. 18-34
- Krueger, A.B., Lindahl, M. (2001). „Education for growth: Why and for whom?”, *Journal of Economic Literature*, American Economic Association, Vol. 39, Issue 4, pp. 1101-1136
- Kwabena, G., Oliver, P., Workie, M. (2006). „Higher education and economic growth in Africa”, *The Journal of Development Studies*, No. 42, pp. 509-529
- Lee, K., Kim, B. (2009). „Both institutions and policies matter but differently for different income groups of countries: Determinants of long-run economic growth revisited”, *World Development*, Vol. 37, Issue 3, pp. 533- 549
- Mankiw, N.G., Romer, D., Weil, D.N. (1992). „A contribution to the empirics of economic growth”, *The Quarterly Journal of Economics*, Vol. 107, Issue 2, pp. 407-437
- Ministerul Educației, Cercetării, Tineretului și Sportului (MECTS) (2010). „Raport asupra stării sistemului național de învățământ”, București
- Murphy, K., Shleifer, A., Vishny, R. (1991). „The allocation of talent: Implications for growth”, *Quarterly Journal Economics*, Vol. CVI, Issue 2, pp. 503-530
- OECD (2012). *Education at a Glance 2012: OECD Indicators*, OECD Publishing,
<http://dx.doi.org/10.1787/eag-2012-en>
- Petrakis, P.E., Stamakis, D. (2002). „Growth and education levels: A comparative analysis”, *Economics of Education Review*, No. 21, pp. 513-521
- Ramoniene, L., Lanskoronskis, M. (2011). „Reflection of higher education aspects in the conception of national competitiveness”, *Baltic Journal of Management*, Vol. 6, Issue 1, pp. 124-139
- Richard, H.M. (2006). „Can higher education foster economic growth?”, *Chicago Fed Letter*, No. 229
- Rogojanu, A. (2010). *Stăpânii ideilor economice. Secolul al XIX-lea*, vol. 3, Editura Economică, București
- Stephan, K. (1997). „Which level of schooling has the greatest economic impact on output?”, *Applied Economics Letters*, No. 4, pp. 177-180
- Tiago, N.S. (2007). „Human capital composition, growth and development: An R&D growth model versus data”, *Empirical Economics*, No. 32, pp. 41-65
- Tsai, C-L, Hung, M-C, Harriott, K. (2010). „Human Capital Composition and Economic Growth”, *Social Indicators Research*, Vol. 99, Issue 1, pp. 41-59

-
- United Nations Development Programme (UNDP) (2011). „Human Development Report 2011. Sustainability and Equity: A Better Future for All”, New York, USA
- World Economic Forum (2012). „The Global Competitiveness Report 2012-2013”, Geneva, Switzerland, www.weforum.org
- Xenopol, A.D. (1882). *Studii economice*, ediția a II-a, in Xenopol, A. D. (1967), *Opere economice*, Editura Academiei, București
- ***(2010). European Lifelong Learning Indicators (ELLI). Making Lifelong Learning Tangible!, Bertelsmann Stiftung, www.elli.org
- *** Eurostat, Education statistics, UOE data collection (educ_figdp)