

COMPARATIVE ANALYSIS OF GLOBAL TERTIARY EDUCATIONAL SYSTEMS

Ciumaş Cristina, Manța Ștefan, Șarlea Mihaela

„Babeș-Bolyai” University, Faculty of Economics and Business Administration, Cluj-Napoca, Romania

cristina.ciumas@econ.ubbcluj.ro

stefan.manta@econ.ubbcluj.ro

mihaela.sarlea@econ.ubbcluj.ro

Abstract: Higher education system occupies a special place in the policy of each nation. Regardless of geographical location, socio-economic or cultural differences, the need to improve the education offered for population by facilitating access to higher education becomes more and more important. Providing a suitable framework for the personal development of each student is expensive and involves high amounts of money. From the analyses carried out we couldn't identify the substantial differences between the way it is structured and organized education system worldwide. However, we were able to identify a number of common elements that create a global University System. The need to invest in human resources through structural reforms in each country is present, and therefore a higher intention to pay greater attention to the development of the higher education system. In our work we decided to analyze education systems in countries like United States of America (USA), United Kingdom (GB), China (CHN), Germany (DE), France (FR), Russian Federation (RU), Japan (JPN) average values recorded for EU-27 and last but not least Romania (RO). Although the investment in the University system is hard to quantify, it is unanimously acknowledged that a country can achieve a competitive advantage in international relations through a very well prepared and trained personnel. The countries reviewed in this paper have different policies when it comes to financial support of the University System. If Germany and France have decided to get involved directly in supporting the system by allocating the necessary funds from the State budget, another European country, the United Kingdom, decided to apply a policy diametrically opposite, similar to that existing in the USA and cover in a lesser degree the needs of universities in Government funds. Regardless of the policy adopted the results are intended to be the same: facilitating access to university education, a high quality of teaching and research process, greater mobility among teachers and students and last but not least, scientific and academic recognition worldwide. However, these reforms, even if they are creating value in an initial stage, over the long term can negatively affect the social situation of the country.

Keywords: university system; quality; financing; unemployment; perspectives;

JEL classification: H52, H75, I21, I23

I. The importance and evolution of higher education system

A long time to subject of the importance of having a competitive and performant higher education system for a country. Human resource has become an important tool in becoming an important country in the world economic system, moreover to the discussion regarding globalization. As Czech President Vaclav Havel stated "We live in an era in which everything is possible and nothing is certain." (Issues in global education 157: 2000)

The global higher education system undergone a large number of changes and is still suffering reforms in a lot of the countries ever since the second half of the 20th century. As Ulrich Teichler also stated, there are some key facts in this development such as: advanced countries adopted the idea that expansion of higher education system would lead to economic growth and also increasing diversity is desirable by stronger concentration of resources, growing differentiation of the research role, diversity of talents etc. (Teichler: 2004:11). The importance of this aspect was surprised in 1999 by Altbach „The future is also happening faster than any of us can imagine. These conditions predominate in world politics largely because power is being dispersed not only across nations but across cultures. Education is the medium of that exchange” (Altbach, Peterson, 1999: 6).

The increase of tuition fees, and thus increase the quality of the University system, could lead to an exodus of young people to the countries which are offering a competitive educational system but with much lower costs. On the other hand, a system that enables high school graduates to attend the courses of faculties, without imposing large financial strain, will lead in the long run, to an over qualification of the population and thus leading to the disappearance of some basic careers that do not require higher education. It has not yet been identified a viable education model that can meet all the needs of the market.

We appreciate that the Bologna educational system, involving a very large number of national States, could generate a balanced system from all points of view. However, even if the idea of this process is viable in theory, in practice it is very difficult to implement because the countries which have accepted these reforms are far too different from one other, both culturally and socio-economical. These discrepancies makes the Bologna process to suffer mutations at the level of each country and the long-term impact of education over the social environment cannot be quantified.

II. Towards a global higher education system?

This analysis will present a compared series of qualitative and quantitative indicators which define to a large extent the American, British, Chinese, French, German, Japanese, Russian, Romanian and European education systems. This analysis is based on data supplied by the national statistical institutes of each country, data provided by UNESCO, the World Bank, IMF and EUROSTAT.

Table 1. The structure of Higher education in 2012

Country	The structure of higher education and the length of studies (years)			The year of last reform
	Bachelor	Masters	PHD	
USA	4	2-3	3-6	1970
GB	3-4	1	3-5	2010
CHN	4	3	3	1977
FR	3	2	3	2008
DE	3-4	2	3-4	2005
JPN	4	2	3	2004
RU	4	2	2-4	2009
RO	3	2	3	2011
UE 27	3	2	3	1998

Source: Authors calculation based on mentioned databases

In recent years, each university system has undergone major changes, designed to improve the system from all points of view. At first, it was identified the need for a change at the structural level. In this regard, all countries surveyed have adopted a system based on three cycles of study: bachelor, master and doctoral. This grading is beneficial especially for students as they can more easily obtain the equivalence of diplomas when they decide to study abroad. At the same time this structure is beneficial for the authorities in relation to the plan adopted for the development of human resources because it may encourage punctually each level of study. From the structural point of view, Romania was folded tertiary structure required by the Bologna Declaration.

Even though the structure of studies is similar, their duration varies from one country to another. These differences are attributed to the ancient structures of the system. However, even though the implemented reforms have a quantitative impact on higher education, the impact upon quality should be pursued as well. It is not enough to impose reform just to change the form of studies but also to impose a change in curricula, methods of teaching or teacher-student relations. A bad example is Russia, that, even if the country has reformed the University system structure, the quality of the studies has remained unchanged.

Once these reforms are applied, correlated with the impossibility of the Governments to financially support from the State budget the tertiary system, the number of private institutions and the various degree programs with fees from the State universities have seen a sharp increase.

Table 2. Total number of higher education institutes in 2009

Country	Type of institution			Access of population to higher education (inhabitants/university) (I/U)
	Public	Private	Total	
SUA	1676	2733	4409	71660 I/U
GB	113	2	115/165**	539200/375806 I/U
CHN	1522	836	2358	547173 I/U
FR	85	0	85/3500*	774375/18806 I/U

DE	309	100	409	200004 I/U
JPN	160	556	716	178673 I/U
RU	653	462	1115	128116 I/U
RO	56	52	108	175925 I/U
UE 27	n	n	4000	125925 I/U

Source: Authors calculation based on mentioned databases

* According to French law, only the State institutions may hold the title of universities.

** Only two private institutions are holding the title of University, the rest being residential institutions of higher education

Note: n = unreported

Worldwide there are tens of thousands of institutions that provide higher education. However, depending on the country of origin, they have different titles. Whether in Germany or Japan there are only private or public universities in countries like France, the United Kingdom and the United States, in addition to the institutions that have obtained the title of University, there are a number of institutions offering diplomas recognized as higher education but who have other titles.

The majority of the institutions that offer higher education are in America, followed closely by the EU 27 and China. A special case is France, where, under the law, only State institutions may be called universities. Thus there are no private universities, but only public or private institutions providing higher education diploma. In many cases these institutions are more internationally ranked than State universities. The same case is registered in the United Kingdom, where only two private institutions have obtained the title of University. However, compared to France, where there are 85 universities and over 3,400 private institutions, in the UK the difference is much smaller, from 165 higher education institutions 115 are universities. Romania is the country with the lowest number of institutions of higher education, but which nonetheless has the most balanced ratio between the number of State institutions and private ones.

It must be considered that this indicator should be directly correlated with the population. In order for a system to be able to make a difference on an international level it should be able to give the population equal opportunities for access to education. Thus, dividing the number of inhabitants of each country to the number of institutions providing higher education we noted that the wider system is present in France, where for every 18806 inhabitants there is such an institution. At the opposite side rests the British system, where each University must cope with a possible influx of more than 375806 people.

In order to be creator of value, the University system must be competitive both nationally and internationally. For this purpose it is necessary to undertake a direct comparison between the University systems reviewed.

Table 3. The university's international rankings (Academic Ranking of World Universities) in 2012

Country	The best occupied positions	Total numbers of institutions in 500 top
SUA	1,2,3,4,6,7,8,9	151
GB	5,10,20,38	37
CHN	151-200	28
FR	40,41,48	21
DE	47,53	39
JPN	21,27	23
RU	80	2
RO	0	0
UE 27	-	197

Source: Authors calculation based on Academic Ranking of World Universities

According to data provided by the Academic Ranking of World Universities, the best universities in the world operate in America. In top 10 positions, 8 of them are occupied by American institutions. The total number of institutions of this country in this top is 151. Highest ranked European University stands in fifth place and comes from the United Kingdom. The weakest position in top is occupied by Chinese system this even though it has 28 institutions in the top 500. The country with the fewest universities present in this ranking is Russia, which even if it has a representative on the 80 position, only two institutions have managed to enter the top 500. Romania is the only country subject to analysis that was unable to have an institution in this international ranking.

A criteria taken into account at the time that these tops are created is the number of students currently enrolled in the studies. However, as we could see, it is not sufficient for the system to have a large number of students if this is not in conjunction with qualitative study programs.

Table 4. The total number of enrolled students (thousand persons); the share of students in total population; the share of graduated in total population* (2009)

Country	Total number of enrolled students (thousand persons)			The share of students in total population (%)	The share of graduated in total population*
	Bachelor	Masters	PHD		
SUA	19,948	479	20,427	6.47%	94,8%
GB	2,394	85	2,479	4.00%	58,52%
CHN	22,317	n	22,317	1.65%	25,94%
FR	2,173	71	2,245	3.41%	54,53%
DE	2,555	n	2,555	3.12%	n
JPN	3,762	73	3,836	3.00%	59,74%
RU	19,948	479	7,500	5.25%	77,19%
RO	673	326.5	999.5	5.26%	58.8%
UE 27	n	n	19,847	3.94%	61.4%

Source: Authors calculation based on mentioned databases

* as proportion of total population aged up to five years after graduating

Note: n = unreported

Worldwide a consistent number of persons is involved in a program of higher education. Although in China more than 22 million people attended the courses of the faculty, they represent only 1.65% of the total population, while in the U.S.A this percentage rises to over 4%. The highest percentage of graduates with higher education also can be identified on the North American continent, and the lowest, less than 25%, is identified in China.

At the same time, thanks to a system based much more on the Bachelor level than master's license, both Germans and China does not report specifically the number of students enrolled in this type of program.

Although the number of students is the main criteria for a university system to survive, this variable must be closely analyzed with the absorption capacity of the markets. In order for an economy to be viable, the result generated by the investment in the University system, the graduates, must be creators of value. To be able to do that, first they must be integrated into the labor market

Table 5. The share of unemployment with tertiary education in total unemployment (2009)

Country	Total unemployment	The share of unemployment with tertiary education in total unemployment
SUA	7,9%	9%
GB	7,9%	14,3%
CHN	4,1	14%
FR	10%	18,3%
DE	6,5%	11,4%
JPN	5%	19%
RU	6,5%	32%
RO	7,3%	6,7%
UE 27	9,7%	14%

Source: Authors calculation based on mentioned databases

Market capacity to integrate graduates is essential in order for an economy to thrive and to compete in the world market. Among the countries analyzed the largest share of unemployed is registered in France, 10%. However, the largest number of unemployed persons with higher education lies in Russia, 32%, followed by Japan with 19%. The lowest share of higher education graduates who failed to find a job is recorded in Romania. The percentage of our country lies far below the European average, and could be based on the account of a small percentage of the share of higher education graduates in the total population.

These percentages can be attributed to several factors. Among them we can mention in particular the economic situation of the country concerned. Depending on the economic situation of each country, unemployment is directly influenced by the market's ability to hire specialists with higher education and also to remunerate them in correlation with preparation and expectations. Another determining factor could be the number of graduates reported to total working population. If in an economy, the University system is based on a large number of students and to graduate is relatively easy, both in terms of academic preparation and financial point of view,

then the number of those who completed the courses of the faculties will be increased. Thus, they will encounter difficulties in the hiring process, both because of their poor academic preparations and higher financial expectations.

In order to create value the state must be able to efficiently combine socio-economic policies with financial and educational ones. High school graduates should be encouraged to follow university courses, but only those who prove to be competitive to be able to obtain the diploma of specialist. The example offered by USA, and to some extent United Kingdom, through the implementation of very high tuition fees, in medium and long term it might be able to provide the expected results. Such a system would discourage people who wish only to obtain a diploma to pursue university programs. Instead those with notable results, obtaining financial aid from the State, will be able to bring the added value that both universities and labor market need.

Regardless of the academic system, one thing is certain; the universities require a consistent share of the expenditure from the State budget. For this reason, one of the chapters where governments worked steadily has been reforming the financing sources by reducing universities dependence on the State budget.

Table 6. Expenditure with higher education at national level (2009)

Country	Total expenditure on education (% of GDP)	Total expenditure at tertiary level (% of GDP)	Total expenditure per student (% of GDP)	Total expenditure per student (USD)
SUA	5,4	1,24	19,4	30000
GB	5,6	0,81	20,6	15000
CHN	3,3	n	85,8	4100
FR	5,9	1,34	39,8	14000
DE	4,6	1,34	42,5	15800
JPN	3,8	0,72	20,9	14500
RU	4,1	0,7	14,2	6200
RO	4,3	1,22	23,9	3400
UE 27	5,7	1,20	28,5	10600

Source: Authors calculation based on mentioned databases

As stated, education in general and higher education in particular requires special attention from the Government because the huge amounts needed from State budget. From the analysis undertaken we can see that of all countries, the United Kingdom allocated some of the largest sums for the education system, 5,6% of GDP. However the University system received only 0,81% of GDP, a percentage similar to that of Russia or Japan, countries which allocated much less to the education. This is due to the reforms implemented in recent years. This reform aims at a reduction of contributions allocated to the universities, in the same time correlated to a massive increase in the amounts coming from extra-budgetary sources, mainly from tuition fees. France, the country with the highest percentage of GDP allocated to education, and Germany, countries where the tertiary system education is almost free, generates nearly double expenses by comparison with the United Kingdom.

Analyzing this problem in terms of gross domestic product per capita, we note that the most significant expenses are registered in China, 85 % of GDP/capita and this even if the State spends only 3,3% of GDP on the education system. This is due to

the very low value of GDP/capita in conjunction with an increased amount of funds needed for higher education. This phenomenon is present also in developed countries, Germany and France, which allocates more than 40% of GDP/capita to higher education. Instead, the United Kingdom and America, systems that generate consistent income from tuition fees, the financial effort on the part of the State is much lower, only 20% of GDP/inhabitant.

So, the amounts allocated to education can reach up to \$ 15,000 annually. As comparison, Chinese State is spending four time less than the German State on higher education. In these circumstances it is very difficult to talk about equity and equality of opportunities between students or university systems. These major differences are affecting the students, the direct beneficiaries of the University system, by the fact that, in countries with financial difficulties, the largest amounts are directed towards meeting the costs of personnel and administrative and not towards the investment in creation of adequate conditions for study and training

From one country to another the financing policy of University system differs. Whether in Germany it is mostly free of charge, in USA, there are no higher education programs financed entirely from State sources, students being obligated to pay a tuition fee that can oscillate between a few hundred dollars on semester up to a few tens of thousands of dollars.

Table 7 the level of tuition fees and the aid granted to students from the State (2009)

Country	Tuition fees	Financial aid (% of total expenditure with higher education)
SUA	5000-50000 USD	19,6 %
GB	1000-9000 GBP	37,5 %
CHN	1700-8400 USD	n
FR	177-584 EURO (1500-6000 EURO - private system)	7,4 %
DE	1000 EURO	20,7 %
JPN	6500-14000 USD	27,5 %
RU	1500-3500 USD	n
RO	500-2000 EURO	7%
UE 27	0-11000 EURO	17,4%

Source: Authors calculation based on mentioned databases

Most significant tuition fees can be found in the universities on the North American continent. The fee for some study programs can reach 50,000 dollars annually. At the opposite pole, the lowest tuition fees are in the European countries, which allocated huge sums from the State budget to finance this system.

In direct connection with these tuition fees should be analyzed the system of student aid granted by the State. In order to be fair and non-discriminatory, the State must give equal opportunities to all those who wish to follow courses at prestigious institutions. Because financial pressure is high, Governments must help the top students with limited financial resources by offering them the opportunity to access funds on advantageous conditions in order to finance their studies. Note that the

countries with the highest tuition fees have the most developed financial aid system. In countries like United Kingdom over 37% of the expenditure on University system can be found in the financial aid offered to students. However, the case of Germany is an exception due to the fact that the percentage allocated to the financial aid of students, as percentage of total expenditure with higher education is roughly equal to the percentage allocated by the U.S. We conclude that Germany puts great emphasis on academic preparation, facilitating access to education to all those interested in attending an academic program.

Funding of the University system is not an easy matter for any country worldwide. Because of the amounts involved, this system is one of the most expensive part of an economy. Because results can be quantified only on medium and long term, in situations of financial crisis and economic instability, universities are among the first that have to suffer from financial cuts. These funds allocated to higher education system are directly influenced by a number of factors, among which the most important is the economy and the growth of gross domestic product.

Table 8. The annual evolution of GDP and government expenditure with tertiary education (%) (2009)

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
U S A	I*	-1.74	32.06	-2.53	9.68	-7.31	7.05	12.39	-7.49	0.18	-5.99
	II**	n	3.36	3.46	4.70	6.38	6.49	5.98	4.87	1.87	-2.47
G B	I*	-5.33	5.97	39.36	0.35	2.74	24.92	-4.95	-	-9.75	-6.66
	II**	-1.49	-0.62	9.74	15.36	18.30	3.60	7.22	14.89	-4.73	-
F R	I*	29.06	3.67	5.80	-1.34	1.96	3.90	4.45	8.51	1.16	2.74
	II**	-9.21	-0.05	8.04	22.37	13.59	3.26	4.97	13.80	9.27	-7.90
D E	I*	3.36	4.22	7.97	5.49	1.32	2.64	1.65	7.92	7.16	2.57
	II**	-11.34	-0.50	6.97	20.60	12.41	1.51	4.85	14.56	9.38	-9.16
J P	I*	22.46	1.22	1.72	15.24	9.23	-3.05	2.03	8.97	2.41	5.12
	II**	6.84	-12.25	-4.33	7.93	8.91	-1.17	-4.17	0.35	11.46	3.14
R U	I*	n	18.05	23.44	27.08	23.67	51.76	35.65	35.88	33.95	-
	II**	32.56	18.05	12.57	24.68	37.39	29.18	29.62	31.29	27.79	-
R O	I*	-14.22	114.45	-4.40	4.60	16.58	22.78	n	82.21	n	13.90
	II**	4.81	8.80	13.31	29.30	27.46	30.84	23.72	39.06	19.76	-
UE 27	I*	n	n	9.94	0.94	4.12	6.48	2.94	5.05	3.37	1.04
	II**	-7.16	0.98	9.28	21.80	15.38	4.58	6.57	15.70	7.94	-

Source: Authors calculation based on mentioned databases

* I. Evolution of the annual expenditure on University System

* II. Annual evolution of GDP

This analysis was carried out without taking into account China, due to the lack of consistent data on the amount of annual spending with higher education.

In terms of the coefficient of correlation of high intensity for the entire period under review, the two indicators are currently following the same trend. An increase in the GDP lead to a growth regarding the amounts allocated to higher education. This assumption is natural, in the conditions under which, a functional market economy, with a consistent and stable national wealth, would be able to finance the University system, when an underdeveloped country will seek to fund other sectors of the economy, which could generate in short-term more visible effects.

III. Conclusions

Each country must be able to develop a university system, as far as possible independent of the macroeconomic oscillations, because only by applying a viable long-term strategy, they can be creative. In 2009, once installed the economic crisis, all countries surveyed had to reduce budgetary expenditure, generating a consistent cutting of funds allocated to higher education.

From the analyses carried out it is observed that, by applying a policy diametrically opposed, University systems can become competitive at an international level. There is no successful policy that could be applied globally. If considered the international university rankings, the U.S.A. system has proved to be the most viable, constituting the foundation for developing prestigious educational institutions. In recent years, although the Bologna system was adopted the reforms adopted by the United Kingdom are strikingly similar to the structuring of the overseas education. In light of the fact that in Europe and also in Asia, in contrast to U.S.A., the higher education system is regulated at constitutional level, and is an issue in direct subordination to the Governments, makes the U.S. system impossible to be applied with success on the old continent.

The University system is complex and requires massive public funding. The reforms must relate to the need of the markets, to the possibilities of institution and not least with the needs of students and teachers.

The challenges ahead for the global education system in the terms of globalization is therefore increasing mobility of students and movements of academic programs, the impact of innovation and technology, the increasing number of students and the challenge to increase quality to name a few. The future is opened to changes as Le Bras stated "Shifting demographics, technological breakthroughs, and the volatility of international political and economic condition make it unlikely that patterns of the past will easily or reliably predict the future" (Le Bras, 2008).

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