

FINANCING HIGHER EDUCATION. A CURRENT DEBATE

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Abstract

The problem of higher education funding is felt in different forms in developed countries. In Central and Eastern European countries, since 1990, demand for higher education has increased significantly and has been intensified with the accession of these countries to the European Union. The purpose of this article is to identify successful models in the financing of higher education applied in the Member States of the European Union, which could be a model for higher education in Romania. The question we want to answer is whether there is a link between the level of funding for education and the performance of education. In our approach, we will use the main component analysis method to see if the level of funding influences performance in education, starting with funding patterns in European Union countries.

Keywords: education financing, higher education, performance

Introduction

Education is a determinant factor of evolution, a visiting card of any nation. That is why the educational system is at the basis of the development of a society, directly influencing all other social components and especially the economic space. Higher education has expanded considerably over the last decades. Enrollment rates have increased strongly in almost all developed countries, both by increasing the number of local students and by increasing international student count. As a result, public spending has increased, and the issue that we want to discuss is to what extent this expenditure is correlated with a performant education system.

1. Romanian higher education funding after 1989

Since the 1989 revolution, the Romanian education system has implemented a series of reforms aimed at changing the education system, which were insufficiently debated, have often been just partially implemented and whose implications have not been well determined.

Coming from a communist legacy, the Romanian higher education system was distorted, in the sense that its offer of study programs did not take into account the

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market requirements. Higher education state-paid full scholarships were predominantly directed towards the engineering field, with the post-1989 industry having suffered a major drop, and scholarships allocated in areas such as social sciences, law, or humanities were below market demand (Miroiu and Țeca, 2013). At the same time, the number of subsidized places was far below the demand for higher education at that time. The state responded to the demand from the population, so the number of scholarships offered has increased from 18,000 in 1989, to 63,000 in 2015 for students enrolled in year I.

Up until 1999, the financing model of the Romanian public universities was not different from the one used in the communist period and was based on the allocation of funds on historical principles, which mainly had several main directions: staff salaries, maintenance and operating materials, repairs, investments and scholarships for students. In 1998, with an obsolete funding mechanism based on historical costs and rising demand for higher education, government allocations fell sharply, and the state, in order to limit its financial effort, implemented two measures. The first measure consisted in the fact that since 1998 universities have been allowed to enrol students who pay their tuition fees themselves, and the second was the introduction in 1999 of a new formula-based funding mechanism.

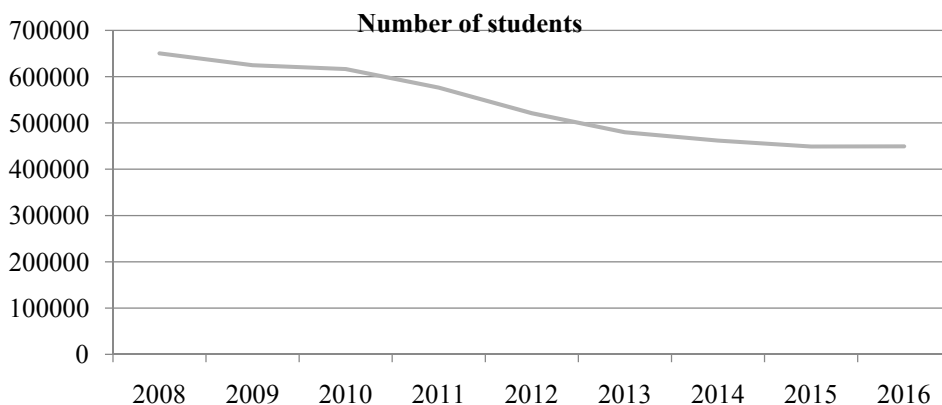
In 2011, the higher education system underwent new changes through the approval of the National Education Law no. 1, which states that funding should be made "based on and within the standard cost per pupil, pre-school or pre-school, as appropriate, according to the methodology developed by the Ministry of National Education respectively through study grants calculated on the basis of the average cost per equivalent student per domain, per cycle of study and per teaching language".

This calculation method has considerably diminished the budgets of the educational institutions, so that in a few years the salary grids were substantially reduced and the expenditures with the equipment of the material base became almost non-existent, as the financing barely covered the maintenance and functioning expenses. Thus, the budgets of the educational institutions have come to be the result of multiplication of the standard cost, established annually by Government Decision, with the number of students. Suddenly, the student became the main driver of revenue-generating educational institutions.

The new Education Law came at a financially difficult moment for Romania and was a response to the need for responsible and transparent management of public funds. In this context, the National Council for Higher Education Financing (CNFIS) has strengthened its role as an advisory body established since 1995. According to the law, CNFIS's mission is to support the Ministry of National Education in the implementation of public policies in the field of higher education by elaborating the proposals for regulations regarding the financing of universities, by setting the average cost per equivalent student by cycles and study fields, by submitting proposals to optimize the financing of higher education, as well as by periodically checking the efficiency of public funds management by the higher

education institutions. Also, according to art. 219, par. 2 of the National Education Law no. 1/2011, must submit annually to the Ministry of Education a report on the state of financing of higher education and the optimization measures required. The CNFIS Council has taken further steps to optimize the higher education system, so the report addresses institutional and organizational actors interested in the higher education system who can make an important contribution to the development of informed public policies in this field. Among the problems highlighted by CNFIS, we can recall that the financing of Romanian higher education is insufficient for increasing the quality of higher education and the competitiveness of universities in Romania in the medium and long term, and at the same time it is necessary to establish a coherent strategy and a set of priorities for the long-term development of the higher education system. In other words, CNFIS representatives say that performance in higher education cannot be achieved without proper funding. This aspect has to be taken into consideration especially as the number of students has fallen sharply in recent years (Figure 1).

Figure 1. The evolution of the number of students in Romania, between 2008 and 2016



Source: EUROSTAT, <https://ec.europa.eu/eurostat/data/database>

The evolution of the number of students for the period 2008-2016 is shown in Figure 1, where it can be seen that in 2008 there were 650.247 students, while in 2016 there were 449.152, which means a 31% decrease in the number of students.

2. Higher education in a European context

There are a number of debates around the world that many practitioners and researchers have been puzzled by over time, namely: the role that education should play in creating a more egalitarian society and the extent to which education should be provided through the public sector, or through the private sector (Hare and



Ulph, 1979). Education can only play a positive role in the development of a society.

The problem of higher education funding is experienced under different forms both in developed and developing countries. In the Central and Eastern European nations, after 1990, the demand for higher education has increased significantly and has been intensified with the accession of these countries to the European Union (Erina and Erins, 2015).

In countries such as Bulgaria, Slovenia or the Czech Republic, the main method to finance education is through a direct allocation of state-funded funds based on a formula (Erina and Erins, 2015). After 1990, when the urgent need for higher education occurred, most of the Central Eastern European countries restructured the financing model of higher education, reallocating a certain part of the funding burden to the students, through tuition fees.

Thus, the level of education funding has been an issue that has been widely debated for generations. Erina J. and Erins I., in their work on the evaluation of higher education funding models in Central and Eastern European countries, argue that it would be necessary to identify new sources of funding, as the financial resources allocated by the state are insufficient for ensuring the implementation of a proper and efficient education process. They also identify potential sources that could support the reallocation of funds allocated by the state, of which we can mention the structural funds coming from the European Union, the revenue of educational institutions such as study fees, project revenues, services, patents. They even propose a calculation formula for allocating funding to higher education that does not take account of the individual and the characteristics of each country:

$$N = S_v \times F_m + (S_v^i - S_v^a) \times F_s + N_g + N_{ep} + N^i$$

where,

N - annual income of the higher education unit;

S_v - the number of students financed by the state;

F_m - student co-financing (tuition fees);

S_v^i - the number of students enrolled in the first year;

S_v^a - the number of expelled students;

F_s - the funding from the state budget allocated for a full-time student in that year;

N_g - state subsidies for scientific research, allocated to defined members of the academic staff of the higher education institution;

N_{ep} - funds received as fees for academic, scientific and expert services;

N^i - state investment in the modernization and construction of buildings, purchases and maintenance of equipment (Erina and Erins, 2015, p. 188).

Leaving aside the institutional sphere of education funding, we must also take into account the indirect beneficiaries of this, namely the students themselves. There are numerous researches that focus on the individual as the main beneficiary of investment in education, which naturally has led to numerous debates and controversies. In this approach one can observe two directions: the endowment of individuals with abilities and their access to resources.

The first direction mentioned starts from the idea that the equality of expenses for different individuals does not produce equality of benefits for them (Arrow, 1971). This is because individuals possess certain abilities that enables them to take advantage of education or not (Ulph, 1977). This issue, which has been debated since 1971, seems to have been understood by both governments and educational institutions. Most countries, until they had a significant level of higher education, funded this sector without evaluating the performance of the universities benefiting from these funds. Once higher education has become a mass phenomenon and financial pressure has increased considerably, there has been a natural tendency towards financial responsibility and finding alternative sources of funding.

On the other hand, recent studies call into question the fact that educational institutions have a high degree of responsibility in achieving students' goals, namely obtaining a diploma (Hossler, Ziskin, Gross, Kim, and Ceckic), this being one of the performance criteria within higher education.

3. Methodology and data. Performance indicators within higher education

The issue we are bringing up refers to the fact that most public funding systems have characteristics that generate an increase in demand for formal education, however, at an inadequate efficiency level because individuals do not know what the real cost of the education services which they benefit from is, as they do not bear these costs directly. The role of universities is essential in achieving individual goals, in other words, if students achieve their goals, universities indirectly reach theirs as well.

In order to determine to what extent the level of financing in higher education influences the degree of university performance, we have taken into account the main performance indicators within higher education:

- widening the access to tertiary education;
- lowering the dropout rate from the tertiary level of education;
- learning outcomes - obtaining graduation diplomas;
- research results;
- graduate employment rate.

In this analysis we applied an econometric method to check whether there is a correlation between the level of government funding of higher education and the variables chosen by us, namely the dropout rate in tertiary education, the number of students enrolled in tertiary education, the rate of graduates employed and the



number of researchers in tertiary education institutions in 2015. The data was extracted from the website www.eurostat.eu and is presented in table 1.

Table 1. Performance indicators within higher education in EU member states in 2015

Countries/2015	Government_educational_expenditure_euro	Early_leavers_rate_from_education	Students_enrolled_in_tertiary_education_n	Employment_rates_of_recent_graduates	Researchers_in_higher_education
Belgium	5.949.000	10,1	504.745	79,5	31.909
Bulgaria	292.300	13,4	278.953	74,6	7.902
Czechia	1.299.800	6,2	395.529	82,2	23.963
Germany	38.016.200	10,1	2.977.781	90,4	270.343
Estonia	287.000	12,2	55.214	80,4	4.610
Ireland	2.306.100	6,8	214.632	77,9	15.865
Greece	1.282.300	7,9	690.868	45,2	37.463
Spain	10.327.500	20,0	1.963.924	65,2	121.161
Italy	12.542.000	14,7	1.826.477	48,5	76.403
Cyprus	234.200	5,2	37.166	68,9	1.520
Latvia	286.800	9,9	85.881	78,8	5.672
Lithuania	439.800	5,5	140.629	82,1	12.600
Luxembourg	267.300	9,3	6.896	84,7	1.290
Hungary	726.700	11,6	307.729	80,4	15.643
Malta	127.200	20,2	13.216	95	863
Netherlands	11.117.300	8,2	842.601	88,2	25.810
Austria	6.130.300	7,3	425.972	86,9	36.699
Poland	5.234.900	5,3	1.665.305	77,4	70.658
Portugal	1.607.100	13,7	337.507	72,2	52.325
Romania	1.054.000	19,1	541.653	68,1	15.057
Slovenia	379.000	5,0	85.616	71,5	4.186
Finland	3.968.300	9,2	302.478	75,5	22.173
Sweden	8.447.300	7,0	428.557	85,9	43.911

Source: EUROSTAT, <https://ec.europa.eu/eurostat/data/database>

Factor analysis

Table 2. The results of descriptive analysis of the variables included in the analysis

Descriptive Statistics

	Mean	Std. Deviation	Analysis N
Government_educational_expenditure	4883582,61	8216756,765	23
Early_leavers_from_education	10,34	4,666	23
Students_enrolled_in_tertiary_education	614318,65	764960,776	23
Employment_rates_of_recent_graduates	76,50	11,900	23
Researchers_in_higher_education	39044,61	58277,856	23

According to descriptive statistics, the countries in the observed sample allocated an average of 4,883,582 Euros for the financing of tertiary education in 2015, had a number of 614,318 students, of which 10.34% abandoned tertiary education and 76.50% managed to enter employment after graduation.

**Table 3. Values of the KMO test statistic and the χ^2 statistics
KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,665
Approx. Chi-Square		88,608
Bartlett's Test of Sphericity	df	10
	Sig.	,000

It can be guaranteed with a probability of 0.95% that there are statistical links between the variables considered, as the χ^2 statistic leads to the conclusion of the rejection of the variability independence hypothesis.

Kaiser-Meyer-Ohlin statistics (KMO) shows a value of > 0.5 indicating that there are statistically significant (mediocre) links between the variables chosen, so ACP can be applied.

**Table 4. Own values and variance explained by the factorial axes
Total Variance Explained**

Comp onent	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,837	56,747	56,747	2,837	56,747	56,747
2	1,164	23,285	80,032	1,164	23,285	80,032
3	,874	17,473	97,505			
4	,077	1,536	99,041			
5	,048	,959	100,000			

Extraction Method: Principal Component Analysis.

The table of the explained variance shows that the first two factors explain 80,032% of the total variance of the initial data. The first factorial axis explains 56,747% of the total variance and the largest differences between the statistical units. The second factorial axis explains 23.285% of the remaining variance.



Table 5. Coordinates of the variables within the two factorial axes system
Component Matrix^a

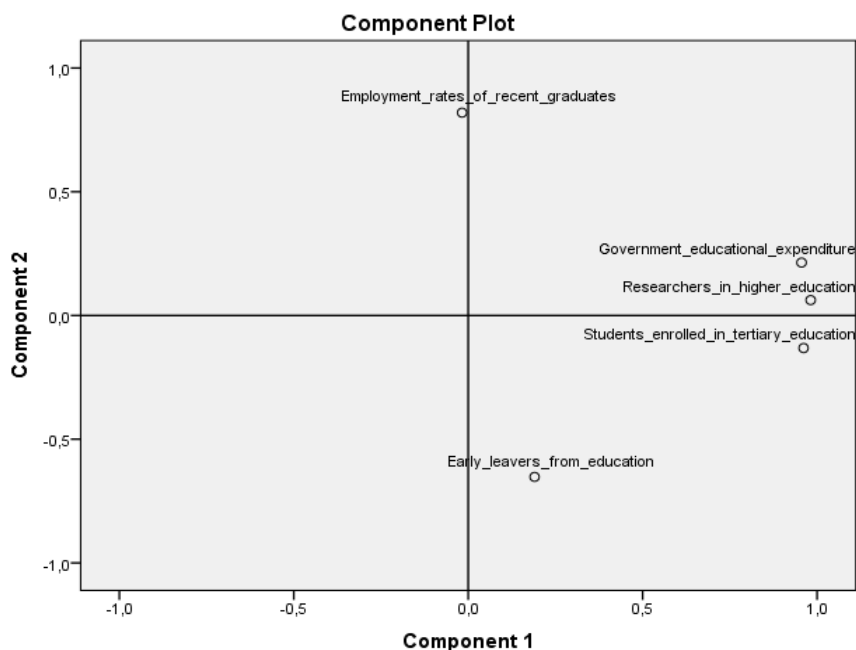
	Component	
	1	2
Government_educational_expenditure	,956	,214
Early_leavers_from_education	,190	-,652
Students_enrolled_in_tertiary_education	,961	-,132
Employment_rates_of_recent_graduates	-,018	,820
Researchers_in_higher_education	,982	,062

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

The values in Table 5 show the position of the variables on the factorial axes. The government educational expenditure variables, Students enrolled in tertiary education and Researchers in higher education have a high (close to one) positive coordinate on the first factorial axis (0.956, 0.961 and 0.982) and the variable rates Employment rates of recent graduates have a negative coordinate according to Figure 2, their positioning on the same side of the dial, indicates the existence of a positive relationship between the three variables.

Figure 2. Graphical representation of variables in the first two factorial axes



For the second factorial axis, the Employment rate of recent graduates variable has a high positive co-ordination (0.820) and the Early Leavers from education variables and Students enrolled in tertiary education have a negative coordinate.

Conclusions

We following the steps in the econometric model and we can say that *Government educational expenditure* influences *Researchers in higher education* and *Students enrolled in tertiary education* from E.U. universities, but will require much involvement from member states to have a performing at European level. The European Union must be involved in solving serious problems, such as school dropout, which in many member countries reaches alarming levels. This analysis started from the need to correlate the size of public spending in tertiary education with the expected outcomes, and not only, but it does not want to be a complete model that provides a true picture of reality. We try through different analyzes to find answers that can be helpful in making responsible high-level decisions.

The problem of financing education as a whole, but especially of higher education, brings to light countless dilemmas faced by decision makers in this field. Even though there are countless studies, proven by specialist analysis, we still have not found a universally valid formula that provides the highest level of education with the lowest cost and best results. This is not possible because universities and the state are the result of several factors joining in all socio-economic areas.

This combination of factors makes the funding higher education a topical subject that we will try to surprise in future studies.

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