TENDENCIES IN THE UNIVERSITY SYSTEM IN ROMANIA

Tudorel ANDREI

PhD, University Professor, Statistics and Econometrics Department
University of Economics, Bucharest, Romania
(Co)Author of books: Reforma administratiei publice in Romania in perspectiva integrarii Romaniei in Uniunea Europeana (2006), Statistica si Econometrie (2003), STATISTICA- teorie si aplicatii (2003)
E-mail: andreitudorel@yahoo.com

Stelian STANCU

PhD, University Professor, Department of Economic Cybernetics
University of Economics, Bucharest, Romania
Co-author of the books: Teoria jocurilor pentru economiesti (2005), STATISTICA- teorie si aplicatii (2003)
E-mail: stelian_stancu@yahoo.com

Irina Maria ISAIC-MANIU

PhD, Associate Professor, Statistics and Econometrics Department
University of Economics, Bucharest, Romania

E-mail: isaiciri@yahoo.com, irina.isaic@gmail.com

Abstract: *Here is a short presentation of the main statistical indicators for higher education. The analysis was structured on the national and regional level and takes into account the differences between private and state universities. We have focused on some indicators regarding student and teacher flows. The case of Romania is peculiar in that there was no private education during the communist era, followed by an exponential development after 1990.*

Key words: *higher education; Romania; universities; statistical indicators*

1. Calculated indicators for the higher educational system

To characterise the higher educational system in Romania, the National Institute of Statistics (NIS) publishes every year a series of indicators featuring important aspects of the academic education. Thus, indicators are being calculated and reported to characterise universities, faculties, students, and teaching staff. Below are presented the indicators referred every year by NIS:

1. The number of universities, faculties, registered students and teaching staff in the superior system, at the beginning of every academic year.
2. The number of students in the higher educational system, by types, forms of education, gender, and forms of property, at the beginning of every academic year.
3. The number of students in the higher educational system of short term, colleges, by types, forms of education, gender, and forms of property, at the beginning at the academic year.

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4. The number of universities, faculties, registered students, and teaching staff in the higher educational system by regions of development and forms of property, at the beginning of the academic year.
5. The number of students registered in colleges, by regions of development and forms of property at the beginning of every academic year.
6. The qualitative situation of students' education in the higher educational system, by forms of education and property, at the end of the academic year 2005-2006.
7. The qualitative situation of the education of students registered in colleges by forms of property and education at the end of the academic year.
8. The number of promoted students and graduates in the higher educational system by types of education and gender at the end of every academic year.
9. The number of promoted students and graduates in the short term educational system by types of education and gender at the end of every academic year.
10. The results of the licence exam in the higher educational system by forms of property and education at the end of every universities year.
11. The number of didactic and non-didactic staff in the higher educational system by forms of property at the beginning of every academic year.
12. Indicators for characterising the material basis in the higher education.
13. Indicators for financial characterisation of higher education units.

2. The evolution of the number of students in the transition period

The indicators calculated by the Institute of Statistics or by the ministry of resort can be used in various studies. In the realisation of this basis, at the first level was considered according to the indicators included in the basis, *a viable analysis at the level of the Romanian educational system, in order to observe the transformations during a period, with the purpose of identifying future evolutions of this system*.

The transition also generated a series of important changes in the higher educational system. The process of informing the Romanian university system was accelerated after signing the Bologna Treaty. During the 17 years of transition a spectacular growth of the number of students took place. Thus, if in the academic year 1990-1991, 192.810 students were registered, all in the public system, in the academic year 2003-2004, 620.785 students were registered, of which 476.881 attend classes in the public system. In contrast, during this period, the proportion of the number of pupils in the number of registered students decreased. Thus, if in the year 1990-1991 the ratio was 5.61, in the year 2003-2004 the value was situated at the level of 1.22. However, in this period, the number of students per 10.000 inhabitants multiplied three times.
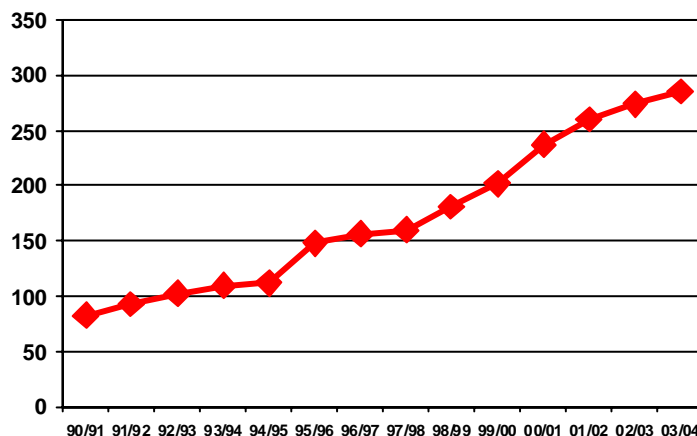

Figure 1. The number of students per 10000 inhabitants

In Romania, the number of high school graduates continuing academic studies has increased. The interest of graduates on this level of education increased every year, and so in the academic year 2005-2006, 716.5 thousand students, 66 thousand (10.2%) more compared to the previous year, were attending the classes of a university. Compared to the first year after the Revolution - 1989, the number of students multiplied three times. Equally, the proportion of students in the total number of scholastic population in the national educational system increased with over 16.4% compared to the previous academic year.

In the period 2000-2006, we observe a substantial growth in the number of students in universities. The table below contains the annual increases of students and teaching staff. The results in the table show that:

i) During the entire analysed period, the growth in the number of students was 34.4%

ii) The most substantial growth (over 10%) was registered in the academic year 2005, compared to the previous year.

iii) The growth was much slower at the level of teaching staff, where over the entire period the rate of growth was 12.8%.

iv) The increase of teaching staff was relatively constant during the entire period.

Table 1. Annual indexes of students and teaching staff between 2001-2006

	2002	2003	2004	2005	2006
Students	109.2	102.4	104.1	104.7	110.1
Didactic personnel	102.5	103.2	101.7	102.3	102.2

Another characteristic of the university system is represented by the larger proportion of female students compared with male students. Thus, for the recently finished academic year, female students represented 55.4% in the total number of students. The new form of organizing the higher educational system, in three cycles, determined a substantial decrease of the percentage of students attending the courses of colleges. The new value of 27.9 thousand students only represents 3.9% of the total population included in the university system. In the university system, the dominant percentage belongs to the students registered in day courses. Still, there are significant differences, as can be seen in the graph bellow, between private and state universities. Thus, while in state universities most of the students (80.5%) attend day courses, in private universities these students only represent 52.1% of the total.
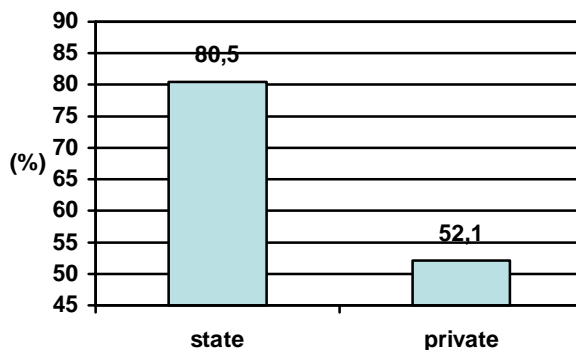

Figure 2. Share of day education students

Another feature of the university system is the continuous growth of the number of students attending distance education. Thus, during the recently finished year the percentage of students attending courses at distance was 15.4% in the total number of students in public universities, of which 27% in the total number of students in private universities.
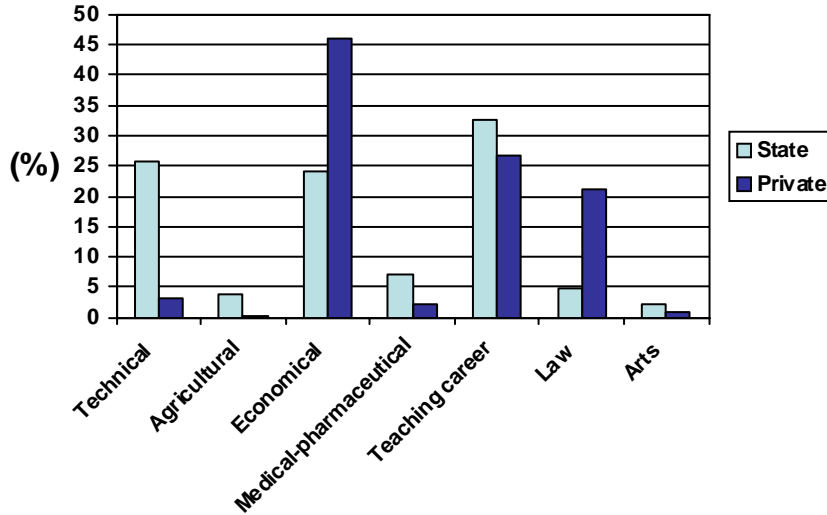
Figure 3. Students' structure from specializations point of view

The graph above shows a few unbalances at the level of universities in classifying students by specializations:

i)   Private universities have a very small percentage in technical profiles (3%) compared to state universities.

ii)   The economic education has the largest percentage in private universities (over 46%) while in public universities the largest percentage belongs to university profiles (32.5%).

iii)   Technical education has a larger percentage compared to economic education at the level of public universities.
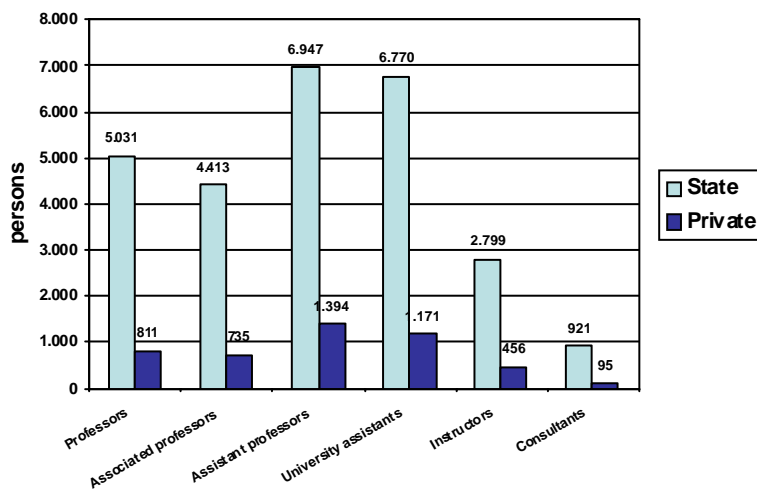
Figure 4. Didactic personnel by categories for the 2005/2006 academic year

Referring to the teaching staff in the university system, the conclusions are the following:

i) The largest percentage for both types of universities represents the assistant professors.

ii) The assistant professors, university assistants and instructors, represent more than 65% of the total places at the level of state universities, respectively at the level of private universities.

iii) The student-teacher ratio is bigger in the case of private universities (24.8) compared to public universities (19.1)
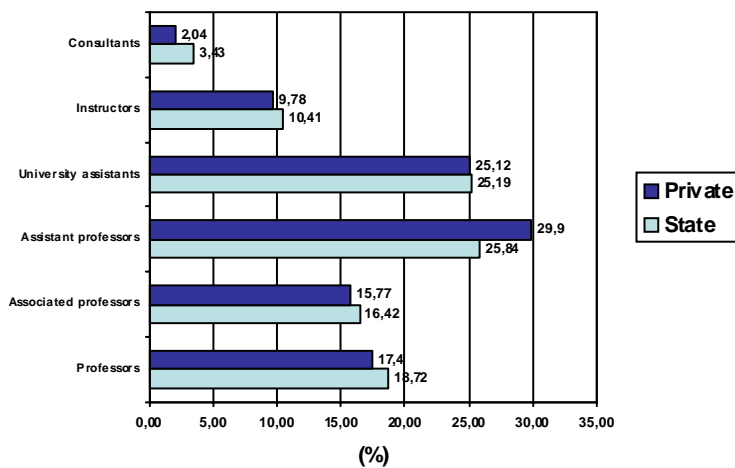

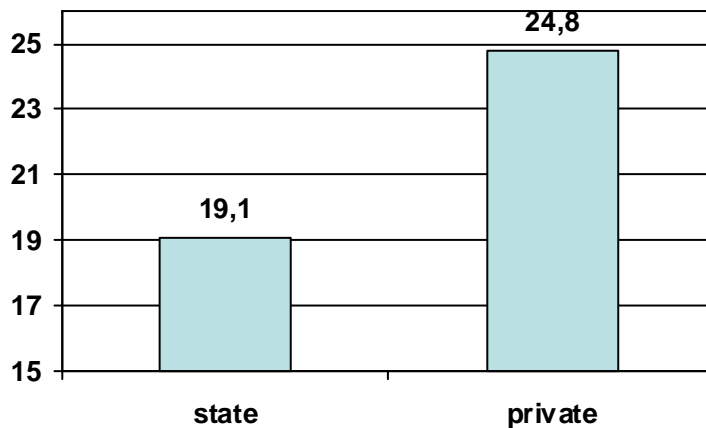**Figure 5.** Classification of didactic personnel by positions

Figure 6. Student-teacher ratio

3. The Wagner model for the analysis of expenses for education

Using panel data for European countries, a series of common features and peculiarities can be identified regarding the evolution of expenses in the university system. At the level of the European Union (EU) countries there is a series of fundamental transformations in the area of higher education.

These changes are equally accelerated by the process of integration that countries recently accepted by the EU have to face. More than that, the Bologna Treaty leads to significant transformations at the level of all countries in the European space, including those with a strong tradition in the university field. The social movements in the year 1989 in Eastern Europe also determined substantial changes in education in general, in higher education in particular. Using a range of macroeconomic indicators and indicators belonging to the university area, a series of analyses at the level of the European space can be accomplished for the period 1990-2007. Considering that throughout the project the specific data bases are created, one can estimate the parameters of some econometric models with panel data.

In literature, there is a consensus regarding the role played by human capital and by education in economic growth (see Greenway and Haynes-2003; Krueger and Lindahl-2001). Using econometric methods, a series of similarities and differences shall be highlighted in the assignment of public expenses for education at the level of the countries recently made members of the European Union. Baqir (2002) shows that there are significant differences in the allocation of these expenses even at the level of countries similarly developed. Moreover, there are considerable variations from one period to another, in this type of countries. Wagner (1883) proves a tendency of faster growth of public expenses compared to the growth of economic activity in industrialized countries. The same tendency is manifested after the Second World War. A vast literature developed on the theme in this period : Gupta [1967], Wiseman [1968], Pryor [1968], Goffman [1968], Bird [1971], Tarschus [1975], Mann [1980] etc. The development in economic techniques of co integration, the Granger causality etc, have determined the appearance of new studies in this area: Demirbas[1999], Murthi [1993], Oxley [1994] etc.

In economic literature six types of functions have been drafted in defining Wagner's Law. They use absolute values or the indicators in the model are calculated per capita:

The **Peacock-Wiseman** [1968] proposes a linear function of analysis for public expenses (G) reported to the GDP (GNP):

$$\ln G_t = \alpha + \beta \ln GNP_t + \varepsilon_t \qquad (1)$$

The **Pryon Model** [1968] proposes a linear model for analysing the dependence between private consumption (C) and GDP (GNP):

$$\ln C_t = \alpha + \beta GNP_t + \varepsilon_t \qquad (2)$$

The **Gupta Model** proposes a linear model of analysing the linear dependence between public expenses and GDP per capita $(GNP/P)_t$:

$$\ln(G/P)_t = \alpha + \beta(GNP/P) + \varepsilon_t \qquad (3)$$

The **Goffman Model** [1968] uses a linear model having as exogenous variable GDP per capita in describing public expenses:

$$\ln G_t = \alpha + \beta(GNP/P) + \varepsilon_t \qquad (4)$$

The **Musgrave Model** [1969] analyses the linear dependence between the percentage of public expenses in GDP and GDP per capita:

$$\ln(GNP/P)_{t=} \alpha + \beta(GNP/P) + \varepsilon_t \qquad (5)$$

The **Mann Model** proposes the following model:

$$\ln(GNP/P)_t = \alpha + \beta GNP_t) + \varepsilon_t \qquad (6)$$

In the ulterior phases of the project the viability of Wagner's Law in the case of Eastern countries is verified, using a disintegrated variant of public expenses. Thus, in every model, expenses from the area of education are used. The results are compared to those of

the model utilising other public expenses, such as military or health. For the aggregated analysis of public expenses or of those disintegrated by various sectors, models like Peacock, Wiseman, Gupta, Goffman, Musgrave and Mann are utilised.

To identify factors determining the dimension of expenses in education, it is necessary to estimate the parameters of the regression model

$$CBE_{it} = f(CB_{it}, x_{1t}, ..., x_{kt}) + \varepsilon_{it}$$

where :
- CBE_{it} represents budgetary expenses for education in a given country *i*, in the year *t*;
- CB_{it} represents budgetary expenses;
- and $x_{1t}, ...x_{kt}$ are other independent variables that are influential to seizing budgetary expenses for education.

The literature highlights a series of papers that try to explain the modifications in budgetary expenses for education in a certain period of time: Verbina and Chowhury (2004) for an analysis over Russia; Falch and Ratto (1997) for an analysis over the federal countries, etc. For estimating the parameters of a model, panel data are used, with fix or variable effect.

Starting from a series of studies based on panel data at the level of some groups of countries (Temple 1999), a small degree of dependence between elements of education and economic performances of the countries is demonstrated. Thus, ex-socialist countries were characterized by low values of important indicators that feature the university system, like the number of students at 10000 inhabitants, the number of students for one teacher, number of specializations.

In the '90s, in most of these countries, the private educational system was implemented and developed as an alternative to state educational system. The proposed models are an attempt to identify the factors contributing to the increase of number of students in these countries, and also to identify the economic and social impact of these transformations from the university system, at the level of labour force markets. The statistics used in estimating the mentioned models come from the following sources:
- the National Institute of Statistics
- the World Bank
- Eurostat

For studying the viability of Wagner's Law by total expenses as well as in disintegrated form one can use: the regression models estimated on the base of data series at the level of one country, models of regression with panel data in the two variants: fix and variable effect; ECM or VEC models.

4. Territorial modifications regarding the university system

The statistical indicators calculated in this basis, allow analysis at the national level as well as at a territorial profile.

The current statistics allow the classification of other number of total students by public and private universities, and by gender, or economic regions. According to INS the classification of the teaching staff in the academic system by regions in the previous academic year is: 13.1% North-East, 5.6% South-East, 3.9% South Muntenia, 5.0% South West Oltenia, 12.2% West, 16.5% North West, 8.6% Centre, 35.0% Bucharest- Ilfov. For the

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private and public universities, the classification of students and teaching staff are represented by the graph (fig. 7 and 8):
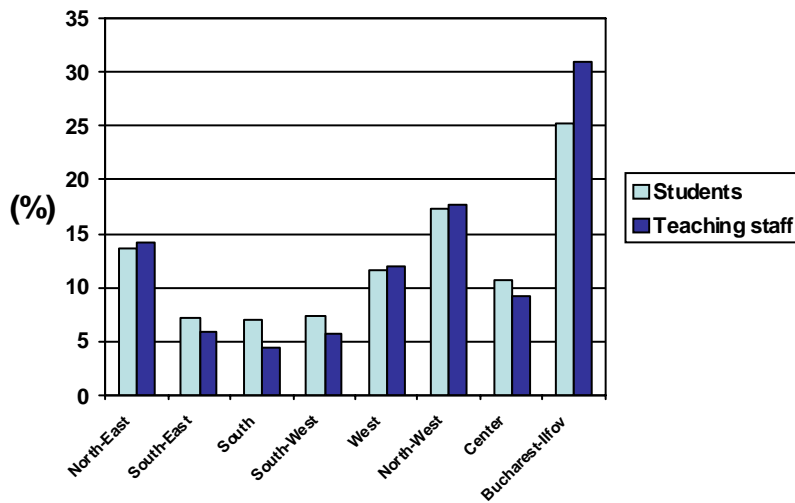

Figure 7. The structure of students and teaching staff in the public system, by regions
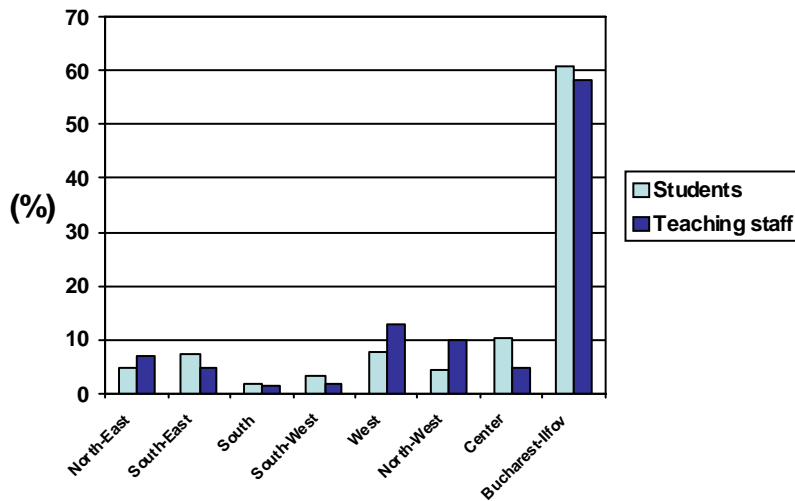

Figure 8. The structure of students and teaching staff in the private system, by regions

Comments on the results on territorial profile:

i) In territorial profile there is a large discrepancy in assigning the number of students per teacher. In private universities, in most of the regions, the values are almost three times bigger than the average of the country. At the level of the Centre region, the indicator has the value of 93.7 students per teacher.

ii) At the level of public universities, the values are in the normal limits. The only exception is in South Muntenia, where the indicator has the value 30.8. At the level of Bucharest-Ilfov where there is the largest percentage for students registered to public universities, the value of the indicator is 15.6.

iii) In public universities, the Bucharest-Ilfov region has a significant percentage of students, but which is not clearly distinct from the next two regions. On the

other hand, at the level of private universities, this region has undeniable monopoly, with over 60% of the students.

Table 2. Studens teacher ratio

	National	State	Private
North-East	22.7	18.3	29.2
South-East	19.1	23.4	67.4
South – Muntenia	28.7	30.8	56.9
South-West - Oltenia	32.1	25.5	81.7
West	28.4	18.4	25.8
North-West	19.5	18.6	20.0
Center	18.7	22.1	93.7
Bucharest-Ilfov	28.0	15.6	45.4

5. The characterization of the infrastructure in universities

The system of indicators must allow featuring some important aspects regarding the infrastructure of higher educational institutions.

At the national level, there are statistics for the characterization of infrastructures of universities by forms of property. A series of derived indicators can be calculated in characterizing the infrastructure. Thus, the state universities have superior endowment regarding the number of students per amphitheatre. The value of this indicator is 214.2 students per amphitheatre in public universities while in private universities, 364.1 students per amphitheatre. The same situation exists in the case of the number of students per seminar room or laboratory. The two values are represented in figure 9.

Table3. The universities' infrastructure

	Amphi-theatres	seminar rooms	gymnastic halls	Labora-tories	workshops	play grounds	swim pools
National	2955	4096	181	8116	573	195	11
State	2398	3065	149	7704	552	177	9
Private	557	1031	32	412	21	18	2

In the 2005-2006 academic year in the Romanian higher educational system there were 107 institutions of higher education; these institutions included 770 faculties and colleges. In the public system were included 55 institutions with 554 faculties. The territorial distribution shows that most of them are in the traditional university centres: 14 institutes (99 faculties) in Bucharest, 6 institutes (49 faculties) in Cluj-Napoca, 5 institutes (47 faculties) in Iasi and 4 institutes (35 faculties) in Timisoara. Regarding the private system, most of its institutions are located also in the traditional university centres. Thus, there are 20 universities in Bucharest, 6 in Iasi, and 4 in Timisoara.
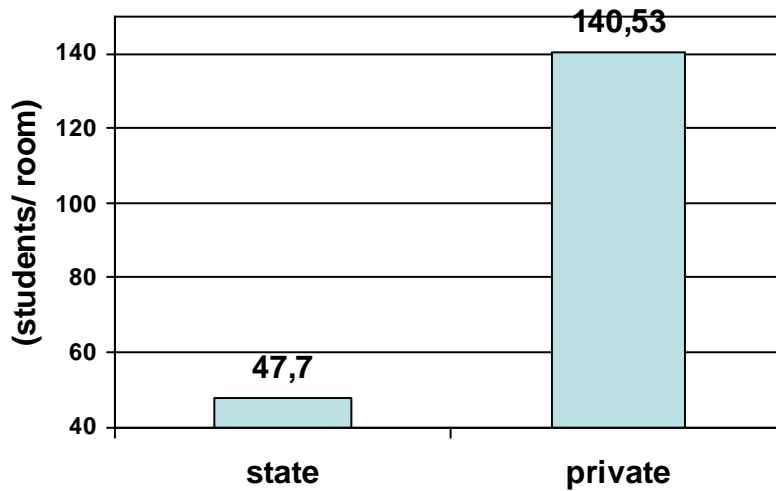
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Figure 9. Number of students per seminar room and laboratory

The system of indicators must allow the characterization of some financial aspects at the level of the institutions in the higher educational system. For the financial year 2005, the expenses for education were at the level of 11.644 million lei, from which the percentage assigned for academic education was at the level of 30.8%.

6. Conclusions

Worldwide, education and professional training are essential elements in the development of a country or an economic region. The entire evolution of human society, in general, highlights the significant connection between the human capital and the general level of socio-economic development.

That is why a careful analysis is necessary to determine the purpose and the consequences that the system of education and professional adaptation has, in the general view of the socio-economic evolution of a society. *The investment in education is a long term investment, and currently, considering the priorities manifested in the socio-economic perspective, transformations in mentality, preferences and attitudes – it can be said that all these factors make education a less attractive investment.*

In all developed countries, the segment of population interested in academic education faced fundamental transformations which led to the necessity of abandoning the traditional forms of training, based on providing courses in a formal institutional environment, or on classic, conservative didactic methods. New technologies have brought about new alternative methods of education, meant to make education accessible to other untraditional segments of the market.

Presently, competent institutions of higher education address not only students but also adults willing to specialize in areas more and more various and dynamic in economy, to reorient themselves professionally, to obtain certain competences necessary to the dynamic evolution of economy and society or to maintain to efficient standards their job.

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The transformations in economy and society inevitably influence the education system. The transformation of the university has become an essential element in understanding the modern higher educational system.

The reorganization of the educational and financial processes started in Romania after the year 1989, and is a direct consequence of the main tendencies manifested on the market of higher education, extensively presented in the present paper, namely: mass higher education, the decline in public finances, the growth of demographic and socio-economic diversification, the request for a constant education of adults the unique development of informational technologies, the globalization of the higher education market.

For Romania, the integration in the European Union, politically assumed, has significant effects on the employment of the labour force, and in the same time on education and professional training as a part of education. The education and the professional training of the labour force in Romania will contribute to defining the place and the role of Romania in the structure of the European Union.

The reform in education does not advance as spectacularly as it would be wanted to in the field of financial decentralization or the participation of community and parents in the decisional process. The present necessities include the clear identification of the external factors blocking the reform measures in education, the constant monitoring of the evolution of these factors, the use of flexible planning strategies.

The reorganization appears as a dynamic process of structuring the institutions of public higher education in Romania, the didactic and research processes as well as the administrative ones, for a better response to the changes produced in Romanian society during transition, especially in the demand for university services, but also in the mechanism of finance adopted by the main financer- the State, in 1999, and the decrease of the contribution of State in financing the today's mass higher educational system.

The problem is of the maximum importance for the creation of an efficient and competitive educational system, according to the new realities, and implies the assurance of the financial resources, as well as implementing an efficient management and productive use of funds.

In Romania, both the national education and the politics regarding professional training should adapt to a regional development strategy, and yet, this centralized adaptation might not be adequate. The decisional factors should continue the present efforts in order to emphasize the educational and professional training strategies of the Regional development Agencies.

Romania is in great need of a higher educational system based on the local requirements of the communities, and on the special needs of the poor families that do not dispose of the financial means to send their children to long distanced faculties. However the existent colleges are sometimes incorrectly looked upon as inferior to universities, and not as distinct institutions offering a different type of quality education. In Romania, there is an impressive number of new private institutions for higher education; while many of these institutions are not completely accredited as universities, they could be transformed into colleges, offering a short cycle of higher education, according and adapted to the local conditions.

The higher educational system is confronted with the development of "new domains" of study in a context of both financial and administrative constrains. Education in areas such as market economy, democratic processes, and civil society and cybernetics,

could substantially advance if colleges and universities would benefit from the important number of young persons attending courses of specialization abroad or in Romania, in programs stimulating creativity. For the full transformation and modernization of the higher education curriculum, a priority is represented by the grant of special stimuli for the recruitment, professional development and retention of these young university cadres.

The reconsideration of the role of education and professional and technical training, in the context of the educational system and of providing labour force, is crucial, especially considering the need of improving the general access to permanent education. Secondly, improvements are required at the level of transition from scholastic regime to a productive one; of significant influence in this purpose, could also be the use of national qualification standards for the initial formation, as well as for the ulterior one, and the collaboration of a comprehensive and transparent approach in evaluating competences.

In the same time it necessary to reanalyse the level and quality of the qualifications obtained through the educational, professional, and technical formation system, as well as their harmonization with the demands in the labour market. This process includes: the adaptation or elaboration of new plans of education, the professional development of teaching staff and administrative personnel, the elaboration of new quality control mechanisms, etc.

Based on the international classification systems, the Ministry of Education should elaborate a list of approved professions; the list must include well established roles and responsibilities between the social partners and other partners.

The reform process must include all levels and forms of education and professional and technical formation. It is necessary to elaborate and apply a new policy of extending the results obtained so far during the reform process. The improvement of managerial processes in education and professional and technical formation can be accomplished only through an enhancement in informing and instructing administrators responsible with mobilising resources and participative management.

Innovative financial politics must be encouraged by identifying other resources besides state budget – the stimulation, through appropriate mechanisms, of investments in instruction activities financed by the employers, the social partners and others. The Ministry of Labour must be preoccupied with the elaboration of a national politics of continuation of formation; this policy must include all resort ministries, administrative regions, and social partners, and identify the roles that are assigned for each in promoting the activities of training adults, and in associated mechanisms (e.g. finance application, etc.).

The training component must be clearly presented in the plans for regional development, and the positive experience gained in the training units must be put to good use to its best. All those participating in the educational process (vocational schools, private and state centres of training, etc) must promote quality and innovative elements; this aspect must be taken into account and shared to all potential partners and students.

The particularities of the educational system require taking into consideration the establishment of the main objectives of principles that individualises it compared to other sectors of activity. These objectives, elements of a strategy, have the purpose of applying an accelerated transformation process, concentrated on operational elements that are determined by a strategic objective.

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