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ECONOMIC CONDITIONS OF GOVERNMENT EXPENDITURE ON EDUCATION IN HIGHER EDUCATION SYSTEM

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Abstract

Higher education institutions are an essential, endogenous element of economic development and take part in resolving global issues. Their utilitarian role, however, may be greatly limited as a result of improper ways of financing science and didactics. The prevailing mechanism of financing didactics in public universities in Polish reality does not ensure the effectiveness of deployed resources and only partially bases on competition, thus not generating the stimuli for positive changes. The algorithm on the basis of which the resources are allocated should be modified. It should be based on criteria reflecting changes in social and economic surroundings. It should also comprise mechanisms stimulating competition between universities and enhancing the quality of didactics and science.

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Introduction

Among various paradigms describing the causes of uneven economic development, the incredibly hot and creatively developed models in recent years are those of endogenous development. In the processes of economic development they emphasize the weight of factors related to the use of knowledge, human capital and material capital. In these theories, investment in knowledge is directly related to the pace of economic development (growth). Modernization, being the consequence of knowledge and human capital accumulation, is the effect of decisions and behavior of consumers, producers and decision-makers, namely the state. It is the state authorities that develop and implement the long-term economic policies. In order to fully take advantage of the potential offered by technological progress, the state has to decide to intensify high-return investment, such as investment in research and development and resources allocated for human capital development. The effect of these actions is the state of a particular country (Carroll, 2011; Ickes, 1996; Maré, 2004; Tokarski, 2007). As we may easily guess, a vital role is performed by scientific research institutions, including universities. They are disposers of financial capital (public and non-public resources) and human capital, and they conduct numerous utilitarian and essential research and scientific undertakings for the economy. They may also generate the tools needed for solving global problems. According to Jeffrey Sachs (2009, p. 316-317) this crucial role of higher education institutions is founded on several reasons. Firstly, universities have a long tradition and as such are focused on long-term strategies, conducive to stability and

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persistence in solving social and economic problems. Secondly, the overwhelming majority of universities are autonomous, apolitical and do not represent commercial interests. Finally, the mission of universities – at least some of them – apart from educating and conducting scientific research, is to solve the social problems on the local, national and global levels.
However, for universities, or for all higher education institutions, to become an essential endogenous element of economic development and to participate effectively in solving global problems, they must be properly financed.

Financing education in times of crisis

OECD in its latest report *Education at a Glance* (2011) analyzes the issue of financing education in times of crisis. It must be admitted that table data concern years 2008-2009, that is the first wave of crisis (we should note that the reference point here is the date of announced bankruptcy of NYSE-listed Lehman Brothers bank, that is 15th September 2008), however recommendations and suggestions concern our contemporary times. In the period from 2000 to 2008, in most OECD countries the total expenditure on education calculated as GDP percentage grew. For example, in the USA, it increased from 6.9% in 2000 to 7.24% in 2008, in Denmark respectively: from 6.6% to 7.09%, in Poland from 5.6% to 5.75%. The average expenditure for OECD countries increased in the analyzed period from 5.5% to 5.71% (OECD, 2011). Obviously, of great interest will be data from the next years, however, OECD is already issuing a warning to governments of all countries against the temptation to make cuts in the education area. OECD experts are even advising to increase investments in higher education, which may translate into creation of new jobs and increased tax revenue. The economic crisis forces governments to seek economies in public expenditure. One may ask why cuts in education expenditure in times of crisis are not beneficial. As Sally Hunt and Michael Burke (2010) calculate, out of annual expenditure on higher education in Great Britain amounting to 23 billion pounds, the budget receives back as much as 60 billion pounds. This sum is composed of various sources, such as: higher employment, bigger exports, innovations and their implementation. Cuts in expenditure on higher education – in the name of fiscal responsibility – may, according to authors, in the long run force governments to lay out millions of pounds on welfare benefits paid to those whose current social and professional activities are related to the area of education (students, university staff and faculty, external service providers for universities). American expert in investment in education – Diana Epstein (2011), does not beat around the bush, writing "Education is the key to competitiveness of the American economy, while strong, still federal investments in education are necessary in order to improve the achievements of students and to keep our economy on the track of permanent growth". According to the author, there are at least six reasons for maintaining and increasing federal support for investments in education. These are: strengthening global competitiveness, providing all students with high standards of teaching, high profitability of education investments, protection of the existing jobs and stimulating creation of new ones, savings in welfare expenditure and strengthening (rebuilding) middle class. A very meaningful presentation on this issue was made at the conference in Ireland by the Finnish government education consultant Pasi Sahlberg. Being the guest of Irish education institutions' heads, he summoned (sic!) the Irish government to radically increase investment in education in spite of the continuing recession. As he argued, after the collapse of the Soviet Union at the beginning of 1990s, Finland experienced a recession similar to the one which can be observed currently in Ireland. The Finnish government then made a brave decision to in-

crease significantly investment in education. As a result of this, Finland overcame the recession quickly and now can be proud of its education system, one of the best systems in the world (The Irish Times, 2011). We should add here that facing the crisis, Ireland has recently decreased (in absolute values) its investment in education. This caused a lot of indignation among education experts, who were surprised that in the past three years the government managed to find 70 billion euro to capitalize banks while it failed to provide 5 billion euro for investment in higher education before 2020. In their opinion, when facing gigantic financial turmoil in the Euro-zone and the crisis of the whole global economy, investment in education should be top priority in supporting economic revival in Ireland (Kinsella, 2011). In this situation we should not be surprised by praise given to the Canadian government, which increased its financing of education, by the Canadian Bureau of International Education – CBIE. As we can read in the statement made by this institution, supporting education brings numerous advantages and creates new opportunities for further internationalization of the Canadian education system (CBIE, 2011).
However, only automatic increase of resources allocated for the education system does not make any sense. The American institution *Center for American Progress* at the beginning of 2011 published the results of the research concerning the effectiveness of education institutions in the USA. As the author of the report states, in spite of threefold increase of education expenditure per student in the past four decades, the effectiveness and quality of American education institutions leaves a lot to be desired. Without detailed supervision of how schools spend public money, automatic increase of resources for education will not guarantee any improvements in the situation. Schools which achieve good education results, apart from appropriate teaching level promote a series of values and implement a number of practices supporting the quality of education. They are also strongly supported by local communities, always ready to make difficult choices. Therefore, observing the openness and transparency of financial expenditure of a particular education institution so as to allow conducting reliable educational research is of key importance (Boser, 2011). This argumentation seems to be confirmed by the latest data by PISA. Cumulative education expenditure per one student aged 6-15, expressed in US dollars (in equivalent USD converted using PPP) in the USA in 2009 was 105752. American students then in the *Reading Comprehension* category obtained 500 points, while, for example, New Zealand, with financial expenditure less than half of the American expenditure (48633 PPPs), scored 521 points in this category. It should be noted that Polish students also obtained 500 points in this category, with the expenditure of 39964 (OECD, 2010). As we can see then, the expenditure level does not always translate into quality and effectiveness of teaching (the list of selected social and economic ratios related to the analyzed issue is provided in the table below).

Table 1: Socio-economic indicators and the relationship with performance in reading – PISA

	Mean performance on the reading scale	GDP per capita *(in equivalent USD converted using PPPs)*[1]	Cumulative expenditure per student between 6 and 15 years *(in equivalent USD converted using PPPs)*[1]	Percentage of the population in the age group 35-44 years with tertiary education[1]
Australia	515	37 615	72 386	37,6
Austria	470	36 839	97 789	19,3
Belgium	506	34 662	80 145	35,3
Canada	524	36 397	80 451	54,2
Chile	449	14 106	23 597	24,4
Czech Republic	478	23 995	44 761	14,4
Denmark	495	36 326	87 642	37,1
Estonia	501	20 620	43 037	34,6
Finland	536	35 322	71 385	43,8
France	496	32 495	74 659	31,2
Germany	497	34 683	63 296	26,7
Greece	483	27 793	48 422	26,5
Hungary	494	18 763	44 342	19,0
Iceland	500	36 325	94 847	36,2
Ireland	496	44 381	75 924	36,8
Israel	474	26 444	53 321	45,9
Italy	486	31 016	77 310	15,2
Japan	520	33 635	77 681	48,4
Korea	539	26 574	61 104	42,5
Luxembourg	472	82 456	155 624	28,4
Mexico	425	14 128	21 175	15,7
Netherlands	508	39 594	80 348	32,5
New Zealand	521	27 020	48 633	39,9
Norway	503	53 672	101 265	38,4
Poland	**500**	**16 312**	**39 964**	**18,8**
Portugal	489	22 638	56 803	14,5
Slovak Republic	477	20 270	32 200	13,9
Slovenia	483	26 557	77 898	23,7
Spain	481	31 469	74 119	32,6
Sweden	497	36 785	82 753	32,7
Switzerland	501	41 800	104 352	36,4
Turkey	464	13 362	12 708	10,6
United Kingdom	494	34 957	84 899	33,0
United States	500	46 434	105 752	43,0

Source: PISA, 2009. Results: What Students Know and Can Do. Student Performance in reading, mathematics and Science. (Volume I), OECD, 2010. Retrieved from http://browse.oecdbookshop.org/oecd/pdfs/free/9810071e.pdf

The above data can prompt us to draw a conclusion that the results of educational activities are not directly proportional to the amount of expenditure on them. We can therefore state that, on one hand, there is a need to increase investment in education, but on the other hand, we must conduct reliable evaluations concerning the effectiveness of the resources spent in this area.

Polish reality of financing education at universities

A well-functioning financing system is a necessary condition for achieving high quality of teaching and scientific productivity in higher education institutions. Of top priority, apart from the amount of available funds, is the origin of resources and their allocation and distribution procedures. Poland is one of those Central and East European countries which have a dual system of financing higher education. It should be noted, though, that from time immemorial higher education has been the subject of great interest of public authorities. Nevertheless, the intensity of this interest and the public authority interference in the external matters of universities vary a lot. The main principles of financing higher education activities in our country can be found in Section II, chapter 4 of the Higher Education Law from 27th July 2005 (Journal of Law, No 164, position 1635, with subsequent changes). If we have a closer look at the above act, we can differentiate two systems of financing: the first one refers to public universities, while the second one – to non-public universities. Analyzing the former, we can see that the fundamental source of financing the operating costs of public universities are subject subsidies from the state budget. It is the central and regional authorities who allocate subsidies to didactic activities, material support for students and research tasks. The above-mentioned sources of financing are of various nature and are characterized by different rules of monetary resources expenditure. Of major importance, however, is the subsidy for didactic activity, which constitutes the overwhelming majority of revenues reported by public universities in Poland. It is, therefore, the main source of revenues for public universities, the size of which influences the financial situation of the university and its staff (Bieliński, 2006).

Subject subsidies for didactic activities are available for both public and non-public universities, however, the latter ones mostly find it to be an unattainable source of financing. In practice, around 75% of subsidies find their way to public universities (Misiąg and Tomalak, 2010, p. 32) . Thus we can venture to claim that public resources for financing didactic activities are still available only for public universities.

Table 2: The amount of subject subsidies for didactic activities and material support for students of public and non-public universities in 2005-2010*

Year	2005	2006	2007	2008	2009	2010
Amount of subject subsidy for didactic activities						
Public universities	5912.6	5880.0	6528.8	6654.3	7182.9	7240.6
Non-public universities	83.2	86.6	120.4	136.1	146.8	149.5

* The calculations concern universities which in 2005-2010 were on the list of universities awarded with subject subsidies.

Source: Own elaboration on the basis of the announcements made by the Minister of Science and Higher Education concerning the list of units which were granted subject subsidies in the scope defined by the Act in part 38 "Higher education" for years 2005-2010

As we can see from the above statistical data, non-public universities receive, on average, only 1.8% of resources allocated for didactic activities and. On average 30.3% of resources for material support for students. This disproportion is further deepened by the fact that among non-public universities receiving subject subsidy for didactic activities, the dominant part is played by just a few universities (Catholic ones), including: The John Paul II Catholic Univesity of Lublin, the Pontifical University of John Paul II in Cracow, the Papal Theological Faculty in Warsaw, the Papal Theological Faculty in Wrocław, and Jesuit University Ignatianum in Cracow. The resources for didactic activities are mainly allocated for these above-mentioned universities, whereas other universities receive rather negligible size of financial support. From the whole pool of resources for education-related activities, Catholic universities obtained as much as 99.3% of the resources, while the remaining 0.7% was allocated among other non-public universities (Table 3).

Another issue which seems to confirm that the breakdown of subject subsidy between public and non-public sectors of higher education is uneven is the amount of resources granted to particular universities. If we take a closer look at the allocation of resources among universities, we will notice that the lowest amount of subsidy granted in 2010 to a public university was PLN 1 116 000, whereas such amount for the non-public university was as low as PLN 200. We must add at this point that the Ministry, in spite of the statutory obligation, has not issued a directive on the basis of which non-public universities could apply for resources to finance their regular studies.

When we analyze the financing of education at universities we should also pay attention to the criteria applied when granting subsidies for core didactic activities of universities. In nearly all European countries, including Poland, financial algorithms are used in order to establish the amount of public resources granted to particular universities. The algorithms are usually based on data concerning the institutions (number of students, number of Ph.D. students, number of didactic and scientific staff, etc.), as well as on results achieved by universities. Detailed algorithm for allocating subsidy for Polish public universities for tasks related to educating students is determined by the Ministry of Science and Higher Education in form of a directive (Journal of Law, No 89, position 544). This directive does not, however, determine the amount of standard subsidy, but only the proportions of the breakdown of the amount of subsidy which was established earlier among universities. The valid algorithm covers seven element criteria, such as:

1) amount of subsidy from the current year (fixed amount transferred from the previous year),
2) number of students and Ph.D. students,
3) number of academic staff,
4) sustained development ratio, reflecting the number of scientific staff and the number of students,
5) number of research projects,
6) rights to award scientific degrees,
7) number of students taking part in international exchange programs.

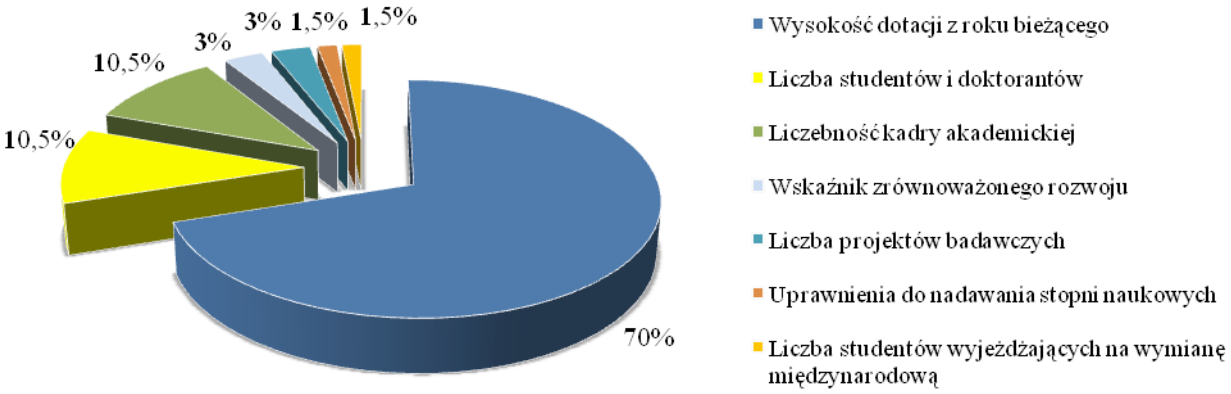
Thus, the algorithm allocating the budget resources of the higher education department is a mathematical model breaking down the total amount of subsidy into parts corresponding to the above-mentioned criteria, according to the ratios assigned to them by the Ministry. The ultimate amount of subsidy for a particular university is calculated on the basis of the sum of amounts calculated for particular criteria. Nevertheless, the most essential element of the algorithm formula is the so-called transfer constant, that is the basis calculated from the previous year (70%), while the remaining 30% of the subsidy amount is allocated into other elements (Figure 1).

Table 3: The amount of subject subsidy for didactic activities and for material support for students of non-public universities in 2005-2010

University/Year	2005	2006	2007	2008	2009	2010
1. John Paul II Catholic University of Lublin	71954100	72217500	93026800	106356900	111990600	111641400
2. Pontifical University of John Paul II in Cracow	11197400	11417700	13674800	15052300	17532300	19034300
3. Papal Theological Faculty in Warsaw	-	904000	3844800	3910500	4203500	4291300
4. Papal Theological Faculty in Wrocław	-	966800	4137000	4140200	4482600	4445600
5. Jesuit University Ignatianum in Cracow	1100	1083100	5682500	6616000	8614900	10092000
Total subsidies granted to the above-mentioned universities	**83 152600**	**86589100**	**120365900**	**136075900**	**146823900**	**149504600**
% of resources allocated for didactic activities for the above 5 universities	**98.8**	**98.8**	**99.4**	**99.4**	**99.7**	**99.8**
OTHER NON-PUBLIC UNIVERSITIES	**1023900**	**1014000**	**725800**	**857100**	**376000**	**320100**
% of resources allocated for didactic activities for other non-public universities which were granted support	**1.2**	**1.2**	**0.6**	**0.6**	**0.3**	**0.2**
The number of other non-public universities which were granted support	**129**	**96**	**110**	**140**	**76**	**21**
Total amount of subject subsidy for didactic activities for non-public universities	**84176500**	**87603100**	**121091700**	**136933000**	**147199900**	**149824700**
	100%	**100%**	**100%**	**100%**	**100%**	**100%**

Source: Own elaboration on the basis of the announcements made by the Minister of Science and Higher Education concerning the list of units which were granted subject subsidies in the scope defined by the Act in part 38 "Higher education" for years 2005-2010

Figure 1: Criteria used in the algorithm breaking down the amounts allocated to financing higher education among universities

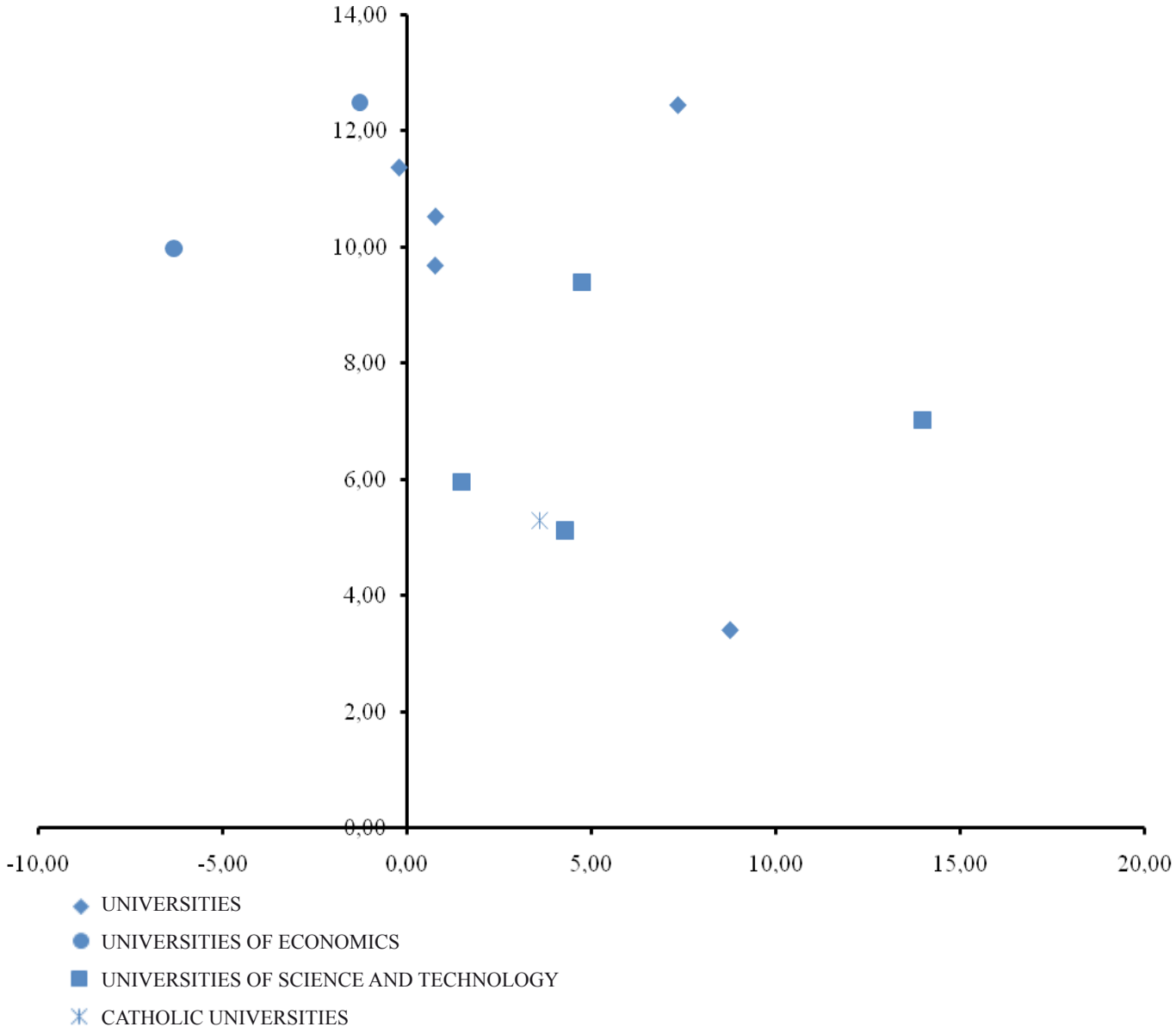


Source: Own elaboration on the basis of the directive issued by the Ministry of Science and Higher Education concerning the principles of dividing the subsidy from state budget between public and non-public universities (Journal of Law No 89, position 544)

In Figure 1:
Amount of subsidy in the current year
Number of students and Ph.D. students
Number of academic staff
Sustained development ratio
Number of research projects
Rights to award scientific degrees
Number of students taking part in international exchange programs

According to H. Miłosz (2007), the fact that 70% of the subsidy is divided on the basis of university share from the previous year, cannot be rationally explained. Such high ratio of the transfer constant significantly weakens the influence of other elements of algorithm on the subsidy division. We should also pay attention to the student – Ph.D. student element, which is calculated on the basis of the share of the number of students of a particular university in the total number of all students of all universities. One might expect that the higher the number of students at a particular university, the higher the amount of subsidy. However, when we analyze the data, it is almost impossible to find any correlations whatsoever between budget subsidy for didactic activities and the number of students. And if we do find such correlations, they turn out to be the opposite of what we might expect, for example subject subsidy for education at Cracow University of Economics, in spite of the decreasing number of students at regular programs, increased by 12%. A similar situation can be observed at Jagiellonian University in Cracow and Warsaw School of Economics (Figure 2).

Figure 2: Compilation of percentage change of subject subsidy for didactic activities and percentage change of the number of regular program students at selected universities. Data for 2009 (percentage change calculated on a year to year basis)



Source: own elaboration on the basis of the announcements of the Minister of Science and Higher Education concerning the list of units which were granted subject subsidies in the scope defined by the Act in part 38 "Higher education" for years 2008-2009

Analyzing deeply the data concerning the number of regular program students and the changes that took place from 2005 to 2009, we can observe that in most analyzed schools (in spite of the decline of population in the 19-24 age group), the number of regular program students increased, whereas the number of weekend students decreased. Comparing the increase of the number of students with the changes in the value of didactic subsidy, we can confirm our earlier conclusions: the increase of subsidy was considerably greater than the changes in the number of students, for example in the 2005-2009 period, the number of regular program students grew by 3.1%, while the subsidy increased as much as 23.1%.

Table 4: Data concerning average percentage increase/decrease of subsidy for didactic activities and increase/decrease of the number of regular program students in 2005-2009 at selected public universities

	Average percentage increase/decrease of subsidy for didactic activities in 2005-2009 (base year – 2005)	Average percentage increase/decrease of the number of regular program students at public universities in 2005-2009 (base year – 2005)
Total: data for public universities	**23.1**	**3.1**
Detailed list of selected public universities:		
UNIVERSITIES		
1. Adam Mickiewicz University in Poznań	5.78	-0.11
2. Jagiellonian University in Cracow	8.22	2.47
3. Cardinal Stefan Wyszyński University in Warsaw	20.84	1.60
4. University of Rzeszów	7.07	3.15
5. University of Warsaw	4.73	0.40
UNIVERSITIES OF ECONOMICS		
1. Cracow University of Economics	8.14	3.74
2. Warsaw School of Economics	4.31	2.11
UNIVERSITIES OF SCIENCE AND TECHNOLOGY		
1. Ignacy Łukasiewicz University of Technology in rzeszów	2.19	6.19
2. Silesian University of Technology in Gliwice	3.84	-3.55
3. Warsaw University of Technology	1.95	-9.15

Source: own elaboration on the basis of the announcements of the Minister of Science and Higher Education concerning the list of units which were granted subject subsidies in the scope defined by the Act in part 38 "Higher education" for years 2005-2010 and data obtained from Central Statistical Office (GUS)

Apart from the number of students and Ph.D. students, a vital element of the algorithm is the staff component. It is a cost ratio, constituting a quality bonus for the universities which employ professors (especially foreign ones) and academic teachers with Ph.D. and post-doctoral degrees. The criterion of calculating didactic subsidy defined in this way accounts for the fact that junior lecturers move to Ph.D. studies, which causes turmoil in the academic staff structure. Currently we can observe a reversed pyramid didactic staff in Poland – there are more professors than young staff: in 2009, there were 24 thousand professors, 42.3 thousand lecturers and only 13.4 thousand junior lecturers (Central Statistical Office, 2010). However, it is the junior lecturers who should constitute a solid basis in the employment structure at universities.

Conclusions

The fundamental idea of the algorithm dividing budget subsidy is to divide the amount so as universities obtain resources proportionally to their share in the higher education system. Such division is to be safeguarded by objective criteria. However, in Poland, according to many opinions expressed by academic circles, and confirmed by the diagnosis of higher education prepared by Ernst&Young and the Gdańsk Institute for Market Economics (2009), the algorithm on the basis of which resources for education are allocated is highly ineffective. First of all, it does not motivate universities to improve their effectiveness and quality, secondly, when determining the amount of subsidy, it does not take into account the level of justifiable education costs, and finally, it does not reflect the effects of education (*Ernst&*Young, Gdańsk Institute for Market Economics, 2009). What is more, according to M. Żylicz (2009), President of the Foundation for Polish Science, the current algorithm does not force universities to improve the quality of their didactics nor does it introduce principles of fair competition for state financial resources allocated for didactics. The faulty distribution system of these resources among universities has led, in his opinion, to many pathological situations.

In times of crisis and budget cuts forced by it, the utmost concern of the government should be to finance higher education on the basis of transparent rules which encourage competition. The mechanisms of finance should ensure effectiveness of used resources. Therefore, the currently used algorithm of dividing budget subsidy should be changes so that it, firstly, could introduce competition among universities and secondly, it could support the education quality and initiate development reserves. Nowadays, it is not essential how many students a university educates (as we pointed out earlier, our algorithm is 'resistant' to changes in the number of students), how well it runs its didactic activities or whether it develops science in a given field. High value of the so-called transfer constant (70%), that is the amount that a university obtained in the previous academic year, provides stability but also causes stagnation. Maybe an inspiration for the change of our algorithm could be the English example of how they allocate budget resources on education. What makes their system special?

The government is responsible for all public resources allocated every year for higher education in England. The institution in charge is *Higher Education Funding Council for England – HEFCE. HEFCE* is the largest source of financing higher education, though it must be admitted that these resources account for less than 40% of total revenue of English higher education institutions (the remaining part is financed from student fees). In the 2008/2009 academic year *HEFCE* shared out the amount of GDP 7.48 billion, while in the 2010/2011 academic year the amount was very similar, that is GDP 7.43 (HEFCE, 2010). While allocating resources in 2010 *HEFCE* applied a number of priorities (values which should be achieved thanks to financing), such as: increased opportunities for various groups of students, including students from underprivileged groups; maintaining and improving the quality of teaching and scientific research, encouraging universities to cooperate with business and local and regional communities; supporting efficient use of public funds and providing predictable financing so that public universities could effectively implement their long-term strategic plans. The government determines the method of allocating finance by means of the biannual inspection during which the level of expenditure is established. The funds dedicated for higher education are allocated by HEFCE using an algorithm which takes into account, for example: number of students, field of studies, direction and quality of research conducted at the university. After determining the size of the fund, it is allocated among universities in form of a block grant. Every university enjoys some autonomy in how it uses it, however,

it must comply with general guidelines provided by *HEFCE.* Over 80% of the funds that HEFCE assigns for education is divided using the main algorithm (the so-called main grant). The remaining part is made up of funds assigned for widening participation (in education) and other grants for education. Fair and effective division of resources is guarded by two underlying principles. The first one states that similar didactic activities should have similar weights, the second one says that if the university wants to increase the number of its students, it should ensure it obtains additional resources, obviously, following HEFCE consent. English universities enjoy relative freedom in spending resources, the method of financing is only to provide appropriate sum for a particular university as a whole. Although the granting depends on, for example, the number of students or faculties, universities may allocate obtained resources for supporting activities not directly related to educating, for example, administrative costs, library or computer center work. According to HEFCE it is much more effective to share resources among universities within a particular sector than to share them among faculties in a given university. We should also add here that the HEFCE method of financing education has five distinctive features. (1) Transparency: both the method of allocating resources and statistical data should be clear and known to the public; (2) predictability: the method of financing and its parameters should be possible to forecast so that we could predict changes of circumstances and decisions in the next years; (3) fairness: differences in financing universities should be justified by serious reasons; (4) effectiveness/efficiency: the method of financing should minimize administrative involvement and costs; (5) flexible: the method should reflect changes of circumstances and trends in higher education. The government also expects that education at universities will be financed both from public resources and by those who directly use it, that is students – in form of student fees (HEFCE, 2010).

In Poland we can accept the fact that the introduction of common student fees is impossible (due to, for example, political reasons), however, we find it hard to swallow that quite large budget resources for higher education are partly wasted. The change of this model should, just like in England, go towards tying the allocated resources with mechanisms forcing quality and competitiveness. The system should also be flexible enough to allow, through financial flow, quick reaction to civilization variables, demographic trends or economic situation.

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