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The transformation of the Slovak economy requires also the structural change of the role of the public sector in this process. From this perspective there is a need to rethink the system of financing and provision of „public goods“^d. Based on the heritage of the communist system in our region people got used that many goods are provided „for free“ from the government budget by the public sector. They do not realize that in the last instance these are taxpayers, i.e. themselves, who is going to pay the bill.

From this perspective the crucial problem of the transformation of the public sector is to reconsider the optimal way of financing and provision of those goods and services, which in former centrally planned economies of Central Europe were traditionally financed and provided by the public sector. One of them are also education services. Although education (except perhaps for a very limited number of education services spread through mass-media), being exclusive in consumption and non-rival only up to the capacity of a class-room, does not meet characteristics of the pure public good, in all countries governments play an important role in the provision of education services. On the other hand, the state monopoly in financing and provision of formal education services has been the specifics of most centrally planned economies. In the past the state monopoly was justified by ideological reasons.

After 1989 these reasons disappeared. In the process of thinking about the reform of education systems of these countries we consider it useful to look into the theory for the rationale for government intervention in education as well as the experience of other countries in this respect. In our paper we provide brief theoretical argument for the government intervention into the education sector and then we are to concentrate on the evaluation of developments in the system of higher education in Slovakia after 1989 and try to identify its main problems and perspectives. The review is provided with some reference to developments in OECD countries as well as to findings of the economics of education.

1. Theoretical framework for government intervention into education.

From the theoretical perspective there are three factors, which can justify the government intervention into the financing and provision of education services:

- . Market imperfections;
- . Imperfect information;
- . Discrepancy between public and private benefits of education (externality argument);
- . Education as a merit good.

The most important market imperfection playing the role in this context relates to the character of human capital, which is created in the process of formal education. According to the human capital theory developed by G. Beckerⁱⁱ resources devoted to education, since they increase productive capacities of an individual in the future, represent an investment similar to the investment into the physical capital. However, compared to the investment into physical capital there are crucial differences. The physical capital acquired by the investment can be resold, i.e. can also be used as a collateral for the loan incurred during the investment. On the other hand, if one invests into the increase of his knowledge and abilities, it increases his value on the labor market, but he cannot provide his future human capital as a collateral for loan helping him to finance this investment. In the system without government intervention

those individuals, who do not possess financial assets needed for the payment of education services, would have problems to finance their education. *Imperfections of capital markets* are one reason for governments to try to correct them via intervention, which can take up different forms. Governments can guarantee loans of private financial institutions for education, can provide loans themselves, or can finance education from tax revenues in the form of grants and subsidies.

Imperfect information relates to the fact that when making consumption decisions about education services, consumers are not well informed about available options. These are parents of future pupils, who make consumption decisions (especially at lower levels of education). This situation can lead to inefficiencies in two respects: parents do not possess enough informationⁱⁱⁱ, or they can choose an alternative, which would be the best one for themselves, but not necessarily for their children. Moreover, the „good quality” education is a relatively subjective term. However, there are many opponents of the idea that the state should be able to make better decisions than families themselves. The imperfect information argument justifies the government intervention in the form of the provision of low costs, accessible information on education options to help families to make better decisions, but cannot justify exclusive public provision and financing of education.

Education does not bring only private benefits to individuals and their families, but means also social benefits for the society as a whole. For the explanation of this notion we can use a simple example. Let us assume the situation, when an individual A, who is a university graduate, develops the new treatment for a previously incurable disease. It brings benefits, perhaps in the form of money and fame, to him, but also to those, who previously suffered from the disease (e.g. individual B). His invention as well as human capital accumulated in the process of formal education brought benefit not only to A, but also to the society as a whole. If A financed his education only from his private resources, when deciding about the quantity of education services he will consume, he would take into account only his own expected benefits from education and compare them with expected private costs of education services. To make A to take into account also external benefits of his education it would be necessary to make B to pay to A for the value of benefits he will receive due to A's education. Since these benefits are as a rule spread among number of individuals, the market itself does not lead to the efficient solution and without government intervention the quantity of education services consumed will be lower than optimal. Thus *the difference between private and social (frequently referred to as external) benefits* of education is another reason for governments to intervene into the provision of education services and to compensate individuals for external benefits of their education to the society as a whole. The optimal solution would be to provide the subsidy to A, which would be financed from taxes of those, who bear benefits of A's education. However, because of the free rider problem^{iv}, practically this solution would be very difficult to implement. Consequently, the compensation for external benefits can be made from overall tax revenues.

In spite of difficulties with the quantification of precise value of external benefits of education, economists agree that it is negatively correlated with the level of education, i.e. it is higher for lower levels of education and decreases at higher levels. This argument can serve as one of the reasons for subsidies at lower levels of education being only rarely questioned, although there are many debates about the appropriate level of financing of higher education.

Education is considered to be a *merit good*, i.e. it is considered to be in rational individual's own interest to consume some quantity of education services. Since, individuals do not always act rationally, there is the government, who, in similar cases, can be provided

with the right to interfere into their independent consumption decisions and force them to consume the specific quantity of education services.^v However, this argument is also more relevant for lower levels of education than for higher education, which is our concern in this paper. Also it does not provide the rationale for public financing of education.

2. The Slovak system of higher education – the potential for reform.

2.1. Monopoly of the state in higher education

Current situation in the Slovak system of higher education is influenced by the heritage of the previous political and economic system. Its characteristic feature has been the almost exclusive monopoly of public institutions of higher education.^{vi} From this perspective since 1989 there has been little change.

In spite of the continuing monopoly of the state in the area of higher education, as regards formal position of institutions of higher education institutions there have been many changes in recent years. In 1990 a new Law on Higher Education^{vii} was passed, which officially abandoned the previous ideological and political control in this sphere. Basic academic rights and freedoms were introduced at universities, academic senates as self-governing bodies were reestablished and the independence of universities was increased. These changes brought about also new problems. One of them might be the problem of creating the balance among influences of different university groups in decision-making processes.

In recent years in the area of higher education Slovak governments followed the policy of establishment of new public institutions of higher education mainly in regions outside the capital. Next to the increasing of enrolments at existing universities, this has been one of ways to increase the participation rates in the tertiary education and bring the country in this indicator closer to the developed world. These developments are summarized in table 1. The establishment of new schools and study programs outside the capital should have brought the education geographically closer to students coming from different Slovak regions and at the same time contribute to the development of these regions. Bringing education services closer to students might be also an important factor to improve the access to education in the period of its increasing indirect costs (e.g. the increase of travel costs and prices of accommodation in the capital) and worsening economic situation.

Table 1. Institutions of Higher Education in Slovakia

Full-time study	1994	1995	1996	1997	1998
Institutions	14	14	14	18	18
Faculties	63	67	69	80	83
Students	69,042	74,322	79,770	83,942	87,117
Part-time study					
Students	8,279	10,457	13,323	18,040	23,590

Source: Statistical yearbook of the Slovak Republic 1999, Bratislava. Veda.

However, this policy probably underestimated the fact that the sufficient condition for the establishment of a university is not the availability of a building. It is a long-lasting process requiring substantial human and financial resources, which have hardly been available. Consequently, several study fields at newly established institutions of higher education could not get through the accreditation process and were closed down.

The process of diversification of the Slovak system of higher education could be assisted by the entry of new private universities, which after meeting the same requirements as public ones could provide comparable higher education. It would lead to the increase of competition between different institutions of higher education not only for students, but also for academic staff. In the period, when new high-income strata of the society is created, which is able and willing to pay for high quality goods and services, there might also be the market potential for such developments. In the long run the system of Slovak higher education should consist of the mixture of small and medium public and private institutions of higher education. However, looking at the economic situation in Slovakia as well as the size of its education market it is hard to expect many private institutions to be created on “a green field”. The solution might be the entry of foreign universities, or the transformation of part of public institutions. It is obvious that legal rules as well as sound institutional framework (including the independency of accreditation comities) are the basic prerequisite of these developments.

2.2.Redistribution impact of existing system

The tuition free system of higher education means that direct costs of education are fully financed from tax revenues. Such system is frequently considered to be the way to ensure equal access to education services and it is politically very popular. However, findings of empirical studies show that there is a positive correlation between socio-economic status of parents and enrolment of their children to the institutions of higher learning^{viii}. Rather limited empirical evidence on family background of current generation of university students in Slovakia also tends to confirm this hypothesis.^{ix} In other words, children coming from higher socio-economic groups and those with parents having higher education are more prone to go on for their tertiary studies. Under these conditions tuition free higher education may lead to the situation, when lower income groups of the society subsidize those individuals, who come from its richer strata and if Becker’s human capital theory holds true (and the data shown in table 2 seem to support this concept), in the future will benefit by higher income due to human capital acquired during their higher education studies. Under such conditions the tuition free system of higher education does not increase the income equality in the society.

In the Slovak system of higher education, except for a few private and church schools at elementary and secondary level and some bachelor part-time programs organized by public universities, tuition-fee is not charged. According to the current Slovak constitution every citizen has the right to study at a higher education institution in a selected field of study, if he/she has completed full secondary education and can demonstrate his/her qualifications to manage this study.

Although due to the tuition free system direct costs of higher education at most types of study are negligible, in recent years the indirect costs of study went up rapidly. It is related to both the inflation pressures in the economy as well as the sharp decline of government subsidies to students. It lead to the increase of costs of literature, travel costs, meals,

accommodation facilities etc. The burden of these increased costs is higher for students residing outside the location of their institution of higher education. In current conditions of worsening economic situation (hitting the countryside more severely) even costs of study at the tuition free public institution of higher education can prove for several groups of students to be prohibitively high.

The existing system also contributes to the formation of elites in the society. If applicants for higher education can succeed to enter the elite group of students, they are eligible for consumption, from which most members of the society are excluded. On the other hand, all members of the society are forced to contribute to the financing of resources, which are consumed by a small group of the society, which is lucky enough to possess specific characteristics (e.g. the ability to pass entrance examination limits; personal connections and/or the income of their family allowing them to overcome indirectly formal requirements), which allow them the access to the consumption of services, which are not accessible to other members of the society. Existing system raises the question whether the discrimination criteria it uses are more efficient, or equitable than alternative systems of distribution of scarce resources, including the market mechanism.

Table 2. Structure of gross salaries in the Slovak economy according to the highest completed level of education in SKK (from the sample surveys)

Education level	1996	1997
Primary education	7,437	6,666
Vocational apprenticeship	8,600	8,685
Specialized secondary without leaving exam	7,980	7,592
Specialized secondary with leaving exam	8,546	9,467
Full secondary (grammar school)	9,071	8,767
University education	14,283	19,073

*Source: Statistical yearbook of the Slovak Republic 1999, Bratislava. Veda
Statistical yearbook of the Slovak Republic 1998, Bratislava. Veda*

The main form of benefit of higher education is the private benefit of students and their families. As indicated above it is little doubted that the rate of return from investment into education is comparable with any alternative form of investment. In table 2 it is shown that this holds true also for current Slovak economy. Both for 1996 as well as 1997 the average wage of an employee with university education was well above the average wage of any other group. In 1997 the average wage of university graduates was the double of the average wage of graduates with full secondary education.

From this perspective it is questionable whether it is in line with the criterion of equity that individuals without children contribute to investment into human capital of other's children and this contribution is hardly done only to the extent of the value of external benefits of their education. At the same time individuals with lower income, who never studied at a university and neither their children will, contribute to financing of education of those, who in the future will belong to higher income group. As stated above, education has also external effects bringing benefits to other members of the society. However, as already said, at the tertiary level these effects are considered to be relatively low. Consequently, in our opinion, the strengthening of the costs sharing by students might be thought of as a possible solution for increased equity.

2.3. International position of the Slovak system of higher education

The next set of problems appears if we go over the national border and try to fit the Slovak system of higher education and graduates of Slovak universities into the world education system. In Slovakia formally the full (i.e. master) university education lasts between 4-6 years. In current situation the percentage of tertiary students, who study for lower (bachelor) degree, is relatively low (although published statistics does not provide their precise numbers). The post-graduate study then takes additional 3-5 years. For comparison in some OECD countries the average duration of tertiary studies in years goes below 4 years (including students taking longer period to finish their study program than its formal duration is). In selected OECD countries in 1997 the average duration of all tertiary studies per students for countries with the shortest duration looked as follows: Norway 3.3 years, Korea, Mexico and UK 3.4 years, Switzerland 3.6 years, Hungary and the Netherlands 3.9 years.^x

The relatively long duration of studies of an average student at tertiary education level increases the aggregate expenditure for a tertiary program graduate and overall costs of higher education. According to the Ministry of Education in Slovakia 3.7 percent of GDP is used for education expenditure with proclaimed goal to reach 6 per cent^{xi} levels in following years (until 2005).^{xii} At the same time there is a tendency to increase the share of population receiving tertiary education to those of developed countries. According to the Ministry of Education in 1997 about 23 percent of the population age group were admitted to a tertiary type study programs. The number of enrolments gradually increases (see table 1), i.e. in the year 2000 it is expected to reach 30 percent of the population age group.^{xiii} This trend has been accompanied with the increase of student/teachers ratios at Slovak universities. In 1996 this indicator went up to 11.01 students per teacher, which is the highest level since the data is available (1960). As can be seen from the table 3, ever since it remained at around 10 students per teacher level.

To meet these quantitative goals, which are to bring the Slovak system of higher education to standards of most developed countries at least from the quantitative perspective, in our opinion, it is necessary to diversify tertiary study programs, with special attention to shorter ones, which would allow increasing the share of population benefiting from tertiary education without excessive pressure on the increase of costs. It could also help to rationalize the existing duration of tertiary studies. Current relatively high average duration of tertiary programs might imply that Slovak university graduates during their studies either accumulate more human capital than it is necessary for most positions they get after graduation, or the existing structure of university study programs is inefficiently organized and the process of human capital accumulation is very slow. In later case if the efficiency of the system increased, during shorter period of time the same quantity of human capital could be accumulated.

Table 3. Students and academic staff at the institutions of tertiary education

Full-time study	1994	1995	1996	1997	1998
Students	69,042	74,322	79,770	83,942	87,117
Enrolments	20,027	20,809	22,293	23,120	23,212
Graduates	7,364	9,868	10,499	13,030	12,753
Doctoral study	3,039	3,616	4,507	5,367	6,452
Academic staff	7,781	8,014	8,455	8,843	8,948
Part-time study					
Students	8,279	10,457	13,323	18,040	23,590
Enrolments	3,117	3,881	4,955	7,113	8,839
Graduates	1,785	1,863	1,137	1,798	2,282

Source: Statistical yearbook of the Slovak Republic 1999, Bratislava. Veda.

Table 4. Dynamics of student enrolments and numbers of academic staff at Slovak universities between 1960-1998

	1960	1970	1980	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Number of students	29,643	49,629	76,792	59,458	60,567	63,784	61,272	64,311	69,608	77,321	84,779	93,093	101,982	109,332
Full-time study	20,839	40,487	57,633	50,230	50,859	54,350	53,965	57,030	61,257	69,042	74,322	79,770	83,942	87,117
Part-time study			19,159									10,422	13,370	23,517
Number of academic staff	2,880	5,858	7,392	7,883	8,059	7,818	7,873	8,103	7,769	7,781	8,014	8,455	8,948	9,332
Student/teacher ratio	10.29	8.47	10.39	7.54	7.52	8.16	7.78	7.94	8.96	9.94	10.58	11.01	10.01	10.01
Share of university students on the population age group	6.9	9.5	13.4	12.9	13.0	13.8	13.3	14.2	14.4	15.0	15.8	16.5	17.3	18.5

Source: Statistical yearbook of the Slovak Republic 1999, Bratislava. Veda.

On the other hand, one of the reasons for low enrolments into tertiary education in Slovakia might be found also in the system of secondary education, when only around 50 per cent of secondary students attend grammar schools and specialized secondary schools, which

are the main source of tertiary education enrolments. From this perspective the reform of the system of higher education is closely related to the reform of education system at lower levels with the increase of graduates from these two types of secondary schools (according to the Slovak Ministry of Education it should increase up to 70 percent) on the expense of shorter vocational secondary programs.

The existing system of enrolments to tertiary education is also not efficient. University faculties have the right to organize this process themselves, deciding on the entry conditions as well as their content. This process allows the subjectivity to be a factor influencing the decision and although formally objective, it is open to corruption practices, esp. at faculties with high applicants/enrolments ratios. A possible solution of this problem might lay in the reform of the system of secondary education. As it is common in several other countries (e.g. USA and UK), scores of nationally organized secondary-school leaving examinations might serve as a substitute for separate entrance examinations organized by individual faculties of universities.

2.4. The reform of financing of tertiary education

In the process of systematic changes of all sectors of the economy transition societies face hard constraints on their government budgets. This is especially true in current Slovak society, when the stagnating economy (and tax revenues) as well as the effort to limit existing government budget deficits place heavy constraints on the expenditure side of the government budget. Although special attention of the government to the development of education has been a proclaimed priority probably of all recent Slovak governments, the set back to it was brought about by limits on the dynamics of public education expenditure. In 1997 in nominal terms the expenditures from the government budget going to the education sector comprised 4,815 million SKK, a year later it was 5,333 million SKK. With regard to the previous year and yearly inflation rate it means the real increase of 6.17 percent for 1997 and 3.46 percent for 1998. In 1999 there was further reduction of incremental real expenditures going into education due to both increased inflation as well as constrained nominal expenditures.

Table 5. Dynamics of education expenditures from the state budget in the Slovak Republic

	Mil SKK		
	1996	1997	1998
a. Nominal expenditures from the state budget for education	4,281	4,815	5,333
b. Nominal intra-year increase (percent)	-	12.47	10.76
c. Inflation rate (CPI)	5.6	6.3	7.3
d. Real inter-year increase (percent) (b-c)	-	6.17	3.46

*Source: Statistical yearbook of the Slovak Republic 1999, Bratislava. Veda
Statistical yearbook of the Slovak Republic 1998, Bratislava. Veda*

In this situation the reform of financing of education might seem to be a possible partial cure to its problems. Although, as stated above, prevailing public financing of elementary and secondary education is only rarely questioned, it is much less so in case of pre-school (which is not our concern in this paper) and tertiary education. Moreover, the

average expenditures per tertiary student are well over those for a pupil at elementary level, or for a secondary student.^{xiv} Tuition fees at public institutions of tertiary education are common in many countries. In other words, privately financed proportions of education expenditures are higher at the tertiary level than at other levels of education. In OECD countries, with the exception of Finland and Sweden, at least some students are enrolled in tertiary institutions, which charge tuition and other fees. In OECD countries the share of institutions charging tuition fees ranges from 4 percent in the Czech Republic to 100 percent in Australia, Italy, the Netherlands, New Zealand, Switzerland, UK and USA.^{xv}

In our opinion, the wider introduction of tuition fees and the reform of overall financing of Slovak higher education could provide the impetus also for the reform of the overall system of education and its functioning, since it would change the incentives of all “players” involved. As explained above the introduction of tuition fees does not have to contradict the equity criterion either. However, to ensure the economic accessibility of education to students with lower income, the existing system of student loans^{xvi} should be reformed so as to ensure the availability of financial resources to those students, who need it. Although it is quite frequently pointed out that people from lower income groups might be traditionally „conservative“ to taking up the loan to cover costs of their education, this does not have to be the reason to refuse this solution. In our opinion, existing lower demand for tertiary education services from individuals coming from lower income groups already weakens the weight of this argument. Also a sound information system concentrated perhaps on secondary school students and their parents explaining availability of loans and conditions for their repayment might be a partial solution to the resistance of lower income group individuals to incur loans. It is important to realize that interest rates below the market rate as well as conditions of repayment of loans, which are more favorable, than market ones, are in kind subsidy to students.

Basing our assumption on standard microeconomic theory we expect that introduction of tuition fees would also increase the interest of students in quality of provided educational services. On the other hand, if universities could keep collected revenues, it would increase their interest to attract higher numbers of students as well as the competition among institutions with similar profile. Institutions with more students would be „better off“ having more resources to spend for their personnel and other expenditure. Although we realize that it would be a complex process of competition based not only on quality of provided education services, the development of labor market in Slovakia and opening up of the country to the European Union might diminish its negative implications.

At the same time, the reform of public subsidies to institutions of tertiary education is needed. For similar study branches subsidies (or at least their large part) should be related to student numbers. Policy of stagnating nominal expenditures on tertiary education, combined with increasing number of students, which has been the trend in Slovak education policy in previous years, might have medium and long-run negative consequences in terms of decreased quality of services provided as well as poorly educated graduates.

In recent years a lot of discussions in literature was related to the use of „education vouchers“^{xvii}. It has been proposed that vouchers of given nominal value were distributed directly to students and their families. Students then could use them as a payment for education services at the education institution of their choice. If the price charged by a selected institution were higher than the value of an education voucher, students would pay the difference from their own resources. In spite of many theoretical discussions on the issue,

in praxis education vouchers have almost not being used. Perhaps main reasons behind are the experimental nature of the concept and assumed administrative costs related to its implementation. If vouchers could be used also at private institutions, which in the existing system do not receive public subsidies, ceteris paribus it would also require the increase of public subsidies to higher education. The introduction of the voucher system, if it were to meet its goals, would also require the facilities needed for the flexible mobility of students.

2.5. Problem of the university personnel

In Slovak conditions it is frequently pointed out at low level of salaries in the education sector. Table 6 shows the average level of salaries in the Slovak economy and in the education sector as such. In OECD countries the ratio between salaries in education sector and GDP per capita has been cca.1.6, i.e. the average salary of an employee in these countries has been on average 60 percent higher than their GDP per capita.^{xviii} In the Slovak Republic in 1997 this ratio for staff of tertiary education institutions was 1.17. The average wage in the education sector in the same period was 16 per cent below the national average (see data provided in table 6).

The concept of opportunity cost is telling us that rational individuals will always chose the alternative, which allows them to maximize their utility. This holds true also for individuals entering the labor market. It should be kept in mind also when thinking about the wage level in the education system. If at the existing wage level the employment is sufficient to provide demanded education services, in general, it is not possible to consider the wage level as low.

Table 6. Average gross monthly wages of employees in the Slovak economy per person (in SKK)

Sector	1997	1998
The whole economy	9,226	10,003
Education	7,756	8,187
Academic university staff	10,820	-

Source: Statistical yearbook of the Slovak Republic 1999, Bratislava. Veda

Also the average level of salaries of teachers in other countries is generally lower than that of employees with comparable education in the private sector. In comparison to other sectors teachers enjoy additional benefits in form of longer holidays, shorter working week, lower risk, which might compensate them for lower salaries.

However, especially in relation to the tertiary education we should raise the question, weather it is required that education was provided by anybody, who meets formal criteria, or at least on the part-time basis by best specialists in a given field, whose opportunity costs are very high.^{xix} The transformation of Slovak economy is connected with the development of the labor market and diversification of wage levels in different sectors of the economy. In first years of the transformation the flight of university staff to other sectors of the economy could be observed. The reason for most of this fluctuation was probably the change of opportunity costs of part of the university staff. If we look at the age structure of teaching staff in Slovak education sector, we see the prevailing share of older staff. It can be assumed that for this

group the employment in education sector represents their best opportunity. However, lower employment of younger age groups may have substantial negative medium and long run effects.

In effort to make the employment at universities more attractive for individuals with high opportunity costs the status of top-expert was introduced to the compensation system at Slovak universities. However, the economic theory of bureaucracy teaches us that if in similar cases the goal is to be reached, the system of its implementation should be carefully worked out not to allow it to be misused by elected representatives of the institution. It is questionable if this condition was met in the process of implementation of this measure. It is also questionable whether it was not accepted only ex post, i.e. after most of the best staff with high opportunity costs had left universities. If the answer to the last question is positive, then the implementation of this measure only increased benefits of university employment for those, whose best option it had already been before it was introduced.

The other problem related to the academic staff is that the current level of salaries forces most of the staff to look not only for the second, but third and further part-time employments. In our opinion, it is reasonable to assume that such situation reduces the quality of performance of the individual in his main job (e.g. leaving less time for preparation of lectures, for individual tutorials with students, research activities etc.). The solution would perhaps not be only the overall increase of salaries, but at the same time the change of the overall system of compensation. It would be useful to separate compensation for pedagogical and research activities, so as the part of compensation would be dependant on the quality of the research output of an individual. Allowing individuals to apply for paid research grants at the Ministry of Education and to supplement their salaries this „desirable“ way, instead of being forced to indulge themselves into numerous teaching hours of introductory courses at various study programs, might help to promote positions of academics with sound record and further potential. At this point there would probably be the space also for activities of different foundations trying to assist the development of higher education systems in our region. This would also strengthen the role of universities as research institutions, which, as explained below, we consider highly desirable.

2.6. The reform of universities as research institutions

The main output of universities is the advancement of knowledge. It happens in two ways. In pedagogical process of formation of human capital of students and in the research activities of the academic staff, which are materialized in the form of published papers, books and research studies. The academic staff of universities in their pedagogical and research activities uses identical resources. Consequently, if we tried to estimate the efficiency of their utilization, we should take into account the output of both pedagogical as well as research activities. On the other hand, the measurement of research output of a university might be more difficult than the measurement of the output of its pedagogical activities. Indirect indicators such as publications of the staff, or citation indexes are not sufficient measures to show the actual value of the research conducted at universities for the society as a whole. This holds true in the context of Slovak academia, where publications of university academics in internationally recognized journals, especially in social sciences, are more an exception than a general rule.

The end of 60-ties was the important milestone in the institutional development of basic research in Slovakia. During this period the role of the Slovak Academy of Science was strengthened and, on the opposite, the role of universities as research institutions weakened.^{xx} However, it is hard to imagine the university education to be separated from the research activities. Knowledge and abilities students acquire when conducting their own research are useful for their further carriers. It teaches them an independent and systematic approach to problems, develops their ability to find relevant information. On the other hand, these abilities can be developed only by staff, which possesses them. Moreover, academic recognition of universities (also in international context) is to a large extent closely related to the quality of their research.

In several developed countries (e.g. in the Netherlands and UK) it is common that universities receive financial resources separately for their pedagogical and research activities. As regards resources for research, as a rule, these are not only grants provided from the government, but also resources earned conducting research for the private sector, i.e. for private firms and other private institutions. These resources are paid for carrying out concrete research projects and researchers involved are motivated to work with additional compensation on the top of their basic salary. At the same time, the use of university facilities for the paid research financed by the private sector has to be financially compensated to the university.

In our opinion, in Slovak conditions the reform of publicly funded basic research is closely related to the reform of university education. In this respect the idea of unification of departments of the Slovak Academy of Science with relevant university faculties (or alternatively some other way of strengthening of cooperation between both types of units) should be reconsidered. This step might lead to the strengthening of positions of universities as research institutions and might also help to rationalize basic research in Slovakia. At the same time subsidies for research and pedagogical activities should be strictly separated, allowing academics with strong research potential to devote their time resources to desirable research activities instead of being forced to look for “less” socially desirable alternatives to supplement their salaries.

3. Conclusions

The process of transformation of the Slovak system of higher education is a complex problem, which, in fact, over previous 10 years did not take place. Except for legal changes reacting to the changed ideological and political situation in the society, hardly any other step undertaken can be considered as a systematic effort to change the system so as it was compatible and competitive with those of most developed countries. The effort to bring enrolments as well as public education expenditure to levels of most developed countries have been limited by economic situation in the society as well as availability of necessary resources. It is also highly questionable whether the increase of subsidies to public universities at their current status quo would be a solution bringing about new quality of education process.

What is needed is a systematic change, which does not have to be politically easy to accomplish. However, prolonged hesitation and cosmetic changes can only increase the price of necessary changes. In our opinion, first steps should lead to legislative changes and to the reform of financing of education. Of course, even afterwards the change does not happen overnight. However, the main task for economic policy makers is to set the rules in a way that

the efficiency is maximized subject to given equity considerations. In our opinion, the key in the reform of the Slovak system of higher education is to change the incentives of all “players” involved so as they changed their behavior. Otherwise we will be forced to continue to complain that for our (tax) money we receive very few (as well as we possibly do in other segments of the public sector) in terms of quality as well as quantity.

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ⁱ We use Samuelson’s definition of public goods according to which public goods are non-exclusive and non-rival in their consumption. See: *Samuelson, P.A.* 1956. The Pure Theory of Public Expenditure. *Review of Economics and Statistics*, 36,4

ⁱⁱ See: Becker, G.S. 1993. *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education*. 3-rd edition. Chicago. The University of Chicago Press.

ⁱⁱⁱ It relates mainly to those parents, who place low values on education of their children and thus are reluctant to look for information needed for a qualified decision.

^{iv} For those not familiar with this concept any introductory textbook of Economics can serve as a reference.

^v This is expressed in the form of the legally binding period of the obligatory school attendance, which is set by a legislative body of a country.

^{vi} At the moment (July 2000) only one private institution of higher education has received the accreditation of the Slovak Ministry of Education.

^{vii} The Higher Education Act No. 172/1990 of the Legal Code and The Act No. 284/1997 of the Legal Code also amends and supplements the Higher Education Act.

^{viii} See e.g. *Vzdelaní a sociálna spravodlivosť v zemiach OECD*. OECD. 1997. Czech translation: Praha. Gnosis. 1998. p. 49-64

^{ix} The survey conducted among 3rd and 5th year students of the University of Economics in Bratislava in 1999 showed that among students included into the surveyed sample 90 percent of both parents finished secondary, or tertiary education. Out of them over 50 percent of fathers and over 40 percent of mothers were graduates from higher education institutions. For more details see: Košta, J., Tuňáková, A., Chajdiak, J.: *Univerzita očami jej absolventov*. 1999. Bratislava. Ekonóm, p.13.

^x See: *Education at a Glance*. OECD indicators. 2000 edition. Paris. OECD. 2000. p. 97.

^{xi} In 1997 OECD countries on average spend 6.1 percent of their collective GDP as a support of educational institutions at all levels of education. See: *Education at a Glance*, OECD indicators, 2000 edition. Paris. OECD. 2000, p. 43.

^{xii} See: *Statistical Yearbook of the Slovak Republic 1999*. Bratislava. Veda.

^{xiii} In OECD in 1998 the average enrolment rate into some kind of a tertiary education program was 59 percent. However, in the Czech Republic at the same period it was 35 percent and in Hungary 45 percent, which is substantially lower than OECD average. See: *Education at a Glance*. OECD indicators. 2000 edition. Paris. OECD. 2000, p.157

^{xiv} In 1997 the average expenditure per student in OECD countries for different levels of education was as follows: primary education 3,788 USD, secondary education 5,507 USD, tertiary education 10,893 USD. See: *Education at a Glance*, OECD indicators. 2000 edition. OECD. Paris. 2000, p.94

^{xv} See: *Education at a Glance*, OECD indicators. 2000 edition. OECD. Paris. 2000, p. 68.

^{xvi} Loans for education were introduced into the system of Slovak tertiary education in 1995 by the Decree of the Ministry of Education of the Slovak Republic from 15th November 1995, No 5949/1995-162-ÚP and the Law of the National Cancel of the Slovak Republic No 200/1997 from 26th June 1997. This system was designed to help well-performing students to cover study-related costs. The main criterion for receiving the loan is high study scores. However, the social element of this scheme is included in the fact that preference should be given to students with disabilities and /or coming from lower income families, i.e. the availability of these loans is limited and they are allocated in the form of competition. Financial resources for loans have been provided from the government budget and the custody over these funds was given to a state controlled bank (Slovenská Sporiteľňa). The interest rate on the loan has been set at 3 percent during the period of its repayment. The longest period of repayment of the loan is 15 years from its beginning. The period of study and maternity leave is not included into calculations of the longest period of repayment.

^{xvii} It was M. Friedman, who introduced the issue to the literature. See: Friedman, M. 1962. *Capitalism and Freedom*. Chicago. University of Chicago Press. For further discussion of education vouchers see also: Blaug, M. 1970. *An Introduction to the Economics of Education*. Harmondsworth. Penguin and Johnes, G. 1993. *The Economics of Education*. London. Macmillan.

^{xviii} The (Web page of the Ministry of Education of the Slovak Republic)

^{xix} According to the Ministry of Education of the Slovak Republic more than 33 percent of teaching services in Slovak education sector are provided by unqualified staff, 8 percent of teachers are in retirement age and more than 23 percent of teachers are aged over 50. (Web page of the Ministry of Education of the Slovak Republic)

^{xx} This is attributable mainly to the fact that after the period of Prague Spring was suppressed, politically unreliable academics were reallocated from universities to research institutes.