EDUCATION IS A RETURNABLE INVESTMENT FOR BOTH INDIVIDUALS AND THE WHOLE SOCIETY

[a]LADISLAV ZAPLETAL, [b]VIERA GUZOŇOVÁ, [c]JOZEF ROJŠL, [d]TOMÁŠ LENGYELFALUSY

DTI University, Sládkovičova 553/20, 018 41 Dubnica nad Váhom, Slovakia
[a]zapletal@dti.sk,[b]guzonova@dti.sk,[c]rojsl@dti.sk, [d]lengyelfalusy@dti.sk

The presented article was prepared in the context of the solution of scientific research projects IGA VŠDTI No. 0002020 Secondary Socialization of Homeschoolers and UAE Gr. 10/29/21 P. SK Aspects of secondary socialization of homeschoolers in the conditions of the Czech Republic.

Abstract: The latest analyses done by the OECD based on many years of experience show very clearly that education plays an important role in economic growth. It has been proved that the last one year of education plus results in an annual production increase of 4–7 per cent per person. It means that raising the share of university educated people in a society is one of the essential conditions for its prosperity even at the cost of introducing tuition fees.

Keywords: Capital investment; education; labor market; qualification; prosperity, society, tuition fees.

1 Introduction

Economic analyses provide relatively convincing conclusions that investment in university education in developed countries is one of the essential factors contributing to the economic growth which is the condition for common increase in prosperity of individual countries. An analysis published by Professor Bano (2015) shows that one year of education plus in the average length of education given to the population of a particular country brings a raised level of economic output by 19% (Europa.1995).

The real return on investment in education without amortization and provided that one school year costs roughly the equivalent of GDP per capita (this is likely to be rather on the high side) is 7% per year, which, from the point of view of public funds investment, represents effectively invested funds.

Economic analyses of the effects of the “new economy”, the economic environment created by the combination of new technologies and mostly university educated staff, show substantially changed characteristics of the Philips curve, which describes the relation between inflation and the rate of unemployment (Beck, 1996). The increase in job productivity in the USA in the 1990s contributed to the natural unemployment rate decreasing by one third. The calculations show that half of this decrease will make a new level of the rate of unemployment due to the long-term economic stabilization. The high degree of interconnectedness between the introduction of new technologies and the need of highly qualified staff causes the disappearance of non-creative and routine jobs. In many cases where a few decades ago a secondary school qualification was sufficient, today a university qualification – a bachelor’s degree as a minimum, is a must. The increase in the percentage share of university educated people in the population is one of the basic requirements for economic growth and the prosperity of the whole society that depends on it. In the long term, a higher qualification means a higher employment rate for all, not just prosperity for those who were successful.

Economic analyses provide relatively convincing conclusions that investment in university education in developed countries is one of the essential factors contributing to the economic growth which is the condition for common increase in prosperity of individual countries. An analysis published by Professor Bano (2015) shows that one year of education plus in the average length of education given to the population of a particular country brings a raised level of economic output by 19% (Europa.1995).

The real return on investment in education without amortization and provided that one school year costs roughly the equivalent of GDP per capita (this is likely to be rather on the high side) is 7% per year, which, from the point of view of public funds investment, represents effectively invested funds.

Economic analyses of the effects of the “new economy”, the economic environment created by the combination of new technologies and mostly university educated staff, show substantially changed characteristics of the Philips curve, which describes the relation between inflation and the rate of unemployment (Beck, 1996). The increase in job productivity in the USA in the 1990s contributed to the natural unemployment rate decreasing by one third. The calculations show that half of this decrease will make a new level of the rate of unemployment due to the long-term economic stabilization. The high degree of interconnectedness between the introduction of new technologies and the need of highly qualified staff causes the disappearance of non-creative and routine jobs. In many cases where a few decades ago a secondary school qualification was sufficient, today a university qualification – a bachelor’s degree as a minimum, is a must. The increase in the percentage share of university educated people in the population is one of the basic requirements for economic growth and the prosperity of the whole society that depends on it. In the long term, a higher qualification means a higher employment rate for all, not just prosperity for those who were successful.

2 Position of young people on the labor market

The position of secondary school and university graduates on the labor market is strongly related to the overall situation and the development in the labor market as well as economic conditions. Fresh secondary school and university graduates in the Czech Republic, as well as elsewhere in the world, belong among those who are most at risk due to a downward trend in the labor market. Employers are generally less interested in employing fresh secondary school and university graduates because they have mostly little or no experience with particular jobs.

The group most at risk in the Czech Republic is the group of young people under 18 years of age. The reason for this considerable age handicap of young people under 18 is a strong competition of those who left school prematurely. In the Czech Republic, this fact also correlates with the short average time spent in education (ca 15 years in comparison with ca 17 years in developed countries), which means that a lot of young people end up very early on labor market (Chamoutová, 2009). Although they have completed their secondary education, they face considerable risks of being unemployed due to their immaturity and insufficient experience. These handicaps are decreasing with growing age, as cited in Nováček (1999).

The ratio of unemployed secondary school and university graduates to total unemployment is changing cyclically within a year. The highest figure is always in September, when graduates from the previous school year start looking for jobs; the lowest figure is in the spring months, more specifically late in May. The average share of unemployed secondary school and university graduates in total unemployment has been 15% since 1996. The development in recent years has shown a relative decrease in the share of unemployed graduates in total unemployment as compared to last years.

The position of secondary school and university graduates on the labor market is strongly related to the overall situation and the development in the labor market as well as economic conditions. Fresh secondary school and university graduates in the Czech Republic, as well as elsewhere in the world, belong among those who are most at risk due to a downward trend in the labor market. Employers are generally less interested in employing

fresh secondary school and university graduates because they have mostly little or no experience with particular jobs.

The group most at risk in the Czech Republic is the group of young people under 18 years of age. The reason for this considerable age handicap of young people under 18 is a strong competition of those who left school prematurely. In the Czech Republic, this fact also correlates with the short average time spent in education (ca 15 years in comparison with ca 17 years in developed countries), which means that a lot of young people end up very early on labor market (Chamoutová, 2009). Although they have completed their secondary education, they face considerable risks of being unemployed due to their immaturity and insufficient experience. These handicaps are decreasing with growing age, as cited in Nováček (1999).

The ratio of unemployed secondary school and university graduates to total unemployment is changing cyclically within a year. The highest figure is always in September, when graduates from the previous school year start looking for jobs; the lowest figure is in the spring months, more specifically late in May. The average share of unemployed secondary school and university graduates in total unemployment has been 15% since 1996. The development in recent years has shown a relative decrease in the share of unemployed graduates in total unemployment as compared to last years.

2.1 Unemployment rates of graduates by completed level of education

The employment of graduates, primarily from secondary schools, is often assessed against the total number of unemployed graduates in corresponding branches. However, this assessment results in incorrect interpretations because the branches regarded as the riskiest are those where the number of unemployed graduates is highest. But one fact is being neglected – these branches also have the highest number of graduates. Their specific unemployment rate can be low. If we want to specify the risk graduates of specific branches face on the labor market, it is necessary to consider both the total number of secondary school/university graduates and their specific unemployment rate.

2.2 Long-term unemployment

It seems to be much more important to take into account the total period of unemployment rather than the total unemployment rate when considering the risks of being unemployed. The ratio of people aged from 19 to 24 years who are long-term unemployed (i.e., more than 6 months) has increased considerably in the last years. Since their position on the labor market has not deteriorated, it seems more certain that this unemployment probably concerns a smaller group of people. In April 2020 the long-term unemployment of graduates in the register of the Labour Office was 59% for apprentices, 56.2% for apprentices who passed the secondary school-leaving exam, 56% for vocational schools' graduates, 47.6% for higher vocational schools' graduates and 49.9% for university graduates. From the point of view of the total number of graduates and youth, the ratio of long-term unemployment is 54.3% for males, with the unemployment rate for females being lower at 52.2% (CZSO, 2021).

2.3 Conclusion

Apprentices with an apprenticeship certificate and graduates from secondary vocational schools are the group most at risk on the labor market. These people are also most affected by long-term unemployment. The unemployment in the case of secondary school and university graduates has a considerably regional character. Regions with higher unemployment also have a higher number of unemployed graduates. The highest figures are seen in the Moravian-Silesian Region, the Ústí nad Labem Region and the South-Moravian Region. The main goal of the educational system is to prepare the students so that they are successful on the labor market and employable. At the same time, this does not mean that the educational system as a whole should be subordinated to the world of labour. These two areas – the education and the labor market – are more likely in a mutual relationship influencing each other; they are both autonomous to some extent, but they depend on each other. From the research of Lajčin, Porubčanová (2021), it is clear that the ability to adapt, flexibility and cooperation in teamwork is expected for employment on the labor market.

The OECD project dedicated to the macroeconomic conditions of growth has shown a substantial contribution of the length of education to the pace of economic growth. D. J. Johnson, OECD general secretary, expressed it in Bratislava in the following words: "The latest analyses done within the frame of OECD are very clearly and empirically based and prove that the education plays an important role in encouraging the growth. It is necessary to emphasize that a minimum of one year of education plus in a particular country means that a year production per person is rising by 4–7%." (Strategie rozvoje lidských zdrojů v České republice při vstupu do Evropské unie.1999). In particular, it is necessary to emphasize the success of the employment of young graduates, the cooperation of universities with industry (Pesti et al., 2021).

The average time of school education is an appropriate criterion of the level of human resources development in a society and there is empirical data showing that university education gives graduates further and essential competences, and a university diploma is not just an indication of the general capabilities that are independent on the acquired level of education. Our often-repeated doubt regarding the need of university education for a rising number of secondary school graduates is very questionable in relation to the macroeconomic parameters because of a high degree of saturation from the point of view of the number of people studying at a university. The character of university studies is changing all around the world from being elite education for a small part of the population to mass education for half of the cohort within a year. The economic benefits exceeding the individual return for each graduate are ones of essential driving powers of these changes and their political support. According to the last statistics, 45% of the cohort within a year join a university in OECD countries. More than 60% of the cohort within a year study at university programmes in Finland and Sweden, more than 50% in Poland, Hungary, Norway, Iceland, Holland and Argentina, the average value of 45% is exceeded in Korea, the USA, the UK or Israel. In the Czech Republic only 23% of the cohort within the year entered university in 1999, which is the worst published figure among OECD countries, even worse than in Mexico with 24%. One quarter or even one third of the cohort within a year get the first university diploma in 17 OECD countries, whereas in the Czech Republic less than 11% manage to get a university diploma (OECD, 2022).

There are also economic benefits that cannot be neglected. These are direct expenses that the students and their families incur during the study. It also applies to the return on public expenses that seem as a loss at first sight. The fact that the legal system enables Slovak students to study at Czech universities and colleges does not only increase the quality of students and create good conditions for Slovak students to remain and work in the Czech Republic, but it also brings direct economic profit. Considering that the state budget spends roughly 40 thousand Czech crowns on each student per year, the direct expenses of these students at a place of study estimated at 100 thousand Czech crowns per year represent an immediate return on this export function of university study.

3 Noneconomic contributions of university education

Noneconomic contributions of university education are more difficult to quantify than those that can be measured economically. A British study sponsored by the Higher Education Funding Council for England and the Smith Institute provided the following results that have been evaluated mainly for the population aged 33 and adjusted for family influence and

former education influence between birth and 33 years of age. During a 10-year period, university graduates showed more significant qualification improvements than people who did not attend university (a good foundation for further studies is most significantly demonstrated in the use of information technologies, organizational skills and teaching). University graduates show better health conditions. University graduates are less inclined to depressions than people without secondary education. Men who attended university education are less likely to be victims in accidents or violent offences than no graduates. Women who attended university education are in less risk to become victims of domestic violence in the process of relationship break-ups.

Parents who attended university education have fewer problems with their children's education; these children also have more books on average than children of less educated parents. And preliminary analysis indicates that experience gained through university education is sufficient for compensation of former disadvantage in educational sphere. Although there is no substantial difference in election participation, university graduates are more active in civil issues and are less cynic in politics (it does not apply for unsuccessful students). University graduates are more tolerant to gender equalities and less likely to accept racism (without the consideration of a current position). University graduates have more confidence in political processes as compared to the people without university education including high school graduates. These impacts of university education are often neglected in the discussions about Czech universities and too much attention is given to the relevance of completed studies for a specific placement or actual position in the labor market (or in a subconsciously planned structure, which is an idea that is still too often used among people who have a great influence on political attitudes and strategies in education).

3.1 Financing

The quality of a university must be compared with standards of comparable institutions around the world. The reason for that is, firstly, the comparability of the quality of education and the experience gained from attending university. Secondly, from the point of view of competitive abilities which require mobility of academic staff, which should not be limited to trips to universities in wealthy countries. When assessing the quality of financing it is necessary to proceed from international comparisons and measure the expenditures on the university sector with comparable expenditures in developed countries. This comparison is indeed not possible without considering the whole economic capacity and overall possibilities of public finances or private sources for financing.

For comparing university expenditures, it is possible to use mainly two parameters, which are described in connection with the economic possibilities of individual countries. The first one is the portion of expenditures according to the size of GDP in a particular country. A lower level of GDP per person in the Czech Republic in comparison with other developed countries should be the reason for higher expenditures on universities because reaching a higher portion of university education level would in return mean faster increase of GDP and a smaller gap compared to other developed countries. We assume that there is an effect of previous losses in the economy which decreased the actual economic capacity of the whole country and which does not allow to use the required portion of GDP for the necessary investments in university education. This is because a part of public expenditures has to be used somewhere else. It might be possible to accept that the required portion of GDP for the educational system cannot be reached (periodical explanation would say that the economy is growing too fast and its efficiency is too high that we cannot manage the required portion of public finances to be reinvested). In this case, an adequate measurement of comparable expenditures on university education would be the portion of expenditures of the national budget. However, not even here does the Czech Republic perform well as compared to other countries' financing of universities. In the Czech Republic it accounts for approximately 1.6% of the overall public expenditures; meanwhile, the average figure in OECD countries is 3%. For example, in Austria it is as high as 3.2% (MŠMT. 2022)[1].

The above-mentioned parameters of the amount of total university financing from the budget of the Ministry of Education indicate that universities should get double the current funds so that the average level of financing with regard to the economic situation of the country where the university is located is maintained. The argument of university education being a driver of economic growth would show the need of higher investment from the Ministry of Education.

3.2 Financing of university education within the school system

In 1994, the number of 19-year-old students reached the peak and at the same time the number of grammar school graduates and university students rose as a result of freer environment at universities and their development. In 1990–1994, the financial pressure on university institutions substantially contributed to their restructuring (a similar effect of crisis concerning financing of university institutions could be seen, for example, in Great Britain after 1981 or in Finland after 1993) and to the establishment of new universities as a response to the increased demand for universities studies. After this phase, however, the stabilization of finances did not follow, but there was a permanent decrease of the real level of student funding.

The development of the actual expenditures per one university student in the second half of the 1990s shows that all declarations of education priorities or university education priorities have been completely unrealistic. This is the problem of not only the current government but also the problem of all political parties. No political party in the government offers useful solutions (or it does not take any practical steps) that would contribute to the increase of the university education level that must be achieved. The access to university education is the crucial problem, not the financing of specific institutions; the current situation means that the access is limited in order to make sure that the institutions can be financed from the state budget. The overall number of students during the 1990s was not very impressive as compared to other developed countries.

The long-term deficit in the financing of university education must surely have had an effect on the quality of university education of Czech students. The deterioration of the quality of education will be gradual but concerning the striking differences in financial resources compared with other developed countries, the deterioration will be inevitable. In fact, universities will not be the only victims. Rather, the university erudition and the access of the young generation to education will be the victims. The way the state transformed university education to public institutions contributed to the state getting rid of the responsibility. This is particularly noticeable in the salary increase in state institutions (no matter whether they are regional schools or the Academy of Sciences) where the structure of the salary rates is connected to automatic salary growth. This is in contrast with the access of public universities to financing because the financing parameters do not contain the student-teacher ratio. The salary expenses decide the quality of the academic staff who are willing to work at universities and at the same time determine the number of students who can be taught at our universities. The current salaries are not high enough to

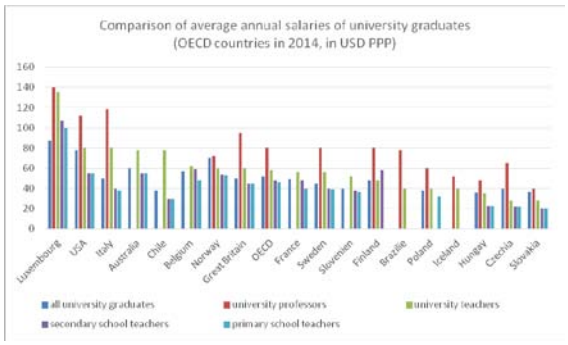
[1] OECD Education in Glance 2016 data: In the Czech Republic, approximately 4% of GDP flowed into education this year, which is one of the lowest figures in the countries whose education systems this study compares. Within the OECD, they allocate a lower percentage of GDP to education only in Hungary, Slovakia and Italy. The OECD average is 5.2% of GDP. In 2013, 0.8% of GDP in our country flowed to primary education, 1.9% to secondary (i.e., secondary schools) and 1.3% to tertiary education (i.e. universities). This issue includes both public and private sources, including international ones. If we take a closer look at primary education, the level of expenditure (0.8% of GDP) is comparable to the surrounding countries – Austria, Hungary or Slovakia. The OECD average is 1.5% of GDP for primary, 2.2% for secondary and 1.6% for tertiary education.

ensure the adequate salaries for university staff and it is no wonder that young people are not willing to work there.

The salaries of Czech university teachers are really very low in comparison with other developed countries[2]. In fact, in nominal terms (according to the exchange rate) in 2014, the majority of the eighteen countries under comparison more than tripled the salaries of university teachers (Belgium, Finland, France and Sweden), quadrupled the salaries (Italy, Great Britain and the USA) or raised them more than fivefold (Australia, Luxembourg and Norway). However, even in less developed countries (South America) with a lower economic level than in our country, the nominal salaries of university teachers are significantly higher (Chile and Brazil). We can thus compare ourselves only with the former communist countries (Slovakia, Hungary and Poland) and with Iceland, where, it must be noted, teachers' salaries have been greatly affected by the recent dramatic economic crisis, after which salaries and wages have fallen throughout the economy. Nevertheless, even in these countries (especially in Poland due to the recent sharp increase in academic staff salaries), the nominal salaries of university teachers are higher than in the Czech Republic, which in 2014 ranked last among all eighteen countries under comparison.

Moreover, the above conclusions are not less striking even if we take into account that the price level in our country is lower (sometimes significantly) than in most developed countries. Even after recalculating the salaries of university teachers according to purchasing power parity (PPP), we remain almost at the very bottom of the ranking of eighteen countries for which comparable data are available (see the following graph). Only Slovakia (USD 26,726 PPP) has a lower annual salary of all university teachers, which in 2014 amounted to an average of 27,693 converted USD (PPP), where university teachers take a slightly higher nominal salary (by 4%), but at the same time the level of consumer prices is higher in Slovakia (by 7%). However, they have a 10% higher salary in Hungary and even significantly higher – by as much as a half (USD 40,862 PPP) – in Poland, where there has been a significant increase in the salaries of university teachers in recent years, when Poland has been doing well economically (see Graph 1).

Graph 1 Comparison of average annual salaries of university graduates (OECD countries in 2014, in USD PPP)



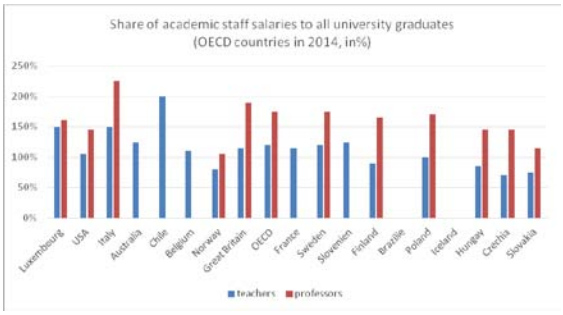
Source: OECD Skills Outlook.2021

The countries are ranked in the chart according to the level of average annual salaries of all university teachers, which are converted into US dollars in so-called purchasing power parity (PPP USD) and thus reflect their real purchasing power in different countries.

[2] The latest available source of comparable data on academic salaries is the result of a special project and an OECD survey (INES NESLI & LSO Networks). A total of eighteen countries took part in the project and the survey, which focuses directly on comparing academic salaries: seventeen OECD member states – this time including the Czech Republic – and Brazil. The project collected and processed data on the average annual salaries of all university teachers and especially university professors (or comparable categories of academics) from 2013 to 2014 through national statistical databases. In 2015 and 2016, the results of this project were published in the database and in the publication OECD Education at a Glance in the form of an extraordinary supplement to Chapter D3?

However, the low salaries of university teachers in our schools result not only from a direct comparison of their face value (either by exchange rates or purchasing power parity) with the situation in other countries, but also from a comparison of the salary levels of different higher education professions in each country. The salaries of our teachers at all levels of education, including higher education, are below the level of the total average salaries of all university students, which, at least for university teachers, is far from common in the world. Of the eighteen countries being compared, this only applies to the Czech Republic, Slovakia, Hungary, Norway and Finland, and this difference is also the highest in our country (see Graph 2).

Graph 2 Share of academic staff salaries to all university graduates (OECD countries in 2014, in%)



Source: OECD Skills Outlook.2021

The countries are ranked in the graph according to the share of the average annual salaries of all academics to all working university graduates in individual countries.

In the Czech Republic, therefore, the occupation group Teachers at universities and colleges (defined at the third distinctive level of the International Classification of Occupations as ISCO 231) is among the 37 groups of qualified occupations (occupation classes ISCO 1 and ISCO 2) in the median average salary up to the 20th place. At the same time, there are a number of less demanding professions above it, which in many cases are also not performed by employees with a university degree. We will get similar results when we further specify the profession. Among the 250 qualified occupations (ISCO 1 and ISCO 2 occupation classes defined at the fifth level of occupation), Professors at Higher Education Institutions (ISCO 23102) ranked 28th in the median average salary, and Associate Professors at Higher Education (ISCO 23103) ranked 77th, Assistants (ISCO 23104) ranked 184th, Lecturers (ISCO 23106) 226th and Assistants at universities (ISCO 23105) ranked as also as 247th. Of course, they all teach college students today. The fact that the salaries of professors at Czech universities are, in an international and national context, a little better than the salaries of all university teachers have two main reasons. Firstly, the share of professors at Czech universities is lower than in most European countries: while in our country it is about 11%, the European average is about 15% and outside Europe this share is usually even higher. Thus, our professors form a slightly narrower (more exclusive) group of the highest paid teachers, and logically their distance from the overall average is also greater. Secondly, in recent years, the salaries of professors have increased in our country, in contrast to other groups of academic staff.

In conclusion, it is possible to unequivocally confirm that the salaries of academics are relatively very low in the Czech Republic. This is in comparison with the salaries of their colleagues in other developed and less developed countries, as well as in comparison with other qualified occupations in the Czech Republic. However, for our universities, which are a natural part of the global higher education area), this significantly reduces the possibilities of real competitiveness in the international as well as in the national competition for quality academic staff. This applies not only to the acquisition of

prominent personalities from abroad to our universities, but also to the recruitment or retention of the best Czech experts. At the same time, world research has repeatedly confirmed that quality teachers are the key factor for high-quality education. In such a situation and under such conditions, however, it is not possible to expect or even demand from our universities results comparable to the best schools in the developed countries of the world.

3.3 Tuition fees

The substantial increase in the number of undergraduates cannot be done without introducing tuition fees. The aim of the introduction of tuition fees is not only the considerable reduction in the budget of universities that depends on public finances. It is known that tuition fees increase the responsibility of all who are integrated into the study process (university staff, teachers and students) and it also increases the quality of education. It can be expected that tuition fees will help determine the "value of education" with regard to the labor market. Properly determined tuition fees should reflect the "value of a university diploma" on the labor market. Reasonable tuition fees will be also an important motivation factor. A certain calculation of "costs" and expected "effects" will make the choice of university and its study programme more rational. Tuition fees together with teachers' evaluation by students can play a role of an important mechanism of how to distinguish between high-quality, average and below-average teachers. It would increase teachers' mobility among the schools of different levels (Kalous, 2006).

Tuition fees must be accompanied by available students' loans with the possibility to repay them in instalments after receiving an adequate salary. The tuition fee system must not install higher inequalities in the access to university education for children from low-income families. The loans, on the contrary, have to play the role of a tool eliminating unfavourable family environment (low income, low motivation of parents to let their children study, etc.) for those who are strongly motivated to study at university. Together with tuition fees and students' loans, it is necessary to start creating scholarship funds which enable excellent students from low-income families to study at lower costs. In addition to scholarships, a system of social aid budget to help undergraduates has to be formed. It can be easily achieved without high expenses if the current system of overall subsidizing of some student services (hostels, meals, transport benefits, etc.), which is less effective, will be transformed into a system of targeted social aids for those who really need them. All the above-mentioned measures, which will be integrated into the law on tuition fees, loans and social aids for students, should contribute to the diminishing of social inequalities and chances to go through university education. The new law proposal on university financing was rejected in January last year, because of clearly ideological reasons and it means the continuation of public universities budget crisis and also stronger enforcement of other reform elements of higher and university education (rationalization of demand for university study, responsibility of universities towards students, responsibility of students for their study, quality of tuition, etc.).

In current legal system, the main factor restricting the access to university studies is the deficiency of the state budget. Universities cannot offer commercial services and use the profit for subsidizing students who cannot be subsidized by the state. This financing and reinvestment out of university sphere would rapidly cause failing of competitive ability of these services. One of the possibilities how to improve this unfavourable situation of universities is to introduce compulsory tuition fees. The proposals based on the so-called "Australian system" make use of the fact that individual return for graduates is high enough and thus a part of undergraduates can subsidize a broader access to tertiary education. The undergraduates are not obliged to pay tuition fees instalments during their study but the state will ensure their recoverability after the graduates start working and their income is above the average income in the country. A tuition fee of 15 thousand Czech crowns per year might be repaid within a ten-year period. The postponement of the payment does not bring more money into the monetary system immediately but in the course of a few years the financing of tuition fees could stabilize and add a quarter plus to the total amount of money for university education. This would lead to a considerably increased number of undergraduates especially in bachelor's programs.

Since in the Czech Republic the salaries of university graduates are on average 70–80% higher than salaries of grammar school graduates, the ability of the graduates to pay off the debts resulting from their studies is relatively high. The opponents of tuition fees often argue that some groups of university graduates, especially teachers or doctors, do not reach such levels of income. In this situation, the state has the possibility to intervene and help the graduates in certain professions pay the debts (in other words contribute to the stabilization of graduates' placement in these professions) instead of the global study subsidizing regardless of the graduate retention in an appropriate position. In fact, salaries of Czech teachers are the lowest among other OECD countries in comparison to purchasing power parity or the level of GDP per person. But their real value is a little higher than they are usually said to be. The average salary in the Czech Republic was 25,128 Czech crowns in 2013. Nearly 206 thousand people worked in regional school system, in kindergartens, primary and secondary schools, higher vocational schools, music and art schools or after-school care, and 146 thousand of them were teachers. The sum of salaries was 56.5 billion which means an increase of 0.8% in comparison to the year 2012. The average bonus part of a salary rose from 1,884 to 2,103 Czech crowns. The highest salaries were at higher vocational schools, where they were 29,500 crowns. Teachers at grammar schools and educators in specialized pedagogical centres earned over 28 thousand crowns, teachers at secondary vocational schools earned a little bit less, teachers at primary schools got about 27 thousand crowns. Teachers in kindergartens had some of the lowest salaries, 23,200 crowns on average, but the lowest salaries were in school administration where the average income ranged from 13 to 14 thousand Czech crowns. In private and religious schools, the salaries were 25,200 Czech crowns on average, no pedagogical employees got 18,200 crowns. An OECD analysis (2011) offers one of the few international comparisons (Graph 1) of teachers' costs of lost salary opportunities. Czech teachers' income was among the lowest in OECD countries according to the analysis. Czech teachers who had from 15 to 64 years of work experience got only a half of the income of other university educated people. In other words, the teacher's profession in the Czech Republic is related to high costs of lost salary opportunities due to low salaries compared to other professions. These costs are a little higher in Iceland, Hungary and Slovakia (CZSO, 2021).

The discussions about the introduction of tuition fees would not go against the notion that university education should be an important public good. In a modern society exposed to multicultural environment and a high rate of global effects rapidly influencing local conditions and requiring a smarter response to these changes, the higher quality of education plays an important role in the development of responsible citizenship. Racism and intolerance are easier to overcome with a high level of general knowledge. An educated population is more responsible and less susceptible to political party demagogy. Education is also an important condition for creating equal chances in society, and the whole society will profit from a higher level of university education. The quality of life of the population will improve, people will have better conditions for creative jobs and employment, they will be more informed and more responsible to influence public affairs and will understand better the complexity of modern democratic society administration (Pelikán, 2012).

Even if we do not consider the effect which tuition fees should have on the broader admission to university studies, the other effect of increasing students' motivation to graduate in due time and teachers' motivation to be more responsible to their students as clients of their educational institutions means that tuition fees can help bring about a faster change in the university educational

structure. This seems to be an even more important possible contribution to this change. Students paying for tuition and even the ones committed to future instalments will be more motivated to exert pressure for change of offered study programmes so that they correspond to the real demand for study.

3.4 Conclusion

University education plays an important role in the overall achievement of an individual and the prosperity of society. If we do not deal with these questions in a more complex way, we are likely to create problems in the future which will not hurt the ones who were accepted to university studies, because these people are the most mobile labour force and are willing to leave their countries for more developed ones where they can get good jobs. On the contrary, these problems will hurt the socially disadvantaged and the retirees because it will be difficult to introduce a sound system of financing for them. Developed countries critically depend on an increased share of university educated population. The number of graduates in the more developed countries is twice as big as in the Czech Republic. In the Czech Republic the introduction of tuition fees may be one of the factors that will help remove the barriers to better access to education, but tuition fees can never replace the need for higher expenditures on education. On the other hand, it can help considerably in making effective use of these expenditures, and the total amount of money from tuition fees could represent a considerable contribution to the Czech state budget.

4 Possible trends in the development of university education

Adapting factually consistent and courageous problem solutions in society to fit the political goals only means degrading politics to the technology of power. The sooner the citizens understand the character of such politics and refuse it, the better for them and the future of their country. We are facing a change referred to as the transition to knowledge economy. Based on the latest studies on this subject and experience of the countries where the competitive ability has been growing for many years (Ireland, Finland, the Netherlands), this change significantly raises the importance of human capital and research related to innovative entrepreneurship.

We must admit that after 25 years of transformation, our university education, science and research have ended up in a critical situation. More and more professionals, in contrast with fewer and fewer politicians, become aware of the severity of this situation and its political, economic and social consequences. The problems of university education, science, research and development are either played down or put away with provably populist promises by the leading representatives of political parties. If in the future we want to reach a turning point in the unfavourable development of the Czech economy's competitive ability and stop the outflow of brains, politicians have to radically change their attitudes to the problems of university education, science, research and development. It would not be an exaggeration to say that the decisions related to this area will have key importance for the success of the Czech Republic in the global economy.

Setting favourable conditions for the development of human capital and for the acceleration of innovative cycle in research and development cannot be carried out within the short-sighted policy oriented towards short-term goals. The policy oriented towards the increase in competitive ability is, on the contrary, characterized by the fact that its goals go beyond the time horizon of one election term. However, the experience of transforming countries including the Czech Republic shows that the development of human capital, transformation of educational system, modernization of research system and its funding, transformation of scientific and research institutions and finally the establishment of conditions for the development of innovative entrepreneurship based on the partnership among universities, research institutions and business companies are key factors for the future development, but they are still on the margin of Czech political interests oriented mostly towards short-term goals (MŠMT, 2022).

The competitive ability of our economy is still very low considering the starting conditions and as compared to other countries. In this regard, in the framework of the OECD countries we come next to last. In 2000 we came 28th out of 29 countries, a drop from the 21st position in 1996. The comparison with Finland, the Netherlands and Ireland is very interesting since their competitive ability is still rising. The common strategic feature of these countries is the orientation of institutions and population towards education, flexibility and adaptability of labour force. In other words, these countries based their successful strategy on the development of human resources and human capital.

Tertiary education in the Czech Republic suffers from chronic shortcomings which can complicate the favourable development of human capital in longer perspective. For many years, the unbearable excess of demand for university education over supply has made the acquiring of university education impossible for a great amount of young people. They could have easily acquired such level of education in other EU countries thanks to their aptitudes. In fact, tertiary education is in contemporary society a prerequisite for good chances for employment and success in life. Statistical data show that the educational structure of Czech population is improving, but much more slowly than in the countries which set out on a way up the ladder of competitive ability. According to the latest data published by OECD, we are gradually losing a relatively good position, whereas countries where the competitive ability has been rising for several years are steadily reaching top positions. From the point of view of educational structure, the group of older people (over 50 years of age) belonged to relatively developed countries, certainly above Ireland and close to Finland and the Netherlands, while the youngest group (under 35) ranks among the poorest countries. But in fact, our main deficit arises from the sphere of tertiary education.

The majority of studies dealing with our educational system and its development after 1989 agree that our system is very inaccessible and highly selective. It applies especially to the university system. Whereas in the countries that set off on the way of economic growth through the development of human capital, the inequalities in the admission to university studies were going down (the Netherlands, Sweden and Ireland), they were rising in our country. When compared to developed countries, the chances of children of diversely educated parents to join university are very low and are getting even worse. According to the latest data, a wider admittance to universities after 1989 has not brought any distinctive change. The main cause of the great social inequalities in the admission to tertiary education is probably the huge excess of demand for higher education over a small supply of study opportunities, together with the inaccessibility of tertiary education. This proves a well-known factor of the application of results of scientists, research teams and institutions in technological progress and innovative entrepreneurship.

The support and development of partnership of private and public sectors are failing. Such a partnership has become the base on which the innovative entrepreneurship is founded. There is a lack of courage to open the door for the co-operation between state subsidized research and technologically oriented entrepreneurship. This is one of the reasons why we are failing to modernize universities and colleges. Modern universities are known to be able to balance the abstract seeking of the truth with the participation in commercial activities and production of economically valuable know-how. The experience of developed countries shows that this situation can be achieved without giving up on the traditional mission of universities. The discussion about the change in the university culture seems to be a taboo subject even for universities and colleges themselves. The representatives of most universities feel that applied research and co-operation with industry is something inappropriate for universities. But it is exactly this co-operation

between universities and business companies where new sources of funding, new opportunities for graduates and in some branches also new trends of research can be discovered.

University education, research, development and innovative entrepreneurship must form a complex of mutually interrelated activities, the main goal (but not the only one) of which is the growth of the competitive ability based on the development of human capital and innovative cycle acceleration. The essential problem is that after years of shuffling around and failing to fulfil political promises, it is necessary to solve the crisis in both the university funding structure and institutional structure, and research and development funding.

According to Čerych (1999), it means namely:

- stopping the decrease in real values of public expenditures on tertiary education and achieving the OECD average (1.1% GDP) of public expenditures on tertiary education;
- approximating the expenditures per undergraduate (ca 5 thousand USD/PPP) as much as possible to the average level in OECD countries (ca 10 thousand USD/PPP);
- accomplishing the university system reform (transformation of higher vocational schools into colleges, creating a hierarchical university education system, a consistent transition to a structured study, a wider space for universities, industry, business companies being active in innovative entrepreneurship co-operation, etc.);
- changing the system of tertiary education funding (strengthening multi-source funding, determining expenditures on university education system in multi-year cycles, introducing tuition fees, student loans, scholarships, and financial aid for students from low–income families, enabling tax saving investment in education, creating a system of innovative entrepreneurship development at universities and supporting the establishment of spin-off firms, etc.).

According to the experience of developed countries, the broadly shaped pyramid of diversely demanding university education cycles is able to much better respond to the demand for university education. For majority of students, the bachelor's degree will become the target education which can react flexibly to the labor market. On the contrary, postgraduate education, provided by research universities, will maintain the continuity of elite education more resistant to job supply changes. Lifelong learning programmes will complete this structure with higher education opportunities which enable elderly people to acquire a university qualification and also continuous updating of knowledge and skills of bachelor's degree graduates with regard to the changing needs of jobs and requalification.

A clear structure of tertiary education study programmes is a necessary condition for the introduction of tuition fees. A student who shares tuition costs must have the possibility to choose between study programmes of different length and between different majors in the course of study. Tuition fees cannot be introduced into the system in which long master's degree programmes predominate. The amendment to the Higher Education Act, which was accepted despite being opposed by the government, sets the principal parameters of the transition to a structured scholar system. This is the first important step in the above-mentioned direction and it opens the door for those who should prepare the law on tuition fees.

In a hierarchical system of higher education, the admission of university applicants must be changed from the existing type of admissions process that uses entrance exams to testing applicants' scholastic aptitudes. This testing should be performed outside of universities and it can be part of a standardized secondary school leaving exam. Universities and colleges can determine different levels of admission requirements for their prospective students, they can require, if need be, further specific testing of skills and talent. It is also important that these specific tests for particular majors (e.g., mathematics, law, languages, etc.) have maximum standardization and are shared with other universities and colleges. This can be achieved if they are prepared and administered by independent institutions issuing anonymous assessment and with a prior determination of the required pass level for different types of schools and study programmes.

As far as research and development are concerned, all strategically important steps start with the implementation of a much stronger interconnection of research and tuition at universities (especially research universities). Institutional separation of university tuition and academic basic research is an anachronism typical for the communist period, which prevents immediate and secondary effects from influencing on the prosperity of society and competitive ability of its economy. It is necessary to commence without delay the evaluation of current colleges and universities and their profile study programmes on the basis of several criteria (results of the accreditation of branches of habilitation, publishing activity of teachers and impact factors, standardized student evaluation of courses, study programmes and teachers, success in obtaining research grants, number of lectures for foreign students, etc.). The results of such evaluation should serve as one of the main sources for the accreditation process the result of which would be the gradual transformation of high-quality universities into research universities. At the same time, it is necessary to create a legal framework for the transformation of the Academy of Sciences institutes or its professional groups to basic research centres and postgraduate courses, which is a way to create equal conditions for their further possibility to join a group of research universities as institutions focused on advanced studies. The current Academy of Sciences staff will be able to compete with current university teachers.

The consistent differentiation of the university system and the accomplishment of the Academy of Sciences transformation by a gradual integration into newly established research universities are the conditions for the commencement of true scientific schools/universities where the majority of staff will be formed by the young generation who is the most dynamic element in research all over the world. If individual institutions carrying out basic research are not able to integrate their research assignments into university postgraduate, or possibly master's studies, the activity of such institutions financed from the state budget should be principally suppressed. This will lead to the desired competitive environment, weakening of the solutions presented by power, personal or group interests and it will create a more transparent environment for real creative competition and viable development in the country's basic research.

Based on the experience of other countries, it would be good to establish an independent executive body (e.g., the Ministry of Research, Development and Tertiary Education) that would be responsible for funds spent on tertiary education, research and development. Within its authority, this body would ensure co-ordination of research, development, universities and entrepreneurship in the area of innovations and technological development.

A proposed sequence of the main steps:

- accelerate the structurization of tertiary education programmes and achieve the definite predominance of structured programmes as soon as possible;
- accelerate, by means of law, the transformation of the higher vocational school system into institutions providing tertiary education (introduce a credit system, gradually transform some part of higher schools into "colleges of science and technology" providing bachelor's degree programmes);
- using the same law, determine various types of higher education institutions (colleges of science and technology, universities, research universities);
- introduce tuition fees, student loans and a system of social aids, found scholarship funds, prepare and put into practice a system of savings for education subsidized by the state;

- cancel the existing university entrance exams and introducing standardized testing of scholar aptitudes, establish an institution for testing in education;
- pass subsequent laws which would determine the position of research and development, research and development funding and protection of intellectual property rights in research and development;
- by the change in the authority law, establish an executive body (ministry) that will execute state administration in tertiary education, research, development and innovative entrepreneurship;
- by means of a new tertiary education law, besides other things, create space for innovative entrepreneurship of university teachers and students;
- create an effective system of public and private sector partnership, provide tax stimuli for the development of innovative entrepreneurship, create funds for risk business, enable the formation of regional clusters – co-operation between firms, schools and research institutions.

The later we start to put the abovementioned steps into practice, the more we will have to catch up with successful countries and the narrower the manoeuvring space for adequate reform steps we will have. Those who are happy with the current situation will resist is most.

Literature

1. Bano, S. & Taylor, J. (2015). Universities and the knowledge-based economy: Perceptions from a developing country. *Higher Education Research & Development* 34.2 (2015): 242-255. ISSN 0022-2437.
2. Beck, U. (1996). Weltrisikogesellschaft, Weltöffentlichkeit und globale Subpolitik. *Kölner Zeitschrift f. Soziologie und Sozialpsychologie*, pp. 119–147. ISSN 1861-891X.
3. Chamoutová, D. *Nezaměstnanost absolventů*. Praha: NUOV, 2009.
4. Čerych, L. (ed). (1999). *Priority pro českou vzdělávací politiku: mimořádné zasedání Výboru pro vzdělávání OECD v Praze 26. 24. 4. 1999*. Ústav pro informace ve vzdělávání.
5. Kalous, J. & Veselý, A. (2006). *Vzdělávací politika České republiky v globálním kontextu*. Praha: Karolinum, 2006. ISBN 80-246-1259-3.
6. Lajčin, D. & Porubčanová, D. (2021). Teamwork during the covid-19 pandemic. *Emerging Science Journal*; 5 (Special issue):1-10, 2021. DOI: http://dx.doi.org/10.28991/esj-2021-SPER-01.
7. OECD Skills Outlook 2021 (2021). *Learning for Life* [online]. [cit. 2022-02-08]. Available at: https://www.oecd.org/education/oecd-skills-outlook-e11c1c2d-en.htm
8. MŠMT (2022). *Strategie vzdělávací politiky České republiky do roku 2030+* [online]. [cit. 2022-02-08]. Available at: https://www.msmt.cz/uploads/Brozura_S2030_online_CZ.pdf
9. Nováček, P. (1999). Křižovatky budoucnosti. *Směrování k udržitelnému rozvoji a globálbnímu řízení* [online]. [cit. 2022-02-08]. Available at: https://www.pavelnovacek.eu/media/files/Krizovatky_budoucnosti_1.pdf
10. Pelikán, J. (2012). Státní vzdělávací politika jako významný problém českého školství. *Pedagogická orientace* 22.4 (2012): 565-580. ISSN 1211-4669.
11. Pesti, C., Tamášová, V., Lajčin, D. & Bodonyi, E. (2021). University – industry collaboration as a drive for innovation in Europe – a literature review with a systematic approach. *AD ALTA: Journal of Interdisciplinary Research*, 11(02), p. 41 – 46, www.doi.org/10.33543/1102, 344pp.
12. Vzdělávání. (2021) [online]. [cit. 2022-02-08]. Available at: https://www.czso.cz/csu/czso/vychazi-statisticka-rocenka-2021
13. Vzdělání a Evropa. *Strategie rozvoje lidských zdrojů v České republice při vstupu do Evropské unie*. (1999). [cit. 2022-02-08]. Available at: https://op.europa.eu/en/publication-detail/-/publication/d0a8aa7a-5311-4eee-904c-98fa541108d8/language-en

Primary Paper Section: A

Secondary Paper Section: AM