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Financing higher education on the principle of transferred prices

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Abstract The paper deals with the financing of tertiary education through deferred tuition, student credit system and credit financing risk. The aim of the paper is to create the concept of higher education funding for the Czech Republic so that it is a part of the system of public and private finance. It contains a proposal of a concept of credit financing of tertiary education, including phases of a credit boom for a period of 24 years. In the proposed concept, student debt is drawn by drawing credits for study. The volume of credits for study is accumulated during the period of study and graduate job entry until the average wage is reached. In the proposed concept, full repayment of student loans occurs in the 13th year since the loan was granted. The graph shows the repayment deficit of 11.229% compared to loans drawn.

Key words Deferred tuition, student loan, loan for study, financing of education, human capital, transferred price

1. INTRODUCTION

Investments to education reflect the importance that an individual or a given society attaches to education. Researches suggest that there is a positive relationship between investment in education and the company's economic growth. In most developed countries, governments want to raise the educational level of their country's population. The Council of Europe declares that the quality of education is to become one of the decisive goals of all kinds and types of schools and that the quality of education must be ensured in all areas of education. Numerous studies have been conducted to try to quantify the rate of return on investment in human capital. The rate of return on investment in formal education ranges between 5-15% in wage growth for each additional year. (HARTOG, 2001) According to the World Bank, the rate of return on investment of university education is 10 %. (MINGAT, 1996) Various studies have tried to point out the dependence of GDP on human capital, although they have not achieved the same results, they all have emphasized the importance of human resource development in the economy.

Czech higher education suffers from the lack of finances and low pressure on the effectiveness of the educational services which is then manifested by graduates employment in professional markets. The current system redistributes finance by number of students admitted, not by the quality of educational services. If competition in the field of tertiary education is increased, the quality of its providers would increase and the funds allocated would only go to those who provide valuable education. It is clear that the development of the education system and the financing of education must also include the involvement of private sources as investment sources. It is precisely the fact, that university education provides students with a high private rate of return in the future, that argues to shift more of the funding of higher education from the state budget from taxpayers' money to students, respectively university graduates. The main reasons for the reform of education financing are to provoke the interest of the educational institution in the long-term employability of the graduate. Further, the efforts of universities to attract the best students and produce the best graduates. There is also a lack of student motivation system.

The aim of the paper is to create the concept of higher education financing for the Czech Republic so that it is a part of the system of public finance and private finance to overcome the lack of funds and to improve the quality of higher education.

There are abundant sources and resources dedicated to education funding. In the Czech Republic, Petr Matějů (2010), an expert of the Institute for Social and Economic Analysis (ISEA), was involved in this issue with a team of colleagues. One of the first attempts to introduce tuition fees at Czech universities was undertaken by Walter Bartoš and Petr Matějů between 2000 and 2002. The proposed tuition was conceived as a student's investment in his own future (investment in education). Credits for tuition would be implemented by financial institutions and tuition repayment should be deferred until graduate´s income exceeds average income. The theme can be processed using classical works (Baar, 2003; Palacios, 2002). Since 1996, the publication Education at a Glance (hereinafter referred to as EaG) has been published annually, where indicators relating to education are published. ISEA outputs also address the issue of education funding; National Education Development Program in the Czech Republic: White Paper (MŠMT, 2001); annual CSO analyzes and reports on GDP. A common feature of tertiary education funding systems based on the investor's share in the student's future income and their modification is to enable access to quality and prestigious education, regardless of the applicant's initial property or social position. These systems create the involvement of universities in the long-term employability of their graduates in professional markets. This creates a market for tertiary education, where awareness, competition, equality of access to education (distribution equality) work. (BARR, 2003).

2. PROCESSING METHOD

The paper presents an abstract model of financing of higher education in the Czech Republic. Many variables have to be estimated to create the concept of credit financing for higher education. The concept in its generality and clarity implies some limitations, which would usually have a negative impact on it. Inflation is not considered in the concept, interest rate and its size are not considered. The concept also does not consider cases that would make it more effective or have a positive or negative impact. There is no "non-standard" behavior of students considered. The student is defined in the ideal form for the purposes of the concept - he studies the standard time, uses the student loan, reaches the required wage in the labor market and begins to pay the defined amount at the expected moment.

There is a simplified illustrative concept of credit financing of tertiary education for a period of 24 years presented, a table of source data and a graphic interpretation of commented values. The phases and risks of the credit boom in relation to credit financing of education are mentioned. Methods of characteristic, trend analysis, synthesis and subsequent deduction and evaluation of modeled values are used for the processing.

3. CREDIT FINANCING OF HIGHER EDUCATION

A functional system of funding of higher education should reduce injustices in the allocation of public finances when funding different types of higher education institutions, and optimize public costs for managing and administering of the system. The amount of private sector participation in credit financing for higher education should not discourage prospective applicants and should not pose a risk to the applicant's personal insolvency. In a properly set up system, not the student pays for the study, but a successful graduate. Credit financing of higher education in a system of transferred price gives a chance to education to candidates who do not have family financial support. The designed model of funding of higher education should produce both student and college effects. The system of credit financing of the transferred price will increase the student's involvement in the study (quality, length, …), and the system of transferred price of credit financing should increase the involvement of the higher education institution in the provided education (process quality and education output). The amount of public sector funding to fund tertiary education should be reduced (or remain at the current level). The decline in public funding should be matched and increased (or only increased) by private (credit) funds. It should not only be a substitute for public funds allocated to tertiary education by private ones. A prerequisite for the concept's functionality is the correct balancing of fees, installments and income limits for repayment. An important element of the tertiary funding system is the source of funding for an initial amount of funding for a higher education loan finance fund that should not be subject to political dependency and should not be managed by a private company created for profit.

4. PROPOSAL OF THE CONCEPT OF CREDIT FINANCING OF TERTIARY EDUCATION

The concept of credit financing of tertiary education for a period of 24 years from the disclosure of credit products aimed at students and the obligation to pay deferred tuition fees in the form of a transferred price is designed. The principle of deferred tuition means that the student pays nothing, successful graduate pays. „After graduating at university, a student (a graduate) deducts from his/her income if he/she exceeds a certain threshold (one or more times the statistically calculated average wage), a certain amount (eg 3-5% of the earned income) for a predetermined period (10-15 years) making the commitment settled irrespective of how much and when it was actually paid, or to settle the interest-bearing or non-interest-bearing liability (repaid by 5-10% of earned income)." (VALENČÍK, 2005) The concept should not only replace private funds allocated to tertiary education with private funds, but create a share of private and public funding sources in the overall increase in tertiary education funding.

Table 1: Development of drawing and repayment of loans for tertiary education in the Czech Republic (in CZK)

Year	Number of students (1.5% growth)	% of the basic normative (in CZK)	Annual loans for study	Volume of loans after 5 years of study	Installment amount = normative	The amount of outstanding loans for education
	I.	II.	III.	IV.	V.	VI.
1	400 583	24 325	9 744 181 475	9 744 181 475	0	9 744 181 475
2	406 592	24 325	9 890 344 197	19 634 525 672	0	19 634 525 672
3	412 691	24 325	10 038 699 360	29 673 225 032	0	29 673 225 032
4	418 881	24 325	10 189 279 850	39 862 504 883	0	39 862 504 883
5	425 164	24 325	10 342 119 048	50 204 623 931	0	50 204 623 931
6	431 542	24 325	10 497 250 834	50 957 693 290	0	60 701 874 765
7	438 015	24 325	10 654 709 596	51 722 058 689	0	71 356 584 361
8	444 585	24 325	10 814 530 240	52 497 889 570	0	82 171 114 602
9	451 254	24 325	10 976 748 194	53 285 357 913	9 744 181 475	83 403 681 321
10	458 023	24 325	11 141 399 417	54 084 638 282	19 634 525 672	84 654 736 541
11	464 893	24 325	11 308 520 408	54 895 907 856	29 673 225 032	85 924 557 589
12	471 866	24 325	11 478 148 214	55 719 346 474	39 862 504 883	87 213 425 953
13	478 944	24 325	11 650 320 438	56 555 136 671	50 204 623 931	88 521 627 342
14	486 128	24 325	11 825 075 244	57 403 463 721	50 957 693 290	89 849 451 752
15	493 420	24 325	12 002 451 373	58 264 515 677	51 722 058 689	91 197 193 528
16	500 822	24 325	12 182 488 143	59 138 483 412	52 497 889 570	92 565 151 431
17	508 334	24 325	12 365 225 465	60 025 560 663	53 285 357 913	93 953 628 703
18	515 959	24 325	12 550 703 847	60 925 944 073	54 084 638 282	95 362 933 133
19	523 698	24 325	12 738 964 405	61 839 833 234	54 895 907 856	96 793 377 130
20	531 554	24 325	12 930 048 871	62 767 430 733	55 719 346 474	98 245 277 787
21	539 527	24 325	13 123 999 604	63 708 942 194	56 555 136 671	99 718 956 954
22	547 620	24 325	13 320 859 598	64 664 576 327	57 403 463 721	101 214 741 308
23	555 834	24 325	13 520 672 492	65 634 544 972	58 264 515 677	102 732 962 428
24	564 172	24 325	13 723 482 580	66 619 063 146	59 138 483 412	104 273 956 864

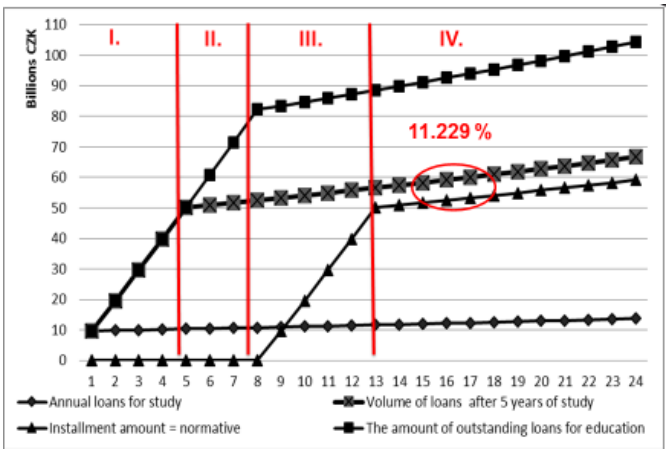
Source: Own calculations and constructions, input values: Valenčík, 2005, pp. 7-10; MŠMT ČR, 2011; ČSÚ, 2012.

For the construction of the concept of credit financing of tertiary education, the amount of normative of the first three academic years monitored is used. This normative (34,325 CZK), (MŠMT, 2011) is divided into approximately 70% of financing by loan on education and 30% of private (family) student resources. The commitment of each student is therefore CZK 24,325 per year (see Column II. in Table 1) for 5 years.

In The concept (Table 1 and Figure 1) will induce students' indebtedness, the number of which is increased by an estimated 1.5% annually (see Column I in Table 1). Determination of the growth rate of students (1.5%) is problematic, the historical data on the development of the number of students are increasing in the period 2007-2011 and in 2012-2018 the number of students is decreasing. (CZSO, 2011) The amount of Annual loans for study (see column III. In Table 1) is calculated as a multiple of the Number of students and the Percentage of the basic normative (column I. x column II.). Accordingly, it is increasing with increasing number of university students. It is generally assumed that the introduction of tuition fees with the possibility of using student loans will eliminate barriers to access to education resulting from the financial situation of social groups in society. Such a system would guarantee so-called social permeability. In the column Volume of loans after 5 years of study (see column IV. in Table 1) the amount of Annual loans for stury (column III. In Table 1) is loaded for the period of study, from the first year of the bachelor's degree (1st to 3rd year) to the second year of the Master's degree (4th to 5th year). After a period of 5 years of study and graduate

entry into employment, or the commencement of a gainful activity, a period of 3 years is needed to achieve the multiple of the average wage as a trigger for repayment of the graduate's commitment. The three-year period should be sufficient, given the level of graduate salaries. Within this period (5th to 8th year), the Volume of loans after 5 years of study grows significantly slower due to the deduction of the amount paid by first graduates. The credit boom repayment phase can be spread over decades. In case of deferred tuition fees it could be a predetermined period (10-15 years).

Figure 1: Model of development of drawing and repayment of loans for tertiary education in the Czech Republic (The phase of the credit boom)



Source: Own design, input values see Tab. 1.

Column V. Installment amount = normative is calculated by loading the first graduate installments of the annual study loans after their 5-year drawing and a 3-year grace period to obtain the necessary amount of income. Column VI. The amount of outstanding loans for education is calculated by loading the amount of Annual loans for study at the same amount as the Volume of loans after 5 years of study within 5 years from the start of the loan drawdown. The next three years untill the graduate reaches the level of income that will start repayment, the loading of the amount of Annual loans for study continues untill the "Amount of outstanding loans for education" exceeds CZK 82 billion (in the 8th year). From the 8th year The amount of outstanding loans for education grows significantly slower due to the deduction of the installments paid by the first graduates (in the same amount as the Annual loans for study in the first year) from the amount of Annual loans for studies in the 9th year.

4.1 The concept of credit financing for tertiary education

In the proposed financing concept, there are four time phases of the credit boom in relation to credit financing of education and repayment in the form of transferred price listed. Phase I., up to 5 years (1st to 5th year) from the beginning of the study, it is purely an investment phase (drawing loans for study), where no repayment occurs. Phase II, up to 8 years (5th to 8th year), the time required to reach twice the average wage, after 5 years graduates leave and new students enter (slowing down the development of "loan volume after 5 years"), „the amountof „outstanding loans for education" is growing, continuing to full years, and the purely investment phase continues. Phase III, up to 13 years (8th to 13th year), full repayment of student loans in the 13th year since the loan was granted occurs, the "amount of outstanding loans for education" grows only by increse in college students, "installment size" increases (graduates reach payment limits), it is an incremental investment phase with increasing installments. Stage IV., after 13 years "outstanding loans for education" is growing only by increase in college students, "installment size" is increasing by growth of graduates reaching the repayment threshold, i tis an incremental investment phase with incremental increases in installments. In the proposed concept, student debt is drawn by drawing credits for study. The volume of credits for study is accumulated during the period of study and graduate employment entry until the multiple of average wage is reached. In this concept, full repayment of student loans occurs in the 13th year since the loan was granted. The graph shows the repayment deficit of 11.229% compared to loans drawn. It is the repayment of the annual installment in the form of the transferred price that should ensure the system's effectiveness in returning a higher amount in student debt installments than was invested during the studies.

5. CONCLUSION

The paper highlights current trends and their possible impacts on the funding of higher education. The thesis deals mainly with private financing of education. There is an emphasis on increasing private participation in higher education funding, but also on creating a competitively soundly functioning university system (at all levels) that is closer to the global tertiary education model.

At present, the system in the area of public tertiary education in the Czech Republic works very inefficiently. Every citizen pays financial contributions to the system, regardless of whether and what kind of education services he was provided with and in what quality. The provider also receives funding regardless of the quality of the educational service. By introducing tuition fees, it would be possible to obtain additional and possibly sufficient financial resources into the system and to open higher education institutions to a greater number of students, while improving the quality of the educational process and the potential of graduates to apply at the labor market (education efficiency).

In the Czech Republic, the tertiary education system applied so far in public schools, as compared to other systems, appears to be a system preventing higher education institutions from developing further (quantitative and qualitative) and thus hinders the effective functioning of the whole higher education system. The general introduction of financial participation of students in education costs represents a fundamental change in the whole system of financing higher education in the Czech Republic. A limitation to changing the funding system is the persistent view that the introduction of financial participation will result in the selection of students from low-income families. The experience of foreign tuition models shows the opposite.

The aim of the paper was to create the concept of financing higher education for the Czech Republic so that it would be part of the system of public finance and private finance. The goal of the paper was achieved. The proposed concept of tertiary education funding should unify the initial conditions of public and private universities in the Czech Republic. The concept should partially address the issue of public finance shortages and reduce public spending on higher education in the Czech Republic by involving additional private funding. From a social point of view, the conditions for access to tertiary education and the elimination of property barriers should be improved. The concept of repayment in the form of a transferred price is focused on the approach of the education provider (university) to the quality of the provided education. In all these areas, the positive effects of the introduction of deferred

tuition and its repayment in the form of a transferred price, are reflected.

I think that the current economy the trend is "rich get richer and poor get poorer". Education is seen as a private property with high positive externalities. Equal opportunities for education should be created in that: information barriers will be removed, property conditions will not affect the possibility of studying, the possibility of investing in a social position will be reduced and the manifestations of clientelism and corruption will be avoided, the investment of private funds in the development of skills will be supported (mature capital market in the field of study support through targeted social scholarships, student loans, study grants).

It is not easy to create an ideal financing model for Czech education. Experience and data from individual countries whose education funding systems are functional and successful can be used. First of all, however, a consensus in the political sphere on the concept of tertiary education is needed. “There is not enough understanding of the basic values, principles and directions of long-term development of the education system. Key parties in education do not share the baseline, which has major negative effects on action in promoting changes at all levels. It is also possible to consider overcoming of the ethical problem, eg in the depoliticisation of the education system. ”(MŠMT, 2017) It is appropriate to carry out a thorough analysis of existing studies (eg OECD) and foreign experience and the feasibility of applying to the Czech socio-economic, political and educational conditions. One of the decisive factors in the introduction of a functional transferred price is the degree of potential abuse of the system (the ethical level of the society). The zero interest rate on student loans (100% interest subsidy) is tempting to make use of the maximum amount of credit, and in addition to those who do not need it, there is also a possibility of an alternative use of it (abuse for other investments). Everyone enthusiastically borrows "cheap" money for a long time, in some cases with the prospect of defaulting their student credit. "Cheap loans would be mainly used by the richer and the state - in this case the poorer - would subsidize interests." (VALENČÍK, 2006) Inadequately set repayment parameters may cause the debtor to avoid repayment. If the state (government) would guarantee the loans, banks would abuse this to transfer credit risks. Interest subsidies make credit cheaper and can jeopardize the quality of education, universities can replace the quality by the quantity of graduates. Universities can increase prices and thereby reduce the default rate of the transferred price.

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