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DIPLOMOVÁ PRÁCE

Should the Czech Republic Implement the English System of Higher Education Funding?

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Prohlášení

Prohlašuji, že jsem diplomovou práci vypracovala samostatně a použila pouze uvedené prameny a literaturu.

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ABSTRAKT

Tato diplomová práce si klade za cíl odpovědět na otázku, zda by bylo dobrým nápadem implementovat Anglický systém financování vysokých škol v České Republice. Anglický systém je časově nejmladším systémem financování vysokých škol. Jeho hlavní charakteristikou je tzv. odložené školné. Odpověď na tuto základní otázku je hledána prostřednictvím kritérií, která jsou identifikována v kapitolách 2 a 3. První sadou takových kritérií je, nakolik Anglický systém odpovídá současným požadavkům na kvalitu a množství lidského kapitálu, který se stal klíčovým faktorem pro ekonomický růst. Druhou sadu tvoří kritéria vyplývající z požadavku na ekonomickou efektivnost systému financování. Konfrontací českého systému s nastavenými kritérii dochází autorka k závěru, že český systém neodpovídá téměř žádnému z nich a je tedy třeba přemýšlet o reformě. Konfrontací Anglického systému s těmito kritérii je pak zjišťováno, zda Anglický systém splňuje daná kritéria a mohl by tedy představovat alternativu pro Českou republiku. Poslední kapitola poskytuje specifické vlastnosti mezinárodních systémů založených na odloženém školném s cílem získat inspiraci pro českou reformu v místech, kde Anglický systém selhává v plnění stanovených kritérií. Ukazuje se totiž, že tento nový systém skrývá slabosti v oblastech, jakými jsou adaptabilita ve vztahu k požadavkům na trhu práce, kvalita vzdělání nebo efektivní alokace vládních zdrojů. Ačkoli se tedy odložené školné ukáže být vhodné jako základ reformy financování VŠ, autorka varuje před slepým okopírováním systému a navrhuje změny, jak ho vylepšit tak, aby přinesl maximální hodnotu ve formě ekonomického růstu. V tomto kontextu mezi navržená opatření patří např. odstranění stropu na školné, zavedení tržního úroku nebo odtranění odpustitelnosti zbylých odluhu po 25 letech.

ABSTRACT

The object of this thesis is to evaluate whether it is desirable to implement the new English system of higher education funding in the Czech Republic. The English system based on income contingent loans is the youngest system of higher education funding. Chapters two and three put forward criteria sets to determine suitability of education system. The first set of criteria reflects the unique role of human capital, its levels and quality necessary for sustainable economic growth. Second set of criteria includes requirements for the system to be economically efficient. It is further shown that the current Czech system does not fulfil almost any of the criteria in their entirety, indicating a clear need for reform. Upon its confrontation with the two criteria sets on the other hand, the English system is tested as a candidate to be considered in the Czech reform. Also other countries' experience with income contingent loans is provided in order to find out the options to fulfil all the criteria for case an English system fails to do so.

Although it is shown that the income contingent mechanism meets both criteria sets it is concluded that the English system includes a number of weaknesses, for example it suffers from low adaptability to labour market needs, suboptimal quality of education or inefficient allocaction of government resources. These findings make the author warn against poor policy transfer of the English system to the Czech conditions. Advice are provided as a part of the analysis as far as modifications are concerned before potential implementation of the English system in the Czech Republic in order to maximize its positive effect on economic growth. In this context, the suggested changes include abolition of tuition fee cap as well as forgiveness of the rest of the loan after 25 years or implementation of the market interest rate.

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1. Introduction

Considering current economic trends and the role of education today, the inevitable conclusion is that human capital has risen to be one of the most important production factors. Most likely, it was also important in past but as a consequence of relative using up of the traditional production factors its importance has become more visible in the last century (-ies). Investment in human capital is the driver of decades of economic growth in countries with relatively used up opportunities in traditional production factors.

There are two basic ways how of improving the quality of human capital – health care and education. The healthier and more educated a person is the longer and more productive he or she can create economic value. This thesis concentrates on the part of education. Following the fact that investment in education in all countries constitutes a significant variable connected with economic progress it is obvious that attention to the investment in all forms of education should be paid so that its quality as well as quantity increases.

As a post-communist economy the Czech Republic went through a transition period to become a market economy. Following the entry to the European Union and exposure to globalization trends, the Czech Republic stands before the task to boost its sustainable economic growth.

This thesis focuses on the higher education and its financing in the Czech Republic. Current financing schemes seem to create barriers for those successful high school graduates willing to obtain higher education. In the Czech Republic 40% of all applicants are refused higher education every year[1] and not making full use of the potential that Czech human capital carries could result in suboptimal economic growth.

Higher education has always been considered to be a public good by the recent Czech governments[2], resulting in a fully state-financed system. The question arises however of the efficiency of such a system. This is especially

[1] Šmídová, Hamanová (2003)
[2] Matějů (2004)

true at a moment when increases in investment as well quality are desirable in order for the country to sustain its economic convergence.

The English system awaiting its implementation in September 2006, represents the newest system in the world. It is based on income contingent loan repayments, a new and rarely used mechanism. Also in the Czech Republic voices have appeared claiming that the Czech Republic could benefit from implementation of such a system.[3] The hypothesis following from this environment is formulated. It says that the Czech Republic should overtake the English system of higher education funding because it is the most recent one and its modern design is expected.

But is the English system really good enough to be implemented in the Czech Republic from the efficiency point of view? Does it meet the challenges of human capital becoming the most important production factor? These are the questions that need to be answered before recommendations are made for the Czech reform of higher education funding system. Because the experts in the field mostly deal with just one part of the system – the one related to tuition fees - this thesis would like to go in more detail to asses the English system as a whole in context of its contributions to economic growth.

The method used combines three approaches. First, desirable system characteristics are defined in accordance with the role of higher education nowadays and the English system is then evaluated based on these characteristics. Second, economic assessment takes place focusing on economic efficiency. Third we make use of experience with income contingent loans (ICL) in other countries, which can shed light on issues not captured by the first two approaches and can serve as a source of an inspiration. As a whole, this paper can help decide about the desirability of the English system as a candidate for reform in the Czech Republic.

Resources used in this thesis include papers written by experts in the field such as Barr, Johnstone, Chapman, Palacios an others, OECD publications, research done by the Czech Academy of Sciences, interviews

[3] Matějů (2005), Valenčík (2005)

with researchers coming from the United Kingdom (UK) as well as from the Czech Republic and information and experience gained by the author while interning in the British National Union of Students[4] from January to April 2006. The absence of empirical evidence on this topic is a reason why this thesis is not based on the empirical evidence but rather on theoretical models.

2. Change in Perception of Higher Education and Identification of Desirable System Characteristics

2.1 Human Capital as the Most Important Production Factor

The role of higher education has changed in recent years. In the past, higher education existed to pursue knowledge for its own sake and was mainly consumption good for middle class intellectual elite. Economic performance of countries was mostly driven other factors, for example geographical position or natural resources. This theory is in detail discussed by Thurow (1996). He discusses the role of human capital and confirmed that its role has risen over past years. Looking at conventional production function

$$Q = f(K, L, M)$$

[4] National Union of Students (NUS) is a voluntary membership organisation comprising a confederation of local student representative organisations in colleges and universities throughout the United Kingdom and Northern Ireland which have chosen to affiliate and which pay a membership fee. NUS has nearly 750 constituent members – virtually every college and university in the country. In context of higher education funding NUS pursues a free system financed from revenues obtained from increased taxes. It considers higher education to be a public good and everyone's right and believes this is the reason to have no tuition fees.

where output, Q, is related to inputs of capital K, labour L, and raw materials M via the production function f (representing in fact technology). In the past, raw materials represented wealth for the country as well as the capital stock that a country had at its disposal. Even technology tended to be tied to specific countries. But today, raw materials and related products do not represent value added. Single components of cars or computers constitute only small shares of the products' price. What regards capital stock, with today's worldwide capital markets, domestic investment is less constrained by domestic savings. The same story is connected with technology. Although it remains a critical determinant of relative economic performance, in today's world with instant information flows technological advance moves across countries more quickly. So, if K, M and f are less important for explanation of differences in economic performance, it must be labour whose importance has had to increase.

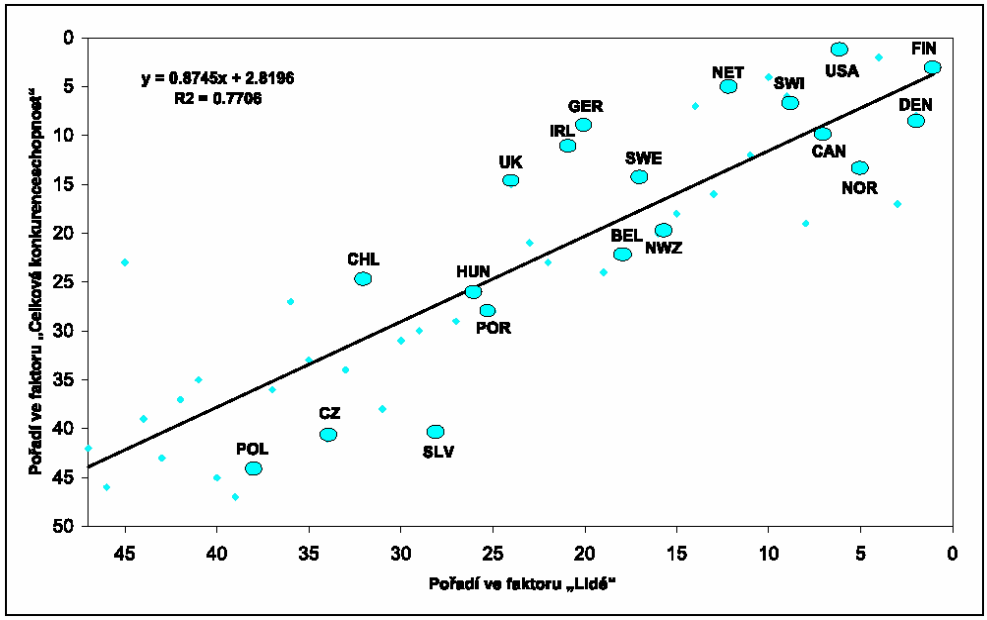
Considering decreasing number of people in productive age, the increase in labour productivity is the only way of supporting economic growth. Here, higher education comes to play its role. Barr (2003) alleges that people will be increasingly replaced by machines in simple processes leading to increased demand for particularly skilled and decreasing demand for unskilled workers. The choice of an optimal level of investment in higher education, and the form of financing of such investment is thus a critical issue in achieving economic growth.

The positive correlation between the country's competitiveness and the quality of human resources was already published in the *World Competitiveness Yearbook 2000.* It was shown that this variable explains approximately 77 percent of the country's competitiveness (see chart 2.1).

The other yearbooks of competitiveness also repeatedly show that insufficient dynamics of development of tertiary education unfavourably influences the human capital accumulation and subsequently economic growth. The cases of countries where governments have fully understood the importance of tertiary education as a resource of prosperity such as Sweden,

Finland, Ireland Netherlands or Norway, prove the above-mentioned causality true.

***Chart 2.1: Relationship between Competitiveness and the Quality of Human Resources*[5]**



Source: Matějů, Schneider, Večerník (2003)

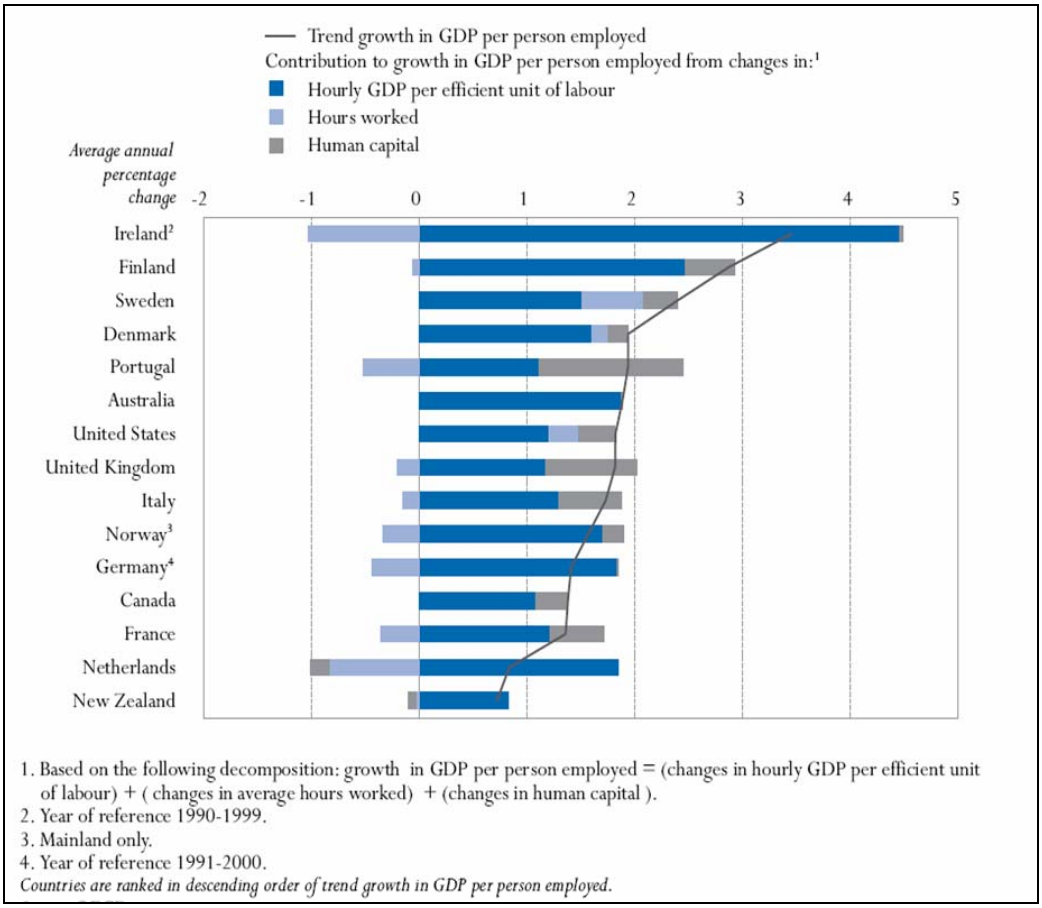
Education at Glance 2005 supports these assertions by mentioning that the educational attainment contributes to a country's overall prosperity. According to OECD, improved education helps raise labour productivity and technological progress, boosting economic growth. *"The long run impact in the OECD area of one additional year of education is to increase economic output by between 3% and 6%."*[6]

Chart 2.2 "*shows that growth in output per employed person is partly attributable to increases in the human capital of those in employment. The*

[5] X Axis: Succession on the "People" factor, Y Axis: Succession in "Overall Competitiveness" factor.
[6] OECD (2005), pp. 10

chart displays the impact of changes in the average human capital of workers on growth in cyclically adjusted GDP per hour worked".[7]

Chart 2.2 Enhancements in Human Capital Contributing to Labour Productivity Growth (1990 - 2000), average annual percentage change



1. Based on the following decomposition: growth in GDP per person employed = (changes in hourly GDP per efficient unit of labour) + (changes in average hours worked) + (changes in human capital).
2. Year of reference 1990-1999.
3. Mainland only.
4. Year of reference 1991-2000.

Countries are ranked in descending order of trend growth in GDP per person employed.

Source: OECD (2005)

[7] *"Essentially, the chart decomposes average annual percentage changes in GDP per capita over the period 1990 to 2000 into three components:*
i) changes in average hours worked,
ii) changes in average years of formal education (used here as a proxy for changes in the quality of labour), and
iii) changes in the hourly GDP per efficient unit of labour, which is equivalent to changes in GDP per worker once changes in working hours and changes in the average quality of labour are accounted for.
The latter is based on a measure of labour input that sums the shares of workers with different levels of formal education, each weighted by their relative wage. Two assumptions underlie this measure: educational attainment accounts for a good proportion of human capital embodied in workers, and relative wages provide a reasonable quantitative proxy for the relative productivity of workers with different levels of education." Source*: OECD* (2005), pp.151

It is worth noting that in order to increase quality of human capital measured by the number of university graduates, more than just increases in spending are needed. Should inefficiencies prevail, as they often do, additional resources could be wasted and the potential to increase economic growth would not be fully utilized. Supporting this argument, Wolf (2002) comes to the conclusion that especially the ability to adapt to the changing economic environment is the crucial requirement on the modern system of higher education.

That is why a system, which should be implemented in the Czech Republic, should not only mean increasing the amount of resources but their efficient spending as well. Characteristics of an efficient system are identified in the following chapter and the English system is then assessed according to these criteria. Further in the paper, the Czech system is also going to be contrasted against these characteristics to show, if there is a need to reform the Czech system and if the English system should replace it.

2.2 Desirable Characteristics of the System

Importance of the human capital identified in the previous chapter helps formulate the objectives that should be met by an effective system of financing higher education. It is essential to open the higher education equally up to everybody independently of his/her income and wealth in every moment in time. The education provided should be of the highest possible quality and matching the needs of labour market. Increases in resource level availability is needed, which could be done in two ways – increasing the percentage of GDP devoted to higher education or increasing spending efficiency.

I have identified the following five basic characteristics that a system should meet should it be considered as a candidate for the Czech Republic.

1. The system should not prevent a system from increasing (and decreasing) the number of university graduates in the economy. Moreover, for prospective students there is a need to eliminate barriers to access and ensure that the new system does not create any new ones (other than intellectual). Opening up universities and making the number of university places flexible would also increase a prospective students' market power in choosing universities, faculties and institutes they want to enter. In the current situation, students often enter schools of second or third-best choice as theirs acceptance to first-best choice institutions is unlikely because of capacity limitations.

2. As it has already been mentioned, an increase in the amount of resources invested into tertiary education does not necessarily imply higher economic growth. In the previous chapter, Wolf (2002) was pointed out with his conclusion that especially the ability to adapt to the changing economic environment is one of the crucial requirements on the modern system of higher education. To fully unlock growth potential of an economy the right structure of graduates in the right fields is needed in every moment in time to match the needs of the labour market. Thus, adaptability is one of the crucial requirements for the system.

3. Permanent pressure on the quality of higher education is needed. Increased spending also does not inevitably increase quality. Here the relationship between education provided and graduates' wages should be regularly published to create competitive environment among universities. The system should be based on the market interactions between students and institutions providing higher education. By making use of their own resources students become investors requiring a maximal return on their investment. As students have a limited power in influencing quality, competition among universities might be even more important. In a competitive environment the whole system leads to quality maximisation and so increases labour productivity.

4. The next desirable characteristic is the productive efficiency. In such a situation, inefficient spending is minimized. That is why motivation of universities to minimize their costs should be part of the system.

5. The ability of a system to "*mobilize public and private funding in ways that better reflect the social and private benefits*"[8] as mentioned in Schleicher (2005) is the last criterion that we shall consider. This requirement and its importance are discussed in the following chapter because they more relate to a system's economic efficiency.

These are the main objectives and requirements on a higher education that ensure that it fulfils its role in the current world.

At the first sight however, meeting all the objectives simultaneously may at the first sight seem like moving in a circle. Tuition fees are the way to increase the volume of resources in the system and make universities better motivated to improve quality of their services. But the introduction of tuition fees creates barrier for those prospective students with insufficient disposable resources. Creating a system of loans in its conventional form (such as US mortgage-type) is usually perceived as a solution of this vicious circle. This solution however has a negative impact on equality because collaterals are mostly needed for students to become eligible for a loan.

Economists from different parts of the world started their research as the quest for a satisfactory financing system has begun (N. Barr, M. Palacios, B. Johnstone, P. Chapman to name a few). All of them have come to the same conclusion: it is possible to escape from this vicious circle by implementing a system based on income contingent loans. These are characterised by deferred tuition fees until the moment when a graduates get a job and start to earn money.

[8] Schleichter (2005), pp. 4

In this chapter desirable characteristics of modern higher education funding systems were identified. Whether or not systems having these characteristics are also economically effective an analysis of higher education as a good is needed as well as of education market specifics. This is provided in the following chapter.

3. Higher Education Funding and Economic Efficiency

When considering economic efficiency there are three basic questions to be answered. These are 1) who is supposed to participate on the higher education costs, 2) how much they should pay and 3) in which way they should pay. As it will be shown, in the case of education the answers need not be simple. We have already mentioned income contingent loans to be a part of the solution, their economically efficient form is presented in the final part of this passage.

3.1 Who should pay?

3.1.1 Is Higher Education a Public Good?

In order answer the question of who is supposed to participate on the higher education costs, first, the character of this good need to be identified. If the Czech government have been correct and higher education is a public good than it is most efficient to finance it entirely from state budget. To find this out let's confront it with commonly known characteristics of a public good as presented by Stiglitz (1997). According to his theory, excludability and non-

rivalrity[9] are two major characteristics of a public good. We see that the characteristics required by economic theory to identify a public good are not fulfilled in case of higher education. But there might be another reason for private as well as public participation on its costs.

3.1.2 Externalities

According to Stiglitz (1997) there are other reasons for a state to cover costs of a good. One of them is the existence of externalities associated with its availability. In the case of higher education, we speak about positive externalities, meaning that gains from someone's private investment to education are not fully captured by the person who has invested but others benefit too. It is possible that standard of living of the people who did not pay for the education will rise as well. Taylor[10] (1999) even differentiates education externalities into second and first-best effects. According to his theory, first-best externalities include benefits in the form of the inventions and innovations not captured by the patent system. In turn, second-best externalities encompass rising tax payments associated with rising levels of education, along with avoided public expenditures associated with society's social safety net. Educated individuals are less likely to be dependent on public assistance, have healthier children and other behaviours that avoid expenditures on their behalf. It is believed that educated people significantly contribute to poverty reduction, economic growth and share common values.

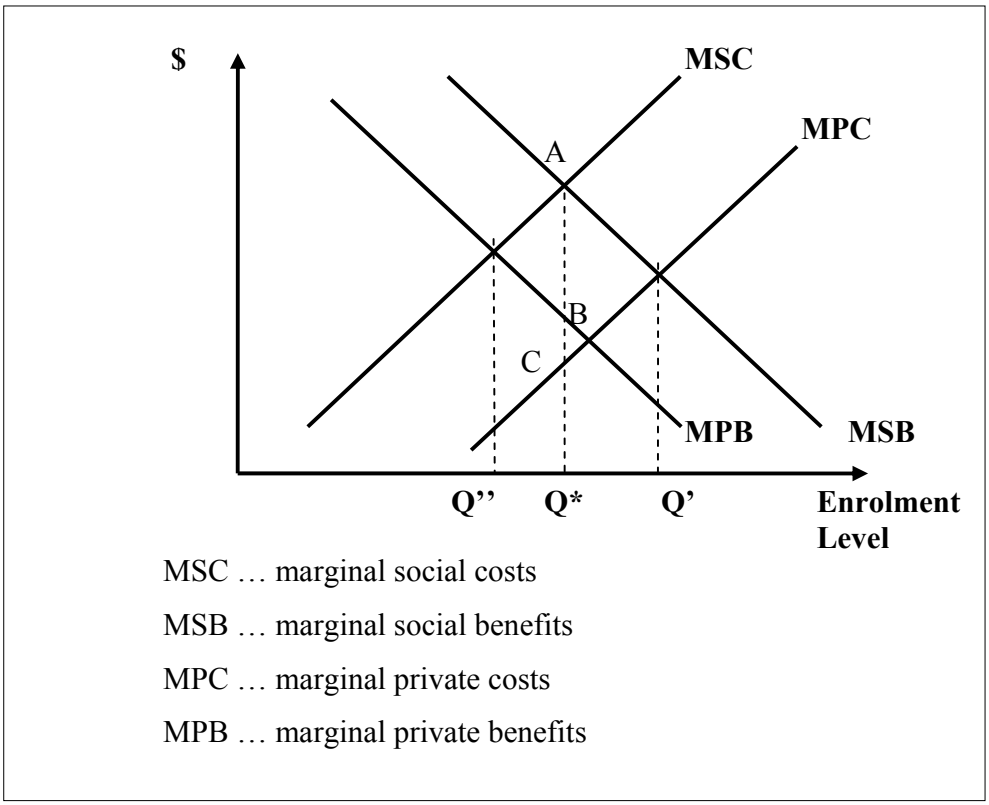
As other externalities also this one likely leads to the disequilibrium on the higher education market. High school graduates would underestimate the total (society-wide) benefits connected with a college diploma as a consequence of imperfect information about the sum returns on investment in

[9] For more on these characteristics, see Apendix I.
[10] Taylor (1999)

higher education. In case they were asked to cover full education costs, these might exceed their personal benefits decide not to attend any university. The market would get into equilibrium only after the college graduates would be compensated to the extent of the externality absorbed by the society (in reality the tax relief for students' parents could be considered to be the compensation. In such a case we speak about so called „Pigou's Taxes"). Because these externalities are consumed by the whole society, public participation on higher education costs is reasonable.

Once the reason for the governments to participate on higher education costs is established one has to ask about benefits exclusive to the recipient individual. A system entirely financed from public budgets does not come to terms with the fact that higher education brings some benefits just to the investing individual (higher salary, increased social status, lower probability of unemployment, etc.). In fact, publicly financed system follows from an implicit judgement that social benefits are at least equal to the amount of public resources invested and that there is no reason for students to cover any part of the costs. A funding system where the total costs are covered by public resources leads to an overinvestment shown in chart 3.1 by point Q'. It is paradoxical, that in times of calling for increased investment into higher education, this conclusion suggests that if student numbers are kept fixed, there really is an overinvestment on the side of the government side. In other words, a "free" system is unfair to those people who decide not to pursue a degree. This is one of the reasons why increased investment without private participation on costs does not solve the system's imperfections but only lead to greater inefficiency.

Chart 3.1 Private and Social Costs and Benefits of Higher Education[11]



Source: Chapman (2005)

Chart 3.1 shows marginal costs and marginal benefits both to an individual and to the society. Marginal costs are increasing with the amount of students enrolled. The reason is that with increasing enrolment in higher education the number of those who end their education at secondary school decreases. As a consequence, the wages of those who do enter the labour market after secondary school increase. These earnings then constitute opportunity costs for those enrolled in higher education. The marginal benefits are shown to be decreasing. It is because the higher the enrolment the bigger number of university graduates in the labour market and the lower their wages. The distance between social and private marginal benefits reflects the positive externalities of higher education to the society; the distance between social and marginal costs reflects the costs of these externalities.

[11] For the discussion about the curves, see Chapman (2005). Further in the text, the relation to the picture means relations to this picture with Q* being optimum.

Chapman (2005) comments on the chart 3.1 as follows: *"As drawn the diagram shows a situation characterised by over-investment in higher education, (Q' > Q*), since it is assumed that there is no tuition fee. However, if all the direct costs are paid for by students (a full-fee regime), then the marginal social costs and marginal private benefits would be identical, but this then leads to an under-investment of higher education (Q'' < q*). Thus the optimal fee is given by the distance BC which is derived from AB, the value accorded the marginal value of the externalities and thus the level of government subsidy."*[12]

Moreover, Chapman (2005) adds that *"the marginal cost pricing rule ... suggests that financing arrangements that do not reflect the interaction of marginal benefits and marginal course costs will not deliver allocative efficiency"*[13]. This means that there is a reason to finance higher education by tax revenues but there is a case for private participation also. That is why the English system based on tuition fees (close to Q*) is expected to be more efficient than the Czech one (Q').

3.1.3 Education as an Analogy to G. Becker's Types of Training[14]

Besides the reasons for private participation on total costs given in the previous chapter there can be other reason for governments not to cover the total costs of higher education. This one follows form the character of higher education as well as from the globalization in terms of increased migration of people. It is based on the analogy to one of G. Becker's theories.

The Nobel Prize winner G. Becker has summarized a theory about two types of training. The first he called *general* and the other *specific*. In spite of the fact that Becker speaks about training provided by firms to their

[12] Chapman (2005), p. 6.
[13] Chapman (2005), p. 6.
[14] Based on the human capital theory summarized by G. Becker.

employees one can draw parallel conclusions when showing the necessity of combined public and private financing of higher education.[15]

According to my opinion there is a certain similarity between financing higher education and financing of general training. Let me illustrate the idea by assuming states to be firms and higher education to be the training.

In a global world, where borders are disappearing, people are going to move more freely and to use fewer languages to communicate. As a consequence, higher education is becoming more "universal" as the education obtained in one's mother country has the characteristics of Becker's general training. Probably there is not any field where knowledge is exclusive to only one particular state[16] and therefore the education raises marginal products of graduates not only in their mother country but also in other countries.

This means that the country financing higher education has little certainty regarding the future workplace of her graduates. It can happen that higher education graduate contributes to economic growth in a country other than his or her motherland. If a government finances the total costs of higher education it actually takes a risk of bearing the entire cost of the graduate leaving to work aboard. It means that governments should take this risk into account and finance just that part of externalities' costs equivalent to the expected value of externalities brought by graduates that stay to work in the country.

The situation is then becomes satisfying not only for graduates but for other countries as well. It is because the Czech government (and others with the same approach) raises a person's marginal product and lets other countries to benefit.

Based on Becker's logic a firm should not pay for the total costs of general training. And I think that education is becoming a general training in today's world and that is why there is legitimate reason for the government not to cover all costs from public budgets. To make the whole system

[15] For details about general end specific training see appendix III in Becker (1993).
[16] The only one that has come into my mind is the knowledge of national law.

efficient, a student should demand the corresponding part of cost from the country where he or she settles. It is because he or she would produce positive externalities in this country, which did not participate on his or her higher education costs.

3.2 Organisation of an Effective Funding System

In the previous subchapter, I have come to the conclusion that a part of the higher education costs should be paid by those who attend it. Now, the second question comes to be answered how this private part of total costs should be paid. In a perfect world it would be enough for the government to provide universities with resources covering the costs up to the amount of externalities and let them charge tuition fees to cover the rest of their costs. Tuition fees charged to students in a world with perfect information would reflect the value of marginal private benefits. The subchapter 3.2.1 shows that such a case can never happen in reality. Moreover, it points at the market and government failures to be the reasons. At the end, we will see whether deferred tuition fees are the solution not only to the "vicious circle" uncovered in case of desirable characteristics but to these failures as well.

3.2.1 Funding in a "Perfect" World

In order to show the failures I would like to start this chapter by showing how the system would work in the world with perfect information and no distortions.

Education serves its recipient as a mean of increasing income. In other words, an individual decides to invest time, effort and other resources in a college degree based on a belief in future higher income, higher social status, lower possibility of being unemployed during his or her life, etc. This view is

compatible with Valenčík (2001) who claims that everybody chooses from number of investment opportunities on the one hand and investment resources on the other. Valenčík (2001) shows that if there is a developed capital market with the absence of uncertainty where participants can invest in opportunities to improve their abilities, budget constraints of families and individuals would not play any substantial role.

As an investment alternative, higher education need not be perceived only as a good for the individual but it can be perceived as an investment opportunity for a third party as well.

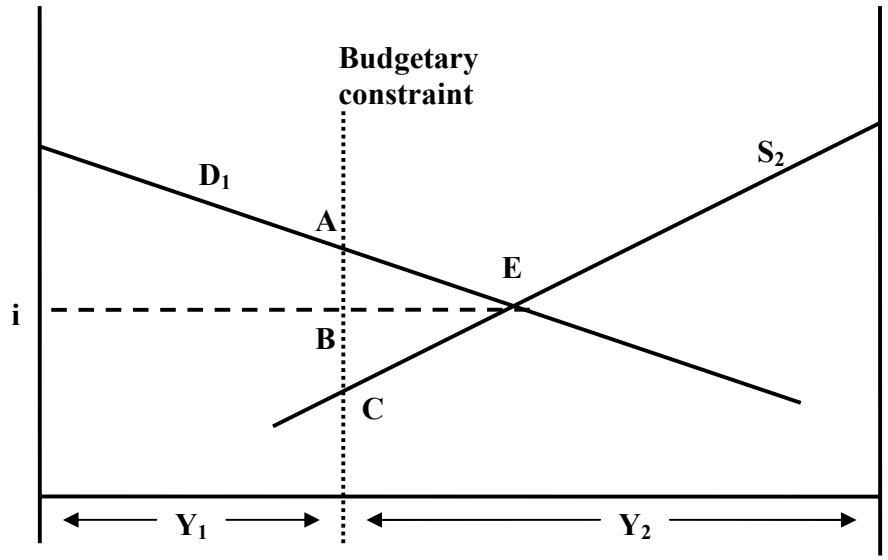
Perception of higher education as an investment opportunity delivering a return leads to an idea of trading higher education on "secondary" markets. The chart 3.2 describes such a situation. On the capital market there always stand two parties[17] against each other:

1. Supply and demand of investment resources.
2. Supply and demand of investment opportunities (lender offers his investment opportunities and borrower demands foreign investment opportunities).

The roles of lender and borrower is portrayed by the following chart.

[17] These parties can be represented by the investment institutions and their insolvent clients, rich people and poor people, state and an individual, etc.

Chart 3.2 Trading Higher Educations on a Perfect Capital Market



Where:

Y … current income

MY´... future income expressed in marginal variables

Y_1 … the first subject's budget constraint

Y_2 ... the second subject's budget constraint

D_1 … marginal return from realization of own investment opportunities (first subject) = demand for the investment opportunities of others (to the budget constraint line) = demand for the investment resources of others (from the budget constraint line)

S_2 ... marginal return from realization of own investment opportunities (second subject) = supply of own investment resources (to the budget constraint line) = supply of own investment opportunities (from the budget constraint line)

i … rate of return from own investment resources provided to enable realization of the investment opportunities of others (interest rate)

ABE … first subject's pareto-improvement

Source: Valenčík (2005)

The triangles represent the pareto-improvements associated with the possibility to finance investment opportunities with the money obtained on the perfect capital market. Under such conditions everybody would have access to higher education of adequate quality independently of their financial resources or resources of their families as these resources would be available on capital market.

The major conclusion of this concept is the fact that there would no longer be divergence between poor and rich caused by unequal access to education in case mortgage-type tuition fees were available. In other words, in a "perfect" world everybody would be able to pay upfront for his or her higher education, no matter what his or her background was.

3.2.2 Market Failure

The above-mentioned concept seems to work very well in theory but in reality it suffers from an information asymmetry between lenders and borrowers. Such a system would lead to a sub-optimal solution caused also by uncertainty faced by both – lenders and borrowers. Barr (2004) concisely analyses this problem in his recent paper. He talks about the mortgage-type loans as a wrong tool used for financing higher education in some countries (for example USA): *"The contrast of home loans with lending to finance investment in human capital – for example, a university degree – is sharp*." [18] Considering loan for buying a house to be a benchmark in his argumentation he argues that there are big differences on the supply side as well as demand side what regards lending to finance a degree:

"*Buying a house is relatively low-risk activity.*

- *The buyer generally knows what he is buying, having lived in a house all his life.*
- *The house is unlikely to fall down.*

[18] Barr (2004), p. 269-270

- *The real value of the house will generally increase.*
- *If income falls, making repayments problematic, he has the option to sell the house.*
- *Because the house acts as security for the loan, he can get a loan on good terms."*[19]

Talking about the problems on the demand side, Barr finds differences in all points described above. Going point by point: a) Although "*…university students are well informed,…, some people, particularly from poor backgrounds, may be poorly informed…and even well-informed students face risk: though the average private return to investment in human capital in investment is positive, there is considerable variation about that average… All borrowers face risk and uncertainty because b), c) and d), though true for housing, are less true for investments in skills…"*[20] Finally he argues that the absence of collateral in case of human capital further increases exposure to risk. As a result of these facts borrowers are exposed to high risk and uncertainty, borrowing to finance higher education would be lower than in optimum.

According to Barr, problems exist on the supply side as well, the major one being the absence of collateral again. *"If I am unable to repay, the lender can repossess the house, sell it, and take what he is owed. Deliberate default is not a problem: though I could disappear, I could not take the house with me."*[21] Because a similar solution is ruled out in case of human capital - lenders have no security. They cannot be sure about the borrower as regards his abilities, future income and therefore his ability to repay his loan in the future. This leads to charging high risk premiums, making the loans more expensive which can discourage less-informed borrowers from taking them. The uncertainty connected with repayments leads lenders, according to Barr,

[19] Barr (2004), pp.270
[20] Barr (2004), pp.270
[21] Barr (2004), pp.271

to lend only those borrowers who can provide security. Clearly, even this scenario leads to inefficiently lower lending.

In context of model of investment opportunities and investment resources, the welfare losses could never be mitigated in reality because of the high risk and uncertainty facing borrowers as well as lenders. The welfare loss can be diminished but not eliminated. Therefore, mortgage-type loans are not the optimal mean of covering the private part of higher education costs. Comparing the mortgage-type loan scheme with the desirable characteristics of the system will, later, show that even more reasons can be found for not considering implementation of such a system.

3.2.3 Government Failure

Governments that are aware of the need to share the costs between students and taxpayers and are aware of the market failure, sometimes try to straighten the market through government interventions. The most common tool is providing financial assistance to borrowers in form of interest subsidies. To lenders, governments provide guarantees for outstanding loans. But even if markets may fail to deliver a socially optimal level of investment in higher education, it does not follow that government interventions in form of subsidies or guarantees will necessarily produce a superior allocation of resources.

In general, interest subsidies are considered to be an expensive form of government support[22]. In fact, they are blanket subsidies and therefore end up helping middle-income graduates to repay their loans faster, which is not what the government originally intended. And because they are not targeted this inefficiency causes governments to under-invest in higher education.

[22] Barr (2004)

3.3. Solution - Income Contingent Loans

The conclusion of the previous chapters suggests that students' share on education should be implemented but there is a problem with charging upfront tuition fees.

To deal with the difficulties with the "vicious circle" a solution in form of a system based on income contingent loans was suggested by some experts (Barr, Chapman, etc.). In this chapter it is shown if such a setting is compatible with economic efficiency. Only in case the English system meets these economic efficiency thresholds it might be considered as a candidate for the Czech Republic.

Income contingent loans basically mean that graduates make the repayment, not students. They do it by subtracting a certain percentage of their incomes until the debt is repaid. It means that instalments are not fixed but depend on the size of a graduate's salary. For example, if a graduate loses a job and gets into financial troubles, repayments are not expected to continue during that period. Income contingent loans display a consumption-smoothing character and therefore minimize the risk that students face when investing in their higher education. The impact of income contingent loans is that the prospective students need not worry about insufficiently low salaries to repay some fixed amount once a month as it would be typical for mortgage/type loans. Consumption smoothing character is typical for income contingent loans.

They also open higher education for everybody independent of their financial background by making it free at the study period. The problem of vicious circle from one of the previous chapters could be recalled here because income contingency really provides a solution. With their help tuition fees can be introduced without creating any barrier to access.

As far as the providers of the loans are concerned, both government and private financial institutions serve this role. In order for the banks to serve this role developed financial markets are needed. This requirement could

constitute a problem in case of developing countries. On the other hand, a system based on commercially provided income contingent loans can be a better option for governments that lack resources necessary for lending. Currently, with a single exception governments finance all systems based on income contingent loans. The one exception is MyRichUncle® system in the United States, which provides loans on the basis on so called human capital contracts. Because the English system funded by the government the rest of this paper is devoted to this type of income contingent loans. More on the topic of human capital contracts can be found in Palacios (2004) and in Valenčík's work.

In more detail, the following subchapters discuss the particular parameters of the system based on ICL s and try to find out the most effective setting to create a benchmark to asses the English system.

3.3.1 Tuition fees

When deciding about the tuition fee the decision has to be made government has to consider whether to set one common fixed tuition fee for all fields and universities (and decide how big it should be) or if to leave it upon universities (and regulate it to be able to provide the loans). The benefits of variable fees set by universities are put by Barr (2004) very well: *"…price ceilings erode incentives to improve quality (whose covers cannot be covered by price increases) and price floors erode incentives to increased efficiency (whose benefits cannot be appropriated through lower prices). Flat fees, including zero fees, are both a floor and a ceiling, and thus particularly inimical to efficiency gains."*[23] Thus, governments should leave tuition fees to vary. One approach is to leave the market forces to set the price. Theoretically, this approach seems to be better in meeting the allocative efficiency but in

[23] Barr (2004), pp.273

reality, problems with such a system could arise. Policy makers would have to ensure that all market players are well informed and that the competitive environment is in place. If this is not fulfilled the tuition fees could rise to be inefficiently high. Privatisation of student debt might be needed in such a case because government's budget might not allow financing of tuition fee loans (for example, the restriction can be represented by the Copenhagen criteria in case of Euro zone members).

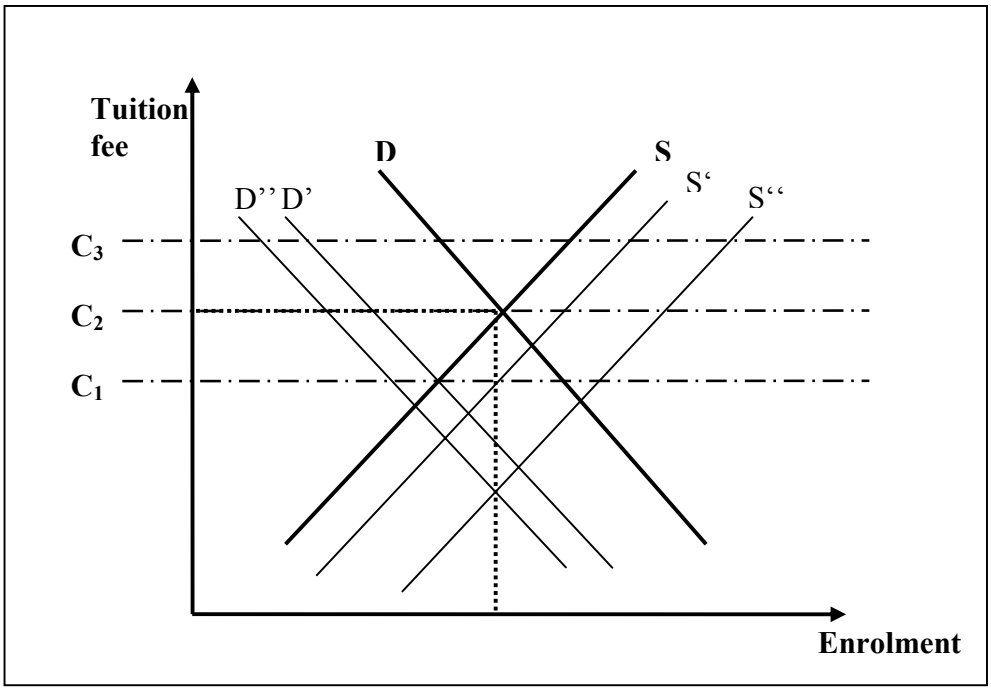
A different approach is advocated by Barr (2004) who insists on the requirement of a cap on tuition fees. According to Barr (2004) the cap "*...should ideally be high enough a) to pay the best universities the rate for the job and b) to bring in competition, but low enough c) to ensure that the new regime is politically sustainable by giving students and parents time to adjust and d) to give universities time to put in place management suitable for a competitive environment.*"[24] But in reality such a cap does not mean anything else then an effort by the government to set prices of courses that with maximum private benefits and to estimate this equilibrium. Because of the government being inadequately informed this will most probably lead to inefficiencies. Actually, a price cap represents a price ceiling – something criticised by Barr himself. And as a price ceiling it would have a negative impact on a quality of education provided (leading to slower economic growth as it has already been mentioned many times).

We can see the situation on chart 3.3., where D and S belong to the most expensive course (the one with the biggest private benefits), S', S'' and D', D'' belong to some courses with smaller tuition fees, C_1 to C_3 are alternative caps. C_1 is a cap that creates a regular price ceiling. C_3 is a ceiling that is not binding. During the time C_3 might become a price ceiling because the private benefits and tuition fees will vary and can require a price increase beyond C_3 to reach equilibrium. C_2 would be the only correct cap because it would not prevent competition. But in reality, estimation of C_2 is not possible

[24] Barr (2004), pp. 279

because it is reached by students' decisions based on subjective costs that are immeasurable and unavailable to the government.

Chart 3.3: Caps on Market with Higher Education Courses



The public costs create the other part of total costs. There will always be a trouble with government's assessment of public benefits from higher education, which in turn would lead to the optimum amount of resources to be invested by the state. These government decisions are highly complex and are not a part of this diploma thesis.

3.3.2 Maintenance Loans

Next part of a system is maintenance loans. Their existence and character is crucial to ensure all barriers to access are eliminated. Politics rather than economics contribute to the decision the standard of living to which students are entitled. Maintenance loans are used to support students'

needs while attending university. Insufficient maintenance loans would create access barriers for those coming from poor backgrounds. On the other hand, they should not be excessive as this would lead to their misuse such as investing them and yielding the interest. Thus, maintenance loans should reflect the students' needs as much as possible, the facts of living at home, in an expensive part of the country and other similar variables should be taken into account.

The maintenance loans should also be income contingent loans to eliminate the fear of prospective students of inability to repay them after graduation.

3.3.3 Repayments

It has already been said that the repayments should be left for graduates instead of for students and should have a consumption-smoothing character. Now, the basic questions to answer in context of repayments are when graduates should begin to repay their loans, how big the percentage subtracted from income should be, from what income base repayments should be subtracted and what to do with those loans or their parts that have never been repaid.

First, the size of an income from which the repayment should begin differs substantially among the countries with ICLs and in theory no particular approach has been discussed. According to my opinion, a graduate should start to repay the loan after he or she earns more opportunity costs of going to university minus the non-wage private benefits gained by obtaining the degree. T is a threshold; OC stands for opportunity costs and NWPB for non-wage personal benefits in the summarizing equation:

$$T = OC - NWPB$$

Even though non-wage private benefits are hard to measure and it would be difficult to identify the potential non-degree wage, one can conclude that the threshold should not be bigger than the average salary of among a graduate's generation starting to work after high school (the more specific group we can identify to set the wage, the more precisely the threshold wage can be set).

Second, there is the question of instalments. These should be high enough to ensure that a maximum number of graduates do repay their loans including interests irrespective of any government guarantees.

If government guarantees were the reason for many graduates not repaying their loans the resulting combined government expenditure constituted by the share of costs originally born by the government with the amount paid by the state for graduates that failed to repay their loan would be higher than the market equilibrium.

As money is a normal good with decreasing marginal utility, income brackets should reflect this. Setting of only a single percentage rate to be deducted from salaries would cause low-income graduates to give up a greater share of their income-related utility than higher income groups.

Because the repayments can substantially differ among graduates and it can happen that some of them will be unable to repay the loans the question is what to do with those who defaulted on their loans. Defaults are caused by the fact that the price of a course was set incorrectly. It did not reflect its future benefits well. There are two reasons why it is not optimal if government forgives the rests of loans. First, taxpayers would end up paying more for externalities they had from a graduate. Second, without reflecting defaults in interest rate charged to students the mechanism informing prospective students about a course being overpriced would be lost.[25]

[25] If a student decides between two courses and for one higher interest rate is charged he chooses the other one. It will cause decreased demand for this course and will force the university to decrease the tuition fee so that it better reflected the course's future benefits.

To avoid this inefficiency government should reflect defaults to the interest rate, which it charges to students[26] and avoid blank default coverage.

3.3.4 Grants

Targeted grants make economic sense if we understand that the prospective students coming from lower income families are more risk averse that those coming from relatively richer families. The reason is that a child raised by parents without a degree is relatively less informed about the benefits of higher education than a child who has seen the benefits of his or her graduate parents. The demand for education of the poor child is too small because of information deficiency and this demand needs to boost to reflect the reality. This is the role of targeted grants.

Barr (2004) supports this idea by saying *"...to the degree that young people of low income, or ethnic or linguistic minority, or rural or otherwise isolated, backgrounds may be more ambivalent about the opportunity costs of higher education (that is, about foregoing the income from directly entering the workforce) or about the sacrifices and/or risks entailed by incurring indebtedness, even need-based grants and generally-available student loans might not be enough to maintain equitable participation under a policy of shifting cost burdens onto students. The assurance of genuine equity in a country moving in policy directions of greater recognition of market forces and/or more cost-sharing, then, almost certainly requires a special sensitivity to, and possibly additional financial compensation for, the fundamentally greater ambivalence, the greater perceived opportunity costs, and the arguably greater debt aversion of those from low income, rural, or*

[26] The courses that produce graduates unable to repay their loans should be identified ant the interest rate should be increased only to those willing to study at these courses. Because if the overall interest rate would be increased, all courses would become more expensive and less students would like to study at universities. This would lead to decreased number of graduates and increase wages. This would continue on and on because all universities would be motivated to overprice their courses, keep the benefits and spread the costs (higher interest rate) among other universities.

ethnic/linguistic minority backgrounds or, in some cultures, of females."[27] This means that targeted grants should be a part of the higher education funding system.

4. Czech Higher Education System and its Funding

This chapter sheds light on the character of the Czech higher education funding system. First the expenditure on higher education are put into context with other OECD countries and the system itself is introduced. Then, bottlenecks connected with this system are identified, especially as a reflection of the desirable characteristics of the modern system as they were identified in chapter two. The same confrontation is done with the efficiency measures to conclude whether there is a need to reform the Czech system or not. On the other hand, grants for everyone would be inefficient spending, reason being the same as in case of interest subsidies. Government would inefficiently spend the money on those who do not need it.

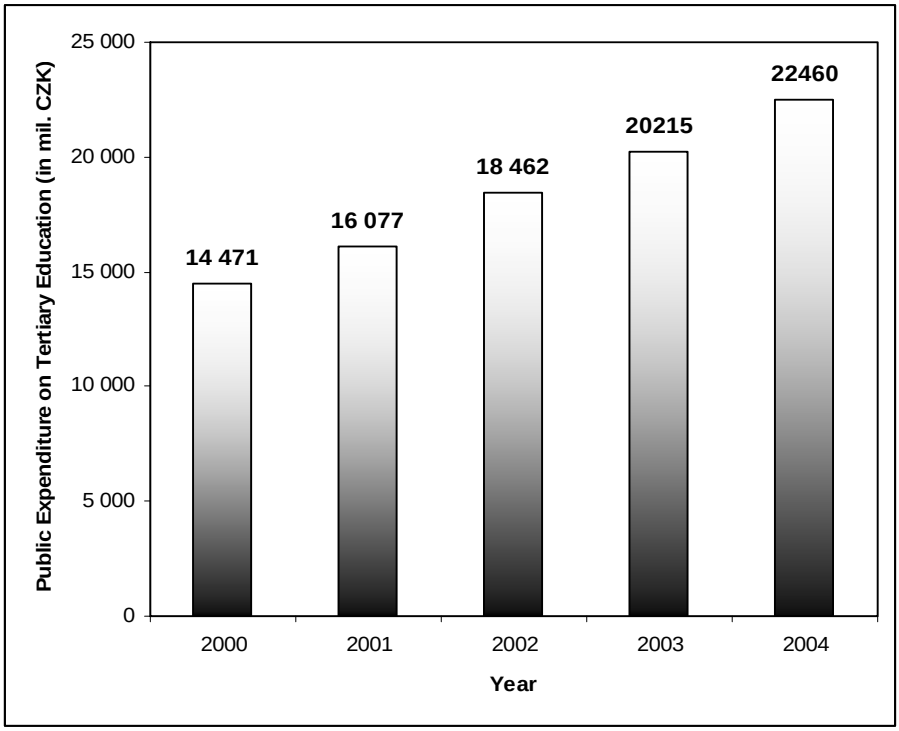
4.1 Czech Expenditure on Higher Education

The share of public expenditure spent on tertiary education can be used to estimate the perceived importance of this education. Czech Republic stays behind in this respect, despite expenditures have been rising substantially in the past years (see Chart 4.1). Czech public expenditures on higher education are still being below 0.9 % of GDP (2002) making it the last of OECD countries. And from the OECD partner countries only Indonesia, India and Uruguay invest lesser share of their GDP to tertiary education.

[27] Barr (2004)

In OECD countries[28] 2002 expenditures on higher education averaged at about 1.7 % of GDP. Although the UK also invests less than OECD average (1.1% of GDP), it is still more than the Czech Republic.

Chart 4.1: Public Expenditures on Tertiary Education in the Czech Republic



Source: MŠMT

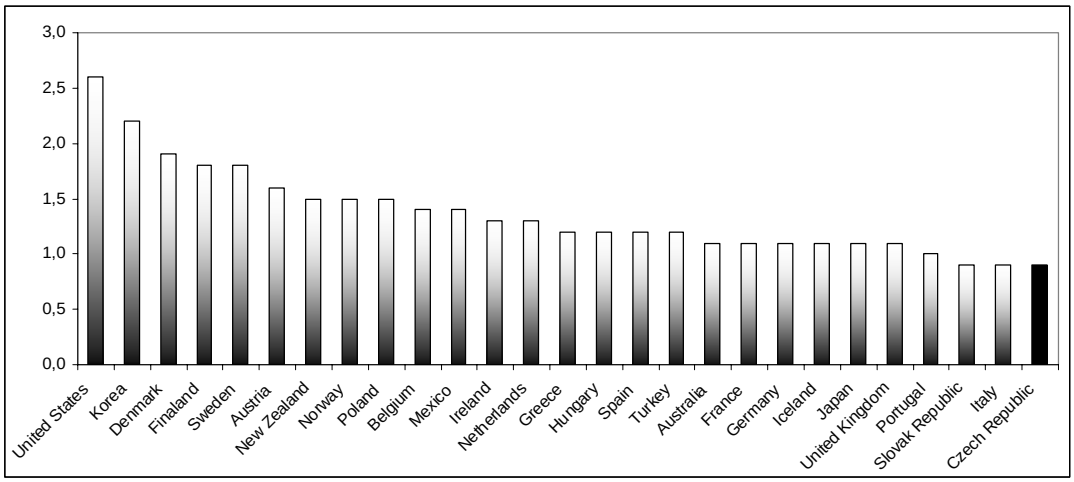
Moreover, just 0.1%[29] of GDP comes from private sources (OECD average: 0.8%, UK: 0.3% of GDP), which effectively makes the Czech government the sole entity providing finance for higher education. This is an outcome of the Czech government's perception of higher education, which prevents a private participation on higher education costs.

The information about expenditure per student is not more optimistic either. Unfortunately, the total expenditure has not been able to keep abreast of increasing number of students. The result is that the Czech Republic has

[28] Education at Glance 2005, table B2.1b, page 185.
[29] Education at Glance 2005, table B2.1c, page 186.

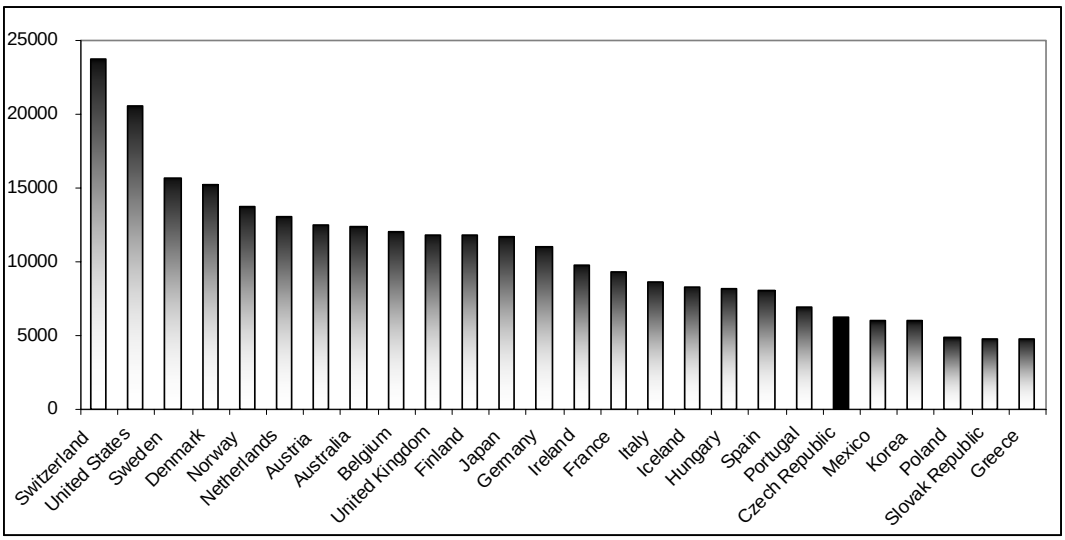
one of the lowest expenditures per student compared to other OECD countries (only Greece, Korea and Mexico, Poland and the Slovak Republic invest even less per student). OECD average is 10 655 US Dollars (in terms of PPP) per student while in the Czech Republic it is only 6 236 US Dollars per student.

Chart 4.2: Expenditure on Tertiary Education Institutions as a Percentage of GDP (2002)



Source: Education at Glance 2005

Chart 4.3: Annual Expenditure on Tertiary Educational Institution per Student (2002, in equivalent US dollars converted using PPPs for GDPs)



Source: Education at Glance 2005

To conclude, despite proclamations by the Czech government about the importance of human capital for economic growth, the numbers show a significant underinvestment in the sector. To see what changes are needed, let me continue with the introduction of the Czech higher education funding system.

4.2 How is the Czech System Funded?

In the Czech Republic the Higher Education Act states that a public higher education institution is entitled to a state subsidy, with limits defining what this subsidy may be used for. The Act does not allow public institutions to charge any tuition fees. Exceptions include:

- Programmes taught in foreign languages.
- B.A. or M.A. graduates willing to study another B.A. or M.A. programme (if it is not the consequential or parallel programme).
- Cases where standard length duration of study was exceeded by the student by more than one year. If a student's study exceeds the standard length of the bachelor or a master study programme by more than one year, under the Act a public higher education institution sets a fee to be paid for each commenced month of study. It is anticipated that this measure will motivate students to complete their studies in due time and vacate the place for another prospective student. This should reduce the average time taken for a student to graduate and lower the abuse of the system.

The lump sum of state money for a particular institution is set on the basis of teaching and research performance. The main part of the budget for teaching is derived from the volume of teaching activity, and is calculated as a product of the normative number of students of a particular higher education

institution and the normative (cost of study) of a study programme (see the box 4.3). It is anticipated that this part of the teaching budget will continue to be the major component of funding several years to come.

The other part, which should continuously increase, is based on a contract depending on the harmony/correspondence between the institutional plan and the state plan. Here universities and other higher education institutions are expected to compete for the government money by coming up with projects with goals compatible with the government's research policy.

Only a small part of the teaching budget is allocated based on non-normative rules.

Box 4.1: Calculation of the Normative Part of Universities' Budgets

In the Czech Republic all fields of study are divided into seven groups, where each group has assigned the index reflecting its relative cost intensity (see the following table). As the ministry of education sets the indices flexibility is limited. The system is very rigid as some of the fields have to compromise when the budget for the others should increase.

Law, economics, history and social sciences	*1*
Pedagogy, translation	*1,2*
Technical fields, Sports	*1,65*
Medical and pharmaceutical specialisation	*1,25*
Chemistry technology, mathematics and physics, fields of nuclear engineering	*2,8*
Veterinary science, fine arts and dentistry	*3,5*
Art	*5,9*

The total budget is then distributed according to the number of respective students according to the following equation:

$$TBU = \sum_{i=1}^{F} SF * R * (\frac{TBAU}{S * R}) \text{, where}$$

TBU…total university budget
SF… number of students in the specific field
R…respective index
TBAU…total budget for all universities
S…number of all students
F…number of fields at university

Under the Act private higher education institutions are obliged to ensure funding for their activities. The Czech Ministry of Education may provide such an institution with a subsidy only in case that it acts as a non-profit institution. Similar criteria as in the case of public higher education institutions are used to determine the level of the subsidy in such a case.

Box 4.2: Funds available to the Czech Students

Funding available from

1) Public institutions

Universities provide means-tested grants for students with low-income backgrounds. Students from families with income lower than 1.1times the subsistence minimum should receive a grant of 1 600 CZK/month (Table 4.1 provides information about students' spending) in 2005/2006 for 10 months of the year. Government will set the amount of resources for grant every year according to the total available.

Students can apply for an accommodation subsidy except for cases where:

1) Students live and study in the same region,

2) Student who, for whatever reason, already finished his/her studies and begins to study again

The Ministry also offers merit scholarships but they are insignificant in amount and number in context of HE funding. The regime of their distribution is left up to the faculty/university.

Maintenance or other forms of loans are not available.

2) Private institutions

Private institutions such as (saving) banks offer loans with lower interest rates for students. The purpose of spending the borrowed money is not regulated. The time of repaying the loan is postponed till the student finishes his/her studies.

Although a number of private colleges and universities operate in the country and students are expected to cover their non-tuition expenses even when pursuing their degrees at public universities, the government does not provide any loans. As for private financial institutions just one bank provides

student loans in maximum of CZK 300 000 which (if used for maintenance expenses) means CZK 5 000/month. According to table 4.1 this sum would be relatively sufficient. But the problem is a mortgage-type character of this loan as it was discussed earlier.

Table 4.1: Average Costs per Month According to Departments

	CZK
Law Faculties	5 000
Humanistic Faculties	4 760
Economic Faculties	4 530
Pedagogical Faculties	4 280
Agricultural Faculties	4 000
Medical Faculty	3 720
Technical Faculties	3 630
Faculties of Natural Science	3 180

Source: Kolik stojí český vysokoškolák? (2006)[30]

There are new means-tested grants in the system. They were implemented in January 2006 and will help c. 5% of all students (13 000 students out of c. 260 000 total). Such grants would be welcome by many more students but the problem is in the fiscal stress again.

Beginning in the academic year 2005/2006, almost every public university student is entitled to an accommodation subsidy that was originally given to dormitories. The impact of the change is that dormitories are going to increase their fees reflecting the lesser amount received from universities and also because students rent and share apartments instead of opting to stay in a dormitory. Thus, market mechanisms were introduced to student accommodation. Although the amount of resources earmarked for this purpose has not changed, the range of entitled students has widened. But because of the overall shortage of resources the subsidies are not big enough to eliminate

[30] Data overtaken from the Centre for Higher Education Studies, www.csvs.cz

financial barriers for relatively poor prospective students. It might be even more efficient, if they were of an income contingent loan character. Unfortunately, the two conditions implemented (see the box 4.2) create inequality that erodes the reform that is otherwise heading in the correct direction.

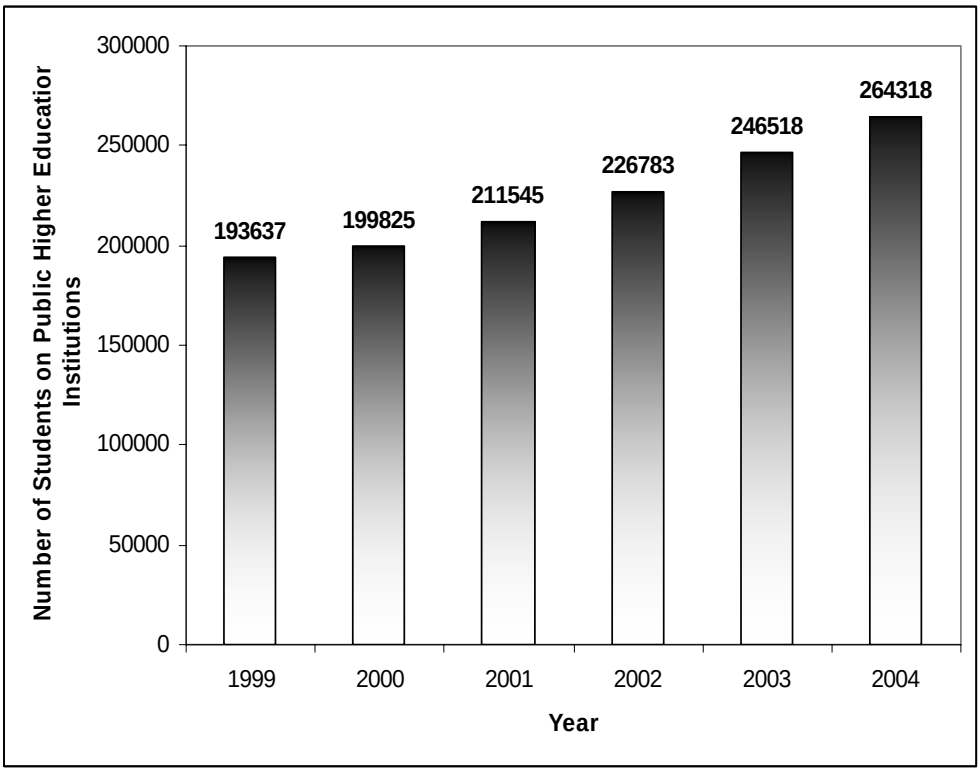
Further distribution of grants is in hands of universities and faculties themselves. They are free to set up their own internal directions in this context. Most often they provide bursaries for excellent study performance.

4.3 Czech System vs. Desirable Characteristics

The number of higher education students in the Czech Republic has doubled since 1989[31] and in 2005 44,2 thousand students graduated.

Chart 4.4: Numbers of Students Attending Public Higher Education Institutions

[31] Úřad pro informace ve vzdělávání (2005)



Source: MŠMT

Despite statistically captured improvements in the Czech republic presented in literature rate of positive change in the tertiary sector is presented as insufficient. There are fewer opportunities for young people compared to other OECD countries. On one hand, the structure of the Czech education develops but on the other hand changes are happening too slowly for serious catch-up to OECD levels to happen. According to Education at Glance 2005 there are only 12% of people between 25 and 34 years of age who attained the tertiary education, compared to 33% in case of the UK. The OECD country mean is 29%[32], more than double that of the Czech Republic. Participation rate among 20 year olds 28 %[33] in 2002, which is under OECD average (30%). The Czech Republic is also a long way behind the UK where 35% of 20 years old population participates in higher education. With these results the Czech Republic falls in the bottom of the list of developed countries.

[32] Education at Glance 2005, table A1.3a, page 37.
[33] Table C1.3: Net enrolment rates, by level of education in public and private institutions, Education at Glance 2004.

Insufficient investments in higher education constitute the major reason for this low participation as was discussed at the beginning of chapter 4. This lack of public resources and mainly non-existence of private participation result in lower system capacity and subsequently lower economic growth. Although the government increases public spending on higher education each year, the demand for higher education by far and continuously exceeds its supply. Every year, *"...over 40 % of all applicants to colleges and universities fail the entrance exams. In fact, approximately 11 per cent of applicants failed to enter a college or university at least five times previously.*[34] Some of them might even fulfil all requirements determined by the university but were not accepted because of capacity reasons. This information shows that there is not a lack of interest among young people in higher education but that there exists a barrier for those who would like to study and do fulfil the intellectual requirements.

Moreover, the lack of invested resources creates another inefficiency. It is common that prospective students keep applying to a number of universities so that they increase the probability of being accepted. The number of universities that one can apply for is not restricted. There are number of students who end up in their "second" or "third best solutions (universities)" where they spend just (half) a year before realising they would rather leave. The public money is inefficiently spent in these cases, as credits from courses taken during the opening periods are not transferred once the student is accepted to the first-best choice (with the exception of doing the same specialisation at another school). The problem is that there are no mechanisms that would lead students to think about going or not going to their "non-first best solution university", they are rather motivated to go to some university as the health insurance, for example, is covered by the state for the time of the studies. Empirical evidence supports this argument by showing that the survival rate in the Czech Republic reaches only 61 %[35], which is again one of

[34] ISEA(2005)
[35] Education at Glance 2005

the lowest values among OECD countries (OECD average is 70 %, the UK stands at 83 %).

Second, the requirement of a system's adaptability to labour market changes was identified to be the desirable characteristic. This is very difficult to measure. In general, there exist no transmission mechanisms that would relay information on course attractiveness to the prospective students. One can argue that there is some notion about the course benefits (wages, social status) of different kinds of employment. But in reality such general and sufficient information is not available to the public. And in their 18 years of age high school graduates are not informed as much as older and more experienced people. And if they are, they do not probably know which university to choose to get their dream job. As a consequence, a number of students decide about the university on the basis of the entrance exams - their character and difficulty – which cannot be considered to be a behaviour reflecting any labour market changes.

Moreover, adaptability of the system is also connected with the transmission mechanism that reflects employer demand into education structure of graduates. It is actually not possible for an applicant to assess if a specific course offers market usable skills and abilities. Because of the fact that universities themselves are not motivated to find out either there is a question about connection between university courses curricula and labour market requirements. It would help if rankings of universities (according to created indexes) were published reflecting their quality and attractiveness for the labour market. Those indexes should be created to reflect the economy needs. More on these needs can be derived from Fišera (2005). Fišera predicts decline of some fields of productions and services in the Czech Republic as a consequence of international competition, total dominance of English language in international business relations or further improvements in ICT and their even more extensive use in the following decade.

Low adaptability of the Czech system might cause higher unemployment rates among graduates. So far however Czech higher education

graduates suffer from the lowest rate of unemployment[36] within the European Union.

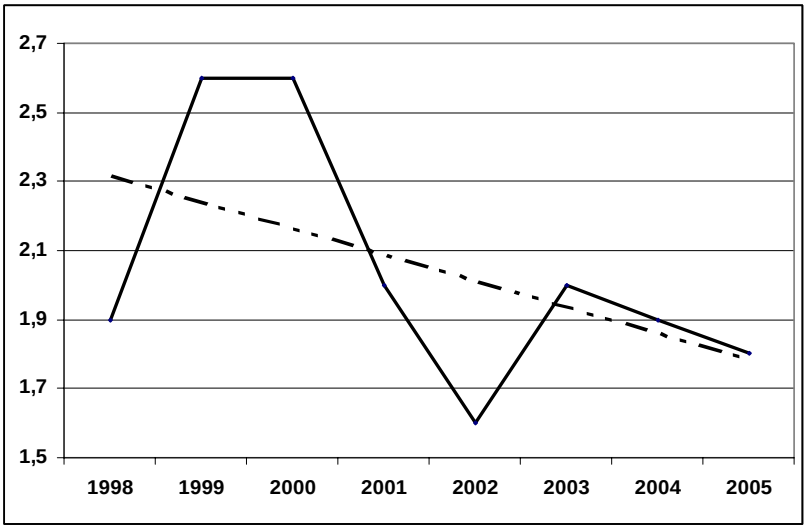
Table 4.2: Tertiary Education Graduates' Unemployment

	1998	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Czech Republic	1.9	2.6	2.6	2.0	1.6	2.0	1.9	1.8
EU15	-	-	4.4	3.9	4.3	4.6	4.8	4.6
EU25	6.9	5.2	4.4	3.9	4.3	4.6	4.8	4.7

Source:Eurostat

The unemployment trend among Czech graduates is shown in table 4.4 Despite theoretical predictions based on system adaptability, unemployment is falling, which suggests that more factors than adaptability contribute to graduate unemployment rates. Such factors could include increased ability of students to make use of their knowledge. This would suggest that not only factual knowledge but also other skills influence the graduates' ability to get jobs.

Chart 4.5: Tertiary Education Graduates' Unemployment – Czech Republic



[36] Eurostat

Source: Eurostat

Third, pressure on quality of education was identified to be another desirable characteristic. The equation in box 4.3 shows that the quality of education provided is not reflected in the distribution of resources. This means that the universities are not in any way motivated to improve the quality of their services. And that is why simple increase in funding does not solve the issues of the Czech system.

On the other hand, one has to admit that the Czech higher education is famous for its excellence in fields of technology and biology as these are a part of a country's tradition. But it is known that the Czech students lack the so called soft skills although these have already been demanded by employers for a long time. Šmídová, Hamanová (2005) found out that *"experts from out of the education sector criticise the quality of universities. The quality of some pedagogues is not sufficient, very often they are rigid and just defend their existence. The higher education system is not sufficient in the Czech Republic; firstly it does not reflect labour market needs and produces unemployable graduates."* It is true that there are no globally-known universities in the Czech Republic. It means that the education quality deserves attention and its development should be perceived as a reason for a reform.

Further, we are getting to the question of access and its barriers. According to the recently published work of Matějů and Straková (2006) *"...social and economic inequalities significantly determine applicants' chances of getting into a college or university. While applicants whose parents do not have a secondary-school diploma have only 37 percent chance of getting into college, applicants whose parents have a university education have a 61 percent chance. Applicants from low-income families have much worse chance of getting into college than applications from wealthier households. University students from rich households ... constitute over 40 percent of the student population in the lucrative fields of the natural sciences, medicine, arts, and law. Students from poorer households dominate in the*

field of agriculture, which is arguably provides the least chance for economic advancement later in the life. Lastly, though this study did not focus on ethnicity, anyone wandering through university classrooms ...would be looking long and hard to find any Romani students."[37] Actually, instead of closing the gap between poor and rich the Czech higher education contributes to its widening.

The question is why the Czech system fails at this one of its roles. It has already been mentioned that the lack of resources in the Czech system represents one of the barrier to access. Paradoxically free higher education creates another barrier. There is a lack of maintenance loans which causes barrier for prospective students coming from disadvantaged backgrounds.

Lack of finance is one of the problems most cited by university students. Over 90% of students look for employment opportunities during studies when pursuing his/her M.A[38]. This too high overall workload might be endangering their academic performance and thus reduce the private as well as public benefits coming from education. And again, it makes it a threat for maximizing the Czech economic performance.

The need to earn money for living endangers not only the academic performance but also leads to the prolonging of the periods spent at universities (for example, only 7% of students finish their studies in the prescribed time)[39]. In the Czech system students are charged for every year exceeding the prescribed study duration by more than one year (still without providing any loans or grants), which puts them under even more stress.

As regards cost efficiency of the Czech higher education institutions, there are no benchmarks in the system. It has already been mentioned, that the formula-based allocation of resources has little to do with cost efficiency. On the other hand, universities seem to build up goodwill in the higher education market. This however may be caused by personal qualities of university

[37] Smith (2006)
[38] Matějů (2005)
[39] Matějů (2005)

leadership. (Policy makers should make sure that after reform motivation within the system does not rest on the presence of specific individuals).

4.4 Czech Funding System vs. Economic Efficiency

Last but not least, the Schleicher's desirable characteristic of cost sharing is not fulfilled in the Czech Republic. As the Czech system does not include tuition fees in any form, it is inefficient as it leads to over-investment in higher education given the number of students. The Czech Republic should introduce tuition fees and accompany them with income contingent loans that are able to avoid the identified market failure.

There is another reason for the introduction of tuition fees besides efficiency - that of equity. In the Czech Republic people earning the same salaries contribute the same amounts to the system, no matter if they have obtained higher education or not.

There is no other need to explain if the Czech Republic should reform its higher education funding system if we look at the whole chapter four. Chapter 5 deals with the English system and assesses answer whether it is a suitable candidate for replacing the Czech system and possible improvements. First, major characteristics are described and second information about systems' performance after the reform is discussed.

5. Higher Education Funding in England[40]

In the introduction the voices appearing to call for higher education funding were mentioned In the Czech Republic such a transition to the new funding system would mean a bigger reform than in the UK. The biggest

[40] Here the system that is going to be implemented from September 2006 is considered.

difference includes the step from completely free higher education in case of the Czech Republic compared to repayment reform of tuition fees in case of England.

The English motivation to change the current system of up-front tuition fees was described in the government's White Paper (2003) in following words:

„The challenge from other countries is growing. Higher education is under pressure, and at risk of decline. We face hard choices on funding, quality and management:

- *Higher education must expand to meet rising skill needs.*
- *The social class gap among those entering university remains too wide.*
- *Many of our economic competitors invest more in higher education.*
- *Universities are struggling to employ the best academics.*
- *Funding per student fell 36 per cent between 1989 and 1997.*
- *The investment backlog in teaching and research facilities is estimated at £8 billion.*
- *Universities need stronger links with business and economy. "*

The incentives are very much comparable with the desired characteristics of the funding system as stated earlier in this paper. Whether or not the English system fulfils there criteria will be assessed in chapter five. First however, the major characteristics of the English system will be tested from the economic point of view so that conclusions about a room for improvement can be made.

5.1 Expenditure on Higher Education

According to the previous chapter, the UK devotes a bigger share of its GDP to higher education than the Czech Republic. For more, see chapter 4.1. After the reform is implemented the share is going to rise again as the tuition fees will increase as well as government's spending per course and per student. Average government's spending per course will rise from approximately £6 000 to £7 600 per year and per student[41]. The tuition fee will rise from c. £ 1 200 up to £3 000.

5.2 Description of the English System of Higher Education Funding

England is after Australia, New Zealand, South Africa, USA, Ghana and Chile the seventh country that decided to implement a system based on income contingent loans[42]. English universities (as well as universities in Wales and Northern Ireland) are free to introduce variable tuition fees up to £3 000 for full time undergraduates. The freedom to vary fees was introduced both for subjects and courses as well. The cap of £3 000 will be inflation-indexed. According to D. Malcolm from National Union of Students the government has promised not to increase tuition until 2010.

The major change is that the tuition fees will not have to be paid upfront. Instead students will be able to defer their payments of their tuition fees until they finish higher education and start to earn more than £15 000 per year. *„The means for achieving this is a separate student loan, which will cover the full balance of the fees. This will not be means-tested and will be added to any student loans taken out to help pay for living costs, and all loans are then repaid on the same basis. The fee loan will have to be taken in the year of study, and as such interest will be applied from that point onwards, although the rate is tied to the Retail Price Index (currently 2.6 per cent) and*

[41] Fitzsimons (2006)

as such is not a commercial rate. However, if a student wishes to pay all or part of the fee without using a loan, they will have to do so upfront; payment cannot be delayed past the year of study."[43]

The English system also involves so called forgiveness which means that the remainder of all loans is forgiven to every graduate after 25 years from graduation.

The British government was aware of the fact that the upfront tuition fees represent the biggest barrier for prospective students. That is why it provides means-tested grants and loans to students. They include:

- Means-tested grants for students coming from poor backgrounds
- Loans up to £2 700 dedicated to cover tuition fees. If a university decides to charge more than £2 700 it has to accompany them by the loan of a minimal amount of £300.
- Maintenance loans up to £3 000. The amount provided depends on the place of studies and the fact is a student is living at home or not.

All loans provided have income contingent repayment scheme. The income contingent character of the loans is crucial for the English system. The English maintenance loans also fulfil the requirement to differ according to students needs. The information about him or her living at home or out of home, living in London or out of London etc. are reflected in the size of provided loans.

Graduates are obliged to begin their repayments once their salary exceeds £13 900 (in 2006 prices)[44]. Then 9 % is deducted from the graduates' incomes until they repay the loan or until it is forgiven. There is a progression in the system - a graduate earning less than £13 900 per year is subject to no repayments.

What regards the interest rate, its size is set to zero and the debt is just increased according to inflation (Consumer Price Index is used) every year.

[43] National Union of Students (2006)
[44] Source: Fitzsimons (2006)

For all students there exists an option to pay tuition fees upfront and loans can be repaid ahead of time.

5.3 The English System vs. Desirable Characteristics

After introducing the English system its confrontation with the desirable characteristics follows to find out whether the English system fulfils the desirable characteristics. Economic efficiency of the system is discussed in chapter six.

5.3.1 Access

In the Czech Republic the transition to tuition fees would cause many to claim that tuition fees restrict access for poor prospective students. However, the requirement of opening up the universities to more students by adding more resources and by eliminating barriers will be met after the reform in 2006 in England. It will happen as a consequence of increased tuition fees and implementation of the income contingent loan scheme. As it has already been said a system based on income contingent loans does not create any barriers to students as their economic background no longer impacts their ability to study at university.

However, maintenance costs could become the limiting factor. Although English government provides income contingent loans, problems could arise in case these loans were insufficiently low and thus did not cover maintenance costs. The issue of maintenance loans has therefore to be taken into account when designing the actual model for the Czech Republic.

The new system helps the relatively poor prospective students more than those coming from relatively richer families according to Institute of Fiscal Studies. *"…the poorest students would gain the most under Labour's scheme and the least under the Liberal Democrats"*[45]. It is worth noting that Liberal Democrats, in a simplified way, propose a system with no tuition fees, maintenance loans and universities to be financed from increased taxes. This suggests that the poor Czech students would be better off under the English system, according to Institute for Fiscal Studies because it is even worse than the proposal of Liberal Democrats (the Czech system does not include any maintenance loans).

The empirical evidence about an impact of the English reform on number of students and their participation rate is not available yet because the reform is going to be kicked off in September 2006. But the Australian data can be used to some extend because the English system is similar to Australian Higher Education Contribution Scheme (HECS). Chapman (2005) provides information about the research done on the impact of HECS and states that:

- *"First, before the introduction of HECS, there was a clear relationship between enrolment in higher education and measures of family wealth…*
- *…Second, the data show that higher education participation rates did not fall for students from any family wealth group after the introduction of HECS. Even so, the increase in the proportion of young people attending university was clearly larger for those from the middle and highest wealth groups.*
- *Third, the large changes to HECS introduced in 1997 had no adverse effects on participation for members of any wealth group; indeed, there were large higher education participation increases for those from all family wealth backgrounds."*

[45] Dearden, Fitzsimons And Goodman (2005), pp.1

However, the recruitment from low socio-economic groups has not changed although not increased as required. The share is 15 % at higher education to 25 % in the society. But *"...evidence suggests this is not due to a fear of debt, but rather to other factors."* This is supported by Stuart, Layer and Evans (2005), too when they say that "*the relatively disadvantaged in Australia were less likely to attend university even when there were no student fees…"*. The reason could have a form of inequalities in earlier stages of education.

5.3.2 Adaptability

Adaptability to labour market demand and its changes was named to be another desirable characteristic. According to Vingoles (2006) the cap is set too low in England. Malcolm (2006) adds that only ten universities plan to charge less than the cap. Because the cap on fees is too low, and causes the fees to be almost uniform across the market, education price does not fully reflect the future income earned by graduates. Nothing links employment opportunity and quality to course price. Rankings about the personal benefits gained in different universities in different courses and programmes are not available. Thus, there is no mechanism providing information to prospective students about the attractiveness of different jobs. This means that the adaptability of the higher education funding system is rather poor because prospective students make their decisions based on imperfect information. This might lead to inefficient spending of public resources, instead of maximization of economic growth.

In a world with tuition fees without a cap, increased demand for a profession on the labour market would lead to an increase in wages. If the government gathered and published this information, such increase in wages would lead to higher demand for education in that field. Once universities would be free to charge higher tuition fees, this would provide motivation to

open more courses and offering that field of study to more students. An inverse mechanism would cause fewer courses to be offered upon saturation of the labour market.

5.3.3 Quality

Moving on to quality of higher education, this is also constrained by the existing cap. This problem has already been analysed in the chapter on economic efficiency and it was concluded that a cap on tuition fees (if not set on the level of the equilibrium price connected with the most expensive course) represents a price ceiling. Such a price ceiling is then connected with quality constraints also in cases when students would, if charged, be willing to pay more than the cap.

One can argue that there is a public supervision on quality and it is summarised in reports every year. But the problem is that these reports do not include any information about private benefits of graduates at particular courses or universities and therefore there is no tool to measure quality for the students. If the salaries and employment rates were published and rankings created (in context of tuition fees), it would be clear, which university provides education of what quality. But the current reports are more designed for governments to observe if their targets (e.g. minority participation) are met.

5.3.4 Cost Efficiency

Cost efficient universities can devote greater share of their resources to new research and attraction of top staff. In a system with tuition fees this is reflected in higher demand on the side of students and subsequently higher tuition fees to be charged.

Once tuition fees are absent, or a cap is imposed upon them, the motivation circle is broken. Universities still can aspire to produce more and better research, but as this is not reflected in higher income, prestige is the only one motivation factor left. Following this argument, systems with no tuition fees and those with caps provide the same, much smaller, motivation for cost efficiency.

5.3.5 Participation on Costs

In the English system the last "Schleicher's" characteristics of the modern system is fulfilled. More about private participation on costs will be said in the following chapter, which tries to assess the English system from the economic efficiency point of view.

To conclude this chapter it is worth mentioning that the English reform is not as ideal as it could seem the first sight. If the Czech Republic decides to implement the English system it should not forget about the lessons learnt in this chapter and should avoid a poor policy transfer. The reason is inappropriate setting of some system's parts leading to suboptimal solution in human capital utilisation.

5.4 English System and Economic Efficiency

This chapter is going to deal with particular features of the English system in terms of efficiency to complete the picture of the English system.

5.4.1 Tuition fees

The UK government has decided to implement variable tuition fees with a cap imposed. In this context, the "English" cap is believed to be set too low to allow competition.[46] Besides its impact on quality the result is a market that cannot make beneficial use of price signals.

This argument is backed by D. Malcolm (2006) who has found out that there will be just ten universities charging less than £3 000. As a result the system is expected to suffer from problems typical for systems with flat fees. These problems were analysed earlier in this thesis.

5.4.2 Repayments

In the English system, graduates are asked to repay 9% of their annual income once they earn more than the threshold either until they repay the full loan or until their debt is forgiven. There is zero nominal interest rate. I have not been provided with clear information on how these two variables were developed and that is why this process is not discussed.

According to Fitzsimons (2005) and Vignoles (2005) no information is available on why instalments were set at 9%. The reasons could vary from adjusting this rate so that the model would behave in a certain way to the fact that number 9 represents the highest single figure and looks better than any double figure. Setting just one repayment percentage is also easier for students to understand. But on the other hand the single repayment rate is unfair from the economic point of view as it does not reflect the decreasing marginal benefit of money. One could argue that diversification would motivate people to cheat on incomes to avoid higher deductions as it is the with tax optimization. But here the motivation of graduates is different from paying taxes as they want to decrease their indebtedness as soon as possible. The debt

[46] Fitzsimon (2006) and Vignoles (2006)

influences the conditions under which they can take other loans and mortgages. According to my opinion, that is why the cheating following from diversified rates needs not be such a problem in case of tuition fee repayments.

What regards the threshold, it is not anyhow connected either with minimum or average wage, some benefits etc. According to the author, it would make sense if the threshold was set on the level of high school graduate's average salary so that it was clear that graduates are paying for the benefits obtained by attending university. According to Vignoles (2005) this connection does not exist in reality. As a result graduates might start to repay earlier than they benefit from the higher education. As a result graduates may be financially strained at times when their needs are highest – when thy need to settle, buy a car or set up a family.

The English system waives the remainder of the loan (both for tuition fees as well as for maintenance) after 25 years. This forgiveness substantially eliminates the students' risk regarding investment in higher education. It would make sense for repayments to be distributed over the entire (productive) life because the benefits from education are gained during this period. But it is not necessary and the loan can be repaid in every moment in time to avoid interest rate. But as there is zero nominal interest rate in the English system, the option to repay in every moment of time is friendlier for graduates. They would like to get rid of their loans as soon as possible because it influences the conditions of their mortgages or other bank loans.

In the theoretical part of this thesis it was concluded that loan forgiveness needs to be accompanied by reflecting it to interest rate. But in the English system the interest rate is set on the zero level. This makes the system irresponsive to universities' overpricing tendencies. In the end, taxpayers end up paying inefficiently high price for positive externalities because the tool providing information about the incorrect evaluation is not available.

The UK government would do better if it introduces market interest rate if it wishes to maintain forgiveness. Without an efficient interest rate the system would fail to assess the courses according to their benefits.

5.4.3 Additional Government Support – Grants, Loans and Interest Subsidies

UK government funds the higher education system through three channels. One is represented by grants to universities distributed according to a formula. These resources are supposed to cover the higher education costs related to social benefits (externalities). The problem is the government's inability to measure externalities. Because of that it is difficult for the system to reach equilibrium.

Apart from this, government provides grants to those students coming from poor backgrounds and subsidises the interest rate so that there is zero nominal interest rate for both - students as well as graduates. Altogether with the defaulted payments, the government support covers approximately 50 % of total costs of higher education[47] (forgiven debts from maintenance loans are included also). This means that the government perceives higher education benefits to be equally divided between graduates and the society. Unambiguous estimations of the size of externalities from higher education in the UK are not available and therefore there is no benchmark to assess the level of government involvement.

It is obvious however that if there is a mismatch and the government over-finances higher education (or under-finances), inefficiencies occur r (again, going back to the chart 3.1, the mismatches would be between Q' and Q* or Q* and Q'').

Mentioning the interest rate, the UK government agreed to set it on zero level. This means that government is subsidizing the total costs of loans – the opportunity costs of these resources as well as the government costs of borrowing and so provides blanket subsidies for the students. In general, interest subsidies are considered to be an expensive mean of subsidizing

[47] Fitzsimons (2006)

higher education according to Barr (2005), who adds: *"This policy… does not achieve a single desirable objective. The subsidy is enormously expensive, the resulting shortage of funds being inimical both to quality and access. This point is not fanciful. The communist experience demonstrates that subsidies can easily lead to shortages; in this case, the fiscal cost of the interest subsidy results in loans that are too small—which harms access—and simultaneously crowds out taxpayer support for universities—which harms quality. To make matters worse, interest subsidies are deeply regressive. They do not help students (graduates make repayments, not students). They give relatively little help to low-earning graduates, since unpaid debt is eventually forgiven. They do not help high-earning graduates early in their careers—with income-contingent loans, monthly repayments depend only on earnings; thus interest rates have no effect on monthly repayments, but only on the duration of the loan. Accordingly, the major beneficiaries are successful professionals in mid career, whose loan repayments stop earlier because of the subsidy than would otherwise be the case. This is not the target group that education policymakers had in mind. In contrast, targeted interest subsidies are useful."*[48] Moreover, with zero interest rate government gives up a tool that brings the market to the equilibrium in case a course is overpriced (when tuition fee does not reflect its future benefits). In the end, taxpayers will pay for the mistake that was artificially created by the government. More on this issue is to be found in the theoretical part discussing loan forgiveness.

According to Vignoles (2006) and Fitzsimons (2006) discussions about market interest rate have not really taken place in the UK. According to Vignoles (2006), the reason could be the system's sustainability and there was no reason to discuss the option of privatizing the debt.[49] It was a mistake as these subsidies hinder the human capital development and thus economic growth. It is worth noting that the government does not ask for any interest rate in case of maintenance loans either.

[48] Barr (2005)
[49] Vignoles (2006)

Grants are provided in England. They are means-tested as it is required by the conclusions in the theoretical part.

The "English" maintenance loans are designed to reflect such facts as study location; living at home and seem to target the resources to the most needed areas. According to Malcolm (2006) the maintenance loans are too low for living on one side but they are big enough according to the government on the other side. The UK government should observe the situation after the reform is launched and be ready to increase the resources for maintenance loans so that they do not create a barrier for prospective students.

6. International Experience

A number of areas where the Czech government could improve the English system in a case that it agrees on its implementation have been identified. This last chapter is supposed to give some inspiration for settings where the English system fails to meet the set criteria. The specifics of countries' systems based on income contingent loans are pointed out (for their overview see Appendix III.) and with help of identified characteristics it is analysed if they were an option for the Czech system.

Although there are many countries with tuition fees in higher education, there are only a small number of those who have accompanied this system with income contingent loans. For inspiration it is useful to look at six countries, which include USA (including the Yale experience), Sweden, Australia, New Zealand, South Africa, Chile and Ghana. There are also countries that have just begun implementation of a system based on income contingent loans. These are Ethiopia, Namibia, Indonesia, Rwanda, The Philippines and Mexico. Because it is too early to make any assessments about these systems they are not a part of this chapter.

Unfortunately, there is a lack of empirical evidence from countries where the ICL system is already in operation. Although the Australian system is the most empirically analyzed, the others may be contrasted against the criteria as well.

6.1.1 Australia

The Australian government introduced a higher education funding system in 1989. During its history the Australian system has gone through a number of changes (for details see Appendix III.). The current Australian specifics include income brackets; discount related to upfront payments and fixed but not unified tuition fees.

Currently, there are nine income brackets in Australia ranging from 4 % to 8 % (compared single repayment rate of 9% in the UK). It has already been said that the diversification makes sense from the economic point of view as the money's marginal benefit is increasing. On the other hand the system might be accused to be more complicated and thus more expensive. The Australian system is one of the cheapest ones with its annual administration costs being just 2-3% of the collected payments. Certainly Czech government should consider Australian experience system when designing future funding systems.

Second, there is a 25 % discount for students paying upfront. According to Chapman (2005) *"...the implications of the 25% discount are not necessarily what they seem. Those opting to defer payment and repay the debt after graduation receive interest rate subsidies equal to the real rate of interest for each year the debt remains unpaid. A consequence is that students who take the pay-later option will receive greater subsidies the longer it takes to repay the debt (that is, the lower their future income). The 'discount'*

effectively introduces a blunt form of a real rate of interest." [50] In his statement there is nothing to disagree with on one hand. On the perception side, courses will appear more costly to those who cannot afford to pay upfront. Obviously, this is a very questionable result as it can be perceived as favouritism of the students coming from socially stronger backgrounds.

One could argue that a certain discount would only lead to a new equilibrium. Discounted price would cause an increased demand for higher education, which would lead to increased number of graduates and thus decrease their wages. Wages would settle on the level reflecting the discounted tuition fees. That is all true but there is a problem if we look at the whole situation from the taxpayers' (government's) point of view. The discount would simply increase the costs of externalities only because a student decides to pay his or her tuition upfront. Australian government uses this discount as a motivation for students not to defer their tuition fees so that it does not have to give out resources to cover the interest subsidies (interest rate is set on zero level in Australia). In this way, the Australian government only tries to retrieve the error made by subsidizing the interest rate. As this situation is inefficient the Czech policymakers should avoid it.

Third Australian specific regards tuition fees' character. Tuition fees are set fixed in Australia; however they are not unified but differ across fields of study. Although the Australian government tries to reflect course attractiveness, it has given up reflecting the quality differences. Moreover, government lacks information not only to differentiate for quality but also to be able to set tuition fees across subjects. And as it was said earlier by the Barr's quotation, fixed tuition fees are not a good idea to introduce as they bear the negatives of both – price caps and price floors – as their were identified earlier. It means that the Czech Republic would do better allowing tuition fees to vary.

These three specifics of the Australian system showed what steps to avoid when designing a higher education funding reform. Only the income

[50] Chapman (2005), pp. 60.

brackets missing in the English system are worth implementing, discounts and fixed fees should be forgotten.

6.1.2 New Zealand

A conviction that students clearly benefit individually from completing tertiary education institutions was the reason for introducing tuition fees in New Zealand. The income contingent form of repayment was put into place in 1991. Since then, the tuition fees have substantially grown. But still, according to OECD, New Zealand is one of the only three OECD countries where both the participation rates in tertiary education and completion rates are above OECD average.[51]

The New Zealand system is designed in a way very similar to Australian HECS (income contingent loans, tax agency used to collect repayments, progressive percentage rate, and income threshold of repayment) but some specifics remain.

The major lesson to learn from the New Zealand experience is connected to interest rate setting. New Zealand system originally rested on market interest rate, which made it the only system resembling the market loan. But the debts' growth that students faced resulted in strong political pressure on the government. The result was the modification of the system in 2000 – there was no interest charged for the time students spent studying and some interest was charged after graduation which depended on the graduate's employment circumstances (weekly amount granted depends on residential and citizenship qualifications, age, location, marital status, dependent children as well as personal, spousal or parental income). As it is mentioned by Palacios (2004) *"this change* (the move away from the market interest rate) *is a step away from loans that can be financed using private capital."* In the end,

[51] Education at Glance 2005

the interest rate has been set at zero level since 2005. According to the theoretical background developed earlier, these steps were not in favour of economic efficiency of the system.

For the Czech policy makers this raises a question of gradual implementation of the system to avoid public misunderstanding although there would be costs associated due to temporary loss of economic efficiency. It might be a better solution than to create a refusing atmosphere in the society towards the system as a whole.

6.1.3 Sweden

In Sweden, a general system based on income contingent loans was implemented in 1989 after realising the system's problems with conventional type of loans.

Current Swedish higher education funding system is specific in a way that income contingent loans are only used to cover maintenance costs. The reason is that there are no tuition fees on Swedish universities[52], all the costs are covered by the state.

Although there is not enough evidence to make judgements about the system's success according to Chapman (2005) the information about the share of minorities in the student population is available. Harvey, Scott and Rayfield (2005) say that the proportion of ethnic minority students matches the share of these minorities in the population.

Sweden is the best rated among countries with income contingent loans from as far as participation and access is concerned. Advocates of tuition free systems could argue that it is thanks to free higher education and could use it

[52] Sweden is typical with even distribution of income end wealth (Guio, 2005), smaller personal benefits and therefore the absence of tuition fees can be assessed to be economically more well-founded than in the Czech Republic.

as an argument against tuition fees. But the truth is that the equalization of percentages is always a question of involving those who underplay their personal benefits (or greatest costs) from higher education. The Swedish evidence does not rebut the income contingent loan theory but actually affirms that some minorities may perceive their benefits from higher education to be so low that the government should end up covering the entire cost of their tertiary education. Such cost coverage serves to fix the information asymmetry, and does not constitute an argument against tuition fees.

Not all students however should have their entire costs covered. Although the Swedish system has its relatively good results as far as participation is concerned it results in is accompanied by misallocation of government's resources.

Although it would be better than the current system (the Czech system does not know maintenance loans) the Czech Republic should avoid implementing another „free" higher education system. A grant of the size equivalent to that of tuition fees should be considered only after making sure that all other barriers to access are removed. Only after that a grant equal to tuition fee can be considered to implement.

6.1.4 USA

Although it is not widely recognized USA has twice gone through income contingent loan experience. Both of these attempts to implement income contingent loans were unsuccessful and their presentation is provided mainly to show what steps should be avoided and why.

Yale Plan

The first of the US systems based on ICLs is recognized as Yale Plan and was introduced in 1972. The major characteristic of this system was that borrowers (students) were put into groups randomly and the responsibility with respect to the total repayment was shared within these groups. *"Individual repayments were not unlimited, however, with a cap being defined at 150 per cent of the borrower's loan. This then became a 'buy-out' option for former students wishing to discontinue in the program"*[53] This system involved a big portion of moral hazard from students causing inequity among group members. In reality, the richer graduates usually ended up repaying the unpaid debts of the other group members. And in the end, only those who did not expect to repay their liabilities were entering the system (presence of adverse selection). The unsuccessful performance was confirmed when initial defaults rates reached 15 %.

Second, universities were put into the role of collect agencies. This feature supported such a big default rate. Because education institutions are not suitable for colleting payments, this only worsened the Yale Plan's failure.

So, this type repayment mechanism, where the repayment responsibility was shared among group members was a blind alley in the income contingent loans' evolution.

"Clinton's" System

The Yale programme has not been the only USA's experience. In 1993 a system was adopted, in which students were given an option to defer some part of their repayment obligations and do it through income contingent loan programme. Rate was set up to 20 % of agreed income basis.

The idea to implement income contingent loans was born because in the traditional setup graduates avoided jobs with lower salaries (but presumably socially productive employment) because it caused them troubles with loan repayments. To the motivation of income contingent loans

[53] Palacios (2004)

implementation Chapman (2005) adds that "…*ICL was promoted in the US as a result of the perceived problems associated with the very high level of conventional loan repayments, which is certainly not the case with respect to the background to ICL introduction in Australia, New Zealand and the UK. In these countries, the regressivity of having a no-charge system, the importance of default protection in the repayment of loans, and the need for resources to allow expansion of higher education were the principal motivations for the introduction of ICL schemes."*

There are several lessons to learn as this USA experiment did not work. Specifically, Chapman (2005) points out the major anomalies. First set of difficulties was caused by poor design of the ICL scheme[54]. Second set of problems was caused by insufficient and incorrect explanation of the system to students. Two points are worth noting. First, according to the surveys done, just a very small portion of prospective beneficiaries (students) knew about the existence of ICL. Chapman (2005) mentions that more than two thirds said they had never heard of it and those who had heard did not always understand

[54] *"The first is that the option for students to convert their loans into an ICL did not cover borrowing obligations that could be sourced to their college of the government. This meant that a graduate with other loan repayments would have to repay 20 per cent of their income at the same time that they faced high additional loan obligations. That is, for some students choosing the part-ICL option would result in lower future disposable incomes than would have been the case with alternative borrowing choices.*
Second, the ICL scheme incorporated an adjustment of a debtor's income to take into account expenditure for necessities, and this was related to legislative assessments of poverty levels. Unfortunately, the adjustment to incomes was insensitive to household income, the implication being that married debtors in some circumstances faced a far higher burden than would be the case for the unmarried. That is, the scheme implicitly taxed marriage and thus was likely to place particular loan obligations on spouses who have no responsibility for the debt.
Third, the scheme had an unusual arrangement with respect to what is known as 'forgiveness'. That is, debtors who had not repaid their loans after 25 years were not obliged to repay their remaining obligations, a feature of other loan systems, known as forgiveness. However, for the US scheme the slate is not wiped clean, with the amount still owed after 25 years being treated as income to be taxed accordingly. This could mean for some ICL debtors that they would face loan repayments in the final year that were a very high proportion of (or in an extreme, even exceeding) actual income. This suggests that the US ICL scheme was not a repayment arrangement completely consistent with future capacity to repay." (Chapman, 2005), pp.39

it completely. Moreover, US government provided students with false information about the system's merits.[55]

The lessons to be learnt from these mistakes are that not only the system's design but again informed stakeholders are crucial for the system's success. The need of sufficient and understandable information would be even multiplied in case of the Czech Republic because the information must involve a certain persuasion about the system's benefits compared to zero tuition fee arrangement.

6.1.5 Republic of South Africa

The Republic of South Africa introduced its system based on income contingent loans in 1991 and called it the National Student Financial Aid Scheme (NSFAS). The motivation was to widen participation of non-white prospective students so that the social exclusion of non-white people was avoided. In another words, the incentives to change the system and base it on income contingent loans were different than the incentives in the UK, where the English system concentrates on minority but the African one on the majority inclusion. *"Resources are distributed via the universities, with preference going to prospective students who are both poor and academically able. That is, unlike other national schemes, the South African ICL involves means testing on the basis of family income at the point of entry to higher education."* [56]

In the South African system the collection of repayments is done by subtracting 3 - 8 % of income, which makes it (unlike the English one) similar

[55] "*For example, comparisons of the expected total repayments of alternative loan repayment streams were presented with an implicit discount rate of zero. This error implied that the ICL option was much more expensive than it was and, because the ICL repayment process would usually take more time than other options, it also suggested that it would cost more in total." (Chapman, 2005), pp.40*
[56] Chapman (2005), pp.35

to the Australian and New Zealand systems. Unlike in them there is an interest rate of 2 %.

A specific of the South African system is that graduates repay their debts directly to the lending institution (it is unclear if directly to the specific university or to the system generally); tax system is not involved in the process. Taxation system is used as a last resort to be use in case of those not maintaining expected debt repayments. Chapman (2005) notes that *"…it is unclear how much this adds to the administrative costs, but it would seem to suggest that collection would necessarily be relatively expensive with such an approach."*[57] Because of this ambiguous result, this mechanism is not recommended to the Czech policy makers.

As regards the cost of courses, unlike in England there are courses that are financed exclusively by the government and are therefore free for students. These include courses with the biggest positive externalities such as nursing, teacher training, and police training colleges. Although this seems reasonable at the first sight, such an exclusion of some courses is not needed from the income contingent mechanism's point of view. The reason is that fixing the price of a course could lead to inefficiencies described earlier (lost of information about the quality/costs/benefits…). And even if it was true there are some courses yielding zero personal benefits, the income contingent loan mechanism would ensure that their price converges to zero. No government dictate is necessary.

Second unique feature of the South African system is that this loan forgiveness is linked to a student's performance. Specifically, the government *"…forgives up to forty percent of the final accumulated loan indebtedness for the successful passage of 100 percent of the courses…"* [58] In fact, it is an inbuilt subsidy in the system, which erodes it and requires more resources than it would do otherwise. What regards this features' potential implementation in the Czech Republic, it should be said that unless there is a common and

[57] Chapman (2005), pp.35
[58] Chapman (2005), pp.34

unified and transparent evaluation process the system could end up funding a very diverse (what regards quality) group of graduates, all of them being the relatively most successful ones within their courses but not the smartest within the field in general. On the other hand, this sort of forgiveness could actually be perceived as a merit scholarship included in the loan system. "*Whether this is a cost-effective expenditure of the South African Rand may be debated; its proponents in South Africa believe that it is…"*[59]

In South Africa, only 20% of all students benefit from NSFAS. According to Chapman (2005) the biggest problem is the insufficient amount of resources available to finance it. Although absence of barriers is typical for income contingent loan mechanism, the lack of resources causing the inability to finance the higher education for some part of the prospective students is itself the barrier. If this is the case, the country is not able to invest in its human capital sufficiently which might prevent its economic growth. *"Although the government's contribution to NSFAS has increased over the years, financial aid provided through NSFAS is inadequate to meet the needs of students from poor communities. According to NSFAS, only 20 percent of the students benefit from the scheme. Furthermore, NSFAS loans do not cover the full cost of study in order to stretch the limited funds to more students. There are currently proposals to review and strengthen the National Student Financial Aid Scheme (NSFAS). Many of the Black majority who are confined to the informal economy remain unequipped for, excluded from and unable to contemplate affording higher or even further education."*[60]

The problem of insufficient amount of resources to implement modern and efficient funding system could happen in the Czech Republic also. The CR has the government spending limited by the criteria given to enter the monetary union in 2010 and cannot afford to increase its government debt above 60 % GDP from 2010 onwards (if the priority is given to Euro adoption before higher education funding reform). In this context, the Czech Republic

[59] Chapman (2005), pp.34
[60] Inshenghoma (2002), pp.5

would be unable to implement efficient funding system unless it decides to privatize the students' debt.

Although such a country as South Africa can seem to be too different to compare, its experience if generalized can serve as a lesson to learn for other countries including the Czech Republic.

6.1.6 Chile

Another country to mention in context with income contingent loan experience is Chile. The funding is done through so called Credit Solidarity Funds in Chile and the loans are provided in accordance with the student's background. "*The loan carries a real interest rate of 2 per cent, and requires from the student annual payments of the lesser between 5 per cent of income and a fixed amount. Maximum repayment periods are 12 or 15 years, depending on the amount of the balance due in the 12th year."*[61] So, Chile is another country with debt forgiveness.

The evidence about this system is very poor, same as in case of the previous countries. Not only are the systems hard to compare, but the absence of the relevant data impedes assessing the system according to its objectives. To make the system efficient data about its performance should be analysed and conclusions drawn. The lack of data means the lack of a tool to improve and adjust the system in time. This is a lesson to learn for the Czech Republic that should be taken into account no matter what funding system it decides to have.

Concentrating on other lessons, according to Palacios (2004) the Chilean system is another to confirm that universities are ill-suited to collect the students' debts. For the Czech Republic it would be better to use its

[61] Palacios (2004), pp.141

taxation mechanism because it was proved to work well in Australia and New Zealand.

Palacios (2004) also points out the lack of government resources to finance the borrowings, which is the same problem as in South Africa. This problem was identified in Chile also and was identified to be a threat for the Czech Republic as well. The political limitations should be expected in such a case, Chile being an example of it as Palacios (2004) mentions *"...engaging private lenders will not be easy: the Chilean government attempted to sell its loans to the private sector and faced fierce opposition from students."*[62]

6.1.7 Ghana

In Ghana, income contingent loan scheme was implemented in 1989. Same as in Sweden its purpose is to provide funds for food and housing, not for tuition fees. The Ghanaian system has an interesting feature that marks it off the other systems. The difference is that social security system instead of taxation system is used to collect the repayments. This solution could be suitable as an alternative for those countries that suffer from underdeveloped and administratively costly taxation systems.

Specifically, the system is paid by graduates' social security benefits. When the loan is repaid the social security contributions start to appear on the individual's account. The advantage of this system is that the repayments do not fall on the graduates in time of their settling when the most money is needed but it cuts the social security benefits and defers the repayment of the university education costs to the retirement period (from the graduates' point of view) and without paying any interest rates. As Palacios (2004) puts it *"...the system carries an interest subsidy on the loan, which means that graduates pay back only a fraction of the original amount given to them."* [63]

[62] Palacios (2004), pp.141
[63] Palacios (2004), pp. 141-142

Because the Czech Republic does not have problems with its taxation mechanism, it needs not to search for other options.

Unfortunately, the insight to the specific features of the systems based on income contingent loans has shown that there is not much to learn from other countries' experience. The systems' specific features were inefficient causing sub-optimal returns from higher education investment. In the end, the insight was more useful in providing information on what arrangements to avoid.

7. Conclusions

The purpose of this diploma thesis was to answer the question from its title and to support or reject the hypothesis about English system being perfect because of its age. To be able to assess the quality of the English system the desirable characteristics together with economic efficiency criteria were identified. Because the Czech system was after confrontation with these desirable characteristics and criteria said to be suitable for a reform there was a reason for the English system to become a candidate for the Czech Republic. From the first English system's analysis made as a critical examination according to desirable characteristics it can be concluded that:

- Thanks to the income contingent loan character the system fulfils the criterion of open access to higher education. The only threat might be hidden in insufficiently low maintenance loans, barriers to earlier stages of education and absence of income brackets. All of these issues should be analysed after some data are available.
- Because of the absence of reliable information about a course's attractiveness on labour market and because of the tuition fee cap that hinders reflection of future income in price the criterion of adaptability is not fulfilled in the English system.

- The quality is constrained by the cap, which actually is a price ceiling. No mechanism linking quality and tuition fee (price) is also missing.
- The cap erodes motivation of universities to be cost efficient. The reason is that they are awarded by increased prestige if they invest their savings into quality but the award in form of higher tuition fees is restricted by the cap.

The second analysis of the English system was done to find out if it is economically efficient. The major conclusions of this analysis are:

- The cap causes that higher education market cannot make beneficial use of price signals.
- The existence of just one percentage repayment rate and the lack of income brackets is a barrier to access.
- A threshold set under a level reflecting some higher education benefits might uselessly cause financial troubles to early graduates.
- Waving the remainder of the loan after 25 years combined with zero interest rate makes the system irresponsive to overpricing the courses by universities. As a consequence taxpayers end up paying more for the externalities than it is optimal without having a tool how to get the system back to equilibrium.

In fact, it was identified that the English system does not fully meet up either desirable characteristics or economic efficiency requirements.

However, to make the system perfect it would be enough to change five (but not always simple) things. These parts of the system represent wrong answer of the government on the problems on higher education market. Because of their character tuition fee cap, interest subsidies and forgiveness can be added to the government failures.

The changes making the system modern and efficient include:

- Removal of the cap on tuition fees. This would lead to cost efficiency, better adaptability of the higher education market to

labour market needs, increased competition among universities which would contribute to increase the quality of higher education.

- Introduction of market interest rate would disable overpricing of courses and contribute to efficient costs of externalities.
- Abolition of forgiveness would also avoid taxpayers paying inefficiently high costs for their higher education benefits (externalities.).
- Implementation of income brackets would mean abolition of the last barrier to higher education and make the system attractive even for those expecting relatively low incomes.
- Publishing data about education quality (graduates' wages, their unemployment rates, etc.) according to institutes subjects to support the competitive environment among universities.
- Providing information about labour market needs reflecting expected development of the economy (for example with help of created indexes) to contribute to the adaptability of the system to the labour market needs. Provision of information enabling educated decisions made by prospective students and supporting competitive environment are major tasks for the government within the higher education funding system.

We can see that the English system was well designed to meet the objective of eliminating barriers to access and increase participation. On the other hand, the English policy makers forgot that this is not enough to make the system efficient. The English system fails to meet the other objectives relevant for making the most of the investment to higher education. Because it suffers from substantial inefficiencies, the hypothesis formulated at the beginning of this diploma thesis is rejected. I would not recommend the Czech Republic to implement it without any modification.

It may be concluded that no matter what kind of reform the government considers to implement it would always be able to assess its desirability according to the criteria identified in this diploma thesis.

Originally, the last chapter of this diploma thesis was presented to find out alternatives compatible with the identified characteristics. Because any suggestions on the parts of the Czech reform has not been found suprisingly I would not even recommend the transfer of other existing systems based on income contingent loans. In the end, the last chapter was useful in pointing out some of the practical issues that can accompany the implementation of a reform in the Czech Republic. The most significant threat represented by insufficient amount of government resources available for such a reform. The Czech government would have to borrow money to start the system up, which would cause increased government debt. As this could endanger the implementation of Euro in 2010, the decision should be made if the higher education or joining the Euro zone is a priority. That is why estimation of this part government debt represents an avenue for further research. Other such avenues include evaluation of externalities or estimation of the size of tuition fees.

Appendix I: Details about Higher Education Being Public Good

Excludability means that it is not possible (or very costly) to exclude any person who does not pay for a good from consumption of a public good once it is provided. Because the state can be always expected to have limited resources education can be always expected not to meet the attribution of excludability. If the state decides to provide education it can always set conditions that must be fulfilled to be allowed to attend a state school and exclude people from obtaining a desired level of education. Simply, there can be only one person accepted to one place at the university. And this person excludes other applicants from being accepted.

Non-rivalrity, on the other hand, means that the costs of the good are not dependent on the number of people consuming it. In other words, marginal costs of a public good are very small, even equal to zero. Although the average expenditure on education per head is far from being a small sum of money, the size of the marginal costs seems to fulfil the requirement of non-rivalrity.

Appendix II: Characteristics of General and Specific Training

If a firm provides a specific training it increases the marginal products of its employees. But is marginal product increased generally in all firms or only in one that provides it? Obviously, marginal product of an employee who has undergone the specific training is increased only within this one particular firm.

On the other hand if a firm provides a general training to its employee it increases his marginal product not only in this one mother firm that provides the training but also in other firms. Here the question arises if there should be some difference in financing following from the different characteristics. In case of a specific training the firm finances something that can be utilized only to increase its marginal product. The only loss that can happen is that a trained employee leaves the firm. In such a case both of them – firm and employee – would loose. The firm would loose its investment into human capital and the employee would not utilize the obtained education and higher marginal product. Because of the fact that MP = W in equilibrium, the employee would give up his higher wage by leaving the firm. Although both of them have the incentive to undergo/provide this training, not both of them have the same incentive to finance it. The employee would risk by paying for a specific training because it can happen that the firm can serve a notice on him from whatever reason. If the firm really offers the wage equal to marginal product it takes smaller risk than the employee because it is less probable that the employee leave the firm that would offer him higher wage[64]. That means it makes sense that firms are more disposed to finance such a form of training.

But the situation is reversed if we consider general training. Increased marginal product in all firms discourages the firms providing general training from its financing and motivates employees to finance

[64] For more see Becker (1993)

the training that they can take and utilize wherever they work. Their marginal product rises in all firms equally.

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Appendix III: Specific Characteristic of the World Systems Based on Income Contingent Loans

Australia	• Income brackets • Discount for upfront payments • Fixed but not flat tuition fees
New Zealand	• Market interest rate as a political issue
USA	• Responsibility for repayment shared among group members. • Universities as debt collectors • Clinton's reform
Sweden	• Zero tuition fees
South Africa	• Repayment done without the use of taxation system • Insufficient amount of resources • Forgiveness linked to study performance
Chile	• Unavailable data to asses the reform
Ghana	• Social security system used to collect payments.

Appendix IV: Development of the Australian Higher Education Funding System

In 1989, Australia introduced a new scheme of education charges. It was a response to increasing demand for higher education and rejection of the state when the costs were covered just from tax revenues. Even the public understood that it is not fair when the whole costs are covered from government resources. HECS was designed, in part, to minimise the extent to which a charge would create an access barrier the participation of poor prospective students.

The new higher education contribution scheme (known as HECS) was characterised by fixed and unified tuition fees and an option to defer those and repay them through the tax system after the studies. The repayment threshold was set at a level of an average income in Australia.

No interest rate on the debt is charged by the government, the debts are just indexed to the CPI. For those willing to pay upfront there still is an option to do so. These students were provided with discount of 15 % (later increased to 25 %).[65]

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[65] In each semester, most students have three choices as to how they pay their HECS contribution:
- Pay the whole amount up front and receive a 25 % discount
- Make a partial up-front payment of Aus$500 or more (and receive a 25% discount on that amount and defer the remainder
- Defer all of their HECS contribution
- Students can make a voluntary repayment at any time and for any amount. Voluntary repayments of Aus$500 or more attract a bonus of 15% off the amount of repayment.

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Unlike in the UK the Australian government was aware of the decreasing marginal benefit from money and divided graduates into groups according to their salaries. Than, these groups were differentiated in the percentage of income used to repay their debts. Currently, there are nine such income groups in Australia ranging from 4 % to 8 % (Table a.1).

Table a.1: HECS income thresholds and repayment rates: 2005–06

For 2005-06 HELP repayment income in the range	**% rate to be applied to total HELP repayment income**
Below $36,185	Nil
$36,185-$40,306	4.0%
$40,307-$44,427	4.5%
$44,428-$46,762	5.0%
$46,763-$50,266	5.5%
$50,267-$54,439	6.0%
$54,440-$57,304	6.5%
$57,305-$63,062	7.0%
$63,063-$67,199	7.5%
$67,200 and above	8.0%

Source: www.goingtouni.gov.au

Although the reform in 1989 gave the basic shape to the system, since a couple of other changes have taken place. The most important one being the one in 1997, where the following steps were implemented:

- *"One, all the charges increased significantly, by about 40 per cent on average.*
- *Two, differential charges were introduced according to a student's course of study, with the new charges essentially reflecting cost differences.*

- *And three, the income thresholds for repayment were reduced significantly…"*[67]

In December 2004 Australian government introduced a number of new measures within its higher education funding. They were designed to:

- Partially deregulate fees allowing universities to charge up to 25% more than the existing fees in the two higher bands for HECS places.
- Increased number of opportunities for universities to register more students on fee-paying only places (in effect an opportunity for universities to take more students on very popular courses in Australia such as Medicine or Law).
- Offer "greater flexibility" or "student choice" in payment of fees or type of debt incurred. For example, the introduction of a FEE-HELP scheme[68], this would be available to HECS students, to fees-only students and students in private institutions.
- Introduce Commonwealth scholarship schemes. These are means-tested and are administered by universities.
- Encourage universities to provide additional university scholarships as well.

These are the main milestones in Australian higher education funding system.

[67] Chapman (2005), pp. 59
[68] FEE-HELP is a loan given to eligible fee-paying students to help pay part or all of their tuition fees.

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