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Human Capital Investment: Measuring Returns to Education

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Abstract

According to human capital theory, knowledge and skills incorporated in the individual can be referred to as capital and all activities with which the present input makes future yields while the productivity of the individual grows can be interpreted as an investment. This research considers higher education as an investment decision and presents empirical evidence on the private return on this investment. We calculate the private net present value of higher education (i.e. human capital) and investment payback period in Lithuania for the period 2004 and 2011. Our empirical results suggest that higher education as a human capital investment yields great returns for the individual in Lithuania.

Keywords: Human capital, Education, Investments in human capital/education, Costs, Benefits, Net present value.

Introduction

Human capital investment as the source of economic growth and development is the focus of considerable debate in the economics literature (Tunaer, Gülcan, 2006). Human capital is the notion that individuals acquire skills and knowledge to increase their value in labour markets. Experience, training and education are the three main mechanisms for acquiring human capital, with education being primary for most individuals (Aghajanyan, Erbasol, 2008).

According to human capital theory, knowledge and skills incorporated in the individual can be referred to as capital and all activities with which the present input makes future yields while the productivity of the individual grows can be interpreted as an investment (Kiss, 2012).

In the standard economic model, the accumulation of human capital is seen as an investment decision (Schultz (1961), Becker (1993), Mincer (1974), Blundell, Dearden, Meghir, Sianesi (1999), Rusalkina and Hicks (2002), Mingat and Tan (1996), Wahrenburg and Weldi (2007)), where the individual gives up some proportion of income during the period of education and training in return for increased future earnings. Compared to other investment alternatives, education must yield a higher rate of return in order to be pursued from an economic point of view (Wahrenburg and Weldi, 2007). Once education is treated as an investment, the natural question is - how much to invest in education? Also, like other investments it is natural to ask whether or not the benefits from education are worth the costs. Knowledge about the return on investment might help individuals make better informed schooling decisions by adding an economic perspective to it (Wahrenburg and Weldi, 2007).

Individuals will only undergo additional schooling or training (i.e., invest in their human capital) if the costs (tuition and training course fees, foregone earnings while studying period) are compensated by sufficiently higher future earnings (Blundell, Dearden, Meghir, Sianesi, 1999).

The amount of education acquired by workers has an important impact on their labour market outcomes. The most direct way that education affects the labour market outcome of workers is by increasing their productivity, thus increasing their earnings. The more education individuals acquire, the better they are able to absorb new information, acquire new skills and familiarize themselves with new technologies. By increasing their human capital, workers enhance the productivity of their labour and the other capital they use at work. If higher levels of productivity reflect higher levels of human capital, which are in turn primarily a result of increased education, then a positive relationship should exist between educational attainment and earnings (Aghajanyan, Erbasol, 2008).

So education — as measure of human capital accumulation — plays an important role in modern labor markets (Card, 1999) and one's wages and earnings differentials (Afzal, 2011). Besides education, there are many other factors such as age, experience, occupation, gender, working hours, computer knowledge, and other family and household (family income, parental education and number of siblings, etc. (Blundell, Dearden, Meghir, Sianesi, 1999)) characteristics that determine an individual's earnings (Afzal, 2011**)**. But usually when it comes to investing in human capital, human capital investment refers to an individual's investment in abilities and skills that enhance their performance on the labor market and other markets (Joensen, 2007)**.**

Hundreds of studies in many different countries and time periods have confirmed that better-educated

individuals earn higher wages, experience less unemployment, and work in more prestigious occupations than their less-educated counterparts (Card, 1999)

One of the most popular methods that has dominated the research in the area of Economics of Education for the last several decades has been the rate of return to education. Since the very formal heralding of Economics of Education in 1960 by T.W.Schultz (1961), researchers have estimated return to education in many countries (Tilak, 2007).

Despite the huge literature on the estimation of returns to education (human capital) in terms of both cross-country and country specific analysis, studies concerning Lithuanian case remain limited. This research aims to make an update contribution to the literature in Lithuania.

Aim of the research. When analyzed, the benefits and costs of return to investment in education, to estimate the net present value of investment in human capital and investment payback period in Lithuania for the period 2004 and 2012.

The object of the research – the return to investment in education.

The research methods used: comparative and logical analysis and interpretation of literature, comparative analysis of statistical data, generalization method.

The Concept of 'Human Capital'

Before estimating the returns to education as human capital, it is important to define what is meant by the term "human capital." The literature to date provides a wide range of human capital definitions. For example, T.W. Schultz (1961) defines the concept of human capital as the knowledge, skills and abilities residing with and utilized by individuals. G. Becker (1964) describes human capital as the stock of knowledge, skills and abilities embedded in an individual that result from natural endowment and subsequent investment in education, training and experience. H.S.Rosen (1999) states that human capital is an investment "that people make in themselves to increase their productivity" (p. 381). According to P.N.Rastogi (2000), human capital of a firm may be viewed as consisting of "highly skilled, creative, motivated, collaborative and knowledgeable people who understand the dynamic business environmental context and the competitive logic of their enterprises; and the critical requirements thereof" (p.196) [1].

M.Lynn (2002) proposed that human capital included the skills and abilities owned by the employees within organization. T.O.Davenport (1999) considered that human capital was composed of four main factors – ability, behaviors, efforts and time. R.Blundell, L.Dearden, C.Meghir, and B.Sianesi (1999) identifiy three main components of 'human capital' — early ability (whether acquired or innate); qualifications and knowledge acquired through formal education; and skills, competencies and expertise acquired through training on the job.

Accoding to S.Appleton and F.Teal (1998) human capital is a broad concept which identifies human characteristics which can be acquired and which help to increase income. It is commonly taken to include peoples' knowledge and skills, acquired partly through education, but can also include their strength and vitality, which are dependent on their health and nutrition. Human capital theory focuses on health and education as inputs to economic production.

S.Dessus (2001) considered that the importance of human capital to economic development depends on the quality of schooling, the educational infrastructure, the initial endowment in human capital (which is usually determined by the parents' level of education), and the ability of the system to distribute equally educational services within the population (Ijaiya G.T. and Ijaiya, M. A ., 2004 a,b).

Despite many literature contained definitions of human capital, a number of key elements seem to be common: encompassing knowledge, experience, acquired and trained skills, innate abilities, attitudes and behavior.

The return to investment in education

The economic value of investment in education has mostly been measured by its rate of return because, as G.Becker (1993) pointed out, "rates of return provide the most convenient and complete summary of the economic effects of education" (p.161). The rate of return analysis provides a fundamental analytical tool to evaluate the educational investment that is the biggest and most important part of human capital. Private rates of return provide a guideline for individuals, with respect to their investment decision in education, as to whether they decide to continue or stop schooling (Kara, 2009).

There are at least three distinct ways of defining the 'investment in human capital' or 'returns to education': (1) the private return, (2) the social return and (3) the labour productivity return. According to R.Blundell, L.Dearden, and B.Sianesi (2001), the first of these is made up of the costs and benefits to the individual and is clearly net of any transfers from the state and any taxes paid. The second definition highlights any externalities or spill-over effects and includes transfers and taxes. The final definition

[1] In general Rastogi (2002) identified human capital as the knowledge, competency, attitude and behavior embedded in an individual.

simply relates to the gross increase in labour productivity (or growth). A key component of each of these measures is the impact of education on earnings (Blundell, Dearden, Sianesi, 2001).

R.Blundell, L.Dearden, A.Goodman and H.Reed (2000) have classified returns to investments in higher education into three main categories:

- Private financial returns to education — acquiring education improves the earnings and/or employment prospects of individuals.
- Private non-financial returns to education — this includes improvements in an individual's welfare that are not a part of measured earnings (e.g., easy access to highly paid jobs, better working environment and so on).
- Social returns to education — acquired education may have a benefit to other individuals of the society. It is over and above private returns to education. It would occur in the form of positive externalities of the education.

This article will analyze the private financial returns to investment in education as human capital; therefore other categories of returns will not be evaluated of analyzed.

The model

The overall economic benefits of education can be assessed by estimating the economic value of the investment in education, which essentially measures the degree to which the costs of attaining higher levels of education translate into higher levels of earnings (OECD, 2012). Estimates of the return to investment in education can be arrived at using different methods. One of the ways to calculate returns to investment in human capital, which is used in the empirical practice, is the net present value, one that will be employed in this study. The net present value method is similar to the internal rate of return method, which is often used in this context.

The net present value of an investment is the difference between discounted benefits and discounted costs based on a preselected discount rate, and the IRR is the discount rate which equalizes the discounted benefits and discounted costs. According to E.Cohn and T.Geske (1990), these two methods are based on the same principles and in many cases they give equivalent answers (Qui, 2007).

The proper method to estimate the net present value of higher education is to compute the *difference* between the present value of lifetime income attributable to a more educated person and the present value of lifetime income attributable to a less educated person with similar characteristics, and the net of direct costs of higher education (Juraimin E., 2002). The discount rate approach makes it possible to compare costs or payments over time (OECD, 2012). The net present value (NPV) formula is (Juraimin, 2002):

$$NVP = \sum_{18}^{65} (E_{Ct} - E_{ht} - C_t)/(1+i)^{t-18} \qquad (1)$$

where, $E_{ct} - E_{ht}$ in equation (1) is the earnings differential between more educated and less educated persons, at age t, that is due to higher education. C_t is the direct costs of college education at age t. We assume that a person starts studying at higher education institution at age 18 and is generating income until age 65[1].

The average net present value to university education, for example, is usually computed by solving the following equation for the net present value (Прахов, 2010):

$$NVP = \sum_{t=o}^{n} \frac{Benefits_t}{(1+r)^t} - \sum_{t=o}^{n} \frac{Costs_t}{(1+r)^t} = \\ = \sum_{t=o}^{n} \frac{Benefits_t - Costs_t}{(1+r)^t} > 0 \qquad (2)$$

Where, NVP – the present value of education;

$Benefits_t$ – benefits associated with higher education,

$Cost_t$ – costs of education,

n – the number of time periods,

r – is the interest rate / individual discount rate.

According to A.C.Harberger and S.G. Guillermo-Peón (2012), the net present value of investment in educational level n can be expressed as:

$$NVP_n = \sum_{t=1}^{l} \frac{W_{t,n} - W_{t,n-1}}{(1+r)^t} \qquad (3)$$

where, $W_{t,n}$ are the annual wage earnings of a worker with educational level n, $W_{t,n-1}$ are the annual wage earnings of a worker with the educational level preceding n, l is the retirement age and r is the discount rate.

In this Equation (3) A.C.Harberger and S.G. Guillermo-Peón (2012) consider that the most important cost associated with one's decision to undertake further years of study is the income that one forgoes while studying. Hence, $\sum_{t=1}^{d} \frac{W_{t,n-1}}{(1+r)^t}$ is the present value of the opportunity cost of education at level n (foregone earnings while studying).

The sufficient condition for using the net present value analysis is that the investment in diploma education will be economically advantageous if, and

[1] Since year 2012 the age of old age pension is 65. (July 18th, 1994. State Social Insurance Pension Law).

only if, the net present value is positive or greater than zero (Shahar, 2008 qoute Low & et. al., 1991; McConnell & et. al., 2006,).

That is to say, according to Прахов (2010), an individual will invest in higher education as long as the benefits gained will be higher than the costs of education, or until the net present value > 0. This allows drawing such conclusions: 1) the lower the costs of education, the higher the current value of education will be, which leads to higher demand for higher education; 2) similarly, the greater the benefits of education will be, the greater the demand for higher education; and 3) the higher the individual discount rate (*r*), the lower the value of current education will be, which will lead to lower demand for higher education (Прахов, 2010).

The positive net present values indicate that investment in college education, on average, is worthwhile.

The costs of investment in education

Costs (individual and social) of education in general consist of these elements (Bagdanavičius, 2002):

1. students' (or parents') direct costs of education;
2. individual indirect costs (foregone earnings);
3. state direct costs of education;
4. public indirect costs of education, calculated as the foregone taxes from the student foregone earnings.

These types of expenditures reflect the direct costs of education and so-called "foregone earnings".

There are two general types of costs of investment in human capital: direct costs and indirect costs of education, which are termed as the foregone earnings in the learning process. The latter, according to J.Bagdanavičius (2002), estimating the return to education, are included with the fees charged for the same tuition and other direct costs.

Direct individual costs of education include tuition, fees, books and supplies.

A.Florides (1995), while examining the importance of education and main costs that appears in order to acquire education, besides the direct costs (which were discussed above) and indirect costs, which include the foregone earnings of not entering the labour market after school, identified the physical costs of studying and being examined.

In summary, it must be concluded that in order to calculate the costs of investment in human capital, the tuition, living expenses (in conjunction with the purchase of teaching aids) and foregone earnings, that appears due to the fact that the student often is not employed or is employed as part-time worker, have to be assessed.

Both - state and private person - acquires some costs on the individual decision to pursue higher education. State-level costs, which can be attributed to educational costs, are identified with the foregone earnings, while working in unskilled jobs and at the individual point of view - these costs are the reduced amount of taxes paid.

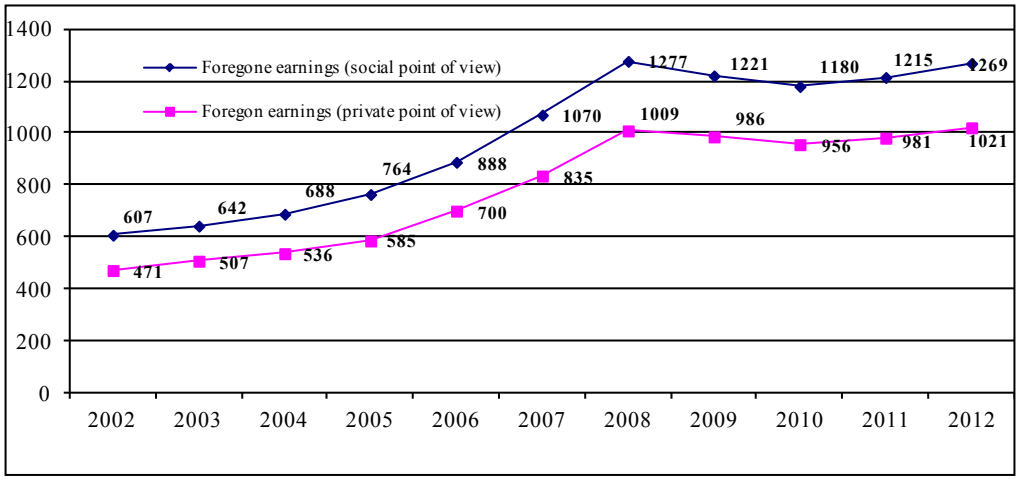

Fig.1. Foregone earnings per month (Lt)

Source: The calculations are based on data gathered from the Lithuanian Department of Statistics[2]

[2] According to data gathered from research (2002 and 2006) made by Lithuanian department of statistics, the average salary of unqualified workers has grown up by 46,3 percent (from 607 Lt/month to 888 Lt/month) from 2002 to 2006. Because there are no statistical data for further years, the assumption was made that the average salary of unqualified workers was changing (rise/drop) similarly as countries' average salary. The realism of assumptions is proved by taking the countries' average salary growth rate that increased similarly by 47,5 percent (from 1013,9 to 1495,5 Lt) from 2002 to 2006.

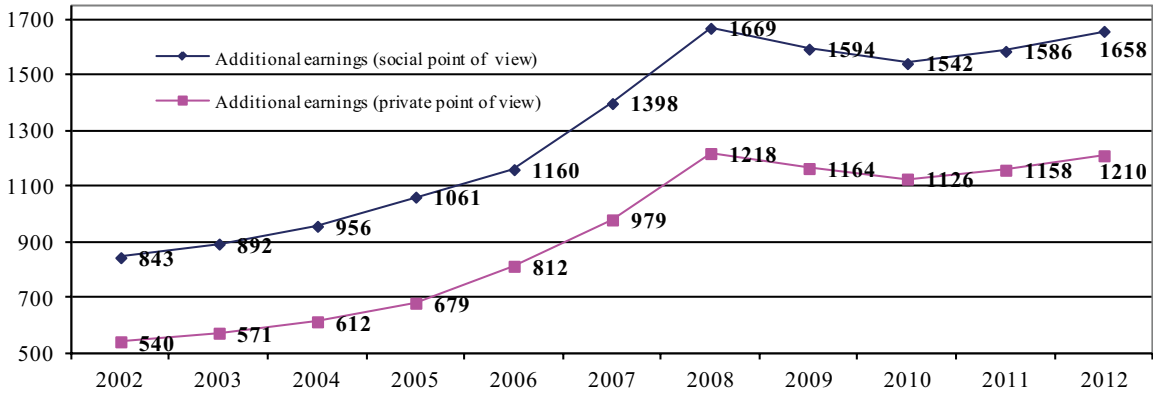

Fig.2. The difference of earnings (additional earnings), due to acquired higher education Lt/ month.

Source: The calculations are made on the basis of the data gathered by Lithuanian Department of Statistics.[1]

According to data given in Fig.1, an individual who decides to invest in himself and study has lost from 471 Lt/month (in year 2002) to 1021 Lt/month (in year 2012) of revenues, i.e., 781 Lt/month in average, while social costs in average was 984 Lt/ month in year 2002-2012.

In order to preliminarily assess student living costs and other costs in study years 2003-2012, the Lithuanian department of statistics gathered data about the average monetary consumption expenditure for one household member per month[2]. According to the calculations and assumptions made, it was found that if a student has a government grant for studies, his costs for education has risen from 5 600 Lt in year 2003 to 9 600 Lt in year 2012.

Another important part of costs of investment into human capital, excluding ones mentioned before, is **tuition fee**. The tuition fees for the first cycle (bachelors) studies ranges from 3892 Lt (humanities field of study areas (except philology), social science field of study areas (except psychology education and skills and public security) to 18 162 Lt (pilot training, music) per year. The tuition fees for second cycle (masters) studies ranges from 7 308 Lt to 21 578 Lt (distributed respectively as undergraduate study fees) and third cycle studies tuition fee is 28 250 Lt per year[3]. According to this data, te average tuition fee for the first cycle studies is 8795 Lt per year, the average tuition fee for the second cycle studies is 12 211 Lt per year and the average tuition fee for the third cycle studies is 28 250 Lt per year (tuition fee for the third cycle studies is the same for all fields of study). The largest influence on the amount of tuition fee are these study field areas: pilot training and music (tuition fee 18 162 Lt per year), fine art, design, theatre and cinema, dance, photography and media, writing work, art studies, sports (coach training), public security, dentistry (11099 Lt), medicine and veterinary medicine (9137 Lt), while humanities and social science studies (except psychology, education and skills and public security) cost 3892 Lt per year.

After evaluating the results it can be stated that the costs of investment in human capital (higher education) has risen from 17 500 Lt in 2003 to 30 700 Lt in 2012.

The benefits of investment in education

The benefit of investment in education is reflected by additional revenues generated by the individual, which are calculated as the difference between the salaries of the individual who has higher education and the individual who has secondary education, excluding taxes. While calculating benefits in social level, taxes are not excluded.

It is assumed that those who are studying at institutions of higher education are not working for 4 years and their revenues are equal to zero.

[1] Every four years the Lithuanian Departments of Statistics calculates individual salary according to these criteria: education level, gender, and major professional groups. In the absence of data for other periods it was assumed that private average salaries of individuals with higher education and with secondary education was changing (grew/declined) in the same way as national average salary.

[2] Expenses for alcohol and tobacco are not included into students' average living expenses, because this is not directly related with studies, but related with individual habits. Housing costs and maintenance fees (it is assumed that student is living in dormitory and does not pay separately for these services), education costs (these costs are evaluated separately, because household expenditure consists only from average costs for all habitants), hotel and restaurant costs are also not included into students' average living costs.

[3] Tuition fees are presented on the basis of orders set by the Lithuanian ministry of education and science for regulatory university prices for student enrollment in 2010-2012.

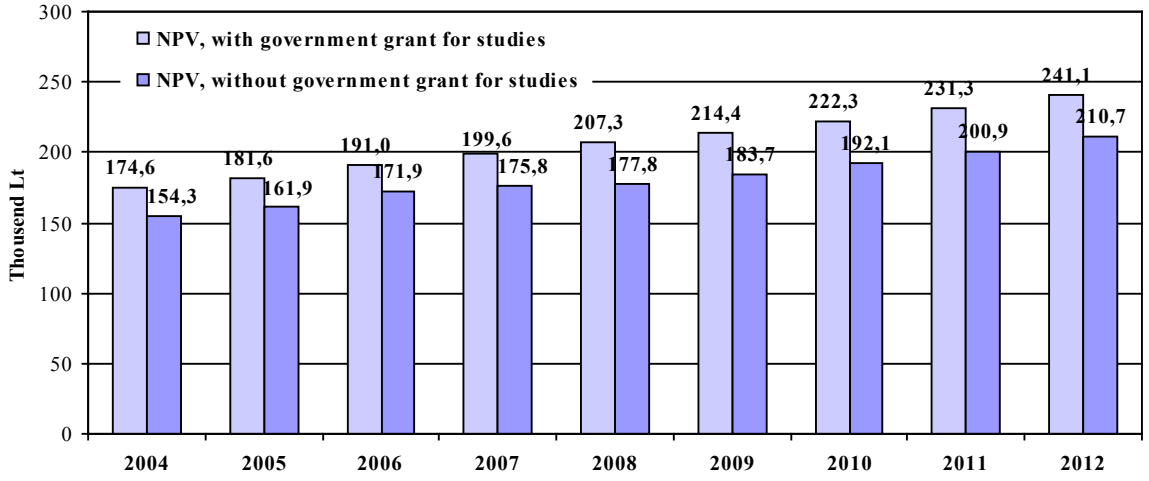

Fig. 3 The net present value of higher education (in thousands of Litas)

Starting with the fifth period, which is identified with graduation from higher education institution, and finishing with forty-seventh[4], when personal economic working life expires, after graduation of the first cycle studies, the individual starts working and generates revenues. The difference between private net (excluding taxes) earnings of individuals with a different level of education is presented in Fig.2, where the average additional revenues of individuals with higher education can be seen.

Made calculations according to adopted assumptions allowed to asses possible additional revenues, which showed that individuals with higher education (i.e., who graduated at least the first cycle studies) additionally has earned on average 900 Lt per month in 2002 – 2012 more than individual without higher education. I.e., the difference between workers with different qualifications, in evaluating the wages of individuals with and without higher education, is about 20 000Lt[5] or 14 500 Lt[6] excluding taxes.

Results. The return to investment in education

In calculating the returns to education, the approach taken here is the net present value of the investment. In order to evaluate the net present value – i.e., what benefits the individual will get after investing in education throughout the working period till retirement age – the net income was found for all of the periods and the net present value was calculated.

In this framework, lifetime costs and benefits were transferred back to the start of the investment. This was done by discounting all cash flows back to the beginning of the investment with a set rate of interest (discount rate). The choice of interest rate was difficult, as it should reflect not only the overall time horizon of the investment, but also the cost of borrowing or the perceived risk of the investment. To keep things simple, the predominant interest rate in the market was chosen according to the average yearly interest rate for household loans, which is calculated on the basis of the average monthly interest rate for household loans published by the Bank of Lithuania.

Taking into account the assumptions made, the calculations of the net present value of investment in human capital showed that for individuals, whose studies were fully granted by the government, the current value of investment in human capital in period of 2004-2012 was increasing from 174 600 to 241 100 thousand Litas (in average around 207 000 Litas)[7].

The positive net present value proves that when interest rates in the market are about 5,2 -10,7 percent, for the individual who is studying with government grant for studies (i.e., the studies are partly free, because the tuition fee shouldn't be paid) is beneficial

[4] Since 2012 the age of old age pension is 65. (July 18th, 1994. State Social Insurance Pension Law).

[5] Every four years the Lithuanian Departments of Statistics calculates individual salary according to these criteria: education level, gender, and major professional groups. Here the calculated values are shown for year 2012 with assumption that average wages of individuals with higher education and with secondary education was changing in the same way as national average wage.

[6] Personal income tax – 15 percent (year 2012), state social insurance tax – 6 percent, pension and social security tax – 3 percent. Non-taxable income rate was calculated using the formula: Non-taxable Income Rate = 470 – 0,2* (monthly resident revenues – 800). It was assumed that individual do not have kids.

[7] The calculations of return on investment in human capital was made by evaluating the average wage and tuition fee data for period 2004-2012 as well as average monthly interest rates for households published by the Bank of Lithuania for corresponding periods of time. The calculations of ROI for further periods was made under assumptions that the average wage will increase by 4 percent each year (regarding to actual changes of period 2011-2012) and the discount rate will remain at the level of 2012.

Table 1

The payback period of investment in higher education (years)

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Individual, with government grant for studies	9,3	9,7	9,8	9,7	9,5	9,4	9,3	9,2	9,1
Individual, without government grant for studies	13,0	13,2	13,2	13,8	14,4	14,1	13,6	13,4	13,1

to invest in higher education, because the investment will be covered with higher wage throughout his working age (43 working years[1]).

While calculating average net present value of investment in human capital, when an individual is paying for studies himself, the value of indicator throughout the reference period on average was around 181 000 Litas (increasing from 154 300 Lt to 210 700 Litas) and the average net present value was about 13 percent lower in comparison with individuals who are studying with government grant. The lower net present value is caused due to the tuition fee which increases the direct costs for studies, which negatively influences and significantly lowers the return to investment on human capital.

After the evaluation of the net present value of investment in human capital calculated for period 2004 – 2012, it could be stated that the return on investment in education was fluctuating, reflecting the influence of constantly decreasing personal income tax and changes (increase/decrease) of average wage and prices as well as fees for higher education. I.e., constantly decreasing personal income tax influenced the increase in revenues and at the same time an increase of return on investment. The increase (decrease) of average wage has increased (decreased) the foregone earnings, while at the same time has increased (decreased) the conditional costs of education and has increased (decreased) additional income that appears due to higher level of education acquired and this has led to an increase (decrease) in the return on investment in human capital in the long term. The same can be said about the cost fluctuations of higher education – as the tuition fees were increasing the direct costs of education were increasing as well, which respectively has decreased the return on investment. The changes of the average net present value of investment in human capital were also influenced by the fluctuations of average interest rates in the market that were used for calculation of the net present value. As the average interest rates for households were increasing the benefits gained for the individual, who had invested into education, were lower. By contrasts, as the interest rates were decreasing the net present value was increasing for the corresponding period.

After summarizing the results it could be concluded that the positive net present value shows that the increase of the net present value of wages is higher than the current net present value of education costs; therefore, the decision to invest in higher education is economically rational (Tamašauskienė, 2002).

It should be noted that it is important for the individual to know the time period during which he could recover his investment; therefore, based on the following assumptions made and results gathered from calculations, and after evaluating the influence of the discount rate the investment payback period was calculated.

The assessment on investment in higher education from the individual‘s perspective was conducted by applying the payback period method. Payback Period was calculated under the following conditions:

Sum of investment – sum of education costs and lost wages. The results obtained after calculating the payback period of investment in higher education is presented in table below (see Table 1).

The calculations have shown that for the investment in education, of an individual who is studying with a government grant, and after evaluating the direct and indirect costs of investment in human capital, payback time was fluctuating from 9,1 to 9,8 years for the period from 2004 to 2012.

The costs of investment in human capital for an individual who has acquired higher education using his own financial assets increases by the sum that is equal to the tuition fee within 4 years of study compared with the higher education costs for an individual who has a government grant. For this reason the return on investment in human capital significantly decreases. This could be seen not only from values of the net present value indicator calculated in Picture 3, but also from almost 1,4 time longer (average around 4 years) investment in human capital (education) payback period presented in Table 1.

The obtained results of the research confirmed that investment in human capital is beneficial, although the return on investment depends on (1) the predominant wages both for individuals with

[1] 23 to 65 years.

higher education and without; (2) personal income tax (this tax reduces the net income of individual, as the difference between wages of individuals with higher education and without is relatively decreasing; therefore, additional benefits of investment is decreasing as well); (3) chosen to apply interest rate and its level for calculation of return on investment; (4) whether individual pays for the studies himself or is he studying with government grant.

Conclusions

In this research we consider higher education as a private investment decision and present empirical evidence on the private return on this investment.

Education — a measure of human capital accumulation — plays an important role in one's wages and income differentials.

Despite many literature contained definitions of human capital, a number of key elements seem to be common, encompassing knowledge, experience, acquired and trained skills, innate abilities, attitudes and behaviour.

The human capital model treats education as an investment. In the human capital model, an individual invests time and foregone earnings in order to obtain higher future benefits.

The economic value of investment in education has mostly been measured by its rate of return.

One of the ways to calculate the rate of returns to investment in human capital, which is used in the empirical practice, is the net present value. This method is similar to the internal rate of return method, because both are based on the same principles and in many cases they give equivalent answers.

The calculations of the net present value of investment in human capital has showed that the net present value, for both individuals who are studying with government grant and without, was higher than 0.

The results of the research revealed that the net present value, when an individual is paying for studies himself, for the analyzed period on average was 181 000 Litas (fluctuating from 154 300 Litas to 210 700 Litas) and was about 13 percent lower than the net present value of those who are studying with a government grant. Such a lowernet present value was caused due to the tuition fee that increases the direct costs of education and thus negatively affects and significantly lowers the return on investment in human capital.

The calculations of payback period of investment in human capital (education) has showed that investment payback period for an individual studying with a government grant, and after evaluating the direct and indirect costs of education, was fluctuating from 9,1 to 9,8 years. The investment payback period is directly influenced by the tuition fee. The evaluation of the latter has determined approximately 1,4 time longer investment payback period of investment in human capital (education).

The conclusions reveal that the return of investment in human capital varies, reflecting the effect of constantly decreasing income tax, average wage and cost changes of higher increments of education (increase / decrease) and the chosen market interest rate fluctuations.

In summarizing the results, it must be concluded that the positive net present value shows that the present value of increased wages is higher than the current value of costs of education and therefore the decision to invest is economically rational.

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Investicijos į žmogiškąjį kapitalą. Išsilavinimo grąžos matavimas

Santrauka

Mokslinėje literatūroje sutariama, kad investicijos į žmogiškąjį kapitalą yra ekonomikos vystymosi ir augimo šaltinis. Išsilavinimas yra viena veiksmingiausių priemonių siekiant sumažinti skurdą, nelygybę, nedarbą, siekiant darnaus ekonomikos augimo. Žmogiškojo kapitalo teorija teigia, kad asmenys siekia įgyti įgūdžių ir žinių, norėdami padidinti savo vertę darbo rinkoje. Patirtis, išsilavinimas ir tolesnis mokymasis/kvalifikacijos kėlimas yra trys pagrindiniai mechanizmai įgyjant žmogiškąjį kapitalą, kurių pagrindinis, ir kuriam skiriamas didžiausias dėmesys, yra išsilavinimas (Aghajanyan, Erbasol, 2008).

Standartiniu požiūriu daroma prielaida, kad asmens investuotas laiko kiekis į išsilavinimą grįžta padidėjusiu uždarbiu ateityje (Schultz (1961), Becker (1993), Mincer (1974), Blundell, Dearden, Meghir, Sianesi, 1999, Rusalkina ir Hicks, 2002, Mingat ir Tan, 1996, Wahrenburg ir Weldi, 2007)), t.y. investicijos į išsilavinimą sąlygoja didesnes ateities pajamas. Lyginant su kitomis alternatyvomis, įgytas išsilavinimas duodą didesnę grąžą ekonominiu požiūriu (Wahrenburg ir Weldi, 2007). Kai išsilavinimas traktuojamas kaip investicija, kyla klausimas, kiek verta investuoti į išsilavinimo įgijimą? Be to, kaip ir vertinant kitas investicijas, svarbu žinoti, ar gaunama išsilavinimo nauda yra didesnė nei patiriami kaštai. Turimos žinios apie investicijų į išsilavinimą grąžą gali padėti asmenims priimti geresnius ir labiau pasvertus (ekonominiu požiūriu) sprendimus mokymosi atžvilgiu.

Straipsnio tikslas – išanalizavus investicijų į išsilavinimą naudą ir kaštus, apskaičiuoti investicijų į žmogiškąjį kapitalą grynąją dabartinę vertę bei atsipirkimo periodą Lietuvoje, įvertinant kitimo tendencijas 2004-2012m. laikotarpiu.

Tyrimo objektas – investicijų į išsilavinimą grąža.

Naudoti metodai: sisteminė ir lyginamoji mokslinės literatūros analizė, statistikos duomenų lyginamoji analizė, apibendrinimo metodas.

Bendra išsilavinimo ekonominė nauda gali būti vertinama apskaičiuojant investicijų į išsilavinimą ekonominę vertę, kuri iš esmės matuoja patirtų išlaidų, siekiant įgyti aukštesnį išsilavinimo lygį, virtimo laipsnį aukštesniu pajamų lygiu (OECD, 2012). Investicijų į išsilavinimą grąža gali būti apskaičiuota naudojant įvairius metodus. Vienas būdų, norint įvertinti investicijų į žmogiškąjį kapitalą grąžą, kuris naudojamas ir šiame tyrime, yra grynoji dabartinė vertė. Grynosios dabartinės vertės metodas yra panašus į vidinės grąžos normos metodą, kuris taip pat dažnai yra naudojamas šiame kontekste.

Grynosios dabartinės vertės metodo pagalba nustatoma, ar investicija į mokslo diplomą yra ekonomiškai naudinga. Asmuo investuos į aukštesnį išsimokslinimą tol, kol patiriama nauda iš išsilavinimo viršys išlaidų srautus į mokymąsi, arba tol, kol grynoji dabartinė vertė bus didesnė už nulį. Iš to galima daryti šias išvadas: 1) kuo mažesnės mokymosi išlaidos, tuo bus didesnė išsilavinimo dabartinė vertė ir tuo bus didesnė aukštesnio išsilavinimo paklausa; 2) analogiškai, kuo didesnė nauda bus gaunama iš išsilavinimo, tuo bus didesnė aukštesnio išsilavinimo paklausa; ir 3) kuo aukštesnė palūkanų norma, tuo žemesnė bus išsilavinimo dabartinė vertė, tuo bus mažesnė išsilavinimo paklausa (Прахов, 2010).

Norint įvertinti grynąją dabartinę vertę – t.y. kokią naudą individas gaus investavęs į išsilavinimą per visus savo darbingus metus iki pensinio amžiaus - buvo surastos kiekvieno laikotarpio grynosios pajamos ir apskaičiuota jų grynoji dabartinė vertė. Įvertinus padarytas prielaidas, atlikti investicijų į žmogiškąjį kapitalą grynosios dabartinės vertės skaičiavimai parodė, kad individo, kurio studijas visiškai finansuoja valstybė, investicijų į aukštąjį išsilavinimą grynoji dabartinė vertė 2004-2012 m. laikotarpiu augo nuo 174,6 iki 241,1 tūkst. Lt (vidutiniškai sudarė apie 207 tūkst. Lt). Apskaičiavus vidutinę investicijų į žmogiškąjį kapitalą grynąją dabartinę vertę, kai individas pats moka už studijas, gauta rodiklio reikšmė nagrinėjamu laikotarpiu vidutiniškai sudarė apie 181 tūkst. Lt (augo nuo 154,3 tūkst. Lt iki 210,7 tūkst. Lt) ir buvo apie 13 proc. mažesnė nei individų, besimokančių valstybės finansuojamoje vietoje, vidutinė grynoji dabartinė vertė. Mažesnę grynosios dabartinės vertės reikšmę sąlygojo tai, kad studijų įmoka didina tiesioginių kaštų sumą, kuri neigiamai veikia ir gerokai sumažina investicijų į žmogiškąjį kapitalą grąžą. Vis dėlto abiem atvejais gauta teigiama grynosios dabartinės vertės rodiklio reikšmė patvirtino, kad individui, tiek besimokančiam valstybės finansuojamoje vietoje (t.y. kuriam studijos sąlyginai yra nemokamos, nes nereikia mokėti studijos įmokos), tiek mokančiam įmokas už studijas, verta investuoti į aukštąjį mokslą, nes per visą jo darbinį laikotarpį (43 darbo metus[1]), šios investicijos susigrąžinamos padidėjusiu darbo užmokesčiu.

Atlikti investicijų į žmogiškąjį kapitalą (išsilavinimą) atsipirkimo laikotarpio skaičiavimai parodė, kad asmens, studijuojančio valstybės finansuojamoje vietoje, investicijos į išsilavinimą, įvertinus tiesioginius ir netiesioginius kaštus, atsipirkimo laikas svyruoja nuo 9,1 iki 9,8 metų. Atsipirkimo laiką tiesiogiai veikia mokestis už studijas, kurio įvertinimas sąlygojo apie 1,4 kartus ilgesnius investicijų į žmogiškąjį kapitalą (išsilavinimą) atsipirkimo metus.

Apibendrinant gautus rezultatus darytina išvada, kad teigiama grynoji dabartinė vertė rodo, jog atlyginimų padidėjimo dabartinė vertė yra didesnė už dabartinę mokymosi kaštų vertę, taigi sprendimas investuoti yra ekonomiškai racionalus.

Pagrindiniai žodžiai: žmogiškasis kapitalas, išsilavinimas, investicijos į žmogiškąjį kapitalą/išsilavinimą, kaštai, nauda, grynoji dabartinė vertė.

[1] nuo 23 iki 65 metų

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