Evaluation of Return to Investment in Human Capital in Lithuania in the Context of Other Countries

Zita Tamasauskiene, Simona Poteliene

Siauliai University
Architektu st.1, LT-78366, Siauliai, Lithuania
e-mail: zita.tamasauskiene@smf.su.lt, simona.ind@gmail.com,

The research literature presents a strong positive relationship between economic development and human capital, which is usually measured by education. The standard approach assumes that an individual invests some time in education, and then it shows up in terms of enhanced future earnings as a return, i.e. investment in education helps to increase the individuals' future earnings. How much to invest in education is one of the most important economic decisions that individuals have to face. Hundreds of studies in many different countries and time periods have confirmed that better-educated individuals earn higher wages, suffer less unemployment and work in more prestigious occupations, have other social returns like honour and status than their less-educated counterparts. This positive correlation between education (schooling) and earnings is well established in the empirical literature.

Despite the fact, that the rate of return to education (human capital) has been widely studied in the world since the late 1950s and even though hundreds of papers have studied this issue in various countries at different time periods and with alternative estimation methods, studies concerning Lithuania's case remain limited. This study focuses on the evaluation of investments in human capital. Problem question raised: Once education, which plays a very important role in development and growth of a country, is treated as an investment, the immediate natural question is: what is the profitability of this investment comparing to alternatives? Therefore it is important to investigate the return to investment in education in order to evaluate effectiveness of investments in human capital in Lithuania and compare it to the other countries in the development process. The object of the research – the return to investment in human capital.

The aim of the research is to estimate the private rate of return to human capital in Lithuania and to study the changes of these returns during the time (2003-2011) and compare calculated data with analogical data in other countries.

In the first part of the paper the concept of "human capital" is defined, before estimating the returns to human capital. In order to reveal the return to investment in human capital, it was limited to investment in education overview. Further, the research methodology is presented. One of the main ways to calculate the rate of returns to investment in human capital, which is used in the empirical practice, is the "full-discounting" or "elaborate" method, which consists in calculating the internal rate of return, was employed. 2003-2011 statistical data were used for the study.

The conclusions reveal that the rate of return to investment in human capital varies over time and rate of return for females is lower than for males. The rate of 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).

After comparing Lithuania's and other countries' rate of return on investment in human capital, it is seen that private rate of return in Lithuania is similar to Denmark, Spain, Finland, Germany and USA. Compared to neighbour countries Latvia and Estonia, the return on investment in human capital is also similar to that in Lithuania.

Keywords: *Human capital, Investment in human capital, Costs, Benefits, Rate of return.*

Introduction

Now there is a general consensus among scholars and policymakers that human capital is increasingly becoming one of the most significant sources for social and economic performance particularly for knowledge based economies (Corona Alcantar, 2006). The knowledge based economy of our age calls for a workforce with special knowledge (Ildiko, 2011). The empirical researches of human capital theory have confirmed that education has a favourable effect on economic development since it increases „*the value creating ability of human effort (work)*" (Schultz, 1961/2004 – p. 8). Therefore, the productivity of labour indicates the competence, knowledge and skills of the people (Ildiko, 2011).

Education is one of the most powerful instruments of reducing poverty, inequality, unemployment and other social evils and thus lays foundation for sustainable economic growth and development (Afzal, 2011). Therefore, education is an important investment tool, which can improve workers 'productivity and influence economic growth. As an important determinant of labour productivity, it also has an important influence on earnings and through the tax/transfer system on public finances (O'Donoghue, 1999).

The standard approach assumes that the individual invests some time in education, and then it shows up in terms of enhanced future earnings as a return (Becker, 1993), i.e. investment in education helps to increase the individuals' future earnings. How much to invest in

education is one of the most important economic decisions that individuals have to face. Hundreds of studies in many different countries and time periods have confirmed that better-educated individuals earn higher wages, suffer less unemployment and work in more prestigious occupations (Card, 1999; Sanroman, 2006), have other social returns like honour and status (Afzal, 2011) than their less-educated counterparts. This positive correlation between education (schooling) and earnings is well established in the empirical literature (Asplund & Pereira, 1999; Asplund, 2001; Blundell *et al.,* 1999; Blundell *et al.,* 2001, Afzal, 2011; OECD, 1998).

Despite the fact, that the rate of return to human capital (education) has been widely studied in the world since the late 1950s and even though hundreds of papers have studied this issue in various countries at different time periods and with alternative estimation methods, studies concerning Lithuania's case remain limited. Only few authors (Sileika & Tamasauskiene, 2003; Tamasauskiene & Damasiene, 2004; Palumickaite & Kleiviene, 2005; Giziene, 2011; Giziene *et al.,* 2012) - can be named, that have calculated the return to investment in human capital (education) in their works.

Once education, which plays a very important role in development and growth of a country, is treated as an investment, the immediate natural question is: what is the profitability of this investment comparing to alternatives? Therefore it is important to investigate the return to investment in education in order to understand the role of education in Lithuania and compare it to the other countries in the development process

The aim of the research is to estimate the private rate of return to human capital in Lithuania and to study the changes of these returns during the time (2003-2011) and compare calculated data with analogical data in other countries.

The object of the research – the return to investment in human capital.

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

The concept of 'human capital'

There are 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 (Blundell *et al.,* 1999). Other labour market activities that are sometimes included in the concept of human capital include migration and search for new jobs.

The concept of human capital arose from a recognition that an individual's or a firm's decision to invest in human capital (i.e. undertake or finance more education or training) is similar to decisions about other types of investments undertaken by individuals or firms. Human capital investments involve initial cost (tuition and training course fees, forgone earnings while at school and reduced wages and productivity during the training period) for which the individual or firm hopes to gain a return on in the future (for example, through increased earnings or higher firm productivity) (Blundell *et al.,* 1999).

Human capital as education

Generally, the term human capital refers to productive skills and knowledge embodied in labour stock, which have the economic property of future services of some value (Verkhohlyad, 2008). According to the original Human capital theory (Becker, 1964; Mincer, 1958; Schultz, 1961), education is the major factor that enhances skills level of individuals and thereby human capital. A higher skill level of the labour force increases the overall production capacity (Verkhohlyad, 2008).

The classical human capital model focused on education (and its measurement) because it was the major national investment and was associated with development of workforce skills and abilities required for economic success. Human capital theory is a theory of joint distribution of education and earnings (Hartog, 2001; Psacharopoulos, 1988). This core model was developed during the period when academic education and on-the-job-training were considered the major, and probably the only, sources of economic success. Consequently, all three founders of the theory originally concentrated their attention on returns to education and training in their attempt to calculate growth of HC. Since that time, comparison of education (although measured in different ways) with human capital became the leading framework, which is still supported by the majority of economists, and is used by default (Verkhohlyad, 2008).

These provisions will be observed in this article while analyzing the benefits and costs of investment in human capital (education) and assessing the private rate of return to investment in higher education in Lithuania.

The model

To compare the rates of return to human capital of Lithuania to other countries, we first need to estimate the rates of return to investment in human capital. The rate of return to human capital (education) has been widely studied since the late 1950s (Card, 1999; Psacharopoulos & Patrinos, 2004, Warunsiri & McNown, 2009). Estimates of the rate of return to investment in human capital can be arrived at using different methods, but, according to Psacharapoulos & Ch.Ng (1992) the method adopted by various authors is often dictated by the nature of the available data. For example, Stark (2007) stating, that there are three main methods of estimating rates of return to investments in human capital (education), highlights Mincers' (1974), econometrical earnings function estimation, ratio of discounted net benefits to discounted total costs, and internal rate of return associated with the investment in education that is calculated in almost the same way as the profitability of financial asset. Psacharopoulos, 1994; Psacharopoulos & Ng, 1992; Psacharopoulos & Patrinos, 2004) also identifies three techniques that could help to asses return on investment in human capital: the Full Discounting or Elaborate Method, the Short-Cut Method, and the Earnings Function or Mincerian wage equation Method.

One of the main ways to calculate the rate of returns to investment in human capital, which is used in the empirical practice, is **the "full-discounting" or "elaborate" method**

(Psacharopoulos, 2009), one that will be employed in this study, consists in calculating the internal rate of return (in literature this method is identified by some authors as an internal rate of return (IRR)) - based on individual age-earnings profiles that vary over time (t). The rate of return to investment in human capital can be calculated by formula given below (Psacharopoulos & Ng 1992; Psacharopoulos, 1994, 2009; Jimenez & Patrinos, 2008, Patrinos & Psacharopoulos, 2011), i.e.,

$$\sum_{t=m+1}^{n} \frac{(W_U - W_S)_t}{(1+r)^t} = \sum_{t=1}^{m}(W_S + C_U)_t(1+r)^t,$$

where (r) is a discount rate that equates the benefits from the extra education (proxied by earnings differentials in the economy), to the sum of opportunity costs (foregone earnings of the student while studying), and the direct resource costs of schooling (education) at a given point in time. Thus, $(W_U - W_S)_t$ is a difference between more educated person (subscript U) and a less educated person (subscript S, the control group). W_U is annual earnings of a more educated person. C_U represents direct costs of schooling (education) consisting of tuition and fees, books, etc., and W_S denotes student's foregone earnings or indirect costs (Psacharopoulos & Ng, 1992; Psacharopoulos, 1994, 2009). According to Maani (1999), the major strength of this method is that it can incorporate the effect of personal costs of acquiring education such as student fees, and means of financing education plus foregone earnings towards estimation of rates of return for various levels of education. Estimates of private rates of return to education generally incorporate the effect of income gains in the form of lifetime after-tax incomes at a higher education level, in relation to personal costs of education such as foregone earnings. The application of this model for calculating the rate of return on investment is assumed that the age-income profiles at a given time also reflect how an individual may expect to earn income over his or her lifetime (Psacharopoulos, 1981, 1994, 1995, 2009; Psacharopoulos & Ng, 1992; Maani, 1999; Stark, 2007). This method was applied by (Constantatos, & West, 1991; Dickson *et al.,* 1996; Boothby & Rowe, 2002; Blondall *et al.,* 2002; Collins & Davies, 2005; Wahrenburg & Weldi, 2007; Kara, 2009; Heckman *et al.,* 2008; García-Suaza *et al.,* 2009; Harberger & Guillermo-Peon, 2012) and others who were evaluating the return to investment in human capital (education) in their studies.

The results. The internal rate of return on investment in human capital

The obtained results has shown (see Figure 1.) that the return on investment in human capital (higher education) during analyzed period remained approximately in the same level (therefore gathered data can be compared with other rate of returns calculated by different researchers in different countries at different time periods, because time period of calculation do not influence the value of indicator).

Calculations of internal rate of return on investment in human capital has showed, that individuals', whose studies are fully financed by government, internal rate of return varies from 12,2 to 14 percent (13 % on average) for period 2003 – 2011. In analyzed period the highest internal rate of return was in year 2008 (14 percent), when the national average wage was also highest for a whole period since year 2003 to year 2011.
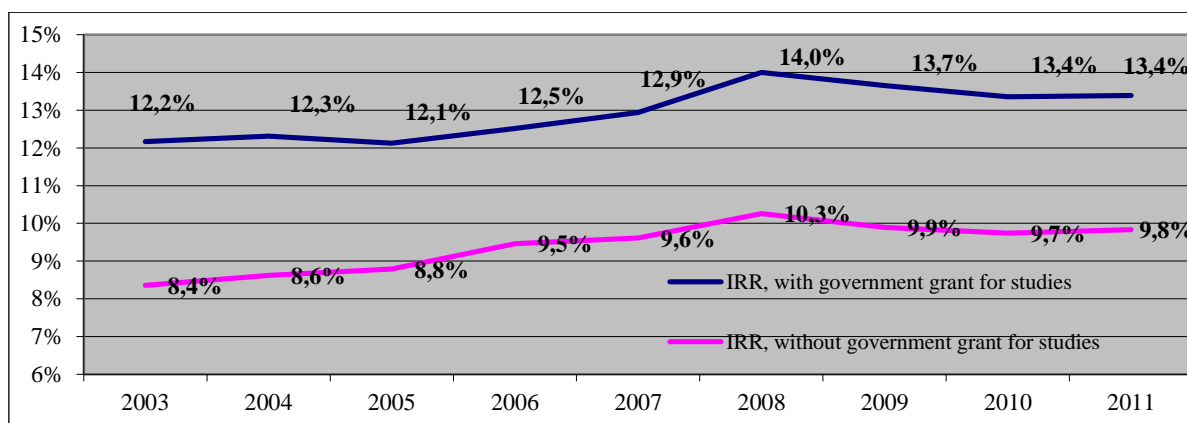

Figure 1. Private internal rate of return on investment in human capital

The private internal rate of return on investment in human capital is influenced by *tuition fee*, which value on average is about 9 thousand Lt per year (the average price of 2008 - 2011 year). The sum of direct costs is directly increased by tuition fee, which negatively influences the rate of return: referring to the calculations made it was stated that while paying for education the private return on investment in human capital was 9% on average. It ranged from 8,4% to 10 %, i.e., it was 4 percentage points lower than individuals, who have government grant for studies. Therefore, the tuition fee noticeably lowers the rate of return on investment in human capital.

While assessing the changes of estimated values of return for the period 2003 – 2011, it can be stated, that the return on investment in human capital (education) varied, reflecting constant decline of personal income tax and changes (increase/decline) on average salary and costs for higher level of education. That is, constant decline of personal income tax caused an increase in revenues and therefore higher rate of return. An increase (decrease) in average wage of more educated and less educated persons has increased (decreased) foregone earnings (salaries) and therefore increased (decreased) conditional costs of education as well as increased (decreased) additional

revenues of more educated persons, and that in the long run it has increased (decreased) the rate of return on investment in human capital. The same can be said about higher education tuition fee fluctuations – while tuition fees were increasing, the direct costs of education were also increasing, which respectively has reduced the rate of return.

Gender aspect. Many experts of economy (Arai, 2001; Stark, 2007; Wahrenburg & Weldi, 2007; Mincer & Polachek, 1974; Brown & 1980; Groshen, 1991; Schumann, *et al.,* 1994; Psacharopoulos & Patrinos, 2004; Mendez, 2009) highlight the influence of gender aspect on return on investment in human capital. Therefore after assessing the average monthly net wage differentiation by education level and gender, the private rate of return for man and women on investment in human capital with and without government grant was calculated.
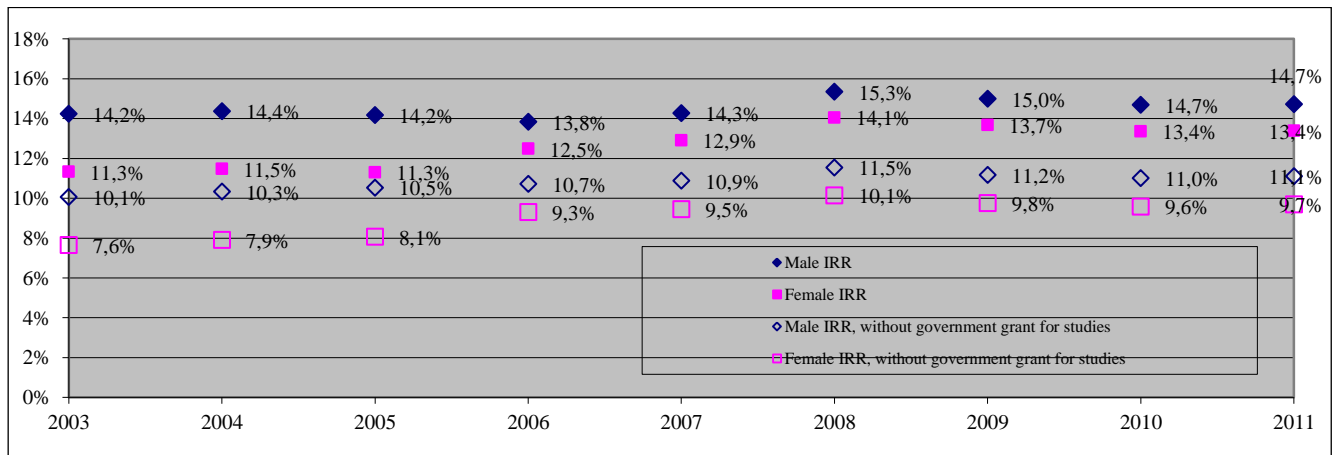

Figure 2. Private return on investment in human capital by gender

Performed calculations have shown that man's internal rate of return on investment in human capital was 14-15 percent, while individual was studying with government grant for studies (10-11 percent, while individual had to pay for studies by himself) and it was about 1,5 percentage point higher than calculated total average rate of return. Women's internal rate of return on investment in human capital was fluctuating between 11-13 % (8-10 %, without government grant for studies) and it was very close to the total average rate of return. Such result was obtained because of a bit lower higher education costs and lower benefits for education level acquired, although women's with higher level of education average salary is higher than those with lower level of education. After assessing the influence of gender aspect on rate of return on investment in human capital it must be concluded that man's internal rate of return is higher than that of women's, although the number of men seeking for higher education is much lower than women.

Comparative analysis of rate of return on investment in human capital

Rate of returns on investment in human capital differs across countries. By comparing discounted costs and benefits, Becker (1964) estimates an internal rate of return to college and high school education of 13 % to 28 %. However, Solow (1965) argues that these large estimates are not corrected for correlations between education and ability (Fleischhauer, 2007). In order to solve this problem, Ashenfelter & Krueger (1994) estimate the return to schooling by contrasting wage rates of twins with different levels of educational attainment. They find that an additional year of schooling generates a wage increase of about 12 % to 16 %. In a similar manner, by analyzing a cross section of twins, Rouse (1999) concludes that the rate of return to education is about 10 % per year of schooling. Empirical evidence for developed western economies suggests that the average estimate of the return to additional year of education ranges from 5 % to 10 % (Wilson, 2001). For example, for the UK Dearden (1998) found that the average annual return to an additional year of full-time education is 5,5 % for men and 9,3 % for women. Comparisons with less-developed countries show, according to Acemoglu (2002), that the rate of return to investment in human capital tends to be higher in latter countries (Fleischhauer, 2007). This is confirmed by the following analysis results, which are summarized in table 1.

Table 1 reports, that the returns are highest in "new countries" such as the Czech Republic, Poland, Hungary and Turkey, and lowest in Scandinavian countries such as Denmark and Sweden. Private rate of return in Lithuania, calculated in this research, is about 2 percentage points lower when compared to average rate of return of various countries presented in Table 4. After comparing Lithuania's and other countries' rate of return on investment in human capital for the year 2007, it is seen that private rate of return in Lithuania is similar to that in Denmark (10,3 %), Spain (10,2 %), Finland (10,1 %), Germany and USA (10 %). Compared to neighbouring countries Latvia and Estonia the return on investment in human capital is about 10 % that is also similar to that in Lithuania.

Generally, the results suggest that calculated rates of return (both in this research and in researches performed by other authors) are higher than real interest rate and this approves that investment in human capital is good investment.

Table 1

Private return to investment in human capital (%)

Country	Year	Male	Female	Total	Source
Australia	2005	9.1	11.3	10.2	OECD, 2011
Austria	2006	9.1	7.4	8.3	OECD, 2010
	2007	10.4	9.8	10.1	OECD, 2011
Belarus	2006			10.1	Pastore, Verashchagina, 2006
Belgium	2004	11.3	14.0	12.6	OECD, 2008
	2005	11.9	14.5	13.2	OECD, 2011
Canada	2004	9.4	9.1	9.3	OECD, 2008
	2006	9.6	8.8	9.2	OECD, 2010
	2007	11.9	11.1	11.5	OECD, 2011
Czech Republic	2004	29.1	23.8	26.4	OECD, 2008
	2006	22.5	19.6	21.1	OECD, 2010
	2007	17.6	16	16.8	OECD, 2011
Denmark	2004	4.4	4.1	4.3	OECD, 2008
	2006	4.4	4.0	4.2	OECD, 2010
	2007	9.4	11.1	10.3	OECD, 2011
Estonia	2003			10.0	Torgo, 2007
Finland	2004	10.7	9.3	10.0	OECD, 2008
	2006	10.0	7.5	8.8	OECD, 2010
	2007	11.1	9	10.1	OECD, 2011
France	2004	8.4	7.4	7.9	OECD, 2008
	2007	10.7	9.9	10.3	OECD, 2011
Germany	2004	8.0	4.8	6.4	OECD, 2008
	2006	9.0	6.5	7.8	OECD, 2010
	2007	11.5	8.4	10.0	OECD, 2011
Hungary	2004	19.8	13.8	16.8	OECD, 2008
	2006	17.7	12.8	15.2	OECD, 2010
	2007	20	14.3	17.2	OECD, 2011
Ireland	2004	10.2	11.8	11.0	OECD, 2008
	2007	13.9	17.7	15.8	OECD, 2011
Italy	2006	11.8	7	9.4	OECD, 2011
Japan	2007	7.4	7.8	7.6	OECD, 2011
Latvia	2002			10.6	Hazans, 2005
Korea	2003	9.4	12.9	11.2	OECD, 2010
	2007	13.6	7.8	10.7	OECD, 2011
Netherlands	2006	7.4	6.2	6.8	OECD, 2011
New Zealand	2004	8.6	11.9	10.2	OECD, 2008
	2006	7.2	6.5	6.8	OECD, 2010
	2007	8.9	7.3	8.1	OECD, 2011
Norway	2004	7.4	8.8	8.1	OECD, 2008
	2006	6.6	8.3	7.5	OECD, 2010
	2007	7.3	9	8.2	OECD, 2011
Poland	2004	22.8	18.6	20.7	OECD, 2008
	2006	21.4	20.4	20.9	OECD, 2011
Portugal	2004	23.9	21.5	22.7	OECD, 2008
	2006	18.5	18.4	18.4	OECD, 2011
Slovenia	2007	19.1	17.7	18.4	OECD, 2011
Spain	2004	9.3	11.6	10.4	OECD, 2010
	2007	9	11.3	10.2	OECD, 2011
Sweden	2004	5.1	4.2	4.6	OECD, 2008
	2006	6.1	5.3	5.7	OECD, 2010
	2007	7.1	5.8	6.5	OECD, 2011
Switzerland	2004	10.3	10.2	10.3	OECD, 2008
Turkey	2005	19.3	19.2	19.3	OECD, 2011
United Kingdom	2004	14.3	14.5	14.4	OECD, 2008
	2006	11.2	8.8	10.0	OECD, 2011
United States	2004	11.0	8.4	9.7	OECD, 2008
	2007	11.3	8.6	10.0	OECD, 2011

Source: OECD, Hazans, 2005, Torgo, 2007, Pastore, Verashchagina, 2006, Psacharopoulos, 2009

Conclusions

Human capital can be defined in many ways. But there are 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. Education — a measure of human capital accumulation — plays an important role in one's wages and income differentials.

While there is clear evidence that investment in human capital yields benefits, it remains difficult to calculate precise rates of return from particular investments. It should be noted that the results gathered from the research and calculated rate of return on investment in human capital in many cases depend on accepted premises, restrictions made and selected calculation method.

Estimates of the rate of return of investment in human capital can be arrived at using different methods; there are

three main methods of estimating rates of return to investments in human capital: the Full Discounting or Elaborate Method, the Short-Cut Method, and the Earnings Function or Mincerian wage equation Method.

This study was based on the private rate of return on investment in human capital using „Full Discounting" method and taking into account privately borne costs (including foregone earnings) and private benefits in terms of higher earnings. This study shows that the rate of return on investment in human capital, calculated for period 2003-2011, was pretty much stable and on average consisted of 13 %. In the analyzed period the highest internal rate of return was in the year 2008 (14 %), when the national average wage was also highest for a whole period since the year 2003 to 2011.

Referring to the calculations made it was stated that while paying for education, the private return on investment in human capital was 9 % on average (ranged from 8,4% to 10 %,) and it was 4 percentage points lower than individuals, who have government grant for studies. So, tuition fee is increasing the sum of direct costs, which is negatively influencing gross internal income rate. While assessing the changes of estimated values of return for the analyzed period, it can be stated, that return on investment in human capital (education) varied, reflecting constant decline of personal income tax and changes on average salary and costs for higher level of education.

Performed calculations have shown that man's internal rate of return on investment in human capital was 14-15 percent, while individual was studying with government grant for studies (10-11 percent, while individual had to pay for studies by himself) and it was about 1,5 percentage point higher than calculated total average rate of return. Women's internal rate of return on investment in human capital was fluctuating between 11-13 % (8-10 %, without government grant for studies) and it was very close to the total average rate of return.

After comparing Lithuania's and other countries' rate of return on investment in human capital for the year 2007, it is seen that private rate of return in Lithuania is similar to that in Denmark (10,3 %), Spain (10,2 %), Finland (10,1 %), Germany and USA (10 %). Compared to neighbouring countries Latvia and Estonia, the return on investment in human capital is about 10 % that is also similar to that in Lithuania.

It should be noted that broader and more detailed presentation of average wage, direct costs of education and other macroeconomic indicators, which are directly influencing the rate of return on investment in human capital and its' changes, was limited by the scope of the paper. The research should be extended by performing further analysis of rate of return on human capital with different evaluation methods of rate of return chosen.

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Zita Tamašauskienė, Simona Potelienė

Investicijų į žmogiškąjį kapitalą grąžos vertinimas Lietuvoje kitų šalių kontekste

Santrauka

Mokslinėje literatūroje pateikiamas stiprus, naudingas ryšys tarp ekonomikos plėtros ir žmogiškojo kapitalo, kuris paprastai įvardijamas kaip išsilavinimas (ar aukštasis mokslas). Standartiniu požiūriu daroma prielaida, kad asmuo, daugiau laiko skyręs išsilavinimui, ateityje gaus didesnį atlyginimą (Becker, 1993), t. y. investicijos į išsilavinimą sąlygoja didesnes ateities pajamas. Kiek investuoti į išsilavinimą, yra vienas svarbiausių ekonominių sprendimų, su kuriuo susiduria kiekvienas individas. Daugybė tyrimų, atliktų įvairiose šalyse ir įvairiais laikotarpiais patvirtino, kad aukštesnį išsilavinimą turintys asmenys gauna didesnius atlyginimus, susiduria su mažesne nedarbo rizika, dirba daugiau prestižinį darbą (Card, 1999; Sanroman, 2006), užima geresnę padėtį visuomenėje, pelno daugiau pagarbos iš aplinkinių (Afzal, 2011) nei asmenys, turintys žemesnį išsilavinimą. Šis teigiamas ryšys tarp uždarbio ir išsilavinimo yra patvirtintas daugelio empirinių tyrimų (Asplund ir Pereira, 1999; Asplund, 2001; Blundell, Dearden, Meghir, Sianesi, 1999; Blundell, Dearden, Sianesi, 2001, 2004; Afzal. 2011). Kai išsilavinimas (aukštasis mokslas), turintis svarbų vaidmenį šalies plėtrai ir raidai yra traktuojamas kaip investicija, kyla natūralus klausimas: kokia yra tokios investicijos grąža lyginant su alternatyvomis? Todėl svarbu ištirti investicijų į žmogiškąjį kapitalą grąžą, siekiant suprasti išsilavinimo svarbą Lietuvoje ir palyginti su kitomis šalimis plėtros metu.

Pasaulyje investicijų į žmogiškąjį kapitalą grąža plačiai tiriama nuo 1950-ųjų pabaigos. Naudojant alternatyvius įvertinimo metodus, daugelyje įvairiausių šalių yra atlikta daug tyrimų, susijusių su šiuo klausimu. Lietuvoje atliktų tyrimų, vertinančių šią grąžą, kiekis yra ribotas. Galima įvardinti tik keletą autorių, savo darbuose skaičiavusių investicijų į žmogiškąjį kapitalą grąžą – tai Šileika ir Tamašauskienė (2003), Tamašauskienė ir Damašienė (2004), Palumickaitė, Kleivienė (2005), Gižienė (2011), Gižienė, Simanavičienė, Palekienė (2012).

Straipsnio tikslas – apskaičiuoti investicijų į žmogiškąjį kapitalą grąžą Lietuvoje, įvertinti jos kitimo tendencijas 2003-2011m. laikotarpiu bei palyginti gautus rodiklius su kitų šalių analogiškais rodikliais.

Tyrimo objektas – investicijų į žmogiškąjį kapitalą grąža.

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

Yra trys pagrindiniai „žmogiškojo kapitalo" komponentai – ankstyvieji gebėjimai (įgauti ar įgimti); kvalifikacija ir žinios, įgytos besimokant ir įgūdžiai, kompetencija bei patirtis, įgyta dirbant (Blundell, Dearden, Meghir, Sianesi, 1999). Tiesa, kartais į žmogiškojo kapitalo sąvoką yra įtraukiama migracija ir naujų darbo vietų paieška. Bendrąja prasme, terminas „žmogiškasis kapitalas" reiškia darbo jėgos, turinčios ekonominę savybę ateityje teikti vertingų paslaugų gamybinius įgūdžius ir žinias (Verkhohlyad, 2008). Pagal pirminę žmogiškojo kapitalo teoriją (Becker, 1964; Mincer, 1958; Schultz, 1961), išsilavinimas yra pagrindinis veiksnys, gerinantis kartu ir žmonių įgūdžius ir žmogiškąjį kapitalą. Didesnis darbo jėgos įgūdžių lygis didina bendrąjį gamybos pajėgumą. Klasikiniame žmogiškojo kapitalo modelyje, dėmesys buvo sutelktas į išsilavinimą ir jo lygį. Taigi, siekdami suskaičiuoti žmogiškojo kapitalo augimą, visi trys teorijos kūrėjai buvo sutelkę dėmesį į išsilavinimo ir mokymų teikiamą naudą. Nuo to laiko tapo įprasta išsilavinimą, nors jis vertinamas skirtingai, prilyginti žmogiškajam kapitalui. Tokios nuostatos, kurios vis dar laikosi dauguma ekonomistų „kaip savaime suprantamos" (Verkhohlyad, 2008), laikomasi ir šiame straipsnyje, vertinant privačią aukštojo mokslo grąžą Lietuvoje.

Literatūroje randama įvairių metodų, kuriais galima įvertinti investicijų į žmogiškąjį kapitalą grąžą, tačiau metodų parinkimą, Psacharapoulos ir Ng (1992) teigimu, dažnai sąlygoja tyrėjų turimi duomenys ir jų kiekis. Pavyzdžiui, Psacharopoulos (1994), Psacharopoulos ir Ng (1992), Psacharopoulos ir Patrinos (2004), savo darbuose yra išskyrę tris metodus, kuriais galima įvertinti investicijų į žmogiškąjį kapitalą grąžą – tai „Pilnai diskontuotas" (plg. angl. Full Discounting) arba „Detalizuotas" (plg. angl Elaborate) metodas, „Trumpasis" (plg. angl. Short-Cut) metodas ir „Pajamų funkcijos" (plg. angl. Earnings Function) arba „Mincer" pajamų funkcijos metodas. Vienas iš pagrindinių būdų, taikomų empirinėje praktikoje siekiant apskaičiuoti investicijų į žmogiškąjį kapitalą grąžą, yra „Pilnai diskontuotas (kompensuojamas)" arba „Detalizuotas" metodas (Psacharopoulos, 2009). Šiuos metodus, vertindami investicijų į žmogiškąjį kapitalą (išsilavinimą) grąžą, savo tyrimuose taikė Collins ir Davies (2005), Boothby ir Rowe (2002), Constantatos, West (1991), Dickson, Milne, Murrell (1996), Wahrenburg, Weldi (2007), Kara (2009) ir kt. Pastarasis metodas, kuris naudotas ir šiame tyrime, remiasi vidinės grąžos skaičiavimais, todėl literatūroje, kai kurių autorių (pvz., Kara, 2009; Stark, 2007), įvardijamas kaip vidinė grąžos norma (IRR) – grindžiamas amžiaus - uždarbio įvertinimais per visą laikotarpį (t). Šiuo būdu investicijų į žmogiškąjį kapitalą grąžos norma yra apskaičiuojama (Psacharopoulos, Ng 1992; Psacharopoulos, 1994, 2009; Jimenez, Patrinos, 2008; Patrinos, Psacharopoulos, 2011), išsilavinimo naudos dabartinę vertę (diskontuota naudos vertė kairėje lygties pusėje) lyginant su išsilavinimo kaštų dabartine verte (diskontuota kaštų vertė kitoje lygties pusėje).

Gauti tyrimų rezultatai parodė, kad investicijų į žmogiškąjį kapitalą (aukštąjį universitetinį išsilavinimą) grąža, nagrinėjamu laikotarpiu, išliko maždaug tokio paties lygio. Remiantis „Pilnai diskontuotu (kompensuojamu)" arba „Detalizuotu" metodu, apskaičiuota individo, kurio studijas visiškai finansuoja valstybė, investicijų į žmogiškąjį kapitalą (aukštąjį universitetinį išsilavinimą) grąža 2003-2011 labai nesikeitė ir vidutiniškai sudarė apie 13 proc. Nagrinėjamu periodu grąža didžiausia buvo 2008 metais (14 proc.), kai buvo pasiektas didžiausias šalies vidutinis darbo užmokestis per visą 2003-2011 laikotarpį. Atliktais skaičiavimais nustatyta, kad mokant už mokslą, privati investicijų į žmogiškąjį kapitalą grąža, vidutiniškai sudarė 9 proc. (svyravo tarp 8,4-10 proc. ir buvo 4 procentiniais punktais mažesnė, nei asmenų, kurie aukštąjį išsilavinimą įgyja studijuodami valstybės finansuojamoje vietoje. Taigi, studijų įmoka didina tiesioginių kaštų sumą, kuri neigiamai veikia bendrąjį vidinės pajamų normos rodiklį, taip sumažindama investicijų į žmogiškąjį kapitalą grąžą. Vertinant apskaičiuotas investicijų į žmogiškąjį kapitalą grąžos reikšmes analizuojamu laikotarpiu konstatuota, kad įdėtų investicijų į išsilavinimą atsipirkimas svyravo, atspindėdamas nuolat mažėjančio gyventojų pajamų mokesčio įtaką bei vidutinio darbo užmokesčio ir kainų už aukštesnį mokymosi lygį pokyčius. T. y., nuolat mažėjantis gyventojų pajamų mokestis sąlygojo didesnes pajamas, kartu ir didesnę grąžą. Vidutinio darbo užmokesčio didėjimas / mažėjimas, didino / mažino prarastas pajamas / uždarbius, kartu didindamas / mažindamas išsimokslinimo sąlyginius kaštus bei didindamas / mažindamas papildomas pajamas, susidarančias dėl įgyto aukštesniojo išsilavinimo lygio. Tai per ilgą laikotarpį didino / mažino investicijų į žmogiškąjį kapitalą grąžą. Tas pats pasakytina ir apie aukštojo mokslo kainos svyravimus: didėjant studijų kainai, didėjo tiesioginiai išsilavinimo kaštai, dėl kurių atitinkamai mažėjo grąža.

Atlikti skaičiavimai parodė, kad vyrų privati investicijų į žmogiškąjį kapitalą grąža sudarė 14-15 proc., kai asmuo studijavo valstybės finansuojamoje vietoje ir 10-11 proc., kai individui pačiam reikėjo mokėti už studijas. Ji buvo apie 1,5 procentinio punkto didesnė, nei apskaičiuota bendra vidutinė investicijų į žmogiškąjį kapitalą grąža. Moterų vidutinė investicijų į aukštąjį universitetinį mokslą grąža svyravo tarp 11-13 proc. ir 8-10 proc., kai mokomasi valstybės nefinansuojamoje vietoje. Ji buvo labai artima vidutinei, bendrai grąžos reikšmei. Įvertinus lyties veiksnio įtaką investicijų į žmogiškąjį kapitalą grąžai, darytina išvada, kad vyrų gaunama grąža didesnė nei moterų, nors aukštojo išsilavinimo siekiančių vyrų skaičius šalyje yra gerokai mažesnis nei moterų. Palyginus Lietuvos ir kitų šalių privačią investicijų į žmogiškąjį kapitalą grąžą, nustatyta, kad Lietuvos privati aukštojo universitetinio mokslo grąža yra artima Danijos (10,3 proc.), Ispanijos (10,2 proc.), Suomijos (10,1 proc.) bei Vokietijos ir JAV (10 proc.) investicijų į išsilavinimą grąžai. Lyginant su Latvija ir Estija, investicijų į žmogiškąjį kapitalą grąža kaimyninėse šalyse yra panaši: apie 10 proc. kaip ir Lietuvoje. Skirtingose šalyse apskaičiuoti investicijų į žmogiškąjį kapitalą grąžos rodikliai yra skirtingi. Įvairių autorių atliktų tyrimų duomenys rodo, kad išsivysčiusiose Vakarų Europos šalyse, papildomų mokslo metų vidutinė grąžos norma svyruoja nuo 5 % iki 10 % (Wilson, 2001). Lyginant su mažiau išsivysčiusiomis šalimis, tyrimai rodo, kad pastarųjų išsilavinimo grąžos norma turi tendenciją būti didesne (Acemoglu, 2002). Tai patvirtino analizės metu gauti rezultatai.

Raktažodžiai: *žmogiškasis kapitalas, investicijos į žmogiškąjį kapitalą, kaštai, nauda, grąža.*