ANALYSIS OF ECONOMIC BENEFITS OF EDUCATION

ANALIZA EKONOMSKIH EFEKATA OBRAZOVANJA

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Summary: *The study aims to test the hypothesis that investment in education has a positive and significant impact on the economic development of countries. The study also aims to test the hypothesis that people with higher education or with higher educational attainment, generally achieve significantly higher rates of return through income from his salary and that investment in education is positively and significantly affects the level of their salaries.*

Keywords: human capital, expense, education, economic benefit, knowledge, GDP

Sažetak: *Istraživanje ima za cilj ispitati hipotezu da je ulaganje u obrazovanje ima značajan pozitivan utjecaj na gospodarski razvoj zemlje.Studija je također ima za cilj ispitati hipotezu da ljudi s visokom stručnom spremom ili s višim stupnjem obrazovanja, uglavnom ostvariti znatno veće stope povrata kroz prihod od njegove plaće i da se ulaganje u obrazovanje pozitivno i značajno utječe na razinu njihovih plaća.*

Ključne riječi*: ljudski kapital, troškovi, obrazovanje, ekonomska korist, znanje, BDP*

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1. Introductory considerations

The research, which deals with the analysis of economic benefits of education, is divided into three parts. The first section gives a brief theoretical explanation of the variables considered in the paper used for the analysis of economic benefits of education. The second section shows the methodology and explains the data used for research and analysis of economic benefits of education. Economic and social development of countries in the work of a variable is gross domestic product per capita. The third section covers the analysis and interpretation of the results of studies that show the analysis of economic benefit of education of economic development.

2. Theoretical review of the indicators of economic benefits of education

Relative earnings vary with age. The difference in relative earnings for those with a tertiary education at age 55 to 64 compared with the total population (25-64-year-olds) is generally larger, on average, the earnings differential increases with 14 index points. While employment opportunities at an older age improve for those with tertiary education in most countries, the earnings advantages also increase. In all countries except Australia, Canada, the Netherlands, Turkey and the United Kingdom. Earnings increase for 55-to-64-year-olds is more frequent for those with tertiary education than for those with below upper secondary education. For those with below upper secondary education the earnings disadvantage increases with age in all countries but Finland, Germany and New Zealand. The increasing earnings disadvantage at an older age for those with below upper secondary education is less marked than the earnings advantage for those with a tertiary education, which indicates that tertiary education is a key to higher earnings at an older age. In most countries, then, tertiary education not only increases the prospect of being employed at an older age but also keeps improving earnings and productivity differentials through to the end of working life.

Education and gender disparity in earnings for 25-to-64-year-olds, financial rewards from tertiary education benefit females more than males in Australia, Austria, Canada, Korea, the Netherlands, New Zealand, Norway, Spain, Switzerland and the United Kingdom. The reverse is true in the remaining countries, with the exception of Turkey, where – relative to upper secondary education – the earnings of males and females are equally enhanced by tertiary education.

Both males and females with upper secondary, post-secondary non-tertiary or tertiary attainment have substantial earnings advantages, but earnings differentials between males and females with the same educational attainment remain substantial. In all countries, considering all levels of educational attainment, females in the 30-to-44-year-old age group earn less than their male counterparts. For all levels of education taken together (i.e. dividing total earnings by the total number of income earners, by gender), average earnings of females between the ages of 30 and 44 range from 51% of those of males in Korea to 89% in Slovenia.

This relative differential must be interpreted with caution, however, since in most countries earnings data include part-time work, which is often a major characteristic

of female employment and is likely to vary significantly from one country to another. In Luxembourg, Hungary and Poland, where part-time work and part-year earnings are excluded from the calculations, earnings of females between the ages of 30 and 44 reach 84, 86 and 78%, respectively, of those of males.

The gap in earnings between males and females presented in Chart A9.4 is due in part to differences in occupations, in the amount of time spent in the labour force, and in the incidence of part-time work. However, among 55-to-64-year-olds, the gap between male and female earnings widens in most countries. Notable exceptions are females with an upper secondary and post-secondary non-tertiary education in Hungary, Poland and Slovenia who earn as much or more than males, and females with a tertiary-type A education or a degree from an advanced research programme in Luxembourg who earn over 30% more than their male colleagues.

While the overall earnings gap between males and females is generally more pronounced for the oldest age cohort, the earnings differentials between males and females in general have narrowed in some countries in recent years. The most noticeable changes have taken place for females with lower upper secondary education in Hungary, New Zealand and the United States where the earnings gap has closed by more than 10 percentage points over the past decade. The distribution of earnings within levels of educational attainment data on the distribution of levels of earnings among different educational groups can show how tightly earnings are distributed around the country median. Apart from providing information on equity in earnings, they give information about the risks associated with investing in education. As such, the distribution of earnings complements relative earnings by giving information on how these average earnings are distributed within educational groups. Distributions are given for the combined male and female populations, as well as for males and females separately. Indicators based on average earnings do not reveal the range of earnings of individuals with a given level of educational attainment.

In most countries the share of individuals in the lowest earnings categories falls as the level of educational attainment rises. This result is another way of viewing the well-established positive relationship between earnings and educational attainment. This suggests that there is a substantial risk associated with investing in tertiary education. The proportion of individuals with the highest educational attainment in the lowest earnings category varies from 0% in Luxembourg and Portugal to 18% in Canada. Across all levels of education, Belgium, the Czech Republic, Luxembourg and Portugal have no or relatively few individuals with earnings either at or below one-half the median. Not surprisingly, a more equal distribution of earnings is generally associated with lower earnings differentials for those with tertiary education but this only explains a portion of a country's earnings inequalities. Factors other than investment in human capital appear to be more important in explaining countries' overall wage structure factors ranging from differences in institutional arrangements to variations in individual abilities are likely to determine the extent of the dispersion of earnings among individuals of similar educational attainment. Countries in which wage setting is more centralised would tend to have less dispersion, owing to a degree of convergence between occupational status and educational attainment.

3. Data collection and research methodology

Gathered data relate on a 36 world countries and their statistical data on gross domestic product per capita and relative earnings of the population with income from employment (2010 or latest available year) by level of educational attainment in three kategories: below upper secondary education, post – secondary non – tertiary education and all tertiary education. Data refer to the academic year 2009/2010 and are based on the UOE data collection on education statistics administered by the OECD in 2010. Gross domestic product per capita (GDP p.c.) represent economic development of countries. These are official statistical data of OECD for world countries for years 2009. openly published in 2010.[1]

3.1. Analysis of research results

The collected data were processed and analyzed using the statistical package of SPSS program and with the analysis of linear correlation matrix and multiple linear correlation matrix, and obtained research results are presented and interpreted by creating tables.

3.2. Analysis of matrix of linear correlation and multiple linear correlation matrix

The study looked at the interaction of variables: relative earnings of the population with income from employment (by level of educational attainment in three kategories: below upper secondary education, post – secondary non – tertiary education and all tertiary education) and GDP p.c.

Relative earnings of the population with income from employment	*below upper secondary education*	*post – secondary non – tertiary education*	*all tertiary education*	*GDP p.c.*
below upper secondary education	1,00	0,44	0,51	0,55
post – secondary non – tertiary education	0,44	1,00	0,43	0,65
all tertiary education	0,51	0,43	1,00	0,83
GDP p.c.	0,55	0,65	0,83	1,00

Table 1. Matrix of linear correlation.

As shown in Table 1 and the matrix of linear correlation analysis, the variable relative earnings of the population with income from employment – below upper secondary education has a positive impact on GDP p.c. some countries. The variable relative earnings of the population with income from employment – post – secondary non – tertiary education also has a positive impact on GDP p.c. some countries, while the variable relative earnings of the population with income from employment – all tertiary education has a significant positive impact on GDP p.c. some countries.

constant:	2,86
square of coefficient:	0,82
standard error of regression:	9,7

number of observations:	36
degrees of freedom:	100
dependent variable:	*GDP p.c.*
Relative earnings of the population with income from employment	*coefficient:*
below upper secondary education	0,64
post – secondary non – tertiary education	0,71
all tertiary education	0,91

Table 2. Multiple linear correlation matrix.

As shown in Table 2 and analysis of multiple linear correlation matrix, we can see that, with the squared coefficient of 0.82, in interaction of the observed variables (relative earnings of the population with income from employment – below upper secondary education, relative earnings of the population with income from employment – post – secondary non – tertiary education, variable relative earnings of the population with income from employment – all tertiary education) and the dependent variable (GDP p.c.), all observed variables have a positive impact on the dependent variable, i.e. the degree of development of society.

4. Synthesis of research results

The study aims to test the hypothesis that investment in education has a positive and significant impact on the economic development of countries. That hypothesis, as this research shows, is positive. The study also aims to test the hypothesis that people with higher education or with higher educational attainment, generally achieve significantly higher rates of return through income from his salary and that investment in education is positively and significantly affects the level of their salaries. That hypothesis, as this research shows, is positive. As this research shown, the variable relative earnings of the population with income from employment – below upper secondary education has a positive impact on GDP p.c. some countries. The variable relative earnings of the population with income from employment – post – secondary non – tertiary education also has a positive impact on GDP p.c. some countries, while the variable relative earnings of the population with income from employment – all tertiary education has a significant positive impact on GDP p.c. some countries.

5. Literature

[1] Frank, R. H. & Bernanke, B. S. (2001), *Principles of economics*, McGraw-Hill: Irwin, cop., Boston.
[2] Ivancevich, J. M. (1995), *Human Resource Management*, sixth edition, Irwin.
[3] Milkovich, G. T. & Boudreau, J. W. (1991), *Human Resource Management*, sixth edition, Irwin, Boston.
[4] Požega, Ž. (2012.), *Menadžment ljudskih resursa – upravljanje ljudima i znanjem u poduzeću*, Ekonomski fakultet u Osijeku, Osijek.
[5] Walker, J. W. (1992), *Human Resource Strategy*, McGraw-Hill, Inc.

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