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ON THE NON-MONETARY BENEFITS OF TERTIARY EDUCATION¹

Abstract: There is a need to measure the efficiency and effectiveness of higher education in its various aspects, including the area of non-monetary benefits of higher education. Education relates to the wider economic and social effects and human welfare depends partly on earnings but also on non-monetary outcomes that all trace back to education in various ways. There exist positive relationships between education and health, the health of family members, the schooling of one's children, life choices made, fertility choices and infant mortality. Increasing the education level also has a positive effect on the environment and has a strong influence on crime reduction. The article is a review of the impact of the intangible benefits of higher education, particularly non-monetary private and the social rates of return on investment in education. Empirical studies are carried out on data from the *Social Diagnosis*² 2011.

Keywords: rate of return on tertiary education, non-monetary returns on tertiary education, private non-market effects, community non-market effects.

1. Introduction

Education is reported to have direct and indirect effects on the quality of life. The most significant factor that diversifies income is level of education. Therefore the rate of return on tertiary education is mainly measured in economic data. But the rate of return on education is not always positive or high enough to explain the great effort to climb up the education ladder. From this point of view we have to conclude that there are also many non-economic factors that motivate to become educated. Probably for many "(...) *education is not just for earning a living; it is also for living a life*" (William E.B. Du Bois). Therefore the numerous nonmarket and economic benefits of higher education are inseparable and they must be considered at the same

¹ The study was conducted in the framework of the research project entitled *Methods of Measuring the Return on Investment in Higher Education (Metody pomiaru stopy zwrotu z inwestycji na edukację w szkołach wyższych)*. The project has been financed by the National Science Centre on the basis of decision no DEC-2011/01/B/HS4/02328.

² Council for Social Monitoring. *Social Diagnosis 2000-2011: integrated database*, www.diagnoza.com.

time. Analyzing the return of investment of tertiary education only in terms of earnings may lead to some underestimations. The scope of the noneconomic benefits of having a tertiary education is extremely wide and diverse, but, at the same time it is often difficult to quantify these benefits and other spillover effects. To some extent, the inability or difficulty in the measurement of non-monetary benefits is the reason why this area is very often neglected and the rate of return on education is mainly calculated only in economic data (income).

2. Investment in higher education and private returns over the life cycle

Non-monetary returns are an important part of the outcomes of education's costs. The monetary and non-monetary returns of education are illustrated in Figure 1, and the area devoted to non-monetary and monetary returns of education is of comparable importance.

The monetary rate of return is merely a type of cost-benefit comparison. Area A in Figure 1 is the internal rate of return that must be considered in terms of net monetary benefits as well as investment-costs (Areas T + D). So Area A is a private rate of return. Private costs include the private tuition and foregone earnings costs net of term-time earnings borne by the student and his/her family. On the other hand the benefits are limited to those private returns received after taxes. Area A in Figure 1

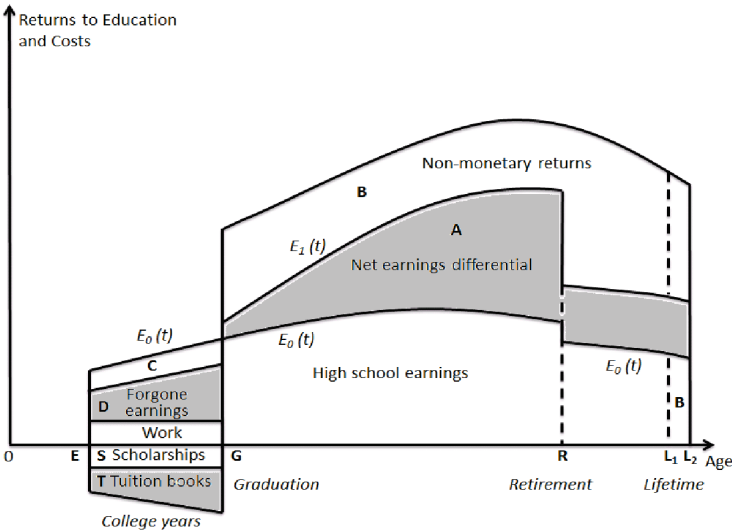


Figure 1. Investment in higher education and private returns over the life cycle

Source: [McMahon, Wegner 1979, p. 6].

also visualizes the social rate of return and represent pre-tax earnings (including the value of output contributed to society through taxes paid, and by letting costs include the full costs to society). Then total costs would contain private costs and additionally the tuition-subsidies obtained from different financial aid, as well as tax and endowment funds (Area S).

The non-monetary private returns are illustrated in Figure 1 on Area B and C. Area C visualizes the current consumption benefits enjoyed while attending college. Area B shows those returns that the student and his/her family earned later, after the investment made during the college years, and so Area B includes, for instance, non-monetary job satisfaction, greater consumption-efficiency during leisure time hours, satisfaction during retirement. It also contains the returns of a longer life (Areas L_2 and L_1), because the longer education of the individual and spouse contribute to better health and longer life ($L_2 > L_1$) [McMahon, Wegner 1979, p. 6].

3. Benefits of tertiary education

It is commonly believed that better educated people have a better life. This general opinion can be empirically confirmed in two ways. Firstly, by people's personal experience and also through respondents statements concerning their life quality perception and expectations along with their level of education.

Chart³ 2 and 3 visualize the output of correspondence analysis depicting the coincidence of the respondents education level (1 is for basic, 4 is for higher) along with a subjective evaluation of his/her life. A comprehensive description of the algorithm of correspondence analysis, computational details, and its applications can be found in the classic text by Greenacre [1984] or other descriptions, for example Stanimir [2005]. The data that was used for these calculations describes the situation in Poland in 2011. Social Diagnosis is a panel research entitled *Objective and Subjective Quality of Life in Poland* that covers 20,655 households including 65,282 members of households and 48,562 individual respondents.

The percent of total inertia described in the two first dimensions is defined in almost 100% – in Figure 2 first dimension describes in about 98% of inertia and in Figure 3 first dimension is described in about 99% of inertia. In Figure 2, point 'very happy' is next to 'high education', and further to the right the 'education level' is lower, and the 'assessment of life in the last year' is also getting worse. Figure 3 shows that 'high education' is close to wonderful and successful in terms of an assessment of the whole past life. Basic education is near to negative assessment of past life (5 and 6 points). Both Figure 2, that shows the assessment of life in the last year, and Figure 3 that illustrates evaluation of the whole past life of the respondent, lead to the same conclusions. So the bottom line is that better education could be

³ Correspondence analysis calculations were made with the database *Social Diagnosis 2011* – analyzed data set: 26,332 observations.

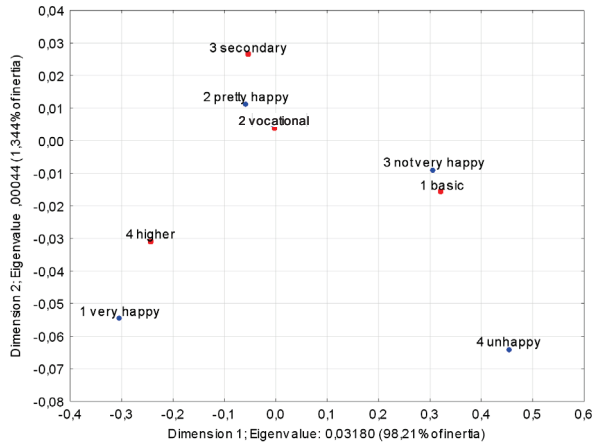


Figure 2. Correspondence analysis of education variable and assessment of life in the last year
Source: own calculations.

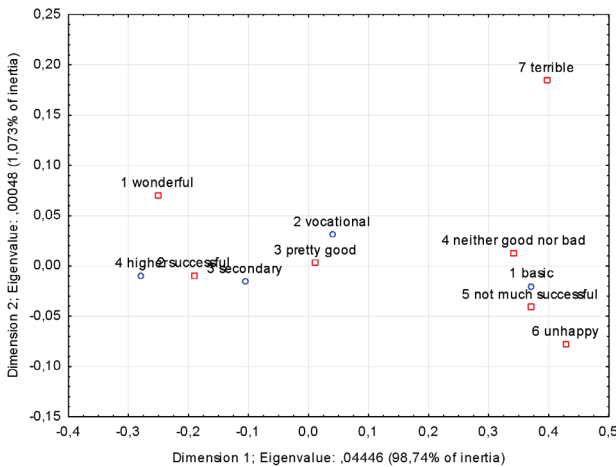


Figure 3. Correspondence analysis of education and assessment of the whole past life
Source: own calculations.

associated with the more positive perception of the past life and their current situation. But while respondents were asked about the three most important conditions for a successful, wonderful life in first five choices they point at health, children, happy marriage, work and money. Education level was mentioned somewhere between 13th and 10th place out of the possible 14 (a higher position for better educated respondents). Looking into this surprising phenomenon leads to the question: maybe education is associated with higher earnings and better jobs.

According to a survey conducted by CBOS (Public Opinion Research Center), Polish respondents show their general expectations about the benefits connected with higher education where 92% of respondents believe that with higher education it is easier to make a career, and avoid poverty (83%) and unemployment (80%). About 75% of respondents say that the children of educated parents have much more (42%) or more (33%) possibilities to achieve a high social position compared to children of less educated segments of society. Tertiary education is generally considered as an important factor of life success. As many as 47% say that this is a very strong issue, 42% consider it as a strong factor and only 9% deny the importance of education for achieving success. Far fewer less respondents think that with better education it is easier to gain friends and prestige (50%) and only 44% said that education helps to achieve happiness [Wciórka 2002, p. 2]. Recent CBOS studies confirmed that higher earnings are the strongest motivator for increasing the education level (65%) [Szczepańska 2007, p. 2; Wciórka 2009, p. 4]. Interestingly, respondents delivered also a very extensive list of important noneconomic reasons why it is worth studying. Among them they mention interesting occupation (39%), easier life (35%), independence (33%), intellectual development, self-improvement (27%), light work (18%), respect and prestige (16%). Among economic reasons the most frequent statement is to avoid unemployment (21%), to have the ability to work on their own behalf (13%), and to have the opportunity to work abroad (11%) [Wciórka 2009, p. 4]. So the range of the list of benefits of having a university degree is extensive and includes several subgroups.

Classification of benefits of tertiary education. The above listed types of returns of investment to education can be defined in terms of the private return, the social return and the labour productivity return. The direct (private) and indirect (social) non-monetary aspects of learning are called “non-monetary returns”. Non-market returns are the combination of private non-market effects and community non-market effects. Still, measurement and methodology remain important problems

Table 1. Classifying the impact of human capital

	DIRECT/PRIVATE (directly captured by individual with higher levels of human capital)	INDIRECT/SOCIAL (aggregation of human capital across individuals, organizations and communities)
MONETARY (sometimes referred to as economic)	Enhanced economic productivity of individuals	Enhanced economic output reflecting the effect on organizations, firms and societies (including interactions between different agents and spill-over effects)
NON-MONETARY	Improves health and aspects of individual well-being	Social cohesion and well-being including the effect of spillovers

Source: [OECD 2000, p. 3].

to researchers. Some researchers represent the approach to measure education in terms of years of schooling while other scientists’ measurement is based upon qualifications gained [Owens 2004, p. 1].

The first group shown on Table 1 (called “monetary”), includes the economic benefits, among them the greater competitiveness in the labor market and higher earnings and the related more satisfying quality of life. The second category of benefits can be defined by the term “personal” (called in Table 1 “non-monetary”). The prospect of education is often associated with the implementation of their own interests, personal development, conscious determination of their own future. It could also be distinguished as social benefits, which include recognition, respect of the environment and a sense of prestige. Related classifications are also proposed in other works [Dziechciarz 2011b; McMahon 2006; Psacharopoulos 2009].

4. Definition of non-monetary returns of tertiary education

Education costs and benefits can be considered in terms of individuals and society [Mingat, Tan 1996]. Basically, the rate of return of tertiary education must be defined as the combination of private non-market effects and community non-market effects and then compared to the private and social costs of education and learning (Table 2).

For individuals, the main cost is associated with lost earnings and lost production. Sometimes, an important cost also includes school fees, while to society the costs are related to public subsidies and the spillover effects in worker productivity. On the

Table 2. Generic education costs and benefits and their accrual to individuals and the rest of society

	INDIVIDUALS	SOCIETY
COSTS	C1. Direct costs Including school fees	C3. Public subsidy Net of cost recovery and adjusted for possible deadweight losses of tax-financed public spending
	C2. Forgone production Lost earnings or other production	B3. Spillover effects in worker productivity As when a person’s education enhances the work productivity of his or her co-workers
BENEFITS	B1. Increased market productivity As reflected in earnings or other work outputs	B4. Expanded technological possibilities Such as those arising from the discovery, adaptation and use of new knowledge in science, medicine, industry, and elsewhere
	B2. Private non-market effects Better personal health, expanded capacity to enjoy leisure, increased efficiency in job search and other personal choices	B5. Community non-market effects Greater social equity, more cohesive communities, stronger sense of nationhood, slower population growth and related alleviation of environmental stress, reduced risks from infectious diseases, crime reduction, and so on

Source: [Mingat, Tan 1996, p. 7].

other hand, there are benefits for individuals and society. Important benefits for individuals are increased market productivity (higher earnings and work outputs) and other private non-market effects (such as better personal health, increased capacity to enjoy leisure, increased efficiency in job search and others).

For society there could also be listed the many benefits of having a tertiary education. Firstly, expanded technological possibilities (such as discoveries and the use of new knowledge) and community non-market effects (social cohesion, sense of nationality, slower population growth, reduced risks from infectious diseases, crime reduction, and so on) [Mingat, Tan 1996].

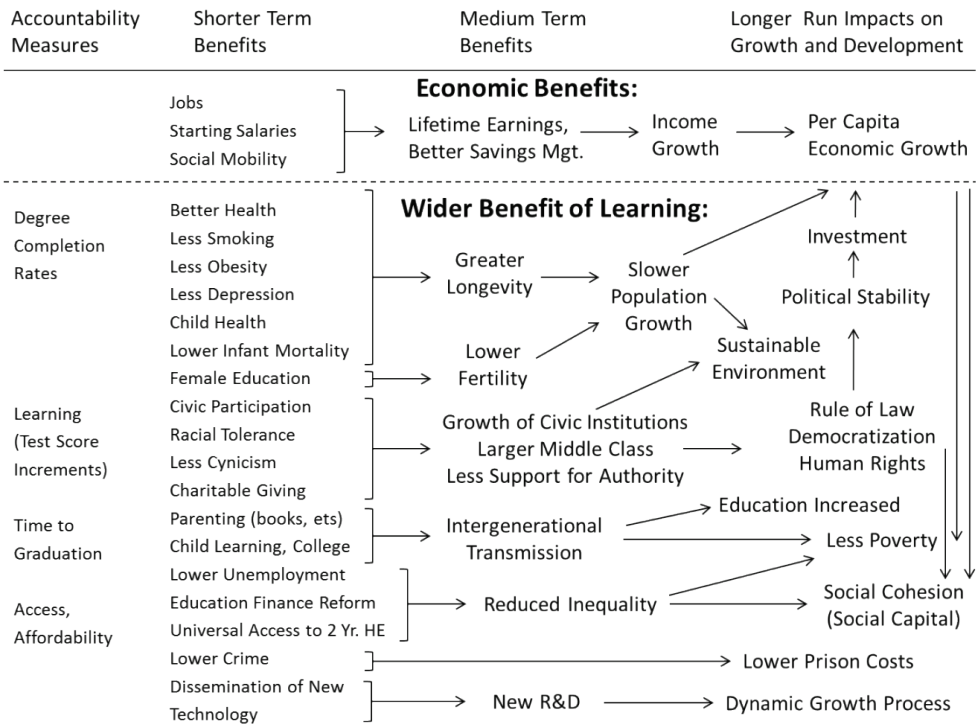


Figure 4. Mapping education’s effects into growth and development benefits

Source: [McMahon 2006, p. 268].

The benefits of tertiary education are the combination of private non-market effects and community non-market effects and these areas are partly inseparable. Wolfe and Zuvekas [1997] identified that a number of non-market outcomes relate to individuals and their family while others relate to society. An extensive list of the outcomes of schooling, nature of impacts and the existing research on magnitude is also found in work of Haveman and Wolfe [1984].

Generally speaking, the nonmarket benefits of education are those that result from the use of human capital in leisure time. The main nonmarket benefits are listed below the dashed line in Figure 4. Adding these nonmarket benefits below the dashed line in Figure 4 to the market benefits of education in order to get the total benefits may entail double counting. However, it is difficult to report these nonmarket benefits while removing the effects of increased earnings due to education [McMahon 2006].

5. Private non-monetary returns of tertiary education

The private non-monetary returns of tertiary education include the impact of education on personal health, the ability to enjoy leisure and the capacity to make personal choices. According to the grouping discussed by Dziechciarz [2011b], additionally, among private non-market benefits should be mentioned better consumer efficiency and 'quality' of children. Additionally Wolfe and Zuvekas [1997], noted the positive link between schooling and the schooling received by one's children and the contribution made by schooling to the efficiency of the choices made, such as consumer choices and time allocation patterns.

Health and Life Expectancy. Obviously, education tends to improve income which affects health positively. People with a higher education level are more aware of healthy behaviour and increase the tendency to seek treatment when needed.

According to the WHO Report [2012], males aged 30 with higher education will live on average 48,5 years longer. While life expectancy of males with primary education is 66,5 years and for secondary education is 73 years. For women, life expectancy is in general longer: for the better educated it is in average 83,2, and for the least educated 5 years shorter. So, the differences in the risk of death related to educational level are greater in the case of men than for women for all causes of death (except Cardiovascular Diseases). Subsequently, the death rates from all main causes tend to be lower among people with higher education levels. All diseases contribute to shortening the lives of less-educated people when compared with better educated individuals. The cause that is most responsible for shortening the lives of less-educated people when compared with better educated individuals is Cardiovascular Diseases, external causes and cancer.

Numerous research results confirm that higher education contributes to increased longevity and better health in terms of severe and fatal diseases, partly through the increased earnings that enable the purchase of better health care and a better diet. But moreover education is also associated with a feeling of overall well-being (Figure 5 and 6). Figure 5 and 6 visualizes the output of correspondence analysis for the level of education of Polish respondents in 2011 and the subjective evaluation of self-well-being (feeling of physical complains and frequency of health problems that hinders the positive perception of quality of life). The percentage of total inertia described in the two first dimensions is defined in almost 100% – in Figures 5 and 6 the first dimension describes respectively about 99 and 98% of inertia. Figure 5

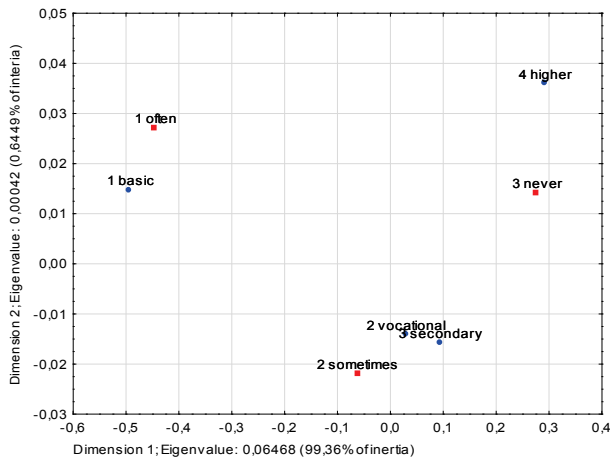


Figure 5. Correspondence analysis of education and feeling of physical complaints

Source: own calculations.

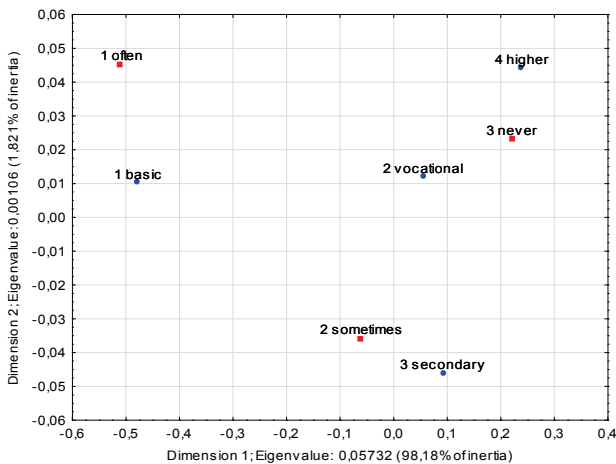


Figure 6. Correspondence analysis of education and health problems hinder living

Source: own calculations.

visualizes that basic education is close to the *often* point in terms of the feeling of physical complaints. High level of education is located near to positive assessment health (point 3 – *never* complains). In Figure 5 the point *often* is also next to *basic education* and further to the right the level of education is growing and the assessment of health is better.

Family life and marriage. Education has been found to influence family life in many ways. Potentially men and women have more opportunities for selecting a mate with better future earnings capacity by having attended to university.

Spouses with the same education level are matched better in terms of their intelligence, so this may contribute to more stable marriages [Becker, Landes, Michael 1977]. On the contrary, the huge disparities between the level of education of husband and wife make for difficult marital relationships. Probably marriages with a higher education level and intelligence increase the probability of parenting bright children. There is substantial evidence that child ‘quality’ in several dimensions (health, cognitive development, education, occupational status, future earnings) is positively and significantly related to the mother’s and father’s education [Edwards, Grossman 1980; Wolfe, Behrman 1982; Strauss 1990; Lam, Duryea 1999].

Fertility and infant mortality. Education is likely to increase the age of marriage and first pregnancy. Surprisingly in Poland the highest percent of fertility in 2002 were for women with tertiary and secondary education (according to the report of the demographic situation of Poland [*The Demographic Situation of Poland 2002*, p. 93]). In general, the higher educated the women are, the fewer children they have, but their children are healthier and better educated. So schooling reduces the desired family size [Mincer 1974; Michael 1973]. Also, particularly in less developed countries, the higher level of education of mothers is positively associated with lower infant mortality and lower birth rates [Wolfe, Zuvekas 1997].

Intergenerational effects. Some nonmonetary benefits are possible to follow up to a generation later. One of the positive results of tertiary education is that the mother’s increased education level lowers the likelihood of early pregnancy out of wedlock of her teenage daughter [Haveman, Wolfe 1984].

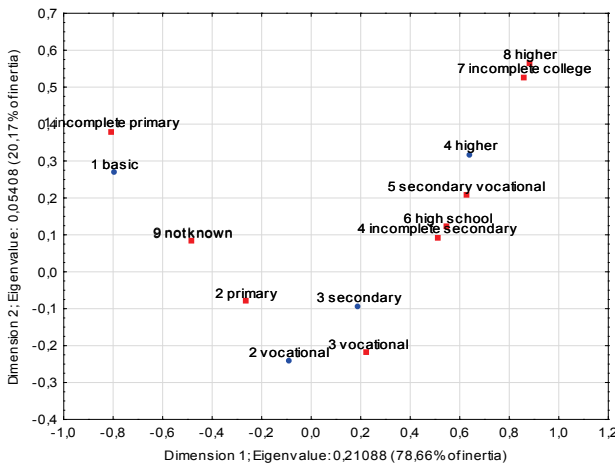


Figure 7. Correspondence analysis of education and father’s level of education

Source: own calculations.

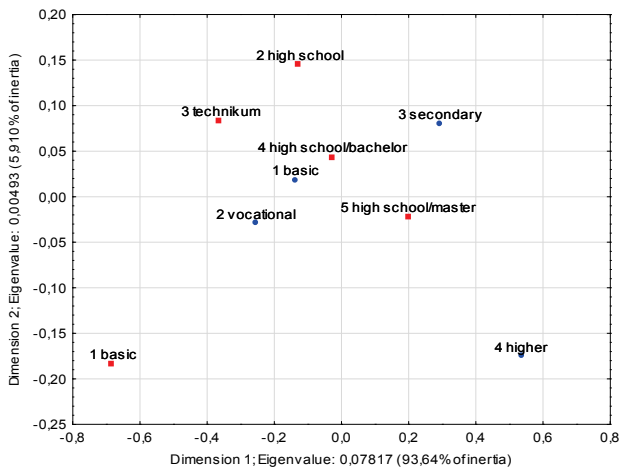


Figure 8. Correspondence analysis of education and intended level of education for child

Source: own calculations.

Moreover, another intergeneration effect of higher education is that individuals are more likely to complete tertiary education if their parents have a given level of education. A person's educational level might be a benefit twice, because of one's own education investments and probably once more in intergenerational benefits. So there is a certain intergenerational effect of a high education level. There is also some evidence that a child's education is positively related to the grandparents' schooling [Blau 1999].

Figure 7 visualizes the output of correspondence analysis for the respondent's level of education in 2011 and the education level of his/her father (or guardian). The next figure shows the education of the respondent and the planned level of education of his/her child. The percentage of total inertia described in the two first dimensions is defined in almost 100% – in Figure 7 the first dimension describes about 79% and in Figure 8 the first dimension describes about 94% of inertia. The dependence between variables in Figure 8 is slightly weaker, without the *Gutmann Effect* (*horseshoe effect*), because many parents with a lower education wish for a better education for their children than they achieved themselves. But still in both cases there is very strong relationship between the level of education among the generations. Figure 7 visualizes that the *basic* level of education of the respondent is close to the *basic* education level of the father. And on the contrary, the *high level* of education is located near to the *higher level* of education of the father. In Figure 8, the point *high* level of education of the respondent is next to the *higher* education level of children.

Time allocation patterns. The level of education influences the patterns of how parents spend time with their children. In general, the increased women's literacy leads to a higher human capital of children [Behrman, Wolfe 1987]. Research shows

that mothers with a higher education devote more attention to their offspring in the first years than women with a lower socioeconomic status [Hill, Stafford 1974]. This is partly due to the potentially better economic situation of the family and greater awareness of this topic. Chart 9 and 10 visualize the output of correspondence analysis depicting the coincidence of the mother’s education level (1 is for basic, 4 is for higher) along with her evaluation of the importance of longer maternity leave and flexible working. The percentage of total inertia described in the two first dimensions is defined in more than 93% – in Figure 9 the first dimension describes about 67% and in Figure 10 the first dimension describes about 81% of inertia. For instance, mothers with higher education, when asked about the importance of a solution that would facilitate the reconciliation of work and family responsibilities, including parental responsibilities, more often chose longer maternity leave (see Figure 9; 1 – the least important, 10 – the most important solution).

Further studies of Hill and Stafford [1980] confirmed that more-educated parents spend more time with their preschool children, including play as well as teaching time. Likewise, more educated mothers are less likely to work when they have preschool children at home. In addition, better educated mothers spend less time on household activities and significantly more time with their children. The finding that better educated parents, especially mothers, devote to their children more time than other parents was featured in Leibowitz’s work (1975). On the other hand, better educated women are more likely to spend more time on the labor market than other women. However, they are still willing to devote more time to their pre-school children than other mothers. So, better educated mothers would appreciate more flexible working hours as a way to balance work and parenting (see Figure 10;

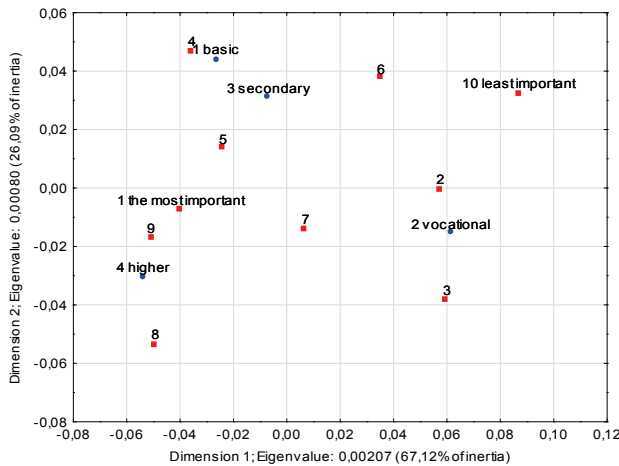


Figure 9. Correspondence analysis of education and longer maternity leave

Source: own calculations.

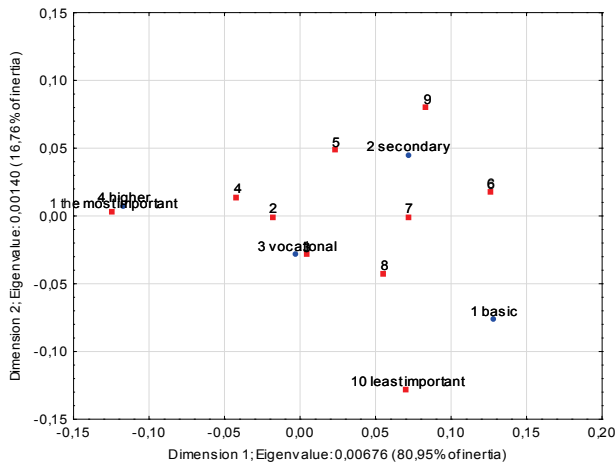


Figure 10. Correspondence analysis of education and flexible working

Source: own calculations.

1 – the least important, 10 – the most important solution). Leibowitz also found a significant relation between the mother's education level and the child's IQ and schooling achievements. Moreover, parental education level is positively related to the schooling level of children. There is also a dependence between the mother's education and the children's cognitive skills. Therefore, one nonmonetary benefit of tertiary education is future education of children, resulting in the children's future higher earnings [Leibowitz 1974a; 1974b; 1974c].

Asset management. Probably more-educated people present different behavior in terms of savings. Solmon [1975] suggest that better educated individuals will save a higher proportion of their income. Moreover, they tend to explore different, more efficient saving portfolios. Generally speaking, there is a relationship between education and saving behavior, but not directly from schooling to saving. It operates more indirectly from the educational dissimilarities to savings through the level of income.

Consumption behavior. According to Michael's estimates [1972; 1974] education raises nonmarket productivity by three-fifths as much as it raises market productivity. There are also studies that implicate some evidence about consumer choice efficiency that schooling leads to more efficient consumer activities [Pauly 1980].

6. Community (social) non-monetary returns of tertiary education

The community benefits of education involve better social cohesion, voter participation and the adoption of new technologies, as well as lowering crime rates. It also contributes to the production of community wealth [Mingat, Tan 1996].

A further social benefit that should be mentioned, is in terms of spread of infectious diseases [Dziechciarz 2011b].

Social cohesion. The level of education according to Mueller's [1978] study, is positively correlated to money and time donations. For instance, Hodgkinson and Weitzman [1988] found that people with college education volunteered nearly twice as many hours and donated 50% more of their income than high school graduates. This public good aspect, that is a consequence of better education, may lead to social cohesion [Owens 2004].

Schooling is also positively associated with voting, so better-educated individuals make more deliberate choices when voting [Hauser 2000]. More schooling is positively related to having an increased membership in community organizations [Helliwell, Putnam 1999].

Adoption of new technologies. Studies provide some findings that higher education raises the probability of the early adoption of new technologies. Moreover, it is a significant factor reducing adoption costs [Wozniak 1987, p. 101]. Wozniak studied Iowa farmers' ability to adopt new technologies. Employing the probit and logit models showed that innovative ability is highly related to the level of education and also has a positive impact on early adoption. In general, schooling is positively related with research, development, and the diffusion of technology [Nelson 1973; Mansfield 1982; Foster, Rosenzweig 1996].

Job amenities and fringe benefits. Graduates have a much more optimistic view of their lives in terms of past and future personal progress [Strumpel 1971]. This feeling is justified, because many studies show that higher educated persons are less likely to be unemployed. So education benefits individuals in this field simply because people are more likely to participate in the labour market and education means that individuals are likely to experience less unemployment. Obviously, higher skills mean that people earn, on average, higher wages than those with a lower educational level. Moreover, their chances for promotion are bigger and the fringe benefits are statistically significantly higher [Kiker, Rhine 1987]. Studies also confirmed that better educated individuals more often consider their jobs as enjoyable [Strumpel 1971]. Thus, theoretically, they have a much more comfortable position on the labour market. There is also some evidence in terms of labor market search efficiency in terms of costs of job search. According to Greenwood [1975], a better-schooled individual reduces the costs of job search. Also regional mobility increased with more schooling [Metcalf 1973; DaVanzo 1983].

Crime reduction. Normally, the older, more intelligent and the more educated people are, the less likely they are to commit a crime. So, the more you earn, the less temptation for a crime. The basic idea says that education raises skill levels and wage rates which then lowers crime [Lochner 1999]. Obviously, education is one of the most important factors of reducing crime, but stricter punishments and incentives also matter.

7. Final notes

In many cases, investment in higher education is justified almost exclusively in terms of the expected nonmarket benefits rather than increased income for graduates. Obviously, tertiary education offers many more possibilities to get a better job, and consequently achieve significant material benefits. But there are many non-monetary reasons why individuals wish to obtain tertiary education. So equally important are non-economic motivations, such as the desire for self-realization of young people, a wish to broaden knowledge and realize passions and dreams, get an interesting job, social prestige and have satisfaction and pleasure of their future profession is extremely significant.

The described potential nonmonetary effects of having tertiary education are usually not captured in the traditional estimates of the private economic returns of education. Research studies document the main direction of the relationship and in many issues the strength of the evidence is not that obvious. Among the most substantial influences that can be mentioned are the relationships between the parents' level of education and health, schooling, and childrearing of their children. Also widely discussed and well recognized are the links between one's own schooling and health. Nevertheless, the level of education gives substantial benefits beyond those usually employed measures of labor market productivity.

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O NIEMATERIALNYCH KORZYŚCIACH Z WYKSZTAŁCENIA WYŻSZEGO

Streszczenie: Badanie efektywności inwestycji w szkolnictwo wyższe jest istotnym zagadnieniem w aspekcie zarówno ekonomicznym, jak i niepieniężnym. W analizach pomiaru stopy zwrotu z inwestycji na edukację uwzględnia się głównie materialne, pieniężne aspekty, wynikające z posiadania wyższego wykształcenia. Jednak równie ważnym obszarem są niematerialne (osobiste i społeczne) korzyści z posiadania wyższego wykształcenia. Najczęściej wymienia się wśród nich lepszy stan zdrowia członków rodziny, a także wyższy osiągnięty poziom wykształcenia dzieci. Ponadto w aspekcie społecznym poziom wykształcenia ma pozytywny wpływ na zmniejszenie przestępczości. Artykuł stanowi przegląd niematerialnych korzyści z wyższego wykształcenia, ze szczególnym uwzględnieniem prywatnej i społecznej, niepieniężnej stopy zwrotu z inwestycji w edukację. Badania empiryczne zostały przeprowadzone na zintegrowanej bazie danych *Diagnoza społeczna 2011*.

Słowa kluczowe: szkolnictwo wyższe, stopa zwrotu z inwestycji edukację, niepieniężne korzyści z wyższego wykształcenia.