International Journal of Social Sciences and Management Review

Volume: 07, Issue: 06 November - December 2024

ISSN 2582-0176

HOW TO MEASURE THE LEVEL OF RETURN ON EDUCATION WITH A SOCIO-ECONOMIC APPROACH?

PUTU AYU PRAMITHA PURWANTI[1], I GUSTI AYU MANUATI DEWI[2] & NI NYOMAN RENI SUASIH[1]

[1]Economics Study Program, Faculty of Economics and Business, Udayana University
[2]Management Study Program, Faculty of Economics and Business, Udayana University

https://doi.org/10.37602/IJSSMR.2024.7631

ABSTRACT

Education as an investment in human capital has a positive relationship with economic growth.education is considered as an investment, so it is necessary to ask what the benefits of the investment are compared to other alternatives. So far, the rate of return on education has been approached more from an economic aspect, even though the rate of return can also be measured through social aspects. Therefore, this paper compiles a model to measure the rate of return on education not only from an economic aspect, but also a social aspect. The methodology used is to conduct a literature review to formulate the model. Testing the rate of return on education with an economic approach can use the Mincer model (1974) with the target variable being income. While the predictor variables are education level, potential work experience and gender. While the measurement of the average rate of return on investment for each level of education is calculated by referring to the method developed by Deolalikar (1993) using the education coefficient and length of school. While the rate of return on education in the social aspect is measured from the level of health, so the target is health insurance ownership. The predictor variables also use education level, potential work experience and gender. As a follow-up, this measurement technique needs to be tested using real data.

Keywords: rate of return on education, economic aspects, social aspects

1.0 INTRODUCTION

Education is a basic need that can improve the quality of human beings and is closely related to intellectual abilities, skills, and attitudes. The education process will give birth to innovation, causing work to become easier and save time so that the economic process becomes more productive (Sunaryo, 2017). Education is a form of human capital that has been proven to increase worker productivity (Kim & Mohtadi, 1992; Smith, 2003). Educated people are more productive when compared to those who are not educated. Technical skills obtained from education will increase individual productivity. High productivity will increase individual income which will then have an impact on their welfare. Thus, investment in education is very important to encourage and accelerate the growth of a region. This is because the mastery of skills, science, and technology by human resources makes it easier for the government to drive national development.

Education as an investment in human capital has a positive relationship with economic growth. The development of science and engineering knowledge can increase the productivity of labor and other inputs in production, thereby increasing economic growth (Becker, 1993). Based on

Volume: 07, Issue: 06 November - December 2024

ISSN 2582-0176

the theory of human capital, education is the most important dimension in human capital and the cost of education is an investment. Psacharopoulos (1995) stated that if education is considered an investment, then it is necessary to ask what the benefits of the investment are compared to other alternatives. Education is a form of human resource investment that provides monetary and non-monetary benefits. The community is interested in investing in education because with education the community will be more organized so that order, security and public welfare will be realized. Thus, education as an investment will be able to increase public welfare. How much the increase in welfare is identified by calculating the rate of return on education. Investment in education is a relative change in income following a certain change in education level (Pscacharopoulos, 1981). This rate of return describes the relationship between education and income.

Investment in human capital through education is an integral component of all development efforts. Education is not only counted as an economic investment but can also be seen from a social dimension that is oriented towards the humanitarian dimension which is more important than just economic investment (Romanello, 2016). Education must cover all broad spectrums in the life of the community. Blundell et al. (2001) stated that there are three different sides in defining the rate of return from education, namely the private return rate, the social return rate, and the labor productivity return rate. In addition, there are three categories of benefits or returns from higher education, namely private financial return, private non-financial return, and social return.

So far, the rate of return on education has been approached more from an economic aspect (Duflo, 2001; Purnastudi et. al., 2013; Dumauli, 2015; Hendajany, et al., 2016). The number of years of schooling completed reflects the ability to acquire knowledge and is a proxy for human capital stock (Barro & Lee, 2010). This measure has a linear relationship with income level (Card, 1999). The higher the education, the greater the potential level of income that will be obtained. Not many have identified the rate of return on education from a social aspect. Dijkstra & de la Motte (2014) stated that measuring the rate of return on education can be done from a social aspect. Therefore, this study aims to develop a model to measure the rate of return on education with a socio-economic approach.

2.0 METHOD

Literature review is a research method to identify, evaluate and interpret all relevant research results related to a particular research question, a particular topic, or a phenomenon of concern (Kitchenham, 2004). Individual study is a form of primary study, while literature review is a secondary study. Literature review will be very useful for synthesizing various relevant research results, so that the facts presented to policy makers are more comprehensive and balanced.

Research methodology in general, where there are quantitative and qualitative methods, then in the Literature review there are also quantitative and qualitative methods. The quantitative method of literature review is used to synthesize research results with a quantitative approach. For example, Randomized Control Trials (RCT), Cohort Study, Case-Control Study, or prevalence studies. The statistical approach in synthesizing quantitative research results is called meta-analysis, where the technique of aggregating data to obtain systematic strength in

Volume: 07, Issue: 06 November - December 2024

ISSN 2582-0176

obtaining a causal relationship between risk factors or treatments with effects/outcomes (Perry & Hammond, 2002).

The qualitative approach in literature review is used to synthesize (summarize) the results of qualitative descriptive research. This method of synthesizing (summarizing) the results of qualitative research is called meta-synthesis, a technique for integrating data to obtain new theories or concepts or a deeper and more comprehensive level of understanding (Perry & Hammond, 2002).

Literature review study is used to collect data or a synthesis of sources related to the research topic from various sources, including journals, books, documentation, the internet and libraries. The literature study method is a series of activities related to the method of collecting library data, reading and recording, and managing writing materials (Nursalam 2016).

3.0 DISCUSSION

3.1 Literature Review Concerning Rates of Return to Education

The benefits received by someone who invests in education can also be called return to education. Simply put, the benefits of education can be classified as follows (Psacharopoulos, 2006).

Table 1. Types of Educational Benefits

Type of benefits	Private	Social
Economy or Market	• Ability to get a job • High income • Reducing unemployment • Flexibility in the labor market	• High productivity • High tax revenue • Reducing dependence on government assistance
Non-Economic or Non-Market	• *Efficiency in consumption* • *Family. Healthier children*	• Low crime rate • Reducing the spread of disease • People care more about each other • Good democratic skills

Source: Pscacharopoulos (2006)

Based on Table 1 the benefits of education that are most easily measured by numbers are in the top left table, namely the economy private return, which is the economic benefit felt by someone who invests in education. As seen in the table where the economy private return in investing in education has many types, however, the focus of the research that the author will conduct is the economy private return in the form of increased income. Then it is also seen on the right side of the table there is an economy social return, namely the economic benefit felt by the community with someone investing in education. The community here can be the community in the person's environment or even within the scope of the state. Then the benefits

Volume: 07, Issue: 06 November - December 2024

ISSN 2582-0176

of education that are difficult to measure are in the left and right columns below, namely Non-Economic Private and social returns to education.

Widiansyah in Komaruddin (1991) stated that education makes a significant contribution to increasing the standard of living, human quality and national income, especially in the following matters: (1) The teaching and learning process ensures an open society (i.e. a society that is always willing to consider new ideas and hopes and to accept new attitudes and processes without having to sacrifice itself). (2) The education system provides the right foundation for development and results of rises (the inherent guarantee for the sustainable growth of modern society). Investment in education can maintain the integrity and constantly increase the stock of knowledge and the continuous discovery of new methods and techniques. (3) If in every economic sector we get all the factors that society needs except skilled labor, then investment in the education sector will increase per capita income in that sector, unless the social structure that exists in that society is not favorable. (4) The education system creates and maintains the supply of human skills in a flexible labor market. It is also able to accommodate and adapt in relation to changing labor needs and the changing modern technological society. The level of private return is used to explain the behavior of people in seeking education of various levels and types, and as an act of distributing the use of public resources.

3.2 Model for Measuring the Rate of Return on Education with an Economic Approach

The Mincer income function is an income model that has been used in many studies in various countries to estimate the effect of investment in human capital on income growth. The function of the standard Mincer model is:

$$ln\ [Y(s,x)] = \alpha + \rho ss + \beta 0x + \beta 1x\ 2 + \varepsilon$$

Where Y(s,x) is the income at education level s and at years of work experience x, ρs is the rate of return on investment in education (assumed to be the same for all levels of education) and ε is the mean zero residual, with E(ε|s,x) = 0. The advantage of the Mincer income function is explained by Kruger & Lindahl (2001) in their argument that Mincer (1974) showed in his model that if an additional year of schooling is the opportunity cost of time for a student and if the proportion of the additional time is constant over the life span, then (log) income will be linearly related to the individual's years of schooling; and the slope of this relationship can be seen as the rate of return.

Furthermore, Heckman et al. (2003) stated that the Mincer income model is the foundation for economic studies in developing countries for several reasons. First, this model is the basis for calculating the rate of return on education. Second, the Mincer income model is a basis for estimating the quality of the rate of return on education. In addition, the Mincer income model can be used flexibly where the model can be modified by adding variables that can theoretically affect income. This model is still relevant to use today. However, the Mincer income model also has several shortcomings. As stated by Hartog (2006), this model does not include the variable of omitted ability bias, measurement errors in education, and shifts in the decisions that underlie a person's schooling. In addition, the Mincer model does not consider uncertainty factors in estimating income.

Testing the rate of return on education with an economic approach using the Mincer model (1974) which was developed into the following equation (Megasari & Purnastuti, 2016):

Volume: 07, Issue: 06 November - December 2024

ISSN 2582-0176

$$LnPi = \beta_0 + \beta_1 DumTPi + \beta_2 PKi + \beta_3 PKi2 + \beta_4 JKi + \varepsilon_i$$

Where LnPi = Total income in the last 1 month

DumTPi = dummy individual education level

PKI = potential work experience

PK_{i2} = potential work experience squared

JK_i = dummy individual gender

ε_i = error

β = regression coefficient

The average rate of return on investment for each level of education is calculated by referring to the method used by Deolalikar (1993):

$$r_K = \frac{\beta_K}{n_K}$$

Where rK = rate of return per school level

β_K = Education coefficient

nK = years of schooling

3.3 Model for Measuring the Level of Return on Education with a Social Approach

The social outcomes of education are important in terms of the social development of individuals and their value for the economy and society in general. The main categories of social outcomes that can be distinguished are: social returns, social cohesion and social capital and social competence. The positive effects of education on the social domain manifest themselves in various forms. Examples are the benefits of school success for the next generation, such as better school results for children and a lower likelihood of risky behavior. Education is also associated with later physical and mental health, well-being and higher life expectancy. Positive effects are also reflected in the decrease in crime rates. The relationship between education and lower levels of deviant behavior also illustrates the relevance of these social outcomes for society.

The social outcomes of education encompass more than just these social returns. On the one hand, they include knowledge and skills that benefit people's personal functioning and have effects at the individual level; on the other hand, they include outcomes at the societal level, which have both collective and individual value. An important collective benefit of education is the social cohesion and social capital that it provides to society. Although different definitions of social cohesion have been put forward, they can essentially be summed up as 'keeping things together'. This definition often focuses on the bond between individuals and

Volume: 07, Issue: 06 November - December 2024

ISSN 2582-0176

the social context: social cohesion as the glue that holds society together. Cohesion is also a two-sided coin and consists of 'keeping things together' and allowing room for variation. The conception of cohesion as a state of equilibrium underlines the importance of cohesion as a mechanism for managing the conflicting demands that characterize societies, such as differences in values and interests. In a peaceful, strong and vibrant society, differences can only exist if there is sufficient commonality. From this, it follows that norms are one of the building blocks of social cohesion, and these norms are not accidental but develop in the process of socialization, of which education is an essential element.

The influence of schools on social participation and social trust is one example of the contribution of education to social cohesion. Social participation refers to the many ways in which people engage with groups, organizations and society in general, striving to realize collective goals, such as organizational membership, participation in volunteer work and donations to charities. Social participation is a measure of people's commitment to collective interests and their willingness to contribute to those interests. Social trust refers to the bonds that people feel exist between themselves and others. High levels of social trust contribute to the expectation that others will not behave opportunistically and to the assumption of a shared willingness to cooperate. The reduction in transaction costs makes social trust one of the building blocks for the effective production of collective goods.

Social participation and social trust are important elements of social capital available to a society (Putnam 2000). Social capital is an important means to combat the problems of collective action and opportunism. It refers to the characteristics of social structures that enable effective coordination and the realization of public interests (Putnam 1993). Social capital consists of the resources available in social networks that help individuals and groups to realize goals that could not be realized otherwise or only at higher costs. Some forms of social capital include trust, reciprocal norms of mutual expectations and obligations, effective social sanctions and access to information.

Education plays a significant role in the formation of social capital. A meta-analysis of international studies shows that participation in education has a substantial positive effect on social trust and social participation (Huang et al. 2010). Researchers have shown that the social capital available to communities has been eroded since the 1990s. Low levels of education are likely to have a negative impact on health through two mechanisms. First, individuals who enter adulthood with lower levels of education have lower human capital and therefore potentially lower income streams, ceteris paribus. Second, the direct impact of education on health has been widely demonstrated through the health production mechanism (Grossman, 1972). Educated people will be more responsive to various health-related information because they are more likely to receive information about various things that affect health.

Testing the level of return on education using the social approach is done by measuring the benefits for individual functions and has an effect on both the individual and community levels (social cohesion). The test uses two measures, the first is the benefit of education on health levels as measured by health insurance ownership and the second is social cohesion, namely participating in social activities (Dijkstra &de la Motte, 2014). When estimating with a dependent variable in the form of a binary variable, there are several alternative models that can be used. The models commonly used are the logistic model with a logistic distribution and

Volume: 07, Issue: 06 November - December 2024

ISSN 2582-0176

the probit model with a normal distribution (Wooldridge, 2010). Both will give the same results. In this study, the model used is the logistic model with the consideration that the results of the logistic model estimation are easier to interpret because the estimated coefficient can be displayed in its marginal value after the logistic regression is carried out (Cameron and Trivedi, 2009).

$$L_i = \left(\frac{P_i}{1 - P_i}\right) = \beta_0 + \beta_1 \text{DumTP}_i + \beta_2 \text{PK}_i + \beta_3 \text{JK}_i + \varepsilon_i$$

Li = Logic dependent variable, namely

- Health insurance ownership. Valued at 1 if the individual (respondent) has health insurance. Valued at zero if they do not have health insurance.
- Participation in social activities. Valued at 1 if the individual (respondent) participates in social activities. Valued at zero if not participating in social activities.

Health insurance ownership is a measure of the level of return related to the level of health. Based on the social approach, the level of return on education is related to a higher level of health. The mechanism is that education causes individuals to become more aware of the importance of health and the higher the education, the greater the exposure to health-related information. The level of awareness of the importance of health is measured by using participation in health insurance. The second measure is participation in social activities, which is a form of social cohesion where with the education they have, individuals tend to care more about their surroundings and one form of activity that can be done is to participate in social activities in their community.

4.0 CONCLUSION

Testing the level of return on education with an economic approach can use the Mincer model (1974) with the target variable being income. While the predictor variables are education level, potential work experience and gender. While the measurement of the average level of return on investment for each level of education is calculated by referring to the method developed by Deolalikar (1993) using the education coefficient and length of school. While the level of return on education in the social aspect is measured from the level of health, so the target is health insurance ownership. The predictor variables also use education level, potential work experience and gender. As a follow-up, of course this measurement technique needs to be tested using real data.

5.0 ACKNOWLEDGEMENT

Gratitude is expressed to the Institute for Research and Community Service of Udayana University for facilitating this study through the 2022 Udayana Excellent Research (PUU) scheme.

REFERENCES

Barro, R. J., & Lee, J. W. (2010). A new data set of educational attainment in the world, 1950-2010. NBER Working Paper, 15902. National Bureau of Economic Research.

Becker, G. S. (1993). Human capital. Chicago: University of Chicago Press

Card, D. (1999). The Causal Effect of Education on Earnings. In O. Ashenfelter & D. Card, Handbook of Labor Economics, Volume 3 (pp. 1801-1863), California: Elsevier Science B.V

Deolalikar, Anil. (1993). Gender Differences in the Returns to Schooling and in School Enrollment Rates in Indonesia. Journal of Human Resources. 28 (4), 899-932.

Diskstra, A., and de la Motte P.I. (2014). Social Outcomes of Educatios. The Assessment of Social Outcoomes and School Improvement through School Inspections. Amsterdam University Press

Duflo, E. (2001). Schooling and labor market consequences of school construction in Indonesia: Evidence from an unusual policy experiment. American Economic Review, 91(4), 795-813.

Dumauli, M. T. (2015). Estimate of the private return on education in Indonesia: Evidence from sibling data. International Journal of Educational Development, 42, 14-2

Grossman, M. (1972). On the Concept of Health and the Demand for Health. The Journal of Political Economy, 80(2), 223-255.

Hartog, C.d. & Kuo, J. (2006). Taxonomy and biogeography of seagrasses. In Seagrasses. Springer, Dordtrecht.

Heckman, J.J., Locher, L.J., & Todd, P.E. (2008). Earnings Function and Rates of Return. Journal of Human Capital, 2(1), 1-31.

Hendajany, N., Widodo, T., & Sulistyaningrum, E. (2016). Perkembangan tingkat pengembalian investasi pendidikan antar-provinsi: Indonesia Family Life Survey 1993–2014. Jurnal Ekonomi dan Pembangunan Indonesia, 17(1), 44-57.

Huang, C.Y., Hsu, M.C., Hsu, S.P., Cheng, P.C., Lin, S.F., Chuang, C.H. (2010). Mediating roles of social support on poststroke depression and quality of life in patients with ischemic stroke. J Clin Nurs, Oct, 19, 19-20. DOI: 10.1111/j.1365-2702.2010.03327.x

Kim, S dan Mohtadi, H. (1992). Education, Job Signaling, and Dual Labor Markets in Developing Coutries. Diakses dari: https://www.ageconsearch.umn.edu, pada 11 Agustus 2015

Kitchenham, B. (2004). Procedures for Performing Systematic Reviews. Keele University, Keele, 33.

Komaruddin (1991). Analisis Manajemen Produksi. Jakarta: Bumi Aksara.

Kruger, A.B. & Lindahl, M. (2001). Education for Growth: Why and For Whom? Journal of Economic Literature, 39(4), 1101-1136. DOI: 10.2139/ssrn/223589

Volume: 07, Issue: 06 November - December 2024

ISSN 2582-0176

Megasari, D.N. & Purnastuti, L. (2016). Disparitas Gender Dalam Tingkat Pengembalian Investasi Pendidikan di Jawa Barat. Jurnal economia, 12(1), 23-31.

Mincer, J. (1962). On-the-job training: Costs, returns, and some implications. Journal of Political Economy, 70(5, Part 2), 50-79

Nursalam. (2016). Metodologi Penelitian Ilmu Keperawatan. Jakarta: Selemba.

Perry, A. & Hammond, N. (2002). Systematic Review: The. Experience of a PhD Student. Psychology Learning and Teaching, 2(1), 32–35.

Psacharopoulos, G. (1981). Returns to education: an updated international comparison. Comparative Education, 17(3), 321-341.

Psacharopoulos, G. (1995). The profitability of investment in education: concepts and methods. Human Capital Development and Operations Policy (HCO) Working Papers, 63. Washington, DC: World Bank

Purnastuti, L., Miller, P. W., & Salim, R. (2013). Declining rates of return to education: evidence for Indonesia. Bulletin of Indonesian Economic Studies, 49(2), 213-236

Putnam, R.D. (2000) Bowling Alone: The Collapse and Revival of American Community. Simon and Schuster, New York. http://dx.doi.org/10.1145/358916.361990Putnam 2000

Putnam, R.D. (1993) Making Democracy Work. Making Democracy Work: Civic Traditions in Modern Italy. Princeton University Press, Princeton, USA.

Romanello, M. (2016). The private and social return to education considering the characteristics of society. Revista Espacios, 38(15), 1-9.

Smith, J. A. (Ed.). (2003). Qualitative psychology: A practical guide to research methods. Sage Publications, Inc.

Sunaryo, Agus (2017) Pengembangan bahan ajar pendidikan dan pelatihan penjenjangan perencanaan pada Kementerian Aama / Agus Sunaryo. Doctoral thesis, Universitas Negeri Malang.

