

**SOCIAL RETURNS FROM EDUCATION: A SYSTEMATIC ANALYSIS WITH FORWARD AND BACKWARD EFFECTS****\*Igor Rodrigues**

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**Abstract**

Education has reported direct and indirect effects on the quality of life of individuals and society as a whole. The most significant factors that differ one individual from another are their educational level, with special attention to the returns that the education brings to the economic base, such as increased productivity and income of qualified workers. However, the educational return rate, from an economic point of view, is not always positive or high enough to justify such a difference between years of study. From this point of view, the purpose of this work is to question the non-economic effects of education. Investigating the traditional sources of educational impact from a non-marketing perspective. For this, a systematic review of studies on the non-economic effects of education will be carried out, compiling the main productions in the area that show the effect of schooling on social well-being, in order to demonstrate the effects of schooling that are not reflected in the estimates of market returns. For this, we will use as a method the forward and backward effect from one of the most renowned journals in the subject: The Journal of Human Capital.

**Keywords:** Educational returns, Non-economic returns, Education, Systematic review.

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**INTRODUCTION**

Educational economics has shown important relevance to questions of evaluating educational returns. This conception is explained from the demonstration of the economic and social returns that education generates individually and collectively. Educational returns have proven to be a strong tool for economic analysis and have identified the benefits of investing in education, recognizing personal and collective aspects. The effects of investment in education have been presented in the literature as educational returns. Such effects are the returns on an investment in education, that is, the ratio between the amount of capital gained as a result of an investment, from the perspective of the amount of capital invested. The concept of rate of return on educational investment is quite similar to other types of investment. In short, they are the benefits or costs that the investment incurs over a period of time. In educational economics, educational returns have been based on human capital theory, which has been estimated since the 1950s. The popularity of the subject stems from the resulting implications of increased productive efficiency, equity and financial implications. As for the importance, it is given through the relevance to other alternative investments which can help educational policy makers in decision making. Studies of educational returns have intensified and ceased to have a purely economic vision and began to have increasingly broader scope. Given that educational returns can be classified into private or social and are also distinguished into economic or non-economic returns. Thus, the educational return rate, due to economic bias, is not always significant enough to justify the factors that differ one individual from another (Duda e Król, 2013). From this point of view, other non-economic benefits must be taken into account, since they must be considered for the correct measurement of educational returns.

The objective of this work is to question the non-economic effects of education. Investigating traditional sources of educational impact from a non-marketing perspective. For this, a systematic review of studies on the non-economic effects of education will be carried out, compiling the main productions in the area that show the effect of schooling on social well-being, in order to demonstrate the effects of schooling that are not reflected in the estimates of market returns. For this, we will use as a method the forward and backward effect from one of the most renowned journals in the subject: The Journal of Human Capital.

**Theoretical framework****Human capital**

Traditional approaches to educational returns have been highlighted by the founders of economics<sup>1</sup>. From the 1950s, studies began with an emphasis on productivity gains generated by the human factor. Since then, this area of economic studies has been theoretically structured and has been explored in the scientific literature. The importance of the subject has opened up new questions and although questions about human capital are being widely discussed, the emergence of new theories is fundamental for the construction of a less standardized analysis of non-market forces in education. Factors determining well-being are one of the main challenges for theorists of economic science. These factors explain development inequalities in different regions. In the classic approach to economic growth models, there is the understanding that growth would be interrelated with production factors (capital, labor and natural factors), demanded by each region. The exogenous theory provided knowledge of the trajectory of economic growth over time.

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<sup>1</sup>Adam Smith in his work "The Wealth of Nations" formulated the foundations that would later become the foundations of the theory of human capital.

However, the need for an explanation for the persistent growth of per capita income, in the long term, was decisive in the search for new concepts (Solow, 1956). In this sense, certain inadequacies to the classic model were noted, since the income of certain locations was heterogeneous in relation to physical capital. With studies, Mincer (1958), Schultz (1964) and Becker (1964) found that the classical theory was insufficient to demonstrate the evolutions of economic growth and development. With this, they verified the existence of another variable to indicate the construction of economic growth: human capital. Mincer (1958), correlated the decrease in the level of social inequality, that is, the distribution of personal income, to investment in human capital, in personal education, in the training of labor and in the qualification of workers. For the author, the trade-off between the time spent on improvement or keeping working without new knowledge was a rational and individual choice, however necessary for the impact of productivity. The human capital model assumes that the individual's decision to invest in his training is based on the cost and benefit ratio of such investment, that is, the decision to invest in human capital is based on the present net value and future earnings of this investment, considering the rate of return on the investment and the market interest rate.

According to Schultz (1964) and Becker (1964), improving the population through investment in education would be essential for raising productivity and consequently impacting the economy and development of the region. The human capital theory states that investments in education make the individual more productive, thus being able to positively influence the country's growth rates. The central idea of the theory is that investment in personal training, in addition to increasing worker productivity rates, leverages the country's progress; it also results in real gains in remuneration. (Schultz, 1961; Becker 1993). The theory of human capital thus correlates the level of education of individuals and their respective professional success, arguing that the rates of return associated with investments in education contribute both to individual growth and to society as a whole, since the improvement in individual earnings ends up generating spillover effects (spillovers) in society, having a positive effect on the health and formation of families. Both Becker (1993) and Schultz (1967) state that for education to result in a causal effect in the process of socioeconomic growth, it is necessary that investments related to the construction of human capital are of good quality. For decades, researchers have measured the returns on investment in education from the growth and development of the region<sup>2</sup>. Based on the assumption that education is a decisive factor for the qualification of the population and considerably influences regional performance; human capital demonstrates the ability to reduce economic disparities and foster regional development, thus increasing the

population's productive capacity and minimizing production costs, making the population show gains through increasing production returns. The notion of non-tangible phenomena as determining factors for progress was accentuated as the interest in more convincing results became necessary for the dimensioning of economic-regional growth. In view of this, the effect of human capital ceases to be merely negligible to become one of the factors of economic growth and a source of traditional impact on local development. In the direct effects we have the impacts that affect the worker's income through the improvement in the marginal productivity of labor, directly affecting the production function, where factors such as capital and technology remain constant. The direct effects are responsible for training workers so that they can improve their skills in relation to the task performed, thus increasing their productive capacity and, consequently, aiming for gains in their income. As for indirect effects, they are the impacts that generate the increase in technology available in the production process, thus creating a new frontier of production possibilities.

### Educational returns

Private returns (PR) are the set of benefits generated by investment in education that are focused on the individual. The PR despite the focus is on the individual it can also have some effects external to the subject. So, we can divide the benefits of PR into internal benefits and benefits with some external effects. Internal benefits are those with purely personal effects. The literature<sup>3</sup> portrays the internal benefits as the intrinsic advantages to the investor, in which more years of education tend to increase his salary, via increased productivity, and to improve his employability rates, demonstrating the relationship between private investments and individual growth rates. The internal benefits are related to the economic returns of education, which from the measurement of the internal rate of return<sup>4</sup>, if it exceeds the opportunity cost of funds, it is economically viable and profitable to invest in education, in addition there is an improvement in production possibilities and less need to incur costs, directly fostering individual financial issues. For Heckman, Lochner and Todd (2008) the internal rates of return on education directly affect the increase in investor income.

The internal benefits of private returns, so far, have had a lot of emphasis on labor market issues, making connections between investment in education and the increase in the income of qualified workers. And despite being widely discussed, private returns, with attention to economic returns, continue to be regularly reviewed. Studies such as Arteaga (2017) and Lins and Duarte (2019) are examples of works that focus on this relationship. When estimating returns on education, other factors that go beyond the relationship between schooling and income must be evaluated, as there are other advantages related to the educational experience that escape monetary evaluation and achieve positive effects for the individual's well-being. As Vila (2000) points out, other private returns have been identified that, despite showing gains in private utility, are non-economic. In this case, in addition to economic returns, such as salary increases, private returns can also be non-economic. economic, such as the reputation, morals, ethics

<sup>2</sup>Based on studies such as Ranis and Stewart (2000) Economic Growth and Human Development; Nafukho, Hairston and Brooks (2004) Human capital theory: implications for human resource development; Dimov and Shepherd (2005) Human capital theory and venture capital firms: exploring "home runs" and "strike outs"; Hanushek (2013) Economic growth in developing countries: The role of human capital; Curea and Ciora (2014) The impact of human capital on economic growth; Boztosun, Aksoylu and Ulucak (2016) The Role of Human Capital in Economic Growth Or in national studies such as: Lima and Urbina (2002) Human capital in production management - a microeconomic approach Cangussu, Salvato and Nakabashi (2010) An analysis of the human capital on the income level of Brazilian states: MRW versus Mincer; Fonseca (2018) Economic development and human capital: theories, critiques and analysis of the Brazilian case. Several more recent evidences have been published in the literature corroborating the importance of human capital as a vector for socioeconomic growth and development models.

<sup>3</sup>Carpena and Oliveira (2002), Teles (2005), Viana and Lima (2010), Santos and Camillo (2011).

<sup>4</sup>The internal rate of return to schooling is an economic parameter introduced in the human capital literature by (BECKER, 1964).

and prestige of a well-qualified professional. From another economic dimension, private returns can be related to a way in which education increases the possibilities of well-being. For the individual and can also generate benefits with some external effects. In this perspective, the benefits with some external effects are results that arise as a result of investment in education as a private return and that end up overflowing individual benefits and generating external effects on their surroundings. Emphasizing that although the benefits are private, their effects are not necessarily extinguished in the individual. As Vila (2000) explains, the returns with some external effects demonstrate that from a system of informed choices and a process of educational qualification, people develop a new lifestyle, educational choices, types of families, place and style housing, eating habits, hygiene issues and number of children. Where these effects, despite arising from a private investment, can reach all around. Such benefits can be illustrated by the relationship between investments in education and the internal benefits for the individual, but also by contributions to their families, providing better health conditions, better educational opportunities, building a healthier lifestyle, good practices of hygiene. As Villa (2000) reports, parental education influences the educational and social orientation of children, of which parental education influences the choices made by children ranging from childhood, with basic questions of hygiene, sustainability, food and continue to adolescent and adult life through professional choices, sexual education, political-social construction, among others. As explained by Barros and Mendonça (1997), the external effects would reach the well-being of those around them, such as children, partners and friends. political-social construction among others. As explained by Barros and Mendonça (1997), the external effects would reach the well-being of those around them, such as children, partners and friends. political-social construction among others. As explained by Barros and Mendonça (1997), the external effects would reach the well-being of those around them, such as children, partners and friends.

The benefits with some external effects, despite being a private return of education, this effect is an interstice between the internal benefits and the positive externalities of education for society (social benefits). Although this benefit does not reach every society in the media, it is the driver for the total reach of the external effects of education. McMahon (1998) explains that through individual choices, private returns to education can contribute to generating positive externalities throughout society. Soon, individual decisions to achieve higher levels of schooling reach other agents in society. According to Lucas (1988) and Romer (1990) the accumulation of human capital can be an element that stimulates economic growth. Given that this growth is not fully captured by private returns, therefore, part responsible for achieving growth comes from the positive externalities of education. Therefore, the benefits of educational returns can reach benefits that surpass the particular conception and exceed the individual relevance, accumulating both private and social issues. This effect starts from private returns and generates a series of improvements on the well-being of those around them and later on the social body. Such external effects can occur through improved health-related behaviors, decreased fertility rates, reduced criminal activity, increased political awareness, improved sanitation, increased life expectancy, awareness of the environment and reduced distances. social. This phenomenon became known as social benefits of education, or positive

externalities of education. Therefore, the combination of private benefits and social benefits gives rise to social returns. According to Junior (2014), the social return is defined as the sum of the private return and the external benefits of a unit of human capital. When a person invests in education, indirectly, the impacts of this investment reach their surroundings and this fact can generate a scale effect reaching society as a whole. Consequently, the positive aspects of education appear to the economy as positive externalities. It can be said that social returns encompass all the benefits generated by education, from the internal benefits of private returns to the positive externalities of education that comprise the whole of society. Thus, part of the literature attributed that the difference between private and social returns lies in the positive externalities of education, in view of the scope of these externalities, because although they are not directly applied in the production process, their effects externally affect the entire society.

The social return of education supports that the social interaction of qualified people can indirectly increase the productivity of other less qualified individuals, through the improvement of the individual's well-being as a whole, but unlike the benefits with some external effects of private returns, the social benefits have a scope that goes beyond the individual's surroundings to reach a larger scope. In this way, the social return is greater than your private return. Barros and Mendonça (1997), stated that the externalities generated by education (social benefits) could greatly exceed its private effects. For Junior (2014) social returns are greater than private returns, due to the possibility of the existence of positive externalities that exceed individual gains, based on the loglinear relationship of salary and educational level. According to Heckman, Humphries and Veramendi (2017), claim that social returns are greater than private ones.

Non-economic returns are easy to understand, but difficult to measure (Heckman, Humphries and Veramendi, 2017; Potelienė and Tamašauskienė, 2015), as they are returns that are not easily accountable, such as well-being, happiness, change of habits or improvement in health. The economic returns can be illustrated through the relationship between education and health, where the reduction in medical expenses can come from a change in lifestyle, such as eating habits, exercise practices, better quality of life, and a good part of health expenses. of individuals is supported by the State, depending on whether there is a positive relationship between levels of education and health, investment in education is justified, implying a reduction in health expenses, both by the State and private. And this relationship between changes in lifestyle and education has often been studied and some case-by-case results have been presented.

According to the literature on educational returns, in particular, on social returns. The difficulty in calculating social returns lies in the difficult measurement of non-economic aspects. For McMahon (1998) there is a need to add nonmonetary returns to the calculation of educational impacts, measuring this marginal product of education for studies to take this educational impact into account. According to Vila (2000), the direct benefits with the improvement in the possibility of production and the reduction of costs are easily conceptualized and measured and due to this we can find such a large offer of studies, however this traditional calculation does not capture all the effects of improvement in utility. for education. As presented by Filho

and Pessôa (2010), education can promote positive externalities for society that go beyond economic issues and that sometimes fail to be properly used to calculate the impacts of investment in education. Therefore, the importance of adding the effects of social returns in measuring the socioeconomic impacts of education is of paramount importance to verify the real relevance of the subject and how its scope can be greater than just the private and monetary effects. Thus, such externalities can be measured from the coefficient that measures the impact of education on aggregate income (JUNIOR, 2014).

## METHODS

Bibliographical research has been used with great frequency in exploratory or descriptive studies, cases in which the proposed object of study is little studied, making it difficult to formulate precise and operational hypotheses. Its indication for these studies is related to the fact that the approximation with the object is given from bibliographic sources. Therefore, bibliographical research provides a wide range of information, in addition to allowing the use of data dispersed in numerous publications, also helping in the construction, or in the best definition of the conceptual framework that involves the proposed object of study. The researcher's concern becomes the evaluation of these publications, in order to categorize what is in fact relevant. In this sense, the problem in question is related to ensuring that the choice of bibliography has been made within a universe of study that can actually represent the state of the art, in addition to striving for quality, scope and significance. Thus, the main objective of this work is to structure a method to carefully choose the best and most significant articles. For this, the following work was built following the following research phases:

### Identification

The identification phase consists of choosing the subject, formulating the research problem and creating a plan that aims to find answers to the formulated questions. Therefore, the subject to be addressed refers to the non-economic effects of education and the present work seeks to answer what are the impacts of these effects on the wellbeing of society?

### Construction of the method

The phase consists of organizing and defining the criteria that delimit the universe of study, guiding the selection of material. For this, it is necessary to define:

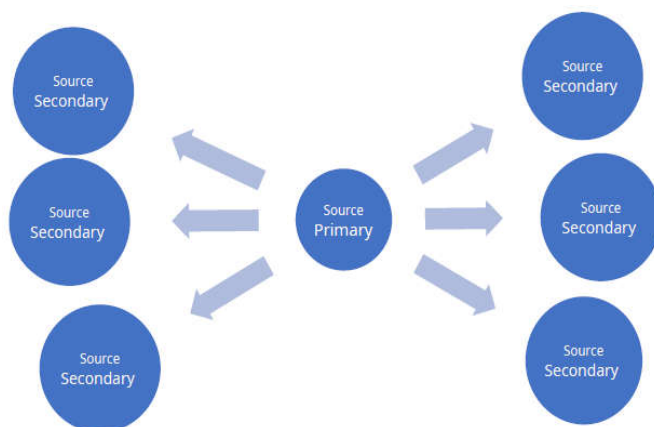
#### A. The choice of base

To achieve the established objective, searches were initially carried out in the most prominent magazine on the subject: The Journal of Human Capital (JHC). The Journal of Human Capital is a quarterly academic journal published by the University of Chicago. It is dedicated to the study and knowledge of the effects of human capital and its expanding economic and social roles in the contemporary knowledge economy. The magazine has excellent global prominence and is a reference in the study of human capital, where it explores the role that human capital plays in the production, allocation and distribution of economic resources and in supporting long-term economic growth and development.

#### B. The choice of search terms

The works related to the object of study, according to the themes that are related to it. For this, the following combinations of terms were used: "Social returns", "Nonmarket returns", "Education", "Externalities", "Nonmarket effects", "Social benefit". In order to delimit the research field to the objectives of the work. It is noteworthy that the choice of terms was due to the fact that it is the form of scientific communication most valued by the academic community, and the option of works in the English language is due to the fact that some authors prioritize publication in international journals. Boolean operators (AND, OR, NOT) were used whenever necessary and other strategies were employed looking for different combinations.

**Methodological design:** The review was carried out based on a bibliographic research plan, where primary sources were initially collected, coming from magazines with great international prominence on the subject, and secondary sources were subsequently identified, with effects going forward, where they were raised works that cited primary sources and that are related to the subject under study; and with backward effects, which represent the survey of references cited by primary sources.



Source. Owncreation, 2021

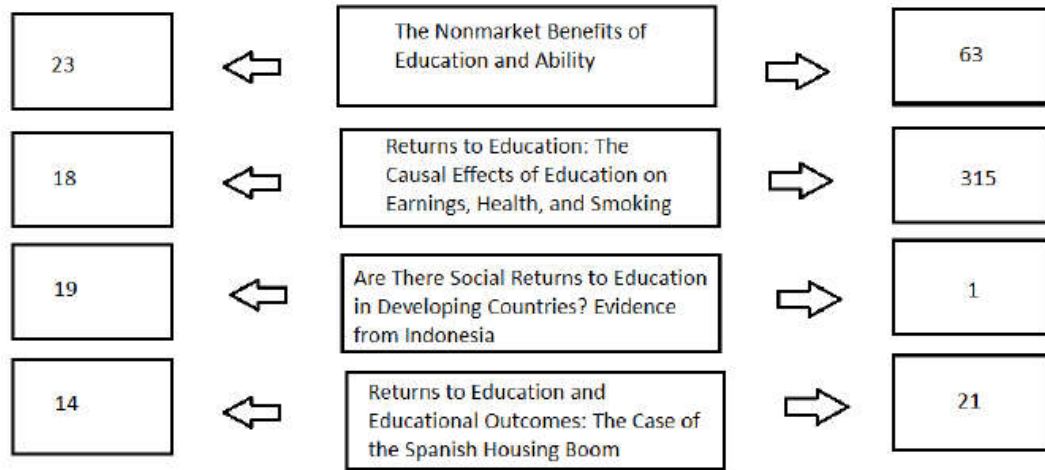
Figure 1. Diagram of methodological effects

**Definition of the criteria:** For the selection and inclusion of studies, the following criteria were used: (1) that presented the search terms in the title or abstract of the article, (2) that addressed the social and non-economic effects of education, and (3) that evidenced the effects individually in the different fields of activity. As exclusion criteria, the following arguments were adopted: (1) repeated studies; (2) addressed another topic that was not of interest to this work; and (3) descriptive studies without analysis performed.

### Compilation

In total, twelve articles were initially identified at the base of the Journal of Human Capital. After reading the abstracts, only 4 articles were eligible, according to the inclusion and exclusion criteria. Of the eligible articles, the research technique with forward and backward effects was performed. Thus, the results returned 400 articles with forward effects and 74 articles with backward effects (Table 1). Like primary sources, secondary sources also passed the inclusion criteria. Thus, 21 eligible articles remained.

Table 1. Quantitative of forward and backward effects



Source. Owncreation, 2022

Table 2. Summary of the systematic review

| Primary Source   |  |  |      |
|--|--|--|------|
| Title  | Author   | Magazine   | Year |
| The Nonmarket Benefits of Education and Ability  | James J. Heckman, John Eric Humphries, and Gregory Veramendi | Journal of Human Capital                               | 2018 |
| Returns to Education: The Causal Effects of Education on Earnings, Health, and Smoking | James J. Heckman, John Eric Humphries, and Gregory Veramendi | Journal of Human Capital                               | 2018 |
| Are There Social Returns to Education in Developing Countries? Evidence from Indonesia | Radhika Joshi, Chetansubramanian, and Shailender Swaminathan | Journal of Human Capital                               | 2019 |
| Returns to Education and Educational Outcomes: The Case of the Spanish Housing Boom    | Ainhoa Aparicio-Fenoll                                       | Journal of Human Capital                               | 2016 |
| Secondary Source   |  |  |      |
| Back Effect  |  |  |      |
| Title  | Author   | Magazine   | Year |
| Priceless: The Nonpecuniary Benefits of Schooling                                      | Oreopoulos, P., and KG Salvanes                              | Journal of Economic Perspectives                       | 2011 |
| The Non-Monetary Benefits of Education   | Vila, L.E.   | European Journal of Education                          | 2000 |
| Returns to Education: The Causal Effects of Education on Earnings, health and smoking  | Heckman, JJ, JE Humphries, and G. Veramendi                  | Journal of Econometrics                                | 2017 |
| Education and Nonmarket Outcomes   | Grosman, M.  | Handbook of Health Economics                           | 2006 |
| Estimating Marginal Returns to Education,  | Carneiro, P., JJ Heckman, and EJ Vytlacil                    | American Economic Review                               | 2011 |
| Robert T. Michael  | Education in Nonmarket Production                            | Journal of Political Economy                           | 1973 |
| Returns to Education: The Causal Effects of Education on Earnings, Health, and Smoking | Altonji, Joseph G.   | Journal of Labor Economics                             | 1993 |
| Estimating Marginal Returnsto Education  | Carneiro, Peter, James J. Heckman, and Edward J              | Econometrics   | 2010 |
| Estimating the Returns to Schooling: Some Econometric Problems                         | Griliches, Zvi   | Econometrics   | 1977 |
| Non-Production Benefits of Education: Crime, Health, and Good Citizenship              | Lochner, Lance   | National Bureau of Economic Research.                  | 2011 |
| Externalities, Non-Market Effects, and Trends in Returnsto Educational Investments     | McMahon, Walter W.   | The Appraisal of Investments in Educational Facilities | 2000 |
| Priceless: The Nonpecuniary Benefits of Schooling.                                     | Oreopoulos, Philip, and Kjell G. Salvanes                    | Journal of Economic Perspectives                       | 2011 |

..... Continue



|   | Forward Effect  |   |      |
|---|---|---|------|
| Title   | Author  | Magazine  | Year |
| Returns to education in the life course   | Michael Gebel and Guido Heineck   | Research Handbook on the Sociology of Education | 2019 |
| Returns to education across the Life course in the national Educational panel study: theoretical framework And Corresponding survey Program | Anika Bela, Nadja Feinauer, Michael Gebel, Guido Heineck, Jacqueline Lettau, and Katrin Mergard | NEPS Survey Paper No. 50                        | 2018 |
| Heterogeneous returns to college over the life course   | Siwei cheng , jennie E. Brandxiang Zhouyu xie and Michael hout                                  | SCIENCE ADVANCES                                | 2021 |
| Socio-economic gaps in university enrollment: The role of perceived pecuniary and non-pecuniary returns                                     | Theodora Boneva, Christopher Rauh   | SSRN  | 2017 |
| The Nonmarket Benefits of Education and Ability   | James J. Heckman, John Eric Humphries, and Gregory Veramendi                                    | Journal of Human Capital                        | 2018 |
| Beyond Graduation: Socioeconomic Background and Post-university Outcomes of Australian Graduates  | Wojtek Tomaszewski, Francisco Perales, Ning Xiang & Matthias Kubler                             | Research in Higher Education                    | 2019 |
| Education-earnings linkage for assessing societal benefits of interventions for children and youth in Sweden                                | Lars Hultkrantz Patrik Karpaty Elin Vimefall  | Psychosocial Intervention                       | 2017 |
| Private and social returns to investment in education: the case of turkey with alternative methods  | Harry Anthony Patrinos, George Psacharopoulos & Aysit tansel                                    | Applied Economics                               | 2021 |
| The private and fiscal returns to higher education: a simulation approach for a young German cohort   | B Fischer, D Hügle  | econstor  | 2020 |

Source. Own creation, 2022

In the end, 23 studies met all inclusion and exclusion criteria and were the object of this systematic review. All eligible studies were read in full to assess the proposed evidence. Table 2 presents the studies, by author, title, type of work and year, selected for the systematic review. As for the general characteristics of the eligible studies, all are articles published in scientific journals of international scope and related to the theme of the proposed objective, the oldest publication being from 1973, however the studies permeate the years 2010 to 2020.

## RESULTS AND DISCUSSION

A scarce number of authors analyze the social benefits in the various fields of social science, measuring the positive externalities of education in society. The relationship between education and health is an object of interest for researchers, who seek to associate better health conditions and better health-related behaviors with educational level based on a health production function (Grossman, 2015). Based on regression studies, he found that higher education was associated with better health. The authors in the study show that the causal relationship between education and health was composed of two models: the productive efficiency model, where more educated individuals manage to produce better health with the same set of inputs, and the allocation efficiency model, that more educated people, due to a greater amount of information and a quality of this information, are able to choose better inputs for the health production function. For example, in this theory, more educated people have knowledge about the harmful effects of tobacco or poor diet and the positive effects of a balanced diet and physical exercise. As expressed by Amin et al. (2015) several factors justify the correlation between education and health, including that individuals with a higher level of education are better paid and thus end up having access to better health conditions, such as health insurance.

Another important factor is that social interaction with educated individuals ends up giving way to positive health externalities. Empirical studies such as that by Barros (2017) revealed the existence of a strong correlation between educational levels and health status, in addition to finding that higher education is associated with a lower probability of being overweight. Studies that focus on the relationship between schooling and health start from an individual bias and also investigate the relationship between the individual and society, that is, the effects of social benefits. For example, studies such as the one by Brunello et al (2016) verified how the educational level can influence the health of residents of thirteen European countries. The effects of education on health, as presented by Brunello, can be short- and long-term, generally the short-term ones are associated with changes in lifestyle, while the long-term ones are associated with the longevity of the population (Marioni *et al.*, 2016). Another important factor to be analyzed when talking about social returns is the relationship between the level of education and participation in criminal activity. For Lochner and Moretti (2001) the level of education raises the opportunity cost of the criminal. In this way, as your educational level increases, so does your employability and your salary in legal activities, so the cost of committing a crime tends to rise. In addition, the possibility of imprisonment is another factor that will make the cost of committing the crime higher. In view of this, education, in addition to changing the individual's preferences, also inhibits the entry into crime, directly affecting the financial and psychological issue of the benefit of crime. Fertility and infant mortality are also another reason for studying the social returns to education. Empirical evidence demonstrates a strong negative association between the level of parental education and fertility and also shows a strong positive association between the educational level of women and a reduction in infant mortality. This negative relationship between the level of education and the number of children was very well observed by Schultz (1993), who documented in his research

that women with seven or more years of study have substantially lower fertility rates than women with none of schooling, in all parts of the world, with special attention to regions of Asia and Latin America. But this relationship between schooling and number of children is not simply a matter of fertility control. Another factor that is taken into account in the study of educational returns is the association between educational level and birth rates, which is shown by two important tradeoffs economical. The first is the well-being and number of children, in this structure it is emphasized that more educated parents tend to reduce the number of children and thus have more resources to invest in the well-being of their children. The basic insight of this model is represented by a substitution effect where the price of a child is indissolubly linked to the number of children and the quantity is linked to their quality (Becker, 1991). Furthermore, the decline in the number of children increases their quality of life, reducing the future degree of poverty (Barros e Mendonça, 1997).

The second is related to female empowerment. The improvement in the female educational level ends up working as an empowerment effect, which increases female autonomy, resulting in new opportunities and entry into the labor market, postponing marriage and the first pregnancy, improving the use of contraceptive methods and reducing the number of children (Duda and Karol, 2013). And with that, the time spent at home and the time spent in the labor market has been an important component of the economic theory of fertility. In addition to the effects mentioned in the previous paragraphs, other social benefits are also the subject of studies, some relating to civic participation. For many economists of different political beliefs, they believe in education as a premise for more educated voters to achieve a better democratic quality (Milligan, Moretti and Oreopoulos, 2004; Lochner, 2011).

Glaeser *et al.* (2006), developed a model that demonstrates that education makes people interact with each other and thereby increasing the benefits of civic participation<sup>5</sup>. The author investigates why stable democracies are rare in countries with low education and concludes that it is due to the fact that with the increase in education, disputes in favor of democracy are promoted, limiting the dictatorial power that only benefits small groups. The study of the different effects of education on the social body shows that the implications of investment in education act on individual decision-making and end up falling on society as a whole and that through investment decisions in education there are direct implications on consumption actions, savings, cognitive development, health, etc. Such actions are passed on to society in the form of crime reduction, environmental awareness, longevity, social interaction, among others. For Oreopoulos and Salvanes (2011), additional evidence of the benefits of education alludes to the improvement in happiness, leadership at work, satisfaction, occupational prestige, confidence. Therefore, educational returns depart from private returns to social returns. Encompassing individual and collective benefits, given that the positive aspects of education appear in the economy as economic and non-economic returns, which can be simultaneously enjoyed by the entire population.

## Conclusion

The mobilizing question that led to this study ratified the importance of investigating the effects of education in its multiple and complex aspects that need to be unveiled. In order to measure such educational effects, it is necessary to compute all the effects measured by the traditional sources of impact and jointly verify the scope of these impacts in relation to the environment that is involved. Throughout the construction of the different stages of the work, an attempt was made to establish links between the different fields of study. In this sense, the use of the systematic review methodology and the methodological design, made it possible to reach the objective of the work. Thus, it was found that in the scope of non-economic benefits of education, these benefits may be greater than just the economic benefits, which is why the nonmarket benefits are reported as longitudinal effects. Therefore, the first benefits of education are found from the education of parents, thus, parents with a better level of education end up passing it on to their children, which is considered an investment by parents in their children, sometimes an indirect effect for the children. Parents and involuntary for children. Thus, it is evident that the benefits measured by the social effects of education are externalized in different areas of study, such as health, environment, crime, among others.

## REFERENCES

- Amin, V., Behrman, J.R., Kholer, H.P. Schooling has smaller or insignificant effects on adult health in the US than suggested by cross-sectional associations: New estimates using relatively large samples of identical twins. *Social Science & Medicine*. 127, 1, pp.181-189, 2015.
- Arteaga, C. The effect of human capital on earnings: Evidence from a reform at Colombia's top university. *Journal of Public Economics*, 157, 1, pp. 212-225, 2018.
- Barros, R. P.; Mendonça, R. Investimentos em Educação e Desenvolvimento Econômico. Rio de Janeiro: IPEA. Texto para discussão nº 525, 1997.
- Becker, G. S. Human capital a theoretical and empirical analysis, with special reference to education. New York: Columbia University Press, 1964.
- Becker, G. S. Human capital a theoretical and empirical analysis, with special reference to education. 3ª Edição. New York: NBER, Chicago University, 1993.
- Brunello, G., Fort, M., Schneeweis, N. E Winter-Ebmer. The causal effect of education on health: what is the role of health behaviors. *Health Economics*. 25, 3, pp.314- 336, 2016.
- Drucker, P. F. The Age of Discontinuity. 1ª Edição. Oxônia: The Age of Discontinuity, 1969.
- Duda, M. D.; Król, A. On the non-monetary benefits of tertiary education. *Ekonometria*, 41, 1, pp. 78- 94, 2013.
- Filho, F. H. B.; Pessôa, S. A. Educação e Crescimento: O que a Evidência Empírica e Teórica Mostra? ANPEC - Associação Nacional dos Centros de Pós-Graduação em Economia, vol. 11,2, pp. 265-303, 2010.
- GROSSMAN, M. The relationship between health and schooling: what's new? *Nordic journal of Health Economics*. 3,1, pp. 7-17, 2015.
- Heckman J. J., Humphries J. E.; Veramendi, G. The non-market benefits of education and ability, NBER Working Paper No. 23896, National Bureau of Economic Research, Cambridge - MA, 2017.

<sup>5</sup>Gradstein and Justman (2002), state that the improvement of the educational level decreases the "social distances", understanding the different values between certain cultures and decreasing "the cost of transition".

- Heckman, J. J.; Lochner, L. J.; Todd, P. E. Earnings functions and rates of return. National bureau of economic research: No. 13780, Cambridge, v. Working Paper, ed. No. 13780, fevereiro 2008.
- Junior, O. M. Q. Retornos privados versus retornos sociais da educação no Brasil: um estudo empírico dos municípios brasileiros a partir dos dados do censo 2010. 2014. 78 f. Dissertação (Mestrado em Desenvolvimento Econômico) - Programa de Pós-Graduação em Desenvolvimento Econômico, setor de Ciências Sociais Aplicadas, Universidade Federal do Paraná., Curitiba, 2014.
- Lins, J. G. M. G.; Duarte, G. B. O impacto do capital humano sobre a remuneração: uma análise para a região metropolitana do Recife/PE. *Brazilian Journal of Development, Curitiba*, 5, 4, pp. 3300- 3326, abril 2019.
- Lochner, L., Non-Production benefits of education: crime, health, and good citizenship. In *Handbook of the Economics of Education*, v.4, 2011.
- McMahon, W.W. Conceptual Framework for the Analysis of the Social Benefits of Lifelong Learnings. *Education Economics*. 6, 3, pp.309-346, 1998.
- Lucas, R. E. Jr. On the mechanics of economic development. *Journal of Monetary Economics*, 22, 1, pp. 3–42, 1988.
- Mincer, J. Investment in human capital and personal income distribution. *Journal of Political Economy*, 66, 4, pp. 281-302, 1958.
- Oreopoulos, P.; Salvanes, K. G. Priceless: The Nonpecuniary Benefits of Schooling. *Journal of Economic Perspectives*, 25, 1, pp. 159–184, 2011.
- Poteliënė, S., Tamašauskienė, Z. The rate of return to investment in education: A case study of Lithuania. *Wroclaw Review of Law, Administration & Economics*. 4,2, pp. 41-55, 2015.
- Romer, P. M. Increasing Returns and Long-Run Growth. *Journal of Political Economy*, Chicago, 94, 5, pp. 1002-1037, outubro 1986.
- Schultz, T. W. O valor econômico da educação. Rio de Janeiro: Zahar Editores, 1964.
- Solow, R. A. A contribution of the theory of economic growth. *Quarterly Journal of Economics*, 70, 1, pp. 65-94, 1956.
- Vila, L. E. The non-monetary Benefits of Education. *European Journal of Education*. 35, 1, pp. 21-32, 2000.

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