

## INVESTING IN HUMAN CAPITAL, PREMISE OF ECONOMIC GROWTH

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### **Abstract**

*The economic development of a nation is closely related to the resources available at any given time. Beyond the provision of physical factors, those who are able to give the pace of growth and development are members of the nation concerned. Work and its quality, the potential that each individual is willing to exploit in the economic activities, education and health, all these characterize the human factor which generates capital. Studies on human capital as a concept, involvement, diversity, composition and significance were and are quite extensive. This article highlights aspects of the main theories and concepts of human capital. It highlights the evolution and structure of human capital, basic characteristics and variables for evaluation and analysis.*

*In recent years, however, economists are starting to draw attention to the importance of higher education in human capital formation and in achieving economic growth. How important is education in economic growth and how it contributes to increasing productivity are questions that the literature has not clear and definitive answers. Starting from these questions and assumptions, we decided to do a brief overview of the main research directions, controversies and trends according to which education contributes to economic growth, that countries showing higher rates of economic growth are endowed with labor holding higher levels of formal education, and generally people with a higher degree of education, obtain higher earnings, which would translate into higher productivity and therefore economic growth.*

*A prerequisite would be that a well-educated and skilled population "tends to be relatively more sophisticated in terms of technology." Also we emphasize the importance of human capital development in order to ensure the continuing development and motivation of human resources, the main premise that organizations must capitalize. Higher education has a key role in achieving this.*

**Key Words:** *human capital, education, higher education, economic growth*

**JEL Classification:** J24, I23, I25

### **1. DETERMINANTS OF ECONOMIC GROWTH AND DEVELOPMENT**

Most materials consulted in the preparation of this paper present the investment in human, physical and technological capital as the main and direct factors of economic growth. They are leading, but it's inaccurate to say direct because the growth of coefficients of these factors first affects productivity per capita of a country which then leads to economic growth. We can not talk about long-term economic growth, without entering into question a continuous growth of real productivity per capita, making an exception only if the country would find an island with almost unlimited resources to exploit and on the condition that the residents of other countries did not find out. So the key word when talking about economic growth is productivity. It is defined as the amount of goods or services produced by a resident in one

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hour of work.

Thus the question that this thesis serves turns from "which are the determinants of economic growth?" to "what are the factors that increase productivity?" And here are the answers to this question: Investment in physical capital. Workers will be more productive if they have tools and equipment that helps them complete their product or service in faster and easier working conditions easier.

The human capital represents the knowledge, skills and techniques of workers/employees acquired through education, training and experience. This human capital is formed from childhood is continued in school, university and training done on the job. Although it is not something tangible such as physical capital, human capital resembles in many aspects to the physical one: education and training increase the ability of workers to produce goods and services and the human capital is a factor produced by other production inputs (teachers, schools, universities, libraries).

Natural resources are the goods and services used in production coming from nature, eg land, water, oil fields, minerals, sunlight.

Technology refers to knowledge by a company of the most effective ways to produce goods and services.

In the early twentieth century, the amount of resources allocated to research and development was influenced by governments (large military research budget and not only), mainly because of the political situation in the world (the world wars, the Cold War) and competition of developed nations. After easing conflicts, military research and development budgets have been reduced considerably, but after the 80's, private research grew. Research during the Second World War made possible the invention of the first order (the ancestor of today's computers) and the emergence of the first forms of communication between computers (internet today). During the Cold War were invented (among many others) integrated circuit, optical fiber and the Russians launched the first artificial space satellite.

## **2. FORMING THE HUMAN CAPITAL - A MULTIFACETED PROCESS**

History regarding the term human capital, knows many ups and downs, as it has been accepted or rejected by academics and politicians. The term human capital has been used more in the economy, even if knew affirmation and conceptual structure only after the seven decade of the twentieth century.

Specialist in human capital notes six main motivations that led over time, treating human beings as capital (B. Kiker, 1966): proof of the power of a nation, determining the economic effects of education, investment in health and migration, system proposal of equitable tolling, determining the total cost of the war, warning the population on the need of preserving life and health, emphasizing the importance of individual life to the real economy of the country in which they live and determining compensation decided by courts in the event of death or accident.

As Kiker (1968) noted, "Two methods were used to estimate the monetary value of the human being: the procedure of production cost and that of capitalized earnings". The first method consists in estimating the net costs of "producing" human being in its development, excluding the cost of "maintenance" of it, Sir William Petty and Ernst Engel being among promoters. The second method is to assess the present value of past and future earnings of individuals (J. Shield Nicholson and Alfred Foville the most famous economists who have used the method).

Adam Smith talked about this in the "Wealth of Nations", resembling the individual to a machine that involves costs, but also produces revenue. Until the advent of human capital as the product of a modern school, in the relationship of human capital - economic growth, there were two significant moments in the foundations of human capital theory: "the A. Smith

moment and Marx moment". In Smith's view, technical capital is and remains the resultant of human capital, being tangible, measurable; Instead, Marx places its analysis of value and creative work outside the quality parameters. According to Smith's conception, a person's education spending is "the essence of investing in the ability to win in the future ... they need to be recovered during the active life of man." A. Smith used this perspective on equality to explain why wage rates vary. In his opinion, these rates would be higher for operations that were more difficult to learn, because people are not willing to learn if they were not compensated by a higher salary. Acquiring knowledge and skills through studies requires an expenditure seen as an investment that A. Smith appreciates as being also a fixed capital because "the work he will perform is expected that it will restore besides a common labor wage the whole expense with his training, plus at least the ordinary profits of an equally valuable capital" (Smith, Adam, 2005).

In conclusion, Adam Smith has the merit to highlight three critical values:

- With the division and specialization of labor, the skills of individuals increase largely.
- Not the individual, but his capabilities are a critical element of the nation's wealth.
- Investing in knowledge and education of the individual are considered future income sources.

Alfred Marshall, the representative of the neoclassical school, in his work "Principles of Political Economy" (1890) warned about investment in education and vocational training as a factor of development, considering them "national investment", "the most valuable of all capital is that invested in human beings ". In his view, education becomes the creator of the base adaptability and occupational mobility of labor. A. Marshall considered knowledge as "the most important sources of production" and believes that "organizations develop knowledge" (Marshall, A., 1907), so he calls the human capital theory as "unreal". The idea that training and not the native ability of the individual is important in understanding the pay gap is found in Karl Marx, in his work entitled "Capital - Critique of Political Economy". According to him "labor in the hands of worker's is merchandise but it is not capital, as equity capital it works after the sale in the hands of the capitalist during production process." (Karl Marx, Friedrich Engels, 1966).

The issue of human capital falls in the field endogenous economic growth. A very high number of studies and articles have highlighted the growing interest of researchers for the subject with both appreciative and critical approach. The concept of human capital has seen the assertion due to the University of Chicago group led by Theodore Schultz who with his colleagues Jacob Mincer, Gary Becker, George Stigler sought economic growth through increased productivity due to investment in education and health. In his view, "attributes ... that are valuable and can be developed through appropriate investments are called human capital. Investing in themselves, people expand their range of options". He is the one who has shown that investment in human capital through education and training are more effective than investment in physical capital: "knowledge and skills are a form of capital and this capital is a substantial part of the result of deliberate investment".( Schultz, Th., 1962)

The theory arises in a specific economic context. Economists have noted a rapid reconstruction of countries devastated by the Second World War and for which Schultz says economists had forecast a period of recovery much longer due to the underestimation of the importance of human capital: "I paid too much attention to non-human capital in my estimates. I fell into this error because I am convinced I have not used a concept of capital and therefore did not take into account the important role it plays in the modern economy "(T. Schultz, 1961).

In the economic literature it is considered that the best interpretation of human capital belongs to Mincer and Gary Becker. Mincer and Becker restrained generally, their approaches on human capital to the analysis of educational capital, highlighting the costs of investing in

training, and the relationship between school and post-school investment.

Jacob Mincer investigated the relationship of an additional school year and the anticipated increase in lifetime earnings reflected in the standard wage equation, which is found in "The Mincer model" in which it is established the dependence between wage and the determinants of wages. He argues that the only cost of an additional year of school is the expected return, thus ignoring direct costs such as tuition fees. J. Mincer has also the merit of establishing a relationship between workplace training, education and income and suggests that total investment in training at work can be almost as large as the investment in education.

According to Jacob Mincer human capital has a dual role in the economic growth process:

- as stock of skills - a product of education and training, human capital is a factor of production along with physical capital and "rough work" in producing the output;
- as stock of knowledge, it is a source of innovation, an important cause of economic growth

In *Investment in Human Being* there were tackled many aspects of human capital by Gary Becker, Larry Sjaasted (migration), George Stigler (labor market and looking for a job), Edward Denison (education and economic growth).

The main contributions to the development of human capital theory are assigned specifically to Becker. It should be noted that the beckerian theoretical model and generally the human capital model specifically address higher education because of understandable reasons (the individual has the legal age to work, so, therefore we can say that he gives up revenue from work, investing in education). The main merit of human capital theory is that it formalizes the relationship between education and revenue obtained on labor market, although "economic approach of human behavior is not new." (Becker, G., (1994)

According to Lucas (1988) human capital focuses on the fact that the way an individual allocates time to achieve its various activities in a reference current period influences productivity in future time periods and human capital accumulation is "a social activity that involves networking groups of people in a unique way that does not find counterpart in the accumulation of physical capital".(Lucas R., 1998).

According to Cohen and Soto (2007) the role that human capital plays vis-a-vis the economic growth is an open debate in the literature and on which has intervened several optical changes in recent decades.

The idea that human capital can generate long-term sustainable economic growth was a critical feature of the literature of new growth theory initiated by Lucas (1988) and Romer (1990), and later to prevail revival of neo-classical approach which evolved based on research results of Mankiw, Romer and Weil (1992), who described human capital as an input not being able to generate endogenous growth. Based on this new perspective, a revisionist approach has gained more influence following the lines proposed by Benhabib, Spiegel (1994) according to which the role assigned to the human capital in economic growth progress was one overstated. (Cohen D., M. Soto, 2007).

## **2.1. THE EVOLUTIONS OF DEFINITIONS OF HUMAN CAPITAL**

For centuries the human capital theory raises problems of definition and operationalization. However, most analysts include educational and biological capital. The educational capital includes skills gained from participation in education, formal systems, knowledge attested by diplomas, skills acquired during life through their own efforts or through interaction with experts from different fields. Although it is difficult to estimate in the literature, we identify three recognized approaches to calculate the capital stock of education:

- Using educational level reached as a proxy of human capital;
- Applying direct testing of adults to determine the relevant attributes of economic activity;
- Following the differences between adult earnings to estimate the market value of these

attributes, the default value of aggregate human capital stock.

Generalizing the basic approaches of the theory of human capital we can affirm that: human capital is a measure of the capabilities and qualities of the individual investments made after being used efficiently, leading to increased productivity and revenue. In Table 1, we present the views of economists on definitions of human capital during the evolution of economic theory.

No.	Definition	Author
1.	"knowledge and skills form the capital and that capital is the product of deliberate investment"	Th.Schultz, 1961
2.	„includes educational capital, biological capital, migration capital”	G.Becker, 1964
3.	"skills and knowledge of a person which facilitate change in action and economic growth"	James Coleman, 1988
4.	"... all the productive capacity of an individual, including his skills in the broadest sense operators: general or specific knowledge, skill, experience ..."	Bernard Gazier, 1992
5.	"value of the knowledge skills and experience of employees"	Leif Edvinsson, 1997
6.	"... includes the individual's age and family income"	Leif Edvinsson, 1997
7.	"a hidden concept, a valuation of individual skills. A simple definition describes it as the value of productive skills, marketed by a person"	Joop Hartog, 2000
8.	"... all intangible assets that people bring to their work"	Thomas Davenport, 2001

**Table no. 1 The evolution of definitions of human capital**

Source: own adaptation

### 3. RELATIONSHIP BETWEEN EDUCATION AND ECONOMIC GROWTH

Education is the basis of development, the foundation for building economic and social welfare. This is the key to economic efficiency and social coherence. By increasing the value and work efficiency, we understand the decrease of mean low standard of living. This increases overall productivity and intellectual flexibility of labor. This demonstrates that a country is competitive in world markets now characterized by changing technologies and production methods.

There are two main reasons underlying the link between education and economic growth. (Benhabib, J. & Spiegel, M. 1994). First of all, in general, it is predicted that living standards have risen the last millennium, and especially since the 1800s because of education. Progress of this kind has been observed in Europe where illiterate society began to be replaced by educated society, which gradually merged into the global economy in the last two centuries. So it seems that there is a connection between scientific progress and how education has facilitated personal development, because people with lower education often find it difficult to operate in an advanced society. So education is needed for people to contribute to scientific progress.

Secondly, in the specific mode, a wide range of econometric studies indicate that the income of individuals depend on their level of education. If people with education earn more than those without, the same can be said about a country. The rate of change of output per worked hour, at least at the level of output per worked hour in a country should depend on the level of education of the population. If education spending provides efficiencies that can be matched with the yields on fixed capital expenditure, then we can speak of an investment in human capital as its counterpart, an investment in fixed capital. The educational process can be analyzed as an investment decision.

Regarding the role that education plays in the economic growth, in the economic literature there are many authors who made researches both conceptually and empirically. Among these, there are some notable presences: Barro (1992, 2001), Jorgenson and Fraumeni (1992), Min and Ding (1999), Becker and Lewis (1992), Bils and Klenow (2000), Duflo (2001).

There are concerns regarding studying the trinomial education - human capital - economic growth. Thus, G. Bertocchi and M. Twine (1998) demonstrated that secondary education is positively related to GDP growth for poor countries. E. A. Hanushek and D. D. Kimko (2000) found that scores of international type testing in mathematics and science are indicative of the quality of labor, and these scores are strongly positively correlated with economic growth (Hanushek, Kimko, 2000). S. Chen and M. Luohe (2009), however, argue that higher scores in mathematics and science reflect only the ability to prepare for exams and not necessarily exceptional quality of human capital. In addition, they stated that "the number of researchers/capita" and "scientific and technical articles / capita" (Tsai, et al. 2010) are real indicators attesting employment and support of economic growth.

In the 90s and beyond, many of the models started from the observation made by R. Barro (1991) and used as a variable with significant influence on economic growth secondary education, both for developed countries and for developing countries.

In recent years, however, economists are starting to draw attention to the importance of higher education in human capital formation and achievement of economic growth (Stephan, 1997 Chatterji, 1998 Kwabena et al., 2006). For example, H.M. Richard (2006) demonstrated that there is a more pronounced growth in countries with well developed higher education system. Other researchers have been concerned with the link between the various specializations in higher education and economic growth. Among them there are:

- K. Murphy, A. Shleifer and R. Vishny (1991) concluded that the higher technical education greatly influences economic growth rather than higher legal education;
- N.S. Tiago (2007) showed that there is a direct relationship between the rate of enrollment in engineering, mathematics and computing studies and economic growth;
- M. G. L.Grilli Colombo (2005) demonstrated that in case of the growth of firms, scientific and technical graduates have a significant positive effect;
- CL.Tsai, M-C Hung and K. Harriott (2010) showed that countries should encourage high-tech fields of study because the percentage of university graduates in science, engineering, mathematics and computing is an important indicator for determining the quality of the workforce.

#### **4. ANALYSIS OF MODELS IN LITERATURE**

How important is education in economic growth and how it contributes to increasing productivity are questions that the literature has not clear and definitive answers. Also opinions on how education contributes most to growth, namely general schooling, formal training or training undertaken at work and the level of primary, secondary or higher education are uncertain.

The beckerian model of 1964 education suggests another mechanism namely as an investment in human capital, where the skills acquired on the basis of education make employees more productive and therefore increase the production per employee. Another form through which education affects growth is specified in the model of Nelson and Phelps 1996. In this one more education increase the dissemination of technology, and individuals are forced to be more educated to adapt to it.

Hanushek and WoBmann (2008) emit similar considerations. They point out that the literature indicates at least three ways in which education can affect growth, stated differently than before. The first is that education increases productivity and consequently the production as it happens in neoclassical theories of growth of Mankiw, Romer and Weil (1992).

Secondly, education can increase the innovation capacity of an economy and the creation of new technologies, products and processes that promote growth (these developments are explained by endogenous growth models, Lucas 1988, Romer 1990).

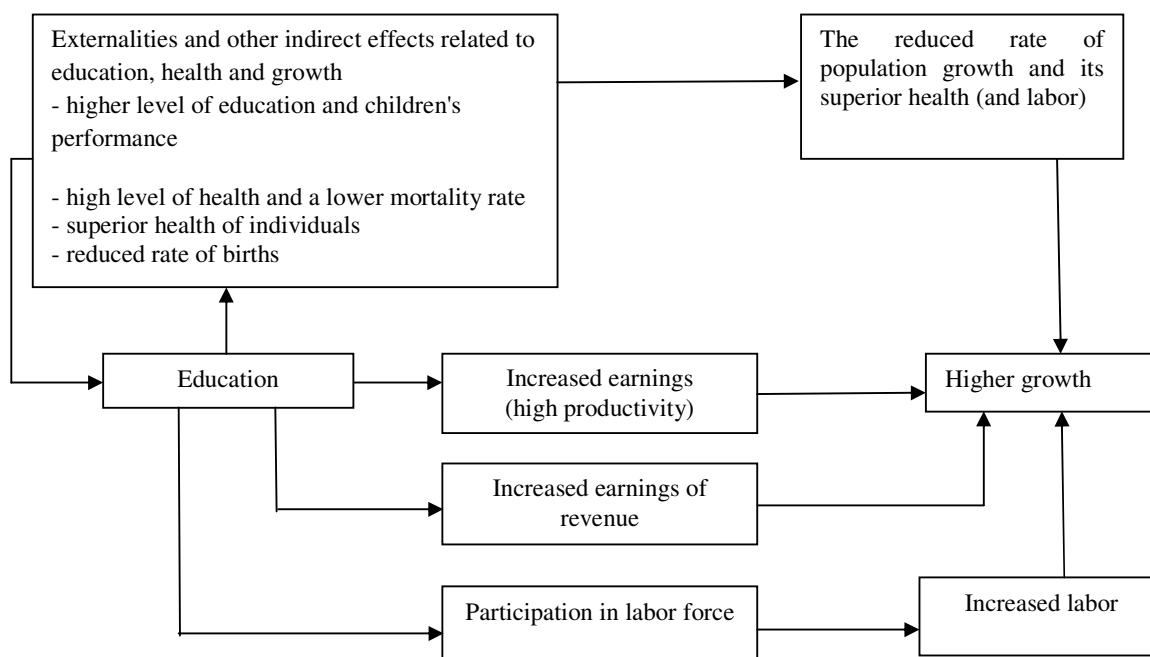
Thirdly education can facilitate the dissemination and transmission of knowledge for

understanding, processing and successful implementation of new technologies, which again can lead to growth. The study of economic boom made by Japan, Taiwan, Hong Kong, South Korea and Singapore were based on the application of these types of theories that explain certain patterns of development. Economic boom of these countries was explained by massive investments in education by governments and concerned citizens.

Becker also emphasizes the importance of this factor in the economic growth of Japan: "it is no accident that, for example, the Japanese system of lifetime employment in large companies originated after the Second World War, when they began to rapidly modernize technology and make great investments for employee enrollment. Lifetime employment system is not explained solely by traditional Japanese culture that emphasizes loyalty towards groups because changing jobs was common in Japan during the first half of the century".

According to the OCDE report, Education at Glance, 2010 "a permanent population educated and prepared is essential to economic and social welfare of the country. Education plays a key role in equipping individuals with the knowledge, skills and competencies required for effective participation in society and the economy". Another point of view would be that a higher educated workforce is essential for productivity growth and therefore to achieve economic growth. This is broadly supported by the results of models based on the new growth theories which argue that higher education employment generates an increase of innovation capacity of workers that ultimately determines economic growth.

We can say that some evidence that education contributes to economic growth, in the economic literature are that countries showing higher rates of growth are endowed with labor holding higher levels of formal education. Another clue would be that generally people with a higher degree of education, obtain higher earnings, which would translate into higher productivity and therefore economic growth. A prerequisite is that a well-educated and skilled population "tends to be relatively more sophisticated in terms of technology."



**Figure no. 1 The economic effect of education on economic growth**

Source: Risikat Oladoyin S. Dauda, (2010), Investment in Education and Economic Growth in Nigeria: An Empirical Evidence, International Research Journal of Finance and Economics, pp.158 - 169.

<http://www.sciencedirect.com/>

## 5. CONCLUSIONS

Between HR investments and economic development there is an interdependent relationship that must be taken into account especially in a time of economic crisis. So you can develop and aspire to sustainable growth you need a well-trained and developed human capital.

Among the elements that characterize the educational system in Romania's case we can include transparency, simplicity and difficulty in administrating the necessary funds' investments in education. The youth's tendency to continue their studies contributes to the overall development of society - assessments generally have high rates of return on investment in education.

Taken into account the presented information, the effects of education on human capital and economic development in order to be the maximum, certain conditions must be met: the quantity and quality of education measured in number of years of study, the percentage of GDP allocated to education, school participation rates, results, performance to be high and the educational offer to correspond to current requirements and future needs of the labor market; the existence of a socio-economically and politically stable environment and fast economic growth rate; wage differences at the individual level to meet the individual educational and vocational training.

- The concept of human capital reflects, therefore, investment in education and development of skills and competences needed to achieve a particular economic activity. Developing human capital theory involved an attempt to assess real changes in the economy of developed countries made by the first wave of scientific and technical progress. Its advocates have developed a new approach to the human role in social development.

- With the advent of human capital theory, treating capital as physic asset is extended as an asset which includes human capital, with the possibility to generate a future stream of income.

- Increase education is studied as a means of fair distribution of income and economic opportunities respectively.

- Human capital has been included within the nation's wealth and human capital investment is studied as necessary and socially important.

- Human capital theory introduced the concept of investing in individual at different levels of micro, mezzo, macro and world economy.

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