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## **Conceptual Analysis of Education Role in Economics: The Human Capital Theory**

**Alfinur Azatovna Galiakberova<sup>1</sup>**

### **Abstract**

The article deals with theoretical issues of building the human potential that is necessary for economic growth and social development. There are some theories, differently interpreting the role of education and the issue of demand for individuals in the labor market. In recent decades, the human capital theory has come to the fore. According to it, human capital rises due to a number of reasons, but the key factor is the educational level of the individual.

There have been analyzed views of prominent economists who laid the foundations of this theory. Their undoubted merit is that since then there has been a huge increase in investment into a human being all over the world, since people began to be considered as an important factor in development, as an investment into tangible assets. There also have been considered the evolution of this theory, which was gradually freed from the elements of simplified economic determinism. It is indicated that in modern Russian realities further expansion of higher education does not always lead to an increase in employees' income.

Along with the arguments of the supporters of this theory, the article contains the arguments of its critics. Owing to discussions, the theory is developing and getting flexible. The concept of "human capital" is expanding and now it includes a variety of personality abilities that make it possible for a person to solve economic and many other problems. Therefore, the theory is gradually becoming the subject of broad multidisciplinary research.

**Keywords:** Human capital, Education, Economy, Mobility, Development.

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<sup>1</sup> Candidate of economic sciences, Associate Professor, Rector of Naberezhnye Chelny State Pedagogical University, E-mail: [ngpi@tatngpi.ru](mailto:ngpi@tatngpi.ru)

## **Introduction**

In society there is observed constant and complicated interaction of economic and educational processes. The economy of each country plays a significant role in maintaining and developing the education system. All aspects of the economic system, including education that depends on funding available from different sources, affect society. These sources are budgets of all levels, civilians, and enterprises. Therefore, the educational sphere depends on the situation in the budget system, the solvency of the population and the profits of enterprises.

At the same time, the economy of any country is built by people and dependent on them as they participate in economic activity. The intellectual and qualification potential created to a great extent in the education system is of great importance for the economy.

The human capital theory developed by American economists J. Mincer, T. Schultz<sup>2</sup>, and G. Becker<sup>3</sup> argues that the whole set of human knowledge, skills, abilities, and motivations is the individual capital. In the context of the theory, the concept of human capital is regarded along with its other (material) types used by people for achieving their life purposes.

This theory has found many supporters in different countries, but the arguments of critics also deserve attention. The ensuing discussion forced the developers of the theory to soften a number of their positions and even abandon some of their previous simplified views.

## **Background**

The concept of human capital was introduced by J. Mincer. In 1958, he developed the model of earnings (“Mincer earnings function”) that explains wage income as a function of schooling and professional experience (Mincer, 1958). His studies on the function of schooling, experience, and earnings made in the 1970s have developed the foundations of human capital theory. The author’s calculations showed that the function of schooling and the employee’s income varies during his life: in the first decade of employment, the dependence of wages on the level of education increases (the coefficient of determination is 33%), and then this dependence weakens. In total, 60% of the differences in the level of earnings, according to J. Mincer, depend on schooling, experience, and the number of working weeks during the year. Differences in the level of schooling determine about 25% of income inequality, about the same percentage depends on work experience and 10% – on the amount of time worked (Mincer, 1974).

In 1960-70s another founder of this theory, T. Schultz, carried out the economic researches in the United States and underdeveloped countries. He showed that education was the most important factor in ensuring productivity in the American economy. Both workers and the American economy get a higher income rather due to “human capital” (self-education and professional experience of the individual, science and health care) than to “real” capital. The studies of the situation in backward countries made the researcher to conclude that poverty elimination and economic growth depend not

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<sup>2</sup> The Nobel Prize in Economics in 1979.

<sup>3</sup> The Nobel Prize in Economics in 1992.

only on the quality of land, subsoil, and technology development but also on improving the quality of the human resources. The structure of social institutions, the social climate, the quality of children's education and health care, and crime prevention are as important as technical development (Schultz, 1962; 1963; 1971; 1972).

In his researches G.S. Becker also showed that the "human capital" growth is due to many factors – professional experience, health promotion, territorial movements, active search for information, etc. (Becker, 1993; 2003). However, education is the main source of human capital, and the amount of remuneration and the nature of vertical mobility of the individual significantly correspond to the level of education. The conclusions of the author are unambiguously positive: the income and career growth of the employee are the direct consequence of the accumulated human capital, and, therefore, investments in the capital are always economically justified. Moreover, according to G.S. Becker's calculations, investments in human capital in the USA give a higher interest income than investments in securities (Becker, 1993). The source of investments can be the employee or the employer, or the government. Investments should be made constantly as human capital can either increase or decrease in case the skills and knowledge become obsolete and unused.

### **Discussion**

The theory has both many adherents and many critics. Owing to supporters who continued to develop and supplement it in many countries, the theory of human capital has now gained in popularity. There was a significant number of definitions and interpretations of the concept of "human capital". Definitions are formulated by both foreign and Russian authors. Among them, there are such researchers as G. Becker (2003), M. Blaug (1997), W. Bowen (1997), F. Machlup (1984), B.M. Genkin (2005), M.M. Critsky, A.N. Dobrynin, S.A. Dyatlov & E.D. Tsyrenova (1999), T.G. Myasoedova (2005), etc.

The Russian authors tend to generalized definitions. Thus, A.N. Dobrynin, S.A. Dyatlov and E.D. Tsyrenova think that human capital is "accumulated due to investments stock of health, knowledge, skills, abilities, and motivations that are expediently used in the production and ensures the productivity and earnings growth of the individual" (1999). T.G. Myasoedova describes human capital as "a set of born abilities and health, acquired knowledge and professional skills, motivation for work and continuous development, the common culture that includes moral values, knowledge and following the regulations and standards of human communication" (2005).

The classification of human capital is based on different grounds. In some cases, it is classified according to the types distinguished, and in others – according to the factors that form human capital. In their monograph V.T. Smirnov, I.V. Soshnikov, V.I. Romanchin, and I.V. Skoblyakova (2005) consider 3 types of human capital: 1) individual human capital, 2) corporative human capital, 3) the national human capital.

The authors include health, intelligence, labor potential, cultural and moral level of the individual development, organizational and entrepreneurial abilities of the employee in the individual human capital.

For a company, its intangible assets (trade secrets, trademarks, trademarks, etc.), as well as individual achievements of employees (copyright certificates, patents, know-how, etc.), are important. Social capital used as a set of public relations is necessary to minimize the operational costs of obtaining the information. Structural capital is important as it is the company's ability to improve its own organizational structure, adapt to changing market conditions, and influence them in its own interests. Organizational capital that is a system of management processes aimed at creating innovative capital and ensuring a clear organization of all production processes is also essential. Finally, for successful companies, client capital (brand capital) which is a kind of affiliation, i.e. creating special long-term trust relationships with its client environment, is of key importance.

National human capital consists of social and national priorities, the most important intellectual resources, competitive opportunities of the country, national cultural potential and identity.

Economists, sociologists, and psychologists thoroughly study the three types of human capital in order to develop methods for its evaluation. Thus, the researchers of individual human capital that is the basis for any company and country distinguish the factors affecting the calculation of the human capital of an individual employee. In our opinion, the classification made by N.I. Pirozhkova gives the widest range of such factors: 1) the employee's sex; 2) the level of qualification; 3) the period of continuous employment; 4) the recognition of the position taken by the employee; 5) the age; 6) the marital status; 7) constant striving for developing the professional skills; 8) the need for self-education; 9) the frequency of job change; 10) high motivation; 11) creative approach to work, the ability to make complex and non-standard decisions; 12) the ability to make management and other decisions quickly and effectively; 13) the consent of the employee to work overtime, if necessary; 14) experience in modern computer and information technology; 15) knowledge of foreign languages; 16) computer skills; 17) the team work ability (Pirozhkova, 2014).

Individual human capital researches are important both for the staff and management as they help to objectively assess the company's potential, especially when making structural changes and setting high ambitious goals. In the 1990s, the most advanced companies began to make human capital balances along with financial statements. Among the first companies that did that work were the largest Indian IT-company "Infosys" and the international financial and insurance group "Skandia".

It was that approach of the Indian company that allowed, according to its managers, to make a real breakthrough: its capitalization amounts to about \$ 40 billion, and the annual turnover – to \$ 9 billion with 173,000 full-time employees. As for the international group "Skandia", Leif Edvinsson, its Intellectual Capital Director, has developed the "Skandia Navigator" model comprising five aspects of the company: finance, consumer, process, innovation and, finally, the most important – the human that is as a link between the other four aspects.

According to L. Edvinsson, the capital of the company consists of two parts: financial capital and intellectual one. And while financial capital is extensively reported in the annual statements, intellectual capital is much more difficult to calculate because it is made up of "hidden asset". In turn,

intellectual capital consists of two components: human capital and structural one. The first one includes the mental abilities of employees, their skills, creative attitude to work, commitment and enthusiasm. In the authors' opinion, structural capital is owned by an organization and remains with it even when people leave. It includes capabilities, routines, methods, procedures, methodologies, etc. embedded in the organization (Tissen & Andriessen, 2004).

National human capital is a kind of general integrative potential of the country's population, total human resources. Different organizations conduct their research and use their own indicators characterizing human development in countries and regions of the world. Due to differences in methods, the data for Russia often differ significantly.

Thus, the experts of the United Nations Development Program (UNDP) calculate the human development index which was developed in 1990 by the Pakistani economist Mahbub ul-Haq. This index is calculated on the basis of three indicators for all countries: 1) life expectancy index, 2) education index, and 3) gross national income index (GNI per capita in US dollars at purchasing power parity). In the report 2018, Russia was 49<sup>th</sup> out of 189 countries with the index 0.816 (Norway had the highest index – 0.953, and the lowest one – Niger – 0.354) (Human Development Index, 2019).

The World Economic Forum (WEF) makes its own assessment of the Global Human Capital Index. In 2013 the index was calculated on such criteria as education, health, labor force qualification, favorable environment. In the list of 122 countries, the Russian Federation was ranked 51<sup>th</sup> (The Human Capital Report, 2013).

The latest published report (2017) does not contain health and favorable environment indicators, but details many indicators for all types and levels of education, and focuses on gender aspects in education, employment, and professional development. As a result, Russia has risen to a relatively high 16<sup>th</sup> place out of 130 countries (The Global Human Capital Report, 2017).

In 2018 the World Bank for the first time used its methods to calculate the values of the human capital index for 157 countries. Russia was ranked 34<sup>th</sup> and joined the group of countries with a high level of human capital. According to the Bank's estimates, the productivity of those Russians who were born in 2018 will be 73% of the potential when they reach the age. However, this productivity is possible subject to secondary education and good health. The corresponding indicator for the Russian Federation is slightly higher than the indices for Europe and Central Asia, as well as significantly higher than the average among the group of countries with above-average income (Human Capital Development Project, 2018).

Despite the great prevalence, popularity, and numerous modifications of the human capital theory, there have always been opposing views that call it into question or strongly criticize it. And it was criticized from different positions. The works of G. Becker, one of the founders of this theory, were immediately discussed very critically, especially among teaching professionals, who criticized Becker regarding the individual as a kind of the machine. G. Becker as well as some other representatives of the Chicago school of economics often and reasonably were reproached for excessive economic

radicalism. The representatives of this school believed that investments in all types of human activities – education, health, migration, etc. – are made for the sake of future income growth.

Becker's views were probably the most radical demonstration of economic determinism among all the proponents of the human capital theory. He was convinced that all actions of people are determined by economic reasons, even if they do not realize it, and their decision-making always depends on the profit expected. He believed that all human motives and ideas are a market-like substance dominated by competitive relations, the principles of supply and demand. Not only education and choice of profession, but also such aspects of human existence as religion and family, crime and discrimination, various moral qualities of a person – egoism, altruism, and envy – are economically motivated.

Therefore, the human capital theory, being humanely oriented, was criticized for the fact that it considered education rather an exclusively pragmatic value than an independent cultural one, and the individual's value was regarded from the point of view of capitalization of knowledge and other abilities.

Studying the works of G. Becker and a number of other co-founders of the human capital theory, one can notice a certain vulgarization when interpreting human behavior, resulting from the general methodological principles of positivism and pragmatism. These views can be found in the works of positivist school economists of the 19<sup>th</sup> century. J.R. McCulloch, in particular, identified a laborer with capital. He wrote, "When understanding capital as part of commodities... there seems to be sound reasons why a workman could be also considered as part of commodities, and there are many reasons why a worker can be considered as a built part of nation's wealth" (McCulloch, 1870).

However, present-day researchers studying the problem should bear in mind that the purpose of those economists was not to lower a worker role, but, on the contrary, to show those who govern the country and run business under those social conditions the advantages of high investments in laborers, in their schooling, training and health. However, this position is still of great importance for any country, including Russia. Additionally, not only the human capital theory was criticized but other alternative scientific theories too.

The British economist P. Wiles, whose attitude to the Chicago school of thought was extremely negative, had the opposite view: the market does not establish social justice, and the mechanisms of competition do not lead to a rational social order. So, his goal was to "save the economics of education from Chicago school of thought" (Wiles, 1974). P. Wiles and K.J. Arrow<sup>4</sup> (1984) were founders of the "filter theory". According to it, education only develops the individual's born abilities. Education does not smooth out the differences between people, but it only reveals and assesses the level of their abilities, i.e. "sorts people out". So, the more gifted people get a higher level of education. Therefore, education is only a high-cost tool for companies and employers to determine the abilities and business qualities of job applicants and select the best of them. Although the authors of the concept recognize

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<sup>4</sup> The Nobel Prize in Economics in 1972.

the correlation between education and remuneration, they do not think that education makes an employee more qualified and productive. Its function, in their opinion, is a selective one that allows the employer to obtain information about the candidate for the workplace.

Along with the "filter theory," there is "signal theory" ("signaling approach") developed by M. Spence<sup>5</sup>. In the 1970s in his articles (Spence, 1973; 1974) he expresses the idea that the level of education is the information ("signal") for employers so that they can make a choice between workers with different productivity. The employees send high-cost signals (i.e., get an education) to convince employers of their working abilities. M. Spence developed a model proving the function of education and its cost. According to it, the cost of vocational education is the basis of the signal, but there should be an inverse proportion between human abilities and education costs. Getting a "signal" for more gifted people should be less costly owing to their high abilities. So, it is easier and cheaper for an employee with high performance to signal. According to M. Spence, such an employee gets education credentials in order to show higher efficiency and receive a higher remuneration. And it is easier for an employer to select the candidates with a higher level of education and thus with more education credentials ("signals"). People having lower abilities do not acquire high-cost education and give up further training.

The proponents of human capital theory did not agree with the arguments of that kind and criticized them. The Greek economist J. Psacharopoulos, for example, remarked that if the "filter theory" were true, then companies could simply use the information about employees' education taking into account their certificates and diplomas. But they, as a rule, not only examine the credentials but spend a lot of money, testing the candidates' abilities, i.e. use their own "filters". (Psacharopoulos, 1981). The other authors, criticizing the "signal theory", refer to the experience of farmers who, not being hired employees, do not have to give anyone "signals" about their education. But as a rule, they are highly motivated to get high-quality professional education.

The "filter" and "signal" theories did not refute the basic arguments of the "human capital" theory, they supplemented it. According to V.I. Trunin, while the "filter" and "signal" consider the problem in terms of demand, the theory of intellectual (human) capital studies it from the position of supply and labor market (Trunin, 2012). The human capital theory persisted in this controversy. In fact, the ideas of opposing concepts made it more elastic.

The human capital theory was strongly criticized by the theorists of the extremely "left" parties. Speaking from the radical positions of class criticism of capitalism and using appropriate terminology, those economists believed that education in a capitalist society carries out a number of functions that ensure the power of capitalists over laborers. It had to provide people with professional skills, ensure the productivity of workers, and reduce costs through the growth of a reserve army of unemployed workers in order to strengthen the economic dominance of capitalists over workers.

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<sup>5</sup> The Nobel Prize in Economics in 2001.

Also, the acquired education had to perpetuate the stereotypes of behavior, a certain emotional perception of the organizational system of capitalist enterprise based on the oppression of hired laborers. Education had to create the illusion of equality and lack of social injustice in a capitalist economy, and skills development had to create an illusion of social mobility. Thus, the main function of education, according to this group of theorists, is a certain political education that helps to distract the exploited classes from the struggle against the existing system.

S. Bowles and H. Gintis in their book "Schooling in Capitalist America: Educational Reform and Contradictions of Economic Life" argue the "correspondence principle". According to their conclusions, the internal organization of schools corresponds to the internal organization of capitalist production, its structures, norms, and values. It is necessary for adapting future workers to the principles of the labor market. The authors argue that the hierarchical system in schools reflects the structure of the labor market, with the headteacher as the managing director, while pupils fall lower down in the hierarchy of the school. Schooling is used by the bourgeoisie to control the workforce, and educational institutions reproduce the existing inequality. The authors deny that there are equal opportunities for all people and argue that education justifies and explains social inequality (Bowles & Gintis, 2011). According to Wikipedia, "the book ... is considered to be a key text for the Marxist theory of education sociology" (Schooling in Capitalist America).

M. Carnoy in his study "Education as Cultural Imperialism" concludes that educational policy is used by the bourgeois elites in capitalist countries as a form of cultural imperialism to perpetuate the conditions under which the working class is exploited both inside and outside these countries. The education system does not smooth out starting social differences and makes it possible for the elites to retain inherited benefits (Carnoy, 1974).

A large number of researchers in the present-day post-Soviet environment have adopted the human capital theory developing their own approaches. They distinguish three types: real, financial, and human capital. But the researchers have many objections, in particular, they do not recognize human capital as a separate part.

S.V. Mocherny does not agree that the individual's born and acquired abilities can be considered as capital. In his opinion, education and qualifications do not produce the capital, but they produce only the labor force, i.e. the ability to work. Consequently, this capital cannot be the individual's attribute due to the facts of unemployment, i.e. the non-use of the acquired knowledge and skills. The source of income is rather a labor, i.e. the process of realization of acquired abilities, knowledge and experience, than education and qualifications (Drebot, 2016).

N.V. Sychev believes that the human capital theory resulted from the scientific and technical revolution and the growing need for education and skills in the capitalist economy. "The second reason is that foreign economic science strives to "scientifically prove" that capital has a non-exploitative nature, that there is no antagonistic contradiction between wage labor and capital since the latter "is owned" by every member of capitalist society" (Sychev, 2016, pp.129-130). Arguing from Marxist



positions, the author criticized one of the founders of the human capital theory T. Schultz who thought that the ways of overcoming poverty among the rural population in developing countries lie primarily in investing in human development. The author of the article writes, “These investments, of course, are really necessary for agriculture. But they cannot “overcome the poverty” until these countries fundamentally change the socio-economic conditions” (Ibid, p.138).

However, one may notice that the human capital theory does not deny the need for changing socio-economic conditions, and it can be more successfully applied under better conditions. When developing, the theory acquired the features that made it possible to apply it in countries with different levels of market development and state control in the economy. There are numerous empirical researches carried out on its basis but their results are rather controversial.

There are many studies carried out in different countries that show a high proportion of human capital in their economies. So, T.A. Stewart refers to the calculations of R. Shiller<sup>6</sup>, according to which human capital is 72, 1% in the national wealth of the United States (Stuart, 2007).

Numerous studies in Russia also prove the importance of human capital. In particular, the research carried out by the Higher School of Economics shows that increasing education duration by one year results in increasing wages by about 6,4%. Moreover, every year of further studies at University ensures the highest increase in wages (7,5%), an additional year of studies at school increases it only by 2,6%, and at college – by 3,2%. Vocational colleges ensure a 9% wage increase, and university graduates earn approximately 41% more in comparison with those who get secondary education. Fluency in foreign languages increases wages by about 40% compared to those who do not speak foreign languages, the ability to speak and read fairly well – by 15-19%, and the ability to speak, but to read and translate with a dictionary – by 9-11,5% (Levashova, 2011).

The studies conducted by A.V. Koritsky in 2002-2014 give a less positive picture, especially in relation to employees with higher education. It showed that in 2002, the share increase in employees with higher education by 1% resulted in increasing the income of the working population by more than 1%. In later years, with a corresponding share increase in employees with higher education, the growth in the income of the working population decreased and it was less than 1%. However, the same study showed that the increase in the employed in the economy population with secondary education corresponds to the income increase by 4-9% per employee.

The author explains this situation by giving his reasons. Firstly, in some regions, there is likely some surplus of specialists with higher education in the labor market. Another possible reason is the degradation of higher education: many graduates lack the necessary knowledge and skills that can be effectively applied to their workplaces. And, finally, due to the disproportions in the structure of higher education specialties some Russian university graduates, being unemployed, leave this country, and the others, especially engineers, do not work by profession (Koritsky, 2016).

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<sup>6</sup> The Nobel Prize in Economics in 2013.

## Conclusion

Since G. Becker, T. Schultz, and their followers developed economic science, the human capital theory has been significantly enriched and it proved its viability. The investments in human resources have increased through the world mostly due to the theory, and they are now regarded as an economic growth source that is as important as other investments.

In the controversy with the critics, the followers of the theory were gradually developing the starting methodological approaches to understanding the effects of education on an individual and society and were going beyond such economic terms as productivity, profitability, etc. The researchers were developing the human capital concept as an essential characteristic of an individual. The human capital concept has now included traditions (mentality), the opportunity to demonstrate the abilities (including creative ones), national culture (Korchagin, 2000). It also includes social, psychological, ideological, and moral and ethical qualities of people, such as the abilities to behave in everyday life and at work, to make acquaintances, to establish and maintain business relations, to maintain discipline and order, to appreciate family relations, to respect society and, finally, honesty, sociability, conscience, and compassion (Martsinkevich & Soboleva, 1995).

As one can see, the human capital concept includes the qualities that are very difficult to verify and measure. Thus, due to the numerous studies, the human capital concept has been developed to the extent that it is not only part of economic theory but also part of interdisciplinary researches. The theory should argue the process of producing, accumulating, and applying “human capital” rather from the point of view of the cultural development of the individual than from the economic effect.

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