

CONTRADICTION IN THE MEASUREMENT OF HUMAN CAPITAL

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Abstract

The article is devoted to the contradiction in the measurement of human capital. Different approaches to the measurement of human capital are analyzed. Basic methods of measuring and estimating human capital are shown. The author indicates some contradictions and problems: 1. There are different views concerning the costs of investments in human capital and consumer expenditures that ensure the current reproduction of labor or the needs of a person; 2. The production of the HC presumes not only money, but also a significant contribution of its own labor to those to whom these investments are directed; 3. Most calculations of investments in the HC do not take into account costs that do not have a monetary equivalent. Accordingly, some controversies are revealed and the ways of solution of such controversies are proposed by author

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Measuring the human capital (HC) on the basis of past efforts is associated with the most productive, investment aspect of HC theory. However, for the application of this method, it is necessary to determine which costs at the individual level, firm level and macro level should be considered as investments in the HC.

Here, two extreme approaches are possible, which are combined in different ways, giving an endless variety of specific techniques. In accordance with the first approach, the costs of manufacturing the HC are equated with the costs of reproducing the person as a physical and social being. The second approach relates most of these costs to consumption, allocating as investments only those that increase the productive capacity of people.

Supporters of the first approach consider the HC as an aggregate value of the entire population of the country. Accordingly, investments in the HC include all costs (or most of them) aimed at maintaining human life. For the first time such an approach was applied by Engel in 1883. He calculated the reserve of the HC as the sum of the expenses of the family for the upbringing and support of children until they reach 25 years old [6].

Advocates of the second approach until recently in practice were the majority of researchers. They initially paid special attention to the formation and accumulation of production experience, and, above all, investments in formal education. Having data on the duration of education within each level of education and on the unit costs of obtaining it, the approximate value of the national education fund can be calculated.

However, the education fund reflects, although significant, but still only a part of the HC accumulated by the population of the country. An indirect empirical confirmation of the fact that a significant part of the HC accumulates outside the formal education system - in the process of family education, informal communication, at work, etc., can be the mentioned discrepancies between representative estimates of the HC, based on the parameters of education, on the one hand, and directly on the skills and competencies of the population - on the other.

The classical version of the combined approach, which takes into account the costs of physical reproduction of man as an element of the reserve of the HC, is Kendrick's calculation. He divides the cumulative social wealth, on the one hand, into the tangible and intangible, on the other hand, to the incarnate in the person (HC) and separated from it. As part of the investment in the so-called "tangible human capital", Kendrick allocates the costs of raising children up to the age of 14 years. To intangible investments in people, he refers to the costs of improving

quality and increasing labor productivity. They include the costs of health and safety, education and training, as well as the so-called missed benefits - the lost earnings of students, which they could get if they preferred to give their time to work and not to study.

In this scrupulous and contradictory work, practically all the vulnerabilities are highlighted, which are associated with the measurement of the HC stock as a sum of past efforts. Human capital is simultaneously the result of purposeful material and labor investments (it is time and / or leisure investment) and an organic part of a person's living personality, inseparable from his natural and social properties and abilities. There are many contradictions and problems.

First, researchers differ significantly in their views on what costs should be considered investments in human capital and which ones should be attributed to consumer expenditures that ensure the current reproduction of labor or the needs of a person as individuals not directly related to his productive activities. Since there are no procedures for empirical verification of the contribution of these or those costs to the increase in the productive capacities of a person and they are unlikely to appear in the foreseeable future, researchers classify consumer and social expenditures for consumption and investments in accordance with their own preferences. For example, Kendrick refers to the investments in the HC as 50% of national health expenditure and occupational safety programs.

Secondly, unlike the accumulation of traditional capital, the production of the HC presumes not only money, but also a significant contribution of its own labor to those to whom these investments are directed. It follows that with equal volumes of financial investments, as a result, different volumes of HC can be formed.

The quality of the acquired equipment can be judged with a high degree of accuracy by its price and the characteristics of the manufacturer. Two computers manufactured at the same plant using the same drawings with a probability close to 1 will have almost identical operational parameters. However, two graduates of the same institution, who attended the same courses in the same institution teachers, will inevitably differ in the volume and quality of acquired knowledge, skills and other valuable, from the point of view of the employer, properties. The volume of educational capital with which a graduate leaves the university limits is determined not only by the quality of teaching, the content of the courses, technical equipment, but also by the personal efforts and natural aspirations of the student.

Thirdly, most calculations of investments in the HC do not take into account costs that do not have a monetary equivalent: work to raise children in the family and the students' own work during the educational process. A peculiar attempt to compensate for this gap is the inclusion in the investment of the shadow component - the hypothetical lost earnings of students. Lost earnings are included in almost all calculations of the stock of human capital, performed on the basis of the method of aggregate investments. The discussion on the methodological validity of this article of costs is rooted in the difference between the methodologies of neoclassical theory and Marxist political economy. However, in any case, not only the legality of such an investment item, but also the technical aspects of its calculation, immediately reveal how approximate any quantitative assessment of the HC is.

Controversy 1. At what age should the lost earnings be accounted for? In the classical version, the bar is set at the level of post-secondary (tertiary) education. However, today, at least in developed countries and transformational economies, the problem of youth unemployment is acute. In the economy, there is no place for young people who have not received proper vocational education and who are formally eligible to work. Another approach is from the point of view of the social norm. It is not by chance that the most widely used indicators for intercountry comparisons are adult education indicators - over 25 years old, including because in developed countries the bulk of young people complete their education and enter the labor market in search of regular (permanent) employment at about this age .

It is different in less developed countries, where the usual age of starting work is lower, and therefore the lost earnings are logically taken into account from an earlier age. It turns out that in post-secondary countries post-secondary education is associated with relatively high costs, and the same level of education achieved will contain a fundamentally different stock of accumulated HC.

Contradiction 2. What is behind the "lost earnings"? If these are just lost profits, we get an absurd conclusion: the amount of investment (and, accordingly, the accumulated capital stock) changes depending on the changing situation in the labor market: reducing the unemployment risk for people with low education means automatically increasing the reserves of the national HC by the corresponding amount of lost earnings those who continue to study. Moreover, the national reserves of human capital, for example, Brazil (where today the population is considered to be able to work from the age of 11) will fall sharply, and the accumulation of capital will slow down as soon as the law on the prohibition of child labor is adopted. Although, logically, everything should be the other way around.

Contradiction 3. If this is still a representative estimate of labor costs, then how good is it? Obviously, with the labor market situation, the labor inputs of students do not correlate at all, and their value assessment, if connected, is weak, and is unknown, negative or positive. And most importantly, what about the labor costs of children of primary and secondary school age? For them (in a normal economic system), no alternative strategy is considered that is related to employment, but this does not mean that at this age the mastery of knowledge and skills does not require investment of one's own labor.

In modern society, the imperative gradually becomes a lifelong learning. Despite the trend towards an increase in the average length of study in the formal education system, its contribution to the creation of the total reserve of the HC is gradually decreasing. Moreover, the formation of the skills and competences of the adult population occurs primarily as a result of "learning-by-doing", and not in the framework of special programs of professional development. The greatest contribution to the informal accumulation of HC is made by creative activities, when "elite" knowledge and production experience accumulate. However, studies show that training in the process of today plays a significant and growing role far beyond the R & D sector. According to some estimates, the contribution of post-school education directly to the workplace in modern developed economies is almost half of the accumulated HC [2].

Not all investments in the HC are the result of deliberate, conscious efforts. The accumulation of production experience is only a side effect of labor processes and in most cases does not involve special targeted investments. "At each given time, the individual's accumulated stock of human capital is the cumulative result of the flow of events that occurred throughout his previous life" [9]. It follows that neither sophisticated representative evaluations combining natural indicators of education nor monetary estimates of the flow of targeted intangible investments are able to cover all the wealth of diverse knowledge embodied in people.

A bizarre combination of targeted and unconscious investments is observed with the accumulation of so-called cultural capital within the family. In many cases, it is not associated with any special efforts. However, the stock of skills and competencies acquired in the early period of life largely determines the success, duration and pace of further accumulation of the HC in the process of formal education and work [1].

The realization that in the case of the HC, the connection between the volume of investments made and the quality of the result is not at all obvious, forcing many researchers to approach the problem from the other side - to measure the scale of the accumulated HC, based on the return it brings.

Supporters of measuring human capital on the basis of its predicted returns argue their approach in that to take into account, measure and evaluate the person's intangible wealth makes

sense insofar as it is involved in the economy and, accordingly, brings tangible benefits to its owners [7, p.602].

Researchers, of course, understand that the possession of human capital brings not only monetary but also non-monetary benefits: reducing the risk of unemployment, satisfaction with content and working conditions, better career prospects. There are also significant benefits that lie outside the sphere of labor and employment and outside the sphere of market relations: holders of large reserves of educational capital on average have better health and have a longer life. However, this intangible flow of additional utility is poorly measurable and does not lead to a single basis [10, p.122].

Thus, researchers attempting to measure the scale of the accumulated HC, equating them to the flow of future benefits, also face serious methodological difficulties.

The inevitability of deviations - both in the direction of increasing and decreasing in real reserves - is due to the presence of several types of distortion. First, with the impossibility of any total accounting and bringing to the common denominator the multitude of future non-monetary benefits from the possession of the HC. In this case, non-monetary returns not only exist in a variety of forms, but can also vary in a different trajectory than the monetary one. Secondly, with the probabilistic, uncertain character of the future [5]. Thirdly, with the multiplicity of factors affecting wages and labor incomes, the difficulty in distinguishing between incomes for the HC and other factors of production.

It is clear that the third type of distortion is key and calls into question the very possibility of assessing the value of the HC based on the capitalization of its return [7, p.8-9]. In the standard approach, it is implicitly assumed that the stock necessarily assumes a return: no return - no capital. "If the market price of goods and services (produced with the participation of the HC) grows, then the value of human capital grows." If this price falls, the value of human capital also decreases" [10, p.1].

At the same time, the return depends not only on the size and quality of the good itself, but also on external circumstances in relation to it - the parameters of demand, economic and institutional conditions [8]. First, the HC can not be used (for example, during the period of unemployment), underemployed or used unproductively (at workplaces that do not require the skills and competences available to the employee). Secondly, the return on individual investments can be differently distributed among the owner of the HC, the owners / managers of the enterprise where this capital is realized, and the society / state. In many ways, this depends on the correlation of class forces, the development of institutions for the protection of the rights of subjects of labor relations, etc. In other words, the benefits expected by the employee may not reach it, losing themselves in intermediary links.

In the context of globalization, the situation is also changing. Moving with its stock to other conditions, for example, from village to town, from a small city to a large one, from Russia to the US, it is possible to increase the return on practically unchanged human capital several times.

A convincing empirical confirmation of the methodological inconsistency of estimating the size of the HC, based on its monetary returns (earnings), was presented by Hendricks [3]. Studying the earnings of immigrants in the US, he demonstrated that the differences in the parameters of the national HC allow us to explain only a small part of the differences in both individual labor incomes and in the GDP of developed and developing countries. Based on the materials of the 1990 population census, Hendricks compared the earnings of immigrants from 67 countries with the earnings of their compatriots in the donor countries, on the one hand, and the earnings of Native Americans, on the other. His analysis showed that the earnings of immigrants, regardless of the level of development of the donor country, the level of pay there and the national GDP per capita as a whole, slightly differ from the earnings of Native Americans with similar characteristics (age, sex, education level, scope of activity). In the case

of relatively poor countries (with a per capita GDP level of less than 18% of the US level), differences in the inventories of the HC, taking into account differences in the quality of education, explain only one fifth of GDP per capita differences, in the stocks of material and human capital - the third part. The rest of Hendricks relates to the total factor productivity.

Mulligan and Sala-i-Martin made an elegant attempt to smooth out the impact on the salary of factors external to the worker and to highlight the net effect of the HC in differentiating earnings. They measured trends in the accumulation of HC in various regions of the United States on the basis of the Labor-Weighted Indices (LC) index, based on their approach to measuring the HC by capitalization of earnings. In order to neutralize the factor of higher earnings in the more developed and technologically advanced regions that are not associated with the HC, all earnings are calculated in relative amounts. At the same time, the unit of labor remuneration in each state (where all workers are supposed to exist in the same technological and institutional environment) takes the income of the employee without education. Mulligan and Sala-i-Martin note that the CW reserve calculated according to their method grew significantly faster than standard representative estimates of education. This, in their opinion, testifies to the improvement of the quality of education and the degree to which it meets the needs of the national economy [4].

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