

ANALYSIS OF EFFECTS OF HUMAN CAPITAL INVESTMENT

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Abstract: *Human capital, technologies and information become pertinent elements of sustainable economic development processes. The way in which they integrate into functional processes through which a higher rate of development is attained is a specific and relatively new one for economic science. An analytical and lucrative approach to investment processes that creates presumptions of highly educated human capital, advanced technologies and varied consistent information implies decision and control-making behavior, based on new managerial principles.*

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Investments in human capital. Cost/benefit analysis

More than two centuries ago, when Adam Smith talked about work, he laid the foundation for what was to become the theory of human capital.⁴

Two centuries after that, two schools of thought can be distinguished, with nuanced approaches to the term human capital⁵:

1. the first school regards the capacity to generate income and the human being as two totally distinct things;
2. the second one regards the individual as being capital himself.

What brings the two schools together within the modern economic theory is the view of human capital as a behavioral model based on maximizing personal interest in a competitive market, other forms of behavior being a priori excluded, each desiring to live better and better .

Any individual will choose to continue their studies, for example, only if that will bring him additional income in the future. Even if the choice will lead to increasing the general level of development, this can only constitute a basis of reasoning for the governmental decision-makers, not for individuals taken as separate entities.

Recent economic literature is quite rich when it comes to argue the importance of investment in education in the context of economic development.

Investment in education influences the process of economic development in a specific way, the way in which the educational factor integrates in the economic process is a holistic one, it can not be specified that a certain amount of education (seen as number of years of schooling or as money spent

⁴ The following excerpt is relevant: "It is to be expected that a trained workman will be lead to be paid salaries above the average level of the common labor force, and finally to replace all the expenses incurred for his training with the corresponding profits of a equally valuable capital. "

⁵ Term introduced by Theodore W. Schultz, laureate of the prize awarded in memoriam of Alfred Nobel by the National Bank of Sweden in 1979 for pioneering research in the field of economic development with special application to developing countries' problems; and elaborated by Gary Becker, as a winner of Alfred Nobel's Memorandum Award by the National Bank of Sweden as well, in 1992, to extend the microeconomic analysis of human behavior including noneconomic behavior

for the training of individuals involved in the active process) is necessary for carrying out an economic act, the same volume of education has different outcomes from one individual to another and from one economic process to another. Some of the benefits brought by this investment can be measured while others can't, but this doesn't mean that they are less important.

Even though the way in which education makes the economic process suffer a transformation in the sense of acceleration and structural adjustment has not yet been explained, deciphering economic growth mechanisms through and with education is a technical issue that can not prevent governments and individuals from opting for high education (at the structural level of the labor market or at the personal level). It is not by accident that the most developed countries have the broadest policies (in terms of volume and structure) in the field of education.

Education policy appears to be an integral part of the general development policy in these states not only because they allow it (as it sometimes appears misinterpreted) but because in those countries they realise that education is a way of ensuring future welfare.

Investing in education as a way of forming human capital - skills and abilities - is a vital element in ensuring economic development, raising living standards and improving social inequalities and inequities. It is an important element in combating unemployment and social exclusion.

The technological revolution that we are experiencing transforms the education system from labor force producer into a capital producer.⁶

School changes its place and role in the new society, it is generating economic performance.

Education produces two types of effects in the economy: *qualitative effects* and *quantitative/qualitative effects*.

The qualitative effects are closer to the social side, they come to ensure and increase the efficiency of economic processes. The individual himself becomes more competent, being able to manage the economic act and develop / implement complex, interdisciplinary decisions in a way that is greatly differentiated from the past by speed and accuracy in execution.

The existence of intelligent economic agents (a performant educational product) ensures the democracy of economic processes, the pursuit of activity on the basis of high quality competition. An appropriately educated manager will be able to see the best solutions and opportunities to achieve the best return on money spent.

The quantitative/qualitative effects refer to the number of qualitative transformations that occur (for example, the number of higher educated individuals).

Directing considerable financial resources towards the educational system has led to a quantitative and qualitative increase of the human factor. Qualified, able, high-quality individuals have emerged to exploit high technology and create hi-tech.

Taking into account the human factor as an active and determinant presence in the economic context has led both to reaching an economic leap and to the reduction of the necessary period to reach it.

The key question is how much money a society has to spend to get the best results. This question can not be answered without realizing the magnitude of returns of the money being spent. For this, a method of *cost/income* analysis is generally used.⁷

⁶See Peter F. Drucker „*Post Capitalist Society*”, Image Publishing House, Bucharest, 1999

⁷ It is a cost/benefit analysis as it is found in Romanian literature, but I prefer this translation of the term "cost / benefit analys" because the term "benefit" is more likely to mean "income" than "benefits"; moreover, the way the issue is interpreted in the literature makes me prefer this term

The *cost/income* analysis is hampered by the fact that an economic leap due to education is only recorded if we are dealing with a coherent and continuous allocation of funds for education over a long period, the whole educational process involving a long period of time for implementation at the individual level.

If we witness a syncope of allocating the necessary funds for a period equivalent to generational exchange, all the investments in the educational system are transformed into permanent losses, the educational product will no longer work at the desired parameters, the increases of the educational level are related to certain ages that the individual goes through. Once these ages are left behind, if the educational act did not achieve the quantitative/qualitative increases of knowledge, it could be recovered only to the detriment of other knowledge, which makes the individual ultimately a less educative product than if there was cursivity.

The way in which funding is carried out must be related to the level of development achieved by each economic system; where the level of income per family member allows the family to bear the schooling costs, then the family must bear them. If individuals, households can not afford to pay for education then the costs of higher education will have to be borne by the government through subsidies and transfers. Otherwise, the community is self-defeating to poverty.

If the individual affords to pay for higher education, then he has to do so, if not, the society being directly interested in it must finance it so far as he is not able to do so.

The effects that education brings to the economic system and which contribute to accelerating the pace of economic development are as follows:

The private effects of education

Income

Education, the learning process, have generally significant impact on workers achieving the amount of skills, abilities and knowledge (whether they are acquired in a school system or whether they are acquired after graduation as a result of specialization courses or experience on the labor market) which they use to complete the whole process of work.

The main outcome of education is the increase in labor productivity and an increase in wage income (we take into account that the salary level is related to the labor productivity dynamics).

Effects on employment

Mincer(1993)⁸ has determined that educated workers have three great advantages over those less educated: a higher salary, greater job security, and greater mobility of income in the direction of growth.

The negative relationship between education and unemployment is the result of two factors: one is the faster increase in the number of available jobs requiring a highly trained workforce than the number of individuals able to occupy them (this imbalance has become a problem in developed economies, which attempt to import labor from less developed economies where high-quality work is not properly rewarded) and the second reason is that an educated individual becomes, through his work, an element of great value for any company, thus he becomes a true hunted on the labor market (it is a practice often condemned in developed economies because for some hierarchical positions salary levels grow artificially), thus eliminating the possibility of voluntary unemployment.

⁸Mincer Joseph "Education and Unemployment" in Studies in Human Capital; Edward Elgar Publishing, Cambridge UK 1993

The decision to invest in education, *Mincer (1974)*⁹; *Becker (1976)*, is grounded before individuals get salary increases. Salary is the link between the labor market and the education market, as well as the connection with the phenomenon of economic development. Due to the fact that individuals are able to earn more, they will increase their savings, and in the conditions of increasing their decision-making powers, their actions on the market will become coherent. But these conditions can be fulfilled if the individual is in a job or starting a business on his own. The risks of non-allocation of the labor market become the risks of investing in education, creating a new dimension for the opportunity cost of pursuing a higher education form, *Freeman (1986)*¹⁰.

The risk of being unemployed leads to an increase in schooling level as evidenced by a series of studies, *Rees-Mocan (1997)*¹¹; *Beths-McFarland (1995)*¹². More skilled individuals will be able to get a job with a higher salary faster. It is thus much closer to full employment, the economy will work much closer to potential GDP. Thus, it can be appreciated that in the long run the potential level of the economy is increased not only implicitly but also explicitly through investment in education.

By increasing education, *Fernandez and Shioji (2001)*¹³, three types of effects can be observed that will lead to an increase in long-term economic potential:

- Unemployed people with a precarious state of studies have the tendency to continue their studies because after graduation they have an increased chance of taking up a job.
- The social and psychological state of the unemployed (which can turn into a strong restriction on development) is improving significantly in the case of the unemployed in a form of education.
- Territorial areas where the education / culture level is higher is the "driving force" of economic growth for the national economic system due to higher employment, rising labor productivity and a tendency to concentrate real capital (especially the capital involving high-tech) in these regions.

Non-economic effects at private level

Education often affects the quality of life in ways that are rarely perceived as such. Highly educated individuals can better adapt to varied living conditions, and, even more, they can adapt these conditions to meet individual preferences. Having a greater income they succeed in investing in themselves, accessing better quality health care, certain methods of psycho-physical maintenance, certain services (housekeeping and tourism) residing in better health, we can think we have to deal with the maintenance of human capital.

The public effects of education

Economic development

The contribution of education to economic development is mainly accomplished in two ways: the first, the most well-known and publicized is the creation of new knowledge, also known as

⁹ Mincer Joseph. "Schooling, Experience and Earnings" NBER, New York, 1974

¹⁰ Freeman R.B. "Demand for Education" *Handbook of Labor Economics*. Vol. I, edited by O. Ashenfelder and R. Layard. Elsevier Science 1986

¹¹ Rees, D.I. și Mocan, N.H. "Labor Market Conditions and the High School Dropout Rate: Evidence from New York State", *Economics of Education Review* 16(2), 1997

¹² Betts, J.R. și Mcfarlad, L.L. "Safe Port in a storm. The impact of Labor Market Conditions on Communitie College Enrolments" *Journal of Human Resources* 30(4) 1995

¹³ Rosa M Fernandez, Etsuro Shioji "Human Capital Investment in the presence of Unemployment: Application to University Enrolment In Spain" University of Oxford, Department of Economics, Discussion Paper Series, 2001

Schumpeterian growth, it is attributed to the growth of human capital. More highly educated individuals means more scientific and technical information to the economic system, more inventions, a larger stock of knowledge, which leads to the emergence of more efficient technological processes of production, thus to economic growth in its quantitative side.

Through the second path, education affects the process of economic development by disseminating and transmitting information. The school system communicates to the individual the information through he/she is able to manage the new information, without which the new technologies would have a much smaller effect. For example, if individuals enter the labor market without information on computer use, the impact of information technology could be a negative one, and the individual would not be able to work with the equipment at his workplace or with the other individuals he should communicate with.

Griliches and Jorgenson (1967) believe that half the percentages of annual output growth can be attributed to educational increases in human capital, which means that 15%-20% of US economic growth at this time can be explained by the education situation.¹⁴

Denison (1985)¹⁵ estimates that education per worker generates 16% of production. A study on Rand Corporation reflects that 21% of the increase in production between 1940 and 1980 was the result of the increase in workers' skills¹⁶. Accepting that 16 percent of US economic growth is due to education, we can say that GNP instead of increasing from \$ 2,210.2 billion in 1959 to \$ 7,269.8 billion in 1997 would be raised to just \$ 6.009 billion, which means a \$ 1,260 billion difference.

Education generates an abrasion of the discrepancies between the extreme levels of income generated by the manifestation of competitive market laws (as *Bian* (1994)¹⁷ shows for a study on China's economy, or *Riskin* (1998)¹⁸.

This translates into a higher increase in low incomes compared to the growth of higher incomes. Increasing the level of education leads to an increase of the productivity of the work much more for the activities with limited decision-making powers (the direct work processes) than for the ones that imply the elaboration and implementation of strategic decisions (the sphere of top management), because the work is already highly skilled. This should not lead to a downward trend in education as although the productivity gains are lower, the overall effects on total output are much larger and more extensive.

By achieving uniformity and revealing competences at decision-making levels in the labor market, education, *Yueh* (2001)¹⁹, contributes to the elimination of non-moral discrimination that may occur at the time of employment. Therefore, decision-making resources will be better allocated to markets, eliminating market dysfunctions that may arise as a result of doubtful decisions. Assigning the decision to individuals whose only quality is to hold a characteristic of a traditionalist character (eg the man is the one who has to decide within the family) leads to the emergence of "terror" (JS Mill - "*Freedom Essay*") that alters the functioning of the market. Making economic flows more consistent leads to the determination of potentially higher GDP.

¹⁴Dale W. Jorgenson, Zvi Griliches. "The Explanation of Productivity Change," Review of Economic Studies 34, no. 3 (July 1967): 249-283; Zvi Griliches, "Notes on the Role of Education in Production Functions and Growth Accounting," Cap. Education, Income, and Human Capital, 71-127, New York, NY: Columbia University Press, 1970

¹⁵Edward F. Denison, *Trends in American Economic Growth, 1929-1982* Washington, DC: Brookings Institution, 1985

¹⁶E.M. King, J.P. Smith. *Computing Economic Loss in Case of Wrongful Death* Santa Monica, CA: The Rand Corporation, 1988

¹⁷Bian, Y. "*Work and Inequality in Urban China*" State University of New York 1994

¹⁸Riskin, C. "*China's Political Economy*" Oxford University Press 1987

¹⁹Yueh, Linda Y. "*An Investment model of Social Capital with Empirical Application to Women's Labor Market Outcomes in Urban China*" University of Oxford, Department of Economics, Discussion Paper Series, nr. 83/2001

Extra-economic public effects

Education involves a series of changes in the behavior of the individual as a social animal, the way he behaves within the collectivity and about it is an immediate result of his degree of culture.

*Friedman (1995)*²⁰ describes a series of these effects: "A stable and democratic society is impossible without a minimum level of training and knowledge of the majority of citizens and without their broad acceptance of a common set of values ... the benefits a child from education come not only to the child or his/her parents but also to other members of society. My child's education contributes to your well-being by promoting a stable and democratic society."

Thus, education produces a number of effects that we see in Saxon literature as "neighborhood effects", which means a peaceful life in the community, without social or individual conflicts (reduction of crime).

Conclusion

There is an intense polemic about the way in which funding for the higher education system is to be achieved, there are fierce followers of purely private funding, and public finance followers are fiery as well (the state, the society being undoubtedly interested in the educational level of the individual should support his/her schooling). Given that for the individual to exist and integrate into society; (and not to become a burden to it, he/she must be able to obtain his/her own means of satisfying needs, instead of society to offer it); needs some degree of education. So, for a minimum of schooling, the costs must be borne by the community, there is no controversy.

My opinion is that as long as the individual is the main beneficiary of education (in the form of a higher culture and increased income) he should pay. When the individual decides to continue his studies he does something for himself, he does not think that by doing so he does good to society. Interested in increasing income in the future are he and his family, it is normal for them to pay for schooling.

But a highly educated individual produces a number of beneficial effects at society level. A highly skilled workforce leads to a higher pace of development, to a general rise in living standards. So society is also interested in educating the individuals who compose it.

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²⁰ Milton Friedman „*Capitalism și libertate*” Ed. Enciclopedică colecția BNR , București 1995, pag.104

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