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Enhancing economic development via the increase of the quality of education

Introduction

Sustainable economic development is one of the major concerns of actual economic policy. In order to achieve this end, standard economic theory is aiming at identifying the major factors contributing to economic development. Economic policy has the task to work out the modalities to fostering the increase of these factors.

One of the major factors to contribute to economic development is human capital. However, while the channels via which human capital affects economic development are quite well described, the quantification of these effects is far less obvious. Especially, the quantitative effect of the quality of human capital on economic development is still an open question.

Economic policy provides pragmatic answers on how to enhance economic development on the grounds of economic models. There are two extreme answers. One extremity is considering the investments into human capital solely as private investment regardless of the positive externalities for the society. The return of this investment is calculated exactly like in the case of all other investments along the net present value of the expected discounted pay-offs. The other extremity is considering investments into human capital as investment in the development (better future) of the society. As the returns of such investments are hardly calculable, investments into human capital are not to be determined on the grounds of financial considerations.

In this paper, we overview the channels via which the quality of professors' work affects human capital and hence economic development. We do not intend to quantify these effects here, as we take granted that the increase of the quality or quantity in human capital results in higher productivity and hence higher economic growth.

In order to do so, in the first chapter we overview the channels identified in the literature via which education affects human capital. These channels are basically twofold: on the one hand, education contributes to individual productivity increase (human capital increase), on the other hand education contributes to a better distribution of labor force in the society (screening theory). In a second chapter, we consider the attempts to measure human capital. The quantification implies arbitrary choices, which are determined by the precise question to be answered relative to the economic development. In a third chapter, we briefly sketch some considerations to enhance the quality increase in education, which goes in pair with an increase in human capital and economic development.

The nexus of economic development, human capital and education

Adam Smith (1776, 2008) seems to be the first classical economist who has dealt with the link between economic growth, human capital and education. For Smith, the primary source of all wealth is labor. Trade contributes to increasing wealth only inasmuch it allows for specialization and hence for productivity increase. As, by hypothesis, the price of all commodities including factors of production are determined by the law of supply and demand of commodities, the price of factors of production reflects productivity of these factors. This general principle applied to the different labors regulates labor supply: "When any expensive machine is erected, the extraordinary work to be performed by it before it is worn out, it must be expected, will replace the capital laid out upon it, with at least the ordinary profits. A man educated at the expense of much labour and time to any of those employments which require extraordinary dexterity and skill, may be compared to one of those expensive machines. The work which he learns to perform, it must be expected, over and above the usual wages of common

labour, will replace to him the whole expense of his education, with at least the ordinary profits of an equally valuable capital. It must do this, too, in a reasonable time, regard being had to the very uncertain duration of human life, in the same manner as to the more certain duration of the machine. The difference between the wages of skilled labour and those of common labour is founded upon this principle." (Smith 2008, 145).

However, subsidies injected into the education of some areas of profession results in the decrease of the production costs of labor supply in these professions and hence to the increase of labor supply, which results in a decrease in wages in these professions: "The difference between the earnings of a common labourer and those of a well employed lawyer or physician, is evidently much greater than that between the ordinary profits in any two different branches of trade. (Smith 2008, 159). In professions in which there are no benefices, such as law and physic, if an equal proportion of people were educated at the public expense, the competition would soon be so great as to sink very much their pecuniary reward. It might then not be worth any man's while to educate his son to either of those professions at his own expense. (Smith 2008, 187). Men of letters are pretty much in the situation which lawyers and physicians probably would be in upon the foregoing supposition. In every part of Europe the greater part of them have been educated for the church, but have been hindered by different reasons from entering into holy orders. They have generally, therefore, been educated at the public expense, and their numbers are everywhere so great as commonly to reduce the price of their labour to a very paltry recompense." (Smith 2008,188).

It is worthwhile to add that if positive externalities exist in some professions, subsidizing these professions is a logical political economic step from the point of view of the overall society. However, the magnitude of the subsidies to converge toward an optimal situation is not an easy task to determine.

Gary Becker (1975) was the first to make an attempt to quantifying the investment in human capital via education in order to assess on the one hand its returns and on the other hand to explain the wage differences on the grounds of differences in human capital. In his work, he treats education solely as a private investment in human capital and tries to identify the explicit and opportunity costs of education. The major part of opportunity costs is the not realized earnings from eventual employment during the education period. In evidence, the results of returns from education largely depend on the estimated opportunity costs, on the discount factor to calculate the net present value and on the time period taken into consideration.

To sum up, the standard logic to explain differences in wealth accumulation is that different productivity implies different returns (wages). In competitive equilibrium the reverse is also true: wage difference reflects differences in productivity. Education contributes to productivity, hence education is necessary.

However, the nexus different wage - different productivity is not questioned, the role of education is challenged by some novel theories. (See i.e Polónyi 2011.) Namely, even if education does not contribute to productivity increase of single individuals, it contributes to increasing overall productivity because it screens individuals of different productivity and hence contributes to signaling to the employers the productivity differences. This screening is possible because the efforts spent for heterogeneous agents to obtain the same diploma is different. Those who have higher productivity have comparative advantage to obtain diplomas.

As to education, the message of screening theories and that of standard theory are diametrically the opposite. Screening theories suggest that the quality of education is secondary, because the relevant signal is the efforts spent to obtain a diploma. Standard theories are of the opposite opinion: the quality of education is the primary factor for productivity increase. In the first case, politics should not spend on increasing the quality of education, in the second case these investments are primordial to

enhance economic development. In evidence, the truth lies somewhere between the two extreme standpoints: human capital may increase both in quality and quantity.

Nevertheless, it seems that politics follows rather Friedrich List's idea on the modalities to develop human capital via education. Namely, education is a so important factor in economic development that a nation should renounce of some advantages in the present to be able to assure adequate education in exchange of accelerated growth in the future: „All expenditure in the instruction of youth, the promotion of justice, defence of nations, &c. is a consumption of present values for the behoof of the productive powers. The greatest portion of the consumption of a nation is used for the education of the future generation, for promotion and nourishment of the future national productive powers.” (List 1909, 109)

Empirical evidence suggests that, the more educated one is, he has more capital, the yield of which is expressed in the higher productivity of work.” (Thünen 1875)

Measuring human capital

Even if we accept the quite reasonable logical chain that more education results in more human capital and hence faster economic development, it is still not clear how to enhance effectively the growth in human capital. For any efficiency measure, we must determine the magnitude of human capital. To do so, there are basically two ways: the costs based and the cash-flow based (capitalization) method.

The cost based measure of human capital determines the magnitude of human capital by adding up all the costs incurred. The first attempt to quantify human capital on the lines of this principle is the work of Ernst Engel (See Zimmerman 1932). He considered 27 years' costs incurred to bring up a man. He simply supposed that education costs increase annually by a constant rate. Put aside the necessarily arbitrary nature of the calculus that affects all calculations to determine the magnitude of human capital (e.x.: time period; estimates of costs) the major drawback of this method that it cannot take into account quality differences: there is not necessarily connection between a man's market value and its production costs.

In principle, the cash-flow based determination of the magnitude of human capital may precisely define a man's market value. However, the market value of human capital is not necessarily in connection with the productivity of human capital. The first attempt to quantify human capital on the lines of the principle of capitalization is the work of William Farr (1853). The value of a man is the net present value of his or her estimated earnings in the future.

Schultz (1983) warns that one must be careful with the determination of the magnitude of human capital. For, a great part of what is generally considered as consumption is in fact investment in human capital.

He also indicates the dangers of focusing exclusively to human capital, because the structure of capital - human and other - is also an important factor in economic development. If human capital does not keep up developing with other capitals, or vice versa, economic development slows down. The equilibrated increase in human capital requires the adequate development in:

- health care facilities and services that affect people's lifespan, endurance and vitality
- on-the-job training;
- formal: elementary, secondary and tertiary education;
- adult education and lifelong learning programs;

The migration of individuals and families in order to adapt to changing job opportunities. The assessment of investments in human capital in order to effectively enhance economic development in a country are generally executed in the following ways in practice:

- determination of the link between education costs and wage increase in a country for a period;
- estimation of the education sector to the GDP;
- comparative studies between countries along indicators like enrollment rate and GDP (Harbison-Myers, 1966).

The effect of the quality of education on human capital

As we have seen in the previous points, there are evident difficulties to measuring human capital and the effects of human capital on economic development. These difficulties do not mean however that one must renounce of the attempts of measuring these effects. We have also seen that the proposition stating that the quality of education significantly contributes to the increase of human capital and of economic development is generally accepted. The problem is hence to determine the modalities to enhance the increase of the quality of the education (Rivkin et al. 2005)

According to several empirical researches (Hanushek and Woessmann 2010, Lee and Barro 2001, Dolton and Marcenaro-Gutierrez 2010), there is a strong positive connection between the quality of education (measured by the results of the students) and the salary of professors in general.

Naturally, the conclusion from this observation is not that if professors' salary is increased the quality of human capital will also increase. This depends on many factors. According to the first McKinsey report (McKinsey&Company, 2007), these factors are:

- adequate people are aiming at becoming professor;
- successful formation to become professors;
- each child have access to the best quality education.

In order to enhance the reform of the educational system to fulfil these requirements one must focus on the following tasks (OECD, 2011):

- the process of entering in teacher training and the quality of teacher training itself;
- the system of professional development of teachers;
- the assessment of the quality of pedagogical work, feedback about the work, the possibilities of teachers' development and career path with easy to follow quality assessment.

The commitment of teachers to a particular reform. These policy advices are based on the findings of some researches that the quality of the education mainly depends on the personality of the professor (Teachers Matter, 2005), and less on the number of students in the class, on the equipment or on the overall expenditures on education. (Rivkin et al, 2005). This said, the most trustful indicators for measuring the quality of education are the indicators that measure the competences of the professors. In order to attract individuals with strong competences required for the profession of education, competitive wages are required. However, competitive wages may represent a great burden, because the wage-share in the education sector is extremely high; it is about 85%. (Sági and Varga, 2012))

As an example, in Hungary in 2003 the wages in kindergartens and in primary schools were 70% of the wages in other professions with the same level of education. This number has gradually declined to 60% till 2009. In secondary schools, the same data for the same period is 10 percent point higher (80% and 70%). The gap between the wages in the education and in other professions with the same level of education increases also with the time spent in the profession. (Sági -Varga 2012)

In addition to the quality of the work carried out by professors, another important factor that determines the quality of the education is the quality of the management in the education sector. The quality increase of the management in the education sector has a multiplicative effect on the quality increase of the education because of strong positive externalities. (Halász, 1966)

Conclusion

One of the main factors of economic development is human capital. The positive effect of human capital on economic development and growth acts through two channels: on the one hand, the increase in individual human capital results in higher productivity per worker, on the other hand, the optimal social organization of labor stemming from the comparative advantage of different human capitals ends up also in higher productivity. An important factor contributing to the increase in human capital is education both in quantity and quality. The quality of education largely depends on the

quality of the professors; according to the latest researches other factors play secondary role. However, one must not forget about the strong effect of the quality of the management in the education sector either, which acts through a great number of positive externalities.

In practical considerations wages play central role. If externalities are not taken into account in a world with perfect information, wages reflect productivity. In the real world however, the education sector is far from this theoretical situation: the existence of positive externalities seem to justify government interventions aiming at raising wages in this sector. Doing so, governments try to make this profession more attractive to increase via the quality of professor economic development.

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