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EDUCATION AND THE DEVELOPMENT OF HUMAN RESOURCES

by

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I - The role of education in economic development

Economic activity can be described as a struggle against scarcity for the purpose of satisfying needs. Every society, following certain patterns of organization and applying certain techniques, produces a quantity of goods and services likely to provide it with the maximum present or anticipated well-being. In a market economy, the goods and services produced will mostly be those "voted for" by income holders, each person voting as many times as he possesses money units. In a centralized economy, production will comprise what is judged to be most in conformity with the interests of society by the planning authorities.

Hence, just like any other goods, the non-material good which education is, aims at satisfying a need of the community. As it is not usually sold on the market, it does not obey the latter's laws and is not a function of money demand (except in some instances for private education). Even in the most liberal of countries education is regarded as a "public service".

But whatever the economic system may be, any good or service produced implies a choice: an opportunity-cost, represented by the goods and services which could have been produced in its place, is imputed to it. In money terms, the cost is equal to the remuneration of the factors of production.

Education today absorbs quite a considerable proportion of the resources of every country. There are some who would like to consider educational expenditure as a function of national income and have calculated an income-elasticity - much greater than one - for this expenditure. From this angle, as the income of a country increases, the proportion of that income allocated to education rises more than
This assertion is probably correct for high-income countries. But it does not seem that there can be in the absolute a strong positive correlation between the level of income and the amount of expenditure on education. The developing countries and especially the African countries which have a per capita income between 60 and 200 U.S. Dollars, sometimes devote a higher proportion of their resources to education than the richer countries. According to the figures submitted to the meeting of African ministers of education which has just been held at Abidjan (March 1964), public expenditure alone on education was, in 1962, 4.4% of the gross national product in Ghana, 4.1% in Uganda, 4% in Sudan and 3.8% in Kenya. In the French-speaking African countries where the figures for public expenditure on education are under-estimated owing to the non-inclusion of foreign aid, the proportions in relation to gross domestic product were 4.2% in Congo Brazzaville, 3.8% in Dahomey and in Senegal, 3.3% in Ivory Coast, again in 1962 (1). According to Professor Edding's calculations, the percentage of educational expenditure (public and private) in relation to national income was, in 1960, 3.5% in France, 3.8% in Federal Germany and (in 1959) 4.41% in Great Britain (2).

The large sums spent on education pose the problem of the nature of the end product of the educational system. Is it a good providing a satisfaction sought after for itself, just like other "consumer" goods, or does it affect the ultimate production of other goods and services and would it in that case be a producer good? If so, through what machinery does it operate?

(1) Figures taken from a document prepared by UNESCO.

(2) Quoted by K. BAHR, I.D.E.P. Cairo Course.
1 - Education in economic thought

Adam SMITH, being imbued with the need for and utility of competition, wanted to introduce it into the educational system in order to increase its profitability. He advocated paying the teachers according to the value of their "output". However, in Adam SMITH's time the aims of education were mainly religious.

RICARDO and MALTHUS saw in education a means of inculcating habits conducive to the limitation of births, the rapidly-increasing rate of which, in their view, was a threat to economic progress.

Alfred MARSHALL spoke of education as an "investment" and related it to the training of manpower. He was in favour of technical education and vocational training as opposed to the traditional teaching of the "grammar schools" (1).

Keynesian thinking, however, did not attach great importance to education. KEYNES, faced with a surplus of manpower, laid the main stress on full employment. He sought to show how equilibrium could be achieved at various levels of employment and how, to meet the inadequacy of demand, additional investment financed ex-nihilo could multiply incomes and absorb unemployment.

Modern theories put the main emphasis on the role of the formation of material capital, called merely "capital", in growth and development. The chief "vicious circle" in the developing countries is considered to be that of capital and income: to increase income we must invest and hence (so as to avoid inflation) save; but the propensity to save is low when income is low. The connexion between capital and income is represented by capital-output ratios which indicate the amount of capital required to obtain a given increase in income. The human factor if seen mainly through its negative aspect, The rapid growth of population brings about a need for additional investment...

(1) cf. Economics of Education by J. VAISEY, p. 15 and ff.
and accentuates the lack of capital. A population which is increasing at an annual rate of 25 per thousand will have to invest - if we assume that the marginal capital-output ratio is 37.5% of its product simply in order to maintain the level of income per capita. Moreover, the increase in the number of dependent persons following a rise in the birth rate involves an increase in so-called social expenditure, reckoned as unproductive.

Recently, however, human factors have again begun to be taken increasingly into account in connexion with growth, and in a sense, Bodin's phrase "there is no wealth other than men" has once again become topical.

2 - Labour productivity and output

It is through the concept of productivity of labour that we can grasp the action of human investment in general, and of education, on the production function.

Labour productivity is generally represented in a firm, a sector or in the economy as a whole by the ratio $Y/L$ or $O/L$ in which $L$ represents labour (often measured in man-hours) and $Y$ or $O$ the output or value added (expressed in money units or in real terms). Similarly the productivity of capital, the reciprocal of the average capital-output ratio, is $Y/C$ or $O/C$.

But measuring labour productivity in average terms in this way means that it depends on the amount of capital available. For example, the mechanization of agriculture will increase labour productivity as expressed by the ratio $O/L$, but the "intrinsic" productivity of the worker will not have automatically increased. In a function in which output is assumed to depend on two variables, capital and labour, the "intrinsic" productivity of one of them is measured by its marginal productivity which is the partial derivative of the function, the other variable remaining constant.
The work of the Bureau of Economic Research in the United States on the long-term growth of the US national product has shown that the increase of capital and that of man-hours only partly explains growth. A significant part of this growth is attributable to the rise in the marginal productivity of the workers. The factors contributing to this rise are numerous and are often connected with action to promote better use of human capital. Education and training play an important role in this field.

Thus the distinction between consumer goods procuring immediate satisfaction and producer's goods used for increasing the productive capacity is not a clear-cut one. The latter are not confined solely to the "capital formation" heads in national accounts. Goods reputed to be consumer goods may raise the national income through an increase in the marginal productivity of labour. The expenditures involved in the production of these goods are therefore not wholly unproductive and become at least partly an investment on the same footing as investment in material capital.

It is only fair to note that education is not the only means of promoting the labour force. In some cases an improvement in health services or an increase in the consumption of some foodstuffs can prove to be profitable investments.

3 - The effects of education in the developing economies

How does education affect the specific structures of the developing economies? Under what conditions can it help those economies to bring about the desired take-off? Does it always have a favourable effect?

A - Favourable effects on development

1) The training of manpower

The developing countries have to face a serious problem. On the one hand they usually have a surplus of unskilled labour, but on
the other hand a surplus of unskilled labour, but
the other hand they have a great shortage of skilled manpower, and this
constitutes a serious bottleneck. These countries have to modernize their
agriculture but at the same time embark upon an industrialization which
must take into account the availability of natural resources, the
existence of markets etc. Industrialization, if carried out according
to judiciously chosen criteria, will reduce dependence as regards fluctua-
tions in the terms of trade and will help to raise incomes appreciably.
The developing countries must also modernize their distribution network,
 improve the economic infrastructure, organize the civil service, etc.

All these problems cannot be solved without qualified manpower
at all levels and in all sectors. Agricultural productivity cannot be
raised in the absence of instructors, leaders, engineers who devise or
implement the extension programmes and in the absence of farmers
equipped with a training which enables them to understand and apply
the new techniques. Industrialization presupposes the existence of a
whole range of qualified personnel: skilled workmen, foremen, accountants,
engineers, supervisory administrative staff at all levels. What is true
for industry is equally true for the public services and administration.
If the developing countries are to maximize yields in the field of trade
and transport, avoid wastages and set up modern networks, they will need
to have well-trained cadres available. In an administration where many
posts are often filled by people who do not have the requisite standard,
and where foreign technicians sometimes take decisions concerning a
country which they may not know well, it is essential to ensure the
availability of qualified persons from the modest ledger clerk up to
the officials responsible for policy and decision-making.

In order to acquire all this quantity of skilled personnel
which the economy so greatly needs in order to improve the efficiency
of the existing enterprises and above all to be able to establish new
production units, we have to rely mainly on the educational system.
Although on-the-job training leading to internal promotion or vocational
training help to reinforce the supply of manpower, they can only consti-
tute a valuable auxiliary contribution to the educational system, which
has to supply, in adequate quantities and of the best quality, the bulk of the labour force needed by the economic machinery. In any case most kinds of vocational training can only be carried out after a prior school training.

2) The creation of conditions favourable to development

Even in purely economic terms, the role of education cannot consist solely in training the requisite manpower. For the state of under-development is not related solely to economic conditions; it is bound up with certain attitudes of mind, with a psychological climate unfavourable to the necessary changes. The farmer for example must want to change his living conditions and to act in consequence, he must consent to sow the subsistence produce after the export crops, as is appropriate in some countries; he must facilitate the extension of the monetary sector as opposed to exchanges in kind. The acquisition of the rational spirit, the struggle against the fatalism in which many inhabitants of developing countries are plunged, are necessary to start the "take-off".

An educational system suitably oriented as to its content and spirit is likely to make a powerful contribution towards overcoming resistances and inculcating new ideas. It will also help to limit population growth, since it is very difficult to introduce contraceptive methods in an illiterate environment where the people's ideas make them reluctant to accept such an undertaking.

Education can also promote monetary savings and especially its institutionalized collection. The introduction of saving books, of postal check accounts, of treasury bills or bonds is greatly facilitated in an educated environment where the utility of such operations is understood.
Education is also necessary for the establishment of a class of entrepreneurs, particularly in countries where it is desired to entrust private initiative at least with the task of carrying out productive investment.

Moreover, the role of education is not confined to transmitting known methods and techniques, but it is also to contribute, by means of research, to the creation of new techniques and new methods. It is not necessary to stress here the well-known role played by research in technological and economic progress, especially in the contemporary period. Inventions and innovations have radically altered the conditions of life in the industrialized countries. In the developing countries, research is still in its early stages or frequently non-existent. We cannot of course expect sensational results in this field in the near future. However, research can be extremely useful for an attempt to adapt the techniques which have proved themselves in the industrialized countries to the specific conditions of each developing country.

B - Unfavourable effects

We have just mentioned the favourable effects which education can and must have on economic development, in the form of the training of skilled manpower and the creation of conditions of all kinds conducive to development. Nevertheless the extension of education in a country will not automatically produce a favourable effect. An educational system can sometimes be traditionalist and conservative. It will then be used to strengthen rather than to break down the psychological and sociological resistances to development. It may also be unsuitable for the realities of the country as to its content, its structure and its methods. It may, for example, tend to form a bureaucratic outlook, to arouse contempt for manual work or accentuate an excessive migration to towns which would empty the countryside of its most vigorous elements.
As regards the training of manpower, the educational system may sometimes get on the wrong track. We have indeed seen countries which are faced with an "overproduction" of graduates in some fields and a serious shortage in other more important ones. For example the graduates of the faculties of letters in some countries of Latin America, Asia or the Middle East are usually excessively numerous, while these countries are facing a shortage of technical personnel.

In some cases also there is a danger that education may fritter away savings by inculcating habits, of conspicuous consumption, into the inhabitants of developing countries.

In sum, it seems that education could be a profitable investment; hence the need and utility of rational planning in this field.

4 - The profitability of educational expenditure

Since expenditure on education can be an investment, attempts have been made to evaluate its profitability as is done for expenditure on material capital. It was thought that it might be possible to ascertain coefficients of educational expenditure similar to capital-output ratios, which would make it possible to obtain a ratio between the expenditure on education and the increase in income. In that way it would be easier to make a choice among educational expenditures on the one hand and between those and other expenditures on the other hand. No definitive results seem as yet to have been obtained.

As individual income, especially that of wage-earners, usually increases with a rise in the educational level, G.S. Becker in the United States has tried to compare the cost of training an individual with the total wages he earns during his working life and...
to calculate, taking several factors into account, a rate of interest in relation to expenditure on education (1). S. STRUMILIN has put forward, on the basis of the differences in wage levels in the U.S.S.R., some figures on the profitability of educational expenditure in that country. According to his calculations "after four years" primary studies a worker has an output and a wage 79% higher than those of a worker in the first category who has had no schooling; after seven years' studies an employee can have a skill worth 235% of the lowest level; this improvement can go up to 280% after nine years' studies and 320% after fourteen years' studies (2).

The chief merit of the above-mentioned approaches is that they measure the individual yield of educational expenditure. But the yield at the macroeconomic level is not always identical to the sum of the individual yields. Does the wage earned in fact measure correctly the contribution made by its recipient to production? This is not always so. In a market economy, at least, the level and trend of wages depend on the structure of the labour market. An increase in wages may be obtained without any equivalent increase in productivity on the one hand, and on the other hand an increase in productivity may have no effect on wages but may show itself in a rise in profits or a reduction of prices to the benefit of the consumers. Also, the relation between wage and educational level is often rather a loose one. Moreover this method of calculation is restricted to wages and does not take into account the indirect effects of education such as the change in sociological structures etc..

Other methods have been advanced for calculating the profitability of investment in education, such as the correlation method or that of residual analysis.


But any measuring of this profitability is actually handicapped, first by the difficulty of making a precise distinction between the consumption aspect and the investment aspect of expenditure in this field, and secondly by the very long "gestation period" which such an investment requires.

Although the absence of accurate ways of measuring the profitability of expenditure on education makes planning decisions more difficult, this latter operation which has recently made considerable progress remains essential for any country which wishes to derive the maximum profit from its education.