# HUMAN CAPITAL AND ECONOMIC DEVELOPMENT: AN ANALYSIS FOR THE MEDITERRANEAN COUNTRIES

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## Introduction

In this essay we shall dwell on examining the influences of "human capital" on per capita income of the countries bordering the Mediterranean.

Since the 60's, physical and human capital emerged as an important theme for analysis. Schultz (1964) demonstrated that for the less developed countries to record a higher growth, it was necessary to disseminate new technologies and to provide infrastructures and services by higher expenditures. Better infrastructures would enable the economy to have low transport costs as in Coase (1937) as well as low costs in the implementation of contracts.

But what is human capital? It is made up of all skills and productive knowledge found in individuals, as agents able to product an income inside an economic system. In relation to the characteristics of the individuals incorporating it, we can refer to the human capital and also to all the qualified human resources, whose enterprises have to carry out the production processes. Literature (see amongst others: Prausello and Marenco, 1996) considers higher school education and vocational training as the most important forms of human capital investment. Generally, every time the present consumption is given up in order to increase the stock of individual knowledge and skills, a human capital investment takes place. This means that particular forms of human capital are connected with the expenses, or costs and opportunities faced for health reasons, to buy and deal information

and particularly to look for a work, to move to another town or emigrate, to achieve a minimum level of production capabilities by means of food expenses in the case of developing countries and so on.

In the first part of this paper we shall dwell on the innovative role given to the theory of economic growth by those researchers that consider also among the productive factors the human capital or endogenous growth models; in the second part the basic hypothesis of these models will be considered; and finally, in the third part, we shall verify (by means of an econometric analysis), the correlation between some proxies of human capital and the per capita income of the countries bordering the Mediterranean; in the fourth conclusive remarks are expressed.

## 1. The innovative role of the models taking into account the human capital

As everybody knows, according to literature, the Harrod model represented, from the 40's to the 60's, the prototype of modern theory of growth. Even if this model did not hypothesise the possibility of difference between effective growth pattern and guaranteed growth pattern, the variations set by the neo-classicists (Solow Model, 1957) and by the Keynesians threw light on the possible difference between the two above-mentioned models of growth. According to the neo-classists, the solution of the problem of the coincidence between guaranteed and natural pattern of growth was committed to the variation of the combinations between capital and work employed in the production process, made possible by the adjustments of the two factors prices. According to the Keynesians, on the other hand, this solution was possible due to the variations of this disposition towards saving and therefore due to the variations of the income distribution. The assumption that technical progress was exogenous and freely appropriable brought about general agreement. The situation, however, changed radically in the following decades. The up-heavals and the transformations of the world economic system commencing from the first half of the seventies and the widespread phenomenon of dullness, crisis, deindustrialization occurring in most less developed countries challenged the thesis that the development economics had proposed, and were subject to more and more negative criticism. Particularly at the outbreak of the debt crisis, the problems of the less developed countries began to be examined and discussed mainly on a short

70

term basis, as problems of macroeconomic balance, efficiency and of markets running.

Furthermore, it is not to be forgotten that the difficult adjustment process which accompanied many developing countries recovering from the debt crisis, has often been characterised by high social costs unequally distributed. This means that the whole costs of recovery will be evident only in ten or twenty years, when the human capital disinvestiment, emerging from the minor present levels of nourishment, health and education, will spread its effects, expressing itself as less productive labour force. Finally, there is a growing consciousness of the environmental approaches to economic development, after a period during which the pessimistic expectations of the early seventies had partially neglected them.

These can be considered to be the historic motivations which, in the second half of the 80's, promoted the proliferation of new literature on the models of growth, spurned particularly by the seminar works of Romer (1986) and Lucas (1988). This literature takes into account the role of some factors previously not considered such as the formation of human capital and the satisfaction of basic needs.

General wisdom holds that illiterate and unskilled workers are an obstacle to alternative trade and financial development along with more complex managerial activities. All this limits the 'absorption of investment capacity', that is the amount of investment is not compatible with the level of workforce skills. Overall, they will follow both mistakes in the implementation of investment and inefficiencies.

An improvement in human capital may take place either by traditional education or by 'learning by doing'. With regard to the traditional form of education, even if subjective decisions are based upon disposable income, the government should contribute financially in the supply of such services. Experience in developed countries shows that primary education, often compulsory, was state supported. Vis-à-vis the second form of learning, a full range of skills is obtained by simply 'doing' some activity (Arrow, 1974) and it is not independent of economic policy decisions. This type of learning is related to the level of public investment and the degree of incentives to private capital towards the sectors and the forms of organization where such learning is qualitatively and quantitatively important. In countries where the main component in investment policies is in the hands of both foreign investors and international organizations, the governments should involve domestic workers in the active

implementation of investments in order to let them acquire new knowledge. The peculiar domestic socio-economic characteristics are to be taken in account.

## 2. Human development and growth

Many of the adjustment programmes adopted during the 80's have had a significant impact on social welfare. The public and private expenditure devoted to health, education and nourishment have not only short-term effects on the level of current consumption, but influence also the storage of human capital. Many studies show that the investments in education have positive and high internal return rates as in (Psacharopoulos, 1988) and the best levels of nourishment in the first years of life, measured in terms of height, are linked with higher productivity and income levels during the working life (see Immink and others, 1982). The link between human development and long-term growth through the formation of human capital is therefore an aspect that deserves major attention. This is particularly true if, as will be seen, the concept of human development is wide, and the attempts to define and measure it usually centre on measures of life expectancy, illiteracy rates, state of nourishment and infant mortality rates. Good levels of health, education and nourishment are the result of the allocation of public or private resources for this aim. In the case of private resources it is necessary that the distribution of income is sufficiently egalitarian so as to allow individuals to produce or buy goods and the necessary services on the market. With regard to public resources it is necessary to guarantee sufficient income to meet expenses and an efficient allocation of these resources.

The definition of human capital, generally used in the literature on endogenous growth, is based on a vaguely specified "state of knowledge", or more precisely, on the educational level. The literature on international trade (see Romer, 1986) considers knowledge more as a series of schemes or as the state of the available technology, and it is more inclined to be incorporated in machineries rather than in human beings. Lucas (1988) instead considers in particular the investments in education and formation which are an alternative to the productive activity. Empirical verifications of the contribution of human capital to development utilize measures based on the illiteracy rate (as in Romer, 1989), on the enrolment rate to primary and secondary schools (see Barro, 1989) or on the average of school year attendance of the population (see Barro and Lee, 1993). Mankiw

and others (1992), instead, use the percentage of population in working age that attend secondary schools as (proxy) indicator of the investment rate in human capital.

## 3.  Relationship between human capital and per capita income for the   countries of the Mediterranean: an econometric analysis

According to Kuznets (1966) a part of Meg (*modern economic growth*) deals with the per capita income growth. However, the per capita income indicator is not a reliable approach to judge development: rich countries (e.g., oil exporting countries) are not always as developed as it is believed. By contrast, it would be important to take into account income distribution, structural transformation such as scale economies, technologies applied to production etc. In any case, there are difficulties in evaluating the level of economic development. In the literature, the level of per-capita income seems the most useful indicator (Pomfret, 1995) and more strongly Lewis (1955, 1979, 1980, 1984). Lewis (1955, p. 421) also supports the view that income growth gives more freedom to people through better control on the environment. Moreover, Lewis affirmed in his presidential address to the American Economic Association, in 1984[1], that "per-capita income remains the better instrument for measuring income development and defined the economic of development as the structures and behaviours of economies when their per-capita income is below \$2000".

In this part making use of the World Bank data for 1990, through econometric estimations, we shall attempt to see to what extent, for the countries bordering the Mediterranean, the average level of per capita income (Y) – quoted into dollars is influenced by some proxies of human capital, used by the literature.[2]

The proxies of human capital that will be taken into account for each country are:

1)  The infant mortality rate (M);
2)  The probabilities of living years hypothesized upon birth (V);
3)  The rate of enrolled at secondary school (S).

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[1]  See Pomfret (1995, p. 20).
[2]  See Daveri (1996, p. 86).

In **table 1** the values of such data are reported in relation to fifteen countries bordering the Mediterranean.[3]

## Table 1

| Countries | Per capita income[4] (Y) | Infant mortality rate (M) | Probability of living years (V) | Rate of secondary school enrolled (S) |
|---|---|---|---|---|
| **Algeria** | 2,600 | 66,5 | 65,4 | 61,0 |
| **Cyprus** | 8,020 | 10,0 | 76,5 | 88,0 |
| **Egypt** | 0,610 | 65,9 | 60,2 | 81,0 |
| **France** | 1,952 | 71,0 | 76,8 | 97,0 |
| **Greece** | 5,990 | 11,3 | 77,1 | 97,0 |
| **Italy** | 1,686 | 87,0 | 77,5 | 78,0 |
| **Libya** | 5,310 | 74,0 | 62,4 | N.D. |
| **Malta** | 6,610 | 89,0 | 73,4 | 80,0 |
| **Morocco** | 0,950 | 67,2 | 61,8 | 36,0 |
| **Portugal** | 4,900 | 12,3 | 74,9 | 53,0 |
| **Spain** | 1,100 | 85,0 | 76,3 | 105,0 |
| **Syria** | 1,000 | 42,5 | 66,1 | 54,0 |
| **Tunisia** | 1,440 | 44,4 | 66,7 | 44,0 |
| **Turkey** | 1,640 | 59,5 | 66,6 | 51,0 |
| **Yugoslavia** | 3,060 | 22,8 | 72,4 | 80,0 |

Source: World Bank, year 1990

As can be noted in **table 1** the countries with a lower per capita income show lower values of proxies of human capital. We can have a further confirmation of the afore-mentioned by taking into account an econometric estimated correlation of variables per-capita income and proxies of human capital. (*See* **table 2**)

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[3] The data about Libya are not complete for all items.
[4] Into million of dollars.

**Table 2**
Estimated correlation matrix of variables

|     | Y       | M       | V       | S       |
| --- | ------- | ------- | ------- | ------- |
| **Y** | 1,0000  | -0,7300 | 0,7673  | 0,6359  |
| **M** | -0,7300 | 1,0000  | -0,9599 | -0,6670 |
| **V** | 0,7673  | -0,9599 | 1,0000  | 0,6636  |
| **S** | 0,6359  | -6670   | 0,6636  | 1,0000  |

As can be pointed out from the results reported in the *table 2*, all the proxies of human capital considered have a significant effect with expected sign-correlation with per capita income. The proxy, in any case, coming out to be the most relevant in static terms is: "The probability of living years supposed upon birth" (V).

## 4. Conclusion

To conclude through the exercise developed in this last part, it was possible to verify, in agreement with what was stated by the above mentioned literature, the existence of a considerable correlation between the proxies that represent human capital and the per capita income of the countries bordering the Mediterranean. All this suggests that the policy to follow in order to improve the per capita income of the more disadvantaged countries will have to be turned to the strengthening of the factor "Human capital". The single countries, in synthesis, must intervene with the purpose of improving the human capital. They must intervene directly and indirectly. Directly:

a) supplying the necessary incentives to stimulate an appropriate production and diffusion of knowledge by means of research and development activities and sufficient investment in education;
b) supplying an adequate level of goods and services which are complementary in the production process.

Indirectly:

a) favouring the realization of infrastructures and services from the private part, with agreements of the "Project Financing" type;
b) favouring the opening of one's own country with foreign countries.

It is known, in fact, that the economic opening degree affects the growth rate, because the flow of goods and investment among countries helps the diffusion of knowledge on an international level. Moreover, as the knowledge produces positive expressions, the availability of a greater quantity of knowledge connected to the trade expansion should also lead to the extension of the productive possibilities of the interested countries. The positive effect will be as great as more trade contributes to the creation of a stock of knowledge common among the countries. This means that the commercial and investment flows should be diversified and be subject to few sectional restrictions, and the transfer of technology here plays an important part in stimulating growth.

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