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ESCAPING FROM POVERTY THROUGH COMPULSORY SCHOOLING

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MEASURING HUMAN CAPITAL IN PORTUGAL

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Measuring Human Capital in Portugal*

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resumo

Apesar do capital humano ser largamente utilizado como um factor produtivo nos modelos de crescimento económico, em estudos empíricos a sua capacidade explicativa é discutível. Os resultados variam desde efeitos sobre a taxa de crescimento do produto, sobre o nível do produto ou mesmo não se encontrando relação entre o capital humano e o crescimento económico. O capital humano é normalmente medido através de variáveis ligadas ao conhecimento ou à escolaridade. Estas variáveis estão sujeitas a importantes erros de medição, que podem justificar os diferentes resultados empíricos. O presente estudo reconhece a importância de uma boa medição do capital humano. Constroem-se três séries anuais para Portugal, uma delas baseada na escolaridade média para o período 1960-2001, mas com uma metodologia diferente de outros estudos disponíveis para Portugal, e outras duas séries baseadas no rendimento do trabalho para o período 1982-1998.


Although human capital is widely used as an input in modern economic growth models, in empirical studies, its importance in explaining economic growth is still an open issue. In fact, results range from influence in Gross Domestic Product growth rates to just a levels effect, and there are even several studies that find no significant explaining capability of human capital in economic growth. Human capital is usually measured through a proxy related to the population knowledge or to education. These proxies are prone to important measurement errors that may be the basis for the different found results of their effects on economic growth. The present study recognizes the importance of a good measure of human capital. It builds three annual series for Portugal, one of them based on years of schooling for the period 1960 to 2001, with a methodology different from other studies available for Portugal, and two others based on the market labour income for the period 1982 to 1998.

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1. Introduction

Human Capital may be defined as the set of resources embedded in people. It has a multifaceted nature, ranging from knowledge to health. Investment in human capital can be defined as "...activities that influence future real income through the imbedding of resources in people. This is called investment in human capital" (Becker, 1962: 9).

Many authors emphasize the importance of these resources of people in economic growth (e.g., Lucas, 1988; and Romer, 1990). Empirical studies that introduce a proxy of human capital stock in modelling economic growth such as Mankiw et al. (1992), Kyriacou (1991), Benhabib and Spiegel (1994), Pritchett (1999), Bassanini and Scarpetta (2002), de la Fuente and Doménech (2001b) have not been consensual in the results found in terms of sign and significance of the human capital stock.

The proxies used are related to knowledge, usually measured by the population's education, because theoretical models emphasize this dimension as a pre-requisite to the production of research and utilization of new technologies.

An argument accepted by many, as Cohen and Soto (2001) and de la Fuente and Doménech (2000), to justify these empirical disparities, are the probable measurement errors contained in the series of human capital stock. The present study recognizes the importance of improving the series of human capital. We build three annual series of human capital stock for Portugal. One is a series of average years of schooling, and two other based on the labour market value of human capital.

The average years of schooling is a measure with a widespread use, although the construction methodology differs among studies. Broadly, we can divide these studies in terms of the kind of data they use: some rely on enrolment data (Lau et al., 1991; Nehru et al. 1995), and others rely primarily on census data (Psacharopoulos and Arriagada, 1986, Barro and Lee, 1993; 1996; 2000; de la Fuente and Doménech, 2000; 2001a; 2002; Cohen and Soto, 2001).

Using data from the censuses is conceptually more correct than relying only on enrolment data, since the censuses give us directly the educational attainment of the population in a given year, which is a stock variable, while the enrolment data is a flow variable. Nevertheless, when trying to fill the years between censuses, it is necessary to use some kind of flow data.

Specifically for Portugal we emphasize the annual series built by Teixeira (1997; 1998; 2004), Teixeira and Fortuna (2003), Pina and St. Aubyn (2002) and Pereira (2004). The series constructed by Teixeira rely on the methodology of Barro and Lee (1993) to get data on a five-year basis, and then use the methodology of Kyriacou (1991) to fill in the remaining years. Pina and St. Aubyn (2002) also use the methodology of Barro and Lee (1993), but then fill the remaining years with straight interpolation.

The series of average years of schooling, constructed in the present study, is an improved version of Pereira’s (2004) and covers the period from 1960 to 2001. This is done using a methodology that improves on existing series for Portugal, by using some variables that were not used in those studies and by appealing less to interpolations and estimations, as will be explained in section 2.

The average years of schooling, has however some limitations, for example, it assumes perfect substitution between workers with different levels of schooling. By weighting the population by the level of education attained, in a linear way, it implies that a person with twice the years of schooling of another person would be twice as productive. It also does not take into account the quality dimension of educational systems, which can be very limiting, especially when the series are used in cross-country studies. For example, Lebre de Freitas (2000) in a comparative analysis of the growth sources of Ireland, Spain and Portugal, and using as a source The World Competitiveness Yearbook (1997), places, in a ranking of 46 countries, Ireland’s education