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The impact of human capital on economic growth

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Abstract

The EU's 2020 Strategy is focused on three area of growth: smart, sustainable and inclusive that couldn't be achieved without major contribution of skills, knowledge or value of people, common knew as human capital. It is difficult to believe that these goals could be realized without a good education and training system, a large diffusion of knowledge in manufacturing services, a creative industries and a great effort to create a research-intensive economy. Using a panel methodology, the paper tried to reveal the role of human capital as a factor of the growth and to argue that the slow investment in human capital should influence the sustainable development of the countries.

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1. Introduction

There is a large body of literature, that has revealed that one of the most important factors of economic growth is human capital (Riley, 2012 Lucas, 1988, Mankiw et al., 1992, De la Fuente and Doménech, 2000, 2006) with regard to both the effect of level (so called level effect) by its decisive influence on production through labor productivity (Romer, 1990; Mankiw, Romer and Weil, 1992) and the rate effect by contributing to increased competitive advantage through innovation and diffusion technology (Pistorius, 2004 Siggel, 2000, 2001, Horwitz, 2005).

In the classical theory of economic growth, labor productivity is regarded as an exogenous factor which depends on the ratio between workforce and physical capital, plus other factors (technical progress), but the beneficial effect

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of education on potential growth of productivity is not taken into calculation. The new theory of economic growth developed in the early 80s comes to correct this shortcoming of the classical theory emphasizing the importance of education and innovation, (elements of human capital) in long-term economic growth. In contrast to this, the theory of market value, shows that studies have highlighted the influence of intangible assets such as research and development, patents, intellectual capital on the market value of companies and also on their development, leading ultimately to economic growth overall national, regional or global, as the new growth theory shows.

De la Fuente and Doménech (2000, 2006) studied the relationship between production and human capital, both in level and in first-order differences, shows a positive and significant statistical correlation (demonstrated by the Temple, 1999). Bassanini and Scarpetta (2001) revealed in a series of OECD data for the period 1971 to 1998 that increased duration of schooling by one year leads to an increase in GDP per capita by 6%. Benhabib and Spiegel (1994) have shown that the introduction of human capital as a factor of production by function type Coob -Douglas leads to its insignificant effect on growth of GDP per capita, but if taken into account the influence of human capital on total factor productivity, the effects are visible in two aspects: a) human capital influences the internal rate of innovation as evidenced by Romer (1990); b) human capital influences the rate of diffusion of technology in the spirit demonstrated by Nelson and Phelps (1966). They show that an increase of 1% of the capital stock leads to a 0.13% increase in the rate of growth and the process of catching up technological development of other countries is strongly influenced by human capital stock nationwide as demonstrated by the Funke and Strulik (2000).

Michael Funke, Holger Strulik (2000), using a model that incorporates aspects of the classical theory of economic growth with the new theories of economic growth emphasize the existence of different effects of human capital in the stage of development of the country. In their view, the model provided by Uzawa-Lucas may explain the development mechanisms if productivity in the accumulating knowledge is sufficiently high, but Grossman-Helpman model for an economy with a wide variety of products can be explained considering technological growth as endogenous factor, which involve significant expenditure on research and development. Physical capital contributes greatly to the growth income per capita in the early stages of development, when the accumulation of knowledge through continuing education and training move to higher stages of development.

Bundell and others (1999) analyzing the impact of human capital on economic growth believe that the growth rate of output depends on the rate of accumulation of human capital and innovation, whose source is the stock of human capital, education level influence labor productivity. For supporting of these ideas they quoted passage: a) the work of Griliches (1997) which showed that in the US in 50 years the change in the level of education of the labor force led to a 33% increase in productivity; b) Jenkins (1995), which revealed that during 1971-1992, a 1% share breeding of highly skilled workers has led to an increase of 0.42 to 0.63% of annual output in the UK; c) OECD record from the 60s that have experienced rapid growth as a result of increasing the number of highly educated; Englander and Gurney (1999) which showed that growth in OECD countries from 70% in 1960 to 95% in 1985 of school enrolment has led to an increase of 0, 6% per year in labor productivity (Bundell and others, 1999, p.16-17).

Mincel (1995) show that higher growth of technological change in a sector, leads to greater demand for educated and trained workforce through training courses. Ángel de la Fuente and A. Cicoone (2002) exhibit much greater role of human capital in explaining productivity differential between countries than in supporting growth. In this paper, based on the new theory of economic growth will seek to highlight the role of education and innovation in economic growth in Romania and other EU countries by applying a panel model.

2. Data and methodological aspects

The literature on this subject reveals a wide methodological series from Solow structural econometric models extended by Mankiw, Rommer and Weil (1992) known as MRW models, to the convergence analyzes proposed by Barro and Sala i Martin (1992) and also to the panel models dedicated to cross-country data analysis (Islam, 1995).

The models used in the literature provides the opportunity to highlight some derived limits either from the election of the indicators used, either in their form of expression (as pace, level or logarithm) or the method of calculation.

One of the main methodological problems is to choose the proxy indicator used to measure human capital, since the amount of influence is affected by the indicator chosen for this purpose. Nonnemen and Vanhoudt (1996) use as proxy in MRW model, the share of education expenditure in GDP and they conclude that the relationship between human capital and economic growth is insignificant. Murthy and Chien (1997) as a proxy of human capital using a

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