Impact of human capital on economic development

How human capital contributes to economic development?

Introduction

The education of a country plays a fundamental role in the development and economic growth since its beginnings in the scientific and intellectual revolution of the sixteenth and seventeenth centuries, and then the age of enlightenment which corresponds to the eighteenth century where the idea of progress was transmitted, this philosophy comes from the last century. Human capital has been an issue that has caused controversy over its role in the Industrial Revolution.

Most economists and economic historians have investigated how the human capital has a major impact on economic performance in a country. The main reason is that individuals invest in education, acquire skills and expertise. This means that everything that they have learned throughout their life is an investment in human capital which in turn seek an economic return. Education provides a high-income to the people and therefore to the economy of their country.

It is essential to analyze the contribution of human capital in the economy. In the development of this essay we will explain two theories that are studied when analyzing education variable, these theories are the human capital theory and signaling theory.

The question that comes to the mind is whether a high growth of general education generates high economic growth or vice versa? According to the theory and empirical evidence shows that education is leading a high level of economic growth, ie, that there is causality.

There are different approaches to private and social returns to education but most empirical studies are based on private returns. The problems that arise in the measurement of education on economic growth of a country are omitted variables and reverse causality.

Intellectual Origins of Modern Economic Growth

In the sixteenth century the Baconian program diffused knowledge and natural philosophy was applied to solve problems with technology and get economic growth, in this century scientific advances were crucial for industrialization. While in the seventeenth century began the age of enlightenment where institutions encouraged and promoted knowledge and technological advancement, this process without the Industrial Revolution would not have had the same impact.

After the the emergence of the countries in the Industrial Revolution some countries became members of the club convergence. Mokyr (2005) argues that the age of enlightenment produced a high level of technological progress.

A great and interesting question that we discuss always is why not everyone is developed? According to history, economic growth has been dependent on the diffusion of knowledge. Since the Second World War is a phenomenon the growth of education in almost all countries. David Landes says that “ The heart of any process of industrialization and economic development is the intellectual.” It is important to point out that the technology transfer can be considered as an educational process.

Learning certainly depends on the priority to be given to education. Therefore, public policy should address strategies to improve the education system in a country. When laws are proposed to develop a quality educational system we seek the effect of education on economic growth or vice versa? According to the theory, economic growth is a cause of educational growth, but it has also happened independently.

Effects of human capital in the economy and its relationship with other variables

We ask ourselves whether the expansion of quality education contributes to the development and growth of a country or region? Bjorkland A. and Lindahl M. (2005) argue that the contribution of education to economic development is overestimated and that social returns are not as great as the individual returns (per capita), while others say that the individual returns are larger than social. The main reason is that the contribution of education to the production of the society is lower than the effects of individual income or per capita.

There are contradictory arguments about the role of human capital on the development and economic growth, for example, that neither had a big impact nor was the cause of the Industrial Revolution. Baten and Zanden J. L. argue that countries with low human capital had no effect on the Industrial Revolution while countries with better conditions reached the level of Great Britain and other countries surpassed it. Before the seventeenth century, the formation of human capital had a positive impact. The great divergence occurred in the period 1800-1913 where countries with high levels of human

capital participated in the Industrial Revolution while less developed countries had no impact.

Traditional research has shown that human capital is directly related to individual earnings and aggregate economic growth rate of countries. The problem arises when the amount of education is a premature measure of human capital, especially when the level of human capital between countries is compared.

Many of the empirical evidence on human capital until 1990 was based on the amount of education such as the number of years of education. There are discrepancies when data is used for comparisons between countries, it is more reliable to use data of regions within a country (Bjorklund A. Lindahl and M, 2005). The problems of such studies are data limitations that make it difficult to find comparable results across countries.

For example if someone might think that a year of education in Ecuador is as productive as one year in Sweden. The person in mention would have to assume that the quality of the education system is identical in the two countries. This causes a problem in the estimation of the allocation of education on economic growth because information is omitted, which in turn generates biased and inconsistent estimates. This could have a negative impact to the educational policies of the countries.

For the above reasons, it is necessary to incorporate the quality of education in order to have more reliable results using standardized data of math and science rather than years of schooling data. This variable allows us to consider aspects that are omitted in the measures of amount of education

that are often used as proxy for human capital. This means that it is better to use quality indicators that quantity indicators of human capital.

According to researchers, when education is measured by quality indicators that reflect the skills and abilities acquired in the work, is what really matters when the economic growth and development is analyzed.

In the field of politics, this makes that educational policies be produced, focusing on improving educational attainment and teaching skills and technical knowledge. In addition to, the importance to identify the educational reforms that will need to be undertaken in order to be effective, so that will result in a widespread economic growth.

Besides the problems of measures of skill, underestimation of income and consumption and heterogeneity of educational systems, the main topic of discussion among researchers is the inclusion of unobservable factors such as innate ability in the wage equation. Therefore, in order to determine the income of individuals is necessary to know their productivity levels, and assume that these depend only on the years of training and experience, but it is not fully adjusted to the reality.

There is causality between education and economic growth? According to studies of comparisons among countries, it has its limitation in the database and we cannot know with certainty whether more education leads to an increase of the GDP or a high GDP causes an increase in the demand of education in the society. A high level of education increases innovation and therefore to a higher economic growth. .

One of the main factors that causes an increase in the children's education is the education of parents. In turn, there is a relationship between education and other variables such as health, life expectancy, crime and political participation.

Bjorklund and Lindahl (2005) conclude that there are no external effects that have a great impact on education: on the other hand, they argue that there is empirical evidence demonstrating that education leads to an improvement on health, increases the life expectancy of people, has greater political participation, reduces the crime rate and that children of educated people become more productive. These authors argue that education may not be a variable that has a great impact on the economic development of a country and that the measure of GDP is too small to capture the full effects. Additionally, when analyzing variations among countries and regions is difficult to capture all the positive effects.

Is education a sign?

Human Capital Theory and Signaling Theory

To know whether education is a sign, we should know about the human capital and signaling theories. These theories explain the human capital and inequality of wages earned by people. With Human Capital Theory wages through education and experience are determined. While signaling theory presents that people are educated to provide signals to employers according to their skills but it is not considered the education as a mechanism that generates stock of human capital. The implications of these two theories is the productivity of individuals and the social costs of education. Most authors agree that education generates increases in the productive capacity of

individuals and also provide their information to entrepreneurs through signals concerning to education

Wage differences are also differences in productivity? There is a causal effect that is used to differentiate between a low and a high educated workforce, Morette (2004).

Entrepreneurs rely on indexes and individual signals to determine the marginal productivity of the individual and thus assign them a salary that matches the expectations from that information. According to the idea of signaling, individuals can create their chances of wages and job through education, due to the fact that they acquire signals that make them more attractive in the labor market. From the point of view of workers, since they perceive the possibility to increase profits through the information of their own abilities, they will try to increase the resources earmarked to acquire this information, Stiglitz (1975).

Human capital theories have been developed to give an explanation of the formation of wages. Despite the limitations that still exist in the database, the continuous effort to include relevant variables in human capital investigations has allowed to confirm the initial hypothesis of human capital of Becker and Mincer. The assumptions of this theory are questioned when Spence proposes that education is used by individuals as signals that provide information about the skills of individuals.

Both theories maintain that the effects that education has on earnings of life cycle are positive. While human capital theory argues that wage determinants are education and experience that enable to the individual to

acquire the skills to do a job , the signaling hypothesis of authors like Arrow, Spence and Stiglitz raises education as a process providing ” labels ” to workers to present these labels to employers in the selection process , but not a process that increase the real productivity of individuals. In this difference in the implications of teaching on individual productivity of each of the two theories we find the interest in knowing about the theory that explains the formation of wages in labor markets. In the event that the signaling hypothesis is confirm, individuals would go to educate themselves for the sole purpose of obtaining signals to provide to employers, in this case they are not developing their skills to be more productive, and they do not generate stock of human capital. In contrast, the predictions of the theory of human capital imply that education is still profitable for individuals and for society probably.

Los estudios tratan de discriminar entre las dos teorías y así conocer la relevancia de las políticas educativas sobre la economía, aunque descartar cualquiera de las dos limita la respuesta de conocer los elementos que determinan los salarios. Se han desarrollado en los últimos años modelos que muestran que la educación sigue resultando una inversión rentable para los individuos y para la sociedad y, a la vez, que los empleadores la toman como una información disponible acerca de la habilidad de los individuos.

Studies attempting to discriminate between the two theories and to know the importance of education policies on the economy, but discard any of the two theories, limits the response to know the elements that determine wages. It has been developed in recent years models showing that education is proving a profitable investment for individuals and for society and, at the

same time, that employers take it as information available about the ability of individuals.

Social and private returns to education

The social return to education is broader and has its effect on the public budget. Finally, different authors have used different approaches to the analysis of the returns to education through private and social rates, average or marginal rates, depending on the purpose of the study.

According to Psacharopoulos G. (1985) the returns are higher when primary education in a country is analyzed and private rates increase after the secondary level. He argues that private returns exceed social returns because public education is subsidized by the government.

Returns to private education include all the benefits and costs incurred by an individual, while the social discount rate includes supported by institutions, in addition to the taxes associated with education. Studies tend to focus on the analysis of private returns to education, regardless of social profitability. Very few investigations have been done about the impact that has the public financing in the decision of individuals or the social impact of subsidies on education.

The returns to education are overestimated when based on the income of workers in all sectors. There is overinvestment in all levels of education.

Problems in measuring education

Two problems are presented. When data of education and income at aggregate level is used, the estimations are larger due to external effects

while when individual or per capita income estimates are used, the estimations are smaller. For the above reasons, there exist a presence of Reverse Causality, ie that rich countries invest heavily in education and has compulsory education while in other countries, individuals choose to educate themselves. The other problem is the omission of variables when making estimations of the effect of education on economic growth. In these cases high estimates for the omitted variables and reverse causality are produced.

When measuring the impact of education on economic growth is very different when the level of GDP or the GDP growth is used, this latter variable measures the expected effect of growth on the level of education. Because problems arise when taking into account data from countries Krueger and Lindahl (2001) recommend using data between regions of a country.

In addition to education, there are other factors that affect education and economic growth of a country, such as the level of capital-intensive and technology development.

FINAL REMARKS

The Scientific Revolution and the Age of Enlightenment had a great importance in the process of industrialization due to technological progress and knowledge and thus on economic growth of countries. In the nineteenth century, there was the Great Divergence where countries with high level of education had a great impact on the Industrial Revolution while countries with low human capital had no effect.

Cuando se realizan las mediciones de la educación y su efecto en el crecimiento de la economía se presentan dos problemas de estimación que

es la omisión de variables y el reverse causality. Hay que utilizar datos de buena calidad y todas las variables necesarias para que sea una estimación consistente. Es recomendable realizar el análisis en base a un mismo país porque si se realizan comparaciones entre países los datos tienen sus limitaciones.

When measurements of education and its effect on the growth of the economy are performed, we find two estimation problems that are the omission of variables and reverse causality. It is important to use good quality data and also the most important variables in order to have consistent estimators. It is recommended that the analysis is based inside a country because if comparisons are made among countries, data have a lot of limitations.

It is true that a high level of education generates high economic growth, but there is also evidence that progress occurs independently.

If the population reaches a high achievement in the education level, the productivity in the economy will improve, achieving a high growth economy. Wage differentials reflect a greater productive value of human capital which is a component contributing to national production. Another effect on schooling as a result of good health positively affects education. Similar effects which would be obtained with increased productivity and growth.

Education has an impact with the reduced growing in the population, meaning that much of the population reduces birth rates. The birth number of children affects the physical ability to work for women and their productivity. This is very approximate to the effect of the health variable.

Education does not have a large effect on the agricultural sector because technology affects this sector.

Education affects the labor market because it makes more people involved, increase the number of trained people and grow at a high rate of labor force participation.

When an education policy aimed at improving the level of income distribution is implemented should consider the groups that will be affected, then the results may be different depending on the treatment group and the affected group.

For developing economies is difficult to give an indication of the impact of education on productivity and growth but will be even more difficult in low-income countries. Given the inefficient and non-transparent political and economic systems of many of these countries the returns to private education are met through non-productive activities. This means that in order to increase the relevance of education to economic growth is necessary to undertake a restructuring of the political and economic framework.

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