

The Crucial Link Between Education and Economic Growth

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Abstract: Currently, the connection between education and economic growth has already been a extensively debated topic, and economists have been interested in this subject matter for years. Figuring out the link between education and economic growth is very necessary for the reason that countries can make full use of this relationship to tailor policies to different economic conditions. By proper proof, education does have influences on economic growth and is typically positive. However, this paper will not only arrange and summarize education's impacts on economic growth, but it will also consider the reverse causation of the economic condition's impact on government spending on education. Also, this paper will divide education into different categories and analyze their relation to economic development, respectively. To study these topics, the paper searches for data from the online database and analyzes them in detail. The results in this paper show that countries with different kinds of economic conditions should focus on different kinds of education to maximize its utility.

Keywords: Education, Economic Growth, Influence.

1. Introduction

The impact of education on economic growth and development is widely acknowledged, with economists and experts proposing many probabilities in which education may affect growth; education not only brings out better income for individuals but also helps bring a lot of positive externalities for the whole society [1]. Education plays a pivotal role in driving economic growth and development in societies worldwide. However, there remains limited consensus regarding two aspects. One is about the possibility that economic growth could also affect education spending, and another is whether different kinds of education could have different impacts on economic growth. This paper delves into the profound impact of education on economic prosperity and illustrates how economic conditions affect education expenditure, highlighting the interconnectedness between the two. Additionally, this paper compares different categories of education and introduces different categories' strengths for economic growth.

Overall, this paper will first introduce the background on education and growth. Then different categories of education and their correlation to the economy are closely analyzed. This paper will also explain several main arguments about education's impact on economic growth from different aspects. Besides, this paper concludes the economic condition's impact on government spending on education. The result of this paper could help governments with different economic conditions implement different education policies.

2. The Background of Education and Economic Growth

Economists have extensively researched the correlation between education and economic growth, exemplified by South Korea's experience. South Korea made substantial investments in education following the devastation of the Korean War. For example, education spending accounted for 4.46% of GDP in 2018 [2]. By prioritizing education, the country developed a highly skilled workforce, leading to rapid economic advancement. Notably, from 1962 to 1994, South Korea witnessed an astonishing increase in the GDP per capita from \$106 to \$10,385, a remarkable rise of more than ninety times [3]. Nowadays, South Korea is renowned for its technological innovations and has successfully become a developed country. Although education is a small part of the driving force, it could be a testament to the transformative power of education on national economic growth to some extent.

Furthermore, education is categorized into distinct segments such as primary education, secondary education, and higher education. Each exerts different impacts on the economy. In the early 2000s, economists Sapir and Camdessus conducted a comparative analysis of Europe and America's economies and posited that the European Union's comparatively lower investment of 1.1% of its gross domestic product in higher education, compared to 3% in America, resulted in slower economic growth across European countries [4]. However, considering the post-World War II period spanning 30 years, Europe exhibited faster growth than the US despite primarily focusing on investments in primary and secondary education instead of higher education. Additionally, the repaid economic growth observed in Asian countries was predominantly driven by investment in primary and secondary education. This analysis underscores that the relationship between education and economic growth is not simplistic; thus economists cannot solely predict economic outcomes based on government emphasis on specific educational sectors.

3. Different Levels of Education's Impact on Economic Growth

In terms of primary education, there exists ample evidence showcasing the positive economic effects of completing this level of education. A comparative study, supported by statistical data from 1960 to 2000, revealed that each additional year of education can lead to a 10% increase in an individual's earning and contribute to an annual average GDP growth rate of 0.37%.

The economic rates of return to individuals' and societies' investment in primary education have been found to be higher in low-income countries than in higher-income countries. The rate of return is observed to be greater for primary education as opposed to secondary and higher education (Figure 1).

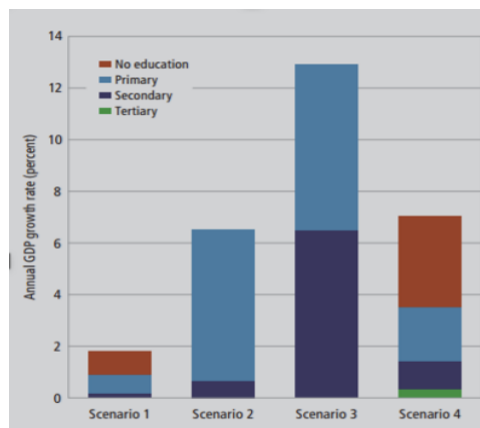


Figure 1: Annual GDP growth rates according to four alternative educational attainment distribution. [5]

Regarding secondary education, Figure 1 above can be analyzed. By comparing Scenario 1 and Scenario 2, the significance of popularizing primary education becomes evident. Similarly, by contrasting Scenario 2 with Scenario 3, the importance of broader secondary education is also highlighted. Consequently, it can be concluded that complementing primary education with a comprehensive secondary education system helps elucidate its benefits in enhancing human capital to alleviate poverty in the countries.

Higher education yields both social and private benefits. Based on the basic concept of economics, education brings positive externalities to society. Particularly in today's era of advanced technology, great countries require people with a high level of educational attainment to effectively govern the country and conduct research on emerging technologies. Also, there are very few countries with broad and high levels of education that are economically underdeveloped [6]. All of these testify that higher education leads to more innovative development.

For impoverished countries specifically, broad-based access to secondary education alongside universal primary schooling holds potential for providing the necessary boost in human capital required to uplift large portions of their population from poverty. For more industrialized and developed countries, youth's pursuit of higher education also plays a key role in driving economic growth.

4. The Interrelationship Between Education and Economic Growth

4.1. The Impacts of Education on Economic Growth

Firstly, education has a significant impact on human capital. The theory of human capital, which emerged as early as the 1960s, has greatly influenced educational policies in the United States. According to this theory, education enhances individuals' cognitive abilities and technical skills, thereby increasing their productivity in the labor force. Furthermore, an analysis of current statistics reveals that from 1980 to 2020, the disparity in annual earnings between college-educated workers and those without a college degree has consistently widened (without the impact of inflation). This observation underscores the crucial role of education in augmenting human capital value. Investing in human capital tends to foster innovation, boost production growth, and improve profitability, all of which lead to economic growth [7].

Second, education serves as a catalyst for fostering innovation and technological advancement. Being educated equips individuals with the ability to effectively solve complex problems and think critically. Some STEM-focused education can significantly contribute to a country's capacity for innovation. Hence, countries that prioritize education often exhibit superior innovative capabilities. A prime example of this is South Korea, which heavily invests in education, spending more than 5% of its GDP on it. [8] Additionally, South Korea places great emphasis on the development of STEM-focused education. All these educational efforts collectively enhance South Korea's innovation capability, evident by their impressive rankings of 4th in Creative Output and 6th in Global Innovation Index, testament to their innovative prowess. The resulting Innovations have the potential to drive higher productivity, thereby enabling greater output from similar inputs and ultimately leading to economic growth.

Furthermore, education plays a pivotal role in mitigating poverty and inequality. Education provides an opportunity for individuals to transform and enhance themselves; however, it is important to acknowledge that this argument may not be universally applicable due to unequal distribution of educational resources, which restricts access to equitable knowledge for disadvantaged individuals. Nevertheless, education has demonstrated significant efficacy in addressing inequality within some countries such as China. For Chinese students, there are two fair and crucial exams in their lives, which decide the future high school and university respectively. This educational mechanism has

empowered a substantial number of students to reshape their destinies by gaining admission into prestigious universities, with some becoming the first undergraduates in their families. After graduation, these graduates secure well-paying jobs and achieve higher incomes than their parents did before them. Consequently, education does alleviate poverty and inequality to some extent while also exerting positive effects on economic growth.

4.2. The Impacts of Economic Conditions on Education Spending

Different economic conditions can have varying effects on education spending. However, similar economic conditions may also yield different impacts on education expenditure. Besides, the analysis of education spending should encompass not only a macro perspective (government) but also a micro perspective (household).

During times of economic prosperity, the government is more inclined to invest the same amount or even more in education. Firstly, during this time, the government will have more tax revenue, which means a larger budget that could be used to invest in education. Also, when the economic condition is quite good, the government will focus on how to continue to develop. At this time, the development of human capital is a crucial point that needs to be focused on. Therefore, the government will be willing to allocate more spending to education. In 1994, China's economic condition was good, and the growth rate of GDP per capita in China was 11.77% [9]. Therefore, education expenditure accounted for 20.06 % of the total government spending in 1994, which is quite high. [10] Also, comparing the trend of GDP (total amount) and the trend of government education spending (total amount), these two factors have similar growth trends, which means that growth in GDP leads to more education spending. All these statistics justify that a good economic condition would generate more government expenditure on education.

In times of economic recession, there could be two kinds of situations for the government. One is a short-term measure, and one is a long-term measure.

As it is a recessionary economy, in reality, the government will adapt some strategies to change recessionary economic conditions. In the short term, expansionary fiscal policy is one of the most common methods to improve the recessionary economy, and it works by reducing taxation and increasing government spending. Therefore, when the economy is in a recession, the government will use expansionary fiscal policy. As the money used for government spending increases, the amount of money that could be spent on education will also increase.

Also, considering the a long-run situation, for a country that plans to prompt sustainable development, human capital is a big point to be focused on. Paying more attention to education can help achieve human capital development. If we put this situation in a simple economic model: the AD and AS curves, increasing the quality of labor could help prompt growth in the long-run aggregate supply curve, which means growth in the economy, and this method has already been proven by Korea and other countries in the past few years. Therefore, the recessionary economy could help effect education spending in the way discussed above.

In times of economic prosperity, households normally have stable economic conditions. Under this circumstance, parents can afford regular school curricula, and for some families with better conditions, they could even afford tutors and some extra-curriculum classes to help and support their kids' academics.

However, during periods of economic recession, households will normally face financial hardships and may struggle to afford education fees for kids. Take the epidemic period in China as an example. During this period, many firms in China went bankrupt. According to the statistics, more than 460,000 companies went bankrupt in China in the first quarter of 2020. Also, even some big companies reduced the wages of employees and fired a lot of employees to keep the company operating normally. These kinds of situations have a deep impact on households. Therefore, as households get less money

and even incur debt, they can't spend as much as before on education for their children. For example, some students who study abroad even lack money to support continuing study. Therefore, since their parents went bankrupt, some of them had to do part-time jobs to support continuing study, and some even had to come back to China.

5. Conclusion

In conclusion, the link between education and economic growth is crucial and pivotal. Making investments in education could provoke the enhancement of human capital, technical and innovative advancement, and the alleviation of poverty and inequality. Also, different kinds of economic conditions will have an impact on the amount of money that the government spends on education. This interdependence underscores the critical importance of aligning educational policies with economic goals, ultimately creating a positive feedback loop that benefits society. Also, the government's awareness of this interdependence could help the economy and education affect each other automatically. Besides, for different countries, they should also choose different focuses to develop education, which could help maximize the promotion of economic growth. Hence, by recognizing this correlation and the importance of deciding which aspects of education to emphasize, nations can pave the way for sustainable growth and development. However, some real-life scenarios were not fully considered in this paper's arguments (some noises were ignored). While there are other ways through which education impacts economic growth that have yet to be explored.

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