

## THE PROBLEM WITH BULGARIA'S LACK OF FUNDING DIRECTED TO THE EDUCATION SECTOR

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### Abstract

*Human capital is one of the driving factors for an economy and has a direct effect on production. One of the best ways to boost a country's GDP is to increase labor productivity, which is directly linked with long-term economic growth. With Bulgaria having one of the lowest general government expenditures to GDP ratio in Europe and low teachers' salary rates compared to other countries, it's important to determine how this may be affecting the country and its economic growth as a whole. The aim of this paper is to analyze the lack of funding in the educational sector based on the human capital theory and the Augmented Solow growth model, as well as to provide some suggestions on possible improvement strategies.*

**Keywords:** European Union (EU), Gross Domestic product (GDP), Sustainable development goal (SDG), International Standard Classification of Education (ISCED)

**JEL:** I22, I25

### Introduction

Economic growth has always been difficult to achieve consistently because transmission channels are interconnected, hence a slight change in one element may have a significant impact on another economy segment. Purely on a macroeconomic level one of the biggest concerns is how to increase a country's productivity in the long run without affecting inflation, which would in turn improve the economy and increase GDP per capita. Bulgaria as a small open economy that is a part of the EU should be growing a lot quicker than bigger countries in Europe, but data shows that this isn't the case. The slow growth rate of Bulgaria is concerning, but the future is even more so with the population decline and the high levels of emigration etc. While it is important to try to fix short-term economic problems, it is more important to improve the economy long-term and one way to do it is to improve the educational system.

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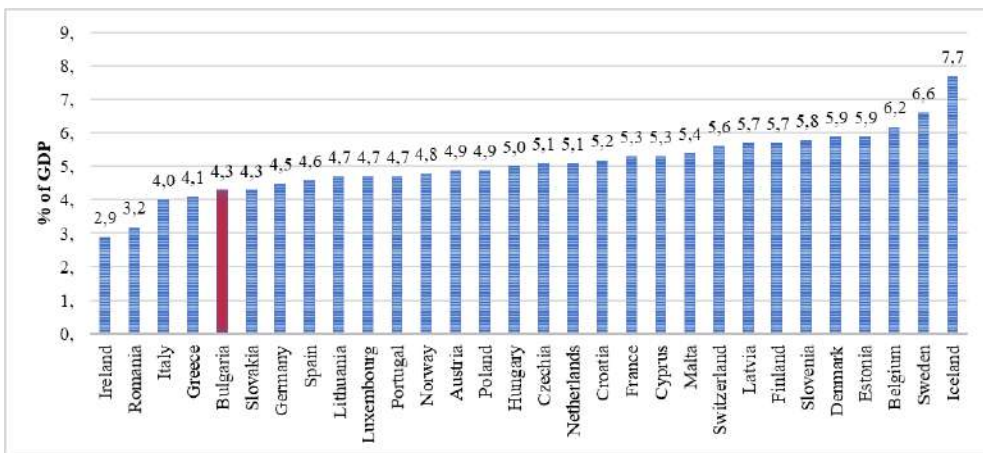
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## The problem with education funding

There are a few issues related to education funding in Bulgaria that become evident when data is analyzed: the low share of GDP (%) that is invested in education, teachers' salaries (European Commission, 2023) and Net enrollment rate of children in preschool education by statistical zones (NSI 2023).

### *Share of GDP (%) that goes into education funding*

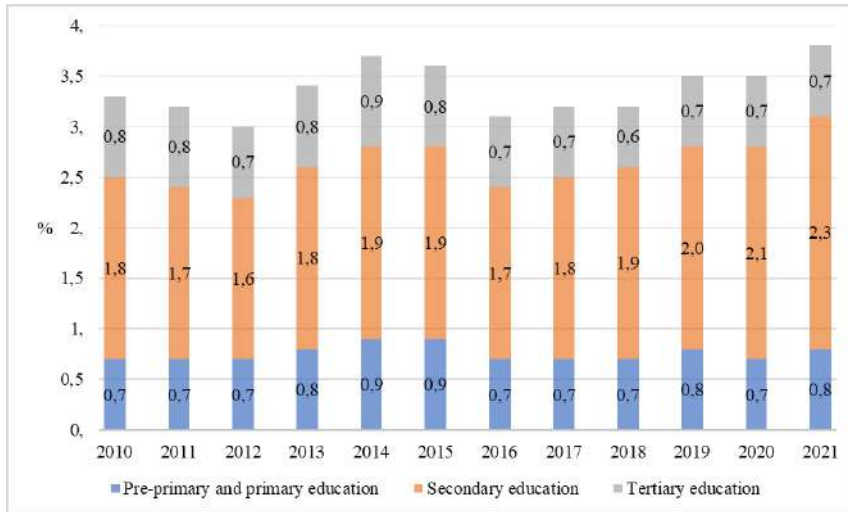
Bulgaria's expenditure on education as a percentage of GDP is quite low compared to other countries and in particular compared to EU member countries.



Source: Eurostat, own calculations

**Figure 1:** Expenditure on education as a percentage of GDP 2021

In Figure 1 we can see that Bulgaria is ranked fifth (same percentage as Slovakia) when it comes to expenditure on education as a percentage of GDP, which is 0.5% lower than the average in EU.



Source: Eurostat, own calculations

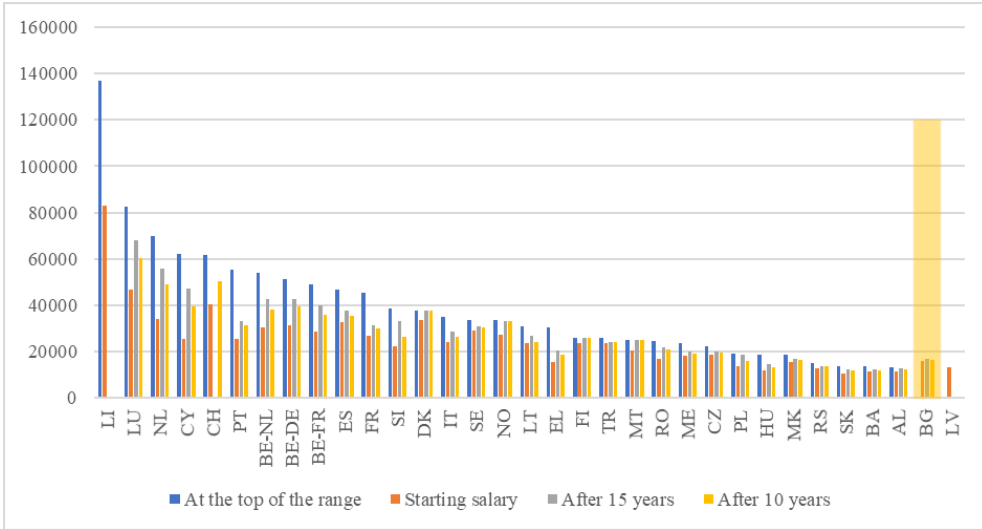
**Figure 2:** Expenditure on different education stages as a percentage of GDP in Bulgaria

To get a better understanding of where most of the money spent in education is distributed Figure 2 should be taken into account. In 2021 the biggest part of the education funds – 2.3% – is directed to secondary education, or ISCED 2 and 3, which is considered the second and final phase of basic education (ISCED 2, which refers to kids aged 12-15) and (ISCED 3 which refers to kids aged 15-18 which lasts until the end of their secondary education). Another 0.8% are directed to Pre-primary (ISCED 0, which refers to kids aged 3 to the start of their primary education) and primary education (ISCED 1 which refers to kids aged 6-12 years and usually lasts for about 5-6 years). The least amount of funds is allocated to tertiary education, which gets 0.7% of the investments that go into education. Tertiary education is right after secondary education and it refers to university, where an individual can acquire a Bachelor, Master, Doctoral degree and depends on the time frame for each degree. There is also data that suggests that currently a lot less kids go to kindergarten. Only about 78.7% of children attend it, which constitutes a 17% difference between the country and the EU average of 95.4%.

There is also a lot of data that shows that investing in education in developing countries yields a higher productivity than the same investment in already developed countries. While Bulgaria is considered a developed (World Bank, 2023) country and has changed a lot in the last decades, it still remains the poorest country in EU and in 2022 convergence has reached only 62% of the average GDP per capita (World Bank, 2023), expressed in purchasing power standards in EU. Additionally, there are studies (Heckman equation, 2014) that emphasize the

importance of pre-primary and primary education – upbringing of children 0-3 years and pre-school 3-5 years yields the most results, stemming from the fact that 90% of the brain develops before the age of 5 (First Things First, 2006).

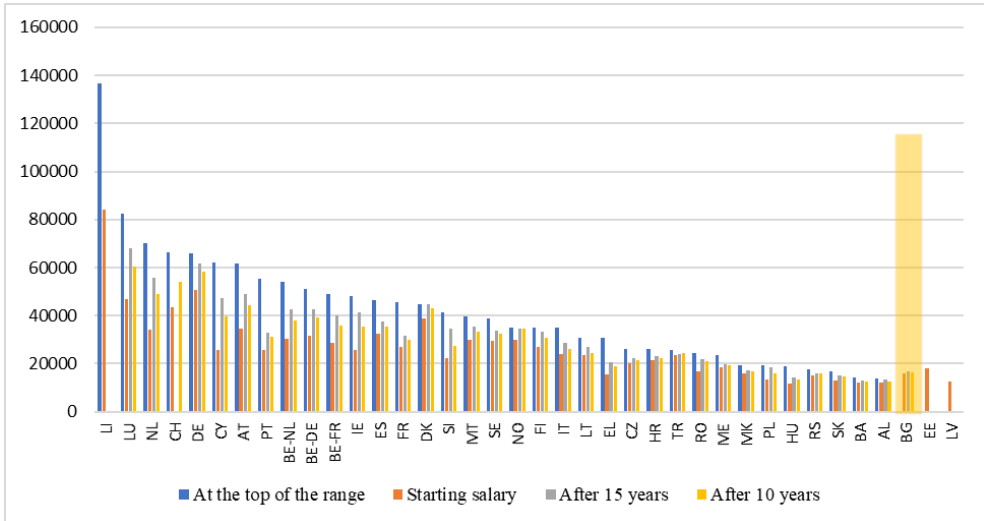
***Teachers’ annual gross statutory salaries (in PPS)  
at different stages of their career***



Source: Eurostat, own calculations

**Figure 3:** Teachers’ annual gross statutory salaries (in PPS) at different stages of their career, by ISCED 02 and salary range

While annual salaries are not the only thing that boosts labor productivity, there is a direct correlation between the salary and the worker’s productivity (Strain, 2019). Low-income jobs affect the worker’s motivation. This has a direct impact on the education quality and in turn lowers human capital. Another problem with the teachers’ low annual salary in Bulgaria is that most educators tend to get a second job to pay for their expenses. As a result of this most teachers cannot concentrate on their teaching job, since they are already spent from the other job, resulting again in lowering the quality of education. Another important statistic that is visualized in Figure 3 is that the salary after ten and fifteen years is close to the starting salary, suggesting that there is basically no professional development compared to other countries.



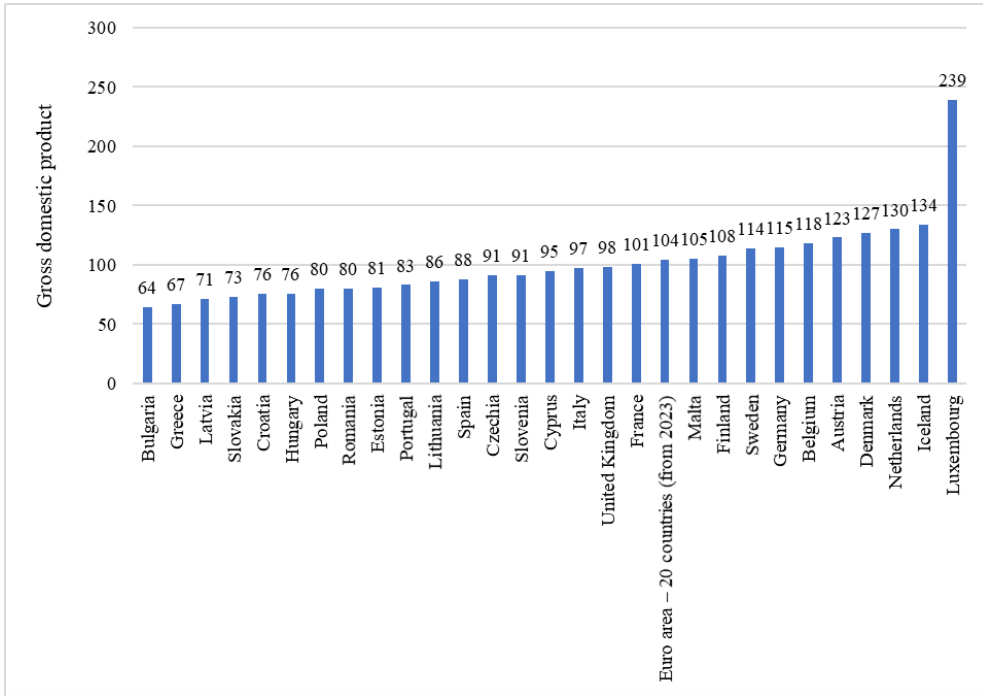
Source: Eurostat, own calculations

**Figure 4:** Teacher's annual gross statutory salaries (in PPS) at different stages of their career, by ISCED 1 and salary range

A closer look at **Figure 4** shows a similar tendency. Bulgaria's annual gross statutory salaries (in PPS) for primary education is quite similar to pre-primary education and the country falls far behind other EU member states.

### *Does high education funding equal high GDP per capita?*

Looking at the data on Figure 1 Iceland, Sweden and Belgium tend to invest the most in education but when we look at their GDP per capita we determine that they are not necessarily the wealthiest. In figure 5 which shows the volume indices of real expenditure per capita (in PPS) Luxemburg, Iceland and the Netherlands have the highest GDP but apart from Iceland none of them necessarily invest the most in education. Does this support the thesis that there is an upper threshold where investing more does not equal an increase in a country's wealth? I wouldn't say so. If we take another close look at the graph, we can clearly see a connection between low investment in education and low GDP. Some of the countries with the lowest GDP are Bulgaria, Greece, Slovakia and Latvia which (apart from Latvia) happen to have some of the lowest Education investments.



Source: Eurostat, own calculations

**Figure 5:** Volume indices of real expenditure per capita (in PPS)

While there are many variables that may influence a country’s growth the statistics show that education is important, and lack of investment in it is associated with less development.

### Human capital theory

Human capital theory is an economic framework that views individuals’ skills and knowledge as forms of capital. It was primarily developed by Gary Becker (1975), Gary Becker (1962) and Melton, R. B. (1965), (Romer, 1990) during the mid-20th century for which they both received a Nobel prize. The Human capital theory is a staple even nowadays, 64 years after its first popularization. In the past a lot of employers were looking for people with a degree (Indeed Hiring Lab, 2024). Currently that number is lower (Society for Human Resource Management 2024), though the degree is still considered an advantage. However, a worrisome trend was recently identified in a study conducted by „Образование България 2030“ in 2020 (Edu2030, 2020). According to the study conclusions 85% of Bulgarian employers believe that finding employees with the necessary

skills and qualifications is more difficult than before. Another research done by Eurostat in 2022 shows that 33.6% of the Bulgarians between 25 and 34 years have a tertiary education while the average figure in Europe is 41%. As a whole education in Bulgaria has improved over the last decades – in 2020 only 3% of the students have dropped out and 80.7% of people that have just graduated (age 20-34) are employed, bearing in mind that the average value in EU is 80.9%. The number of young people (age 20-34) not working or studying however has hit a record low with just 17.5%, which is 5.8% more than the number of NEETS (Not in Education, Employment, or Training) in EU (Eurostat, 2023). Quality education is the fourth Sustainable Development Goal (United Nations, 2015), which is part of the 17 goals that United Nations accepted in 2015 to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity and is inherently linked to the other SDGs.

### *Is education for everyone?*

While in theory education should be for everyone, in reality it is not that simple. One of the most worrying statistics is one that analyses the Net Enrollment Rate of Children in Preschool Education by Statistical Zones, Regions, and Districts for the Academic Year 2023/2024 (NSI, 2024). The research done by the National Statistical Institute shows that there are some towns that have far less enrollment of children in preschool. While the average in the country is 87.9%, towns like Sliven (74.8%) and Kardzali (78.1%) are an indicator that some cities require more funding than others in order to stimulate growth and reach the average figure. Another statistic shows that in 2021 the gap between the tertiary attainment in the urban and rural areas remains considerable (47.4% and 13.7%, respectively), the tertiary educational attainment in Bulgarian cities being close to the EU average of 51.4%. The regional disparities in tertiary educational attainment also remain visible and differ between 20.8% in the North-West Region and 46.5% in South-West Region (where the capital of Sofia is located). This is linked to the concentration of universities in Sofia.

### *Robert Solow's model for growth*

Robert Solow's growth model (Solow, 1956) is a macroeconomic long run model that measures the effects of savings decisions, the population growth rate, technological progress, and capital accumulation on economic growth. For this paper Robert Solow growth model will be used with Cobb-Douglas production function, incorporating human capital with constant returns to scale. The original model has three main components which are:

$$\text{Output per worker} - y = Af(k) \quad (1)$$

$$\text{Capital accumulation} - k_{t+1} = k_t(1 - \delta) + i_t \quad (2)$$

$$\text{Saving which in a closed economy is the same as investment} - s_t = s \times y_t \quad (3)$$

*In the model with Cobb-Douglas production function, incorporating human capital, (Mankiw, Romer, Weil, 1992) the three main components introduce a few differences:*

$$\text{Output per worker} - y = Ak^a h^{1-a} \quad (4)$$

where  $y$  = output per worker, representing the productivity of labor,  $A$  = total factor productivity, representing the level of technology and efficiency,  $k$  = capital per worker, the ratio of physical capital to the labor force,  $h$  = human capital per worker, the ratio of human capital to the labor force and  $a$  = output elasticity of capital, representing the share of output attributed to capital (typically between 0 and 1)

$$\text{Capital accumulation (physical capital)} - \Delta k = sAk^a h^{1-a} - (\delta + n)k \quad (5)$$

where  $\Delta k$  = change in capital per worker, representing investment in physical capital,  $s$  = savings rate, the fraction of output saved and invested,  $A$  = total factor productivity,  $k$  = capital per worker,  $h$  = human capital per worker,  $\delta$  = depreciation rate, the rate at which capital depreciates,  $n$  = population growth rate, representing the growth rate of the labor force and  $a$  - output elasticity of capital, representing the share of output attributed to capital (typically between 0 and 1)

$$\text{Human capital accumulation} - \Delta h = s_H Ak^a h^{1-a} - (\delta + n + g)h \quad (6)$$

where  $\Delta h$  = change in human capital per worker, representing investment in human capital,  $s_H$  = rate of investment in human capital,  $A$  = total factor productivity,  $k$  = capital per worker,  $h$  = human capital per worker,  $\delta$  = depreciation rate of human capital,  $n$  = population growth rate,  $g$  = Growth rate of human capital (technological progress)  $a$  - output elasticity of capital, representing the share of output attributed to capital (typically between 0 and 1)



## Conclusion

With Bulgaria having one of the lowest expenditures on education as a percentage of GDP and one of the lowest percentages of adults learning (EPALE, 2023) and some additional factors, it is clear that actions need to be taken in order to reach the level of other EU member states. This paper emphasizes the correlation between education and productivity, as well as its importance for long-term economic growth. The fact that education is one of the 17 sustainable development goals only further emphasizes its importance. Bulgaria should focus on investing more in education, teachers' salaries, making education available for everyone and promoting education not only for young people, but for adults as well. A nation is only as good as its people and education is a major factor in raising the value of human capital.

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