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GOVERNMENT EXPENDITURES ON EDUCATION AS THE PERCENTAGE OF GDP IN THE EU

Abstract

This paper analyzes the government expenditures as the percentage of gross domestic product across countries of the European Union. There is a statistical model based on Z-score, whose aim is to calculate how much each EU country deviates from the average value. The model shows that government expenditures on education vary significantly between EU countries.

Key words: education, GDP, European Union, Smart specialization

Introduction

The European Union today is faced bynumerous interrelated and complex challenges. The consequences of the global crisis can be felt in all countries of the EU. In the context of this financial and economic crisis, education systems must ensure that all citizens of the European Union are equipped with the knowledge, skills and competences needed to meet the challenges of their future work place. Because of that, it is very important that all governments of EU countries invest in education. Government investment in education is usually represented by the economic measure called government expenditure on education as the percentage of gross domestic product (GDP). It shows the share of all government expenditure that is spent on education. Higher levels of this measure usually mean the better the education system.

Literature overview

There are not many papers focusing on this topic, but here three papers that have analyzed the importance of education and investing in it are analysed.

Moonwon Kang (1993) analyzed the returns to education of government investment. Based on the view that education is partly a superior consumption-good generating higher status, the author indicates that the measured rate of return to education, ignoring utility benefits from education, is generally an underestimated indicator of the real rate of return. Further, he indicates that, in developed countries where utility benefits are much larger, the rate of return is more heavily underestimated than in developing countries. Moonwon Kang proposes this as another reason why the observed rate of return is much higher in lower developed countries than in developed countries.

Kuhl Teles and Andrade (2008) wanted to visualize the relation between government spending on basic education and the human capital accumulation process, observing the impacts of this spending on individual investments in higher education, and on economic growth. They have used an overlapping-generations model where the government tax the adult generation and spent it on the basic education of the next generation. It demonstrated that the magnitude of the marginal

effect of government spending in basic education on growth crucially depends on public budget constraints.

Nir and Kafle (2013) analyzed the effect of political stability on public education quality. The purpose of their paper is to provide a preliminary analysis to evaluate the implications of political stability for educational quality, evident in the survival rate measure. Authors have conducted the secondary analyses from data drawn from the Political Risk Service Report, the World Bank Report, the United Nations Report and the OECD Report, using a sample comprising 47 countries, (26 politically stable and 21 politically unstable) during a ten-year period (1998-2008). The study revealed that political stability plays a major role in explaining the survival rate in education when used as a single predictor or, when introduced in the analysis with per capita GDP. Following previously reported findings suggesting causal relations between high economic growth and regime stability, the authors' analyses show that as far as educational quality is concerned, political stability plays a far more significant role compared to countries' economic circumstances evident in the per capita GDP.

Methodology

Public expenditure on education as % of GDP is, according to the World Bank definition, the total public expenditure (current and capital) on education expressed as a percentage of GDP in a given year. Public expenditure on education includes government spending on educational institutions (both public and private), education administration, and transfers/subsidies for private entities (students/households and other private entities). The values are calculated by national bureaus of statistics of each member country of the European Union. All the data for EU member countries is collected and grouped by Eurostat, the statistical agency of the European Union.

The data about the percentage of GDP invested in education is analyzed using statistical tools, in order to conclude which EU counties arecloser to the average value, and which arefar from it. For this analysis, the Z-score method has been used. It is the method that compares the data between different units, in this case countries, according to the average value and the standard deviation.

Cross country analysis

Expenditure on education is a very important factor of an economy because it has numerous aspects which it may influence. It can help to increase economic growth, enhance productivity, and contribute to people's personal and social development. The latter is also important as it can help reduce social inequalities. The proportion of total financial resources devoted to education is one of the key choices made by governments in each country of the European Union. The data below shows government expenditures on education as % of GDP in 2011.

Government expenditures on education on the level of the European Union are about 5.3% of GDP. As a ratio to GDP, the highest levels of government expenditure on education among the EU countries were found in:

- Denmark (7.79% of GDP);
- Cyprus (7.18% of GDP);

- Sweden (6.79% of GDP);
- Slovenia (6.67%);
- United Kingdom (6.51% of GDP).

The lowest ratios of government expenditure on education to GDP were observed in:

- Bulgaria (3.63% of GDP);
- Slovakia (4.04% of GDP);
- Romania (4.13% of GDP);
- Greece (4.08% of GDP);
- Italy (4.24% of GDP).

In some of the leading countries of the EU, like Germany, government expenditure on education was below average.

The highest government expenditures on pre-primary and primary education were found in Denmark (3.93% of GDP) and Sweden (3.91% of GDP), and lowest in Czech Republic (0.55% of GDP) and Bulgaria (0.71% of GDP). The average value of government expenditures on pre-primary and primary education was 1.69% of GDP.

Regarding secondary education, the highest government expenditure is in Finland (2.87% of GDP) and Czech Republic (2.73% of GDP), and the lowest in Sweden (1.25% of GDP) and Poland (1.54% of GDP). The average value of government expenditures on secondary education was 1.99% of GDP.

Government spendingon tertiary education were highest in Finland (1.79% of GDP) and Estonia (1.60% of GDP), and lowest in Luxembourg (0.32% of GDP) and Italy (0.38% of GDP). The average value of government expenditure on tertiary education was 0.86% of GDP.

Looking at the EU-27 general government expenditure on education from 2002 to 2011, two trends are obvious (Eurostat). The first trend is the percentage of GDP for education in the European Union, which followed a declining trend from 2002 until 2007 and then increased sharply from 2008 to 2009. Then lower public investment contributed to a decrease of 0.2 percentage points of government education expenditure in terms of GDP from 2009 to 2011. The other trend is the total government expenditure for education, which shows constant growth from 2002 to 2011.

Crisis influence on government expenditure on education

Investment in education is set as the priority area in EU's growth strategy Europe 2020. In the face of the current economic challenges, it is essential for the promotion of sustainable growth. Investing in education, training and lifelong learning supports the development of human capital to enhance employability and, in particular, tackle and prevent youth unemployment (European Commission, 2013). However, the economic crisis and the subsequent increase in budget deficits and debt levels demand fiscal consolidation to bring countries of the EU in line with the requirements of the stability and growth pact. Hence, public spending on education is under pressure in this consolidation process.

Government expenditures on education have significantly changed in some EU countries between 2012 and 2013. In the great majority of the countries, government expenditure oneducation for 2013 has increased by more than 1%, compared to the

education budget for 2012. There are also some countries in which there was a decrease of more than 1%, whilst, some countries' expenditure on education for 2013 compared to that for 2012 remained stable, i.e. it increased or decreased by less than 1%.

Differences in the European Union

Although education policies and economic policies in the countries of the European Union tend to be similar, it is obvious that the percentage of GDP allocated to education varies significantly across the EU countries. The following statistical analysis aimsto show how big thesedifferences are.

The differences between EU countries are analyzed using the Z-score method. This method calculated Z-scores for each country, using the average value and the standard deviation. The value obtained in this way shows how much each country differs from the average in the terms of standard deviation.

The Z-score for all EU countries is presented below:

Country	**% GDP**	**Z-score**
Belgium	6.18	0,6200
Bulgaria	3.63	-1,6630
Czech Republic	4.89	-0,5349
Denmark	7.79	2,0614
Germany	4.26	-1,0990
Estonia	6.48	0,8886
Ireland	5.25	-0,2126
Greece	4.08	-1,2601
Spain	4.74	-0,6692
France	6.05	0,5036
Croatia	3.48	-1,7973
Italy	4.24	-1,1169
Cyprus	7.18	1,5153
Latvia	5.73	0,2171
Lithuania	5.82	0,2977
Luxembourg	5.09	-0,3559
Hungary	5.18	-0,2753
Malta	5.82	0,2977
Netherlands	5.77	0,2529
Austria	5.56	0,0649
Poland	5.56	0,0649
Portugal	6.35	0,7722
Romania	4.13	-1,2153
Slovenia	6.67	1,0587
Slovak Republic	4.04	-1,2959
Finland	6.38	0,7990
Sweden	6.79	1,1661
United Kingdom	6.51	0,9154
Average	***5.48750***	
St. dev.	***1.11696***	

From this data we can observe where each country is compared to the EU average, regarding their government's expenditure on education as the percentage of GDP. Positive values mean that the country is above average, while negative values represent countries that are below average. The largest absolute value of Z-score means the largest deviation from the average of the European Union.

All EU countries can be divided into two groups on the criteria of positive/ negative value of Z-score.

EU countries above the average are:

1. Denmark Z-score: 2,0614
2. Cyprus Z-score: 1,5153
3. Sweden Z-score: 1,1661
4. Slovenia Z-score: 1,0587
5. United Kingdom Z-score: 0,9154
6. Estonia Z-score: 0,8886
7. Finland Z-score: 0,7990
8. Portugal Z-score: 0,7722
9. Belgium Z-score: 0,6200
10. France Z-score: 0,5036
11. Lithuania Z-score: 0,2977
12. Malta Z-score: 0,2977
13. Netherlands Z-score: 0,2529
14. Latvia Z-score: 0,2171
15. Austria Z-score: 0,0649
16. Poland Z-score: 0,0649

This list shows countries of the European Union whose governments invest in education more than the EU average. Denmark is the country that has the largest investment in education from all EU countries, measured as the share of GDP. Its value is 2.06 standard deviations higher than the EU average. According to statistical theory, this value can be regarded as an untypical value, because it is more than 2 standard deviations from the average. Denmark is followed by Cyprus, Sweden and Slovenia. Altogether, 16 countries of the European Union have government expenditure on education above the average.

EU countries below the average are:

1. Ireland Z-score: -0,2126
2. Hungary Z-score: -0,2753
3. Luxembourg Z-score: -0,3559
4. Czech Republic Z-score: -0,5349
5. Spain Z-score: -0,6692
6. Germany Z-score: -1,0990
7. Italy Z-score: -1,1169
8. Romania Z-score: -1,2153
9. Greece Z-score: -1,2601
10. Slovak Republic Z-score: -1,2959
11. Bulgaria Z-score: -1,6630
12. Croatia Z-score: -1,7821

This list represents the countries of the European Union that have government expenditure on education below the EU average. There are 12 countries in this

category. The worst position is that of Croatia, which is 1.78 standard deviations under the average value. It is followed by Bulgaria, Slovak Republic and Greece.

Recommendations for the future

Education is essential for every country, for each citizen, it is the key element for the civilization of human society. It is the base for the social, economic and political development of a country. This is the main reason why countries invest in education. They all want to utilize the positive effects of education. The European Union is often regarded as the society of knowledge, and the basis for knowledge is a good and high quality education system.

Government expenses on education can be analyzed on various levels, depending on the level of education: primary, secondary and tertiary education. Primary education is important as the basic education for each person, secondary education is important for professional level development, and tertiary education is focused on specialization and on research and development. Tertiary education is the one from which innovation emerges. Because of that, it is very important to invest in tertiary education.

Currently one the most popular topics in tertiary education is the implementation of 'smart strategy' in universities. It is one way of financing tertiary education, but not directly from the central government. There was an agreement that universities and regional authorities have a unique opportunity to form close partnerships that, together with industry and other stakeholders, can maximise the use of EU Structural Funds for research and innovation to deliver economic and social development. From the perspective of universities, it is vital that there is more clarity on how they can benefit from the Structural Funds and how to achieve a greater synergy with competitive EU research funds (Horizon 2020). One way to start addressing these issues is through the design of Research and Innovation Strategies for Smart Specialisation (RIS3).[1]

According to the European University Association, universities should be recognised as a vital partner for regions in the design and implementation of successful RIS3. Universities can benefit from Structural Funds for research and innovation (R&I) activities if they reach agreement with regional authorities on priorities for the region. For regions, the benefits should not be simply new infrastructure in physical terms but also importantly in investment in human capital development and services to the region.

Conclusion

This paper has analyzed the government expenditure on education in the European Union regarded as a percentage of the gross domestic product. The analysis has shown that the percentage value of GDP invested in education varies between EU countries from 3.50% to 7.79%. The model showed that 16 EU countries invest in education more than the average, while 12 EU countries invest less than the average. Each EU country that is below the average should invest more

[1] Report on joint EUA-REGIO/JRC smart specialisation platform expert workshop: The role of universities in smart specialisation strategies.

in education. However, investment in education can also come from different sources. Smart specialization is one of the good examples of collaboration between universities and local authorities, and the financing comes from the EU funds. In the future it will be interesting to analyze how government expenses on education change through years, and if there are other significant sources for investments in education.

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References

European Commission (2013): *National Sheets on Education Budgets in Europe 2013*. http://eacea.ec.europa.eu/education/eurydice/documents/facts_and_figures/National_Budgets.pdf.

European University Association (2014): *Report on joint EUA-REGIO/JRC smart specialisation platform expert workshop: The role of universities in Smart Specialisation Strategies*. Brussels: EUA.

Eurostat: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/General_government_expenditure_on_education.

Kuhl Teles, V. & Andrade, J. (2008): Public investment in basic education and economic growth. *Journal of Economic Studies*, 35(4), 352-364.

Moonwon Kang, J. (1993): Why the Rate of Return to Education is Apparently Higher in LDCs than in Developed Countries: A Note. *Journal of Economic Studies*, 20(6). http://dx.doi.org/10.1108/01443589310048154.

Nir, A. E. & Kafle, B. S. (2013): The effect of political stability on public education quality. *International Journal of Educational Management*, 27(2), 110-126.

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