RONDELI FOUNDATION

GEORGIAN FOUNDATION FOR
STRATEGIC AND INTERNATIONAL STUDIES

ASSESSMENT OF ECONOMIC GROWTH IN THE POST-COMMUNIST MEMBERS OF THE EUROPEAN UNION AND THE EASTERN PARTNERSHIP STATES

VLADIMER PAPAVA

EXPERT OPINION 101

საქართველოს სტრატეგიისა და საერთაშორისო ურთიერთობათა კვლევის ფონდი
GEORGIAN FOUNDATION FOR STRATEGIC AND INTERNATIONAL STUDIES

EXPERT OPINION

VLADIMER PAPAVA

ASSESSMENT OF ECONOMIC GROWTH IN THE POST-COMMUNIST MEMBERS OF THE EUROPEAN UNION AND THE EASTERN PARTNERSHIP STATES

101

2018

The publication is made possible with the support of the US Embassy in Georgia. The views expressed in the publication are the sole responsibility of the author and do not in any way represent the views of the Embassy.

Technical Editor: Artem Melik-Nubarov

ISSN 1512-4835
ISBN 978-9941-8-0050-4

Introduction

The goal of this study is to find out the quantitative difference between the economic growth of the European Union (EU) members states with a non-Communist past and that of the Central and Eastern European states with a Communist past. The results of such a study could definitely be the subject of a further qualitative analysis.

The EU consists of 28 member states, 12 of which have a Communist past. These include Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. We are deliberately avoiding the established terminology according to which the geographic area comprising these states is called Central and Eastern Europe. We shall call this group of countries the post-Communist states of the EU in order to compare economic growth as is characteristic to the non-post-Communist and post-Communist countries of the EU given the features of their past economic development. In order to broaden the scope of comparison between the EU members states with and without Communist pasts, this study also includes six Eastern Partnership (EP) states – Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine which are also post-Communist countries.

In order to assess the economic growth indicators more or less objectively, we will use the data of the World Bank from before the start of the global financial and economic crisis and from a period maximally removed from that point. More specifically, the analysis will be done for the years 2006 and 2016. With this approach, we tried to maximally exclude the influence of the crisis on the economic growth of the countries included in the study. It should also be pointed out that the gross domestic product (GDP) data of various countries is in international dollars, taking its purchasing power parity (PPP) into account.

Before we move to directly discussing the economic growth indicators of the aforementioned countries, it is necessary to underscore that the *frontier growth*[1] as such is only characteristic to the United States and some Asian countries.[2] Unfortunately, only some of the EU states have the potential of *catching up*[3] with Denmark, Finland, Germany, Luxembourg, Sweden and the Netherlands[4] standing out.

The countries which are characterized as *extremely falling behind* are a separate problem when, unfortunately, their national innovation systems are in so much of an embryo state (or do not exist at all) that not only can there be no talk of using innovative technologies but the transfer/use of imitating (meaning something already created) technologies is almost impossible as well.

The Catch-Up Effect Problem

As is well known, the indicator (*r*) is used in order to measure economic growth which expresses the ratio of the real GDP change (meaning the difference between the reporting period (Y^1) of the GDP and the base-period (Y^0) of the GDP or $\mathbf{\Delta}Y = Y^{\mathbf{1}} - Y^{\mathbf{0}}$) to the real GDP base-period:

$$r = \frac{\Delta Y}{Y^{\mathbf{0}}}$$

This indicator is used by economists to measure the economic growth of a given country and also how the economic growth indicator changes over the years.

Using these indicators, it is impossible to compare two or more countries. More specifically, in this case, due to diminishing returns on capital and with all other things being equal, it is possible to achieve a higher economic growth rate in countries with a lower level of economic development than in countries with higher levels of economic development. This fact is called the *Catch-Up Effect*.[5]

If we consider the economic growth rates[6] of the EU member states as well as those of the EP states, it is easy to notice that generally in the post-Communist countries and especially in 2006, just before the global crisis, their economic growth was clearly higher than in other EU member states (see Table 1).

Table 1

Economic Growth and Economic Development Indicators in EU and EP States in 2006 and 2016

No.	Countries	Indicators of Economic Growth (in percentage terms)		GDP per capita, PPP (in current international $)	
		Year		Year	
		2006	2016	2006	2016
	EU Countries				
	Non Post-Communist Countries				
1	Austria	3.4	1.5	37,644.80	50,644.40
2	Belgium	2.5	1.5	35,406.60	46,541.40
3	Cyprus	4.5	3	30,496.10	32,580.40
4	Denmark	3.9	2	37,317.10	49,818.80
5	Finland	4.1	1.9	34,382.80	43,365.10
6	France	2.4	1.2	32,543.40	41,466.30
7	Germany	3.7	1.9	34,261.50	48,884.80
8	Greece	5.7	-0.2	28,535.90	26,525.90
9	Ireland	5.5	5.1	44,230.80	71,404.70
10	Italy	2	0.9	32,350.60	38,345.10
11	Luxembourg	5.2	3.1	77,996.20	103,556.60
12	Malta	1.8	5.5	23,237.20	38,072.10
13	Netherlands	3.5	2.2	40,620.80	51,319.50
14	Portugal	1.6	1.5	24,669.60	30,664.90
15	Spain	4.2	3.3	30,833.00	36,462.10
16	Sweden	4.7	3.2	37,439.80	49,507.80
17	United Kingdom	2.5	1.8	34,516.10	43,081.00

	Post-Communist Countries				
18	Bulgaria	6.8	3.9	11,377.90	19,509.00
19	Croatia	4.8	3	16,934.70	23,731.80
20	Czech Republic	6.9	2.6	23,790.20	35,139.60
21	Estonia	10.3	2.1	19,269.10	29,620.00
22	Hungary	3.9	2.2	18,308.50	26,996.80
23	Latvia	11.9	2.1	15,761.60	25,932.50
24	Lithuania	7.4	2.3	16,494.00	29,966.10
25	Poland	6.2	2.9	15,150.90	27,922.70
26	Romania	8.1	4.6	11,694.30	23,626.40
27	Slovak Republic	8.5	3.3	18,875.50	30,706.10
28	Slovenia	5.7	3.1	25,778.00	33,421.20
	Eastern Partnership Countries				
29	Armenia	13.2	0.2	5,607.60	8,849.90
30	Azerbaijan	34.5	-3.1	9,830.20	17,282.20
31	Belarus	10	-2.6	11,389.60	18,090.70
32	Georgia	9.4	2.8	4,985.30	10,024.00
33	Moldova	4.8	4.1	3,190.10	5,342.60
34	Ukraine	7.3	2.3	7,184.20	8,271.80
	European Union	3.3	1.9	29,783.10	39,838.20

Based upon Table 1 and due to the *catch-up effect*, it is practically impossible to determine which countries are characterized with catching up growth with regard to EU economic growth and which have the *coat-tail growth* or are *falling behind*.[7] For example, the fact that Azerbaijan had the highest actual economic growth in 2006 (34.5%) does not mean that Azerbaijan necessarily had *frontier growth*.

It is quite clear that the economic development levels of the countries presented in Table 1 are different, for example, by the fact that the past (and in some cases the present, too) of the post-Communist countries is burdened with a *necroeconomy*.[8] Hence, given a lower starting point (in which the post-Communist states found themselves due to their level of economic development), it is easier for post-Communist countries to achieve high economic growth due to the catch-up effect than it is for non-post-Communist countries.

The level of economic development is usually assessed through the GDP per capita. It is clear that this indicator is very different if we compare the EU member states to the EP countries (see Table 1).[9]

Hence, in order to be able to compare the economic growth indicators of the countries with different starting points in terms of economic development, it is necessary to exclude the *catch-up effect* which can be achieved, for example, by using the method based upon the *hypothesis of proportional overlap*.[10] More specifically, let us agree on the level of hypothesis that the more economically developed a country is as compared to another one, the more difficult it is for the first country to achieve the same level of economic growth which is achieved by the second country.

If we use *N* to signify the population of a given country, then the GDP per capita (*y*) will be

$$y = \frac{Y}{N}$$

Stemming from the essence of the *hypothesis of proportional overlap of the catch-up effect*, the proportional overlap coefficient of the catch-up effect α_{ij} shows how many times the GDP per capita for *i* country (y_i) exceeds the same indicator of a *j* country (y_j):

$$\alpha_{ij} = \frac{y_i}{y_j}$$

At first glance, it is better to take a country with the biggest GDP per capita (in our case, Luxembourg) as the *i* country (or, provisionally, the *Etalon* country), making it more difficult for this country to achieve a high level of economic growth. It must be noted that it is also acceptable to take the respective indicators of any other country to set as the *Etalon* country as the ratio of the final results (meaning the adjusted economic growth indicators) does not change due to the *invariance theorem*.[11]

Given the goals of this study, it is logical to take the GDP per capita of the EU ($\overline{y}$) as the *Etalon* indicator as in this case it will enable us to compare both the EU member states as well as those of the EP to the EU's economic growth and its level of economic development. Hence, for the goals of this study, the proportional overlap coefficient ($\overline{\alpha}_j$) will be

$$\overline{\alpha}_j = \frac{\overline{y}}{y_j}$$

These coefficients are presented in Table 2. The parameters given in this table show how many times the GDP per capita of the EU is more or less as compared to the respective indicators of the individual countries.

Table 2

Proportional Overlap Coefficients of the Catch-Up Effect (Ratio of the GDP per capita of the EU with the Same Indicators of Individual Countries)

No.	Countries	Years	
		2006	2016
	EU Countries		
	Non Post-Communist Countries		
1	Austria	0.791161	0.786626
2	Belgium	0.841174	0.855973
3	Cyprus	0.97662	1.222766
4	Denmark	0.798109	0.799662
5	Finland	0.866221	0.91867
6	France	0.915181	0.960737
7	Germany	0.869288	0.81494
8	Greece	1.043706	1.50186
9	Ireland	0.673357	0.557921
10	Italy	0.920635	1.038938
11	Luxembourg	0.381853	0.3847
12	Malta	1.281699	1.046388

13	Netherlands	0.733198	0.776278
14	Portugal	1.207279	1.299147
15	Spain	0.965949	1.092592
16	Sweden	0.795493	0.804685
17	United Kingdom	0.862876	0.924728
	Post-Communist Countries		
18	Bulgaria	2.617627	2.042042
19	Croatia	1.758703	1.678684
20	Czech Republic	1.251906	1.133712
21	Estonia	1.54564	1.344976
22	Hungary	1.626736	1.475664
23	Latvia	1.889599	1.536227
24	Lithuania	1.805693	1.329442
25	Poland	1.965764	1.426732
26	Romania	2.546805	1.686173
27	Slovak Republic	1.577871	1.297403
28	Slovenia	1.155369	1.192004
	Eastern Partnership Countries		
29	Armenia	5.311203	4.501542
30	Azerbaijan	3.029755	2.305158
31	Belarus	2.614938	2.202137
32	Georgia	5.974184	3.974282
33	Moldova	9.336102	7.456706
34	Ukraine	4.145639	4.816146
	European Union	1	1

Adjusted Economic Growth

Taking into account that the actual economic growth of a country *j* was r_j, while the ratio of the economic development level of the EU with that of the country *j* is $\overline{\alpha}_j$, it follows that the adjusted economic growth of the country *j* ($\overline{r}_j^{\bullet}$), taking the proportional overlap hypothesis of the catch-up effect into account, will be

$$\overline{r}_j^{\bullet} = \frac{r_j}{\overline{\alpha}_j}$$

In other words, $\overline{r}_j^{\bullet}$ does not show the actual economic growth of a country *j* but, rather, its adjusted indicator, taking into account the difference between the economic development levels of the EU and the country *j*. The adjusted economic growth data are presented in Table 3.

Table 3

Adjusted Economic Growth Data

No.	**Countries**	**Years**	
		2006	**2016**
	EU Countries		
	Non Post-Communist Countries		
1	Austria	4.297481	1.906878
2	Belgium	2.972038	1.752391
3	Cyprus	4.607729	2.453454
4	Denmark	4.886553	2.501057
5	Finland	4.733204	2.068208
6	France	2.622432	1.249041
7	Germany	4.256358	2.331459
8	Greece	5.461306	-0.13317
9	Ireland	8.168035	9.141075
10	Italy	2.172413	0.866269
11	Luxembourg	13.6178	8.058232
12	Malta	1.404386	5.256175

13	Netherlands	4.773607	2.834036
14	Portugal	1.325294	1.154604
15	Spain	4.348056	3.020341
16	Sweden	5.908286	3.97671
17	United Kingdom	2.897289	1.946519
	Post-Communist Countries		
18	Bulgaria	2.597773	1.909853
19	Croatia	2.729285	1.787114
20	Czech Republic	5.511595	2.293351
21	Estonia	6.663904	1.561366
22	Hungary	2.397438	1.490855
23	Latvia	6.297633	1.366986
24	Lithuania	4.09815	1.730049
25	Poland	3.153989	2.032618
26	Romania	3.180456	2.728071
27	Slovak Republic	5.387006	2.543542
28	Slovenia	4.933489	2.600663
	Eastern Partnership Countries		
29	Armenia	2.485313	0.044429
30	Azerbaijan	11.38706	-1.34481
31	Belarus	3.824182	-1.18067
32	Georgia	1.573437	0.70453
33	Moldova	0.514133	0.549841
34	Ukraine	1.760887	0.47756
	European Union	3.3	1.9

If we compare the adjusted economic growth data in Table 3 with the actual economic growth data in Table 1, we will find essential differences.

Basing upon the adjusted economic growth indicators, in order to clearly imagine the quantitative differences between the non-post-Communist countries of the EU, the post-Communist countries of the EU and the EP states, it is advisable to present these indicators graphically. For this, it is necessary to rank the levels of the economic developments of each given country with regard to the level of the EU's economic development. For this purpose, we will divide the GDP per capita by individual country by the respective EU indicator ($\bar{\beta}_j$)

$$\bar{\beta}_j = \frac{y_j}{\bar{y}}$$

The appropriate indicators are presented in Table 4.

Table 4

Ratio of the GDP per capita by Individual Country to the Same Indicator of the EU

No.	**Countries**	**Years**	
		2006	**2016**
	EU Countries		
	Non Post-Communist Countries		
1	Austria	1.263965	1.271252
2	Belgium	1.188815	1.168261
3	Cyprus	1.02394	0.817818
4	Denmark	1.252962	1.250528
5	Finland	1.15444	1.088531
6	France	1.09268	1.040868
7	Germany	1.150367	1.227084
8	Greece	0.958124	0.665841
9	Ireland	1.485097	1.792368
10	Italy	1.086207	0.962521
11	Luxembourg	2.618807	2.59943

12	Malta	0.780214	0.955668
13	Netherlands	1.363888	1.288198
14	Portugal	0.828309	0.769736
15	Spain	1.035252	0.915255
16	Sweden	1.257082	1.242722
17	United Kingdom	1.158916	1.081399
	Post-Communist Countries		
18	Bulgaria	0.382025	0.489706
19	Croatia	0.568601	0.595705
20	Czech Republic	0.798782	0.882058
21	Estonia	0.646981	0.743507
22	Hungary	0.614728	0.677661
23	Latvia	0.529213	0.650946
24	Lithuania	0.553804	0.752195
25	Poland	0.508708	0.700903
26	Romania	0.392649	0.593059
27	Slovak Republic	0.633765	0.77077
28	Slovenia	0.865524	0.838923
	Eastern Partnership Countries		
29	Armenia	0.188281	0.222146
30	Azerbaijan	0.33006	0.43381
31	Belarus	0.382418	0.454104
32	Georgia	0.167387	0.251618
33	Moldova	0.107111	0.134107
34	Ukraine	0.241217	0.207635
	European Union	1	1

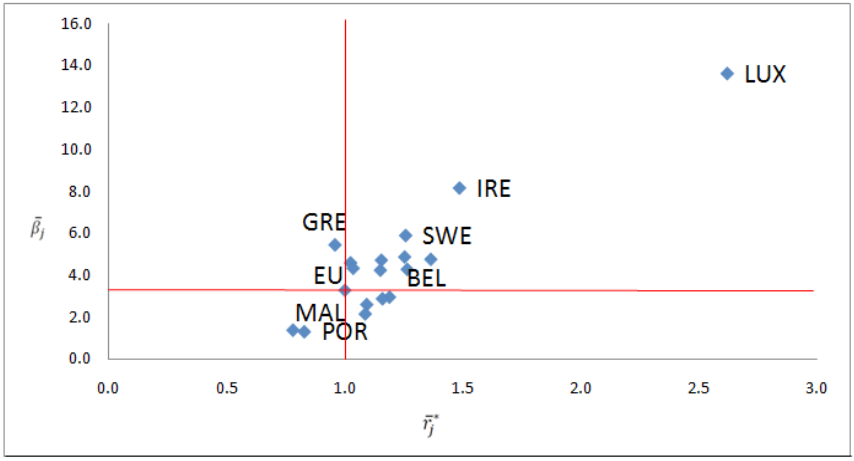
Graphical Representation

In order to represent the adjusted economic growth data of the countries as well as their level of economic development on a graph, we will take the ratio of the GDP per capita by country to the same indicator of the EU $\overline{\beta}_j$ on the abscissa axis and the data adjusted basing upon the proportional overlap hypothesis of economic growth ($\overline{r}_j^{\bullet}$) on the ordinate axis. On every graph presented below, 1 on the abscissa axis corresponds with the GDP per capita of the EU according to which the same indicators of every country are ranked while for the 2006 graphs we see the EU economic growth rate – 3.3 and for 2016 – 1.9 on the ordinate axis (see Tables 1 and 3).

Graphs 1 and 2 depict the indicators of the adjusted economic growth rates of the non-post-Communist countries of the EU as well as the GDP per capita rankings as compared to the EU.

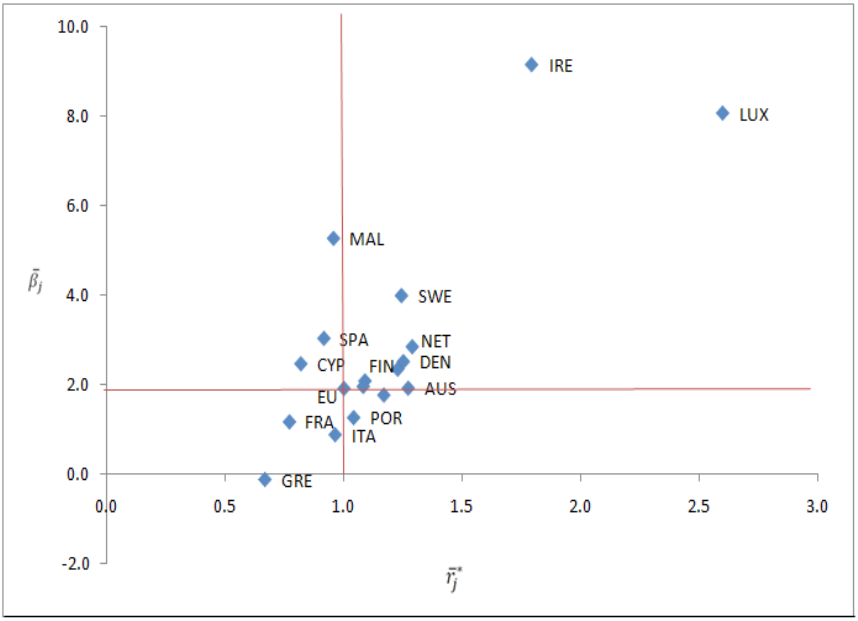
Graph 1

Adjusted Economic Growth of the Non-Post-Communist Countries of the EU and their Level of Economic Development as Compared to that of the EU in 2006



Graph 2

Adjusted Economic Growth of the Non-Post-Communist Countries of the EU and their Level of Economic Development as Compared to that of the EU in 2016



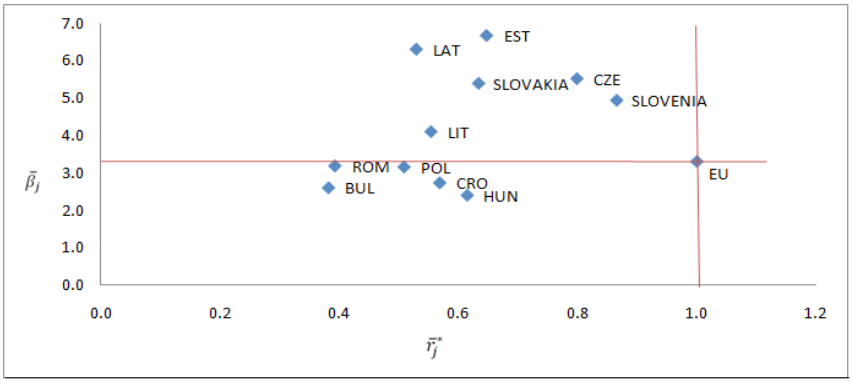
Both of the graphs include the names of only some of the countries as otherwise it was impossible to render a clear picture due to the dense positioning of the dots representing the countries.

Even after excluding the catch-up effect, both graphs clearly show that Luxembourg and Ireland have especially high levels of economic growth. In terms of economic development, Spain, Cyprus, Italy, Malta, Greece and France have clear problems; however, for 2016, even after excluding the catch-up effect, Spain, Cyprus and Malta have encouraging economic growth.

After excluding the catch-up effect in the post-Communist countries of the EU (Graphs 3 and 4) as well as the EP states (Graphs 5 and 6), we have a no less interesting picture.

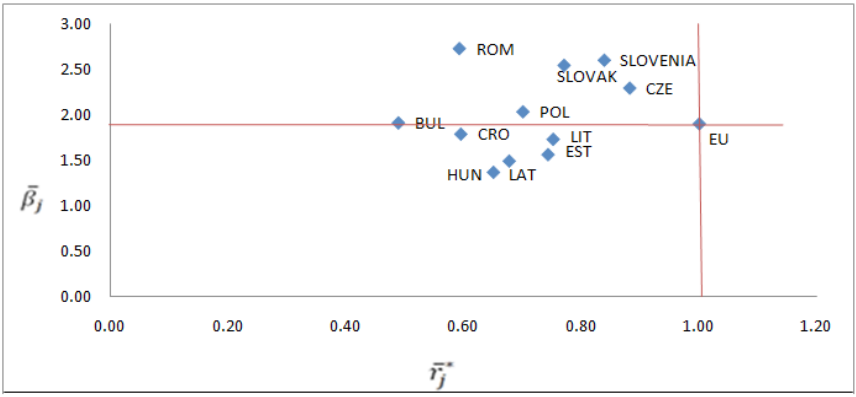
Graph 3

Adjusted Economic Growth of the Post-Communist Countries of the EU and their Economic Development Level as Compared to that of the EU in 2006



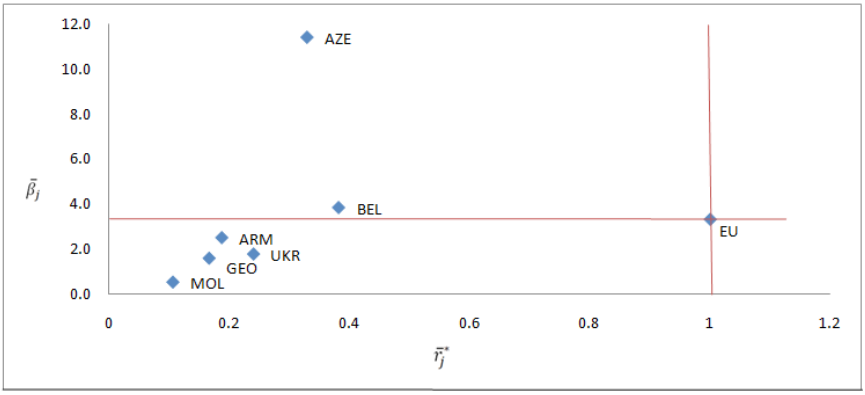
Graph 4

Adjusted Economic Growth of the Post-Communist Countries of the EU and their Economic Development Level as Compared to that of the EU in 2006



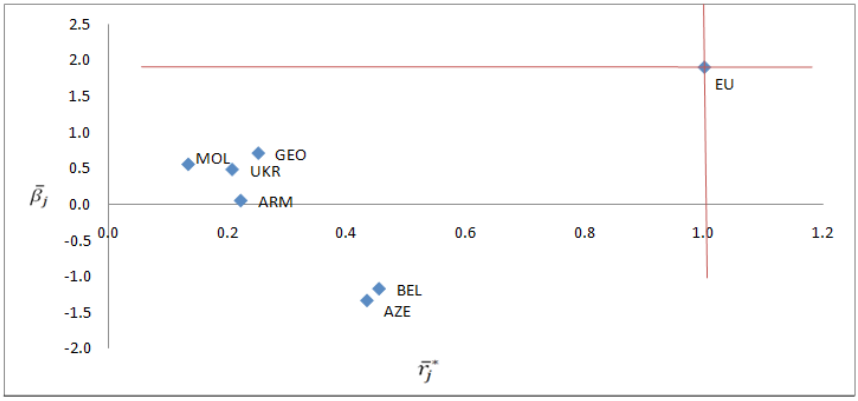
Graph 5

Adjusted Economic Growth of the EP States and their Economic Development Level as Compared to that of the EU in 2006



Graph 6

Adjusted Economic Growth of the EP States and their Economic Development Level as Compared to that of the EU in 2016



Graphs 3 and 4 make it clear that based on a ten year interval, in 2006 and 2016, only Slovakia, Slovenia and the Czech Republic from the post-Communist countries of the EU had clearly defined and relatively high economic growth while other countries showed no such stability with the economic growth indicators of Hungary and Croatia pointing to a clearly defined *falling behind*.

It is clear that in order to diagnose what type of economic growth the abovementioned countries have, it is not enough to merely exclude the catch-up effect – it is necessary to use a whole system of indicators.[12] In addition, it is advisable to take a more-or-less lengthy time period in order for the economic growth trends to be better revealed. It is no less important that from this time period, the points of global or regional economic and crisis periods be excluded so that the crisis does not distort the image of the economic growth type under consideration.

In this regard, the adjusted economic growth indicators of the EP states are even more troubling (see Graphs 5 and 6).

Both in 2006 as well as in 2016, the EP states seriously lag behind the indicators of the EU when it comes to the level of economic development.

Even after excluding the catch-up effect for 2006, only Azerbaijan can be singled out due to its high level of economic growth; however, this does not mean that this country can be characterized by *catching up*. If we remember that the economy of Azerbaijan is characterized by the production and exports of oil and gas (in which terms 2006 was also a special year[13]), it is undeniable that the economic growth type of this country is *coat-tail growth*. The reduction of oil prices on the world market had quite painful results for the economy of Azerbaijan which was one of the important reasons for the economic recession of 2016.

It can be concluded unequivocally that the EP states are not characterized by *catching up* at all and, unfortunately, the type of their economic growth is either *falling behind* (maybe even *extremely falling behind*) or *coat-tail growth*. In order to tell which one has which, it is necessary to study the main features of individual economies.

Conclusion

Excluding the catch-up effect is of special importance in making a quantitative assessment of the differences between the economic growth of the EU countries with a non-Communist past and those states of Central and Eastern Europe that did have a Communist past. For this purpose, the method based upon the proportional overlap hypothesis can be used.

After excluding the catch-up effect, it became even clearer that not all countries of the EU with a non-Communist past have relatively high economic growth rates. These countries include Italy, Greece, France and Portugal.

After excluding the catch-up effect, the most promising economic growth in the post-Communist countries of the EU can be found in Slovakia, Slovenia and the Czech Republic.

Unfortunately, the economic growth types of the EP states are not satisfactory. It is clear that characteristic to these countries are *falling behind* (or, more accurately, *extremely falling behind*) and *coat-tail growth*.

In order to study the economic growth type for each country with more precision, after the catch-up effect is excluded, the use of a special system of indicators is necessary.

References

1. E. A. Hudson. *Economic Growth: How it Works and How it Transformed the World*. Wilmington: Vernon Press, 2015, p. 34.
2. A. Åslund, S. Djankov. *Europe's Growth Challenge*. New York: Oxford University Press, 2017, pp. 133-134.
3. M. Abramovitz. "Catching Up, Forging Ahead and Falling Behind." *The Journal of Economic History*, 1986, Vol. 46, No. 2, <www.sites-final.uclouvain.be/econ/DW/DOCTORALWS2004/bruno/adoption/abramovitz.pdf>; H. W. Gottinger. "Economic Growth, Catching Up, Falling Behind and Getting Ahead." *World Review of Entrepreneurship, Management and Sustainable Development*, 2005, Vol. 1, No. 2.
4. A. Åslund, S. Djankov. *Europe's Growth Challenge*, p. 135.
5. N. G. Mankiw. *Principles of Economics*. Mason: Thomson South-Western, 2004, pp. 546-547.
6. "GDP Growth (Annual %)." *World Bank*, 2018, <www.data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG>.
7. M. Abramovitz. "Catching Up, Forging Ahead and Falling Behind;" H. W. Gottinger. "Economic Growth, Catching Up, Falling Behind and Getting Ahead." *World Review of Entrepreneurship, Management and Sustainable Development*; E. A. Hudson. *Economic Growth: How it Works and How it Transformed the World*, pp. 34-35.
8. V. Papava. "Necroeconomics – The Theory of Post-Communist Transformation of an Economy." *International Journal of Social Economics*, 2002, Vol. 29, No. 9-10.
9. "GDP Per capita, PPP (current international $)." *World Bank*, 2018, <www.data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD?end=2015&start=1990>.
10. V. Papava. "Economic Growth in the Central Caucaso-Asian Countries Adjusted for the Catch-Up Effect." *Central Asia and the Caucasus*, 2012, Vo. 13, No. 4; V. Papava. "The Catch-Up Effect and Regional Comparisons of Growth Indicators (With the Eastern Partnership Countries as an Example)." *Problems of Economic Transition*, 2014, Vol. 57, No. 3.
11. V. Papava. "The Problem of the Catch-Up Effect and Post-Crises Economic Growth in the World Leading Countries." *Bulletin of the Georgian National Academy of Sciences*, 2016, Vol. 10, No. 4, p. 103.
12. UNIDO. *Capability Building for Catching-Up. Historical, Empirical and Policy Dimensions*. Vienna: United Nations Industrial Development Organization, 2005.
13. V. Papava, S. Bagirov et al. *Energy Trade and Cooperation between the EU and CIS Countries*. CASE Network Reports, No. 83. Warsaw: CASE – Center for Social and Economic Research, 2009, p. 50, <www.case-research.eu/files/?id_plik=3050>.