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A Comparison of GDP Growth of European Countries During 2008-2012 Period from Regional and Other Perspectives

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Abstract. The aim of the article is to compare total real GDP growth of European countries from the 3rd quarter of 2008 to the 3rd quarter of 2012, that is the period from the start of the Great recession in European Union to the present day. This period is characterized by a predominant economic stagnation or an economic recession, which occurred in the majority of examined European countries. Countries were divided into groups based on the following grounds: whether they are geographically close the economic center (Germany) or periphery, whether they are in Eurozone or not, whether they are (new) EU members or not, etc. The main findings from the comparisons are as follows: 1. European countries close to the economic center (Germany and its neighbours) experienced positive economic growth during examined period on average, while countries from European periphery experienced negative economic growth on average during the same period. This difference was found statistically significant at $\alpha = 0.01$ level. 2. Differences between Eurozone and non-Eurozone and differences between old and new EU members were found statistically insignificant. 3. Among European regions with the most negative real total GDP growth were countries from Baltics, Balkans, Southern Europe (Italy, Portugal) and Iceland. The most successfull countries with the most positive real total GDP growth were countries of central Europe (Poland, Slovakia, Germany, Switzerland, Austria) and Northern Europe (Sweden and Norway).

Keywords: economic growth, European union, international economics, European regions.
JEL: F43, F44, O47, O57, R11.

1. Introduction

The beginning of the current global financial crisis can be dated to the fall of major US investment banks Lehman Brothers and Merrill Lynch on the 14th and the 17th of September 2008 respectively following the bursting of US housing bubble in the summer of 2007. Investors liquidated their assets, stock markets dramatically dropped and a downturn spiral began to whirl. During a few months many banks, especially in the USA, followed the fate of Lehman Brothers[1]. This development led to a fall of large financial institutions around the globe or their bailout by national governments; some countries found themselves on the brink of financial breakdown too.
In the European Union decline in real gross domestic product (GDP) started in the 1st quarter of 2008 in Estonia, Ireland, Latvia and Sweden. European Union as a whole fell into a recession in the 3rd quarter of 2008 and returned back to the growth one year later in the 3rd quarter of 2009. However, during 2010 and 2011 many European countries slipped into a recession again, and at the end of 2012 twelve European countries were still declining.
Nevertheless, some countries experienced significant economic growth despite the crisis. The most succesfull country among 31 European countries monitored by Eurostat was Poland followed by Sweden, Slovakia and other 8 countries with positive economic growth since the 3rd quarter of 2008, including Germany. Countries in a recession occupy predominantly Southern Europe, Balkans and Baltic, so according to experts the current economic crisis is mainly the problem of European periphery. Also, the question whether or how much the common currency (Euro) is contributing to the crisis is discussed.

[1] According to the Federal Deposit Insurance Corporation (FDIC), more than 300 banks were closed in the USA during 2009 and 2010 (http://www.fdic.gov/bank/individual/failed/banklist.htm).

The aim of the article is to examine these and similar questions by a comparison of total real GDP growth of European countries from the 3rd quarter of 2008 (the start of EU recession) to the 3rd quarter of 2012 (the last data available from Eurostat for all examined countries in this study), based on Eurostat's data. Countries were divided into several groups based on the following grounds:

i) whether they are geographically close to the European economic centre (Germany) or not (they are in European periphery),
ii) whether they are in Eurozone or not,
iii) whether they are new EU members (after 2000) or not,
iv) and geographic location.

The paper is organized as follows: in section 2 the data are presented, in section 3 the method and results are provided, section 4 is devoted to discussion of results and Conclusions close the article.

2. The data and the method

For a comparison real quarterly GDP growth rates (in %) (adjusted for seasonality and working days) in a quarter-to-quarter comparison from Eurostat (2013) were used. From these data total GDP growth during 2008Q3-2012Q3 was evaluated for each country. Altogether, GDP data for 31 European countries were utilized, the data for Greece were available only until 2011, so Greece was eliminated from the study, and the data for Macedonia were missing completely.

In Table 1 total GDP growth during examined period is provided for all 31 countries in the alphabetical order. During this period 11 countries experienced positive economic growth, while the rest of 20 countries experienced negative economic growth, as well as whole European Union. Figure 3 provides a graphical comparison of the economic growth of all countries based on the data from Table 1.

In Figure 1 a development of GDP growth rates of European Union, Germany and France is shown. A sharp decline in GDP from 2008Q3 to the 2008Q3 is visible for all three economies, but beginning with 2009Q4 economies returned to the growth, which was followed by stagnation in 2012. In Figure 2 economic development of Baltic countries is provided.

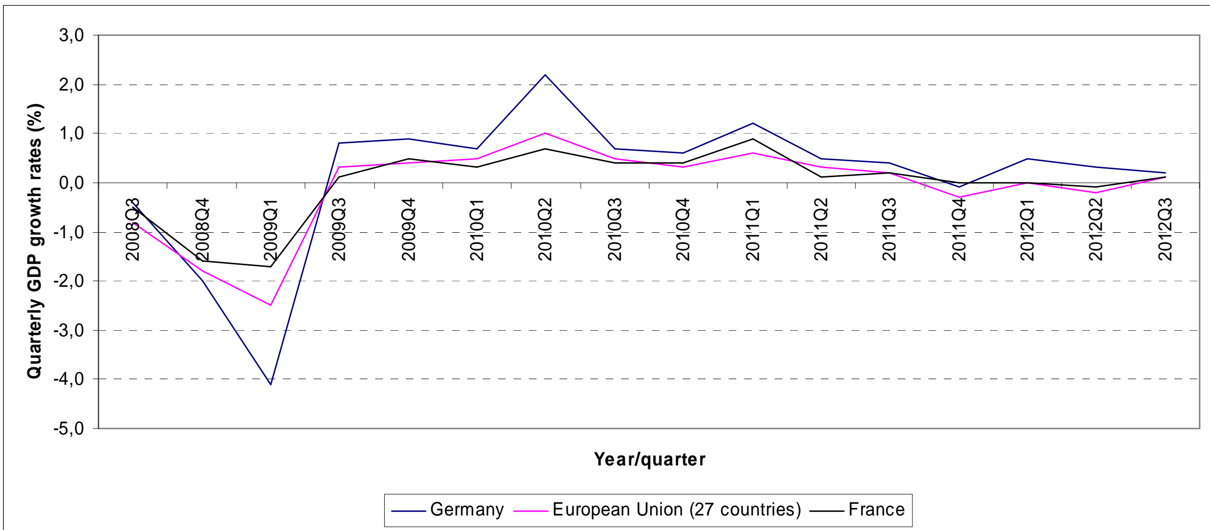

Figure 1. Quarterly GDP growth rates (in %) of EU, Germany and France from 2008Q3 to the 2012Q3. Source: Eurostat (2013).

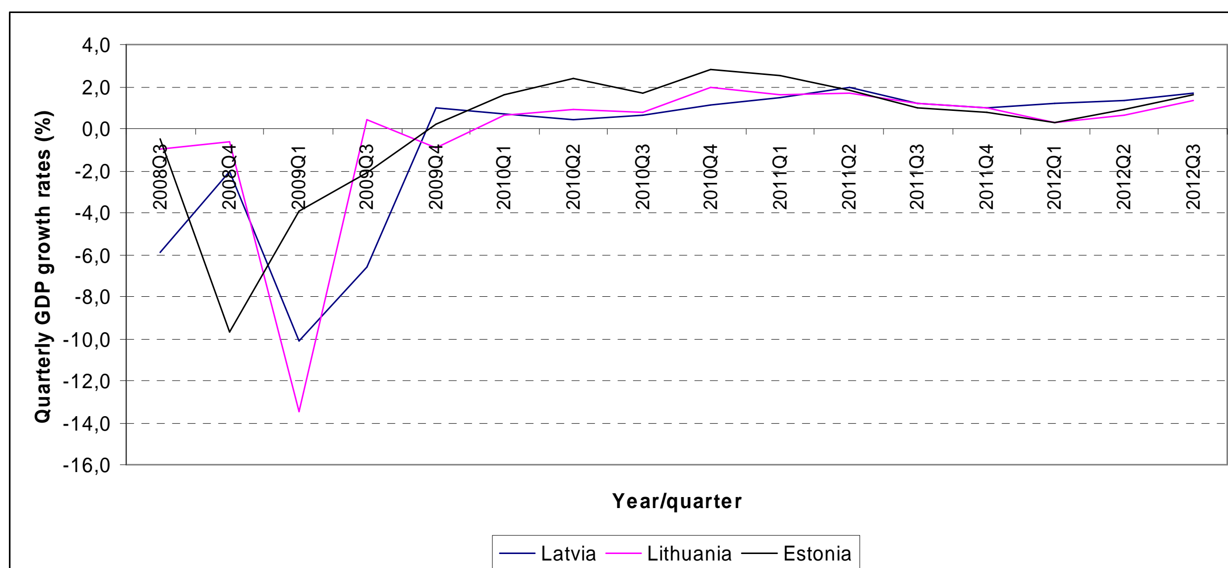

Figure 2. Quarterly GDP growth rates (in %) of Baltic countries from 2008Q3 to the 2012Q3.
Source: Eurostat (2013).

Table 1. Total GDP growth during 2008Q3-2012Q3 period in selected countries.

country	Total real GDP growth from 2008Q3 to 2012Q3 (in %)	country	Total real GDP growth from 2008Q3 to 2012Q3 (in %)
Austria	1.24	Lithuania	–4.58
Belgium	0.04	Luxembourg	–0.78
Bulgaria	–2.96	Macedonia	–4.13
Croatia	–10.14	Malta	3.23
Cyprus	–1.42	Netherlands	–0.95
Czech Republic	–1.58	Norway	3.46
Denmark	–3.64	Poland	12.23
Estonia	0.63	Portugal	–6.55
EU (27 countries)	–1.45	Romania	–4.39
Finland	–3.12	Slovakia	4.55
France	–0.24	Slovenia	–8.62
Germany	2.27	Spain	–4.71
Hungary	–5.57	Sweden	5.22
Iceland	–8.80	Switzerland	3.71
Ireland	–3.37	United Kingdom	–2.05
Italy	–6.02	United States	2.77
Latvia	–11.28	Japan	–2.71

Source: own calculations from Eurostat (2013) data.

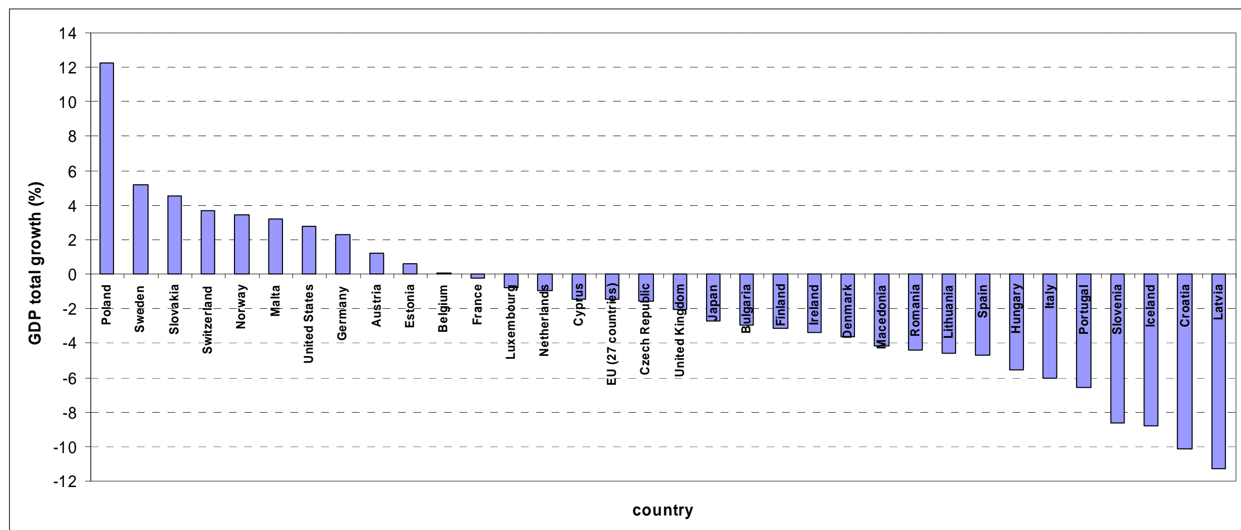

Figure 3. A graphical comparison of the economic growth of all countries from 2008Q3 to 2012Q3.
Source: own calculations.

3. Results

European countries were ranked from the most economically successfull to the least successfull in the given period, see Figure 3. Also, USA and Japan were included into the figure for the comparison. As can be seen, USA were among the best, while Japan performed on average. In the next sub-sections other comparisons are provided, while possible explanation of these results is included in section 4.

3.1 Centre versus Periphery

In this section countries were compared on the basis of their geographic location. The centre is Germany – the strongest economy on the continent – with its neighbours, while other countries constitute European periphery. Results of the comparison are shown in Table 2.
The following null hypothesis was tested:

H_0 : *Average total GDP growth in Centre and Periphery is equal.*

The test of this hypothesis (and also other null hypothesis in next subsections) was performed by two-sample t-test with non-equal variances in Gretl.
The difference in the average total real GDP growth between Centre and Periphery was found statistically significant at 0.05 level ($p =$ 0.006), and the null hypothesis was rejected.
During the crisis countries from the central part of Europe experienced positive total growth, while the periphery experienced a total decline of GDP by 3.4% on average. Hence, the problems of European periphery were confirmed

Table 2. Centre versus periphery average growth.

Groups	Countries	Total real GDP growth from 2008Q3 to 2012Q3 (in %)
Centre (10)	Germany, Czech Republic, Denmark, Belgium, France, Netherlands, Luxembourg, Switzerland, Austria, Poland	1.23 % ($\sigma = 4.15$)
Periphery (21)	Bulgaria, Croatia, Cyprus, Estonia, Finland, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Macedonia, Malta, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, UK	–3.36 % ($\sigma = 4.58$)

3.2. Old EU countries versus new EU countries

In this section a comparison of old EU member countries (with the EU membership dating before 2000) vs. new EU member countries (with the membership dating after 2000, but excluding Croatia) is shown in Table 3.
The following null hypothesis was tested:

H_0 : *Average total GDP growth in old and new EU countries is equal.*

The difference in the average total real GDP growth between old and new EU members was not found statistically significant at 0.05 level ($p = 0.82$), so the null hypothesis couldn't be rejected.
Because new EU members are (with the exception of Cyprus) economies of the former Soviet communist bloc, this result can be interpreted so that transition economies of the former Eastern bloc performed during the crisis as well as their western counterparts.

Table 3. Old EU countries versus new EU countries average growth.

Groups	Countries	Total real GDP growth from 2008Q3 to 2012Q3 (in %)
Old EU members (15)	Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, UK	–1.62 % ($\sigma = 3.15$)
New EU members (11)	Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia	–2.09 % ($\sigma = 6.10$)

3.3. Eurozone versus non-eurozone

Another factor, which might influence impacts of the crisis is the common currency – euro. In this section a comparison of Eurozone countries versus non-Eurozone countries is provided in Table 4.
The following null hypothesis was tested:

H_0 : *Average total GDP growth in Eurozone and non-Eurozone is equal.*

The difference in the average total real GDP growth between Eurozone and the rest of EU countries was not found statistically significant at 0.05 level ($p = 0.66$), so the null hypothesis cannot be rejected. Hence, Euro didn't provide advantage during the crisis.

Table 4. Eurozone versus non-eurozone average growth.

Groups	Countries	Total real GDP growth from 2008Q3 to 2012Q3 (in %)
Eurozone (16)	Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Ireland, Italy, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia, Spain	–1.49 % (σ = 3.56)
non-Eurozone (15)	Bulgaria, Croatia, Czech Republic, Denmark, Hungary, Iceland, Latvia, Lithuania, Macedonia, Norway, Poland, Romania, Sweden, Switzerland, UK.	–2.30 % (σ = 6.04)

3.4. European regions

In this section regional differences were examined, see Table 5. Countries were divided geographically (mainly with accord to the UN regional division) into seven regions.
The best region was Scandinavia with the total average growth of 1.87%, while the most affected regions by the crisis were Baltic and Balkans with the total average GDP decline of –5.08% and –5.40% respectively. Because of a small number of countries in some groups statistical analysis was not performed in this case. Note, that some countries (e.g. Sweden) were included in more than one region.

Table 5. European regions' average growth.

Region	Countries	Total real GDP growth from 2008Q3 to 2012Q3 (in %)
Scandinavia	Finland, Norway, Sweden	1.87
Central Europe	Austria, Czech Rep., Germany, Hungary, Slovakia, Slovenia, Switzerland	1.03
Western Europe	Belgium, France, Ireland, Luxembourg, Netherlands, UK	–1.22
Northern Europe	Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway, Sweden,	–2.76
Southern Europe	Cyprus, Italy, Malta, Portugal, Spain	–3.09
Baltic	Estonia, Latvia, Lithuania	–5.08
Balkans	Bulgaria, Croatia, Macedonia, Romania	–5.40

4. Discussion

The best economic performance during examined period (somewhat surprisingly) belongs to Poland. Main reasons for its exceptional good results are strong domestic demand despite the crisis abroad, out-of-date financial system as foreign investments were already low before the crisis, so the outflow of foreign capital was prevented, see e.g. Knibbe (2011), devaluation of Zloty enabled lower interest rates and also an impact of neighbouring Germany, the strongest economy on the continent and the most important export country for Poland, was not neglible.
On the other hand, the most affected regions were Southern Europe, Baltic and Balkans.
Well-known problems of Portugal, Spain, Italy and Greece in particular were caused by government debts and lower productivity without possibility of devaluation of their currencies and led to austere measures by national governments. Nevertheless, all mentioned countries were still in a recession in the first half of 2013.

For the situation in the Baltic see e.g. Knibbe (2011), Vilpišauskas and Kuokštis (2013), Kajaks (2013) or Kattel and Raudla (2013). Before the crisis Baltic countries belonged among the fastest growing economies in Europe (Latvia grew by 12% annualy in 2006, Lithuania 8% and Estonia by 10%), but when the crisis began they fell into one of strongest recession on the coninent, see Mazurek and Mielcová (2013). Kajaks (2013) provides concise explanation on causes of such development: „The basic reason for this is that the country's development was based not on industrial production but on an influx of cheap and readily available foreign capital, which was invested in consumption in the form of loans granted by the commercial banks, thus creating an illusion of growing and sustainable prosperity..."
Lithuania tried to soften the crisis by internal devaluation, but to no avail. During 2011-2013 Latvia and Lithuania returned to the modest growth, while Estonia fell into another recession in the first half of 2013.
Problems of the Balkan countries were examined e.g. in Minchev (2010), Karasavvoglou and Polychronidou (2013) or Pere and Hashorva (2012). In general, Balkan countries are low opened economies vulnerable to external shocks, with relatively stable banking system but without automatic stabilizers of social welfare systems as their Western counterparts. Before the crisis Balkan countries experienced economic boom (Montenegro 11% of real GDP in 2007, Romania 8%, Serbia 7%; Macedonia 6% etc.). Balkans countries were still growing in 2008, as they usually follow the trends from the Western Europe with a time lag of approximately one year. Because Balkan economies are closely tied to the European Union countries (namely to Italy, Greece and Germany), the decline in demand from EU also caused decline of their economies. However, major economy of Balkans (with exception of Greece) - Romania – returned to the growth at the end of 2012, while Bulgaria or Croatia were still in stagnation in the first half of 2013.
Also, it should be noted that both Baltic and Balkans GDP growth rates are computed from much lower base than in the West, so the growth or decline in real GDP (in %) is more visible.
The role of pre-crisis conditions on a performance during the crisis in general is discussed e.g. in Aiginger (2011), while the crisis in Euro area was studied e.g. by Beblavý at al. (2011).

5 Conclusions

In this paper a selected set of 31 European countries (with the data available from Eurostat) were selected for a comparison of their economic growth during 2008-2012 period, that is a period of predominant economic recession or stagnation.
Countries were divided into two or more groups with regard to different criteria, e.g. whether they belong to European periphery or the Centre, whether they are part of the Eurozone or not, etc. While Euro didn't matter, geographic location was found statistically significant.
Also, the comparison enabled to identify regions the most affected by the financial crisis as well as the most successfull ones. In the examined period the most successfull country was Poland, while the least successfull was Latvia. As for regions, the most successfull was Scandinavia, while the least successfull Balkans and Baltic.
Result of the study can be used for another more detailed analysis of causes for such development, and also it has policy implications, as the most affected regions can be supported from European Comission by European Cohesion or Structural Funds.

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