Economic crisis impact on the EU convergence process from the perspective of green economy achievements

Genovaite Liobikiene, Justina Mandravickaite
Vytautas Magnus University, Kaunas, Lithuania
Baltic Institute of Advanced Technology, Vilnius, Lithuania
E-mails: g.liobikiene@gmf.vdu.lt, justina@bpti.lt

Introduction

- Convergence process of the EU countries is considered as the most important objective of the EU cohesion policy. Active eurointegration policy and the EU Structural funds promote accelerating economical growth particular in the new EU member states.
- Unfortunately, economic growth associates with increase usage of natural resources, accelerating environmental degradation and climate change.
- Therefore, in the United Nations conference on sustainable development which was held in 2012 in Rio de Janeiro the most attention was given to green economy. In simplest expression the green economy can be described as being low carbon, resource efficient and social inclusive.

Methods

Two main concepts of convergence, i.e. β-convergence and σ-convergence were applied in this study of the EU26 countries (except for Luxembourg):

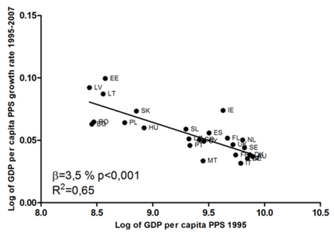
- β-convergence evaluation is based on inverse relationship between growth rate and initial level of analyzed indicators.
- Evaluation of σ-convergence is based on changes in the dispersion of investigated indicators inside the EU.
- The elasticity coefficient (E) (the environmental impact ratio of economic growth) was applied for evaluation the course of decoupling.

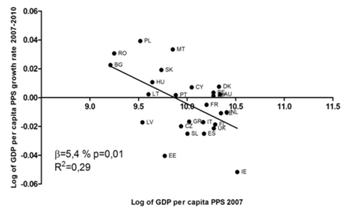
Main indicators:

- GDP (PPS per capita)
- Final energy consumption (teo per capita)
- Emissions of acidifying compound (kg per capita)
- Emissions of greenhouse gases (t per capita)

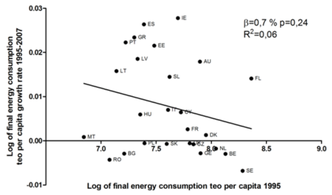
The research covers two periods: until financial crisis (1995-2007) and the economic crisis (2007-2010)

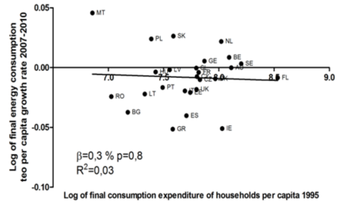
Results-1



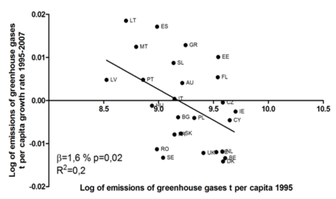


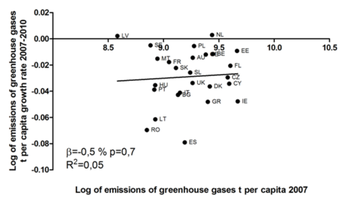
- According to GDP the convergence in the EU was bigger during the economic crisis period (3,5 percent)rather than until economic crisis (5,4 percent).
- During the period of economic growth there was observed the fastest growth of GDP in new EU member states.
- However, during economic crisis GDP declined the most sharply in those countries where the initial level in 2007 was the highest. Meanwhile, in the countries such as Romania, Bulgaria and Poland the economy in 2010 slightly grew in comparison with 2007.





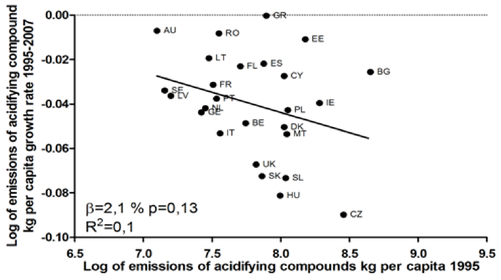
- Convergence of final energy consumption was observed in both periods, however, it was statistically insignificant.

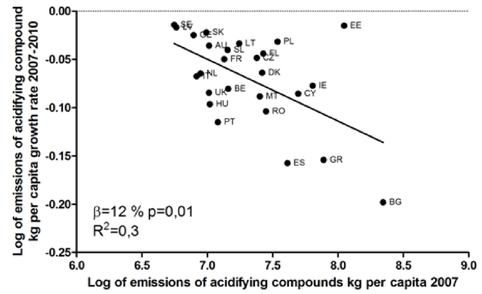




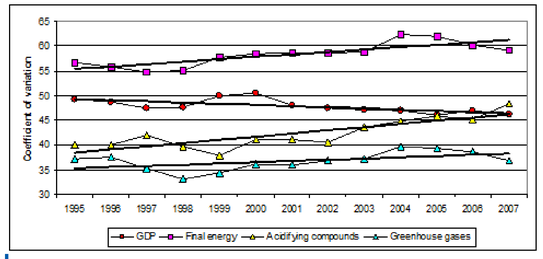
- Despite the fact that convergence of energy consumption was statistically insignificant, there was observed slight convergence (1,6 percent) of emission of greenhouse gases during the period until economic crisis. Contrary, during the economic crisis there was measured divergence, however, statistically insignificant.
- Despite the fact that convergence of energy was statistically insignificant, there was observed slight convergence (1,6 percent) for emission of greenhouse gases during the period until economic crisis. During the period of 1995-2007 the CO_2 emissions increased in those countries (Lithuania, Spain, Malta), where the initial level (in 1995) was the lowest, and decreased in the countries, where the pollution in 1995 was the utmost.
- Contrary, during the period of economic crisis there was measured divergence, however, statistically insignificant.

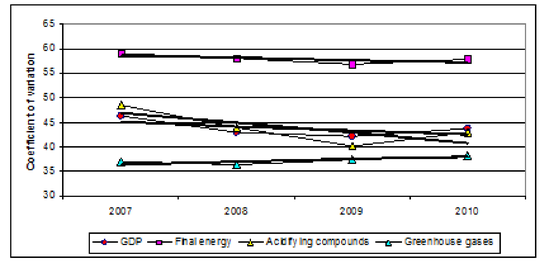
Results-2



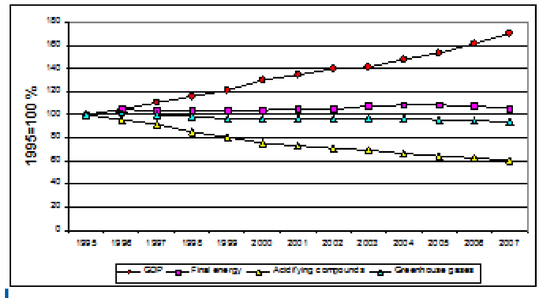


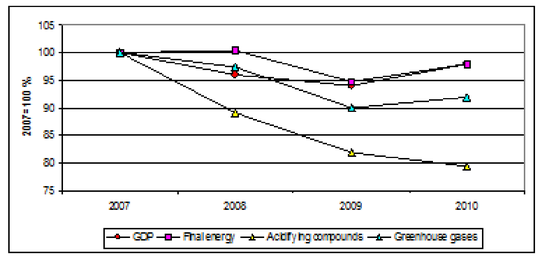
- The emissions of acidifying compounds decreased in all the EU countries during the analyzed period. Though, convergences in the EU countries were statistically insignificant in 1995-2007. However, during the period of economic crisis convergence of these emissions was particularly high - even 12 percent.
- During the period of economic crisis, the lowest reduction of SOx emissions was observed in the countries, where the pollution in 2007 was the least. Meanwhile, in Bulgaria, where the latter pollution was the highest in 2007, it decreased the most and it determined the so fast convergence of acidifying compounds emissions.





- During the period of economic crisis (2007-2010) the divergence was observed only for emissions of greenhouse gases. Meanwhile, the convergence was measured for residual indicators and the highest level of convergence was estimated for emission of acidifying compounds, which in period until economic crisis diverged the most.
- According to σ- convergence, approximated coefficient of variation to leaner trend of convergence in the EU26 during the period of 1995-2007 was observed only for GDP. According to residual indicators, there was measured the divergence particularly for emission of acidifying compounds as the coefficient of variation increased the most.





- During the period until economic crisis the economy in the EU27 grew particularly fast, meanwhile, the final energy consumption grew slightly. Hence, GDP increased by 1 percent, the final energy consumption increased by 0,1 percent, that is, ten times slower (E=0,1). According to emissions of acidifying compounds and greenhouse gases, in this case there was observed absolute decoupling and the elasticity coefficient was respectively -0,6 and -0,1. So, it is considered as a very positive feature from the perspective of sustainability and green economy.
- During the period of 2007-2010, GDP in the EU27 decreased, however, the final energy consumption decreased only softly, and the coefficient of elasticity (E=0,93) revealed that recessive negative decoupling occurred, which in perspective of sustainability and green economy is negative. However, in terms of emissions of acidifying compounds and greenhouse gases, there was observed the recessive decoupling. Thus elasticity coefficient was 10 and 4 respectively and in the case of reduction of GDP by 1 percent the emission of CO_2 declined by 4 percent and SOx shrank even by 10 percent.

Conclusions

- Convergence in the EU during the period until economic crisis occurred according to GDP and emission of greenhouse gases, however, referring to σ- convergence methodology, convergence was proved only for GDP.
- Economic crisis accelerated the convergence of GDP and particularly of acidifying compound emissions. Meanwhile according β- (statistically insignificant) and σ- convergences there was measured the divergence for emission of greenhouse gases in the EU countries.
- Positive feature of sustainability and the green economy was noticed during the period of economic growth, when the resource usage increased slower than economy and pollution even decreased.
- Despite that in the period of economic crisis the emissions of CO_2 and SOx decreased more than GDP, however, the final energy consumption decreased only slightly and in the perspective of sustainability it is considered negative.
- Therefore, the main proposition for policy in the EU countries would be to raise the resource efficiency and achieve production that causes lesser pollution.