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**Article**

## Regional Disparities in Europe: An Assessment of the Impact of the 2007–2013 Funding Programme on Convergence in Romania and Bulgaria

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*Alina Schoenberg*  
**Regional Disparities in Europe:  
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### INTRODUCTION

The common European market requires homogeneity in economic development, a fact that has led to political concern regarding regional disparities across EU member states in recent decades. Such differences between (or within) regions can be observed in long-lasting inequalities in economic growth. In this context, regional development and the reduction of regional disparities towards economic, social and territorial cohesion have become an important priority in the European Union. Since 1975 when the Regional Development Fund was installed, European policy started focusing on the economic development of the poorest regions. The Cohesion Fund, which strongly emphasises the subsidiarity principle, but provides funds based on the additionality principle, was established in 1994; and the Lisbon strategy in the year 2000 shifted funding priorities towards promoting regional growth, employment and innovative performance, initiating a change in paradigm from redistribution to growth orientation. Since cohesion policy funding accounts for one third of the budget of the European Union, it is often the subject of evaluation and of political and scientific debate. Economic literature has been dealing with the impact of different EU programmes on key economic indicators of recipient regions, offering mixed evidence on whether regional growth is being enhanced. Cappelen *et al.* (2003) show that regional policy in the EU has succeeded in improving income and productivity equality among regions, but they also suggest that funding has to facilitate innovation and structural change in poor regions in order to become more successful. Beugelsdijk *et al.* (2005) also find evidence for the positive effect of structural funds between 1995 and 2001 on convergence. Becker *et al.* (2012) state that funding leads to faster growth in the recipient EU regions, but they also suggest that a redistribution of funds from regions with a transfer intensity (as the amount of funds in percent of GDP) above 1.3 percent of GDP to regions below this threshold could benefit the convergence process. For mostly peripheral regions with high unemployment and low productivity, Fagerberg and Verspagen (1996) find a diverging impact of EU investment support on growth. Dall'erba and Le Gallo (2007) also

raise some doubts about the effectiveness of the 1989–1999 funding period after including spatial effects in their analysis and indicating that peripheral regions are more affected by structural funds allocated to core regions than by their own funding. Boldrin and Canova (2001) do not find any evidence of a decrease in regional disparities during the 1980s, suggesting that regional policy serves re-distributional purposes instead of improving regional growth. Even although there is evidence of a positive impact of structural funds on growth rates in poor EU regions in the first programming period, Puigcerver-Penalver (2007) also finds a negative effect on the convergence of those regions after the second programme. Some authors find only conditional effectiveness of the EU regional policy. In this line of argument Ederveen *et al.* (2006) show by using a neoclassical growth framework that cohesion only takes place in receiving counties with a strong institutional framework; and suggest that funds should primarily be allocated to institution building in order to increase the effectiveness of regional policy. Rodriguez-Pose and Fratesi (2004) see the need for better-defined and region-specific development strategies, which could help avoid supporting 'wrong' causes and would prepare regions to face economic challenges by boosting their competitiveness. In general, studies dealing with more recent funding periods indicate larger effects of structural funds. Thus, a learning effect might have led to a more effective ways of allocating the funds (Dall'erba and Fang 2017; Fratesi and Wishlade 2017).

This paper aims to show whether convergence took place in regions of the two newest members of the EU, Bulgaria and Romania, after the first post-accession funding programme between 2007 and 2013 by using a difference-in-difference approach. This approach makes it possible to compare the changes in different variables related to convergence between regions in the two new member countries and other regions not eligible for the convergence objective before and after the funding period, assuming that without the funding, the development in the two groups of regions would have been similar. The paper is structured as follows: the second section provides information on the 2007–2013 programme in Bulgaria and Romania, followed by the third section which shows the key findings of the estimation. The final section concludes by offering an outlook on the current funding period for the two countries.

### CONVERGENCE POLICY IN BULGARIA AND ROMANIA IN THE 2007–2013 PROGRAMME

Following enlargement in 2007 whereby Bulgaria and Romania joined the EU, the EU population has grown by 37.8 million (6.5 percent), which reduced average GDP per capita of the EU27 by 4 percent. At the same

Table 1

**Allocation of Cohesion Funds (ERDF, SEF and CF) in Bulgaria and Romania during the Funding Period 2007–2013.**

	Total funds (billion €)	Funds per capita (€)	GDP per capita (€)	Funds in % of GDP	Funds in % of capital expenditure
Bulgaria	6.67	899.05	3,316.70	2.43	56.01
Romania	19.06	934.09	4,132.84	2.04	36.72
EU average	12.12	1,090.41	25,158.32	1.19	28.14
CEE average	15.94	1,963.58	10,885.72	2.63	52.97

Source: European Commission; own calculation.

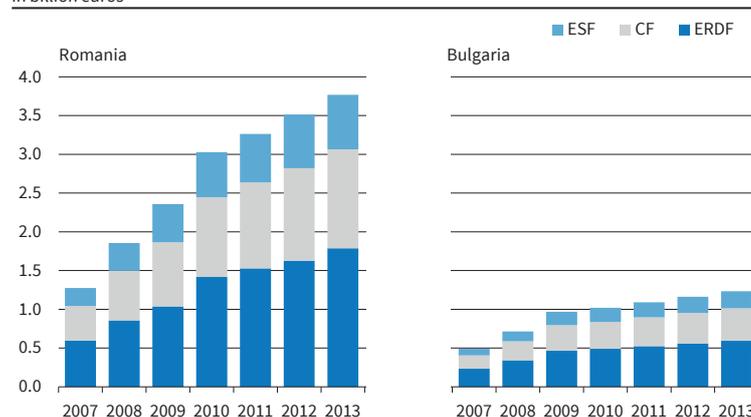
time this further increased regional disparities, following on from the accession of ten new members in 2004, which had already almost doubled the development gap across the EU. As a result, cohesion efforts shifted from countries in southern Europe like Greece, Spain, Portugal and Italy, but also Ireland and eastern Germany, towards countries in Eastern Europe aimed at helping them to catch up economically and to adjust to open market competition. In the 2007–2013 programme, the cohesion policy amounted to 36 percent (308 billion euros<sup>1</sup>) of the total EU budget and was largely aimed at financing activities linked to the Lisbon Agenda. The programme defined three main objectives for the funding period: convergence (formerly objective 1), competitiveness and employment (formerly objective 2 and objective 3) and territorial co-operation. The first main objective is convergence for regions with GDP per capita below the threshold of 75 percent of the EU average. As opposed to previous programmes that allocated funds mostly to infrastructure and human capital development, the 2007–2013 programme aimed to promote growth-enabling factors in particular. It supported innovation, the knowledge-based society and structural change towards sustainable growth and employment. In addition to the 86 regions eligible for the convergence objective, 16 further ‘phasing-out’ regions that narrowly missed the threshold due to the statistical effect of the enlargement were included in the convergence objective.<sup>2</sup> For 13 regions covered by objective 1 in the previous funding period and exceeding 75 percent of the average GDP of EU15 average in 2007, a ‘phasing-in’ system towards the competitiveness objective was granted. This second priority of the 2007–2013 funding period aimed to strengthen competitiveness and to support employment in regions not covered by the convergence objective. Overall, 38.4 billion

euros (financed by the European Regional Development Fund and the European Social Fund) have been allocated to promoting innovation and entrepreneurship and to improving the accessibility and adaptability of labour markets, in order to enhance a smoother transition to the knowledge society. The third objective of the programme was to improve territorial co-operation by facilitating joint actions for local, regional and national actors from different EU members.

Despite Romania and Bulgaria experiencing a considerable strengthening of the economy in recent years, both countries are among the poorest regions in Europe. The funding from the Structural Funds allocated to Bulgaria and Romania in the 2007–2013 programme totalled 25.7 billion euros (6.68 billion euros for Bulgaria and 19.05 billion euros for Romania) representing 14.6 percent of funding for the 12 new member countries (Table 1). However, the funding for both countries remained below the average for Central and East European (CEE) countries. Figure 1 shows the allocation of committed funds from the ERDF, the CF and the ESF for each programming year.

The priorities set by the National Strategic Reference Frameworks (NSRF) regarding the utilisation of financial support from the EU were similar in both countries. They aimed to allocate funds to develop and improve infrastructure, to increase long-term competitiveness and to foster entrepreneurship, to improve the quality of human capital and to support a balanced territorial

Figure 1

**Committed Structural Funds for Bulgaria and Romania from 2007–2013**  
In billion euros

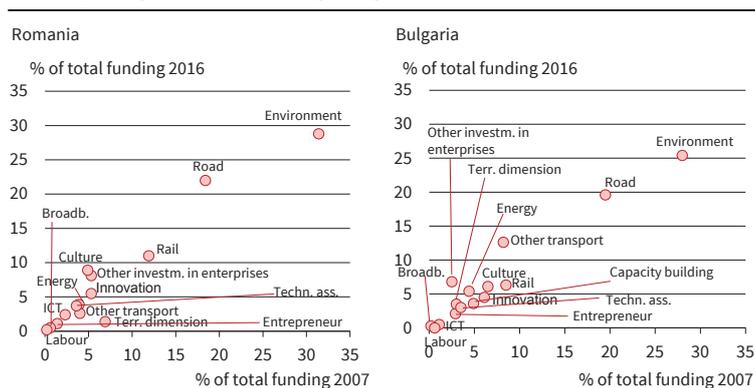
Source: European Commission.

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<sup>1</sup> Of which 175 billion euros were allocated towards new member states joining the EU in 2004 and 2007.

<sup>2</sup> Due to the EU enlargement this regions had a higher GDP per capita than 75 percent of EU25 average but were still below the 75 percent threshold of the EU15 average.

Figure 2  
Funds by Category and Shift among Categories between 2007 and 2016



Source: Eurostat.

**EFFECTS OF THE PROGRAMME ON CONVERGENCE IN ROMANIA AND BULGARIA**

In order to determine the effects the cohesion policy has had on economic development and convergence in Bulgaria and Romania, I will compare key economic indicators in Bulgarian and Romanian NUTS 2 regions with those for regions not eligible for the convergence objective before and after the programming period by using a difference-in-difference approach.<sup>3</sup> The

development. In both countries, over one third of total support was directed towards transport programmes and more than 25 percent towards environmental issues (Figure 2). In both countries, no funds were allocated towards human capital formation. Over the course of the programming period, both countries shifted funds between policy areas, mainly due to problems in absorbing the funds. Initial funds related to the labour market accounted 0.6 percent of total funding in Bulgaria at the beginning of the programme, but were completely reallocated towards other priorities by the end of 2016. Around 0.2 percent of total funding in Romania was used to finance labour market activities. To increase the effectiveness of expenditure in Romania, funds were shifted towards cultural projects, almost doubling the initial amount for this priority. This illustrates the institutional and administrative problems in both countries in an exemplary fashion.

The advance funding of projects by local authorities led to temporary financial problems on the part of municipalities. Both countries also experienced difficulties in finding the requisite private and public co-funding at a national level, leading to a reduction in the national co-financing rate that was intended to reduce pressure on national public finances. Romania still had the lowest absorption rate in Europe, claiming only 75 percent of the available funds (ERDF, ESF, CF) by the end of 2015. Although Bulgaria had similar implementation problems up to the year 2012, it managed to absorb all the available funding by the end of 2015.

variables of interest are GDP in PPS per capita as a percentage of the EU average, unemployment rate, gross fixed capital formation and R&D spending per capita. Considering the growth orientation of cohesion policy in this funding period, the effects of the grants in Romania and Bulgaria are expected to induce higher changes in these variables than in more developed regions. The periods considered in the analysis are the pre-funding period between the year 2000 and 2006 and the post-funding period of 2014–2015. The control group consists of ‘objective 3 regions’ during the 2000–2006 funding period that were not eligible for the convergence objective in the following funding period. To examine the effects of cohesion policy on convergence in Bulgaria and Romania I estimate following model:

$$(1) y = \beta_0 + \beta_1 dCoh + \delta_0 dpost + \delta_1 dpost \cdot dCoh + u$$

where *dCoh* is a dummy variable taking the value of 1 for NUTS 2 regions in Bulgaria and Romania and 0 for regions not qualifying for the convergence objective. *dpost* denotes the time dummy and captures factors that would change the dependent variable without the EU funding for the convergence objective.  $\delta_1$  is the difference-in-difference coefficient that estimates the average effect of the funding in Romania and Bulgaria after the programming period. I estimate the equations for the economic indicators of interest

<sup>3</sup> The analysis includes all 15 Bulgarian and Romanian NUTS 2 regions and all 163 NUTS 2 regions that do not qualify for the convergence objective, the ‘phasing out’ system or the ‘phasing in’ system. The data used is from Eurostat.

Table 2  
Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
GDP per capita as % EU average	1,562	18	593	112.64	46.563
Unemployment rate (%)	1,626	1.2	22.8	6.74	3.1537
Gross fixed capital formation (million €)	1,274	124	135,465	10,385.52	11,366.060
R&D expenditure per capita (€)	855	1,800	3,737.30	473.36	495.02

Notes: If available, all variables refer to 2000–2006 and 2014–2016 values for Romania and Bulgaria in the treatment group and for all former objective 3 regions (NUTS 2) that did not qualify for the convergence objective in the 2007–2013 funding period in the control group. Since only the poorest and the richest regions have been included in the analysis the mean for the GDP per capita as % EU average is not 100%. Source: Eurostat; own calculation.

(GDP in PPS per capita in percentage of EU average, unemployment rate, gross fixed capital formation and R&D spending per capita) as dependent variables.

Table 2 provides the descriptive statistics for the variables used in the analysis and Table 3 provides several estimates of the average effects of Cohesion Policy in Bulgaria in Romania.

The results suggest that the GDP per capita as a percentage of the EU average did increase more in Bulgaria and Romania than in the more developed regions of the EU, implying that convergence did take place after the funding. The coefficient for the difference-in-difference estimator is positive and statistically significant. While in terms of GDP per capita, regions in Bulgaria and Romania managed to converge to the EU average by 19 percent (on average), the developed regions experienced a 4-percent decrease in per capita GDP as a percentage of the EU average. The Bucharest region in Romania managed to achieve a GDP per capita of above 100 percent of the EU average, disqualifying it for the convergence objective in the following funding period. On average, however, Romania achieved 58 percent of the EU average, with only 3 regions below 50 percent; while Bulgaria only converged to 42 percent on average. The results for the unemployment rate are similar and indicate that Romania and Bulgaria experienced a higher average decrease (1.58 percent) in unemployment than the more developed control regions, with the difference between regions being statistically significant. As far as gross fixed capital formation is concerned, the difference-in-difference estimator is negative suggesting that gross fixed capital formation in Bulgaria and Romania increased less on average than in the control group. This result is rather surprising given that one third of funding in Romania and Bulgaria was allocated to infrastructure and transportation projects. Furthermore, investment in enterprises amounted to 6.8 percent of total funding in Bulgaria and 8.1 percent in Romania. However, this result is not statistically significant. The analysis also states a statistically significant lower increase in per capita R&D expenditure in Bulgaria and Romania. Nevertheless, in view of the allocation of funds in Romania and Bulgaria for the funding period, which did not prioritise innovation<sup>4</sup> and long-term endogenous growth as intended by the programme, and given

the lack of expertise in knowledge creation and technology transfer, it is not surprising that Bulgaria and Romania did not manage to catch up to more developed regions. Furthermore, the two main objectives of improving regional competitiveness and achieving economic convergence appear contradictory due to a relatively lower capacity to absorb the funds in poorer countries (compared to more developed regions) and their relatively greater need to promote innovation activities at the same time (Nam *et al.* 2013).

Although the approach used enables an evaluation of Bulgaria's and Romania's convergence process, it does not account for political and economic changes at a national level; and therefore does not necessarily explain the causality between EU funds and economic growth in these countries. Romania experienced high growth rates until 2008, but was also strongly affected by the financial crises, having to deal with decreases in FDI and macroeconomic imbalances. The European debt crisis has therefore challenged the implementation of the EU programmes in Romania. In addition to EU funding, Romania was one of three non-Eurozone countries to receive further financial assistance (balance-of-payments assistance) in order to overcome macroeconomic and fiscal instabilities and this may also have led to changes in production and labour. Bulgaria has been facing a declining working age and lower productivity. Furthermore, since the absorption of funds from the 2007–2013 funding programme ended in 2015, further effects may be delayed and are not included in this analysis. In other words, both countries deal with administrative inefficiencies and problems in guaranteeing the national contribution, resulting in missing or delayed absorption of funding. While the funding for regions not qualifying for the convergence objective is significantly lower, the impact might be relatively higher due to better implementation strategies in these regions, which in

Table 3  
Estimation Results

	(1) GDP per capita as % EU average	(2) Unemploy- ment rate	(3) Gross fixed capital formation	(4) R&D expenditure per capita
Coefficients (p-values)				
$\beta_1$ (BG, RO)	- 88.08*** 0.000	2.56*** 0.000	- 9,645.01*** 0.000	- 434.25*** 0.000
$\delta_0$ (post)	- 4.03 0.116	0.841*** 0.000	2,283.540** 0.015	302.57*** 0.000
DiD estimator	22.54** (0.013)	- 1.58*** (0.010)	- 851.764 (0.766)	- 278.29*** (0.008)
$R^2$	0.240	0.045	0.066	0.190
$N$	1,562	1,626	1,274	855

Notes: Difference-in-difference estimations, including intercepts (not reported). Dependent variables: GDP per capita in % of EU average (PPS), unemployment rate (%), gross fixed capital formation in million € and per capita R&D expenditure in €. P-values in brackets. If available, all variables refer to 2000–2006 and 2014–2016 values.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Source: Own calculation.

<sup>4</sup> About 5.5 percent and 4.5 percent of total funds were spent for innovation and R&D in Bulgaria and Romania, respectively. Funds for entrepreneurship amounted to 2.1 percent of total funding in Bulgaria and 1.1 percent in Romania.

fact could relatively slow down the catching-up process of the least developed regions in the EU.

## CONCLUSION

11 years after accession to the EU and 4 years into their second post-accession funding period, Bulgaria and Romania are still dealing with problems that delay the convergence process. Firstly, both countries face massive implementation problems that are mainly caused by inefficiencies at the administrative level. The absorption of funds has been a major challenge in both countries, leading to delayed implementation, payment lags and financial irregularities. Furthermore, the pressure to use the allocated funds has led to shifts in NSRF's priorities towards projects that are easier to implement, rather than projects that enhance convergence. Further steps to improve assistance and management skills on the administrative level and to enhance cooperation between central governments and local authorities are therefore necessary in both countries in order to increase the effectiveness of funding in the current programming period.

Secondly, national implementation strategies in both countries have not yet prioritised projects that would help to accelerate endogenous growth. In other words, due to major shortfalls in infrastructure development, a high share of funds has been directed towards transportation and construction projects, marking a failure to focus on innovation and employment too. This analysis has found some evidence in favour of a positive impact of Cohesion Funds on GDP and employment, despite the fact that both countries experienced serious economic setbacks during the crises years. However, the analysis shows divergence with respect to per capita R&D expenditure, confirming that an implementation of the Lisbon strategy in the cohesion strategy was not achieved during the 2007–2013 funding period and indicating that a change in paradigm regarding funding priorities on a national level is necessary to achieve long-term growth and speed up the convergence process.

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