EU Cohesion Policy: A suitable tool to foster regional innovation?

Policy Paper

BertelsmannStiftung

EU Cohesion Policy: A suitable tool to foster regional innovation?

Policy Paper

Imprint

Author
Julia Schmidt (Bertelsmann Stiftung, Programme Europe's Future)

Responsible
Dr. Katharina Gnath
Senior Project Manager
Programme Europe's Future
Bertelsmann Stiftung
Telephone +49 5241 81-81183
Fax +49 5241 81-681183
katharina.gnath@bertelsmann-stiftung.de
www.bertelsmann-stiftung.de

Across Europe, regions are divided into innovation leaders and moderate innovators – the latter referring to regions that lag behind in terms of prosperity and R&D activities. This innovation gap in turn threatens to reinforce the productivity gap between regions. The EU's Cohesion Policy recently shifted its focus towards funding innovation to deal with these disparities. Is this strategy working?

Research and development (R&D) is widely recognised as a major driver of international competitiveness, productivity and economic growth. Knowledge hubs, research centres and investment in new technology are concentrated for the most part in economically advanced, urban areas. The landscape in Europe is marked by a division between leading EU regions that perform strongly in terms of GDP per capita and R&D expenditure and regions that lag behind.

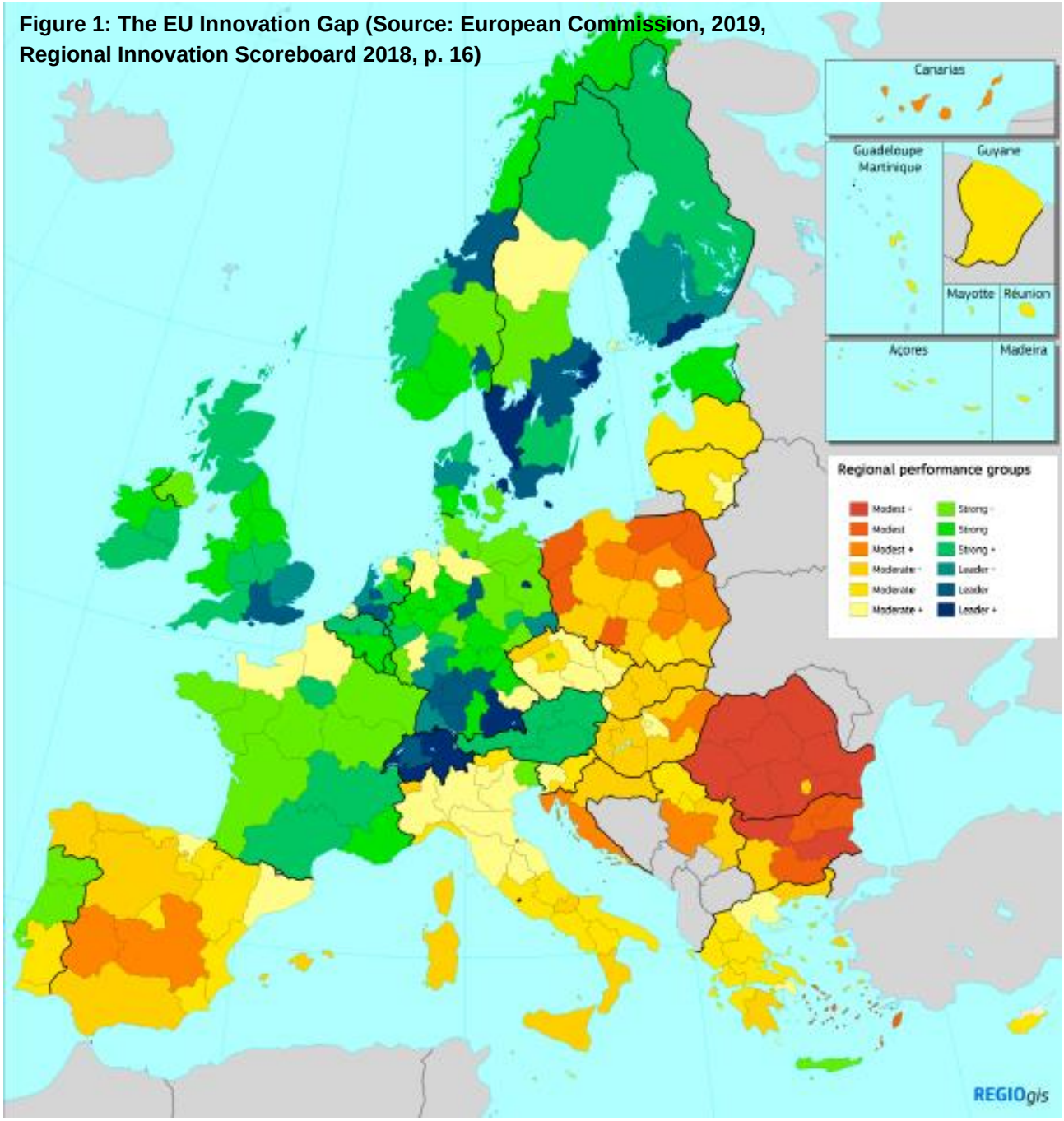
The European Union (EU) developed a structural policy, known as Cohesion Policy, to deal with economic and social disparities. The funds disbursed through it support regions with below-average GDP (European Commission 2017a). After the 2014 launch of the research programme Horizon 2020, policy makers hoped to turn structural funds and, in particular, the European Regional Development Fund into an "innovation booster". Over the period 2014-2020, resources from the European Sturctural Investment funds of over EUR 350 billion were allocated to cohesion policy – a sum amounting to about a third of the total EU budget. A handful of economists have analysed the policy's effects on strengthening innovation – so far with mixed results (Ferrara et al. 2016; Wamser et al. 2013). With the upcoming negotiations on the EU's multiannual financial framework (MFF), there is a need to evaluate the effectiveness of measures to foster innovation-led growth in the EU. This policy brief discusses the extent to which structural funds appear to fulfil their mandate of fostering innovation at a regional level.

In the first part, this paper highlights the European innovation gap that follows a well-known core-periphery pattern. Furthermore, we give an overview of the EU's Cohesion Policy with a focus on the European Regional Development Fund (ERDF) and outline the challenge of measuring the effects of structural funding on fostering innovation. In the second part, we analyse the relationship between GDP per capita, R&D expenditure and ERDF funding at the level of EU regions (NUTS2 level), using data from Eurostat and the European Commission over the period 2010-2016. Interestingly, ERDF funding reflects the core-periphery pattern of the observed innovation gap across European regions. In line with existing research, we show that R&D expenditure is related to higher GDP per capita. However, we do not observe any direct relationship between ERDF funding and R&D expenditure. The findings encourage a strengthening of local governance capacities and research networks over and above purely monetary measures to foster regional innovation across Europe.

Mind the gap in EU innovation

After the economic crisis, regional disparities re-emerged in heightened form across the EU and its Member States. Researchers observed a core-periphery pattern with the economically strong regions in the centre surrounded by relatively deprived neighbours (see Figure 1). Similarly, R&D expenditure differs widely across European NUTS2 regions. The most "innovative" regions in the EU are Helsinki-Uusimaa in Finland, followed by Stockholm in Sweden, and Hovedstaden in Denmark. Innovation performance has decreased for 79 regions including all regions in Romania and Slovenia, and for most regions in Bulgaria, Denmark, and Germany (European Commission 2019). Different indicators that measure some form of innovation – including the proportion of the working age population with tertiary education, the work force in the tertiary sector, or the number of patents – underline the innovation gap across European regions.

Figure 1: The EU Innovation Gap (Source: European Commission, 2019, Regional Innovation Scoreboard 2018, p. 16)



Refocussing EU Cohesion Policy towards innovation

The European Commission has developed several instruments to counter regional imbalances. Most importantly, the EU's Cohesion Policy as enshrined in the Treaty on the Functioning of the European Union (TFEU Art. 174) aims at strengthening economic and social convergence by reducing inter-regional disparities. Since the 1980s, regional policy is channelled through two main funds: the European Regional Development Fund (ERDF) and the Cohesion Fund. Together with the European Social Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund, they make up the European Structural and Investment Funds (for a review of the origins of the policy see e.g. European Commission 2019).

From 2000 onwards, Cohesion Policy was developed into an instrument to boost innovation. In this light, the Lisbon Agenda effectively set the dial towards productivity and economic growth by fostering R&D investments, in particular within the scope of the ERDF. Stricter rules for priority spending targets were introduced for the 2014-2020 period, leading to a greater focus of the ERDF on a few key objectives as set out in the EU's overarching

Horizon 2020 strategy: research and innovation, information and communication technology, SME competitiveness and the low carbon economy. All funds are managed and delivered in partnership between the European Commission, the Member States and stakeholders at local and regional level. Financial support thus comes on top of national budgets. To keep a tight rein on funding, regions are only eligible for monies according to certain criteria (see Box 1).

Box 1: European Structural and Investment (ESI) Funds have allocated over 350 billion to cohesion policy over 2014-2020*

Cohesion Fund EUR 63 billion (14 percent of total ESI)	▪ **Thematic concentration:** transport and environment ▪ **Eligibility:** Targeted at Member States whose Gross National Income per inhabitant is less than 90 percent of the EU average
European Regional Development Fund EUR 196 billion (43 percent of total ESI)	▪ **Thematic concentration:** research and innovation, information and communication technology, SME competitiveness, low-carbon economy ▪ **Eligibility:** distributed according to different categories (less developed regions: GDP/head < 75 percent average EU-27; transition regions: GDP/head 75 to 90 percent of EU-27 average; more developed regions: GDP/head >= 90 percent of EU-27 average)
European Social Fund EUR 84 billion (18 percent of total ESI)	▪ **Thematic concentration:** employment and labour mobility, social inclusion, poverty, education and skills, institutional capacities ▪ **Eligibility:** distributed according to different categories as above

*NB: Total spending of ESI funds amounts to EUR 450 billion, EUR 350 billion of which are spent on cohesion policy.

A crucial part of the strategic focus of EU expenditure has been the obligatory development of smart specialisation strategies (S3) to support regional innovation in the 2014-2020 period. S3 allows EU countries and regions to strengthen their research and innovation systems, as well as their institutional capacities to absorb and diffuse innovation potential (Hegyi and Rakhmatullin 2017). Member States have developed over 120 smart specialisation strategies through adopting partnership, multi-level governance and bottom-up approaches establishing priorities for research and innovation investments. In the current period, more than EUR 40 billion (and more than EUR 67 billion including national co-financing) allocated to regions via the ERDF will fund these priorities.

Measuring the effect of Cohesion Policy on regional innovation remains elusive

An effective and performance-based assessment of the policy's structural effects on innovation potential is difficult. The bulk of existing research measures Cohesion Policy effectiveness by way of analysing the growth effects of different types of funds. However, the results remain a matter of controversy. Several studies point to pro-growth effects of Cohesion Policy in particular in regions with a per capita GDP lower than 75 percent of the EU average (e.g. Pellegrini et al. 2013). At the same time, a significant number of studies find neutral or even negative effects (Boldrin and Canova 2001; Dall'Erba and Le Gallo 2008).

The picture gets even muddier when analysing Cohesion Policy and regional innovation. Only very recently have researchers started to focus on this link – and there is very little conclusive evidence so far. In a pioneering study, Ferrara et al. (2016) evaluate the policy's effectiveness on innovation over the period 1999-2010. The researchers use a regression discontinuity design to disaggregate regional data according to different streams of EU cohesion funding and show a positive impact on research, technological progress and innovation. Other studies suggest within-country disparities to account for almost two fifths of total EU disparities. One main driver is the growth rate of per capita investment in R&D activities at national as well as at regional level – both positively correlated with growth of within-country and within-region disparities over the period 1995-2014. This positive

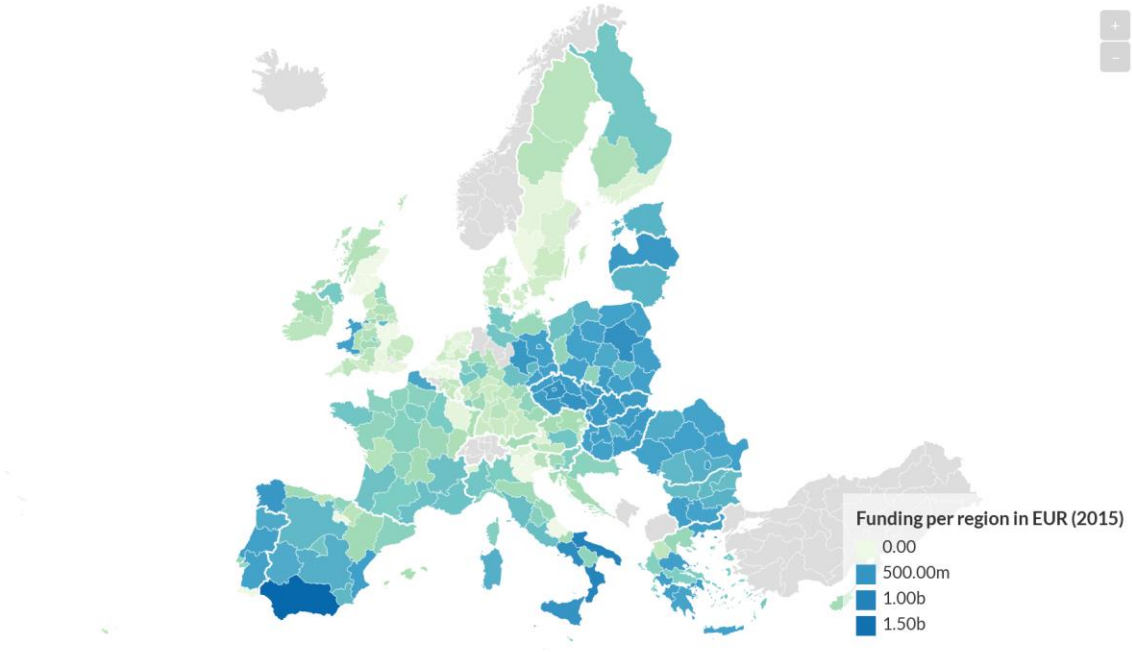
correlation is observed at all regional levels with a slightly different intensity – 0.23 at NUTS1, 0.33 at NUTS2, and 0.29 at NUTS3 level (Butkus et al. 2018). Wamser et al. (2013) fail to find any increase in innovation promotion by the EU between the second programme period of 2007-2013 (during which the Lisbon strategy came into effect) compared with the first (2000-2006). Case studies underline the observed trends. An experiment by Crescenzi et al. (2018) evaluates a programme of subsidies for collaborative industrial research (co-)funded by EU Cohesion Policy in Italy that mobilised over EUR 1 billion. Although the experiment confirmed potential opportunities and challenges in the practical application of the S3 approach, no real rise in the overall innovation potential could be detected.

A direct comparison of study results is also difficult as research designs differ strongly. Studies vary greatly in the type of funds analysed, sample size, programming periods and methodology (McCann 2015). Moreover, innovation itself is difficult to quantify and measure in terms of available data and suitable indicators. Various attempts to do so have been carried out, such as, for example, by the OECD and the European Commission, with a special focus on knowledge hubs, industrial production zones and peripheral regions (Solly 2016). One major challenge is that innovation goes beyond traditional technology and manufacturing, enhancing the role of creative and cultural industries in fostering sustainable growth. Economies of scale and scope as well as spill-over effects across regions are difficult to capture in one single indicator. Finally, EU structural funding comes at a threshold on top of national governments' money. Research also shows that innovation measures are subject to a ten-year time lag in bringing sustainable and inclusive regional growth (Mohl and Hagen 2010). This renders it hard to isolate the effect of structural cohesion funding on regional innovation.

Empirical analysis: direct funding effects on innovation remain invisible

The search for the initial analytical basis for the debate requires discovering whether Cohesion Policy and in particular ERDF funding achieve the goal of fostering innovation regionally, thereby establishing a pathway for sustainable economic growth. We use data from Eurostat and the European Commission to illustrate the link between funding for innovation, allocated through the ERDF, and innovation indicators at NUTS2 level. Looking at the distribution of ERDF funding across EU regions, we observe the well-known core-periphery pattern (see Figure 2). The economically weakest regions receive the most ERDF funding, while regions that are well off receive less. Southern Portugal, Andalucía, southern Italy, regions in Greece and Eastern Europe receive the most ERDF funding – the dark blue regions in Figure 2 below. The core, namely regions in Germany, France, Denmark and Sweden, receive significantly less funding – in line with their level of economic development. ERDF funding thus reflects the post-crisis recovery pattern – and the European innovation gap.

Figure 2: ERDF funding across EU regions



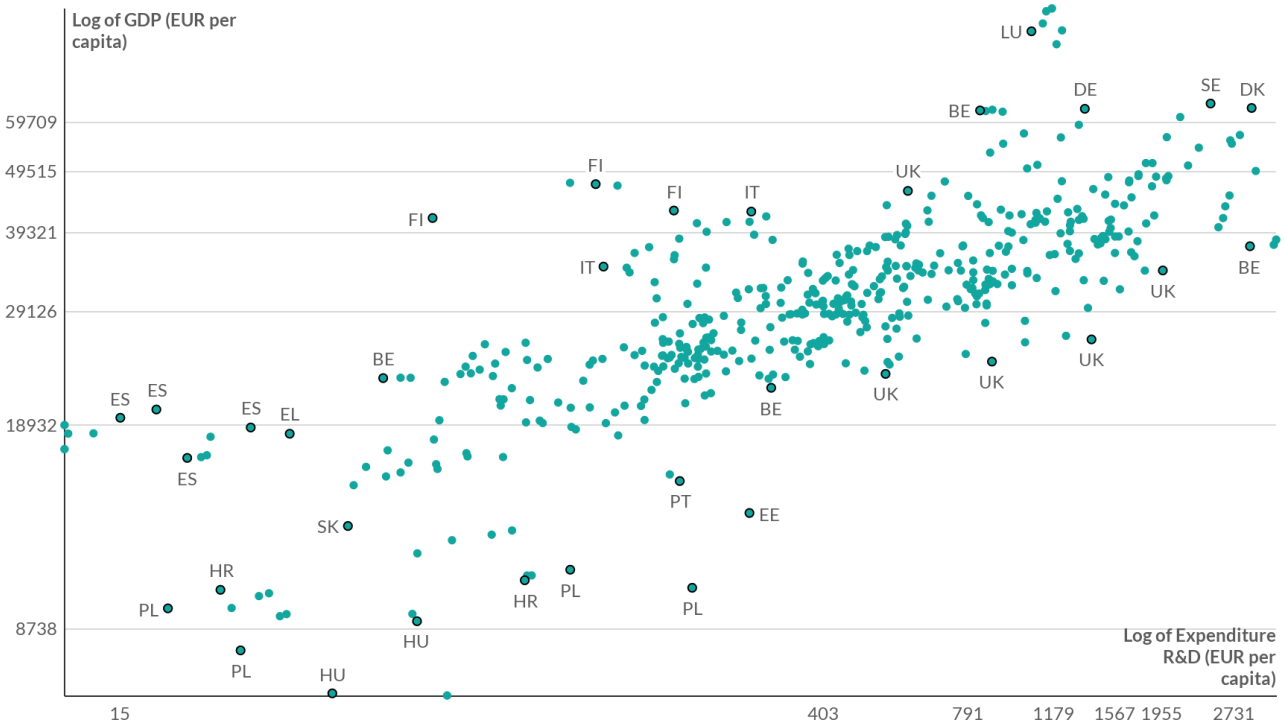
Regions with missing data in grey; Data cover the year 2015.

Source: Eurostat

BertelsmannStiftung

According to a well-established strand of the literature, the higher the GDP per capita, the higher government R&D spending. Economically strong countries invest in education, technology and industry, thereby boosting innovation potential in their respective economies. Vice versa, higher expenditure on R&D might also lead to higher GDP per capita. This mechanism linking levels of GDP per capita and state spending on R&D seems to work pretty well in EU regions. We confirm this strong and solid correlation between GDP and innovation expenditure at NUTS2 level in Europe for the period 2010-2016 (see Figure 3). According to economic theory, innovation expenditure is one major driver of (regional) economic growth. If ERDF funding is designed to boost innovation, the effect of higher innovation expenditure on growth should appear stronger and even more targeted.

Figure 3: R&D expenditure and GDP



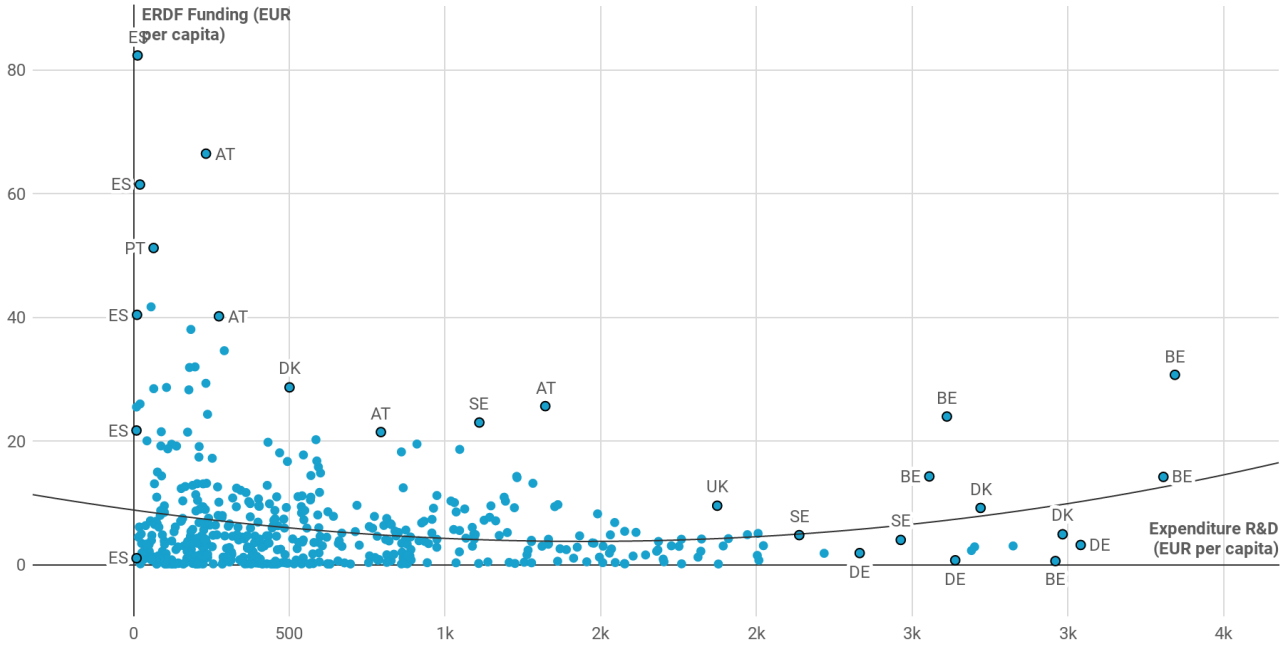
Regions with missing ERDF funding have been excluded. The data cover the period 2010 - 2016.

Source: Eurostat

BertelsmannStiftung

As a final step, we plot annual payments by the ERDF and expenditure for R&D in EUR per inhabitant over the period 2010-2016 (Figure 4). In line with the objective of fostering innovation and creating an environment for smart specialisation, we have presumed a positive correlation between ERDF payments and expenditure for R&D. Surprisingly, we cannot confirm that higher ERDF funding leads to higher R&D expenditure or vice versa. Hence, we are unable to detect any significant correlations. Instead, the figure shows a diverging pattern. Regions in Spain and Portugal on the left side receive high levels of ERDF funding, but spend extremely little on R&D. On the other hand, regions that receive little ERDF funding, for example in Germany, Denmark or Belgium, spend twice or thrice the amount on R&D.

Figure 4: ERDF funding and R&D expenditure



Regions with missing ERDF funding have been excluded; Data cover the period 2010-2016.

Source: Eurostat

BertelsmannStiftung

Looking beyond direct funding effects…

The data reveal merely a section of the bigger picture. Regions that receive no ERDF funding go unreported in the data. Moreover, we only use public sector research expenditure as an innovation indicator. Future analyses should integrate other indicators such as tertiary employment or the number of patents published per region. What is more, the focus on smart specialisation and innovation became core within Cohesion Policy from 2014 onwards.

Furthermore, while a lot of funding has gone into structural funds, policy makers do not necessarily agree on the precise goals and objectives. On the one hand, Cohesion Policy aims at convergence between regions. On the other hand, the Lisbon Agenda, the Horizon 2020 framework and the focus on smart specialisation are designed to strengthen the competitiveness and innovation of the best performing regions. New economic geography or endogenous growth theory argue that there is a substantial trade-off between convergence goals and overall growth objectives. The lack of agreement leads to vaguely specified actions hampering a straightforward implementation of measures to foster innovation.

Lastly, the missing direct link between ERDF funding and innovation suggests that we need to pay attention to omitted variables and other potential limitations: According to Rodríguez-Pose and Garcilazo (2015), governance capacities play a crucial role in not only applying for funding, but even more in investing monies in activities that foster innovation. The researchers observe a threshold beyond which regional policy spending becomes less effective unless there are improvements in the quality of government. Consequently, many regions might suffer from institutional structures that hinder the effective use of public funds. At the same time, it is important to evaluate ERDF funding bound to their framework conditions. Structural funds in general are distributed in addition to national government funding (Ständer 2018).

… and taking a comprehensive view on fostering innovation-led growth through Cohesion Policy

Fostering innovation requires more than just boosting the economic growth in a given region through structural spending – it requires an adequate ecosystem flexible enough to adapt to changing resource environments, global trade flows and international economic challenges.

First, it is worth exploring the option to incorporate more research partnerships into (national) growth and innovation strategies. In this light, creating awareness of extant platforms such as the Vanguard Initiative or the recently initiated Smart Specialisation Platform, where clusters of regions and firms facilitate access to business partners, might become indispensable to lesson-sharing and attracting new investments (European Commission 2017b).

Second, policy makers need to reinforce governance capacity at local and regional level. Deficiencies in institutional quality are increasingly recognised as an impediment to regional development (BMWi 2018). For instance, available resources are not employed in a timely manner and may, in the worst case, be lost to the region. In the same way, coherence and quality of programmes and projects undertaken may be sub-optimal, thus contributing too little to regional development. Structural funding by its very nature is designed to be implemented through multi-level governance. If one is to enhance the effectiveness of ERDF funding, enhanced institutional and human capacities play a critical role.

In sum, EU Cohesion Policy supports an important objective in narrowing economic and social disparities between European regions and the turn in the past years towards focusing on innovation and smart specialisation is a welcome step. Yet when re-adjusting policies in the upcoming negotiations on the EU's multi-annual financial framework, it is important that more effort is put into investigating the relationship between structural funding and innovation potential in European regions.

References

Boldrin, M. and Canova, F. (2001). Inequality and convergence in Europe's regions: Reconsidering European regional policies. Economic Policy 16, 205-253.

BMWi (2018). Zukunft der EU-Strukturpolitik in Deutschland ab 2021. Prognos AG. Retrieved from: https://www.bmwi.de/Redaktion/DE/Publikationen/Studien/zukunft-der-eu-strukturpolitik-in-deutschland-ab-2021.html.

Butkus, M., Cibulskiene, D., Maciulyte-Sniukiene, A., & Matuzeviciute, K. (2018). What is the evolution of convergence in the EU? Decomposing EU disparities up to NUTS 3 level. Sustainability, 10(5), 1552.

Crescenzi, R., de Blasio, G., & Giua, M. (2018). Cohesion policy incentives for collaborative industrial research: Evaluation of a smart specialisation forerunner programme. Regional Studies, , 1-13.

Dall'Erba, S. and Le Gallo, J. (2008). Regional convergence and the impact of European structural funds over 1989-1999: A spatial econometric analysis. Papers in Regional Science 87, 219-244.

European Commission (2017a). My region, my Europe, our future: Seventh cohesion report on economic, social and territorial cohesion. Luxembourg: Publications Office of the European Union. Retrieved from: https://eur-lex.europa.eu/legal-content/FR/TXT/?qid=1508317360588&uri=CELEX:52017SC0330.

European Commission (2017b). Strengthening Innovation in Europe's Regions: Strategies for resilient, inclusive and sustainable growth, COM (2017) 376 final. Retrieved from: https://ec.europa.eu/regional_policy/sources/docoffic/2014/com_2017_376_2_en.pdf.

European Commission (2019). Regional Innovation Scoreboard 2018. Luxembourg: Publications Office of the European Union. Retrieved from: https://ec.europa.eu/growth/sites/growth/files/ris2019.pdf

Ferrara, A. R., McCann, P., Pellegrini, G., Stelder, D. and Terribile, F. (2017). Assessing the impacts of Cohesion Policy on EU regions: A non-parametric analysis on interventions promoting research and innovation and transport accessibility. Papers in Regional Science 96(4), 817-841.

Iammarino, S., Rodríguez-Pose, A. and Storper, M. (2017). Why regional development matters for Europe's future. Working Paper 7/2017, DG Regio. Brussels: European Commission.

Hegyi, F. B. and Rakhmatullin, R. (2017). Implementing smart specialisation-thematic platform on industrial modernization. JRC Technical Reports, S3 Policy Brief Series No. 22/2017.

McCann, P. (2015). The Regional and Urban Policy of the European Union: Cohesion, Results Orientation and Smart Specialisation. Cheltenham: Edward Elgar.

Mohl P. and Hagen, T. (2010). Do EU structural funds promote regional growth? New evidence from various panel data approaches. Regional Science and Urban Economics 40, 353-365.

Pellegrini, G., Terribile, F., Tarola, O., Muccigrosso, T., & Busillo, F. (2013). Measuring the effects of European regional policy on economic growth: A regression discontinuity approach. Papers in Regional Science, 92 (1), 217–233.

Rodríguez-Pose, A. and Garcilazo, E. (2015). Quality of government and the returns of investment: Examining the impact of cohesion expenditure in European regions. Regional Studies 49(8), 1274-1290.

Solly, A. (2016). Place-based innovation in cohesion policy: Meeting and measuring the challenges. Regional Studies, Regional Science 3(1), 193-198.

Ständer, P. (2018). Missions for EU Innovation Policy: The right set-up matters. Policy Paper No. 224. Jacques-Delors Institute Berlin, Bertelsmann Stiftung. Retrieved from: https://www.bertelsmann-stiftung.de/de/publikationen/publikation/did/missions-for-eu-innovation-policy-why-the-right-set-up-matters/.

Wamser, G., Nam, C. W. and Schoenberg, A. (2013). The Lisbon agenda and innovation-oriented cohesion policy: A new challenge for economic integration among the EU regions. Journal of Economic Integration 28(1), 37-58.

Address | Contact

Bertelsmann Stiftung
Carl-Bertelsmann-Straße 256
33311 Gütersloh
Telephone +49 5241 81-0

Dr. Katharina Gnath
Senior Project Manager
Programme Europe's Future
Telephone +49 5241 81-81183
Fax +49 5241 81-681183
katharina.gnath@bertelsmann-stiftung.de

www.bertelsmann-stiftung.de

BertelsmannStiftung