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R&D and Innovation Support in the Evolving EU Cohesion Policy

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Economic convergence among regions is one of the major political objectives of the European Union. Article 174 of the Treaty on the Functioning of the European Union states that "the Union shall aim at reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions" (European Union 2012). Consequently, around one third of the EU budget is presently dedicated to the European Structural and Investment Funds that implements the EU's cohesion policy and distributed mainly to regions with a per capita GDP of less than 75 percent of the EU average. While the general idea of fostering economic growth in disadvantaged regions has remained constant over time, the focus and measures of the EU's cohesion policy have changed significantly from one EU budget period to another.

In the following, we provide an overview of how EU cohesion policy has evolved over time, and how the changing economic environment has provoked adjustments of priorities from one EU budget period to another. We then focus on how the EU's expenditure on cohesion policy has changed as a result of adjustments to cohesion policy priorities. We conclude that, apart from some institutional weaknesses related to the steadily changing promotion activities and eligible areas, as well as violation of the subsidiarity principle when developing strategies, a lack of transparency hinders an exact assessment of how much the EU actually spends on cohesion policies in total and makes it rather difficult to compare cohesion policy spending across the different EU budget periods. In order to obtain further insights, we investigate how a particular measure – innovation promotion – changed for a selected group of countries – Italy and Spain – at the NUTS 2 level from 2000 to 2020. The data confirm two objections against the EU's convergence policies that already emerge when strategic changes from one EU budget period to another are more closely examined. Firstly, we find considerable fluctuations in contributions for regions over time, which is difficult to reconcile with the long-term goal of increasing growth *via* innovation and R&D. Secondly, the very aim of the EU cohesion policy seems to be impaired by the recent focus on innovation and R&D, simply because more prosperous regions offer higher potential for innovative projects that are likely to gain support from the EU.

CHANGES IN EU COHESION POLICY PRIORITIES OVER TIME

In the Treaty of Establishing the European Community signed in 1957, economic and social cohesion is defined in terms of reducing regional disparities in the level of development, usually measured by GDP per capita (relative to the EU average) in purchasing power parities (Yin and Zestos 2003). To achieve this aim, the European Structural and Investment Funds (ESIF) were established, which comprise the European Regional Development Fund (ERDF), the European Social Fund (ESF), the Cohesion Fund (CF), the European Agricultural Fund for Rural Development (EAFRD) and the European Maritime and Fisheries Fund (EMFF). As already mentioned above, total cohesion policy expenditure in the 2014-2020 period amounts to 351.8 billion euros which constitutes 32.5 percent of the overall EU budget.

The objectives of the European Structural and Investment Funds have been adjusted from time to time in response to changes in the overall strategy of the European Union. The budget period from 2000-2006 was characterised by a redistribution-oriented EU cohesion policy that focused on the economic growth of disadvantaged EU regions to promote convergence within the EU. Financial supports from Structural Funds were mainly concentrated on infrastructure and human capital development (European Commission 2004).

As a timely response to slow economic growth in the EU, the Lisbon Agenda agreed by EU leaders at the Lisbon summit in March 2000 aims to make the EU a more competitive and dynamic knowledge-based economy, capable of sustainable economic growth with more and better jobs and greater social cohesion.[1] In part, this political idea emerged due to a less clear consensus on the impact of 'past, redistribution-oriented' EU cohesion policy on the economic growth of EU regions and convergence in the EU (Leonardi 2006; EEAG 2018). EU regional policymakers have taken into account that regional growth is stimulated by the existence of numerous industries in the rapid-growth phase of the product life-cycle, and is retarded by the strong presence of old declining industries, which is associated with a lower level of new technology introduction (Grossman and Helpman 1991). As a result, the promotion of regional innovation systems has become one of the main EU policy measures for guaranteeing the sustainable economic growth of a region under the Lisbon Agenda. The role of regional

[1] In particular, it was agreed that to achieve this goal, an overall strategy should be applied, aimed at (a) preparing the transition to a knowledge-based economy and society *via* better policies for the information society and R&D, as well as by stepping up the process of structural reform for competitiveness and innovation and by completing the internal market; (b) modernising the European social model, investing in people and combating social exclusion; and (c) sustaining the healthy economic outlook and favourable growth prospects by applying an appropriate macro-economic policy mix (http://www.euractiv.com/future-eu/lisbon-agenda/article-117510).

innovation systems in particular was seen as a kind of self-help and learning tool for triggering local, self-sustained growth dynamics, especially targeted at peripheral regions, which would, in turn, help these less-favoured regions to catch up with core regions (De Bruijn and Lagendijk 2005).[2]

According to the overall EU financial budget, the main fields of investment and their relative shares of funding were classified into: (a) knowledge and innovation: almost 83 billion euros (24 percent of total 347 billion euros) were spent on research centers and infrastructure, technology transfer and innovation in firms, and the development and diffusion of information and communication technologies; (b) transport: about 76 billion euros (22 percent) had been allocated to improving the accessibility of regions, supporting trans-European networks, and investing in environmentally sustainable transport facilities in urban areas in particular; (c) environmental protection and risk prevention: investments of around 51 billion euros (19 percent) finance water and waste-treatment infrastructures, the decontamination of land in order to prepare it for new economic use, and protection against environmental risks; and (d) human resources: around 76 billion euros (22 percent) were spent on education, training, employment and social inclusion schemes. Other interventions concern the promotion of entrepreneurship, energy networks and efficiency, urban and rural regeneration, tourism, culture and strengthening the institutional capacity of public administrations (European Commission 2008).

Compared to the cohesion policy budget for the 2000-2006 period, with a total amount of 234 billion euros, Table 1 indicates that in the period of 2007–2013: (i) the share of funding spent on promoting less-favorable EU regions increased from 75 percent to 82 percent in the course of EU expansion from 15 to 27 countries; (ii) infrastructure support also gained importance and was increased from 32 percent to 37 percent; (iii) yet the share of funds spent on promoting education and training has been reduced remarkably from 31 percent to 22 percent; and (iv) a movement of financial priority took place from the promotion of firms' production and cooperation activities, including the establishment and innovation (EU budget 2000–2006) to knowledge-innovation (EU budget 2007–2013).

Since 2008, the EU has faced the global financial crisis and the Eurozone debt crisis, which has created persistent economic and social imbalances, for example, the high unemployment widespread in Southern European countries.[3] As a result, the EU cohesion policy for the 2014-2020 aims to promote job creation and business competitiveness, stimulate economic growth and sustainable development and, finally, enhance inhabitants' quality of life. In response to the crisis, cohesion policy now targets 'all' regions and cities in the European Union – in contrast to previous periods. Internally, the funds aim to simplify the rules and improve accountability by clear and measurable targets (European Commission 2014).

In order to achieve these goals in all EU regions in this budget period the cohesion policy (funded to the tune of 351.8 billion euros) is designed to provide the necessary 'investment framework to achieve the smart, sustainable and inclusive growth in the EU' set out in the Europe 2020 strategy.[4] The five main targets of this strategy include:

1. Employment: 75 percent of the 20-64 year-olds to be employed
2. Research & development: 3 percent of the EU's GDP to be invested in R&D
3. Climate change and energy sustainability: (a) greenhouse gas emissions to be reduced by 20 percent (or even by 30 percent, if the conditions are right); (b) the share of renewable energy in final energy consumption to be increased to

[2] The EU policy measures shall include the "generation, dissemination and use of knowledge [are] critical to the way in which businesses operate and grow. Facilitating access to finance and markets, promoting business support services, reinforcing links between enterprises and the scientific base, equipping people with the right skills through education and training, encouraging the take-up of new technologies and increasing investment in R&D are all crucial to improving the business environment and stimulating innovation [as well as economic growth and job creation in the lagging EU regions]" (European Commission 2004, 114).

[3] There is a widespread view that these developments aggravated divergence within the EU and destroyed part of the progress of cohesion policy achieved until then.

[4] See also http://ec.europa.eu/regional_policy/en/policy/what/investment-policy/.

Table 1

EU Budgets for Cohesion Policy for the Periods 2000–2006 and 2007–2013

	EU budget 2000–2006 EU15 (+ EU10 later)	EU budget 2007–2013 EU27
Total amount	234 billion € (100%)	347 billion € (100%)
Promotion of objective 1 (or cohesion) region	175 billion € (75%)	283 billion € (82%)
Infrastructure (mainly transport & environment)	76 billion € (32%)	127 billion € (37%)
Firms' production & cooperation activities (incl. also establishment & innovation)	73 billion € (31%)	
Human resources	73 billion € (31%)	76 billion € (22%)
Knowledge-innovation		*83 billion € (24%)*
Cross-border cooperation & others	12 billion € (5%)	61 billion € (18%)

Source: European Commission, Wamser *et al*. (2013).

20 percent; and (c) increases in energy efficiency by 20 percent
4. Education: (a) reducing the rates of early school leavers below 10 percent; while (b) increasing the share of the population aged 30–34 having completed tertiary to 40 percent
5. Fighting poverty and social exclusion: at least 20 million fewer people in or at risk of poverty and social exclusion.[5]

The types of eligible EU regions are also newly defined: (a) 'Less developed' regions in which GDP per capita is below 75 percent of the EU average, will continue to be the top priority for the policy. The maximum co-financing rate is set at 75–85 percent in the less-developed regions and the outermost regions;[6] (b) 'Transition' regions, whose GDP per capita is between 75 percent and 90 percent of the EU average, will have a co-financing rate of 60 percent; and (c) 'More developed' regions, whose GDP per capita is above 90 percent of the average. The co-financing rate will be 50 percent (European Commission 2014). The concentration of financial supports on the so-called cohesion regions, both less-developed regions and transition regions (former objective 1 regions), for the period 2014–2020 amounts to 'only' 62 percent of the total 351.8 billion euros (European Commission 2014; Nam 2017).

A more detailed assessment of how much the EU actually spends on cohesion policies under the Structural and Investment Funds and its classification according to the promotion activities, regions, etc. is highly difficult given the data available. The EU has defined eleven themes ranging from 'Research & Innovation' to 'Efficient Public Administration' and lists the share of their budgets currently spent in each member country. However, no information on which part of the budget is related to cohesion policies is provided. Additionally, the structure of five funds decreases transparency further. More specifically, this structure comprises of the European Agricultural Fund for Rural Development (EAFRD) and the European Maritime and Fisheries Fund (EMFF), which are not linked to cohesion policy. As the classification of budget positions have changed from one EU budget period to another, it is very hard to compare the development of spending on cohesion policies over time, which is surprising given the European Commission's attempts to improve accountability.

R&D AND INNOVATION PROMOTION PRACTICES IN ITALIAN AND SPANISH REGIONS AMONG DIFFERENT EU COHESION PRIORITIES

To gain further insights, we study how particular policies – innovation promotion – have changed for regions in Italy and Spain from 2000 to 2020. The policy priority of promoting regional innovation systems was reflected

[5] See https://ec.europa.eu/info/strategy/european-semester_en.

[6] Basically, the EU only provides financial support for regional projects if national authorities are also financially involved. Such a 'matching co-finance principle' (or the so-called 'additionality principle') aims to ensure the complementary relationship between the fund providers in the context of the EU cohesion policy (Nam and Wamser 2011).

Table 2

R&D and Innovation Promotion in Italian NUTS 2 Regions in the Context of EU Cohesion Policy

Italian NUTS 2 regions	Budget year 2000–2006	Budget year 2007–2013	Budget year 2014–2020
	Innovation promotion as a %-share of total public contributions [d]	Innovation promotion as a %-share of total public contributions [d]	Innovation promotion as a %-share of total public contributions [d]
Abruzzo [a,c]	30.5	39.4	19.4
Aosta Valley	0.0	30.6	21.0
Apulia [a,b]	0.0	11.1	na
Basilicata [a,b]	0.0	22.3	na
Calabria [a,b]	0.0	10.0	8.8
Campania [a,b]	0.0	17.7	12.5
Emilia-Romagna	38.6	53.0	29.2
Friuli-Venezia Giulia	43.5	45.5	na
Lazio	0.0	34.3	19.7
Liguria	33.0	27.0	20.4
Lombardy	31.6	49.4	36.0
Marche	38.0	41.5	33.8
Molise [a,c]	0.0	39.4	na
Piedmont	50.3	46.2	36.7
Province of Bolzano-Bozen	0.0	36.0	24.0
Province of Trento	0.0	0.0	50.5
Sardinia [a,c]	0.0	27.0	13.8
Sicily [a,b]	0.0	5.0	na
Tuscany	39.9	35.6	31.9
Umbria	36.5	46.0	28.6
Veneto	0.0	41.9	19.0

Notes: [a] = Objective 1 regions defined in the framework of the EU Regional Development Programs 2000-2006; [b] = Less developed regions defined in the framework of the EU cohesion policy 2014–2020; [c] = Transition regions defined in the framework of the EU cohesion policy 2014–2020; [d] = EU contribution + national contribution; na = not available.
Source: European Commission.

Table 3

R&D and Innovation Promotion in Spanish NUTS 2 Regions in the Context of EU Cohesion Policy

Spanish NUTS 2 regions	Budget year 2000–2006	Budget year 2007–2013	Budget year 2014–2020
	Innovation promotion as a %-share of total public contributions [d]	Innovation promotion as a %-share of total public contributions [d]	Innovation promotion as a %-share of total public contributions [d]
Castile-La Mancha [a,c]	1.9	25.7	39.5
Canary Islands [a,c]	4.2	16.3	24.2
Castile and Léon [a]	2.7	36.3	na
Extremadura [a,b]	4.4	23.5	34.0
Murcia [a,c]	3.4	30.8	30.6
Asturias [a]	2.2	35.2	25.3
Ceuta [a]	0.0	16.9	0.0
Melilla [a,c]	0.0	20.3	0.0
La Rioja	26.7	80.0	na
Andalusia [a,c]	3.0	27.2	15.0
Valencia [a]	9.3	41.0	53.0
Galicia [a]	14.7	24.7	na
Basque Country	32.7	72.0	44.6
Catalonia	29.5	51.6	40.9
Navarre	42.1	90.4	na
Aragon	33.9	81.0	na
Balearic Islands	26.9	56.2	16.0
Madrid	36.9	61.7	na
Cantabria	6.6	79.8	20.0

Notes: [a] = Objective 1 regions defined in the framework of the EU Regional Development Programs 2000–2006; [b] = Less developed regions defined in the framework of the EU cohesion policy 2014–2020; [c] = Transition regions defined in the framework of the EU cohesion policy 2014–2020; [d] = EU contribution + national contribution; na = not available.
Source: European Commission; Nam (2017).

for the first time in the cohesion policy programme for the period 2007–2013, and has since been enforced by targeting 'all' regions, as already mentioned above. The R&D and innovation promotion scheme implemented in the EU cohesion policy framework basically comprises and compounds the following measures: (a) financial support for the innovation activities of firms (in particular SMEs); (b) promotion of public R&D capacity expansion (universities and technology centers); and (c) support for projects aimed at the creation and (better) establishment of regional innovation system (i.e. cluster formation, networking and knowledge transfers).

The EU reports the total cost of regional programmes and the respective EU contribution at the NUTS 2 level for operational programmes officially adopted by the European Commission at the beginning of the budget years.[7] These programmes were prepared by each EU member state and present the weights of financial priorities (e.g. infrastructure, innovation, human capital, environment, etc.) set by the national and regional authorities for the corresponding budget period. Tables 2 and 3 compare the share of R&D and innovation promotion grants aimed at all three aforementioned categories – measured in terms of the national and EU sum of innovation support divided by the total cost of the regional programme – for the individual Italian and Spanish NUTS 2 regions in different EU budget periods.

The descriptive evidence of R&D and innovation promotion in Italy and Spain confirms two objections against the EU's convergence policies that already emerged in discussions of the strategic changes from one budget period to another. As evident from Tables 2 and 3, the share of total public contributions dedicated to the promotion of innovation fluctuates considerably over time for most regions. An immediate explanation for this pattern is the continuous revision of the EU cohesion policy's priorities due to changing macroeconomic circumstances and the subsequent, most immediate economic problems (e.g. the Lisbon treaty as a reaction to the EU's stagnating economic growth; the negative impact of the 2009 financial crisis on the EU regions). While such flexibility in policy design and implementation may certainly be deemed appropriate for addressing current needs, it is difficult to reconcile with the long-term goal of increasing growth *via* innovation and R&D. Thus the EU regional policy does not seem to be coherent over time in the field of innovation promotion in the Italian and Spanish NUT 2 regions considered here.

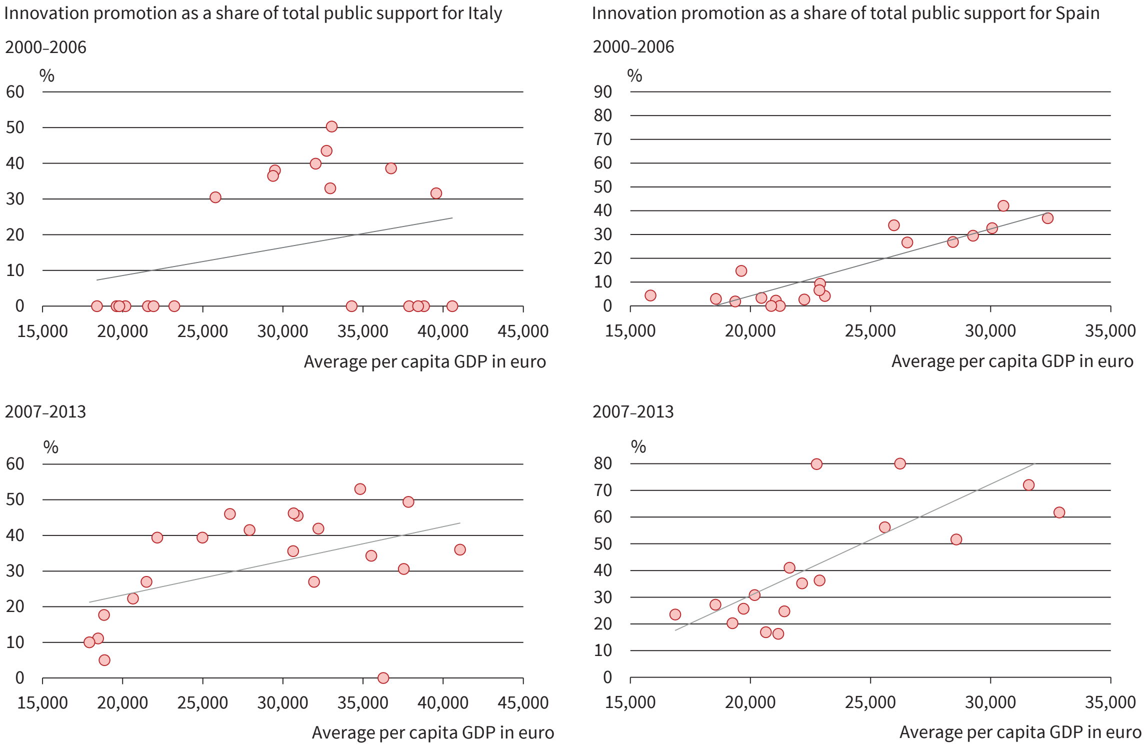
In Figures 1, we plot the average per capita income of a region (in Italy and Spain) during an EU budget period against the share of total public contributions, which is dedicated to the promotion of innovation.[8] The evidence suggests that prosperous regions obtain a higher share of public contributions than before due to the focus on innovation and R&D following the Lisbon strategy. The integration of the Lisbon strategy in the EU regional policy appears to have created some tensions between competitiveness aims and cohesion aspirations. These tensions have become even more

[7] See http://ec.europa.eu/regional_policy/en/atlas/programmes/.

[8] We only consider the periods 2000 to 2006 and 2007 to 2013, as too much data is missing for the current period.

Figure 1

Innovation Promotion in Selected European Regions Under Different EU Budget Periods



Source: European Commission; own calculations.

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prevalent in the current budget period, as cohesion policy now targets 'all' regions and cities in the European Union in response to widespread economic problems as a result of the recent crisis in Europe. According to Lawton-Smith (2003), the twin goals of increasing competitiveness in the global economy and economic and social convergence are contradictory and inherently comprise different policy options: the former is generally about 'winners and losers', while the other is about 'redistribution'. First of all, there is a trade-off between growth and cohesion, as different core and periphery growth trends tend to increase regional disparities at low levels of development. Secondly, while cohesion policy primarily aims to enable low performing regions to catch up to the core regions in the EU, the promotion of competitiveness triggered since the Lisbon Agenda seems to strengthen the competitiveness of the best performing regions. While this effect was already observed in the 2007–2013 period, the new priorities of the current EU budget period seems to have enforced this development, which works against the goal of reducing the economic, social and territorial disparities that still exist.

CONCLUSION

EU cohesion policy has been continuously revised under consideration of changing macroeconomic circumstances and the subsequent, most immediate economic problems (e.g. the Lisbon treaty as a reaction to the EU's stagnating economic growth; the negative impact of the 2009 financial crisis on the EU regions). Such flexibility in policy design and implementation may certainly be deemed appropriate and necessary. Yet the EU regional policy and its emphasis in different budget periods do not appear to have been coherent. While cohesion policy originally aimed at enabling poorly performing regions to catch up to core regions in the EU, the R&D and innovation promotion triggered by the Lisbon Agenda and Europe 2020 seems to have strengthened the competitiveness of strongly-performing regions in the EU. Innovation efforts in the less affluent EU regions with a traditional socio-economic structure have remained in vain to date, mainly due to the limited vision of firms caused by their concentration on local markets, their weak capacity to absorb new ideas and technologies, limited levels of entrepreneurship, their lack of access to local research and knowledge transfer networks, etc. (see also Wamser *et al.* 2013)

In addition, the design and implementation of EU cohesion policy should ideally have a stronger regional (i.e. 'bottom-up') dimension, endowed with a multi-level governance structure to accommodate it. While all projects are planned and implemented at the regional or local level, the EU only co-finances policy projects that are in line with the pre-defined priorities. The Lisbon Agenda and Europe 2020 were imposed top-down on EU members with targets that are more macro- than micro-economic, and therefore have an overriding national dimension – a fact that clearly violates the subsidiarity principle (see also De Propris 2007).

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