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One or many Cohesion Policies of the European Union? On the differential economic impacts of Cohesion Policy across member states

Riccardo Crescenzi[a] and Mara Giua[b]

ABSTRACT

To what extent do regions in different member states of the European Union benefit from Cohesion Policy? A spatial regression discontinuity design approach offers distinct but fully comparable estimates of regional impacts for each individual member state. Cohesion Policy has a positive European Union-wide impact on regional growth and employment. However, a large part of the growth bonus is concentrated in Germany, while impacts on employment are confined to the UK. The picture in Southern Europe is less rosy. In Italy, positive impacts on employment do not survive the Great Recession, while in Spain economic growth benefits are limited to the recovery period.

KEYWORDS

Cohesion Policy; European Union; regions; growth; employment

JEL O18, R11, R58

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INTRODUCTION

Since the late 1980s, the asymmetric spatial distribution of the benefits of the process of European economic integration became progressively more apparent. At the same time the enlargement of the European Union (EU) to Greece, Portugal and Spain reinforced the call for collective action in favour of regions whose economic development was significantly below the average. An EU-level policy seemed the best response to an EU-wide challenge, acting as an internal redistributive mechanism able to serve the double political purpose of: (1) compensating less developed regions for their reduced ability to benefit from the Single Market; and (2) maintain politically sustainable net contributions to the EU budget for countries (such as Spain, Portugal and the UK) gaining limited financial benefits from the Common Agricultural Policy (CAP) (at the time modelled upon the needs of French and German farmers).

In this context, Cohesion Policy has become one of the cornerstone policies of the EU, today accounting for one-third of the total EU budget (European Commission, 2017). The number of beneficiary regions has also increased with the progressive enlargement of the EU to new member states. The set of objectives Cohesion Policy is intended to serve has also increased in the framework of the overarching EU strategy for growth and jobs (Europe 2020) and in response to the Great Recession. The governance of Cohesion Policy has also evolved with a diversified engagement of local, regional, national and EU-level authorities at different stages of the policy design, implementation and evaluation (Mendez, 2011). Notwithstanding the sustained efforts of the European Commission towards simplification and thematic concentration, the complexity of the programmes funded under the Cohesion Policy umbrella has grown exponentially as well as the institutional and managerial capacity needed for the implementation of the corresponding projects (Mairate, 2006). In addition, the practical returns in terms of additional local economic impacts of the 'place-based approach' introduced on the basis of the recommendations of the Barca Report (Barca, 2009) are still hard to evaluate.

The high-level political debates on the post-2020 EU Budget have called into question the survival of Cohesion Policy as an EU-level policy. The probable departure of the UK – a net contributor to the EU budget – from the

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EU together with the mounting pressure from nationalistic and Euro-sceptic parties in many member states have forced a 360-degree reconsideration of the value added of all EU policies (Crescenzi, Di Cataldo, & Giua, 2019a; Crescenzi, Fratesi, & Monastiriotis, 2019b). Various proposals have been put forward for post-2020 EU policies, including an increase in the national co-financing of agricultural subsidies and a renationalization of Cohesion Policy in order to 'drop some pan-European policies and "do less more efficiently"' (statement by Jean-Claude Juncker, European Commission President) (Beesley, 2017).

Changes in the net budget contributions of many member states and the increased public scrutiny on the economic returns to national funds transferred to the EU budget make the assessment of the economic impacts of Cohesion Policy (and their distribution) a key existential factor for this policy area. How (and to what extent) regions in different member states benefit from Cohesion Policy? Are regional impacts persistently diversified across countries? Does it still make sense for all member states to transfer national resources to fund an EU-level regional policy?

These fundamental questions are still unanswered. Most of the existing studies that employ counterfactual techniques in order to identify the impacts of Cohesion Policy conclude that the policy has a positive effect on growth and employment. These same studies also suggest that positive effects are contingent upon several local and policy conditions such as funds absorptive capacity, local context and intensity of treatment. However, all this evidence is only valid for the EU as a whole, with no insights into the country-specific nature of the estimated impacts, their heterogeneity across countries and possible composition effects.

This paper aims to fill this gap by applying counterfactual methods to estimate how economic impacts of Cohesion Policy vary across countries, unveiling if (and to what extent) the regions of some member states benefit from Cohesion Policy persistently more than others. It relies on a spatial regression discontinuity design (RDD), leveraging as threshold for the treatment the spatial boundaries (*policy-change boundaries*) between Objective 1 regions (treated) and non-Objective 1 regions (non-treated). Following this approach, different thresholds can be identified in each country with Objective 1 and non-Objective 1 regions. This makes it possible to construct different (but fully comparable) counterfactual scenarios in different countries and reproduce the same identification strategy in each country while preserving EU-wide comparability of the results. For each country, this RDD approach compares economic outcomes (economic growth and employment) of the treated and non-treated NUTS3 regions sharing a policy-change boundary. Contrary to existing RDD studies that could only estimate a single EU-wide 'impact' coefficient (leveraging the eligibility threshold of a regional gross domestic product (GDP) < 75% of the EU average GDP), the innovative spatial RDD approach makes it possible to 'unpack' the aggregate impact of Cohesion Policy and estimate individual fully comparable coefficients for Germany, Italy, Spain and the UK both before and after the Great Recession. By using the spatial RDD to net out the estimations from any confounding factor influencing the policy's impact within the country, any differences in the estimated coefficients across member states can be ascribed to country-specific aspects related to national-level specificities in quality of governance and/or implementation models.

The analysis of the NUTS-3 regions for Germany, Italy, Spain and the UK suggests that EU Cohesion Policy works differently in different member states, with very heterogeneous country-specific economic impacts. The results show that Cohesion Policy has exerted a positive and significant EU-wide impact on both regional economic growth and employment. However, regional economic impacts are not evenly distributed across member states. A large part of the regional growth bonus generated by Cohesion Policy is concentrated in Germany. Conversely, impacts on regional employment are confined to the UK. The picture for beneficiary regions in Southern European member states is less rosy. In Italy, impacts are short-lived: the positive impacts on employment did not survive the Great Recession. Conversely, in Spain, economic growth benefits emerge only in the recovery period with no relief on structural unemployment problems. National macro-institutional factors play a key role in shaping heterogeneous returns from Cohesion Policy. These results offer an innovative contribution to the debate on the economic value added of a supra-national EU-wide approach to the design and implementation of public policies and on the optimal degree of flexibility among member states (Henke et al., 2018). The evidence suggests that the place-based approach popularized by the Barca Report (Barca, 2009) needs to be balanced by new responsibilities and empowerment of individual member states. Some national models of intervention are indeed effective and impactful; others are not. Where performance is more disappointing, member states should take full responsibility and be empowered to act accordingly. This would also counteract the 'blame Brussels' rhetoric that has dominated the campaign for the 2019 European elections in many countries.

EXISTING EVIDENCE AND KEY GAPS

The link between Cohesion Policy and territorial performance has been studied from different perspectives, with different methodologies, with reference to different spatial scales and time horizons (Molle, 2007). The literature is now vast but still far from a consensus on the overall impact of the policy on economic territorial cohesion[1] in particular with reference to what would have happened to the most disadvantaged areas of the EU in absence of an EU-wide Cohesion Policy (European Commission, 2014).

The most recent wave of studies on the impacts of Cohesion Policy has approached the definition of a suitable counterfactual scenario by adopting treatment effect methods. Policy impacts, for example, in terms of economic growth and employment, are netted out from the

confounding influence of all other characteristics of the territorial ecosystem in which the policy effect of interest is embedded.

A large part of the studies in this research stream conclude that EU-wide impacts have been positive on economic growth and employment (Becker, Egger, & von Ehrlich, 2010, 2013; Pellegrini, Busillo, Muccigrosso, Tarola, & Terribile, 2013) and on innovation and transport infrastructure (Ferrara, McCann, Pellegrini, Stelder, & Terribile, 2017). The heterogeneity of these impacts has also been investigated, suggesting that economic impacts depend on the local quality of government (Accetturo, de Blasio, & Ricci, 2014), on expenditure intensity (Cerqua & Pellegrini, 2017), on regional contextual conditions (Bachtrögler, Fratesi, & Perucca, 2019, in this issue) or on the sectorial structure of the local economy (Percoco, 2017).

However, all existing evidence is valid only at the EU aggregated level. All existing studies leverage the EU-wide eligibility threshold for the assignment of the status of 'most disadvantaged region'[2] (namely Objective 1, convergence or less developed regions in different programming periods) that grants access to the large majority of Cohesion Policy funds. These studies compare regions (at the NUTS-2 level) whose GDP levels are close to the eligibility threshold. The assumption is that these regions are similar in all characteristics except for receiving (for those with a GDP below the threshold) or not (for those with a GDP above the threshold) Cohesion Policy funding. This identification strategy leverages a single threshold associated with a single joint control group composed by all EU regions with similar levels of regional GDP. Regions whose GDP is slightly above the 75% threshold and belonging, for instance, to Italy are compared with other regions whose GDP is marginally below this same threshold but which belong to Germany, or Spain or any other EU member state. With this approach, a single aggregate coefficient has been estimated, capturing the net impact achieved by Cohesion Policy (treatment) for the most disadvantaged regions in Europe as a whole (i.e., on the joint EU-wide-treated group). Therefore, the estimated economic impact (positive, negative or absent) is the impact achieved by Cohesion Policy for the whole EU.

On the other side of the spectrum, the existing literature has relied on counterfactual methods in order to estimate the impact of Cohesion Policy in individual EU countries. Mitze, Paloyo, and Björn (2012) look at the effect of regional subsidies on labour productivity growth in Germany, concluding that they are effective, but only up to a certain maximum treatment intensity; Bondonio and Greenbaum (2014) focus on firm-level effects in a large northern Italian region showing that the magnitude of the estimated effects is increasing in the economic value of the incentives; Barone, David, and de Blasio (2016) look at the case of Abruzzo (Italy) to study the long-term effects of EU regional policy, concluding that the policy fails to move treated regions towards a persistently higher GDP growth path; Di Cataldo (2017) studies the impact of EU funding in the UK, suggesting a positive effect of EU Objective 1 funds in terms of jobs and economic performance; Giua (2017) focuses on the Italian Mezzogiorno, estimating positive effects of the EU regional policy on regional employment. These country-level quantitative case studies are based on different identification strategies, rely on different measures of output (with different data sources) as well as heterogeneous territorial definitions/spatial units of analysis, preventing any comparability of the results across member states. At the same time, these studies have shed a light on substantial differences across countries in terms of impacts and on the importance of country-specific factors in conditioning success and failure. Taken together, single-country counterfactual studies confirm the conclusions of other relevant streams of research on Cohesion Policy (Medeiros, 2017): EU-wide aggregated results might average out important differences and mask significant country-level heterogeneity and composition effects.

Therefore, a fundamental question at the very centre of the current policy debate remains open: Are (positive) regional economic impacts persistently diversified across countries?

A suitable empirical strategy able to answer this question needs to meet three criteria. First – in line with both streams of research reviewed above – it should keep 'confounding factors' under control by means of an appropriate counterfactual. Second, it needs to estimate separated impacts for each individual country. Third, the estimated country-specific impact coefficients should reflect exactly the same identification approach, thus remaining fully comparable across countries (i.e., differences in impacts across countries should not depend upon difference between the control groups).

In order to satisfy these three conditions simultaneously, we need to estimate the Cohesion Policy impacts on economic growth and employment in the regions of each country separately while relying on the same identification strategy. Results based on traditional RDD settings leveraging the 75% eligibility threshold are still valid when regions across the entire EU can be matched and compared according to the value of the forcing variable. However, this approach is less helpful in a setting where observations to be compared are bound to belong to the same country (in order to produce country-specific estimates). If only regions belonging to the same country and with very similar GDP per capita levels (forcing variable) can be compared, a sharp decrease in the number of possible comparisons makes the estimation of the country-specific treatment effects impossible. In addition, even when NUTS-3 regions are chosen as spatial unit of analysis (increasing the number of observations available in each country), the forcing variable would still not vary within the same NUTS-2 region given that eligibility for Cohesion Policy funds is granted at the NUTS-2 level (i.e., all NUTS-3 regions belonging to the same NUTS-2 region would still be assigned the same value of the forcing variable).

A solution enabling country-specific estimations comes – in this paper – from a spatial RDD: the geographical coordinates of eligible and non-eligible areas are used as

a forcing variable for the identification of policy impacts. This spatial approach to the identification of policy impacts has been extensively used in other fields of policy evaluation (Black, 1999; de Blasio & Poy, 2017; Dell, 2010; Einio & Overman, 2012; Gibbons, Machin, & Silva, 2013; Holmes, 1998; Jofre-Monseny, 2014; Menon & Giacomelli, 2017; Papaioannu & Michalopoulos, 2014), although only marginally employed for the analysis of EU Cohesion Policy (Giua, 2017, for the case of Italy).

In general, the identification assumptions under the spatial RDD is that at the cut-off of the distribution (boundary), treated and non-treated observations (spatial units) are similar in everything except for treatment (balancing properties). Spatial RDD analyses normally take two different approaches: border strategies or RDD polynomial specification with spatial forcing variables (distance from the boundary or geographical coordinates). The first approach focuses on the narrowest possible spatial window around the discontinuity (non-parametric approach). The 'as good as random' scenario in which observable (and unobservable) characteristics are smoothly distributed across treated and untreated observations includes only the spatial units that are directly contiguous to the geographical boundary (on both sides) that divides treated and the untreated areas to be compared. Conversely, with the second approach, the treatment and control groups include all spatial units belonging to the treated and the untreated areas respectively, using distance from the eligibility border or geographical coordinates as continuous forcing variables as standard in the parametric approach to RDD (Lee & Lemieux, 2010).

This paper leverages the latter approach and uses a spatial RDD approach in order to identify fully comparable country-specific estimates of the regional impacts of Cohesion Policy.

EMPIRICAL STRATEGY

In order to identify comparable national-level effects, we look at the spatial structure of EU Cohesion Policy: the same discontinuity (Objective 1 versus non-Objective 1 regions) is captured by all administrative spatial boundaries between Objective 1 and non-Objective 1 regions (policy-change boundaries). Since these boundaries run across each individual country, we can construct separate counterfactual scenarios for each country and estimate the same RDD model in each of them. The policy-change boundaries all respond to the same policy discontinuity (they are the thresholds between Objective 1 and non-Objective 1 regions), thus the coefficients that we will estimate are fully comparable.

The policy-change boundaries relevant to the present analysis are the administrative boundaries between Objective 1 and non-Objective 1 NUTS-2 regions that, for the 2000–06 policy Programming Period, can be identified in Austria, Belgium, Finland, Germany, Italy, Spain and the UK (Figure 1). The analysis necessarily excludes: countries that are entirely eligible for Objective 1 status (e.g., Portugal, Greece); that do not have suitable spatial

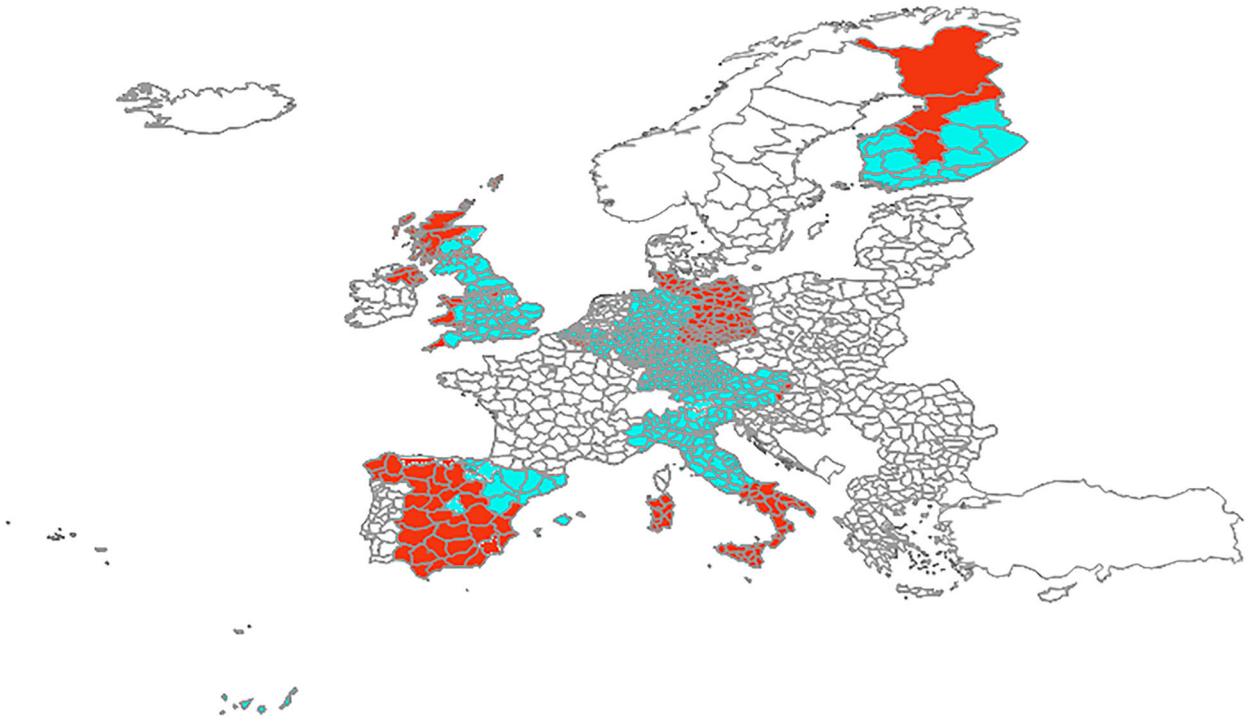

Figure 1. Country-specific counterfactual scenarios.
Note: Treated NUTS-3 regions (belonging to Objective 1 regions according to the 2000–06 Cohesion Policy eligibility criteria) are shown in red; counterfactual NUTS-3 regions are shown in blue.
Source: Authors' elaboration on Eurostat and European Commission data.

boundaries (for instance, the only treated areas in France are the Overseas territories that do not share any physical border with non-Objective 1 regions); or countries where eligibility is grated at a different spatial scale (for instance, the Flevoland area in the Netherlands).[3]

In line with the spatial RDD literature, for each policy-change boundary, the NUTS-3 regions belonging to treated and non-treated NUTS-2 regions are matched with each other according to the geo-coordinates of their centroids (source: Eurostat), that is, the forcing variable in parametric spatial RDD models.[4]

The policy treatment is represented by the Objective 1 status during the 2000–06 programming period, which is captured by a dummy that takes a value of 1 for those NUTS-3 belonging to an Objective 1 NUTS-2 region.

In order to account for the medium-run nature of policy impacts, we look at impacts over the 2000–14 period. This assessment period is divided into two subperiods. The first is the shortest-run possible period to assess the ex-post impact of Cohesion Policy following the end of the programming period in 2006. This first subperiod covers the entire time span of the policy implementation, taking into account that expenditure was allowed for up to two additional years after the end of the programming year (and that, indeed, many countries concentrated a significant part of their actual expenditure toward the final years of the programming period; European Commission, 2014). Therefore, it goes from 2000 to 2010 (i.e., 2006 plus two years of additional implementation plus a two-year time lag to allow for the short-run effects of the policy to emerge). This first subperiod – which aligns this study to other empirical work on the impact of Cohesion Policy – includes the very initial years of the Great Recession offering insights on the capacity of the policy to truly address regional structural resilience factors during the crisis (Crescenzi, Luca, & Milio, 2016).

The second subperiod covers the more medium-run effects of Cohesion Policy by focusing on the 2010–14 period that also coincides with the recovery phase following the Great Recession. The Great Recession has presented major challenges, in particular in the disadvantaged areas of the European Union (European Commission, 2014), deserving special attention in the analysis of the policy impacts.

Economic impacts are analysed with reference to the main intended outcomes of the policy: regional economic growth and employment. By using Cambridge Econometrics data, we consider as dependent variables changes in: (1) regional gross value added (as a proxy for economic growth available in a time series running up to the 2014); and (2) employees in the manufacturing sector (as a proxy for regional employment).[5] In both cases, the variables are expressed in logarithmic growth rates for the two periods of interest.

Country-specific economic impacts are estimated by means of the model specified in equation (1) in each country-specific scenario for Germany, Italy, Spain and the UK.[6] We run model 1 also for the aggregated sample (estimating an EU-wide coefficient) in order to check the coherence of the results with other existing studies:

$$\Delta y_{it} = \beta_0 + \beta_1 \text{Policy}_{i,00-06} + \text{Policy}_{i,00-06} \sum_{\rho=1}^{3} \gamma \, \text{coord}_i + \theta \, \text{border}_i + \epsilon_{it} \quad (1)$$

where i is the NUTS-3 region; t is the temporal window (2000–10 for the first subperiod; 2010–14 for the second subperiod); the dependent variable Δy stands for the logarithmic growth rates in regional gross value added and in manufacturing sector employment; 'Policy' is the Objective 1 dummy; and 'Coord' (i.e., longitude and latitude coordinates of the NUTS-3 centroids) is the spatial forcing variable, which takes a polynomial specification (with a polynomial degree of up to order 3 allowed to vary differently on the two sides of the cut-off) – this is also interacted with the treatment dummy (Lee & Lemieux, 2010). In line with the most recent RDD literature, the forcing variable best specification is selected according to the Akaike information criterion (AIC). Finally, the model includes a set of segment dummies ('border') that groups NUTS-3 sharing the same segment of the policy-change boundary: within each country the policy-change boundary is composed by several segments, separating different regions. This ensures that the selected policy-change boundary does not coincide with individual regional boundaries, contributing to minimize the risk that other regional conditions might change in a statistically significant manner at the cut-off together with the treatment.

The balancing properties confirm that all observable characteristics (for which data are available at this spatial scale) are equally distributed across the policy-change boundary (Table 1): almost all the coefficients estimated by the regression of the Objective 1 dummy on the cross-border covariates according to the specification selected for model 1 are not significant. This suggests that all regional characteristics – except for the treatment assignment – are smoothly distributed across treated (Objective 1) and non-treated (non-Objective 1) NUTS-3 regions and the discontinuity associated to the policy-change boundaries is related exclusively to the treatment. The evidence is confirmed also by other customary tests performed in order to verify the exogeneity of the threshold (see Appendix A in the supplemental data online). In addition, usual concerns that commonly apply to RDD analysis (i.e., the hypothesis of non-manipulation around the cut-off[7]) do not affect the estimates: NUTS-3 belonging to non-treated NUTS-2 cannot put in place active strategies in order to be reassigned to treated NUTS-2 regions.

The quasi-experimental properties of the counterfactual scenarios confirm that the proposed empirical strategy makes it possible to compare NUTS-3 regions that are similar in everything except for being treated (or not). The confounding influence of any unobservable factors that might be correlated to the policy's effect at a subnational level is removed from the estimates by the proposed

Table 1. Balancing properties for the baseline covariates (pretreatment year).

	Europe	Germany	Italy	Spain	UK
Population change	0.0001	−0.0001	0.0002	0.0004	−0.0004
	(0.0007)	(0.0001)	(0.0001)	(0.0004)	(0.0003)
Natural population growth rate	−0.0008	−0.0001	0.0008*	0.0001	−0.0001
	(0.0035)	(0.0001)	(0.0003)	(0.0002)	(0.0001)
Migration rate	−0.0056	0.0002	0.0001	−0.0007	0.0006
	(0.0039)	(0.0003)	(0.0001)	(0.0004)	(0.0009)
Agricultural share	−0.0041	0.0002	0.0001**	0.0001*	−0.0001*
	(0.0034)	(0.0003)	(0.0000)	(0.0000)	(0.0000)
Service share	0.0020	−0.0001	0.0002	0.0001	0.0001
	(0.0012)	(0.0001)	(0.0007)	(0.0005)	(0.0008)
Share of built area	0.0013	−0.0001*	0.0001	−0.0002	−0.0004
	(0.0009)	(0.000)	(0.0001)	(0.0005)	(0.0003)
Vulnerability to climate change	−0.1151	−0.0002	0.0001	0.0001	−0.0005
	(0.0845)	(0.0005)	(0.0001)	(0.0001)	(0.0004)
Photovoltaic	0.0043	−0.0001	0.0002	−0.0001	−0.0000
	(0.0048)	(0.0001)	(0.0006)	(0.0002)	(0.0001)

Notes: Variables are selected under the constraint of the data availability at the NUTS-3 level (we include all variables considered by previous studies and by the European Commission, 2014). Robust standard errors are clustered at the NUTS-2 level. Coefficients are estimated by applying model 1 to evaluate the effect of the pretreatment value of observables on the treatment dummy. The best polynomial degree of the forcing variable is selected according to the Akaike information criterion (AIC) criteria among the nine specifications of model 1 (we estimate the model by considering the polynomial degree of up to degree 3, allowing it to differently vary below and above the cut-off of the forcing variable).
Significance level: $***p < 0.001$; $**p < 0.01$; $*p < 0.05$.

identification strategy. The estimated impacts, therefore, capture the net effect of the policy on country-specific performance in terms of regional growth and employment, excluding the effects of any unobservable factors related to contextual conditions that might change at the subnational level (within-country heterogeneity). Estimated coefficients can be interpreted as comparable measures of how Cohesion Policy has been able to promote regional growth and employment in each national context. The variability across countries is a measure of how the impact of the same policy change across EU member states (cross-country heterogeneity). The different signs and magnitude of the estimated coefficients can be attributed to the *national component* of Cohesion Policy implementation and to the macro-institutional characteristics of the individual countries. The variability of these policy implementation and institutional conditions at the regional level is 'netted out' by the identification strategy,[8] making it possible to univocally to link the observed heterogeneity in impacts to national-level conditions.

HOW DOES THE NET IMPACT OF COHESION POLICY DIFFER ACROSS MEMBER STATES?: COUNTRY-SPECIFIC ESTIMATES

The coefficients estimated with respect to economic growth and employment reported in Table 2 refer to the 2000–10 period and capture the more short-run effects, while Table 3 shows the corresponding results computed for the 2010–14 period. Cohesion Policy has been one of the primary tools leveraged by the EU in order to support recovery after the Great Recession, especially in the most disadvantaged regions. When the impacts of the Great Recession started to unfold itself in the EU regions, significant funding reallocations have been allowed by the European Commission in order to support the most deprived areas of the EU and, in some cases, in order to compensate for cuts in national expenditure in key priority areas. Therefore, by looking at the impacts of Cohesion Policy on economic growth and employment after 2010, we can get a preliminary indication on the extent to which the policy has supported recovery in the regions of different member states.

For each period and dependent variable, the model is estimated both for Europe as a whole (to validate the results of the existing literature) and for each country separately (in order to compute country-specific impacts).

Overall the baseline whole-EU results are in line with the existing literature. We identify a positive effect of Cohesion Policy on economic growth, with both sign and magnitude of the coefficient (Table 2, A) in line with existing estimates (Becker et al., 2010, 2013; Pellegrini et al., 2013). This confirms that EU Cohesion Policy produced an overall positive impact by generating a 'growth bonus' in favour of the most disadvantaged regions of the EU. EU Cohesion Policy has also a positive impact on regional employment levels.[9] Table 2(B) shows that the support of Cohesion Policy to the most disadvantaged regions in Europe made it possible to achieve not only higher economic growth but also higher employment levels.

Table 2. Effects of Cohesion Policy on economic growth and employment (2000–2010).

	Europe	Germany	Italy	Spain	UK
(A) *Y: economic growth*					
Objective 1	0.0036**	0.0354**	0.0295	0.5078	0.0074
	(0.0011)	(0.0118)	(0.0411)	(0.5907)	(0.0451)
R^2	0.183	0.094	0.195	0.360	0.138
Polynomial degree	3–2	3–1	2–1	2–1	1–1
Observations	779	428	87	44	125
(B) *Y: employment*					
Objective 1	0.0045*	9.7737	40.8626**	−78.8229	50.3325**
	(0.0017)	(4.9094)	(12.8633)	(43.9912)	(16.6211)
R^2	0.300	0.154	0.218	0.510	0.177
Polynomial degree	3–1	3–3	2–3	3–3	3–2
Observations	770	421	87	42	125

Notes: Robust standard errors are clustered at the NUTS-2 level. The best polynomial degree of the forcing variable is selected according to the Akaike information criterion (AIC) criteria among the nine specifications of model 1 (we estimate the model by considering the polynomial degree of up to degree 3, allowing it to differently vary below and above the cut-off of the forcing variable). *P*-values of the Wald test of jointly significance of the Objective 1 coefficients are: (A) 0.005 (EU–Germany); 0.033 (EU–Italy); 0.031 (EU–Spain); 0.045 (EU–UK); and (B) 0.012 (EU–Germany); 0.000 (EU–Italy); 0.006 (EU–Spain); 0.045 (EU–UK).
Significance level: ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$.

How are these positive economic impacts distributed across countries? In terms of regional growth, Germany is the big winner from Cohesion Policy. The results show that regional benefits in terms of economic growth are concentrated in German regions that drive the whole-EU positive impact (Table 2, A). This suggests that the positive aggregated impact identified in the existing literature might be the result of a composition effect rather than a genuinely EU-wide effect. The positive performance recorded in terms of regional growth is not matched by an equally significant impact on employment levels. However, returns to structural investment have still materialized in the form of higher employment levels in German beneficiary regions during the recovery period post-2010 (Table 3, B).

The second major winner from Cohesion Policy is the UK. If UK beneficiary regions are not better off in terms of economic growth they show a better performance than non-beneficiary regions in terms of employment levels (in line with the recent single-country analysis by Criscuolo, Martin, Overman, & Van Reenen, 2019). The positive impact in terms of new jobs in the UK beneficiary regions, – confirmed in both the short-run (Table 2, B) and the medium-run (Table 3, B) – has been achieved by leveraging limited resources. Funds earmarked to UK Objective 1

Table 3. Effect of EU Cohesion Policy on economic growth and employment, 2010–14.

	Europe	Germany	Italy	Spain	UK
(A) *Y: economic growth*					
Objective 1	−0.0092*	−0.3776	41.1915*	2.2226**	7.6063
	(0.0024)	(0.4297)	(15.6782)	(0.5160)	(5.3399)
R^2	0.325	0.179	0.206	0.264	0.165
Polynomial degree	3–1	3–2	2–3	3–1	3–2
Observations	702	379	87	41	114
(B) *Y: employment*					
Objective 1	0.0151*	41.5978**	−3.7066	111.0092	151.7883**
	(0.0069)	(13.2816)	(37.0892)	(212.4177)	(46.6149)
R^2	0.320	0.159	0.634	0.316	0.285
Polynomial degree	3–1	3–3	2–3	3–3	2–2
Observations	697	373	87	42	114

Notes: Robust standard errors are clustered at the NUTS-2 level. The best polynomial degree of the forcing variable is selected according to the Akaike information criterion (AIC) criteria among the nine specifications of model 1 (we estimate the model by considering the polynomial degree of up to degree 3, allowing it to differently vary below and above the cut-off of the forcing variable). *P*-values of the Wald test of jointly significance of the Objective 1 coefficients are: (A) 0.000 (EU–Germany); 0.000 (EU–Italy); 0.000 (EU–Spain); 0.000 (EU–UK); and (B) 0.009 (EU–Germany); 0.121 (EU–Italy); 0.049 (EU–Spain); 0.048 (EU–UK).
Significance level: ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$.

regions account for < 5% of the total funds allocated to Objective 1 regions in Europe (European Commission, 1999), suggesting that the intensity of funding is a second-order concern when compared with the more macro-national and strategic framework conditions in which territorial policies are implemented.

Very different is the experience of Southern European regions in Italy and Spain.

In Italy, Cohesion Policy produced a short-term positive impact in the beneficiary regions that materialized only in terms of regional employment (Table 2, B). However, this positive impact vanished after the crisis. The lack of impacts on growth and the short-lived effects on employment support the idea of Cohesion Policy working as a means to maintain employment in subsidized low-productivity jobs in the Mezzogiorno, a model that the Great Recession has made unsustainable. The effects on Objective 1 regions' employment seem to reflect the genesis of short-term opportunities, which did not translate into sustainable trends in the medium- to long-run (Boltho, Carlin, & Scaramozzino, 2018).

Spanish beneficiary regions absorbed almost 30% of total EU expenditure in the 2000–06 period (European Commission, 1999). Nevertheless, at least until the crisis – and in contrast to the EU as a whole – they have not benefitted from Cohesion Policy in terms of additional growth and jobs. These results are fully in line with the evidence discussed above for the UK. It is not necessarily the amount of funding that makes the difference, but rather the (national) models of policy design and implementation and the macro-level conditions. The existent literature offers ample material to support this interpretation. Spain has adopted a model of policy intervention largely unbalanced towards transport infrastructure (Crescenzi & Rodríguez-Pose, 2012; Crescenzi, Di Cataldo, & Rodríguez-Pose, 2016) and disconnected from the endemic challenges in terms of skills, youth unemployment and other dimensions of regional development such as social inequalities (Castells-Quintana, Ramos, & Royuela, 2015). A positive effect – in sharp contrast with the rest of the EU – emerges in Spanish regions only during the 2010–14 subperiod in terms of higher growth while unemployment problems have remained unaffected. The extent to which this 'growth' bonus will materialize in the longer run remains to be seen.

CONCLUSIONS

Nowadays Cohesion Policy is expected to serve a diversified set of objectives (that include economic growth, competitiveness, employment, social inclusion, environmental sustainability, innovation, etc.). Cohesion Policy is expected to deliver results in all regions of the EU (not only in the most disadvantaged areas), dealing with a hugely diversified set of territorial conditions.

While scholarly and policy debates have extensively covered the challenges associated with the interaction between a single unitary Cohesion Policy framework and diversified territorial conditions, more limited has been the attention devoted to the heterogeneity of impacts associated to diverging macro-national conditions and models of implementation. However, several studies have provided relevant insights on the specificities of individual national contexts and on their importance in shaping economic and non-economic impacts (Medeiros, 2017). Furthermore, Brexit and the rise of nationalistic movements in virtually all EU countries have put the role of the nation-state back at the centre of the debate on the future of all EU policies. Which policies are better pursued at the EU level? Which would be more effectively controlled by individual member states? Answers to these questions with reference to Cohesion Policy call for careful counterfactual assessments of the net impacts of the policy in terms of both growth and jobs as well as for clear comparable answers to the distribution of these economic impacts across member states.

This paper has contributed to these debates by applying an innovative identification strategy to a large sample of NUTS-3 regions in different member states with heterogeneous national macro-institutional and policy implementation conditions. This empirical strategy has allowed an estimation of both EU-wide and country-specific fully comparable policy impacts.

Based on this empirical strategy, the paper made a two-fold innovative contribution to the existing literature. The first concerns the identification of an EU-wide positive impact of Cohesion Policy on both growth and employment. The second concerns the heterogeneity of these regional impacts across member states.

Cohesion Policy has exerted a positive and significant EU-wide impact on both regional economic growth and employment. The positive economic impact on regional employment has survived the Great Recession and supported less developed regions in the recovery period. However, these positive effects are not evenly distributed across the regions of all member states. Germany is the member state where large part of the regional growth bonus from Cohesion Policy is concentrated. Conversely, impacts on regional employment are largely confined to the UK. The picture for Southern European member states is much less rosy. Italian beneficiary regions have experienced better employment performance, but this effect has ended with the Great Recession. Conversely, Spanish beneficiary regions have only benefited from Cohesion Policy in terms of better growth performance during the recovery phase after the Great Recession with no impacts on employment.

Even if the Barca Report (Barca, 2009) re-centred the debate on Cohesion Policies around the importance of highly localized factors conditioning success and failure, these results show that macro-national factors remain central. Macro-institutional conditions and models of intervention make the difference in terms of impacts over and above the diversity of local conditions. Early strategic decisions – such as the early focus on innovation in Germany – have significant long-term consequences and are better taken at the national level with more complete information and foresight capabilities as well as more effective coordination. However, while the predicaments of the Barca Report (and the adoption of a bottom-up approach) have resulted in a stronger role (and

independence) being given to individual regions in the selection of the tools and in the implementation of the policy (Crescenzi & Giua, 2016), the same is not true for the member states. Implementation mechanisms and rules are the same for all countries (e.g., financial rules, certification, co-financing procedures, project documentation requirements) and they are then operationalized in different ways in different regions.

Would more flexibility and autonomy given to the member states reinforce the economic impacts of Cohesion Policy? The results of this paper suggest that not only models of intervention but also economic impacts are already highly heterogeneous across countries. A nation-based approach – with better adaptation of the policy to the needs and overarching objectives of each individual member state – might be the best complement (and indeed a much needed counterbalance) to the current place-based approach. More national-level adaptability and autonomy might be the best response to the calls for renationalization of key EU policies. While in the post-Brexit Europe territorial cohesion remains an EU-wide public good – requiring EU-wide coordination and financial solidarity – the most effective (and politically viable) approach to its achievement might be premised on a stronger role to be (re)assigned to the member states.

These considerations are based on the analysis of purely economic impacts of Cohesion Policy (regional economic growth and employment). However, Cohesion Policy aims to promote regional development well beyond narrowly defined economic outcomes. The holistic and multidimensional approach to regional development embraced by Cohesion Policy – in terms of social cohesion, environmental sustainability, territorial governance, and cooperation and spatial planning (Crescenzi, Fratesi, & Monastiriotis, 2017; Medeiros, 2017) – calls for a more comprehensive and integrated approach to the evaluation of non-economic impacts and their distribution across member states. The lack of economic returns in some regions might well be compensated by other non-economic impacts impossible to capture with the present analysis. How to reconcile the use of rigorous quantitative counterfactual methods with the pressing need to capture a wider set of policy impacts remains in the agenda for future research.

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NOTES

1. For a recent review on the different existing results, see Crescenzi and Giua (2017).
2. Regions whose GDP per capita is below 75% of the EU average were eligible for the status of Objective 1 (2000–06 Programming Period), Convergence (2007–13) or Less Developed (2014–20) regions.
3. It is customary in the existing literature to exclude these areas from estimation samples.
4. Islands (i.e., Canarias, Sardinia and Sicily) are necessarily excluded from the analysis.
5. By using this disaggregation, we can focus on the sector that has been directly targeted by the policy, rather than considering its effect on the whole employment structure, which also includes sectors far from the aim and funding of EU Cohesion Policy (e.g., financial and public sectors). Cambridge Econometrics missing data have been integrated with correspondent data from national institutes.
6. We cannot estimate the country-specific models for Austria, Belgium and Finland owing to the limited number of 'treated' observations (NUTS-3 belonging to Objective 1 NUTS-2) in the individual samples (only three Objective 1 NUTS-3 in Austria, seven in Belgium and four in Finland).
7. Usually tested with the McCrary test (McCrary, 2008).
8. This is the reason why a traditional analysis of heterogeneity would not help in order to answer the research questions. We would be forced to interact the policy dummy (= 1 for NUTS-3 belonging to Objective 1 regions) with country-level variables.
9. Up to now, employment has been granted a weaker attention in the existing literature, and among the papers more methodologically aligned to our own work (counterfactual methods); Becker et al. (2010) is an exception.

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