Regional needs, regional targeting and regional growth: assessing the impact of EU cohesion funds in the UK, 1994-2013

Marco Di Cataldo* and Vassilis Monastiriotis**

* Department of Geography and Environment
London School of Economics
E-mail: m.di-cataldo@lse.ac.uk

**European Institute
London School of Economics
E-mail: v.monastiriotis@lse.ac.uk

Extended abstract

Despite the bourgeoning literature on the economic effects and overall effectiveness of EU Cohesion Policy, and in spite of the relevance of the latter for the debate about Britain's position in the EU, studies examining the contribution of cohesion funds on regional economic performance in the UK are far and few between (for a recent exception see Di Cataldo, 2016, Journal or Regional Science). The broader European literature offers of course a substantial number of studies seeking to evaluate the effectiveness and economic impact of Cohesion Policy at large and of cohesion expenditures in particular. Despite the wealth of empirical evidence, however, results remain on the whole rather inconclusive (e.g., Fiaschi et al, 2009 or Rodriguez-Pose and Novak, 2011 versus Hagen and Mohl, 2008 or Falk and Sinabell, 2008).

More recently, owing in part to the increasing availability of wealthier and more accurate datasets, the literature has extend its focus beyond simple questions concerning the size and direction of the growth effects of cohesion spending, seeking instead to identify the local-level and wider (e.g., national-institutional) factors that may condition the materialisation of such effects in the first place (Rodríguez-Pose and Garcilazo, 2015, Regional Studies; Crescenzi et al, 2015, Regional Studies). Only recently, however, has this literature started examining more specifically conditioning factors related to the design (targeting) and deployment of cohesion funds (scale of expenditures, prioritising on specific types of expenditures, congruence between regional needs and spending priorities – Crescenzi et al, 2016).

In this paper we set out to examine four aspects related to these: (a) the concentration/dispersion of spending across a range of interventions (i.e., the extent of prioritisation of thematic areas of intervention); (b) the consistency of expenditures (i.e., the

distance between programmed allocations and actual expenditures/payments); (c) the possible presence of threshold effects (i.e., whether effects depend on the scale of expenditures); and (d) the targeting of expenditures (i.e., the 'matching' between expenditures and measured 'needs'). Our focus is on the largely unexplored case of the UK, a country where developmental needs are less acute and where EU cohesion funds are of a relatively smaller magnitude. Using data with detailed information on expenditures by programming period and by category (axis) of expenditures, we offer a unique analysis of the regional impact of cohesion spending in the UK over three programming periods (1994-2013), examining the role that aspects of design and fund-deployment have had on this.

A first part in our analysis concerns the identification of threshold and assignment effects. We examine these using two alternative datasets: one containing annual information of actual expenditures (payments) covering a 20-year period from 1994 to 2014; and one containing period averages of expenditures over the three programming periods 1994-1999, 2000-2006 and 2007-2013. For both datasets, our estimating specification corresponds to a conditional beta-convergence model: regional growth of GDP per capita (annual or annualised, depending on the dataset used) is regressed on the initial level of regional per capita incomes (one-year lag or in the year prior to the start of the programming period, respectively for each dataset), a set of 'initial period' characteristics (unemployment, tertiary education, agricultural employment and R&D patents) and a full set of regional (time-invariant) fixed effects (which capture permanent differences in growth rates across regions) and year or period fixed effects (which capture the impact of national-level effects on regional growth). To this specification we add selectively various measures of interest relating to the cohesion policy interventions in our sample.

The Table below reports a subset of the results obtained from this analysis. In the initial specification (col.1), produces strong evidence of conditional convergence and, alongside this, strong evidence also of a positive relationship between cohesion expenditures (as a share of regional GDP) and regional growth. Although the specification does not allow us to make formal claims about causality, we note the following: first, the inclusion of regional fixed effects corrects, to a large degree for problems of selection, i.e., for the possibility that expenditures are directed disproportionately in regions with a particular growth advantage (or disadvantage); second, when replacing the contemporaneous expenditures measure with a one-year lag of the same measure maintains the positive relationship between expenditures and growth (albeit losing its statistical significance); third, when we re-specify our model to include a distributed lag of current and past expenditures (not shown), the long-run relationship remains not only positive but also statistically significant (at 5% for a lag-structure of up to two years). We

interpret this as an indication of a causal, at least in its Granger-causality sense, relationship between expenditures and growth.

Table. Preliminary results on the relationship between cohesion policy interventions (expenditures and assignment) and regional growth

VARIABLES	Annual data				Programming periods		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita (t-1)	-0.248***	-0.239***	-0.244***	-0.218***	-0.181***	-0.174***	-0.175***
	(0.0455)	(0.0450)	(0.0462)	(0.0383)	(0.0262)	(0.0269)	(0.0280)
Spending (% of GDP)	1.982**		1.938	3.486***	0.219***		
	(0.774)		(1.508)	(1.2586)	(0.0725)		
Spending squared				-167.1***			
				(61.583)			
Obj.1 status		0.0130**	0.0125*			0.904***	
		(0.00512)	(0.00616)			(0.288)	
Exiting							0.386
							(0.559)
Entering							1.290***
							(0.434)
Obj1 (x) Spent			1.291**				
			(0.579)				
Constant	2.493***	2.410***	2.456***	2.172***	1.827***	1.763***	1.773***
	(0.461)	(0.457)	(0.467)	(0.370)	(0.259)	(0.266)	(0.276)
Observations	613	613	613	613	109	109	109
R-squared	0.766	0.766	0.767	0.752	0.946	0.947	0.948
No of nuts	37	37	37	37	37	37	37

Notes: Robust standard errors in parentheses. All regressions include regional controls (unemployment, tertiary education, agricultural employment, patents) and region and year (period in cols.5-7) fixed effects. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

A similar result is obtained when we replace actual expenditures with a variable indicating the assignment of regions into Objective 1 status. The effect here is also positive and statistically significant (col.2) and, importantly, it remains so when we include jointly the status indicator with the continuous measure of expenditures (col.3). In this case, expenditures continue to be positively associated with regional growth, but this is statistically significant only in the case of Objective 1 regions. This novel finding indicates clearly the presence of assignment and, possibly, threshold effects: expenditures have on the whole a positive bearing on regional growth, but this is stronger in regions which obtain an Objective 1 status and, consequently, receive a much larger 'treatment' in terms of funding; for these regions, the extent of funding still plays a (statistically) significant role in strengthening growth performance (see the interaction effect in col.3). Direct evidence of a threshold effect is presented in col.4, where we

include a quadratic term of annual regional expenditures. As can be seen, the two terms have stronger statistical significance than the linear term alone. The sign of the quadratic term suggests that the positive effect of cohesion spending starts declining after a threshold. Analysis of the magnitude of this effect for within-sample values, however, reveals that the effect remains positive and increasing (convex) for over 90% of the distribution of expenditures in our sample and remains positive for all sample values. Again, this is a result with an only limited prior documentation in the literature.

The next two columns in the Table reproduce part of these results for the programming periods dataset. As can be seen, the positive relationship between expenditures and growth (col.5) and between assignment into Objective 1 status and growth (col.6) is reproduced here, if anything, with more strength (statistical significance). In the last column we further test whether the assignment effect is driven by regions *exiting* Objective 1 status or rather by regions which are starting to be 'treated' as Objective 1 (essentially testing whether the assignment effect reflects rather a negative effect from 'de-assignment'). Our results clearly show that the relationship obtained earlier (columns 2, 3 and 6) is not driven by 'de-assignment' but exclusively by 'entry' into Objective 1 status. This intuitive result increases further our confidence in the validity of our results and of our interpretation of them as showing evidence of a causal relationship between cohesion policy interventions (expenditures, assignment) and regional growth performance.

Our analysis proceeds further to examine a highly important, analytically, and policy-relevant issue which – as noted earlier – has hardly been addressed in the literature: the role of 'targeting', and specifically the alignment between regional needs and policy interventions, for regional growth performance and for the effectiveness of cohesion policy interventions. To examine this, we develop a set of category-specific indices of 'relative regional need' along the categories defined by the programming axes of cohesion funds (human resources, transport and other infrastructure, etc), using data on the conditions characterising each of the UK NUTS2 regions in a number of related variables (road/rail network density, hospitals and schools per 1,000 inhabitants, etc).

Our approach is as follows. First, we collected information (starting values) for a large range of variables mapping onto the different expenditure categories and developed composite indicators measuring the performance of each region in each cohesion policy field (category) at the time prior to the start of each programming period. We then assigned a rank value to each region according to its performance in each of the composite indicators; and used these rankings to produce, for each of the regions, a ranking of 'relative regional need'. To illustrate this, in our data for the programming period 1994-1999 West Wales and The Valleys was ranked

third (from bottom) in terms of its patents per 1,000 inhabitants (showing a relatively high 'need' in the field of 'research and development') but only thirteenth in terms of its unemployment rate (thus showing a relatively less urgent 'human resources need'). In this case, 'RTDI' was ranked as a higher need than 'HR' for this particular region. Separately, we produced a similar rank-assignment of expenditures (e.g., the category with the higher proportion of spending within the region was ranked first). With these, we calculated a dissimilarity index for each region (and in each programming period), giving the average distance between 'relative need' and 'relative effort' across all categories. In this measure, a value of zero shows perfect alignment between the ranking of regional needs and the prioritisation of areas (categories) of intervention – i.e., it shows that expenditures are in line with revealed needs in this region. Inversely, a high value in this measure shows that the allocation of expenditures across categories was poorly aligned to the revealed relative needs of that region.

Geared with this novel measure, we subsequently perform a series of econometric tests to examine how 'policy targeting' (alignment between needs and effort) may impact on regional growth and on the effectiveness of cohesion policy. Specifically, we introduce this new measure as a regressor in our regional growth model explaining regional growth performance in the UK across the different programming periods under study. Although this analysis is still incomplete – and thus our findings with regard to this are still preliminary – the evidence derived seems to offer strong support to the prior hypothesis that alignment between targets (spending effort) and needs (relative underperformance prior to the allocation of funds) has contributed significantly to boosting growth and – in particular – to raising the effectiveness of cohesion expenditures (in the sense of raising the elasticity of regional growth with respect to spending as a share of regional GDP). This is a unique finding in the literature (other than the limited and more qualitative evidence offered with regard to this in Crescenzi et al, 2016) that has very important implications for policy and in particular for the design of cohesion policy interventions and the allocation of cohesion funds within regions across intervention categories – i.e., on the prioritising of policy interventions within regions.

The results show that identification of needs (and alignment of spending efforts to these needs) is of paramount importance for the effective deployment of cohesion funds and the effective support offered by policy to the growth and catch-up prospects of lagging regions – both in relation to Cohesion Policy and, intuitively, for similar policies outside the Cohesion Policy framework (e.g., post-Brexit). We discuss the implication of this (and of the other findings of our analysis) both in the context of 'lessons learned' for the (factors conditioning the) effectiveness of EU cohesion policy and in relation to the prospective withdrawal of cohesion funds from the UK as part of the country's exit from the EU.