Regional Studies

ISSN: 0034-3404 (Print) 1360-0591 (Online) Journal homepage: https://www.tandfonline.com/loi/cres20

The impact of European Cohesion Policy in urban and rural regions

Luisa Gagliardi & Marco Percoco

To cite this article: Luisa Gagliardi & Marco Percoco (2017) The impact of European Cohesion Policy in urban and rural regions, Regional Studies, 51:6, 857-868, DOI: 10.1080/00343404.2016.1179384

To link to this article: https://doi.org/10.1080/00343404.2016.1179384

REGIONAL STUDIES, 2017
VOL. 51, NO. 6, 857–868
https://doi.org/10.1080/00343404.2016.1179384

The impact of European Cohesion Policy in urban and rural regions

Luisa Gagliardi[a] and Marco Percoco[b]

ABSTRACT

The impact of European Cohesion Policy in urban and rural regions. *Regional Studies*. This paper presents an evaluation exercise on the impact of European Cohesion Policy on the economic performance of the most disadvantaged European areas (Objective 1 regions) for the programming period 2000–06. By performing the analysis at NUTS-3 rather than NUTS-2 level to exploit the exogeneity of the treatment status in the context of a regression discontinuity design (RDD), the analysis shows that European Cohesion funds have positively contributed to generating economic growth in lagging areas. However, their effect is mainly driven by the successful performance of rural areas close to the main urban agglomerates. Favourable geography and the progressive suburbanization of the rural landscape created new opportunities for rural areas close to cities, thus boosting the effect of the policy.

KEYWORDS

regional growth; Cohesion Policy; urban regions; rural development

摘要

欧盟凝聚政策在城市和乡村地区的影响. *Regional Studies*. 本文提供欧盟凝聚政策在 2000 年至 2006 年期间，对欧洲最为贫困地区（第一目标区域）的经济表现之影响所进行的评估活动。本分析透过在 NUTS-3 而非 NUTS-2 层级进行分析，以在断点迴归设计（RDD）的脉络中利用待遇身份的外部性，显示出欧盟凝聚基金在落后地区中引发了正向的经济成长。但其效应主要是受到邻近主要城市集群的乡村地区的成功表现所驱动。有利的地理和进行中的乡村地景郊区化，为邻近城市的乡村地区创造了新的机会，因此促进了政策效益。

关键词

区域成长; 凝聚政策; 城市区域; 乡村发展

RÉSUMÉ

L'impact sur les régions urbano-rurales de la politique européenne en faveur de la cohésion. *Regional Studies*. Cet article cherche à évaluer l'impact de la politique européenne en faveur de la cohésion sur la performance économique des zones européennes les plus défavorisées (les régions relevant de l'Objectif 1) pour la période de programmation allant de l'an 2000 jusqu'à 2006. En effectuant une analyse au niveau NUTS-3 plutôt qu'à l'échelle NUTS-2 dans le but d'exploiter l'exogénéité du statut de traitement dans le contexte d'une régression par discontinuité, l'analyse montre que le Fonds européen de cohésion a contribué de façon positive à la réalisation de la croissance économique dans les zones en perte de vitesse. Cependant, l'impact est dans une large mesure piloté par la performance réussie des zones rurales situées près des principales agglomérations urbaines. Une géographie favorable et la banlieusardisation progressive du paysage rural ont créé de nouvelles possibilités pour les zones rurales situées près des grandes villes, renforçant ainsi l'impact de la politique.

MOTS-CLÉS

croissance régionale; politique de cohésion; régions urbaines; aménagement rural

CONTACT

[a] **(Corresponding author)** luisa.gagliardi@unige.ch
Department of History, Economics and Society (DEHES), School of Social Sciences (SdS), University of Geneva, Geneva, Switzerland; Spatial Economics Research Centre (SERC), London School of Economics (LSE), London, UK; and Research Centre for Regional Economics, Transports and Tourism (CERTeT), Bocconi University, Milan, Italy.

[b] marco.percoco@unibocconi.it
Department of Policy Analysis and Public Management, and Research Centre for Regional Economics, Transports and Tourism (CERTeT), Bocconi University, Milan, Italy.

ZUSAMMENFASSUNG
Auswirkungen der europäischen Kohäsionspolitik in städtischen und ländlichen Regionen. *Regional Studies*. Dieser Beitrag enthält eine Bewertung der Auswirkungen der europäischen Kohäsionspolitik auf die Wirtschaftsleistung der am stärksten benachteiligten europäischen Gebiete (Ziel-1-Regionen) für den Programmplanungszeitraum 2000–06. Wenn die Analyse statt auf NUTS-2- auf NUTS-3-Ebene durchgeführt wird, um die Exogenität des Behandlungsstatus im Kontext einer Regressions-Diskontinuitäts-Analyse zu nutzen, zeigt sich ein positiver Beitrag der europäischen Kohäsionsfonds zum Wirtschaftswachstum in rückständigen Gebieten. Allerdings hängt dieser Effekt vor allem von der erfolgreichen Leistung von ländlichen Gebieten in der Nähe der wichtigsten städtischen Ballungsgebiete ab. Eine günstige Geografie und die fortschreitende Suburbanisierung ländlicher Gegenden hat neue Chancen für ländliche Gebiete in Stadtnähe geschaffen und so die Wirksamkeit der Politik verstärkt.

SCHLÜSSELWÖRTER
regionales Wachstum; Kohäsionspolitik; Stadtregionen; ländliche Entwicklung

RESUMEN
Impacto de la política europea de cohesión en regiones urbanas y rurales. *Regional Studies*. Este artículo contiene un ejercicio de evaluación sobre el impacto de la política europea de cohesión en cuanto al rendimiento económico de las zonas europeas más desfavorecidas (regiones del Objetivo 1) para el periodo de programación de 2000 a 2006. Al llevar a cabo el análisis en el nivel NUTS-3 en vez del nivel NUTS-2 para aprovechar la exogeneidad del estado de tratamiento en el contexto de un diseño de regresión discontinua (DRD), el análisis muestra que los fondos europeos de cohesión han contribuido positivamente a generar crecimiento económico en áreas rezagadas. Sin embargo, este efecto depende sobre todo del buen rendimiento en áreas rurales cerca de grandes aglomeraciones urbanas. La geografía favorable y la suburbanización progresiva del paisaje rural ofrecen nuevas oportunidades a las áreas rurales próximas a las ciudades, potenciando el efecto de la política.

PALABRAS CLAVES
crecimiento regional; política de cohesión; regiones urbanas; desarrollo rural

JEL E62, H50, R58
HISTORY Received August 2014; in revised form April 2017

INTRODUCTION

Europe has been deeply involved in a process of progressive political and economic integration during the last few decades, and with the recent inclusion of Croatia the European Union (EU) now counts 28 member states. The key common principle of solidarity has inspired the European Cohesion Policy by promoting the increasing concentration of funds in disadvantaged areas and sectors with the aim of tackling economic, social and territorial disparities (Art. 158 of the Treaty of the European Union). The amount of financial resources devoted to this priority, in particular in recent periods of public resource scarcity, and the apparent lack of upward mobility across disadvantaged areas in Europe, have stimulated the debate in the field (Boldrin & Canova, 2001; Cappelen, Castellacci, Fagerberg, & Verspagen, 2003; Dall'Erba & Le Gallo, 2008; Ederveen, Gorter, de Mooij, & Nahuis, 2002; Midelfart-Knarvik & Overman, 2002; Percoco, 2013; Rodriguez-Pose & Fratesi, 2004; Sala-i-Martin, 1996). However, despite the attention devoted by scholars and policy-makers to the evaluation of such policy initiatives, no univocal consensus has been reached so far.

This paper presents an evaluation exercise on the impact of the European Cohesion Policy on the economic performance of lagging European regions – also defined as Objective 1 areas – for the period 2000–06.[1] With respect to previous contributions, this research exploits a novel perspective of analysis suggesting that heterogeneity in the distribution of land across urban and rural areas, and in turn the exploitation of available land across alternative productive uses within NUTS-2 regions in Europe, is a relevant dimension for explaining the emergence of different territorial responses to the policy. In this framework, the traditional policy evaluation approach is enriched by a greater attention to the insights coming from contributions on the economics of regional planning, stressing the importance of land use as one of the key levers for achieving growth through the efficient spatial distribution of people and economic activities.

By performing the empirical investigation at a finer geographical level of analysis (NUTS-3 rather than NUTS-2 regions), and comparing areas subject to the same treatment status but characterized by different degrees of urbanization (cities versus intermediate versus rural areas) and distance from main urban agglomerates (rural areas close to the city versus dispersed rural areas), the analysis underlines distinctive spatial patterns of economic response to the policy. In this context the exogeneity of the treatment status, the condition upon which the reliability of the evaluation exercise heavily depends, is supported by the fact that the eligibility criterion is defined at NUTS-2 level irrespective of the economic performance of the nested NUTS-3 areas. This implies the possibility of

identifying a category of recipient areas that are defined here as 'accidental winners', which encompasses NUTS-3 areas that were theoretically not eligible for the policy, but ended up being treated because the eligibility criterion was applied at a broader geographical scale. Stemming from this evidence and employing a regression discontinuity design (RDD), the analysis compares NUTS-3 areas that are continuous to the policy eligibility threshold (defined at 75% of European gross domestic product (GDP)) and thus characterized by similar economic fundamentals but different treatment status.

Results show that the effect of the policy was not homogenous within NUTS-2 regions. It was more effective in rural areas close to main urban agglomerates, suggesting a disproportionate impact on those spatial contexts that had the possibility to exploit the benefits of agglomeration economies by integrating with cities. This result correlates with recent studies showing that higher growth rates in Europe have characterized rural regions close to large cities, which have become increasingly attractive for people and firms (Dijkstra, Garcilazo, & McCann, 2013, 2015). Primary urban, intermediate and dispersed rural areas were not systematically affected by the European Cohesion Policy. In the former case, this is because city growth in Europe is constrained by a number of historical and architectural heritages, preventing the possibility of accommodating increasing numbers of people and economic activities. Intermediate regions are, instead, areas that have been already subject to some degrees of urbanization/suburbanization.[2] Hence, despite benefiting from their geographical position close to main urban centres, these spatial contexts exhibit a lower potential to reconvert their land due to pre-existing patterns of urban settlements. Finally, dispersed areas have limited capabilities to attract valuable economic actors, thus undermining the impact of the policy.

The findings of this paper offer a sound rationale for a striking stylized fact: during the last decade, with 2001 being the beginning of the turning point, predominantly rural regions have outperformed intermediate regions and predominantly urban regions in GDP per capita growth in the EU-15 (Dijkstra et al., 2013, 2015; Organisation for Economic Co-operation and Development (OECD), 2011b). Relevant policy implications are associated with these findings. Although neglected in the definition of the eligibility criteria in line with the idea that spatial problems in Europe are more regional in nature (Dreier, Mollenkopf, & Swanstrom, 2001), the observed spatial heterogeneity within NUTS-2 regions plays a relevant role in explaining differences in the effectiveness of the policy. Territorial responses to the policy, in fact, pass through spatial adjustment mechanisms alongside changes in the urban/rural landscape within each region. This implies that the benefits of the policy are not homogenously distributed within each region and that the regions benefiting most are those with the greatest potential in terms of reconversion to a more productive use of significant portions of their land. Policy-makers should therefore devote more attention to this dimension, taking into consideration the possibility of coupling policies aimed at tackling structural advantages with US-inspired initiatives characterized by a stronger focus on the sub-regional and urban dimension (Jargowsky, 1997, 2003).

The remainder of the paper is organized as follows. The second section discusses the existing literature on the evaluation of the European Cohesion Policy. The third section describes the methodological setting of the paper, while the fourth section presents the data used for the empirical investigation and some related descriptive statistics. The fifth section discusses the main results and robustness checks, while the sixth section concludes.

LITERATURE REVIEW AND CONTRIBUTION TO PREVIOUS RESEARCH

The *ex post* evaluation of the European Cohesion Policy has gained increasing attention with the aim of investigating the effectiveness and efficiency of the funds and their impact on economic, social and territorial cohesion (Baslé, 2006; Bernini & Pellegrini, 2011; European Commission, 2014). This is not surprising considering the amount of financial resources devoted to this objective and its long-lasting implementation period. Researchers have long speculated on the extent to which the Cohesion Policy has delivered the expected results in terms of convergence processes among EU regions. Whereas the European Commission has emphasized the positive effect of the policy on the substantial reduction of disparities in GDP per head across regions in the EU (European Commission, 2010), recent academic studies have provided mixed results. This inconclusive evidence coupled with the lack of consistent upward mobility across disadvantaged areas in Europe has generated increasing concerns about the effectiveness of the scheme (Magrini, 1999; Martin, 1998; Puga, 2002).

As a consequence, research has flourished in the field. Boldrin and Canova (2001, 2003) suggested that regional policies did not contribute to the process of convergence among European countries, while Ederveen et al. (2002, 2006) found that the effectiveness of the EU regional policy, if any, has been unsatisfactory due to crowding out effects, rent seeking and inappropriate spending. Garcia-Milà and McGuire (2001), using a different approach and Spanish regional data, found no effect of the grants, neither in promoting private investments nor in improving welfare in poorer regions. In a similar vein, Midelfart-Knarvik and Overman (2002), by analysing the impact of Structural Funds on the location decisions of Research and Development (R&D)-intensive firms, suggested that financial aids provided distortive incentives for firms to locate in assisted regions.

Rodriguez-Pose and Fratesi (2004) detected a positive, although small, impact only for funds targeted to education and human capital improvements for the period 1989–99, and Puigcerver-Peñalver (2007), using panel data for the same decade, endorsed this evidence estimating a positive effect of the policy for Objective 1 regions, but only for the years from 1989 to 1993. Esposti and Bussoletti

(2008), adopting generalized methods of moments (GMM) techniques, found a negligible impact of the policy on regional growth, and Aiello and Pupo (2012), focusing on Italian regions over the period 1996–2007, suggested that expenditures for Structural Funds did not significantly reduce productivity differentials between regions.[3] Consistent with these findings, Dall'Erba and Le Gallo (2008) emphasized the emergence of a 'core–periphery' pattern in Europe over the years 1989–99, suggesting weak evidence of convergence in the EU. Mohl and Hagen (2010) found a small but positive impact of Objective 1 grants on regional growth and no effect or even negative effects of Objective 2 and 3 payments.

Beginning with the early study by Cappelen et al. (2003), which suggests that the positive impact of Structural Funds is 'crucially dependent on the receptiveness of the receiving environment' (p. 640), other studies have tried to shed fresh light on the heterogeneous impact of the policy across regions and countries. Le Gallo, Dall'Erba, and Guillain (2011) estimating a Bayesian model allowing for a regional-specific impact of Structural Funds, suggested that heterogeneous results may depend on the country of interest. Using quasi-experimental methods and applying generalized propensity score techniques, Hagen and Mohl (2008) found that Structural Funds had a positive but not statistically significant impact on regional growth. Becker, Egger, and von Ehrlich (2010), adopting an RDD to exploit the existence of a threshold in the attribution of the treatment status (set as 75% of the EU per capita GDP in purchasing power parity), found a positive and statistically significant effect of Objective 1 transfers on regional growth. Building on that, Becker, Egger, and von Ehrlich (2011) implemented a new estimation technique in which the RDD setting allows to estimate heterogeneous local effects. The analysis computed through heterogeneous local average treatment effect (HLATE) showed that the degree of absorptive capacity (measured by the quality of regional institutions and by the stock of human capital) is important in explaining differences in outcomes.

Consistently with this increasing focus on the conditions under which heterogeneity in the effect of the policy emerges, this paper contributes to existing research by exploiting an additional and still underexplored dimension that refers to the organization of land across different typologies of productive uses within each NUTS-2 region. In the context of European regions where the geography of spatial planning tends to be highly stable and urban agglomerates are often the result of historical processes of urban settlements, changes in the distribution of land across alternative productive uses and their implications in terms of development opportunities have received limited attention. This is at odds with the increasing focus that the European Commission and the OECD have devoted to the implications for economic growth of different regional configurations in terms of degree of urbanization and remoteness (Dijkstra & Ruiz, 2010; Dijkstra & Poelman, 2008).

This study rests on the idea that the organization of land ultimately accounts for the efficient exploitation of available local resources, and that differences in the potential to reconvert significant portions of land to more productive uses may explain heterogeneity in the capability of regions to take advantage of the policy. In the European context these spatial adjustments may be particularly evident with respect to expanding cities, which increasingly experience the transformation of rural areas close to the city centre into urban and industrial ones (Antrop, 2000). This tendency is further boosted by novel transportation infrastructures fostering the redistribution of economic activities, which in turn respond to the possibility of benefiting from agglomeration economies while taking advantage of a greater availability of cheaper land. In this view the concept of urbanization as diffusion process that starting from the urban centre affects the countryside in concentric spheres of differentiated influence (Antrop, 2004) is a powerful argument to understand the complexity of the possible adjustment mechanisms at play in response to the policy. Rural areas at the periphery of the city centre are those where changes in the economic performance of the region are expected to be more visible. In these contexts the effectiveness of the policy passes through the process of deep transformation occurring in modern cities, which are increasingly characterized by phenomena of suburbanization and the progressive transfer of people and economic activities towards the edge of the city (Kasanko et al., 2006).

DATA AND DESCRIPTIVE STATISTICS

Data used in this analysis are from Eurostat databases publicly available online and refer to regions defined at NUTS-3 level, even though Objective 1 eligibility is on a NUTS-2 basis. A more disaggregate level of analysis yields a better understanding of the processes triggered by the payments, allowing for a more detailed investigation of the impact of the policy when the potential heterogeneity between different areas within each region is accounted for. In other words, the unit of observation is the NUTS-3 region, whereas the treatment is assigned at NUTS-2 level. As such, advantage is taken here of the mild exogeneity of the treatment status, which rests on the possibility to observe in the sample both NUTS-3 regions with relatively high GDP per capita being treated only because they belong to NUTS-2 regions defined as Objective 1 and NUTS-3 regions with a GDP per capita below the threshold level that have not been treated because they belong to non-Objective 1 NUTS-2 regions.

The investigation focuses on Structural Funds expenditures for the programming period that started in 2000 and ended in 2006. However, data for the dependent variable – i.e., regional GDP – have been collected for the period 1999–2008. The upper bound does not coincide with the end of the programming period because of the $n+2$ rule, which states the obligation to spend the funds allocated annually by the second year following the end of the programming period (i.e., 2006). Main controls collected for

Table 1. Variables.

Variable	Description	Source
GDP Growth	Cumulative growth over 1999–2008	EUROSTAT
Population Density	Total population over the surface	EUROSTAT
Employment Rate	Share of employment over the working-age population	EUROSTAT
Secondary Education	Share of secondary educated people over the total population	EUROSTAT
Tertiary Education	Share of tertiary educated people over the total population	EUROSTAT

a similar time span include population density, employment rate and the shares of the population with secondary and tertiary education (Table 1).[4]

Funds are allocated on the basis of the 75% threshold rule, meaning that eligibility is granted to NUTS-2 regions with a GDP below 75% of the EU GDP. There are, however, a number of exceptions to the 75% threshold. The first group includes sparsely populated regions in Austria, Finland and Sweden that are considered eligible for funds despite being above the relevant threshold of 75%. Another group comprises the outermost regions of France, Portugal and Spain, where the Canary Islands are above the relevant GDP threshold. Finally the last exception is the phasing-out status – i.e., NUTS-2 regions that were granted Objective 1 transfers during the preceding programming period – namely 1994–99 – and whose GDP is higher than the threshold for period the 2000–06, but still receive Objective 1 payments so that the large flow of funds does not stop abruptly.

During the programming period 2000–06 there were 257 NUTS-2 regions divided into 1233 NUTS-3 regions.[5] Table 2 presents summary statistics for per capita GDP in purchasing power parity (PPP) terms at NUTS-3 level by country for the year before the recognition of the Objective 1 status (1999 for EU-15 and 2003 for EU-10). All EU-10 countries except for Cyprus had an average per capita GDP level below €15,000, while all the EU-15 countries, except Portugal and Greece, had an average GDP above €15,000. Naive estimates of the impact of Objective 1 transfers can be obtained by combining the results of the two statistics. Panel A in Table 3 presents the average GDP values before and after the treatment together with its difference while

Table 2. Summary statistics for per capita gross domestic product (GDP) (€ purchasing power parity (PPP), 1999).

Country	Average	Minimum	Maximum	Standard deviation
AT	20,048.6	13,000	33,300	5446.2
BE	18,211.4	9400	44,600	5884.7
CY	18,400	18,400	18,400	.
CZ	14,342.9	11,700	31,900	5129.7
DE	20,222.8	10,000	60,700	8129.7
DK	.	.	.	.
EE	9460	6900	17,400	4453.4
ES	16,152.5	10,900	24,600	3687.6
FI	19,225	6300	49,700	8806
FR	18,053	10,900	58,600	5814.8
GR	13,998	9300	36,800	4050.1
HU	11,135	7200	26,800	4299.5
IE	19,850	13,500	30,500	5499.4
IT	19,599.1	9600	33,000	5334
LT	8770	5300	14,900	2652.9
LU	42,500	42,500	42,500	.
LV	7450	4600	15,900	4293.6
MT	14,550	12,500	16,600	2899.1
NL	21,570	14,800	35,700	4108.4
PL	9350	5800	30,100	3775.2
PT	11,953.3	6600	23,500	3525.1
SE	20,114.3	17,100	31,500	2889.2
SI	15,358.3	11,800	24,900	3473.9
SK	11,850	7000	25,900	5849.1
UK	19,322.1	10,600	103,900	8860.5

Note: No available data for Denmark.

Table 3. Pre- versus post-treatment outcomes (gross domestic product (GDP) per capita in € purchasing power parity (PPP)).

	Mean recipient (observations: 474)	Mean non-recipient (observations: 759)	Difference
GDP per capita in 1999	13,272.52	21,121.42	−7848.9
GDP per capita in 2008	18,651.05	28,040.05	−9398
GDP per capita growth	4.77	3.25	1.51

panel B shows the per capita GDP average growth rate over time. Each of these statistics is broken down into recipient and non-recipient NUTS-3 regions, with different levels of aggregation being considered: the entire EU, the *old* member states and the *new* member states.

Evidences from Table 3 show that Objective 1 transfers had a negative impact on GDP per capita as differences increased rather than decreased from 1999 to 2008. At the same time, however, data shows that recipient regions have grown faster than non-recipient regions by more than 1.5% on average, suggesting some evidence of β-convergence.

Finally, Table 4 presents average cumulative growth rates for different typologies of NUTS-3 regions. The urban–rural dichotomy classifies all NUTS-3 regions according to criteria based on population density and population distribution (urban–rural).[6] This classification has been combined with a distinction between areas located close to city centres and remote areas[7] following the scheme identified by the European Commission (Dijkstra & Poelman, 2011). Four distinct categories of NUTS-3 regions were defined according to the above criteria: urban regions, intermediate regions close to a city, rural regions close to a city, rural and remote regions. It emerges that Objective 1 regions experienced higher growth rates than the rest of the sample and that rural regions close to a city had the largest average increase.

Although not causal, the above descriptive evidence suggests the emergence of spatial heterogeneity in the effectiveness of the Cohesion Policy across different typologies of areas within each region. This preliminary result further justifies the need for a deeper investigation aimed at analysing these distinctive spatial patterns.

Table 4. Average cumulative growth, 1999–2008.

	Objective 1	Non-Objective 1
Whole sample	4.77	3.25
	(1.96)	(1.08)
Urban regions	4.94	3.28
	(2.23)	(1.14)
Intermediate regions close to a city	4.73	3.23
	(1.91)	(1.04)
Rural regions close to a city	4.91	3.19
	(1.98)	(1.04)
Rural and remote regions	4.53	3.57
	(1.81)	(1.16)

Note: Standard errors in parentheses.

METHODOLOGY

The main aim of this paper is to provide an unbiased estimation of the impact of the European Cohesion Policy for the period 2000–06, further exploiting novel insights on the spatial mechanisms that may mediate the emergence of heterogeneous local responses. The analysis examines the composition of NUTS-2 regions in terms of spatial distribution of land across urban and rural areas to understand whether differences in the organization of space across alternative productive uses affected the impact of the policy.

In this context, a key major departure from existing analyses is that the empirical estimation is performed on NUTS-3 rather than on NUTS-2 areas, thus exploiting differences in terms degree of urbanization and distance from main urban agglomerates to identify the abovementioned four categories of NUTS-3 areas.

To provide reliable predictions on the impact of the policy, an RDD setting is employed assuming the possibility to control for observed as well as unobserved heterogeneity in the estimation of the treatment effect by taking advantage of the existence of an eligibility rule based on an observable variable x, which in the case of this analysis is the GDP threshold set at 75% of the EU average. The research design rests on the mild exogeneity of the treatment status given that the estimation is performed at a lower geographical level with respect to that identified by the policy to define the eligibility status. The paper therefore exploits the availability of the category of the so-called 'accidental winners' defined as NUTS-3 areas that were in theory not eligible for the policy support as characterized by a GDP above 75% of the EU average, but which ended up being treated simply because the eligibility criterion was applied at a broader geographical scale. These are areas that were randomly sorted into treatment regardless of their compliance with the eligibility threshold. As such, by looking at NUTS-3 regions just below and above the threshold, one can compare areas that are likely to be very similar with respect to both observed and unobserved characteristics, except for the randomly assigned treatment status.

A fuzzy RDD design was applied to account for the exceptions in the applicability of the treatment status acknowledged in the third section. The estimation strategy is based the methodology popularized by Imbens and Lemieux (2008) and Lee and Lemieux (2010), who proposed a fuzzy RRD design with local average treatment effect (LATE) estimation where the discontinuity is used as an instrumental variable (IV) for the treatment status. The joint possibility of exploiting a randomly assigned treatment at NUTS-3 level and to instrument the

treatment status by means of the discontinuity coming from the application of a fuzzy RDD design allows to recover reliable predictions of the effect of the policy.

Following Imbens and Lemieux (2008), the goal is to estimate the parameter ρ:

$$y_{i,T} = \theta + \varrho T_i + f(\widetilde{x_{i,T}}) + \eta_i \quad (1)$$

where $y_{i;T}$ is in the case the GDP growth of region i whose treatment status is T (i.e., being Objective 1 or not), θ is a constant, $\tilde{x}_i;T$ is the forcing variable properly normalized. In the case $x_{i;T}$ is per capita GDP at PPS averaged over the years 1996–98 and is normalized with respect to 75% of the EU average; that is, a variable in the form $x_{i;T}\, x_0$ is considered so that at $x_{i;T} = x_0$ one has $\tilde{x}_i;T = 0$ and $f\,(\tilde{x}_i;T) = 0$. Consequently, ρ identifies the impact of the treatment at $x_{i;T} = x_0$. The $f\,(\tilde{x}_i;T)$ term is a p-th order parametric polynomial whose parameters may differ on the left and the right side of the cut-off point (Angrist & Pischke, 2009). This makes it possible to account for the non-linearity of the relationship between growth and initial GDP, while distinct sets of parameters allow for different trend functions. Lastly η_i is an error term.

Applying ordinary least squares (OLS) estimation to equation (1) would lead to a biased estimate of the treatment effect due to the fuzziness of the treatment variable (Imbens & Lemieux, 2008; Lee & Lemieux, 2010). The treatment dummy T can be instrumented by a first-stage regression which takes the form:

$$T_i = \alpha + \beta R_i + f(\tilde{x}_i) + K_i + \varepsilon \quad (2)$$

where α and β are unknown parameters; and ε_i are disturbances. The variable R_i denotes the treatment that the region would have been assigned in case of a strict application of the eligibility rule.

Three considerations apply to this empirical approach. First, the coefficient capturing the Objective 1 status measures the impact of Cohesion Policy on regional growth on the subsample of compliers. In the case of this analysis complier regions are NUTS-3 regions with a GDP per capita lower than the 75% of the EU average located in NUTS-2 regions receiving the treatment. This implies that for the few cases in which the Objective 1 status has also been assigned to NUTS-2 regions not complying with the 75% of EU average rule, one can estimate the impact of the Cohesion Policy only for those NUTS-3 regions complying with the rule.

Second, the instrument is valid only if the exclusion restrictions hold, i.e., if it is uncorrelated with other variables explaining regional growth. To support this claim indirectly, Figures B1–B3 in Appendix B in the supplemental data online report scatter plots with local polynomial regressions in which no significant changes in population density, share of the population with a high school education and share of the population with a university degree are detected in correspondence with the treatment.[8] This evidence suggests that the treatment and the instrument are not correlated with other observed variables. Likewise the instrument should not be correlated with other policies with a similar admission criterion – i.e., the rule of 75% of EU average per capita GDP – applied at NUTS-3 level. This assumption seems to be plausible since, to the best of the knowledge, there are no such policies Europe wide.

Third and related to the last point, the instrument is a kind of 'ideal' intention-to-treat instrument; that is, it implicitly creates a counterfactual in which the decision maker admits regions to the treatment by observing the relative level of GDP per capita at NUTS-3 instead of NUTS-2 level. This situation, as is often the case with counterfactuals, does not manifest in reality. However, this 'ideal' rule is useful to exclude from the analysis regions with a relatively high GDP per capita.

RESULTS

Preliminary results are reported in Figures 1–5, which plot the outcome variable (i.e., the average growth rate for NUTS-3 regions) against the forcing variable (i.e., per capita GDP in PPP for NUTS-3 regions).[9] A polynomial in the running variable is added in order to mark the discontinuity. The jump in the outcome variable at the threshold level is evident for all typologies of spatial units. Figure 1 shows the presence of a consistent shift in the growth rate of GDP exactly at the identified threshold for the whole sample of regions, providing graphical support for the effectiveness of the policy. Results are consistent when the sample is split and the same graphical representation is provided for urban regions (Figure 2), intermediate regions close to the city (Figure 3), rural regions close to the city (Figure 4), and rural and remote regions (Figure 5). In all cases, with some degrees of variation (in particular intermediate regions seem less affected), data show a discontinuity at the threshold.

These preliminary results support two considerations. First, there is some suggestive evidence of the effectiveness of the policy for both the whole sample and each subsample of areas; second, given the evident discontinuity at the threshold, the RDD seems to be a sound approach to analyse the effectiveness of the Structural Funds in promoting GDP growth in relatively poorer regions of the EU.

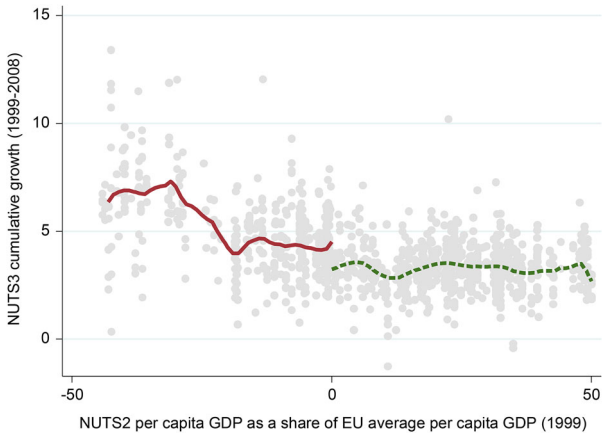

Figure 1. Impact of Cohesion Policy on the whole sample.

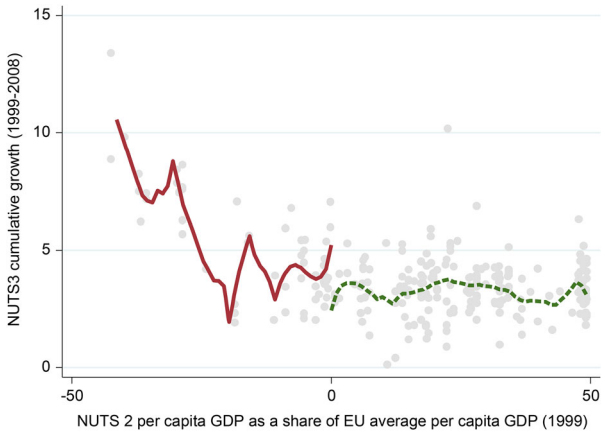

Figure 2. Impact of Cohesion Policy on urban regions.

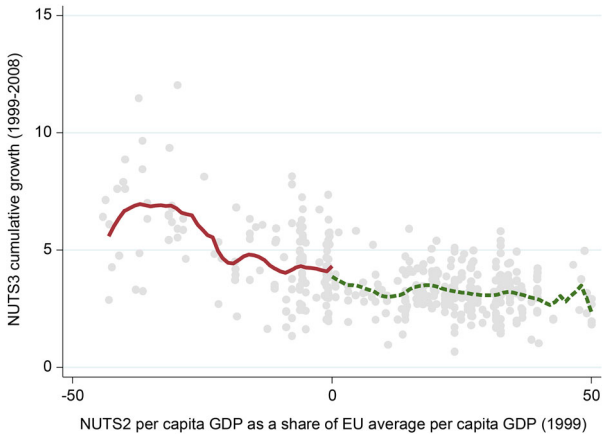

Figure 3. Impact of Cohesion Policy on intermediate regions close to a city.

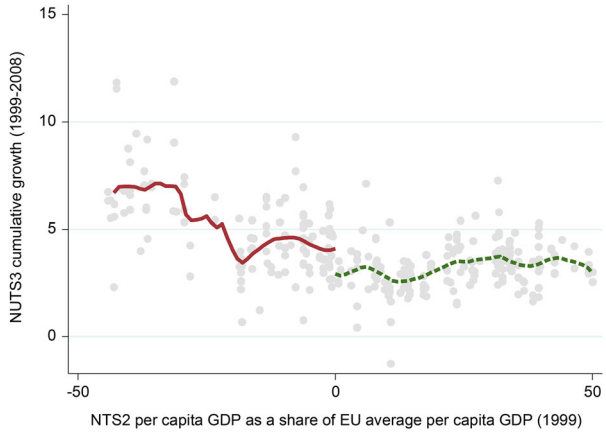

Figure 4. Impact of Cohesion Policy on rural regions, close to a city.

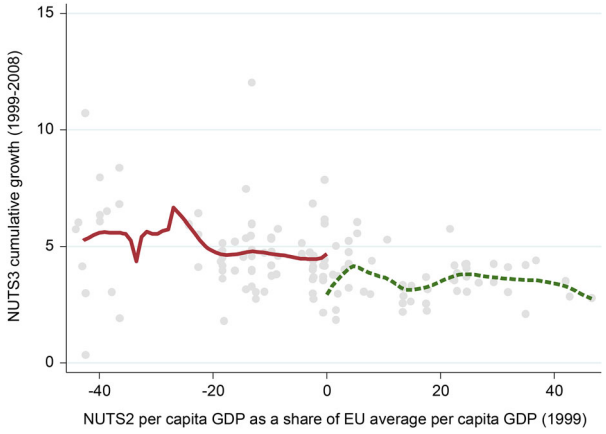

Figure 5. Impact of Cohesion Policy on rural and remote regions.

A regression analysis is also performed following the methodological setting discussed in the third section. Table 5 reports the IV estimation for the whole sample, different groups of regions and different specifications. Panel A presents the baseline regression where the dependent variable (the average growth rate of GDP over the period under analysis) is related to the treatment status. The Objective 1 status turns out to be a significant determinant of the economic performance of NUTS-3 regions over the whole sample. However, when looking at subsamples of NUTS-3 areas classified with respect to their degree of density and their distance from main urban agglomerates, results are confirmed only for rural regions close to the city. In all other cases, despite being positive, the relation remains insignificant. In the whole sample Objective 1 NUTS-3 regions experienced $a + 0.7\%$ additional growth with respect to Objective 2 NUTS-3 regions as a consequence of the Cohesion Policy. This average result, hides a considerable heterogeneity as rural regions close to a city show a policy impact of 1.62%, whereas the impact for urban region, intermediate regions close to a city, and rural–remote regions is not statistically different from zero.[10]

Panel D includes only NUTS-3 regions belonging to Austria, Belgium, France, Germany, Italy, Luxembourg, the Netherlands, Denmark, Ireland, Greece, Portugal and Spain in order to rule out the concern that results are driven by relatively new member states. Interestingly, results remain qualitatively unchanged, with a significant increase in the policy impact. Result for rural regions close to a city remain almost stable and significant.

The above evidence is not surprising if interpreted in the light of the stability in the spatial dimension of European cities, which has been widely acknowledged by the existing literature (Antrop, 2000, 2004). The natural consequence of such trend in the spatial pattern of urban areas is their progressive expansion towards rural districts close to the city centre in the search for cheap land and good connections with the urban core. Coherently, the estimation shows that rural areas close to the city centre are those benefiting more from policy initiatives aimed at fostering development in lagging regions through investments in infrastructures and connectivity (which, as acknowledged by Rodriguez-Pose and Fratesi (2004), accounts for a large part of the EU budget), human capital formation and business support. These spatial contexts experienced the deepest transformation and the greatest diversion

Table 5. Effect of Objective 1 status on cumulative growth (IV).

	Whole sample	Urban regions	Intermediate regions close to a city	Rural regions close to a city	Rural and remote regions
Panel A: Baseline regression					
Objective 1	0.758***	0.516	0.0647	1.623***	2.716
	−0.277	−0.565	−0.41	−0.418	−2.292
Observations	1233	305	451	323	138
R^2	0.338	0.463	0.343	0.44	0.011
Panel B: Including country dummies					
Objective 1	1.034***	0.711	0.780*	1.195**	−88.41
	−0.323	−0.598	−0.416	−0.482	−1679
Observations	1233	305	451	323	138
R^2	0.581	0.635	0.578	0.737	−116.711
Panel C: Including controls and country dummies					
Objective 1	0.923***	0.0118	0.853	1.544***	−40.12
	−0.317	−0.741	−0.554	−0.521	−241.7
Observations	998	265	361	256	106
R^2	0.575	0.616	0.581	0.72	−13.683
Panel D: Baseline regressions across old EU member states					
Objective 1	1.729***	3.802	1.043*	1.504***	3.315
	−0.349	−3.662	−0.568	−0.499	−2.227
Observations	915	198	356	252	101
R^2	0.289	0.314	0.151	0.18	0.158

Note: The dependent variable is cumulative growth over 1999–2008. In panel A all specifications include a fifth-order polynomial in the running variable, which is gross domestic product (GDP) per capita in 1999. Panel B includes country dummies; panel C includes population density, employment rate, and the shares of the population with secondary and tertiary education, respectively. In panel D, only regions of Austria, Belgium, France, Germany, Italy, Luxembourg, the Netherlands, Denmark, Ireland, Greece, Portugal and Spain are included. Robust standard errors are in parentheses.
Significance levels: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

with respect to their natural trend, turning out to be the areas where the effect of the policy is most visible.

To further support the reliability of the results, panel B includes controls for country dummies that account for any distinctive economic pattern at national level. Country dummies are important in the case of the Cohesion Policy as they capture the effect of national factors common to all NUTS-3 regions in a given country, including different ways of managing EU funds. The policy impact on the whole sample increases to 1.03% whereas the coefficient for rural regions close to a city decreases to 1.195% of GDP growth.

Panel C includes a number of additional controls to account for relevant characteristics at NUTS-3 level: population density, employment rate, and the share of the population with secondary and tertiary education as a proxy for human capital. As it is customary in counterfactual analysis, all variables are measured in 1999, i.e., before the treatment. The inclusion of these controls allows to eliminate additional confounding factors, eventually not captured by the non-linearity of the forcing variable. If the model is well-specified, i.e., if the polynomial in the forcing variable captures most of the growth pattern, one should not observe sizeable changes in the coefficients. Consistently with this expectation results remain almost unchanged. The status of Objective 1 regions – and in turn the possibility of benefiting from the financial resources devoted by the EU to lagging areas – is a significant determinant of the economic performance of European NUTS-3 areas and amounts to 0.9% of GDP growth. Again a substantial heterogeneity in the impact of the policy emerges when the sample is split across different typologies of NUTS-3. Rural regions close to a city experience a 1.54% increase in GDP per capita. No significant impacts are found for urban regions, intermediate regions close to a city or for rural–remote regions.[11]

To conclude, results show that rural areas close to cities have benefited most from the growing opportunities created by the policy by accommodating the increasing demand for available space in the surroundings of main urban agglomerates. Cities and intermediate areas that were already characterized by higher degrees of urbanization have been positively, but not systematically affected. Interestingly the impact turns out to be negative, although not significant, in the case of rural dispersed areas that have been reasonably affected by processes of progressive outmigration and depletion of the local economic structure. This empirical evidence highlights a further relevant

dimension in the analysis of the impact of the European Cohesion Policy in Europe: the initial distribution of land mediates the impact of the policy that passes through increasing urbanization and the transformation of the rural landscape.

CONCLUSIONS AND POLICY IMPLICATIONS

This paper presents an evaluation exercise of the European Cohesion Policy for the period 2000–06. It contributes to the existing research in the field by exploring the heterogeneity in the effect of the policy across NUTS-3 areas characterized by different degrees of urbanization (cities versus intermediate versus rural areas) and distance from main urban agglomerates (rural areas close to the city versus dispersed rural areas). Within each NUTS-2 region the analysis underlines distinctive spatial patterns of economic responses to the policy, which contribute to ultimately drive its overall impact on targeted areas. The impact of the policy was particularly evident for rural areas close to the city. These findings are motivated by the significant diversion from their natural development trend that rural areas close to cities experienced as a result of the policy. In fact, rural areas close to city centres, more than urbanized or suburbanized areas, were able to satisfy the increasing demand for space and to accommodate flows of people and business activities. At the same time, they took advantage of their geographical location close to core urban agglomerates, conditions not satisfied by more dispersed rural areas. Regions characterized by greater portions of their territory showing these favourable features were more able to capitalize the benefits coming from the availability of the financial resources made available through the policy. This evidence sheds new light on the conditions under which the European Cohesion Policy has generated a positive impact on targeted areas. In concert with these findings, it also provides relevant implications for the successful design and management of the policy in the near future.

In the first instance, the results of this analysis claim for a greater focus on the geography of development within each regional context. Alternative combinations of urban cores with a semi-urban and rural hinterland linked to the core by functional ties may contribute to the emergence of different outcomes. The implications of this claim are even more relevant in the context of the globalized economy where urban agglomerates expanding toward contiguous areas represent key actors of the economic landscape (McCann & Ortega Argilès, 2014).

Secondly, the findings of this study point in the direction of evaluating more carefully the possibility to incorporate spatial planning considerations in the context of the Cohesion Policy. The increasing focus on the place-based character of the policy, which is the philosophical approach that has underpinned its reform in 2013 (Barca, McCann, & Rodriguez Pose, 2012; OECD, 2009a, 2009b, 2011a), requires a stronger focus on the actual characteristics of each territory. In this view a territorial approach to economic development needs to be highly context-dependent and it requires tailored interventions for spatial entities, such as for instance remote rural areas or congested, degraded urban districts, characterized by different strengths and weaknesses

ACKNOWLEDGEMENTS

This paper was developed in the context of the 'STARE-BEI 2011: Built to Last: Development Policies and Socio-Economic Foresight in the Cities of Europe' grant provided by the European Investment Bank (EIB). The authors thank Gianni Carbonaro and audience at the Organisation for Economic Co-operation and Development (OECD) seminar for comments and advices.

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

FUNDING INFORMATION

This paper was developed in the context of an EIBURS grant provided by the European Investment Bank (EIB). The financial support of the EIB is gratefully acknowledged.

SUPPLEMENTAL DATA

Supplemental data for this article can be accessed at https://doi.org10.1080/00343404.2016.1179384

ORCID

Luisa Gagliardi http://orcid.org/0000-0001-6266-4572

NOTES

1. See Appendix A in the supplemental data online for additional information on European Cohesion Policy and the definition of key terms. The focus here is on 2000–06 as it is the only period for which there are data one year before the formal start of the programme and for two years after the programme's official end. See the third section for details.
2. In the definition of the European Commission, these areas coincide with towns and suburbs/small urban areas or regions 'which [contain] an urban centre of more than 200000 inhabitants representing at least 25% of the regional population' (Dijkstra & Poelman, 2008).
3. Results further endorsed by Percoco (2005), which focus on a set of South Italian regions and use a small supply-side computable model.
4. See Table B1 in Appendix B in the supplemental data online for additional descriptive statistics for control variables.
5. With the accession of Bulgaria and Romania on 1 January 2007, regions became 271 and 1303 respectively.

6. Urban clusters are defined as clusters of contiguous grid cells of 1 km^2 with a density of at least 300 inhabitants/km^2 and a minimum population of 5000. All areas outside urban clusters are defined as rural. Based on this definition, NUTS-3 regions are classified as predominantly rural if the share of the population living in rural areas is higher than 50%; intermediate if the share of the population living in rural areas is between 20% and 50%; and predominantly urban if the share of the population living in rural areas is below 20%. Two further caveats apply: (1) a predominantly rural region that contains an urban centre of more than 200,000 inhabitants representing at least 25% of the regional population becomes intermediate; and (2) an intermediate region that contains an urban centre of more than 500,000 inhabitants representing at least 25% of the regional population becomes predominantly urban.
7. All predominantly urban regions are close to a city. A predominantly rural or intermediate region is considered remote if fewer than half of its residents can drive to the centre of a city of at least 50,000 inhabitants within 45 minutes.
8. Bandwidth sizes have been selected according to the Imbens and Kalyanaraman (2012) procedure. This paper has restricted the sample to ±50% of EU average GDP per capita, set at 0.
9. The horizontal line in Figures 1–5 ranks NUTS-3 regions according to the ratio between the per capita GDP of the NUTS-2 region to which they belong and the EU average per capita GDP in 1999. To this ratio, the authors have subtracted 75% (i.e., the threshold) to obtain a standardized measure of GDP per capita. Therefore, a deviation of +1 should be interpreted as a 1% deviation from the treatment.
10. Odd values of R^2 are due to the IV model for which it is often not possible to compute meaningful goodness-of-fit statistics.
11. Additional robustness checks, in particular placebo regressions, are reported in Appendix C in the supplemental data online.

REFERENCES

Aiello, F., & Pupo, V. (2012). Structural Funds and the economic divide in Italy. *Journal of Policy Modeling*, *34*(3), 403–418.

Angrist, J. D., & Pischke, J. S. (2009). *Mostly harmless econometrics: An empiricist's companion*. Princeton: Princeton University Press.

Antrop, M. (2000). Changing patterns of urbanized countryside of Western Europe. *Landscape Ecology*, *15*, 257–270. doi:10.1023/A:1008151109252

Antrop, M. (2004). Landscape change and the urbanization process in Europe. *Landscape and Urban Planning*, *67*, 9–26. doi:10.1016/S0169-2046(03)00026-4

Barca, F., McCann, P., & Rodriguez Pose, A. (2012). The case for regional development intervention: Place-based versus place neutral approaches. *Journal of Regional Science*, *52*(1), 134–152. doi:10.1111/j.1467-9787.2011.00756.x.

Baslé, M. (2006). Strengths and weaknesses of European Union policy evaluation methods: Ex-post evaluation of Objective 2, 1994–99. *Regional Studies*, *40*(2), 225–235. doi:10.1080/00343400600600595

Becker, S. O., Egger, P. H., & von Ehrlich, M. (2010). Going NUTS: The effect of EU Structural Funds on regional performance. *Journal of Public Economics*, *94*(1–2), 578–590. doi:10.1016/j.jpubeco.2010.06.006

Becker, S. O., Egger, P. H., & von Ehrlich, M. (2011). *Absorptive capacity and the growth effects of regional transfers: A regression discontinuity design with heterogeneous treatment effects*. CEPR Discussion Paper No. 8474. London: Centre for Economic Policy Research (CEPR).

Bernini, C., & Pellegrini, G. (2011). How are growth and productivity in private firms affected by public subsidy? Evidence from a regional policy. *Regional Science and Urban Economics*, *41*(3), 253–265. doi:10.1016/j.regsciurbeco.2011.01.005

Boldrin, M., & Canova, F. (2001). Inequality and convergence: Reconsidering European regional policies. *Economic Policy*, *32*, 207–253.

Boldrin, M., & Canova, F. (2003). Regional policies and EU enlargement. In B. Funck & L. Pizzati (Eds.), *Labour, employment and social policy in the EU enlargement process. Changing perspectives and policy options*. Washington, DC: World Bank.

Cappelen, A., Castellacci, F., Fagerberg, J., & Verspagen, B. (2003). The impact of EU regional support on growth and convergence in the European Union. *Journal of Common Market Studies*, *41*, 621–644. doi:10.1111/1468-5965.00438

Dall'Erba, S., & Le Gallo, J. (2008). Regional convergence and the impact of European Structural Funds 1989–1999: A spatial econometric analysis. *Papers in Regional Science*, *87*(2), 219–244. doi:10.1111/j.1435-5957.2008.00184.x

Dijkstra, L., Garcilazo, E., & McCann, P. (2013). The economic performance of European cities and city regions: Myths and realities. *European Planning Studies*, *21*(3), 334–354. doi:10.1080/09654313.2012.716245

Dijkstra, L., Garcilazo, E., & McCann, P. (2015). The effects of the global financial crisis on European regions and cities. *Journal of Economic Geography*, *15*(5), 935–949. doi:10.1093/jeg/lbv032

Dijkstra, L., & Poelman, H. (2008). *Remote rural regions: How proximity to a city influences the performance of rural regions* (Regional Focus No. 1, 2008). EC-DG REGIO.

Dijkstra, L., & Poelman, H. (2011). *Regional typologies: A compilation*. European Union Regional Policy Paper No. 01/2011.

Dijkstra, L., & Ruiz, V. (2010). *Refinement of the OECD regional typology: Economic performance of remote rural regions*. Retrieved from www.oecd.org/dataoecd/41/56/45511797.pdf

Dreier, P., Mollenkopf, J., & Swanstrom, T. (2001). *Place matters: Metropolitics for the twenty first century*. Lawrence: University Press of Kansas.

Ederveen, S., Gorter, J., de Mooij, R., & Nahuis, R. (2002). *Funds and games: The economics of European Cohesion Policy*. CPB Special Publication No. 41.

Ederveen, S., de Groot, H. L. F., & Nahuis, R. (2006). Fertile soil for Structural Funds? A panel data analysis of the conditional effectiveness of European Cohesion Policy. *Kyklos*, *59*(1), 17–42. doi:10.1111/j.1467-6435.2006.00318.x

Esposti, R., & Bussoletti, S. (2008). Impact of Objective 1 funds on regional growth convergence in the European Union: A panel-data approach. *Regional Studies*, *42*(2), 159–173. doi:10.1080/00343400601142753

European Commission. (2010). *Ex post evaluation of Cohesion Policy programmes 2000–2006 financed by the European Regional Development Fund in Objective 1 and 2 regions*. Directorate General Regional Policy.

European Commission. (2014). *Monitoring and evaluation of European Cohesion Policy: European Social Fund*. Employment, Social Affairs and Inclusion DG.

Garcia-Milà, T., & McGuire, T. (2001). Do interregional transfers improve the economic performance of poor regions? The case of Spain. *International Tax and Public Finance*, *8*(3), 281–296. doi:10.1023/A:1011264107134

Hagen, T., & Mohl, P. (2008). *Which is the right dose of EU Cohesion Policy for economic growth?* ZEW Discussion Paper No. 08-104. Mannheim: Zentrum für Europäische Wirtschaftsforschung (ZEW).

Imbens, G., & Kalyanaraman, K. (2012). Optimal bandwidth choice for the regression discontinuity estimator. *Review of Economic Studies*, 79(3), 933–959. doi:10.1093/restud/rdr043

Imbens, G. W., & Lemieux, T. (2008). Regression discontinuity designs: A guide to practice. *Journal of Econometrics*, *142*(2), 615–635. doi:10.1016/j.jeconom.2007.05.001

Jargowsky, P. A. (1997). *Poverty and place: Ghettos, barrios, and the American city*. New York: Russell Sage Foundation.

Jargowsky, P. A. (2003). *Stunning progress, hidden problems: The dramatic decline of concentrated poverty in the 1990s, center on urban and metropolitan policy*. Washington, DC: Brookings Institution.

Kasanko, M., Barredo, J. I., Lavalle, C., Mccormick, N., Demicheli, L., Sagris, V., & Brezger, A. (2006). Are European cities becoming dispersed? A comparative analysis of 15 European urban areas. *Landscape and Urban Planning*, *77*, 111–130. doi:10.1016/j.landurbplan.2005.02.003

Le Gallo, J., Dall'Erba, S., & Guillain, R. (2011). The local versus global dilemma of the effects of Structural Funds. *Growth and Change*, *42*(4), 466–490. doi:10.1111/j.1468-2257.2011.00564.x

Lee, D. S., & Lemieux, T. (2010). Regression discontinuity designsin economics. *Journal of Economic Literature*, *48*(2), 281–355. doi:10.1257/jel.48.2.281

Magrini, S. (1999). The evolution of income disparities among the regions of the European Union. *Regional Science and Urban Economics*, *29*, 257–281. doi:10.1016/S0166-0462(98)00039-8

Martin, P. (1998). Can regional policies affect growth and geography in Europe? *World Economy*, *21*, 757–774. doi:10.1111/1467-9701.00162

McCann, P., & Ortega-Argilés, R. (2014). Smart specialisation in European regions: Issues of strategy, institutions and implementation. *European Journal of Innovation Management*, *17*(4), 409–427.

Midelfart-Knarvik, K. H., & Overman, H. G. (2002). Delocation and European integration: Is structural spending justified? *Economic Policy*, *17*, 321–359. doi:10.1111/1468-0327.00091

Mohl, P., & Hagen, T. (2010). Do EU Structural Funds promote regional growth? New evidence from various panel data approaches. *Regional Science and Urban Economics*, *40*(5), 353–365. doi:10.1016/j.regsciurbeco.2010.03.005

Organisation for Economic Co-operation and Development (OECD). (2009a). *Regions at a glance*. Paris: OECD.

Organisation for Economic Co-operation and Development (OECD). (2009b). *How regions grow*. Paris: OECD.

Organisation for Economic Co-operation and Development (OECD). (2011a). *Regions and innovation policy*. Paris: OECD.

Organisation for Economic Co-operation and Development (OECD). (2011b). *Regional typology*. Paris: OECD.

Percoco, M. (2005). The impact of Structural Funds on the Italian Mezzogiorno, 1994–1999. *Région et Développement*, *21*, 141–153.

Percoco, M. (2013). *The impact of European Cohesion Policy on regional growth: How much do strategy and local economic structure matter?* Mimeo. Milan: Università Bocconi.

Puga, D. (2002). European regional policy in the light of recent location theories. *Journal of Economic Geography*, *2*, 373–406. doi:10.1093/jeg/2.4.373

Puigcerver-Peñalver, M. (2007). The impact of Structural Funds policy on European regions' growth. A theoretical and empirical approach. *European Journal of Comparative Economics*, *4*(2), 179–208.

Rodriguez-Pose, A., & Fratesi, U. (2004). Between development and social policies: The impact of European Structural Funds in Objective 1 regions. *Regional Studies*, *38*(1), 97–113. doi:10.1080/0034340031000163222 6

Sala-i-Martin, X. (1996). Regional cohesion: Evidence and theories of regional growth and convergence. *European Economic Review*, *40*, 1325–1352. doi:10.1016/0014-2921(95)00029-1