Did the Governance of EU Funds Help Italian Regional Labour Markets during the Great Recession?

ROBERTA ARBOLINO,[1] PAOLO DI CARO[2,3] and UGO MARANI[1]
[1]University of Napoli l'Orientale, Naples [2]Italian Ministry of Economy and Finance, Rome [3]University of Portsmouth, Portsmouth

Abstract

European and national policy-makers have highlighted the role of the cohesion policy in smoothing the effects of the crisis during the programme period 2007–13. To support these claims, however, specific evidence is needed. This article studied the relations between the absorption of the EU funds and regional labour markets in Italian regions during the Great Recession. By applying different panel data models to new data on cohesion policy, three main results were achieved. We found that the cohesion policy made a contribution to the resilience of Italian regional labour markets. Yet the short-term consequences of the cohesion policy on regional economies were conditional on the heterogeneous quality of regional institutions. We also found that the policy changes introduced in Italy during the crisis increased the effectiveness of the cohesion policy. The analysis was controlled for endogeneity issues and alternative specifications.

Keywords: regional labour markets; EU cohesion policy; resilience; great recession

Introduction

During the programme period 2007–13 the Great Recession created unexpected new challenges to the European Union (EU) cohesion policy, which was originally designed to solve long-term regional disparities. The exceptional circumstances originating from the global financial crisis, like the increasing constraints in the public finances of particular member states (MS) and its different impact on European regions (Dijkstra *et al.*, 2015), motivated a recalibration of the cohesion policy to supporting income and jobs, also in the short run. The view that 'though not an anti-cyclical economic policy, cohesion policy had a key role to play in the exceptional measures needed to help the MS counter the effects of the crisis' (EU Commission, 2010) found consensus among European and national policy-makers. Several regulatory changes were made to align this policy with the European Recovery Plan, by simplifying administrative procedures and adopting projects with countercyclical targets (Bachtler and Mendez, 2016; Berkowitz *et al.*, 2015). In recent years the EU Commission pointed out that the effects of the crisis were moderated by the expenditure financed under the cohesion policy that played a stabilising role (EU Commission, 2017). Did the cohesion policy really make a contribution to the resilience of regional labour markets during the Great Recession? If yes, were these effects conditional on the same regional factors that are generally used to explain the effectiveness of the EU funds?

In this study we provide novel evidence of the consequences of the cohesion policy on regional labour markets over the years 2007–13. The existing literature does not offer adequate support for answering the questions above, by motivating the need of

scientifically-based evidence in this area (Camagni and Capello, 2015). There are only a few works that analyse the consequences of EU funds on regional economies during the recent crisis, though the existence of a broad literature studying the effects of the cohesion policy *lato sensu*. Healy and Bristow (2015) used a qualitative approach to link the regional impact of the crisis with the management of EU funds. Bachtrögler (2016) investigated the effects of the structural funds on the per capita growth of gross domestic product (GDP) in 250 European regions, finding reduced effectiveness of cohesion policy over the period 2007–13. In both works, the authors did not look at the labour market variables on which we focus here.

In Italy there has been increasing interest in the employment effects of the cohesion policy during the recent crisis, but most of the analyses had limited geographical scope. Dal Bianco and Fratesi (2015) and Porro and Salis (2017) looked at the Lombardy region only; Ciani and de Blasio (2015) focused on local labour markets located in the south. By contrast, in our study we consider all 20 Italian regions in order to benefit from the regional variations observed in labour markets (Cappelen *et al.*, 2003) and institutions (Charron *et al.*, 2014) across Italy. Cerqua and Pellegrini (2018) used a spatial discontinuity design, finding a positive impact of the cohesion policy on the growth of employment in Italian municipalities during the Great Recession. Our work adds to that contribution in some respects. We used observations for employment and a job protection insurance mechanism to describe labour markets more in detail depth (Dupor and Mehkari, 2016). A further novelty of our work is that we looked at the quality level of regional institutions to explain regional differences in the effectiveness of the cohesion policy (Capello, 2018). We prefer regional data for two main reasons: regional authorities manage a large fraction of the EU funds in comparison with municipalities; and data on the quality of institutions are available on a regional level.

In this article, we applied different panel models to new data collected for the 20 Italian regions for the years 2007–13. This period is ideal for our analysis, given that it encompasses both the Great Recession and the EU cohesion policy multiannual programme. We add to works studying the cohesion policy by using panel approaches (Di Cataldo and Monastiriotis, 2018).[1] By studying the role of institutions as a moderating factor to explain the consequences of EU funds on regional labour markets, our study brings new knowledge to specific cohesion policy analyses (Farole *et al.*, 2011).[2] Our analysis also contributes to an understanding of the policy determinants of regional economic resilience. This is the first work studying the interplay of regional policies and economic resilience in the Italian regions (Di Caro and Fratesi, 2018a).

The rest of the article is organized as follows. Section I provides a discussion of the theoretical foundations and an overview of the literature. Section II describes the data and presents preliminary evidence. The empirics are in Section III. The final section concludes the work. Supporting information is provided in the Appendix.

---

[1] The report for the ex-post evaluation of the cohesion policy in 2007–13 highlighted the need for evidence on the effects of the EU funds other than counterfactual evaluations, given the confounding factors of the crisis and the short time period (EU Commission, 2016). For a justification of panel techniques in cohesion studies, see Hagen and Mohl (2011).
[2] We also provide evidence on the effectiveness of the EU funds targeted at specific fields of interventions by looking at projects funding occupation. To save space, the results are reported in the Appendix (Section B).

Theoretical Background and Related Literature

In this section we discuss the conceptual background of the empirical analysis developed in the next pages by providing an updated overview of the main literature of interest for this article. The aim was to derive some hypotheses to guide our empirical investigation.

The EU Cohesion Policy and Regional Growth

Studying the effects of the EU cohesion policy on the economic and social performance of European regions has attracted the interest of researchers since the early 1990s (for a survey, see Dall'Erba and Fang, 2017). Despite the mixed results in the literature, resulting from conditional positive impact several factors such as the unit and time of observation, the empirical strategy and the particular funds analysed, there has been progressive agreement on the conditional positive impact of the cohesion policy on regional growth and development (Becker *et al*., 2010; Szopik-Depczyńska *et al*., 2018). Some of the existing works have applied cross-section and panel techniques to regional growth regressions where the dependent variable is the growth of GDP per capita and/or employment and the main explanatory variable is eligibility for and/or the amount of cohesion funds (Pinho *et al*., 2015a, 2015b). More recent contributions have used regression discontinuity design and synthetic control methods to provide robust evidence of the effectiveness of the cohesion policy (Becker *et al*., 2012; Di Cataldo, 2017; Pellegrini *et al*., 2013). The positive growth effects of the EU structural funds have been confirmed also for the Italian case (Aiello and Pupo, 2012; Coppola *et al*., 2018; Giua, 2017).

Our first research objective was to address empirically the expectation that the cohesion policy could have had positive consequences on regional labour markets in Italy during the Great Recession (Hypothesis 1). This hypothesis is motivated by the fact that the EU funds are used for public investments and expenditures that are able to sustain short-term demand effects both directly and indirectly through Keynesian multiplier effects. More precisely, the cohesion policy is part of place-based policies: policy tools designed for smoothing geographical differences in income and employment (Neumark and Simpson, 2014). In a recent work, Crescenzi and Giua (2018) used a spatial regression discontinuity approach to study the effects of the cohesion policy in selected MS also during the recent crisis, finding interesting country differences.

Regional Institutions and Cohesion Policy

The success of the cohesion policy for promoting regional development is conditional to specific economic and social factors (Arbolino and Boffardi, 2017; Crescenzi *et al*., 2017). The quality of regional governments and institutions has been recognized as a key variable for explaining the effectiveness of a cohesion policy on a national (Ederveen *et al*., 2006) and a regional level (Becker *et al*., 2013). On theoretical grounds, high-quality regional governments and institutions – the set of formal and informal rules of the game – increase public trust and transparency, reduce information problems, improve the provision of public goods and limit rent-seeking activities (Rodríguez-Pose, 2013). Good regional institutions favour the promotion of better economic conditions and functioning labour markets and, in turn, the implementation of development policies (Di Cataldo and Rodríguez-Pose, 2017). These premises motivate our second research

objective: to test whether and to which extent the labour market consequences of the cohesion policy during the Great Recession were conditional to the different quality levels of regional institutions in Italy (Hypothesis 2).

We here contribute to the literature studying the role of government and institutions on the returns of the EU cohesion policy (Beugelsdijk and Eijffinger, 2005). Drawing from Rodríguez-Pose and Garcilazo (2015), who pioneered this field of research using panel data for the European regions over the years 1996–2007, we focused on regional labour markets' outcomes over the programme period coinciding with the recent crisis. We also innovated with respect to existing works on the Italian case. We extended the research of Milio (2007) by studying the institutional dimension across all the Italian regions. Compared with Filippetti and Reggi (2012), we focused on employment growth for the period 2007–13 and we used different measures for the EU funds and institutional variables. Our attention to the quality of regional institutions adds to the work of Dellmuth *et al*. (2017), which linked the effectiveness of the cohesion policy in the Italian provinces to regional political factors.

## Labour Markets and the Cohesion Policy during the Great Recession

We combined data on employment, obtained from the National Institute of Statistics with observations from the National Institute of Social Security, on the main Italian job insurance mechanism, the Cassa Integrazione Guadagni (CIG).[3] CIG data measure the total amount of hours allocated to workers, which are temporarily not occupied by firms experiencing specific adverse situations, for compensating them for wage losses due to cuts in working time (Tronti, 1991). Specifically, an increase (decrease) of the CIG hours means worse (better) economic conditions following a temporary reduction (a rise) in labour demand. Importantly, CIG data complement information on job positions, as workers benefiting from CIG are not counted among employed (and unemployed) individuals (Padoa-Schioppa, 1988). The Italian CIG is made up of three different instruments: *ordinaria, straordinaria,* and *in deroga*. We use data on the CIG *ordinaria* because they capture the short-term adjustments of labour markets more directly than the other instruments (Tronti, 1991). In the Appendix (Figure A3), we report the sensitivity index for the years 2007–13, which is a measure commonly used for describing regional resilience (Fingleton *et al*., 2012) in terms of employment and CIG. High values denote a region showing low resistance in relative terms; in the figures the dark colours indicate high sensitivity. Regional differences are significant at 1 per cent level after performing ANOVA tests on the equality of the mean level. This suggests that the Great Recession had asymmetric effects on the Italian regional labour markets, motiving further inquiry on this topic (Di Caro, 2017).

To measure the absorption of the cohesion policy we constructed an indicator obtained as the share of annual payments made by regional authorities divided by the funds committed to the region for each individual year at the beginning of the programme period 2007–13. The indicator uses values from zero (low absorption) to one (high absorption). High values imply that regional authorities were more capable of transferring committed funds to the beneficiaries than low value regions. We limited our attention to the funds

---

[3]The description and summary statistics of the variables are in the Appendix. Figures A1 and A2 report some preliminary information on the dependent variables and the EU funds.

Figure 1: (a) EU funds absorption and (b) index of institutional quality, Italian regions, calculated on the average for the period 2007–13. [Colour figure can be viewed at wileyonlinelibrary.com]

(a) EU funds absorption
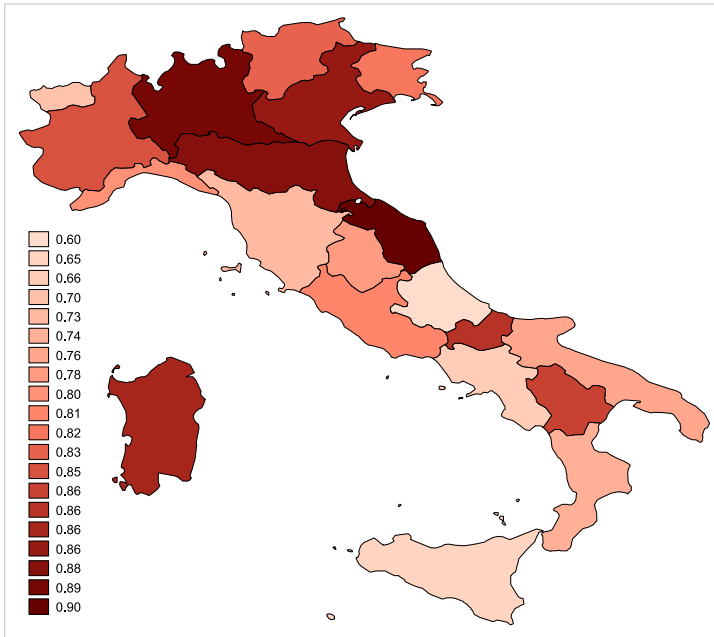
(b) Institutional quality index
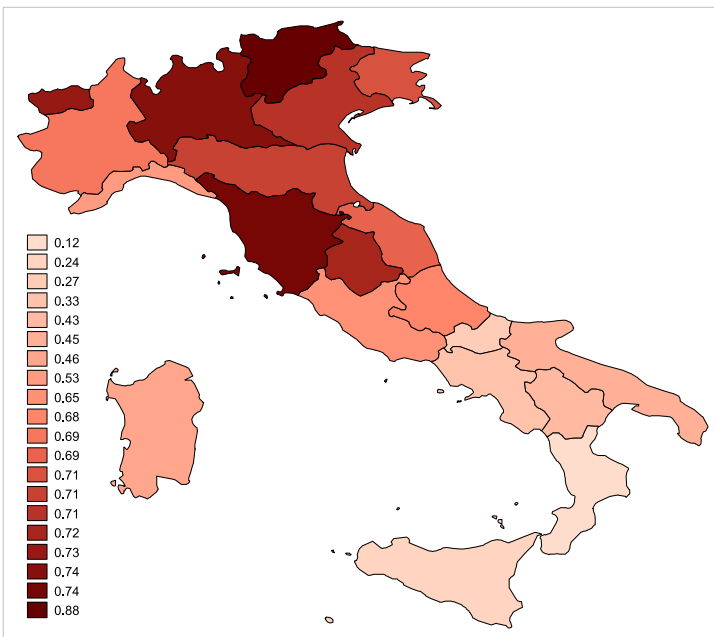
included in each regional operational programme (ROP), in which regional authorities manage a large fraction of resources by autonomously establishing priorities and targeting financial instruments. Funds addressed to infrastructural projects in the ROPs are not included as they may be influenced by inefficiencies of the national government. In Italy, about 70 per cent of total cohesion funds are managed by regional authorities (Dellmuth *et al.*, 2017).

Projects localized in a given region, but financed either through the ROPs of other regions or national programmes were also excluded. Our measure of funds absorption was constructed for all the thematic subjects and the specific subject area financing projects on occupation. Table A1 (Appendix) reports information on the projects, total funds and payments for each ROP. The regional distribution of the funds varied in terms of number and type of projects, allocation of resources, beneficiaries and subjects. The total allocation of funds was on average higher in the 'Objective 1' regions located in the south, where about 60 per cent of total funds are localized, than in the rest of the country. Figure 1a maps the funds absorption observed on average during the Great Recession: regional differences are significant at $P = 0.05$ level after performing the ANOVA test. The interpretation of the index is as follows. In the Marche region that shows the highest absorption, for 1 euro of EU funds allocated through the ROP about 0.90 euro was transferred to beneficiaries by means of payments.

We used the index of institutional quality (IQI) to measure the quality of regional institutions in Italy (Nifo and Vecchione, 2014). The IQI is a composite index based on the World Governance Indicator constructed by the World Bank (Kaufmann *et al.*, 2011). It is the weighted average of 24 indicators that are divided into five pillars: voice and accountability; government effectiveness; regulatory quality; rule of law; control and corruption. IQI values range from 0 (poor-quality institutions) to 1 (high-quality institutions). Our preference for this index was motivated by the large panel dimension and the high within-country variation with respect to other indexes (Nifo and Vecchione, 2015). This index shows a high correlation (0.79) with the survey-based European Quality of Government index (Charron and Lapuente, 2013), which has been used in cohesion policy studies (Rodríguez-Pose and Garcilazo, 2015).[4] From Figure 1b, we see high IQI are found in central and northern regions, while regions located in the south report low IQI values. Comparing the two figure parts in Figure 1, it can be noted that the regional distribution of the absorption of funds is similar to that of the institutional quality level. These patterns are more thoroughly analysed in what follows.

Methodology

This section contains our empirical analysis, which was developed in three steps. First, we describe our starting specification, which is based on panel data models with interaction effects. This choice was motivated by our interest in modelling the short-term consequences of the cohesion policy in the framework of a regional labour market's growth regression (Chodorow-Reich *et al.*, 2012; Hagen and Mohl, 2011). Our preference for panel regressions is also explained by the possibility of making comparisons between our results and those obtained by other works analysing the interaction between cohesion policy

---

[4]The findings of the article were not modified when the European Quality of Government index was used. Results are available upon request.

and quality of institutions in Europe (Rodríguez-Pose and Garcilazo, 2015). Second, we present the main results of the article, focusing on the focal explanatory variables. The results of the cohesion policy targeted at occupation are placed in the Appendix, to save space. Third, we checked the robustness of our findings by conducting sensitivity checks, including an estimation of generalized methods of moments (GMM) and instrumental variable models. We also introduced additional control variables in the baseline specifications.

Baseline Specification

Our starting specification is a panel model where the dependent variable y_{it} is the annual change of the particular labour market indicator (that is, employment/CIG) observed in the region i ($i = 1, \ldots, 20$) during the crisis period ($t = 2007, \ldots, 2013$):

$$y_{it} = \alpha_i + \beta_1 EUfund_{it-1} + \beta_2 Inst_{it-1} + \beta_3 EUfund*Inst_{it-1} + \sum_{j=0}^{q} \theta'_{ij} x_{i,t-j} + \varepsilon_{it} \quad (1)$$

The term α_i is the autonomous growth rate, and controls for time-invariant differences across regional labour markets (Hsiao, 2014). The covariate $EUfund_{it-1}$ describes the regional absorption of EU funds and $Inst_{it-1}$ is the IQI index. We introduce the main covariates of interest with a lag of one year because it is likely that projects financed by the cohesion policy become effective for regional economies after a time lag (Mohl and Hagen, 2010).[5] This choice partially reduces the occurrence of reverse causality bias in the estimates and allows the short-term consequences of the policy to be captured (Pinho *et al.*, 2015b).

The estimation of the coefficient β_1 addresses our first hypothesis; namely, the relation between the effectiveness of the EU funds and performance of the regional labour markets over the years 2007–13. A positive (negative) coefficient was expected when the dependent variable is the growth of employment (CIG). The coefficient β_1 captures the (partial) effect of the explanatory variable *EUfund* on y when the covariate describing the level of regional institutions is equal to zero; with subscripts removed for notational convenience. Our second hypothesis was modelled by introducing the interaction term *EUfund*Inst* in the empirical relation (1). This captures the effects of funds absorption conditional on a given level of quality of regional institutions, $y/EUfund = \beta_1 + \beta_3 * Inst$. To make useful interpretations of the estimates from (1), we present results with the sample mean of the interaction covariate *Inst* that represents the average quality level of regional institutions in Italy (Jaccard and Turrisi, 2003).

In our baseline specification the vector $x_{i,t-j}$, with $j = 1$, is made up of some region-level controls that are potentially correlated with both the EU indicator and changes in employment and CIG. We introduced the (lag of) regional population as a standard control in labour market growth models and to check for patterns of convergence (Chodorow-Reich *et al.*, 2012). We also added the (lag of) annual total allocated EU funds (in logs) granted to a region at the beginning of the programme period, as regional differences in

---

[5]The selection of a one year lag results from the comparison of different models augmented with contemporaneous and lagged covariates. The variables *EUfund* and *Instquality* do not show collinearity: the Variance Inflation Factor (VIF's) values are below 2 in every specification; correlation coefficients are not significant and below 0.20.

the allocated funds potentially influence the progress of payments (EU Commission, 2017). The baseline specification was enriched by introducing time-period annual effects that enabled us to rule out the presence of omitted effects that are common across all regions during the observation period. Examples of common effects are the impact of the Great Recession on the Italian economy and the increasing trend observed in the total allocation of the funds on a regional level deriving from the time progress of the EU financial framework. We also added the growth of employment/CIG registered in the previous programme period (2000–6) in order to account for pre-existing regional economic trends. No differences were registered between using previous period levels rather than growth rates.

The estimation of (1) was conducted by applying the Prais–Winsten estimator with heteroskedasticity-robust and panel-corrected standard errors (SEs) given its feasibility in short panels (Beck and Katz, 1995). Preliminary tests suggest the presence of heteroskedasticity and serial autocorrelation in the error term ε_{it}. In each model, the modified Wald test rejects the null of homoscedasticity at the $P = 0.01$ level of statistical significance; the Wooldridge test confirmed the presence of first order correlation. The null hypothesis of cross-sectional independence was rejected after applying the Pesaran's test (2004). When time fixed-effects were included the degree of cross-sectional dependence was diminished, but it remained significant, suggesting that we need to account for spatial interactions (Elhorst, 2014).

Main Results

Table 1 reports the main findings of the article. We have estimated four different panel models (A–D), including in two (B and D) the interaction term between the EU funds indicator and the IQI. In models (C) and (D), we added the covariate *PAC*, which is defined as the interaction of the EU indicator and a dummy for the years 2011–13, when the Italian government introduced a new policy framework called Piano Azione Coesione (PAC) to enhance the effectiveness of the EU funds and speed up payments. Interest in the consequences of PAC is motivated by the fact that this new policy framework was the starting point for the Italian strategy for the programme period 2014–20. Moreover, this allowed us to make some comparisons with the work of Ciani and de Blasio (2015). No significant changes were registered when modifying the covariate PAC to consider also the effects of the European Recovery Plan, that has been introduced since 2008 on an EU level. The overall goodness of our estimates is supported by the values of the Wald statistics and the R^2; the results of the baseline controls are fairly closely in line with findings in the existing literature (Dupor and Mehkari, 2016).

As for employment estimates, the coefficient β_1 was positive, confirming that the cohesion policy contributed to improving the resistance of Italian regional labour markets. It turned out to be significant only when the quality level of regional institutions is taken into accounted, as in models (B) and (D). This result, combined with the observation that the coefficient β_2 was positive and statistically significant, supports the view that returns on the EU funds on regional economies are linked to the presence of growth-enhancing regional institutions (Tosun, 2014). In the regions with a high quality level of institutions and where the EU funds were transferred to beneficiaries in a punctual and timely manner, labour markets registered high resilience and a reduced drop in labour demand. From

Table 1: Main Estimates, Employment and CIG

Dependent variable	Employment growth				CIG growth			
Explanatory variables	A	B	C	D	A	B	C	D
EUfund (β_1)	0.0163	0.0794*	0.0264	0.0989**	−0.4867**	−0.7028	−0.3720*	−0.7463
	(0.0166)	(0.0433)	(0.0168)	(0.0433)	(0.2133)	(0.5480)	(0.1962)	(0.5331)
Instquality (β_2)	-	0.2243**	-	0.2396**	-	−4.4360***	-	−4.4947***
		(0.0987)		(0.0949)		(1.6109)		(1.5739)
EUfund*Instquality (β_3)	-	−0.1267*	-	−0.1418*	-	0.2299	-	0.4429
		(0.0739)		(0.0723)		(0.9318)		(0.9073)
PAC (β_4)	-	-	0.0110**	0.0119***	-	-	0.3509***	0.1978*
			(0.0048)	(0.0044)			(0.1216)	(0.1203)
Emppre/CIGpre	0.7682*	0.3774	0.7193*	0.3757	−0.6645*	−0.0713	−0.1420	−0.1032
	(0.3328)	(0.3744)	(0.3342)	(0.3750)	(0.3981)	(0.4285)	(0.3604)	(0.3774)
Population (log)	0.0182	−0.3065	−0.1621	−0.5189**	−14.5353***	−13.0217**	−17.8598***	−14.8829**
	(0.1581)	(0.2009)	(0.1767)	(0.2023)	(5.2801)	(5.6390)	(5.4702)	(6.5024)
Tot. EUfunds (log)	−0.0043***	0.0038**	−0.0055**	−0.0050***	−0.0648	0.0859**	−0.0958**	−0.1074***
	(0.0016)	(0.0016)	(0.0015)	(0.0015)	(0.0402)	(0.0363)	(0.0402)	(0.0396)
Observations	120	120	120	120	120	120	120	120
R^2	0.29	0.34	0.32	0.39	0.68	0.69	0.70	0.72
Wald statistics ($\chi^2_{(k)}$)	136.35	119.59	158.89	142.38	281.39	290.54	324.68	339.81
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]

Note: Results obtained with the inclusion of: a constant term, regional and time annual effects. Errors are in parentheses (). * $P = 0.1$, ** $P = 0.05$, *** $P = 0.01$. *P* values in brackets.

Figure 2: Predictive margins of the effect of absorption of EU funds on employment growth in (a) average and (b) high and low absorption regions. 2a reports the marginal effects of the variable *EUFund=0.80* for different levels of the covariate *Instquality*. 2b reports the marginal effects of the variables *EUFund=0.65* (light) and *EUFund=0.90* (dark) for different levels of the covariate *Instquality*. Results are obtained from model (B) for employment. Shaded areas report 95% confidence intervals. [Colour figure can be viewed at wileyonlinelibrary.com]

(a) Average absorption regions

(b) High & Low absorption regions
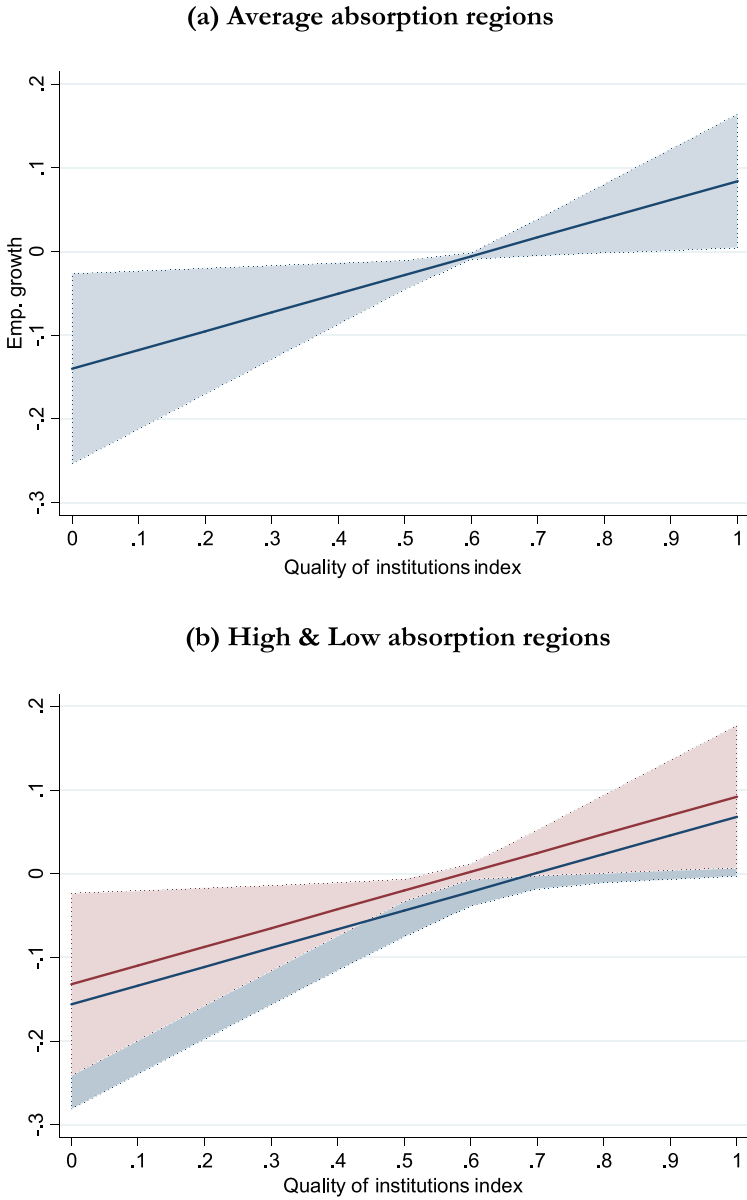
model B, we see that in a region with an average quality level of institutions the effect of the cohesion policy on employment growth was equal to $0.006 = 0.079 + (-0.127*0.582)$, with 0.582 denoting the average IQI in Italy. During the Great Recession a 10 per cent increase in the absorption of the EU funds produced a positive variation of employment of 0.060 standard deviation from the mean employment growth. The F-test rejected the null hypothesis of joint not significance of the coefficients β_1 and β_3 (P value = 0.013). The SE of the estimated coefficient is equal to 0.001.

If the policy changes deriving from the PAC are considered (model D), the estimated effect is now equal to 0.028 (SE = 0.013). The F-test rejected the null hypothesis of joint not significance of the coefficients β_1, β_3, β_4 (P value = 0.019). This suggests that the PAC exerted a positive impact on the returns of the EU funds on regional employment growth in Italy. This finding is partially in contrast with the results of Ciani and de Blasio (2015) that found the PAC had no relevant effect. One of the reasons for this difference may be that we focused on the EU funds managed by regional governments, while Ciani and de Blasio (2015) analysed all funds addressed to local labour markets. Moreover, we analysed all 20 Italian regions, Ciani and de Blasio (2015) looked at southern regions only.[6] Most of the changes in the cohesion policy during the programme period 2007–13 were undertaken in the regions located in the centre-north. In Lombardy the regional government activated an anti-crisis package by mobilizing about €350 million, mostly provided by the cohesion policy for innovation and research and easier access to credit. In Emilia-Romagna, about €46 million was addressed to a youth employment support plan for sustaining jobs by activating job-oriented training and hiring interventions.

Our hypothesis 1 is also confirmed when the dependent variable is the CIG growth rate. From model B, we see the effect of the EU funds on CIG growth is equal to -0.569 (SE = 0.204). The F-test rejected the null hypothesis of joint not significance of the coefficients β_1 and β_3 (P value = 0.020). In regions with high absorption of EU funds, where firms experienced less shortage of financial resources by benefiting from the cohesion policy, the activation of the CIG short-term earnings compensation mechanism was reduced. In model D the overall effects of the cohesion policy on the CIG growth rate were diminished and were equal to -0.290 (SE = 0.130). The F-test rejected the null hypothesis of joint not significance of the coefficients β_1, β_3, β_4 (P value = 0.005). One possible explanation may be that the PAC was used by the national government also to improve the governance of the Italian CIG, by providing support to regional administrations experiencing difficulties in activating job insurance mechanisms. Following changes to the cohesion policy deriving from the *PAC*, firms probably had quicker access to the CIG than before these changes were introduced by PAC (Silvi *et al.*, 2013).

Figures 2 and 3 show the marginal effects of EU funds absorption on the growth of employment (Figure 2) and CIG (Figure 3) for varying levels of the quality of regional institutions (*x*-axis), showing an average level of the absorption of the cohesion policy. Figures 2b and 3b show the marginal effects observed in the regions with the highest (light) and lowest (dark) absorption of the EU funds in Italy. Absorption values are calculated on the average for the period 2007–13. First, other things being equal, during the

---

[6]The introduction of a dummy for the macro-region 'south' did not affect our results. The effects of the EU funds on employment growth are equal to 0.0482 (SE = 0.0301) in model C and 0.0352 (SE = 0.0287) in model D.

Figure 3: Marginal effects of the absorption of EU funds on CIG growth on (a) average absorption regions and (b) low and high absorption regions for different levels of the covariate *Instquality*. 3a shows the marginal effects of the variable *EUFund=0.80*. 3b shows the marginal effects of the variables *EUFund=0.65* (blue line) and *EUFund=0.90* (red line). Results are obtained from model (B) for CIG. Shaded areas show 95% confidence intervals. Regions are reported in alphabetical order. [Colour figure can be viewed at wileyonlinelibrary.com]
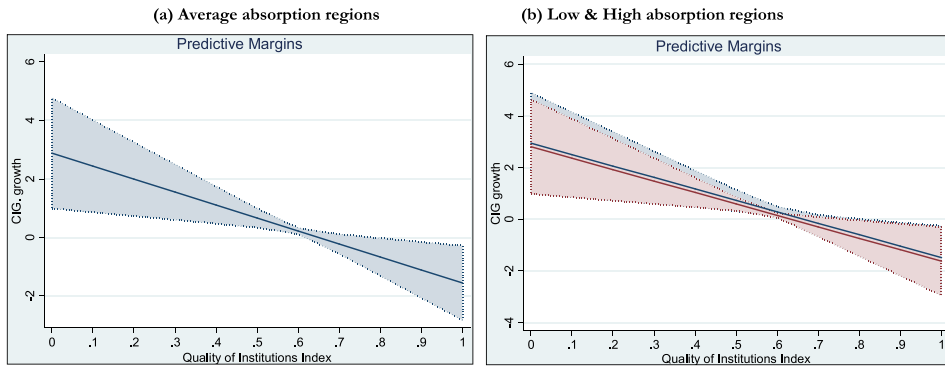
Great Recession regions with a higher quality of institutions performed significantly better in terms of employment (Figure 2a) and CIG (Figure 2b), at the same level of absorption of EU funds than regions with a low quality of institutions. This confirms the findings of Rodríguez-Pose and Garcilazo (2015) that were obtained using GDP data for all European regions.

Second, from figures 2b and 3b, we note that the quality of regional institutions matters for understanding labour markets adjustments during shocks in both regions with high and low absorption of the cohesion policy. In the south, Puglia and Sicily shown similar values for absorption of the cohesion policy over the programme period 2007–13 (around 0.65), but different IQI values: Puglia=0.34; Sicily=0.27. Other things being equal, this may explain why during the Great Recession the drop in employment growth was more severe in Sicily than in Puglia, of about 0.12. Similar considerations can be made in the centre-north where, for instance, the Veneto region, which shows higher IQI values than Piedmont, experienced less negative changes in employment growth, though in both regions the progress of the cohesion policy was fairly similar (around 0.85). Our evidence supports the view that the study of regional institutions is crucial for understanding the role of the cohesion policy in the short run together with its role for regional economic resilience (Camagni and Capello, 2015).

Sensitivity Analysis

GMM Estimates

The variable used for the cohesion policy can be affected by endogeneity: some unobserved variables may simultaneously influence EU payments and dependent variables.

Table 2: GMM Estimates, Employment and CIG

Dependent variable:	Employment growth				CIG growth			
Explanatory variables	A	B	C	D	A	B	C	D
EUfund (β_1)	0.0026	0.1445**	0.0062	0.1278**	-0.2234	-1.6994	-0.1203	-1.1710
	(0.0188)	(0.0611)	(0.0190)	(0.0544)	(0.4443)	(1.6068)	(0.4311)	(1.8905)
Instquality (β_2)	-	0.2175*	-	0.1888***	-	-1.4879	-	-2.0594
		(0.1126)		(0.0912)		(2.7505)		(2.9544)
EUfund*Instquality (β_3)	-	-0.2452*	-	-0.2138**	-	2.2607	-	2.5368
		(0.1235)		(0.0993)		(3.2898)		(3.5229)
PAC (β_4)	-	-	0.0285	0.0176	-	-	0.0800	-
			(0.0315)	(0.0256)			(0.0706)	
Emppre/CIGpre	-0.8984	0.4884*	-0.8240	0.5604**	-0.3019	-0.6140**	-0.2574	-0.7017**
	(2.0407)	(0.2474)	(2.1488)	(0.2749)	(0.1936)	(0.2537)	(0.2007)	(0.2789)
Population (log)	0.0085	-0.3065	0.0076	0.0030	0.0829**	-0.0218	-0.0878**	-0.0144
	(0.0072)	(0.2009)	(0.0078)	(0.0017)	(0.0384)	(0.0621)	(0.0392)	(0.0502)
Tot. EUfunds (log)	-0.0062*	-0.0006	-0.0054	-0.0006	-0.0236***	0.0230	-0.0878***	0.0132
	(0.0034)	(0.0019)	(0.0040)	(0.0020)	(0.0232)	(0.0489)	(0.0242)	(0.0470)
Observations	120	120	120	120	120	120	120	120
Units	20	20	20	20	20	20	20	20
Instruments	12	16	13	17	9	13	10	14
AR(1) test (P value)	[0.338]	-	[0.362]	-	[0.138]	-	[0.151]	-
AR(2) test (P value)	[0.542]	[0.324]	[0.514]	[0.332]	[0.102]	[0.455]	[0.102]	[0.180]
AR(3) test (P value)	[0.519]	[0.285]	[0.528]	[0.282]	[0.268]	[0.741]	[0.154]	[0.809]
P value of Hansen test	[0.417]	[0.373]	[0.184]	[0.323]	[0.222]	[0.685]	[0.284]	[0.680]

Note: Employment results obtained with the inclusion of a constant term and time annual effects. CIG results are obtained with the inclusion of the time annual dummies that resulted significant. The covariates *EUfund* and *Instquality* are treated as endogenous. Results are robust to heteroskedasticity and serial correlation in the errors. The option 'collapse' has been used for reducing the number of instruments (Roodman, 2009). Errors are in parentheses (). AR, Autoregressive. * $P = 0.1$, ** $P = 0.05$, *** $P = 0.01$. *P* values in brackets.GMM, generalized methods of moments.

Besides, it is possible that the negative consequences of the crisis may have reduced the ability of regional governments to co-finance EU expenditures, which may imply reverse causality problems. Although we did not find instances of endogeneity for the lagged co-variate *EUfund* in the relation (1) after adopting the modified Hausman test, we preferred to apply a dynamic panel GMM model to check for additional sources of endogeneity in our specifications. This model allowed us to limit the occurrence of Hurwicz-type dynamic panel bias in our small T and large N panel: some covariates may be correlated with present and past errors (Nickell, 1981). We opted for the GMM-system model given the degree of persistence in our data (Crescenzi *et al.*, 2017). Results obtained with the GMM difference are not substantially different. To reduce instrument proliferation, we limited the lag length on the basis of serial correlation tests on residuals and collapsed instruments (Roodman, 2009).

Table 2 shows robust GMM system estimates with information on the number of instruments, the autocorrelation tests (*P* value) and the *P* value of the Hansen test of over-identifying restrictions. The GMM results are similar overall to those in Section 0. The low statistical significance of CIG estimates can be explained by the high cross-sectional dependence in CIG data, for which GMM models do not provide adequate support (Roodman, 2009). In model D for CIG, the positive coefficient of PAC pushes the effects of the cohesion policy to be positive.

Additional Controls

Our results remain robust after controlling for other sources of potential variations among Italian regional labour markets. Table C1.1 (Appendix) contains information on the additional control variables. The Prais–Winsten estimates of the relation (1), model D, augmented with these new variables, are reported in Table C1.2 (employment) and C1.3 (CIG). We have added the lag of the regional GDP (I) as a standard control in panel regressions studying the cohesion policy (Crescenzi *et al.*, 2016b). A variable describing the different levels of human capital has been introduced (II) in the spirit of Barro and Lee (2013). We have also used a dummy variable for the regions with *Statuto Speciale*, with a greater degree of administrative autonomy (III) than other regions. To check for other public interventions operating on a regional level, we added the log of regionalized public expenditures managed by the national (V) and regional (VI) governments. The share of regional employment in specific sectors has been included (VII) to account for sector-specific shocks (Rodríguez-Pose and Fratesi, 2004) and for the possible influence on CIG patterns (Tronti, 1991). Moreover, the results (available on request) are not modified when introducing the previous period employment/CIG levels rather than the growth rates and the lag of employment/CIG instead of the population for checking possible convergence effects.

An indicator for regional exports (in log) has been added (IV) in order to control for the asymmetric consequences of the crisis on regional labour markets, given that one of the main channels of the Great Recession was the drop in the external demand (Partridge *et al.*, 2017). We have also subtracted the national average of employment/CIG growth from our dependent variables in order to isolate the regional-specific variations of employment/CIG. These results are reported in Table C1.4, where, due to the limited number of degrees of freedom and to avoid collinearity, we have performed separate regressions for each additional control. Table C1.5 shows the estimates when using the log

of regional EU payments for describing the cohesion policy instead of the absorption indicator. Lastly, we have extended the observation period to 2014–15 because committed funds for 2007–13 were paid until 2015, as well as to increase the number of observations. The results are shown in Table C1.6.[7] The inclusion of these additional years reduces the significance of the results probably because in 2014–15 the absorption rates were close to 1 in almost all regions.

Addressing the Endogeneity of the Institutional Variable

When studying the economic implications of the cohesion policy, endogeneity can be a serious concern threating the reliability of estimates (Efendic *et al.*, 2011). Endogeneity can affect both the index used for the quality of institutions and the covariate describing the absorption of the EU funds, though we have lagged the variables. In this section, we discuss our strategy for limiting the endogeneity of the institutional variable, while the issues related to the indicator for the EU funds are addressed in the previous pages. Measuring regional institutions can produce the following: reverse causality; high IQI values can be observed in fast-growing regions; omitted variable bias, and the IQI may include factors omitted from the regression. From the results of the Hausman test robust the IQI to heteroskedasticity, we found that the null hypothesis of exogeneity for the (lagged) IQI was rejected at $P = 0.05$ level of significance only in models B and D, when the dependent variable is the CIG growth rate. However, we applied a two-stage instrumental variable (IV) strategy to employment and CIG data for the sake of completeness. The results are reported in Table C2.3 (Appendix).

The IV approach is preferable when errors show a cross-sectional dependence, as in our case (Sarafidis and Robertson, 2009) and where institutions are characterized by high persistence across time, as in Italy. In the presence of interaction terms in the model, moreover, the two-stage IV strategy can be the most parsimonious way of addressing endogeneity (Wooldridge, 2010). To instrumentalize the IQI we have used the duration (in years) of the foreign dominations present in the Italian regions between 1100 and 1800. These instruments have been created by aggregating the provincial data of Di Liberto and Sideri (2015) for the 20 Italian regions. The idea that historical events have consequences on regional economies through their permanent influence on regional institutions is an old one (Guiso *et al.*, 2016). A more complete description of the set of instruments used here and the IV estimates is provided in the Appendix (Tables C2.1, C2.2, C2.3, C2.4). We prefer these instruments for different reasons. They show a high correlation with the covariate *Inst* and limited correlation with the other main covariates. They introduce regional differences within the South and cover a very long time period (seven centuries), by going into greater depth than other sets of instruments (Tabellini, 2010). The IV estimates (Table C2.3) mostly confirm the main findings of the article. In the Appendix, we show the results obtained by using the instruments based on past economic constraints on regional governments from 1600 to 1850 (Tabellini, 2010). No significant modifications of our findings are registered.

---

[7]In a previous version of the article we also controlled for a different measure of institutions based on the IQI for voice and accountability (Nifo and Vecchione, 2015). No significant modification of the results was obtained.

Conclusions

The set of evidence presented in this article seems to support the claims of European policy-makers that the EU funds had implications for regional economies during the Great Recession, although they were designed to solve long-lasting disparities. The cohesion policy uses public resources that, other things being equal, are able to smooth the negative consequences of economic shocks. We have confirmed, however, that the consequences of the EU funds on regional labour markets are conditional on the different quality level of regional institutions. In 2011 the Italian government adopted the PAC for improving the effectiveness of the cohesion policy through the enhancement of regional administrative capacities in managing the EU funds. We found that the PAC went in the right direction. From our work, moreover, two main policy contributions for the debate on the future of the cohesion policy 2021–27 can be derived. The future design of cohesion policy also has to take into account its role in the short run. This means that budget flexibility and administrative simplification are important for making the cohesion policy more responsive to sudden changes in economic environments. Policy strategies aimed at improving regional institutional quality, like those undertaken over the years 2007–13, are crucial for making cohesion policy really effective for European citizens.

While this study has provided some new insights into the short-term consequences of the cohesion policy on regional economies, it suffers from some limitations, some of which we plan to address in the near future. We have not directly considered cohesion funds other than ROPs, such as national operational programmes, which can produce consequences on a regional level. Studying the case of Italy, where regional disparities are persistent across time, can make the distinction between short and long-term effects of policies (Barca *et al*., 2012) problematic. In this respect, we are working on the construction of a dataset covering different crisis periods and including, for instance, data for the early 1990s when EU funds were already available and the Italian economy experienced the Lira crisis (Di Caro and Fratesi, 2018b). Replicating the results obtained for regional data with more fine-grained information on local economies (such as municipalities) may be a worthwhile next step, though the availability of institutional data for municipalities covering different years can be problematic.

Correspondence:
Paolo Di Caro
Department of Finance, Ministry of Economy and Finance, Italy, Via dei Normanni 5,
00184 Rome, Italy
Tel: +39-06-93836167
email: pdicaro@unict.it

References

Aiello, F. and Pupo, V. (2012) 'Structural Funds and the Economic Divide in Italy'. *Journal of Policy Modelling*, Vol. 34, No. 3, pp. 403–18.

Arbolino, R. and Boffardi, R. (2017) 'The Impact of Institutional Quality and Efficient Cohesion Investments on Economic Growth Evidence from Italian Regions'. *Sustainability*, Vol. 9, No. 8, p. 1432.

Bachtler, J. and Mendez, C. (2016) *EU Cohesion Policy and European Integration: The Dynamics of EU Budget and Regional Policy Reform* (London: Routledge).

Bachtrögler, J. (2016) 'On the Effectiveness of EU Structural Funds during the Great Recession: Estimates from a Heterogeneous Local Average Treatment Effects Framework'. Mimeo.

Barca, F., McCann, P. and Rodríguez-Pose, A. (2012) 'The Case for Regional Development Intervention: Place-based versus Place-neutral Approaches'. *Journal of Regional Science*, Vol. 52, 1, pp. 134–52.

Barro, R.J. and Lee, J.W. (2013) 'A New Data Set of Educational Attainment in the World, 1950–2010'. *Journal of Development Economics*, Vol. 104, No. C, pp. 184–98.

Beck, N. and Katz, J.N. (1995) 'What To Do (and Not To Do) with Time-series Cross-section Data'. *American Political Science Review*, Vol. 89, No. 3, pp. 634–47.

Becker, S.O., Egger, P. and Von Ehrlich, M. (2010) 'Going NUTS: The Effect of EU Structural Funds on Regional Performance'. *Journal of Public Economics*, Vol. 94, No. 9, pp. 578–90.

Becker, S.O., Egger, P.H. and Von Ehrlich, M. (2012) 'Too Much of a Good Thing? On the Growth Effects of the EU's Regional Policy'. *European Economic Review*, Vol. 56, No. 4, pp. 648–68.

Becker, S.O., Egger, P.H. and Von Ehrlich, M. (2013) 'Absorptive Capacity and the Growth and Investment Effects of Regional Transfers: A Regression Discontinuity Design with Heterogeneous Treatment Effects'. *American Economic Journal*, Vol. 5, No. 4, pp. 29–77.

Berkowitz, P., Von Breska, E., Pieńkowski, J. and Rubianes, A.C. (2015) 'The Impact of the Economic and Financial Crisis on the Reform of Cohesion Policy 2008–2013'. Regional and Urban Policy, Working paper 03, Brussels: European Commission.

Beugelsdijk, M. and Eijffinger, S.C. (2005) 'The Effectiveness of Structural Policy in the European Union: An Empirical Analysis for the EU-15 in 1995–2001'. *JCMS*, Vol. 43, No. 1, pp. 37–51.

Camagni, R. and Capello, R. (2015) 'Rationale and Design of EU Cohesion Policies in a Period of Crisis'. *Regional Science Policy & Practice*, Vol. 7, No. 1, pp. 25–47.

Capello, R. (2018) 'Cohesion Policies and the Creation of a European Identity: The Role of Territorial Identity'. *JCMS*, Vol. 56, No. 3, pp. 489–503.

Cappelen, A., Castellacci, F., Fagerberg, J. and Verspagen, B. (2003) 'The Impact of EU Regional Support on Growth and Convergence in the European Union'. *JCMS*, Vol. 41, No. 4, pp. 621–44.

Cerqua, A. and Pellegrini, G. (2018) 'Local Policy Effects at a Time of Economic Crisis'. Mimeo.

Charron, N., Dijkstra, L. and Lapuente, V. (2014) 'Regional Governance Matters: Quality of Government within European Union Member States'. *Regional Studies*, Vol. 48, No. 1, pp. 68–90.

Charron, N. and Lapuente, V. (2013) 'Why Do Some Regions in Europe Have a Higher Quality of Government?' *Journal of Politics*, Vol. 75, No. 3, pp. 567–82.

Chodorow-Reich, G., Feiveson, L., Liscow, Z. and Woolston, W.G. (2012) 'Does State Fiscal Relief During Recessions Increase Employment? Evidence from the American Recovery and Reinvestment Act'. *American Economic Journal: Economic Policy*, Vol. 4, No. 3, pp. 118–45.

Ciani, E. and de Blasio, G. (2015) 'Getting Stable: An Evaluation of the Incentives for Permanent Contracts in Italy'. *IZA Journal of European Labor Studies*, Vol. 4, No. 1, pp. 1–29.

Coppola, G., Destefanis, S., Marinuzzi, G. and Tortorella, W. (2018) 'European Union and Nationally Based Cohesion Policies in the Italian Regions'. *Regional Studies*, pp. 1–12.

Crescenzi, R., Fratesi, U. and Monastiriotis, V. (2017) 'The EU Cohesion Policy and the Factors Conditioning Success and Failure: Evidence from 15 Regions'. *The Region*, Vol. 305, No. 1, pp. 4–7.

Crescenzi, R. and Giua, M. (2018) 'One or Many Cohesion Policies of the European Union? On the Diverging Impacts of Cohesion Policy across Member States'. Spatial Economics Research Centre Working Paper, LSE.

Crescenzi, R., Luca, D. and Milio, S. (2016b) 'The Geography of the Economic Crisis in Europe: National Macroeconomic Conditions, Regional Structural Factors and Short-term Economic Performance'. *Cambridge Journal of Regions, Economy and Society*, Vol. 9, No. 1, pp. 13–32.

Dal Bianco, A. and Fratesi, U. (2015) 'La resilienza dei territori lombardi alla crisi economica e fondi strutturali'. Available online at: https://www.slideshare.net/slideistat/antonio-dal-bianco-e-ugo-fratesi-la-resilienza-dei-territori-lombardi-alla-crisi-economica-e-fondi-strutturali. Last accessed 14 May 2019.

Dall'Erba, S. and Fang, F. (2017) 'Meta-analysis of the Impact of European Union Structural Funds on Regional Growth'. *Regional Studies*, Vol. 51, No. 6, pp. 822–32.

Dellmuth, L.M., Schraff, D. and Stoffel, M.F. (2017) 'Distributive Politics, Electoral Institutions and European Structural and Investment Funding: Evidence from Italy and France'. *JCMS*, Vol. 55, No. 2, pp. 275–93.

Di Caro, P. (2017) 'Testing and Explaining Economic Resilience with an Application to Italian Regions'. *Papers in Regional Science*, Vol. 96, No. 1, pp. 93–113.

Di Caro, P. and Fratesi, U. (2018a) 'Regional Determinants of Economic Resilience'. *Annals of Regional Science*, Vol. 60, No. 2, pp. 235–40.

Di Caro, P. and Fratesi, U. (2018b) 'One Policy, Different Effects: Estimating the Region-specific Effects of EU Cohesion Policy Funds'. RSA Winter Conference Proceedings 2018, London.

Di Cataldo, M. (2017) 'The Impact of EU Objective 1 Funds on Regional Development: Evidence from the UK and the Prospect of Brexit'. *Journal of Regional Science*, Vol. 57, No. 5, pp. 814–39.

Di Cataldo, M. and Monastiriotis, V. (2018) 'Regional Needs, Regional Targeting, and Regional Growth: An Assessment of EU Cohesion Policy in the UK Regions'. *Regional Studies*, pp. 1–13. https://doi.org/10.1080/00343404.2018.1498073.

Di Cataldo, M. and Rodríguez-Pose, A. (2017) 'What Drives Employment Growth and Social Inclusion in EU Regions?' *Regional Studies*, Vol. 51, No. 12, pp. 1840–59.

Di Liberto, A. and Sideri, M. (2015) 'Past Dominations, Current Institutions and the Italian Regional Economic Performance'. *European Journal of Political Economy*, Vol. 38, pp. 12–41.

Dijkstra, L., Garcilazo, E. and McCann, P. (2015) 'The Effects of the Global Financial Crisis on European Regions and Cities'. *Journal of Economic Geography*, Vol. 15, No. 5, pp. 935–49.

Dupor, B. and Mehkari, M.S. (2016) 'The 2009 Recovery Act: Stimulus at the Extensive and Intensive Labor Margins'. *European Economic Review*, Vol. 85, pp. 208–28.

Ederveen, S., Groot, H.L. and Nahuis, R. (2006) 'Fertile Soil for Structural Funds? A Panel Data Analysis of the Conditional Effectiveness of European Cohesion Policy'. *Kyklos*, Vol. 59, No. 1, pp. 17–42.

Efendic, A., Pugh, G. and Adnett, N. (2011) 'Institutions and Economic Performance: A Meta-regression Analysis'. *European Journal of Political Economy*, Vol. 27, No. 3, pp. 586–99.

Elhorst, J.P. (2014) *Spatial Econometrics* (Berlin and Heidelberg: Springer).

EU Commission (2010) 'Cohesion Policy: Responding to the Economic Crisis'. Commission Staff Working Paper. Brussels.

EU Commission (2016) 'Synthesis Report Working Paper 1 Ex-post Evaluation of Cohesion Policy 2007–2013'. Brussels.

EU Commission (2017) 'Seventh Report on Economic, Social, and Territorial Cohesion'. Brussels.

Farole, T., Rodríguez-Pose, A. and Storper, M. (2011) 'Cohesion Policy in the European Union: Growth, Geography, Institutions'. *JCMS*, Vol. 49, No. 5, pp. 1089–111.

Filippetti, A. and Reggi, L. (2012) 'The Impact of the Structural Funds in European Regions: Quality of Governments and Political Decentralization'. Paper prepared for the XXXIII Conferenza scientifica annuale AISRe Rome, 13–15 September.

Fingleton, B., Garretsen, H. and Martin, R. (2012) 'Recessionary Shocks and Regional Employment: Evidence on the Resilience of UK Regions'. *Journal of Regional Science*, Vol. 52, No. 1, pp. 109–33.

Giua, M. (2017) 'Spatial Discontinuity for the Impact Assessment of the EU Regional Policy: The Case of Italian Objective 1 Regions'. *Journal of Regional Science*, Vol. 57, No. 1, pp. 109–31.

Guiso, L., Sapienza, P. and Zingales, L. (2016) 'Long-term Persistence'. *Journal of the European Economic Association*, Vol. 14, No. 6, pp. 1401–36.

Hagen, T. and Mohl, P. (2011). 'Econometric Evaluation of EU Cohesion Policy: A Survey'. In Jovanovic, M. (ed.) International Handbook on the Economics of Integration: Factor Mobility, Agriculture, Environment and Quantitative Studies (Cheltenham: Edward Elgar) pp. 343–370.

Healy, A. and Bristow, G. (2015) 'Building Resilient Economies: Lessons from the Crisis for EU Cohesion Policies'. Paper presented at the Challenges for the new EU cohesion policy 2014–2020 Conference, Riga.

Hsiao, C. (2014) *Analysis of Panel Data* (Cambridge: Cambridge University Press).

Jaccard, J. and Turrisi, R. (2003) *Interaction Effects in Multiple Regression* (London: Sage).

Kaufmann, D., Kraay, A. and Mastruzzi, M. (2011) 'The Worldwide Governance Indicators: Methodology and Analytical Issues'. *Hague Journal on the Rule of Law*, Vol. 3, No. 2, pp. 220–46.

Milio, S. (2007) 'Can Administrative Capacity Explain Differences in Regional Performances? Evidence from Structural Funds Implementation in Southern Italy'. *Regional Studies*, Vol. 41, No. 4, pp. 429–42.

Mohl, P. and Hagen, T. (2010) 'Do EU Structural Funds Promote Regional Growth? New Evidence from Various Panel Data Approaches'. *Regional Science and Urban Economics*, Vol. 40, No. 5, pp. 353–65.

Neumark, D. and Simpson, H. (2014) 'Place-based Policies'. NBER Working Paper, No. w20049.

Nickell, S. (1981) 'Biases in Dynamic Models with Fixed Effects'. *Econometrica*, Vol. 49, No. 6, pp. 1417–26.

Nifo, A. and Vecchione, G. (2014) 'Do Institutions Play a Role in Skilled Migration? The Case of Italy'. *Regional Studies*, Vol. 48, No. 10, pp. 1628–49.

Nifo, A. and Vecchione, G. (2015) 'Measuring Institutional Quality in Italy'. *Rivista economica del Mezzogiorno*, Vol. 29, No. 1–2, pp. 157–82.

Padoa-Schioppa, F. (1988) 'Underemployment Benefit Effects on Employment and Income Distribution: What We Should Learn from the System of the Cassa Integrazione Guadagni'. *Labour*, Vol. 2, No. 2, pp. 101–24.

Partridge, M.D., Rickman, D.S., Rose Olfert, M. and Tan, Y. (2017) 'International Trade and Local Labor Markets: Do Foreign and Domestic Shocks Affect Regions Differently'. *Journal of Economic Geography*, Vol. 17, No. 2, pp. 375–409.

Pellegrini, G., Terribile, F., Tarola, O., Muccigrosso, T. and Busillo, F. (2013) 'Measuring the Effects of European Regional Policy on Economic Growth: A Regression Discontinuity Approach'. *Papers in Regional Science*, Vol. 92, No. 1, pp. 217–33.

Pesaran, M.H. (2004) 'General Diagnostic Tests for Cross Section Dependence in Panels'. Mimeo.

Pinho, C., Varum, C. and Antunes, M. (2015a) 'Under What Conditions Do Structural Funds Play a Significant Role in European Regional Economic Growth? Some Evidence from Recent Panel Data'. *Journal of Economic Issues*, Vol. 49, No. 3, pp. 749–71.

Pinho, C., Varum, C. and Antunes, M. (2015b) 'Structural Funds and European Regional Growth: Comparison of Effects among Different Programming Periods'. *European Planning Studies*, Vol. 23, No. 7, pp. 1302–26.

Porro, G. and Salis, V. (2017) 'Do Local Subsidies to Firms Create Jobs? Counterfactual Evaluation of an Italian Regional Experience'. Papers in Regional Science, Vol. 97, No. 4, pp. 1039–1056.

Rodríguez-Pose, A. (2013) 'Do Institutions Matter for Regional Development?' *Regional Studies*, Vol. 47, No. 7, pp. 1034–47.

Rodríguez-Pose, A. and Fratesi, U. (2004) 'Between Development and Social Policies: The Impact of European Structural Funds in Objective 1 Regions'. *Regional Studies*, Vol. 38, No. 1, pp. 97–113.

Rodríguez-Pose, A. and Garcilazo, E. (2015) 'Quality of Government and the Returns of Investment: Examining the Impact of Cohesion Expenditure in European Regions'. *Regional Studies*, Vol. 49, No. 8, pp. 1274–90.

Roodman, D. (2009) 'How To Do Xtabond2: An Introduction to Difference and System GMM in Stata'. *Stata Journal*, Vol. 9, No. 1, pp. 86–136.

Sarafidis, V. and Robertson, D. (2009) 'On the Impact of Error Cross-sectional Dependence in Short Dynamic Panel Estimation'. *Econometrics Journal*, Vol. 12, No. 1, pp. 62–81.

Silvi, F., Di Giacomo, G. and Pennisi, A. (2013) L'efficienza delle strutture periferiche del ministero del lavoro e delle politiche sociali, Rivista di Economia e Statistica del Territorio, pp. 5–44.

Szopik-Depczyńska, K., Cheba, K., Bąk, I., Stajniak, M., Simboli, A. and Ioppolo, G. (2018) 'The Study of Relationship in a Hierarchical Structure of EU Sustainable Development Indicators'. *Ecological Indicators*, Vol. 90, pp. 120–31.

Tabellini, G. (2010) 'Culture and Institutions: Economic Development in the Regions of Europe'. *Journal of the European Economic Association*, Vol. 8, No. 4, pp. 677–716.

Tosun, J. (2014) 'Absorption of Regional Funds: A Comparative Analysis'. *JCMS*, Vol. 52, No. 2, pp. 371–87.

Tronti, L. (1991) 'Employment Protection and Labour Market Segmentation: the Fiftieth Anniversary of the "Cassa Integrazione Guadagni"'. *Labour*, Vol. 5, No. 1, pp. 121–46.

Wooldridge, J.M. (2010) *Econometric Analysis of Cross Section and Panel Data* (Cambridge, MA: MIT Press).

Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Table C2.3. Instrumental Variable (IV) estimates, employment and CIG
Table C2.4. IV estimates with Tabellini (2010)'s instruments, employment and CIG