



EXTENDED ABSTRACT

Title: Regional EU funds absorption capacity: Is there a difference between thematic objectives?

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1. Context, motivation, and objective

The European Structural and Investment (ESI) funds represent more than half of the total EU funding and are the main financing instruments to support job creation and the development of a sustainable EU economy. For the period 2014-2020, the EU budget of ESI funds¹ was more than €500 billion, divided into 5 funds: European regional development fund – ERDF (43%); European social fund – ESF (19%); Cohesion fund – CF (12%); European agricultural fund for rural development – EAFRD (25%) and European maritime and fisheries fund – EMFF (1%).²

The effect of EU funds on growth (e.g. Becker et al., 2010), convergence (e.g. Aiello and Puppò, 2012; Maynou et al., 2016) and development (e.g. Rodríguez-Pose and Fratesi, 2004) have been extensively assessed in the literature. The results of these analyses are not unanimous; however, on average they tend to show a positive effect of EU funds on economic performance (Mohl and Hagen, 2010). More recently, Di Caro and Fratesi (2022) have provided evidence of a heterogeneous effect of cohesion policy funds (ERDF, ESF, and CF) on the EU regions. Among the factors explaining such

¹ All these funds are managed by EU Members States, by means of partnership agreements prepared in collaboration with the European Commission (EC). The amount of funds allocated to each EU country is mainly calculated based on their socio-economic conditions (inverse GDP per capita, unemployment) and size (population).

² For more details see Open Cohesion data - [ESIF 2014-2020 FINANCES PLANNED DETAILS](#)

different effects, the EU funds absorption rate may be a driver of such policy outcomes (Kersan-Škabić and Tijanić, 2017). Indeed, the concept of absorption capacity of funds is intrinsically associated with the ability of the territory to spend the money and the efficient use of this money (Cace et al., 2009). Therefore, understanding the determinants of EU funds absorption capacity reveals to be particularly useful for policymakers, especially in a context of post-Covid 19, where EU Member States have access to additional EU funds (€800 billion) targeted to support recovery coming from the Next Generation EU.

Existing studies in the field of absorption capacity are essentially divided into 3 type of analysis: EU country data (Tosun, 2014; Incaltarau et al., 2020), group of countries (e.g. Horvat, 2005; Tiganasu et al., 2018 - Central and Eastern countries) or one country only (e.g. Šumpíková et al., 2004 - Czech Republic - Oprescu et al., 2005; Georgescu, 2008; Zaman and Georgescu, 2009 – Romania – Zubek and Henning, 2016 – Slovakia – Aivazidou et al., 2020 – Italy). However, analyses using EU regional data have been less explored (except Kersan-Škabić and Tijanić, 2017). Furthermore, existing literature (see Table A1 in Appendix A) has mostly analyzed the EU funds absorption capacity as a whole (sum of different EU funds) without analyzing the ability of regions to use a specific typology of EU funds more quickly than others. The present study aims to fill this gap by estimating the speed of regional EU funds absorption capacity making a distinction between the type of funds (ERDF *versus* ESF), as well as between the different funds' objectives (using ESI funds thematic objective classification). Then, the estimated indicator is used as a dependent variable in a regression model to understand how macro-economic conditions influence its performance.

2. Data and methodology

2.1. Speed of absorption capacity indicator

To estimate the speed of absorption capacity (SAC) we use data from Open Data Portal on European Structural and Investment Funds (<https://cohesiondata.ec.europa.eu/>) regarding the EU amount planned and spent of Cohesion policy funds (ERDF, ESF and CF) for the programming period 2014-2020. Our indicator, expressed in equation (1), refers to the average (2016-2021) of the annual absorption capacity (*AAC*). The *AAC* refers to the ratio between the accumulated EU amount of expenditure/spending reported by the selected projects (*S*) in year *t* over the total EU planned amount for the period 2014-2020 (*P*), for the territory *i* and the thematic objective *j*. A territory could

be a region (NUTS 1 or NUTS 2-level) or a country, depending on the coverage of the Operational Programme (National or Regional). The earlier in time S is closer to P , the larger the indicator SAC will be, since a AAC closer to 1 will appear with a higher frequency in our average estimated.

$$SAC_{i,j} = \frac{\sum_{t=2016}^{t+N} S_{i,j}/P_{i,j}}{N} = \frac{\sum_{t=2016}^{t+N} AAC_{i,j}}{N} \quad (1)$$

To make a distinction between Regional and National Operational Programme (OP), we use the information available in the European Commission Regional Policy atlas, for the programming period 2014-2020, (https://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020). Introducing the unique identifier for each programme (CCI) in the atlas, we extract the information of the region(s) targeted by the OP. Then using the history of NUTS classification from Eurostat (<https://ec.europa.eu/eurostat/web/nuts/history>), we attribute a NUTS code to each OP. This NUTS code could be level-1, level-2 or country-level. This classification of OP by NUTS code will allow us to map the speed of the absorption capacity at regional or national level. Multi-regions OP and Territorial Cooperation OP (like Interreg) are excluded from the analysis, because the EU planned amount refers to the total amount for more than one region.

2.2. Empirical model

Once estimated the indicator in equation (1), we use it as a dependent variable in a regression estimation to estimate the determinants of the speed of absorption capacity. SAC is considered a function the EU planned amount per capita (Ppc) and a set of control variables (X) as expressed in equation (2).

$$SAC_{i,j} = f(Ppc_{i,j}, X_i) \quad (2)$$

As control variables, we follow Šumpíková et al. (2014) who grouped the determinants of EU funds absorption capacity into demand side and supply side conditions of the territory. Supply side of EU funds is related to macro-economic conditions and the ability to co-finance the remaining investment – measured by the wealth of the territory,

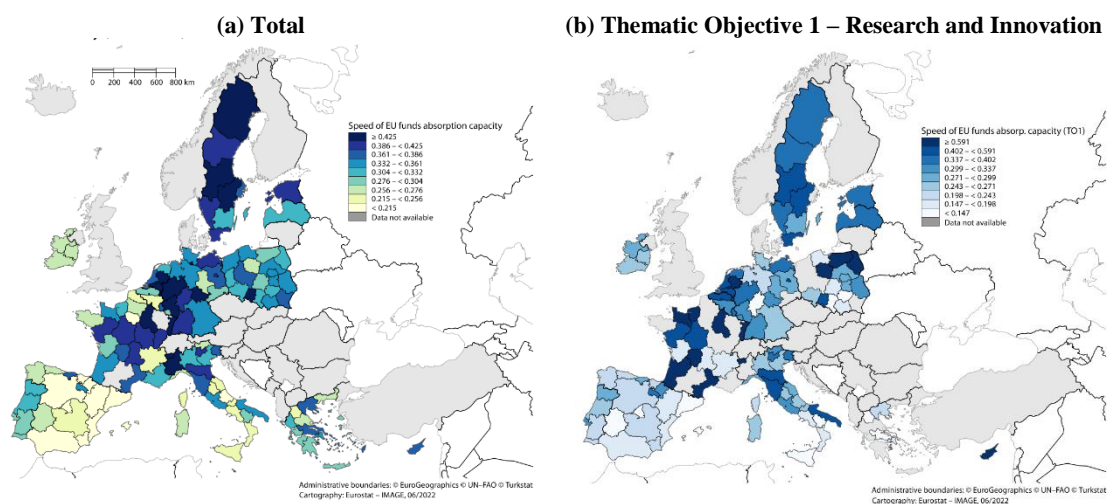
i.e. Gross Domestic Product (GDP) per capita. Demand side is associated with the ability to develop projects by regional actors – e.g. share of micro-sized firms as proxy for financially constraints region –, as well as, firms’ dynamics in the territory - e.g. births rate of enterprises, as a proxy entrepreneurship. Data to measure demand and supply side conditions of the territory are extracted from Eurostat, and refers to its situation at the beginning of the programming period, to avoid the effect of reverse causality.

3. Preliminary results

3.1. Geographical distribution of the regional absorption capacity

Figure 1 displays the regional geographical distribution of the speed of absorption capacity of EU funds under Regional Operational Programmes (2014-2020), for the total Cohesion funds (top left), TO1 – Research and Innovation (top right), TO4 – Low carbon (bottom left) and TO8 - Sustainable and quality employment (bottom right). We can observe a strong heterogeneous speed of absorption capacity across the different EU regions and between the different thematic objectives. For instance, some Spanish, Italian and French regions are the one that report an overall slower speed of absorption capacity. However, such patterns are different when we look at TO4 – Low carbon (Figure 1 - bottom left) and TO8 - Sustainable and quality employment (Figure 1 - bottom right). Indeed, some Spanish regions display an indicator higher than the EU average.

Figure 1. Speed of EU funds absorption capacity: Regional Operational Programme, Cohesion Policy (2014-2020), by Thematic Objectives



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Appendix

Appendix A. EU funds absorption capacity: related literature

Table A1. Some studies about EU funds absorption capacity: scope, indicator structure, model and main findings

Scope	Absorption indicator	Model and variables	Findings
Tosun (2014)			
<ul style="list-style-type: none"> · 2000-2006 · EU25 country data · ERDF 	<ul style="list-style-type: none"> · ERDF payments as % of total allocation by the end of 2008 	<ul style="list-style-type: none"> · Cross-sectional data · Tobit model <p><i>Explanatory variables:</i></p> <ul style="list-style-type: none"> · Government effectiveness (Worldwide Governance Indicators – World Bank) · Political decentralization (regional authority index) · Sub-national share of total government expenditure · Sub-national share of total government revenue · GDP per capita (constant price, PPP) · % change in GDP 2007/2008 · Member States entered in 2004 (dummy) · Absorption capacity in 2004 · Absorption capacity in 2007 	<ul style="list-style-type: none"> · Government effectiveness/Capacity: (+) · GDP per capita: (-) · EU10: (+) · Absorption capacity 2007: (+) · Government revenue: (-) · Government expense: (-)
Kersan-Škabić and Tijanić (2017)			
<ul style="list-style-type: none"> · 2000-2006 + 2007-2013 · 272 NUTS 2 regions · ERDF, ESF and CF (sum) 	<ul style="list-style-type: none"> · Payment per capita · Paid/committed 	<ul style="list-style-type: none"> · Dynamic panel model (GMM) · Two estimations done separately: developed regions and convergence regions <p><i>Explanatory variables:</i></p> <ul style="list-style-type: none"> · Region size (km²) · Infrastructure (motorways in km per 1000 km²) · Labour force characteristics (unemployment rate and share of employment with at least upper secondary education) · Gross fixed capital formation · European Quality of Governance · Control of corruption index · Programming period (dummy) · Institutions and fiscal decentralization (dummy) 	<p><i>Model developed regions:</i></p> <ul style="list-style-type: none"> · Education: (+) Paid/committed; · (-) Payment per capita · GFCF: (+) both · Unemployment: (+) both · Fiscal decentralization: (+) Paid/committed <p><i>Model convergence regions:</i></p> <ul style="list-style-type: none"> · Infrastructure: (+) both · Education: (+) both · Fiscal decentralization: (+) both
Incaltarau et al. (2020)			
<ul style="list-style-type: none"> · 2007-2015 (2013+2) · EU27 country data · ERDF, ESF and CF (sum) 	<ul style="list-style-type: none"> · Payment/(gross fixed capital formation by general government) · Annual indicator expressed in cumulative term 	<ul style="list-style-type: none"> · Dynamic panel model · Tobit model (<i>xttobit</i>) <p><i>Explanatory variables:</i></p> <ul style="list-style-type: none"> · Macroeconomic absorption capacity (total amounts allocated to GDP before the start of the programming period) · GDP per capita · Political decentralization (regional authority index) · Economic crisis (dummy) · New Member States (dummy) · Government effectiveness 	<ul style="list-style-type: none"> · Macroeconomic capacity: (+) · Economic crisis: (-) · New Member States: (-) · Government effectiveness: (+)

Source: Own elaboration based on cited authors.