REGIONAL INEQUALITIES, POLITICAL DISCONTENT AND THE ANATOMY OF INTEGRATION AND DISINTEGRATION IN EUROPE

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EU Cohesion Policy: an endogenous variable or an axiomatic

doctrine

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Introduction

Regional policy has long been one of the cornerstones of European integration. Established with the promise of fostering cohesion and shared prosperity, the European Union (EU) has invested substantial resources in addressing territorial imbalances through its Cohesion Policy and related Structural Funds. Yet, two decades into the twenty-first century, the outcomes appear mixed. While the EU has maintained its commitment to solidarity, it has simultaneously faced slower economic growth than many of its global trade partners and, more critically, a widening of spatial inequalities across its regions. This paradox raises pressing questions about the effectiveness of EU regional policies and whether they are truly achieving their stated objectives.

A central source of concern lies in the distribution and use of the Structural Funds. The allocation of these resources across expenditure categories has often been uneven, and the regional growth returns they generate remain highly asymmetric. Some regions have reaped substantial benefits, while others have lagged behind despite receiving significant support. These imbalances call into question not only the efficiency but also the fairness of existing regional policy frameworks.

Against this background, an important issue emerges: to what extent is Cohesion Policy endogenously determined—that is, shaped by the actual economic, social, and political conditions of the regions it targets? If allocations are responsive to regional needs, they should reflect structural disparities such as gaps in development, infrastructure, investment, human capital, unemployment, or environmental sustainability. Alternatively, if Cohesion Policy is largely exogenously determined—guided more by broad economic doctrines, or axiomatic principles than by local realities—it may fail to deliver on its promise of convergence and inclusive growth.

This study addresses this question by examining the responsiveness of Cohesion Policy allocations to a set of key socio-economic and structural gaps across EU regions. The analysis explores whether the limited effectiveness of the policy can be attributed, at least in part, to a mismatch between the allocation of resources and the specific problems faced on the ground. More broadly, it investigates whether Cohesion Policy operates as an endogenous policy tool that adapts to the evolving needs of weaker

regions, or whether, despite its intentions, it serves other priorities. By tackling this issue, the report contributes to ongoing debates on the design, implementation, and reform of EU regional policy, offering new insights into the balance between solidarity, efficiency, and political economy in shaping the Union's territorial development agenda.

Major research findings

The descriptive analysis on the key socio-economic and structural gaps over the period 2000-2022 reveals the following critical associations with the CP allocation:

Development Gap

- Positive overall association between CP and development gap.

- Stronger responsiveness at *lower* levels of the gap, but weaker or even negative at *higher* levels.

- Indicates that the regions with the most severe development deficits do not receive proportionally higher CP funding.

- Possible explanations: distributional bias or limited absorptive capacity in lagging regions.

Human Capital Gap

- On average, regions with weaker human capital receive more CP funds.

- However, some regions with relatively stronger human resources also obtain equal or greater funding than the most deprived.

- Large variation across regions with smaller gaps, with some clearly receiving preferential treatment.

Unemployment Gap

- Positive and more uniform relationship with CP allocations.

- Funding pattern appears more consistent because unemployment is more evenly distributed across regions compared to human capital.

Infrastructure Gap

- Positive relationship between CP allocations and infrastructure deficits.

- Suggests that infrastructure needs are acknowledged in allocation decisions.

Investment Gap

- Negative association with CP allocations.

- Regions with the greatest capital formation needs do not receive more CP funds.

- Implies CP is not functioning as a tool to boost investment where it is most lacking.

Environmental Gap

- Negative relationship between CP allocations and environmental quality gaps.

- Funding does not flow to the regions facing the most serious environmental challenges.

To sum up, the descriptive analysis provides evidence that CP is partly responsive to structural gaps (development, human capital, unemployment, infrastructure) but fails to target investment and environmental deficiencies—and even within the responsive dimensions, the most severely deprived regions often remain underserved. Overall, the evidence points to a policy that is only partially aligned with regional structural needs and that leaves critical disparities insufficiently addressed.

Econometric analysis

The empirical analysis is based on a panel fixed effects econometric model that draws regional NUTS II level data (EU28 - 272 regions) from 3 programming periods (2000-2006, 2007-2013, 2014-2020) confined in the years 2000-2022, testing the responsiveness of Cohesion Policy at the regional level to economic, structural and social gaps. Moreover, in order to examine the role of political factors influencing the allocation of funds among Member States, the model is extended with the addition of dummy variables that intend to capture the impact of political influence for the country in the case it "holds" a critical political position at the EU level during the period of analysis, as well as for the possibility that the political representation of each country in the European Parliament is influencing the allocation decisions of Structural Funds. The analysis provides evidence that:

- **Socio-economic gaps:** Cohesion Policy allocations are positively and significantly associated with development, human capital, employment, and environmental gaps, insignificant for infrastructure, and negative for investment.

- **Infrastructure gap:** The impact of infrastructure disparities depends on development levels—positive in advanced and capital regions but negative in lagging regions—implying that those most in need receive relatively less support.

- **Investment gap:** CP allocations increase with investment gaps only in very advanced core regions, while lagging regions with the greatest investment needs systematically receive lower per capita support.

- **Commissioner nationality:** Countries whose nationals hold Commissioner posts in DG REGIO, DG ECFIN, and in some models DG EMPL, enjoy a statistically significant allocation premium, with limited evidence for DG AGRI.

- **EU top offices:** The Presidency of the European Commission generally shows no effect, whereas the Presidency of the European Council is linked to a significant positive impact on allocations.

- **European Parliament:** A higher share of anti-systemic parties in a country's European Parliament delegation significantly reduces the Structural Funds allocated to that country and its regions.

Conclusions

The findings of this study provide critical insights into the responsiveness of EU Cohesion Policy (CP) to regional economic and social disparities and shed light on some of the reasons why the policy continues to struggle in promoting convergence in lagging regions. Despite its explicit purpose of reducing developmental gaps across the Union, the evidence reveals a complex and at times contradictory allocation pattern that undermines its effectiveness.

A key difficulty lies in the limited responsiveness of CP to structural deficiencies that are essential for long-term growth. While allocations are generally directed toward regions with lower development levels, higher unemployment, and weaker human capital, they are far less responsive to infrastructure shortages and investment deficits. As a result, many economically disadvantaged regions may be caught in a low-development trap: unable to attract sufficient investment to overcome structural weaknesses, these regions risk falling further behind. This misalignment indicates that Cohesion Policy has been designed and implemented with insufficient attention to the growth and investment gaps that critically shape the prospects of lagging areas.

A second source of difficulty stems from the influence of political and institutional dynamics on the allocation of funds. Our analysis shows that the concentration of decision-making power in certain Directorates-General, together with political factors such as the relative strength of mainstream and non-mainstream parties, can skew the distribution of resources. These patterns suggest that allocations are not always guided by genuine regional needs but are also influenced by institutional bargaining and political considerations, which undermines both the fairness and the legitimacy of the policy.

Taken together, these findings point to the need for reforms that refine Cohesion Policy allocation mechanisms to more effectively target structural disparities in the weakest regions. A stronger emphasis on addressing infrastructure and investment gaps could significantly enhance the capacity of disadvantaged areas to achieve sustained growth. At the same time, reducing the influence of high-level political bargaining in the distribution process would improve the transparency, credibility, and efficiency of the policy. Ultimately, a more nuanced and evidence-based approach to the design and implementation of Cohesion Policy is required to foster genuine regional convergence and strengthen economic cohesion across the European Union.

1. Introduction

The structural funds are financial tools of the EU regional policy aimed at achieving economic, social, and territorial cohesion by reducing development disparities among regions and member states. The recent literature is systematically revealing a very interesting picture on how important is the role played by the specific context and "territorial capital" of places in which the EU regional policy is implemented and how the SF responsiveness evolves (Bachtrögler et al. 2020; Camagni and Capello, 2015; Rodríguez-Pose and Fratesi, 2004). The impact albeit an extremely relevant and critical research line of both the post-allocation effects and of the evaluation of the policy, does not touch upon a sensitive issue which is the rationale and decision premises of the initial design and efficient allocation objectives of the SF on the ground.

Conceptually, the responsiveness of SFs to the actual needs and structural deficiencies of recipient regions has not been examined explicitly, instead only the impact on regional economic performance (growth, productivity, employment ext.) has attracted the attention of scholars and in most cases the conditional impact has taken center stage. There is however a missing piece which is the question of initial design and the less examined element on the decision process and how this is informed by the structural weaknesses such as gaps in the economic development and growth trajectories and - equally important - in the structural deficiencies of recipient regions.

While the lion share of studies has focused on the impact of SFs, the current study takes a step back to unveil the extent to which the Cohesion Policy is reactive enough to the actual needs of regional economies. What has fueled the motivation of our key research line is the inconclusive evidence of a positive impact, more strikingly the absence of impact and in some cases the conditional impact of the CP. Very often the impact depends on certain characteristics of regions while the same policy is not uniform across space which shows that certain national or regional characteristics have not been taken properly into account when deciding the CP allocation/implementation while certain principles (i.e., the concentration principle) certainly need to be strengthened (Bachtrögler et al., 2020). Considering that the Cohesion Policy is one of the most debated (and complex) EU policies (Amendolagine et al., 2024) apart from the effectiveness, the initial design and allocation decisions need to go under the spotlight.

We argue that SFs need to respond to the needs of places. If policies are not informed by and tailored to the specific challenges of places and more importantly if places are not prepared to receive the funding required, then the whole regional policy intervention is at risk in terms of delivering a sustained impact. We test this hypothesis with the use of a panel econometric model that draws regional NUTS II level data for 3 programming periods in the period 2000-2022 to estimate the significance of certain regional deficiencies in determining the CP payment intensity, we tackle this by assessing the responsiveness of the Cohesion Policy to the regional gaps on a number of development and structural dimensions. This will provide insight into *how* responsive the CP actually is to the serious gaps' regions develop in time.

The report is organized as follows; section 2 offers a review of the relevant literature, section 3 presents methodology and data, while section 4 divided into two sub-sections presents descriptive evidence and results. Finally, section 5 presents the core conclusion and policy implications of the main findings.

2. Literature Review

From a theoretical perspective, several approaches have stressed the impact of Structural Funds (SF) on economic growth. The neoclassical framework posits that public expenditures drive economic growth and development, contributing to regional convergence through constant or diminishing returns on capital accumulation (Solow, 1956). Endogenous growth theory also highlights the positive role of public capital in promoting growth, suggesting that enhancements in human capital (Lucas, 1988) and increased public investments, particularly in infrastructure, lead to higher rates of return on the marginal product of private capital, thus encouraging capital accumulation (Aschauer, 1989; Barro, 1990). Conversely, the new economic geography school argues that public investments create externalities that primarily benefit firms and regions within clusters (Porter, 2000), although the effects of projects, such as those related to transportation, can be amplified or diminished due to cumulative causation mechanisms in a region (Puga, 2002).

From an empirical standpoint, a vast body of literature examines the influence of EU Structural Funds on regional growth and convergence. Sala-i-Martin (1996) initiated the debate by suggesting that regional cohesion policies play a minimal role in the

broader process of regional convergence (Becker et al., 2010). However, subsequent studies on the effectiveness of European structural policy have produced mixed results, leading to a lack of consensus.

In terms of the interplay between CP and the recipient regions characteristics, deficiencies in infrastructure, particularly in transport and environmental sectors, are identified as barriers to long-term growth, notably in Romania, Bulgaria, and Poland. However, infrastructure investments have been criticized for the lack of more strategic, integrated, and targeted planning. In the long term, the primary need is to enhance human and knowledge capital. This requires shifting the strategic focus from infrastructure towards education (including higher education), training, innovation, and the transfer and diffusion of technology. "The problems of low employment/high unemployment or, as recently (at least in Poland), scarcity of skilled labour due to massive outmigration are often spatially concentrated in restructuring or backward regions and among people with obsolete skills, requiring support in areas such as (re)training, alternative labour market policies, improved transport links/services for commuting, business support and (in some cases) labour mobility" (Bachtler and Gorzelak, 2007: p.319).

The long lasting debate of the CP's impact reveals *positive* channels on growth and productivity (Crespo-Cuaresma et al, 2008; Crucitti et al., 2024; Ezcurra and Rapún, 2006; Ferrara et al., 2017; Fiaschi et al., 2018) with evidence showing that the EU Cohesion Policy (CP) seems to increase regional competitiveness (GDP per worker) and leads to a reduction in regional disparities (Gini index) however with a strong impact mainly for Objective 1 regions with higher multipliers in more recent programming periods (due to "learning processes" effects) and concomitant spatial externalities (Fiaschi et al., 2018). The conclusions are mainly grounded on the importance of the geographical concentration to targeted regions and on "core priorities" to improve the effectiveness of the EU CP.

Highly heterogeneous and conditional direct and indirect effects across regions have stressed the importance of the institutional framework, the level of decentralized governmental structures, the investment policy mix, the regional endowments and production structure (Cerqua and Pellegrini, 2018; Crescenzi and Giua, 2020; Di Caro and Fratesi, 2022; Di Cataldo and Monastiriotis, 2018; Gagliardi and Percoco, 2017; Sotiriou and Tsiapa, 2015). Trade is considered in a recent study as a condition in which

spillover effects generated by trade in value-added and the intensified participation in international production networks (spill in and spill out effects) affects the SF growth impact (Petrakos et al., 2024). Specifically, the precondition for the SF's effectiveness is the presence of a "large manufacturing sector and a relative specialization in medium–high sectors which increases the likelihood of being part of value chains" this constitutes the positive growth channel of cohesion expenditure (Amendolagine et al., 2024: p.13).

When assessing the allocation objectives, the evidence on the policy mix and the policy priorities sheds light to this direction. The criticism on the overemphasis on infrastructure (that may be conducive to growth only when complementary economic development strategies and policies, such as labor market reforms are supported, (which have often been inadequate) is another indication that initial conditions should be put under scrutiny (Basile et al., 2001). The importance of a recomposition of the policy mix is verified in a recent study that concludes that the EU's more developed regions could have achieved a doubled GDP p.c. growth rate by pursuing a policy mix where *hard* (infrastructure) investments are reduced in favor of *soft* (business and technical support) investments and estimate that the re-allocation of shares across priorities should rebalance from 26% (Hard)—74% (Soft) to an average of 4% (Hard) in favor of a 96% (Soft) (Cristofoletti et al., 2023). The over-emphasis on infrastructure was grounded on the assumption "that disparities in infrastructure in the EU were greater than disparities in incomes" (Martin, 1999: p.86). Empirical findings stress the importance of the intensity of the treatment in conditioning the impact but only after surpassing a certain threshold, the impact on GDP growth is concave and not linear, based on the fund's intensity (Becker et al., 2012; Cerqua and Pellegrini, 2018).

Further the need for targeted focus on investments in education and human capital that have been emphasized due to the positive medium-term growth acceleration (Rodrıguez-Pose and Fratesi, 2004) should also be informed by the pre-existing gaps in the quality of the HC endowments. Regarding business support—another key element of Cohesion Policy programs – has also a conditional effect given that evidence from Italy suggests that business incentives have been effective in fostering additional employment and economic activity but are less effective in poorer regions, likely due to the lack of necessary preconditions for capitalizing on such incentives (Bondonio

and Greenbaum, 2006). Therefore, gaps need to be first addresses before -one size fits all – policies are implemented in a spatially blind approach.

In regards to the *conditional positive* impact, there is consistent empirical evidence that Objective 1 regions experience a positive GDP growth effect but the absence of an employment growth effect explaining that Objective 1 transfers mainly stimulate the volume and change the structure of investment (e.g., infrastructure) without job creation effects except if estimation does not capture the employment effect that takes longer than the duration of a programming period of five to seven years (Becker et al., 2010). In a similar vein, studies find that transfers tend to display immediate effects, but they do not show much longevity beyond a programming period when it comes to stimulating real per-capita-income growth in recipient regions (Becker et al., 2018) "concluding that growth gains seem to be largely un-done once Objective 1 status is lost" (Becker et al., 2018: p.151). This finding aligns with the notion that Objective 1 status, if granted, should likely be maintained for extended periods otherwise the temporary surge in benefits has short-lived effects.

The vast majority of empirical studies has focused on the effects of CP on aggregate measures of economic performance such GDP/GDP growth, TFP and overall employment outcomes (Coppola et al., 2020; Fiaschi et al., 2018; Mendez and Bachtler, 2011), there is however a growing body of empirical evidence that looks into firm-level performance and TFP in manufacturing firm's performance which has produced ample concrete policy related evidence. The firm level-dimension is important as it represents the direct channel of impact that essentially synthesizes the overall local and regional outputs we observe temporally. The question of whether the CP is correctly designed and tailored to the needs of regions departs from the heterogeneity on the impact across firms in the same region and across the regional typology.

To this end, studies assessing the effect of the European Regional Development Fund (ERDF) in Italy find that local TFP growth has been largely unresponsive to European financing revealing the ineffectiveness of the EU Structural Funds in promoting local TFP growth (Albanese et al., 2021). The analysis concludes that the effect is conditional on the local fabric and the thematic category of the SFs, revealing some positive effect of ERDF infrastructure investments only for the areas characterized by higher institutional quality and population density. The authors cast significant doubt regarding the current design of EU regional policy, "suggesting that a different

configuration, more devoted to (direct) public investments rather than subsidies and transfers, could better foster productivity growth of backward areas" as well as looser deadlines for implementation of projects (Albanese et al., 2021: p.16).

A recent relevant OECD study (Bachtrögler and Hammer, 2018) on 2,000,000 projects that were co-funded by the ERDF, the ESF or the CF during the MFF 2007-2013 looked into firm performance indicators and characteristics for manufacturing firms, the study concluded that firms benefited in terms of TFP growth (in some countries i.e., Spain, Portugal) but the positive job creation impact did not involve wage increases but shifts to lower-wage workers. Similarly, Bachtrögler et al. (2020), find that the firm-level effects of Cohesion Policy (CP) vary significantly across Europe. On the one hand although the impact is positive on value added and employment growth, however the effect is lower in boosting productivity growth. Overall, the effects are far from uniform across Europe which may partly explain the differing levels of popularity and political support for the policy in various countries. At the regional level, they evidence that CP is not effective when there are inadequate private assets in a region because firms are in need of financial support prior to the CP intervention, in order to grow in employment, value added and productivity. The importance in looking into the responsiveness stems from the fact that influential studies evidence that the impact of CP grants tends to be larger in relatively poor countries (Romania in CEE and Portugal among the EU-15 member states), "where firms may face harder conditions and, as a consequence, may be more in need of policy support" (Bachtrögler et al., 2020: p.31). Decomposing the SFs evidence to the impact of Structural Funds are not affected. Total Structural Fund commitments do not significantly affect European regional growth, whereas funds allocated in Objective 1 programmes do (Bouayad-Agha et al., 2013). The high heterogeneity in the impact is perhaps what generates a complex outcome that potentially is behind the inconclusive evidence at the aggregate level analysis. Important findings on the impact of the EU Cohesion Policy on regional convergence emphasize the role played by cultural diversity among Member States suggesting that CP does not bring universally positive outcomes due to significant cultural and economic differences across regions and only in northern countries, the Cohesion Policy demonstrates a positive effect on regional convergence in both the short and long term. However, no statistically significant impact is observed in central-eastern countries, while in western and southern countries, the policy exhibits a

significant but negative influence. These results underscore the challenges of applying a homogeneous policy framework in a culturally diverse union (Butkus and Matuzevičiūtė, 2016).

Studies focusing on the responsiveness of GDP per capita growth to changes in the intensity of regional EUF transfers find a positive effect but only up to a maximum value after which the "marginal efficiency of transfers is negative" (Cerqua and Pellegrini 2018: p.553), in line with these findings Di Caro and Fratesi (2022: p.319) evidence that there are "regions where large amounts of cohesion funds do not correspond to positive growth effects, which they label as cases of ineffective policy". The positive impact of CP is highly dependent on the recipient country and benefits are unevenly distributed, with a significant portion of the growth gains concentrated in Germany, while employment gains are largely observed in the United Kingdom. In Southern Europe, the outcomes are less favorable; in Italy, employment gains dissipate after the Great Recession, and in Spain, economic growth is limited to the recovery period, highlighting regional disparities in the policy's impact (Crescenzi and Giua 2020; Di Caro and Fratesi, 2022).

The question which arises is how can we turn these transmission channels into a research agenda? It seems particularly effective to concentrate on firm-level impacts. For supporting research and innovation, direct transmission channels should be explored—such as reduced costs in research and technological development that drive innovation and productivity. Indirect channels should also be considered, like the spillover effects of R&D support on local companies. However, eclecticism should not lead to scattered efforts, instead research outcomes should foster a dialogue between policymakers and academics, while taking into account regional characteristics, types of beneficiaries, and other influencing factors (Berkowitz et al., 2020).

The literature on the allocation of EU Cohesion Policy funds reveals a complex interplay between political negotiation, administrative capacity, and broader institutional dynamics. While ostensibly aimed at addressing regional disparities, the policy is heavily influenced by political considerations that shape both its design and implementation.

A critical element in the CP allocation process is the role of the European Commission as a key political actor. Hooghe (1996) argues that the Commission wields significant

agenda-setting power, but this influence is far from absolute. The Commission operates within a web of competing member-state interests, raising questions about the extent to which allocations reflect genuine regional needs versus political compromises. While varying capabilities and political powers determine the effectiveness of the "successive phases of financial bargaining, institutional design, and the creation, negotiation, implementation, and monitoring of regional development plans" (Gary, 2021). These findings challenge the notion of cohesion funding as purely technocratic and emphasize its role as a tool for political negotiation within the EU.

Administrative capacity also emerges as a critical factor in the effective distribution of funds. Bachtler et al. (2023) highlight that regions with stronger institutions are better positioned to secure funding, suggesting a feedback loop where well-governed areas are rewarded, potentially exacerbating existing inequalities. This observation aligns with Woźniak's (2009) analysis of implementation barriers, which points to the dual challenges of political interference and administrative inefficiency. Together, these studies suggest that the ostensibly redistributive goals of Cohesion Policy may be undermined by systemic biases in favor of better-performing regions.

Beyond these structural and administrative factors, Cohesion Policy has broader political implications. Bauer and Becker (2020) illustrate how fund allocation influences regional political stances, particularly in fostering support for or resistance to EU integration. This dynamic underscores the policy's dual function as a redistributive mechanism and a political instrument for strengthening EU cohesion. Guerra and Trenz (2022) extend this argument by linking fund distribution to the cultivation of a European identity, suggesting that allocation decisions have both material and symbolic significance.

The literature also critically examines the evolution of Cohesion Policy itself. Bachtler et al. (2023) argue that successive reforms have been shaped by broader EU political dynamics, raising questions about the long-term viability of the policy's goals in the face of shifting political priorities. This critique invites reflection on whether the policy's design is sufficiently adaptive to address emerging regional challenges or whether it is constrained by entrenched political interests. Furthermore, the Parliament urged the Commission, Member States, and regional authorities to strengthen and utilize existing mechanisms to identify and combat irregularities, fraud, and corruption in Cohesion Policy funding (European Parliamentary Research Service, 2025).

Taken together, Cohesion Policy can be seen as a multifaceted instrument that operates at the intersection of politics, administration, and regional development. While its goals are ambitious, its implementation reflects deep-seated political and institutional dynamics that can compromise its redistributive potential. This underscores the need for greater transparency and reform to ensure that the policy serves its intended purpose of fostering equitable regional development across the EU.

3. Data and Methodology

This analysis investigates the extent to which the EU Cohesion Policy is endogenously determined, in the sense that it prioritizes and addresses the various economic and social gaps of weaker EU regions, or in fact, despite intentions, fails to address the actual deficiencies on the ground. We address this issue with the use of a panel fixed effects econometric model that draws regional NUTS II level data (EU28 - 272 regions) from 3 programming periods (2000-2006, 2007-2013, 2014-2020) confined in the years 2000-2022. The estimation equation takes the following form:

$$CP_{r,t} = a + \sum_{i=1}^{n} \beta_i \, GAPS_{i,r,t} + \sum_{j=1}^{m} \gamma_j Z_{i,j,t} + \delta_c + \zeta_t + \varepsilon_{r,t} \quad \textbf{(1)}$$

r = 1,…, 272 NUTS II regions

i = 1,…, n economic and social gaps

j = 1,…, m control variables

t = 1,…, 3 time periods

δ_i = country fixed effects

ζ_t = time fixed effects.

The dependent variable for Cohesion Policy (*CP)* is proxied by the per capita aggregated Structural Funds[1] payments by NUTS II for each programming period[2], provided by DG-REGIO (EU, 2024a, 2024b); subscript *r* stands for the regional unit of analysis r = 1,…, 272 NUTS II regions, *i* stands for the determinants of CP; j measures control variables; *t* represents the three time periods; δ_c and ζ_t denote country-specific

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[1] European Regional Development Fund (ERDF), European Social Fund (ESF), Cohesion Fund (CF), European agricultural fund for rural development (EAFRD), European Maritime and Fisheries Fund (EMFF), plus Fund for European Aid to the Most Deprived (FEAD) and Youth Employment Initiative (YEI) for the period 2014-2020.
[2] Payments for the 2014-2020 programming period are not fully reimbursed.

fixed effects capturing national-level factors not included in the model and time fixed effects to control for common shocks affecting all regions and countries respectively.

Our key variables of interest are the economic, social and structural gaps among EU regions. The economic dimension is proxied by the development gap (*YGAP*), the gap in infrastructure (*INFRGAP*), and the gap in investments (*GFCFGAP*), whereas the social dimension is proxied by the gap in human capital (*HCGAP*), the unemployment gap (*UNGAP*) and the environmental gap (*ENVGAP*).

The level of development is measured as the GDP per capita at constant 2015 prices. To define the level of infrastructure, we use motorway density (motorway kilometers per thousand square kilometers). Due to missing data for several NUTS II regions and countries, we use the NUTS I level of analysis. The level of investments is measured as Gross Fixed Capital Formation over GDP. Human capital is estimated as the share of persons with higher education that are employed over the persons graduated from higher education, while the unemployment rate is measured as the share of unemployed persons over the total labour force. The environmental quality level is measured using the total ecological footprint of consumption divided by the population size, measured in global hectares (gha) per person, due to lack of data availability at lower levels of aggregation. Data for GDP per capita is sourced from the ARDECO database, the ecological footprint is provided by World Bank (Global Footprint Network, 2019; WGI, 2024), while all other data is sourced from Eurostat.

The indices for the estimation of gaps are constructed as the ratio of the best performing region over every other region's performance, using the following formula:

$$X\,GAP_{r,t} = {X\,max,t}\big/{X_{r,t}} \tag{2}.$$

where: $X_{max,t}$ is the level of the leading region in year t and X_{rt} is the level of region r in year t.

In cases of gaps in unemployment and environmental quality level, we use an inverse ratio provided by the formula:

$$X'\,GAP_{r,t} = {X'_{r,t}}\big/{Z_{min,t}} \tag{3},$$

as the best performing regions are those with the lowest levels of unemployment and ecological footprint.

The model also includes a set of control variables Z:

- The absorptive capacity (*ABS*) as a proxy of regions' administrative capacity and level of bureaucracy, measured as payments in years of programming period over total payments of programming period,
- gravity index[3] (*GRAV*) which represents the geo-economic position of a region, and accounts for market size and accessibility (Petrakos, 2000),
- population density (*DEN*) which reflects agglomeration economies (Albanese et al. 2021),
- institutional quality (*INST*) proxied by regulatory quality, one of the World Governance Indicators' dimensions, that captures perceptions of the government's ability to formulate and implement sound policies and regulations that permit and promote private sector development (Kaufman et al., 2010).

All independent variables are estimated at the beginning of each programming period (2000, 2007, 2014) and are expressed in logs to account for the effect of outliers.

Moreover, in order to examine the role of political factors influencing the allocation of funds among Member States, we augment our model with the addition of dummy variables that correspond to whether the country in question "holds" a critical institutional position during the period of analysis; the variables are proxied as flows:

- EU Commission Presidency (*PRESEC*), that takes the value 1 for the countries having a national politician appointed as EU Commission President for the years of service
- EU Council Presidency (*PRESCOUNCIL*), that takes the value 1 for the countries having a national politician appointed as EU Council President for the years of service

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[3] Estimated by the formula $GRAV_i = \sum_i^j \left(P_i P_j / d_{ij} \right)$. P_i and P_j represent the population of regions i and j respectively and d_{ij} indicates the Euclidian distance between them.

- DG REGIO Commissioner (*DGREGIO*), that takes the value 1 for the countries having a national politician appointed as DG-REGIO Commissioner for the years of service

- DG ECFIN Commissioner (*DGECOFIN*), that takes the value 1 for the countries having a national politician appointed as DG-ECFIN Commissioner for the years of service

- DG EMPL Commissioner (*DGEMPL*), that takes the value 1 for the countries having a national politician appointed as DG-EMPL Commissioner for the years of service

- DG AGRI Commissioner (*DGAGRI*), that takes the value 1 for the countries having a national politician appointed as DG-AGRI Commissioner for the years of service

- DG ENV Commissioner (*DGENV*), that takes the value 1 for the countries having a national politician appointed as DG-ENV Commissioner for the years of service.

Furthermore, in order to control for the effect of certain political ideologies influencing the allocation decisions, we include a variable representing each country's share of non-mainstream political groups in the European Parliament elections:

- Share of anti-systemic / Euroskeptic parties (extreme Right and extreme Left) in the EU Parliament; Confederal Group of the European United Left - Nordic Green Left (GUE/NGL) is considered as extreme left, whereas Union for Europe of the Nations Group (UEN), Independence/Democracy Group (IND/DEM) and their "successors" Europe of Freedom and Democracy (EFD), Europe of Freedom and Direct Democracy (EFDD) and Identity and Democracy (ID) are considered extreme-right.

All variables are considered in the initial year of each programming period (i.e., 2000, 2007, 2014). The variables were collected or constructed as shown in Table A1 in the Appendix. The summary statistics are provided in Table A2 and the correlation matrix in Table A3 in the Appendix.

4. Empirical analysis

a. Descriptive evidence

Prior of the estimation of the basic and extended models we plot the key variables of interest against our dependent variable to observe the association "trends" and directions with the use of scatterplots. The pair-wise correlations below present how the allocation of funds is associated with several critical gaps related to the level of development, the quality of human resources, the quality of infrastructure, the quality of the environment, the level of investment and the level of unemployment at the regional level.
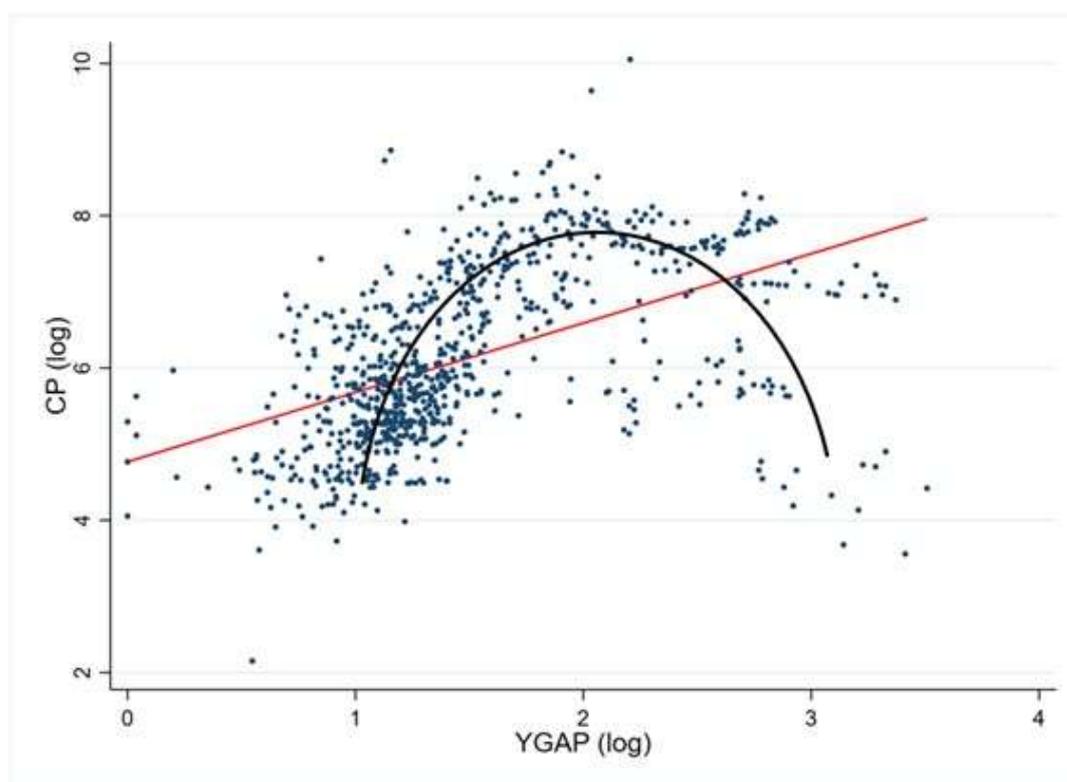
Figure 1. *Cohesion Policy and Development Gap*

Source*:* Own elaborations, ARDECO and DG-REGIO (2024)

Figure 1 presents the relation of CP to development gap. We observe that the linear fitted line indicates an overall positive relation (red line), which however, hides a steeper relationship at lower levels of the gap and a flatter, or even negative relationship at higher levels of development gap (black line). This pattern reveals a group of regions facing the most serious development gaps without receiving equally serious funding by CP. This may be the result of distributional bias in the allocation of resources, or limited

capabilities of the most seriously lagging regions to absorb the allocated funds. We explore this issue further in the next section.

Figure 2 presents the relation of CP to the gap in human capital. We observe a positive trend indicating that higher gaps in human capital at the regional level mobilize, in general, higher level of CP funds. Although on average regions deprived of quality human resources receive more funds, it is interesting to observe that several regions with higher quality of resources receive equal or higher funds than the most deprived. In general, we observe a great variation in the funding of regions with relatively lower gaps in human resources, as a group of them clearly receives a more favorable funding. On the other hand, Figure 3 shows that the relation of CP to the unemployment gap at the regional level has also a positive trend. In this case, however, the allocation of funds follows a more homoscedastic pattern, one of the reasons being that regional unemployment figures follow a more even distribution, while human capital figures follow a rather skewed one.
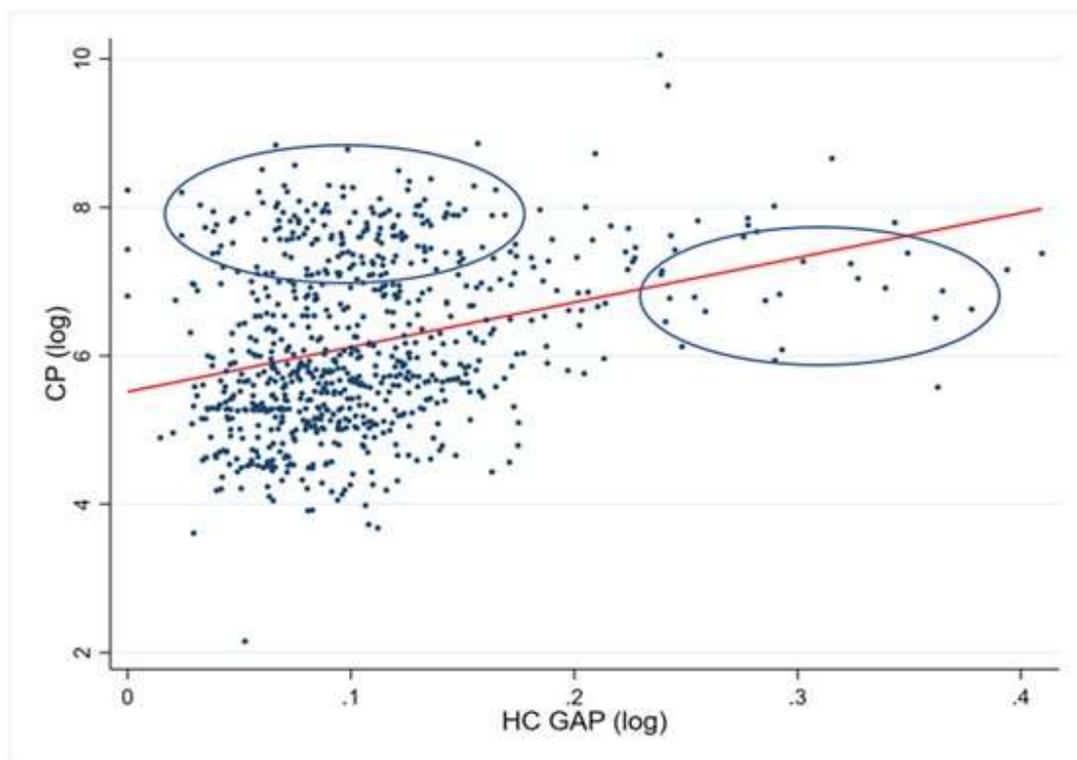
Figure 2. Cohesion Policy and Human Capital Gap

Source: Own elaborations, Eurostat and DG-REGIO (2024)
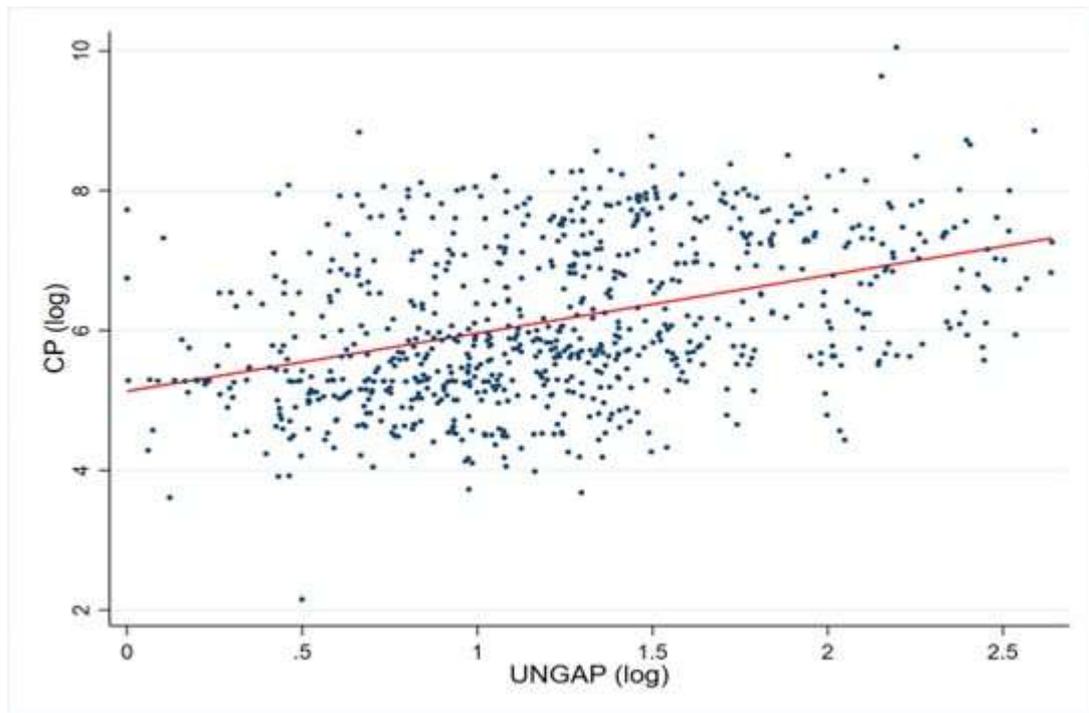
Figure 3. *Cohesion Policy and Unemployment Gap*

Source: Own elaborations, Eurostat and DG-REGIO (2024)

In a similar way, CP is positively related to existing regional gaps in infrastructure (Figure 4). However, this is not the case for all critical gaps. As Figure 5 shows, CP is negatively related to investment gaps, indicating that the regions with the greater needs do not receive more CP funds. At least at the level of diagrammatic analysis, the figures suggest that CP may not be a tool designed to support capital formation in the most deprived regions, or at least, it does not seem to behave in that way.

Similar reservations appear in the case of environmental protection. Figure 6 presents the relation of CP funds to environmental quality gaps. The relation appears to be negative, indicating that funds are not directed at the environmentally most unprepared or burdened regions[4].

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[4] The reservation in the Figures 4 and 6 is that the available data is not at the regional, but at the NUTS I (Fig.4) and national (Fig.6) level.

Figure 4. Cohesion Policy and Infrastructure Gap

Source: Own elaborations, Eurostat and DG-REGIO (2024)
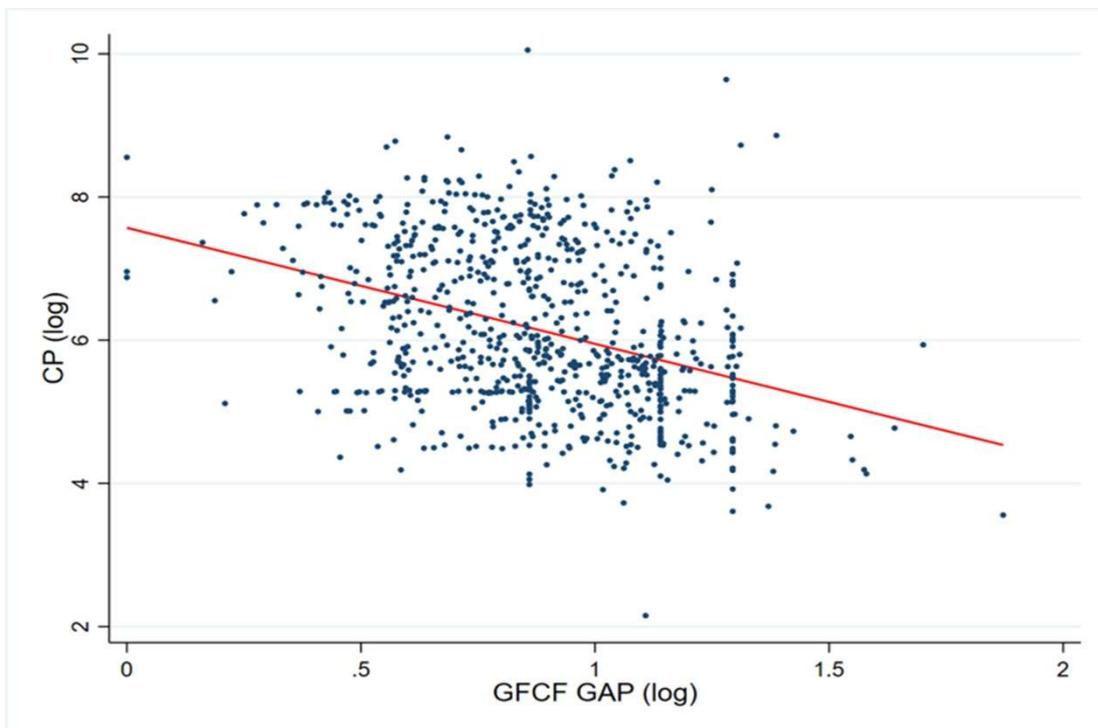
Figure 5. Cohesion Policy and Investment Gap

Source: Own elaborations, Eurostat and DG-REGIO (2024)
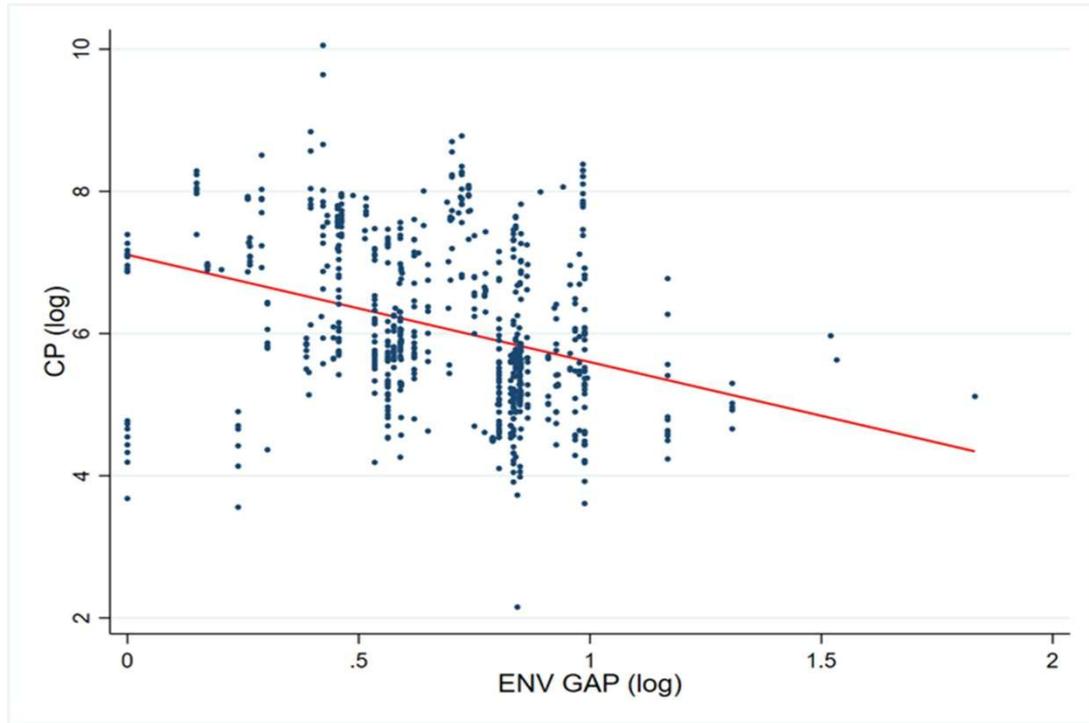
Figure 6. *Cohesion Policy and Environmental Gap*
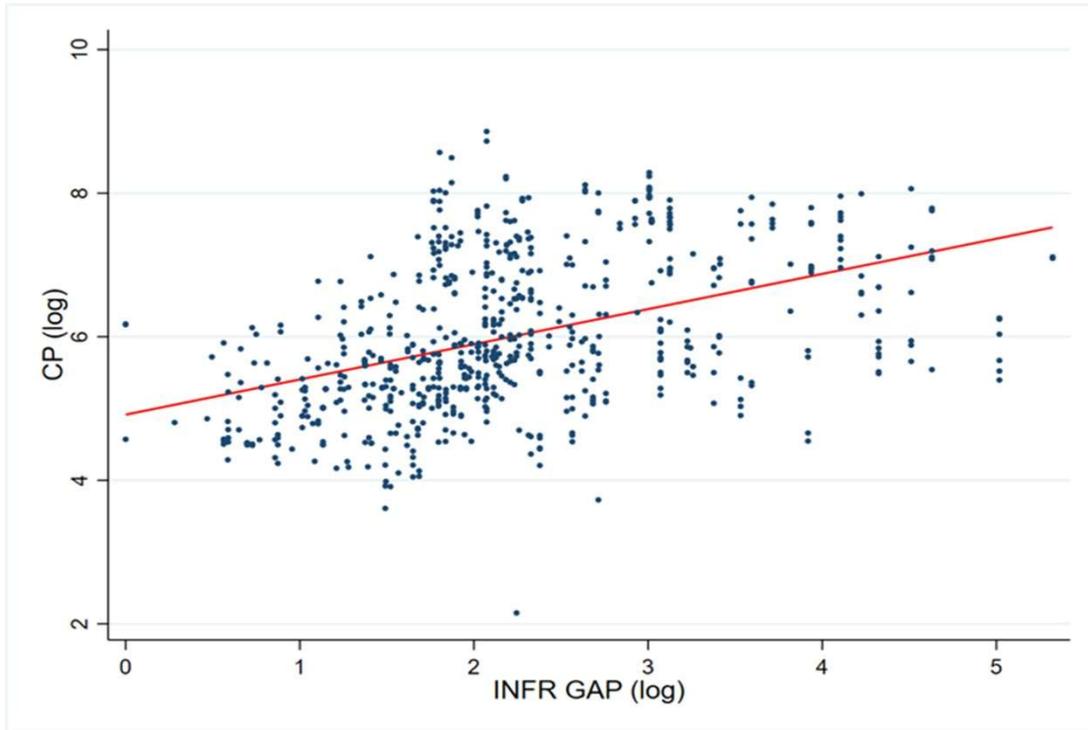
Source*:* Own elaborations, World Bank and DG-REGIO (2024)

Scatterplots for the two-way associations of Cohesion Policy with the control variables are provided in the Appendix (Figures B1 – B4).

b. Empirical results

In order to estimate the degree of endogeneity of Cohesion Policy, we estimate equation (1) with the use of a panel fixed effects econometric model and data at the regional NUTS II level for the EU28 and programming periods 2000-2006, 2007-2013 and 2014-2020.

Table 1 presents the results of the estimation of models including different combinations of the determinants of CP. These include the gaps in the development level (*YGAP*), the quality of human resources (*HCGAP*), the level of unemployment (*UNGAP*), the quality of infrastructure (*INFRGAP*), the level of investment (*GFCFGAP*) and the level of environmental quality (*ENVGAP*). The hypotheses tested here are to what extent these gaps affect the formation of CP at the regional level. A complementary hypothesis is whether there is any type of conditionalities in the impact of these gaps.

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The determinants also include a number of dummy variables that take the value 1 when the Commissioners of DG REGIO, DG ECOFIN, DG EMPL, DG EVN and DG AGRI or the Presidents of the EC and the EU Council are nationals of a specific country. This hypothesis tests for the extent to which the possession of the Commissioner's Office in General Directions that have a strong involvement in the formation of CP affects the allocation of resources in favor of the home countries of the Commissioners. The models also test for the impact of political representation of each country in the European Parliament on the allocation of CP funds. Political parties in the EU Parliament are divided in two categories: mainstream parties including the conservative, the social democratic and the liberal parties and the non-mainstream ones (NONMAINSTREAM), including the extreme right and the left. This variable tests the hypothesis that different mix of national representation in the EU Parliament in these two political categories implies a different treatment with respect to the allocation of Structural Funds.

Models 1 and 2 present the results from the estimation of the basic model with different combinations of economic and social gaps in order to test for the different effects and in order to address auto-correlation issues.

We observe that the estimated coefficients are positive and significant for the development, human capital, employment and environmental gaps, insignificant for the infrastructure gap and negative and significant for the investment gap. At first glance, the results seem to suggest that the formation of CP and the allocation of funds take into consideration the needs of lagging regions to catch up in terms of development levels, as well as in terms of utilization and quality of human and environmental resources towards the forerunner regions. CP does not seem to be responsive to the needs of regions with low quality of infrastructure and appears to support more regions with lower needs for investment.

Since the improvement of infrastructure is one of the main targets of ERDF, this finding would imply that the funds are allocated in such a way that does not reduce the gap of the lagging regions. In addition, the negative sign of the GFCF gap is problematic, as it indicates that CP funds are directed to countries and regions that perhaps do not need them that much. One could think as a possible explanation that countries have to provide matching funds for every euro of EC support, as CP in fact only co-finances programs and projects that have secured domestic funding from public or private

investment. Still, the finding that CP provides more support to countries and regions that have a greater ability to mobilize domestic capital seems to contradict with the basic goals of the policy.

We explore further in models 3 and 4 the question of the impact of infrastructure and investment gaps on the allocation of CP resources with the use of the multiplicative terms *INFRGAP*YGAP* and *GFCFGAP*YGAP* that attempt to estimate conditional effects.

Model 3 tests for the joint effect of infrastructure gap and development gap on Cohesion Policy responsiveness. We observe that the impact of *INFRGAP* is now positive and significant, but the joint impact of the multiplicative term is negative and significant. We estimate the conditional effect of the infrastructure gap with respect to development gap from the first derivative in equation (4).

$$\partial(CP)\Big/\partial(INFRGAP) = \beta_4 + \beta_7 * YGAP_{it} \qquad (4)$$

We see that the impact of *INFRGAP* on CP will be positive when $YGAP_{it} > -\beta_4/\beta_7$, which, ceteris paribus, implies that the effect of infrastructure gap on CP will be positive only for the regions having a development gap lower than 1.70. This is true for regions in advanced countries [AT, BE, DE, DK, FI, FR, IE, IT (except regions in the South for the 3rd pp), LU, NL, SE, UK], Cyprus, Spain (except some regions for the 3rd pp) and the capital regions in Czechia, Portugal, Slovenia and Slovakia (see table C1 in the appendix for a detailed description). In lagging regions with a greater development gap, the impact is negative. Figure 7 shows in blue the regions where CP is responding in a positive way to infrastructure gaps and in red the regions where CP is responding in a negative way to (higher) infrastructure gaps.

These findings indicate that per capita Structural Funds spending increase with the infrastructure gaps of the regions, but this is valid only for the regions above a certain threshold level of development. Below this threshold, spending per capita declines with higher infrastructure gaps. Can these findings be rationalized? Given that infrastructure needs are greater in lagging regions, they look suspicious or at least against the logic of CP. One explanation is related to size and power. The net contributor to the EU budget countries have the strength and the arguments to convince the Commission to prioritize infrastructure like roads, railroad, telecommunications or energy networks that serve better their own needs and the needs of the broader "old Europe" that is home of the

majority of the EU citizen. A second explanation is related to the capacity of the less advanced countries and regions to co-finance and implement the large-scale interventions required for a faster catching up in terms of infrastructure conditions. Whatever the reason might be, the preferential treatment of the core EU regions shown in Figure 7 in terms of responsiveness to infrastructure needs is unlikely to close the existing infrastructure gap and perhaps equally unlikely to lead to spatial convergence with respect to development levels[5].
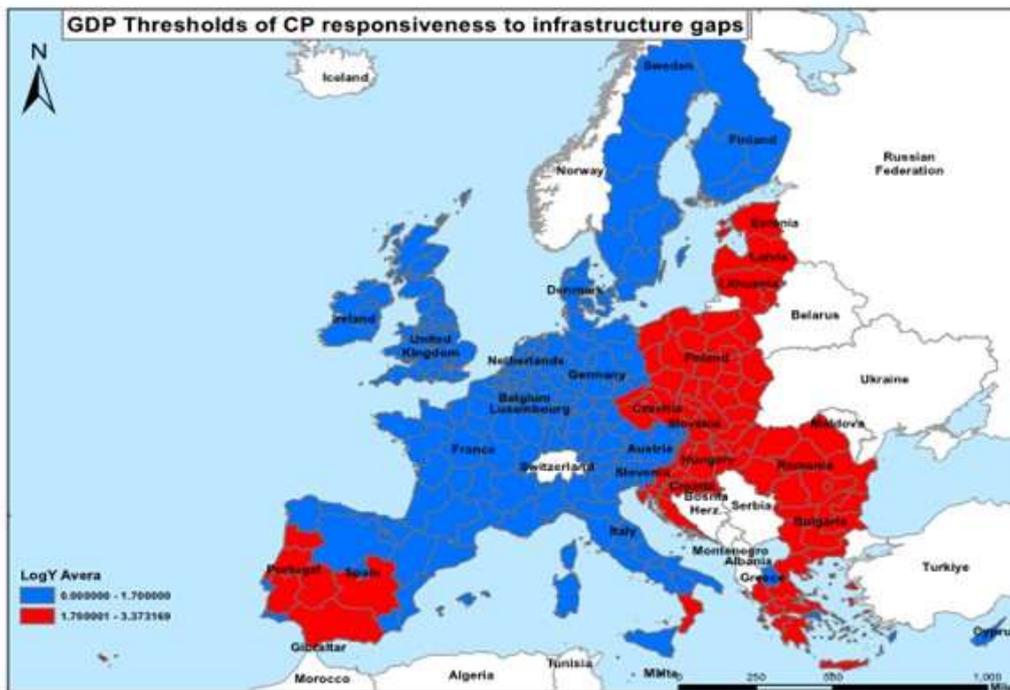
Figure 7. *Map with GDP Thresholds of CP responsiveness to infrastructure gaps*

Note: map lines delineate study areas and do not necessarily depict accepted national boundaries

Source: own elaboration using data from EUROSTAT

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[5] The conditional effect of development level on CP with respect to INFRGAP is estimated from the first derivative in equation (5):

$$\partial(CP)\big/\partial(YGAP) = \beta_1 + \beta_7 * INFRGAP_{it} \qquad (5)$$

It indicates that YGAP has a positive impact on CP when INFRGAP is lower than 4.45. The majority of the regions comply with this condition, with the exception of a few regions in Romania, Poland and Finland, where the development gap exceeds this range and has a negative impact on CP (see table C2 in the Appendix for a detailed description.

Table 1. *CP and regional development gaps*

DEP.VAR: CP	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
YGAP	0.868***	0.802***	1.740***	2.039***	1.803***	2.050***	0.491***	0.299**	0.685***	0.628***
	(0.158)	(0.139)	(0.247)	(0.245)	(0.253)	(0.240)	(0.162)	(0.141)	(0.148)	(0.153)
HCGAP	3.514***		3.934***		4.112***		4.445***		3.251***	3.568***
	(0.925)		(0.916)		(0.889)		(0.795)		(0.809)	(0.810)
UNGAP		0.368***		0.279***		0.249***		0.517***		
		(0.085)		(0.086)		(0.085)		(0.075)		
INFRGAP	0.065		0.663***		0.720***		-0.004		0.175***	0.146***
	(0.074)		(0.130)		(0.133)		(0.057)		(0.058)	(0.057)
GFCFGAP		-1.015***		1.049***		1.083***		-0.529***	-0.591***	-0.514***
		(0.180)		(0.358)		(0.355)		(0.157)	(0.175)	(0.174)
ENVGAP	2.344***	2.643***	2.155***	1.950***	2.151***	1.563***	0.658	1.163***	-0.084	0.364
	(0.574)	(0.452)	(0.577)	(0.469)	(0.541)	(0.486)	(0.438)	(0.375)	(0.520)	(0.490)
YGAP*INFRGAP			-0.391***		-0.428***					
			(0.070)		(0.071)					
YGAP*GFCFGAP				-1.168***		-1.204***				
				(0.168)		(0.167)				
DGREGIO					0.199***	0.334***			0.296***	0.237**
					(0.067)	(0.061)			(0.103)	(0.107)
DGECOFIN					0.466***	0.263***			0.235**	0.230**
					(0.111)	(0.093)			(107)	(0.108)
DGEMPL					0.353***	0.269***			0.115	0.089
					(0.119)	(0.122)			(0.107)	(0.113)
DGEVN					-0.955**	-0.377**				-0.749**
					(0.375)	(0.174)				(0.359)
DGAGRI					0.485**	0.098				-0.198
					(0.224)	(0.147)				(0.200)
PRESEC									0.103	0.070
									(0.109)	(0.110)
PRESCOUNCIL									0.141***	0.139***
									(0.046)	(0.044)
NONMAINSTREAM									-0.798***	-0.893***
									(0.274)	(0.274)
ABS							1.396***	1.427***		-0.111
							(0.162)	(0.143)		(0.237)
GRAV							-0.364***	-0.406***	-0.467***	-0.411***
							(0.071)	(0.064)	(0.063)	(0.071)
DENS							-0.116**	-0.129***		-0.057
							(0.048)	(0.042)		(0.050)
INST							2.079***	2.195***	1.820***	1.531***
							(0.407)	(0.344)	(0.506)	(0.515)
Constant	-4.642***	-3.826***	-5.771***	-5.107***	-5.903***	-4.381***	0.356	0.909	1.525	1.064
	(0.584)	(0.543)	(0.653)	(0.577)	(0.631)	(0.569)	(0.979)	(0.904)	(1.132)	(1.130)
Observations	628	719	628	719	628	719	626	715	585	583
R-squared	0.649	0.683	0.671	0.700	0.686	0.707	0.748	0.788	0.814	0.821
Number of rg	227	252	227	252	227	252	227	252	227	227
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
$\partial CP/\partial YGAP > 0$ if INFRGAP <			4.45		4.21					
$\partial CP/\partial$ INFR GAP > 0 if YGAP <			1.70		1.68					
$\partial CP/\partial YGAP > 0$ if GCFC GAP <				1.75		1.70				
$\partial CP/\partial$ GFCG GAP > 0 if YGAP <				0.90		0.90				

Robust standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Model 4 tests for the joint effect of investment gap and development gap on Cohesion Policy responsiveness. We observe that the impact of *GFCF* is now positive and significant, but the joint impact of the multiplicative term is negative and significant.

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We estimate the conditional effect of the infrastructure gap with respect to development gap from the first derivative in equation (6).

$$\partial(CP)\Big/\partial(GFCFGAP) = \beta_4 + \beta_8 * YGAP_{it} \qquad (6)$$

We observe that *GFCFGAP* has a positive impact on CP when *YGAP* is lower than 0.90 (see table C3 in the Appendix for a detailed description). As Figure 8 shows, the regions meeting this threshold are the very advanced regions of the EU[6]. This finding indicates that, apart from a small number of metropolitan and advanced regions in the EU core, CP is not designed to respond to the needs of the regions for investment and especially the lagging regions that have the greatest needs. On the contrary, the greater the investment gap, the more likely it is that the per capita support from Structural Funds to be lower. This pattern runs against the logic of CP and certainly does not contribute to the goal of regional convergence that requires substantial investment in the old and new EU periphery.

The findings indicate that the difficulty of lagging regions and countries to mobilize significant public or private investment is not one of the criteria for the allocation of CP funds. On the contrary, the greater the difficulty, the more likely is that the per capita EU funds that they will receive will be lower. A possible explanation is that the funds of the CP are limited when compared with the capital formation gaps of the lagging regions and as a result, they cannot follow any proportional rule. Another explanation discussed before is related to the issue of co-financing that sets certain limits to the ability of weaker economies to match EU funding of a much higher order. This may explain the finding that regions with greater investment gaps receive lower per capita EU funds. Whatever the explanation is, the fact is that the decoupling of Structural Funds from the processes and conditions of capital formation in weaker regions and countries is very likely to increase regional disparities, especially when the

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[6] Wien (AT13), Salzburg (AT32), Tirol (AT33) and Vorarlberg (AT34) in Austria, the capital region of Brussels (BE10) in Belgium, the regions of Stuttgart (DE11), Oberbayern (DE21), Bremen (DE50), Hamburg (DE60) and Hessen (DE71) in Germany, the regions of Hovedstaden (DK01), Southern (DK03) and Central (DK04) Denmark, Helsinki (FI1B) and Aland (FI20) in Finland, the capital region of France (FR10), Southern-Eastern Ireland (IE02), Luxembourg (LU00), the regions of Groningen (NL11), Utrecht (NL31), North Holland (NL32) and South Holland (NL33) in Netherlands, Stockholm (SE11) in Sweden, London (UKI1), Cheshire (UKD6), Bedfordshire and Hertfordshire (UKH2), Berkshire-Buckinghamshire-Oxfordshire (UKJ1) and North Eastern Scotland (UKM5) in the UK.

regions in the upper quantile have the capacity to find ways to attract higher per capita CP funds[7].
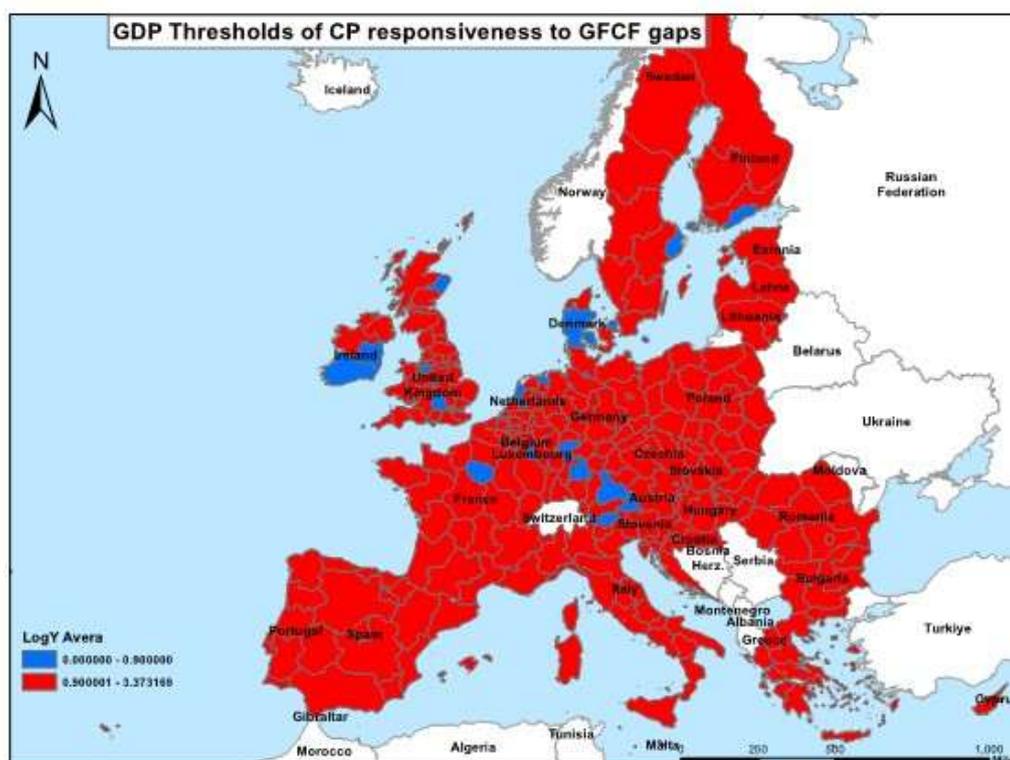
Figure 8. *GDP Thresholds of CP responsiveness to GFCF gaps*

Note: map lines delineate study areas and do not necessarily depict accepted national boundaries

Source: own elaboration using data from EUROSTAT

In models 5, 6, 9 and 10 we include a number of political dummy variables testing for the hypothesis that the possession of a high-ranking Office in the EU, like Commissioner, President of the Commission or President of the Council, is associated with unobserved and undeclared benefits for the home countries of the Officials. The

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[7] From model (4) we can also estimate in equation (6) the conditional effect of development level on CP with respect to GFCF (5):

$$\frac{\partial(CP)}{\partial(YGAP)} = \beta_1 + \beta_8 * GFGFGAP_{it} \tag{6}$$

It indicates that YGAP has a positive impact on CP when GFCF is lower than 1.75. All observations (except BG32) have GFCFGAP lower than this threshold, indicating that YGAP has always a positive impact on CP.

results of the estimations in the four models provide robust evidence that the positions of the Commissioner of DGREGIO, and DGECOFIN provide a statistically significant premium to the home countries of the Officers. Models 5 and 6 provide the same evidence for DGEMPL, while the evidence provided for DGAGRI is limited only to model (5). The evidence with respect to the influence of CP by the two highest Offices in the EU is mixed. Although the position of the President of the European Commission does not seem to have any statistically significant impact on the allocation of Structural Funds, in the case of the President of The European Council the evidence suggests that the impact is significant and positive. It should be noticed, of course, that the evidence covers 22 years and three programming periods with many people serving in these Offices. As a result, the findings do not point to the persons heading the Offices in the specific period, but to the way that these Offices may use their institutional power in the negotiations among Member States in order to prioritize certain regions or projects aligning with their national interests or political agendas. Interestingly, the position of the DG Environment is associated with a negative impact on the Structural Funds allocated to the home country of the Commissioner. This may be explained by the fact that the DGENV is responsible for the environmental regulations and directives imposed on economic activities in order to promote a greener economy. These regulations and directives, however, often slow down the implementation of CP, as they require several public checks and environmental studies before an investment, or a project can be approved. Although the negative relation between environmental requirements and CP spending can be explained, it is not clear why this has a differential impact on the home country of the Commissioner of the Environment.

In models 9 and 10 we also included a political variable related to the share of anti-systemic parties in the European Parliament for each country over the period 2000-22. The results indicate a statistically significant negative impact on the allocation of Structural Funds to countries and regions. If we assume that anti-systemic parties voice dissatisfaction and discontent with governance and policies in left-behind countries and regions (Rodríguez-Pose, 2018), one would perhaps expect that the EC would turn its attention to these places and make an effort to improve the conditions that fuel dissatisfaction. This does not seem to happen, as the policy response to anti-systemic vote is to cut CP funds. Presumably, the EC understands the anti-systemic vote as an anti-EU vote that poses an institutional threat and therefore should have a cost. In this

interpretation, anti-systemic behavior is not related so much to being left behind, but to a fundamental disagreement with the EU principles of inclusiveness and no discrimination. Another explanation of the negative relation may be that anti-systemic parties do not have (and perhaps do not want to have) any experience with the mechanisms of allocation of resources and as a result are not able (or willing) to support national interests in the same way as systemic parties. Whatever the reason is, the fact is that lower EU funding for countries and regions with a more anti-systemic representation may deteriorate the conditions that caused the anti-systemic vote in the first place.

We also include in the models 7 - 10 as control variables an index of Absorbing Capacity (*ABS*), a Gravity index (*GRAV*), an index of concentration or agglomeration (*DENS*) and an Index of Institutional Quality (*INST*). The coefficients have the expected signs and in most models are statistically significant. The results suggest, first, that regions with more efficient administrations and higher absorbing capacity have at the end of each programming period managed to receive more CP funds. Second, they suggest that regions that are more peripheral tend to get systematically more funding than central regions, which is one of the main objectives of CP. Third, metropolitan regions and regions hosting large cities that benefit from scale and agglomeration economies tend to receive per capita less funding than less densely populated urban and rural areas. On the other hand, regions and countries that have invested in institutional quality manage to absorb more funds at the end of each programming period.

Table 2 presents the results of the estimation of equation (1) with all variables in a standardized form. All signs for the direction of the impact of each variable, as well as the levels of significance remain the same. What changes is the value of the coefficients that provide an indication of the relative impact of the independent variables on CP. According to the results in Table 2, the most important factors affecting the intensity of CP at the regional level are: (a) the development gap, (b) the quality of institutions, (c) the environmental deficiencies and (d) gaps in the quality of infrastructure. Deficiencies in the quality of human resources and the opportunities for employment in the labor market have a less important impact.

Table 2. *Standardized coefficients*

DEP.VAR: zCP	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
zYGAP	0.476***	0.440***	0.955***	1.119***	0.990***	1.125***	0.269***	0.164**	0.375***	0.345***
	(0.087)	(0.076)	(0.136)	(0.135)	(0.139)	(0.132)	(0.089)	(0.078)	(0.081)	(0.084)
zHCGAP	0.177***		0.199***		0.208***		0.224***		0.164***	0.180***
	(0.047)		(0.046)		(0.045)		(0.040)		(0.041)	(0.041)
zUNGAP		0.177***		0.135***		0.120***		0.249***		
		(0.041)		(0.042)		(0.041)		(0.036)		
zINFRGAP	0.053		0.550***		0.597***		-0.004		0.145***	0.121***
	(0.061)		(0.108)		(0.110)		(0.048)		(0.048)	(0.047)
zGFCFGAP		-0.225***		0.232***		0.240***		-0.117***	-0.131***	-0.114***
		(0.040)		(0.079)		(0.079)		(0.035)	(0.039)	(0.039)
zENVGAP	0.520***	0.586***	0.478***	0.433***	0.477***	0.347***	0.146	0.258***	-0.019	0.081
	(0.127)	(0.100)	(0.128)	(0.104)	(0.120)	(0.108)	(0.097)	(0.083)	(0.115)	(0.109)
z(YGAP*INFRGAP)			-0.968***		-1.060***					
			(0.174)		(0.176)					
z(YGAP*GFCFGAP)				-0.715***		-0.737***				
				(0.103)		(0.102)				
zDGREGIO					0.045***	0.075***			0.066***	0.053**
					(0.015)	(0.014)			(0.023)	(0.024)
zDGECFIN					0.122***	0.063***			0.057**	0.055**
					(0.027)	(0.022)			(0.026)	(0.026)
zDGEMPL					0.065***	0.050**			0.021	0.016
					(0.022)	(0.023)			(0.020)	(0.021)
zDGEVN					-0.140**	-0.055**				-0.110**
					(0.055)	(0.025)				(0.053)
zDGAGRI					0.058**	0.012				-0.024
					(0.027)	(0.018)				(0.024)
zPRESCOM									0.018	0.012
									(0.019)	(0.020)
zPRESCOUNCIL									0.040***	0.040***
									(0.013)	(0.013)
zNON-MAINSTREAM									-0.104***	-0.116***
									(0.036)	(0.036)
zABS							0.270***	0.276***		-0.021
							(0.031)	(0.028)		(0.046)
zGRAV							-0.247***	-0.275***	-0.317***	-0.279***
							(0.048)	(0.044)	(0.043)	(0.048)
zDENS							-0.120**	-0.134***		-0.059
							(0.050)	(0.043)		(0.052)
zINST							0.419***	0.443***	0.367***	0.309***
							(0.082)	(0.069)	(0.102)	(0.104)
Constant	-0.402*	-0.437**	-0.345*	-0.175	-0.320	-0.151	-0.670***	-0.776***	-0.156	-0.251
	(0.206)	(0.193)	(0.202)	(0.186)	(0.197)	(0.183)	(0.147)	(0.148)	(0.201)	(0.220)
Observations	628	719	628	719	628	719	626	715	585	583
R-squared	0.649	0.683	0.671	0.700	0.686	0.707	0.748	0.788	0.814	0.821
Number of rg	227	252	227	252	227	252	227	252	227	227
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Political factors, like the country of origin of top-level EU officials and the presence of non-mainstream parties in the EU parliament play a role, which, however, is of a lesser importance compared to the non-political determinants that affect the allocation of funds. Besides institutional quality that plays a key role in the ability of regions to

utilize allocated resources and secure funding from competitive sources, the other control variables also seem to have a relatively significant influence in the allocation of funds. The capacity of regional administrations and the geographical factors of proximity and density appear also to have a role, which likely enough is much more significant than the role of the political factors.

5. Conclusion

The findings of this study provide critical insights into the responsiveness of EU Cohesion Policy to regional economic and social disparities and identify some of the reasons behind the difficulties Cohesion Policy is facing in its effort to support convergence in the lagging regions. One reason is related to the limited responsiveness of CP to two important deficiencies of their performance. While the policy is designed to reduce developmental gaps across regions, our analysis reveals a complex and sometimes contradictory allocation pattern. The results indicate that while funds are directed toward regions with lower development levels, higher unemployment, and human capital gaps, they are not sufficiently responsive to structural deficiencies such as infrastructure and investment shortfalls in weaker regions. This misallocation suggests that certain economically disadvantaged regions may be trapped in a cycle of low development, as they fail to attract the necessary investments to stimulate long-term growth. Indeed, Cohesion Policy is designed and implemented overlooking the existing growth and investment gaps, that, however, have a critical role in shaping the effectiveness of the catching up efforts in these regions.

Another reason is that the concentration of decision-making power at the top ranks of certain General Directories, as well as political considerations related to the balance between mainstream and non-mainstream parties affect the allocation of resources in an unplanned and certainly undesired way. The role of political influences in fund distribution raises concerns about the extent to which policy decisions are driven by genuine regional needs versus institutional bargaining and political considerations.

Moving forward, the effectiveness of Cohesion Policy could be enhanced by refining its allocation mechanisms to better address regional disparities in a more targeted manner. A greater emphasis on institutional quality, absorptive capacity, and the specific developmental needs of weaker regions could improve the policy's impact.

Policymakers should also ensure that infrastructure and investment funding are distributed more equitably, rather than favoring already-developed regions. Additionally, reducing the influence of political negotiations in fund allocation could help reinforce the policy's legitimacy and effectiveness. Ultimately, a more nuanced and evidence-based approach to EU Cohesion Policy design is necessary to foster genuine regional convergence and long-term economic cohesion across the Union.

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Appendix

A. Variables of analysis

Table A 1. Variable description

Dependent		
CP	Logarithmic value of per capita aggregated Structural Funds payments	DG-REGIO (2024)
Explanatory		
YGAP	Logarithmic value of development gap	ARDECO (2023)
INFRGAP	Logarithmic value of infrastructure gap	Eurostat (2024)
GFCFGAP	Logarithmic value of Gross Fixed Capital Formation gap	Eurostat (2024)
HCGAP	Logarithmic value of human capital gap	Eurostat (2024)
UNGAP	Logarithmic value of unemployment gap	Eurostat (2024)
ENVGAP	Logarithmic value of environmental gap	World Bank (2024)
Controls		
ABS	Logarithmic value of absorptive capacity	DG-REGIO (2024)
GRAV	Logarithmic value of the gravity index	Eurostat (2024)
DEN	Logarithmic value of population density	Eurostat (2024)
INST	Logarithmic value of Regulatory Quality (World Governance Indicators)	World Bank (2024)
PRESEC	Dummy: EU Commission Presidency	EU Commission (2024)
DGREGIO	Dummy: DG REGIO Commissioner	DG REGIO (2024)
DGECOFIN	Dummy: DG ECFIN Commissioner	DG ECFIN (2024)
DGEMPL	Dummy: DG EMPL Commissioner	DG EMPL (2024)
DGAGRI	Dummy: DG AGRI Commissioner	DG AGRI (2024)
DGENV	Dummy: DG ENV Commissioner	DG ENV (2024)
PRESCOUNCIL	Dummy: EU Council Presidency	EU Council (2024)
NON-MAINSTREAM PARTIES	Share of non-mainstream political groups in the EU Parliament elections	EU Parliament (2024)

Table A 2. *Summary statistics*

Variable	Obs	Mean	Std. Dev.	Min	Max
CP	814	6.142	1.155	2.153	10.053
YGAP	816	1.509	0.634	0	3.508
HCGAP	781	0.106	0.058	0	0.409
UNGAP	776	1.221	0.557	0	2.640
INFRGAP	706	2.215	0.958	0	5.323
GFCFGAP	816	0.882	0.256	0	1.872
ENVGAP	759	0.677	0.256	0	1.832
ABS	813	4.118	0.223	2.757	4.519
GRAV	816	10.725	0.784	8.085	13.427
DENS	806	5.030	1.203	0.693	9.265
INST	816	0.782	0.233	-0.126	1.107

Table A 3. *Correlation Matrix*

| Variables	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
CP	1	1.000																		
YGAP	2	0.499***	1.000																	
HCGAP	3	0.306***	0.257***	1.000																
UNGAP	4	0.403***	0.408***	0.630***	1.000															
INFRGAP	5	0.440***	0.584***	0.059	0.167***	1.000														
GFCFGAP	6	-0.359***	-0.155***	0.027	0.099***	-0.149***	1.000													
ENVGAP	7	-0.333***	-0.679***	-0.182***	-0.232***	-0.374***	0.253***	1.000												
ABS	8	0.067*	-0.495***	-0.213***	-0.266***	-0.189***	-0.011	0.313***	1.000											
GRAV	9	-0.547***	-0.613***	-0.169***	-0.337***	-0.443***	0.019	0.258***	0.277***	1.000										
DENS	10	-0.409***	-0.325***	-0.107***	-0.115***	-0.473***	0.210***	0.212***	-0.022	0.476***	1.000									
INST	11	-0.347***	-0.701***	-0.462***	-0.493***	-0.323***	0.004	0.579***	0.521***	0.475***	0.242***	1.000								
DGREGIO	12	0.105***	0.126***	-0.016	0.058*	0.191***	0.027	-0.072**	0.063*	-0.052	-0.089**	-0.166***	1.000							
DGECOFIN	13	0.143***	-0.038	0.102***	0.174***	-0.003	-0.230***	-0.084**	0.085**	0.017	-0.080**	0.013	-0.085**	1.000						
DGEMPL	14	0.194***	0.106***	0.025	0.006	-0.022	-0.178***	0.096***	-0.092***	-0.121***	-0.009	-0.129***	-0.063*	-0.068*	1.000					
DGEVN	15	0.119***	-0.015	-0.020	0.012	0.015	-0.054	0.045	0.099***	-0.122***	-0.140***	-0.059*	-0.049	-0.053	-0.039	1.000				
DGAGRI	16	0.037	0.097***	-0.030	-0.067*	0.179***	-0.087**	-0.150***	-0.067*	-0.029	-0.047	-0.031	0.234***	-0.043	-0.032	-0.025	1.000			
PRESCOM	17	0.111***	-0.041	0.078***	0.099***	-0.078**	0.104***	-0.004	0.067*	-0.032	-0.014	-0.152***	-0.060*	-0.065*	-0.048	-0.037	-0.030	1.000		
PRESCOUNCIL	18	0.049	-0.020	-0.107***	0.070*	-0.069*	0.005	-0.043	0.197***	0.059*	0.034	0.016	0.260***	-0.117***	0.103***	-0.067*	-0.054	0.042	1.000	
NONMAIN	19	0.005	0.092**	0.137***	0.017	0.210***	-0.035	0.042	-0.301***	0.009	-0.016	-0.076**	0.126***	-0.231***	0.053	-0.018	-0.039	-0.017	0.091**	1.000

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

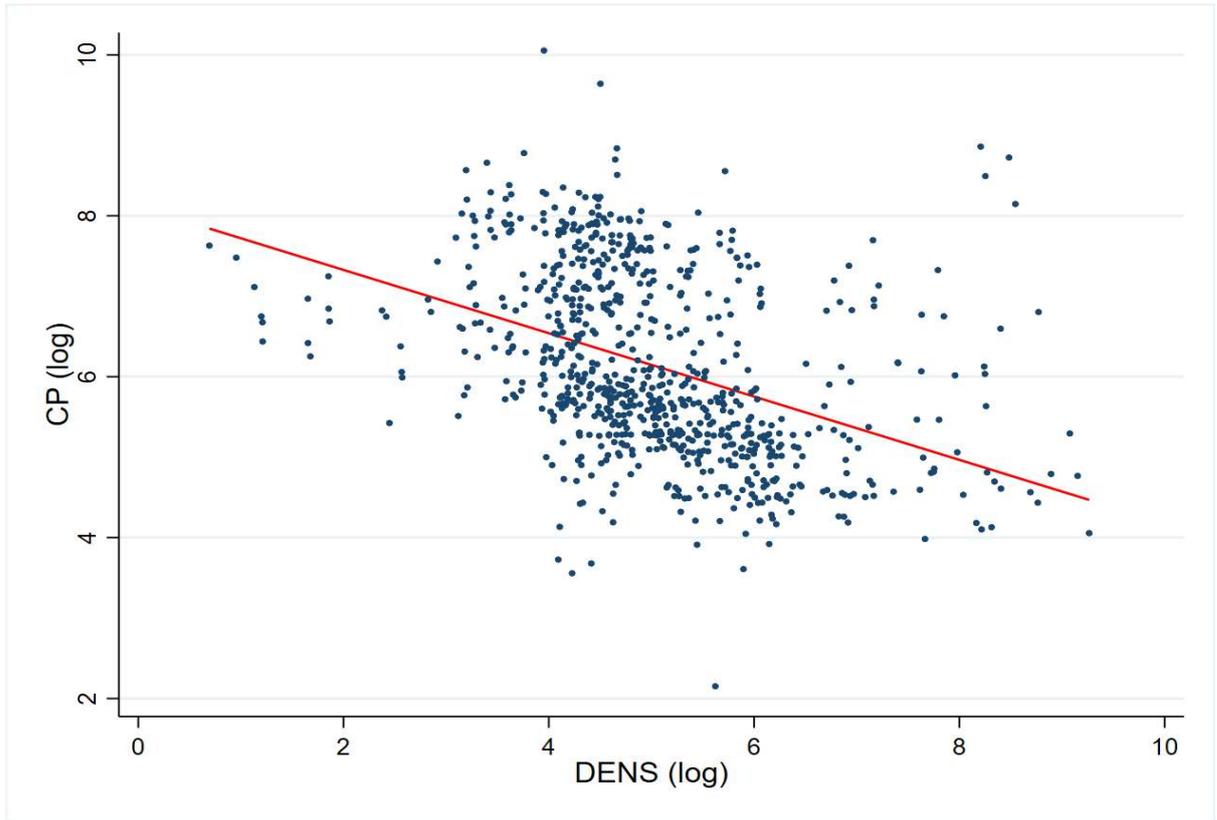**B. Pairwise scatterplots of dependent variable and controls**
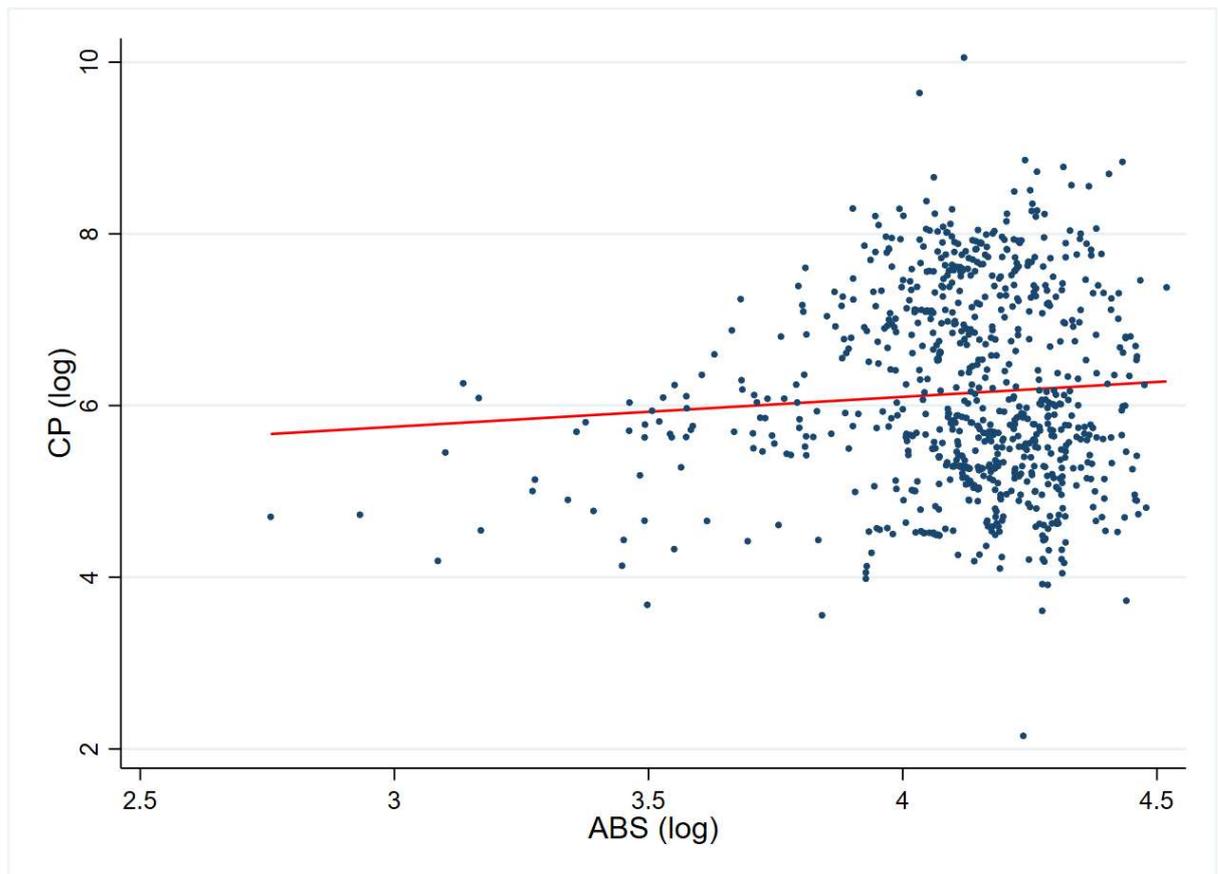
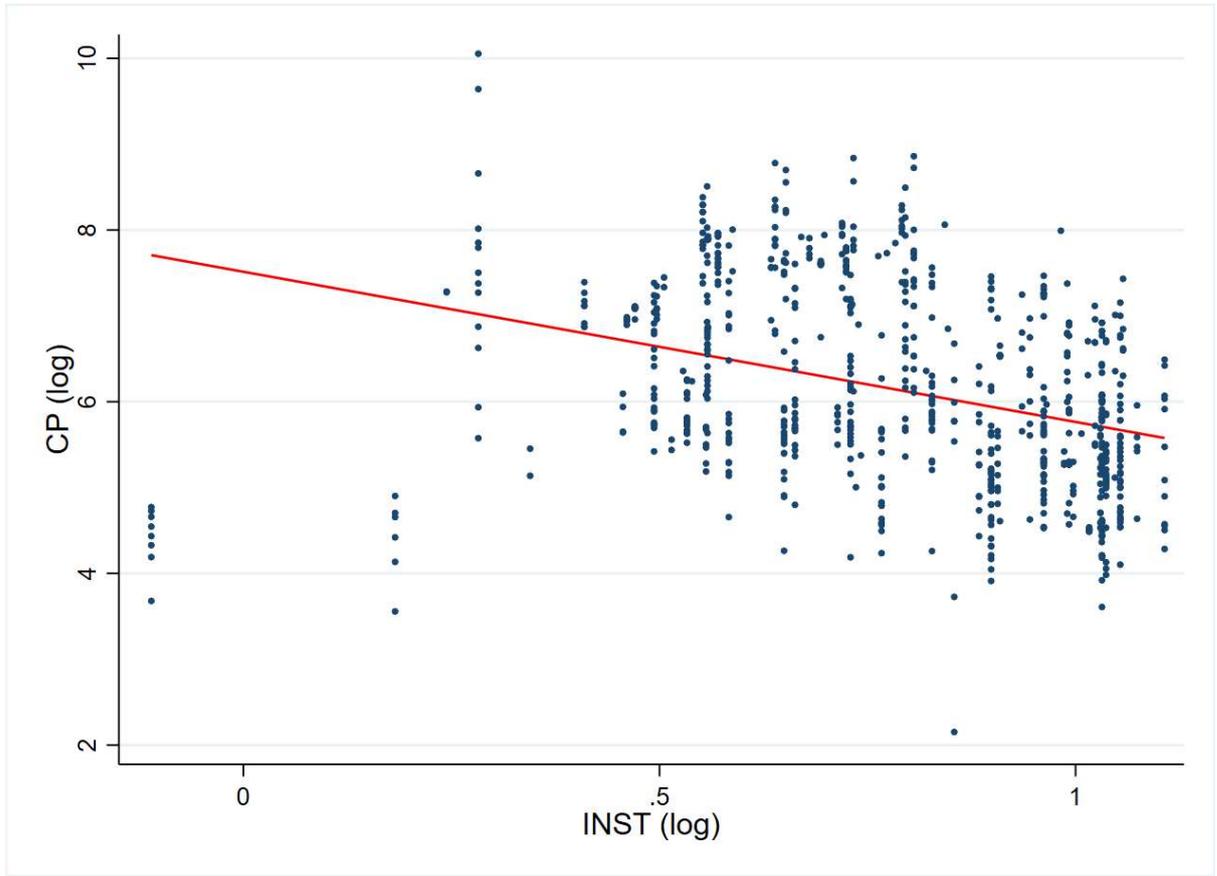*Figure B 1. Cohesion Policy and Absorptive Capacity*
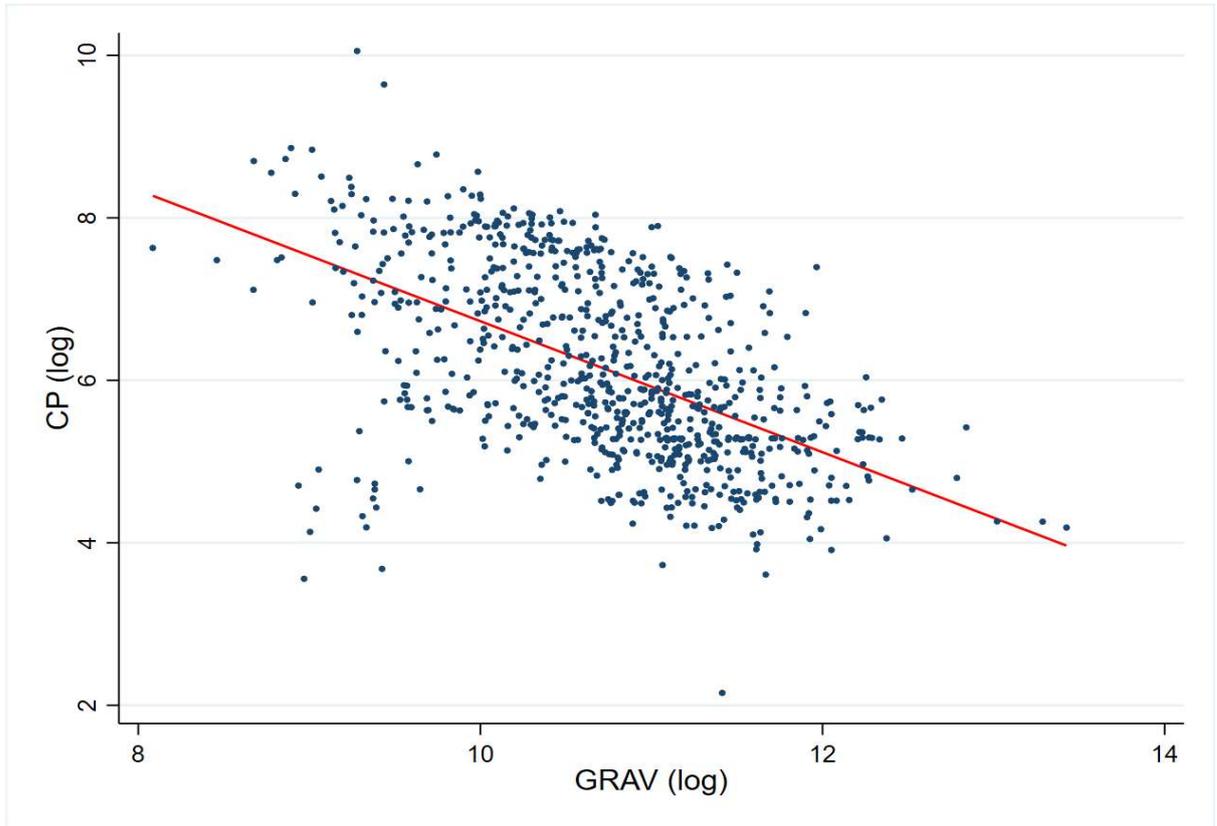
Figure B 2. *Cohesion Policy and Gravity Index*

Source*:* Own elaborations, Eurostat and DG-REGIO (2024)

Figure B 3. *Cohesion Policy and Population Density*

Source*:* Own elaborations, Eurostat and DG-REGIO (2024)

Figure B 4. *Cohesion Policy and Institutions*

Source*:* Own elaborations, World Bank (2024) and DG-REGIO (2024)

C. Regions above and below estimated thresholds

Table C 1. *Regions where INFRGAP has a positive impact on CP when conditioned to YGAP*

Country	Region	Programming period
Austria	All	All
Belgium	All	All
Germany	All	All
Denmark	All	All
Finland	All	All
France	All	All
Ireland	All	All
Luxembourg	All	All
Netherlands	All	All
Sweden	All	All
United Kingdom	All	All
Italy	ITC1, ITC2, ITC3, ITC4, ITF1, ITH1, ITH2, ITH3, ITH4, ITH5, ITI1, ITI2, ITI3, ITI4	All
	ITF2, ITF3, ITF4, ITF5, ITF6, ITG1, ITG2 (southern regions)	1 and 2
Spain	ES11, ES12, ES13, ES41, ES42, ES52, ES62, ES63, ES64, ES70	All
	ES21, ES22, ES23, ES24, ES30, ES51, ES53	1 and 2
Cyprus	CY00	1 and 2
Portugal	PT17 (capital)	ALL
	PT15	1 and 2
Chezia	CZ01 (capital)	all
Slovenia	SI04 (capital)	all
Slovakia	SK01 (capital)	all

Table C 2. Regions where YGAP has a negative impact on CP when conditioned to INFR

Country	Region	Programming period
Estonia	EE00	2
Finland	FI19, FI1B, FI1C, FI1D	2
France	FR52	1,2,3
Poland	PL11, PL33, PL41, PL42, PL43	1
	PL12, PL31, PL32, PL34	3
Romania	RO11, RO12, RO21, RO22, RO41, RO42	3

__Table C 3.__ Regions where GFCFGAP has a positive impact on CP when conditioned to YGAP

Country	Region	Programming period
Austria	AT13	All
	AT32	1 and 2
	AT33, AT34	1
Belgium	BE10	All
	BE21	1
Germany	DE11, DE21, DE60, DE71	All
	DE50	1 and 2
Denmark	DK01	All
	DK03, DK04	1 and 2
	DK05	1
Finland	FI1B, FI20	all
France	FR10	All
Ireland	IE02	All
Italy	ITC2, ITC4, ITH1, ITH2, ITH5	1
Luxembourg	LU00	all
Netherlands	NL11, NL33	all
	NL31, NL32	all
Sweden	SE11	All
	SE33	1
United Kingdom	UKI1, UKJ1, UKM5	All
	UKD6	1 and 2
	UKH2, UKI2, UKJ2, UKK1	1