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by

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Abstract: Some regions in Europe that have been heavily supported by the European Union's cohesion policy have recently opted for parties with a strong Eurosceptic orientation. The results at the ballot box have been put forward as evidence that cohesion policy is ineffective for tackling the rising, European-wide wave of discontent. However, the evidence to support this view is scarce and, often, contradictory. This paper analyses the link between cohesion policy and the vote for Eurosceptic parties. It uses the share of votes cast for Eurosceptic parties in more than 63,000 electoral districts in national legislative elections in the EU28 to assess whether cohesion policy investment since 2000 has made a difference for the electoral support for parties opposed to European integration. The results indicate that cohesion policy investment is linked to a lower anti-EU vote. This result is robust to employing different econometric approaches, to considering the variety of European development funds, to different periods of investment, to different policy domains, to shifts in the unit of analysis, and to different levels of opposition by parties to the European project.

Introduction

Between 2014 and 2020 the European Union (EU) spent almost one third of its budget – or €351.8 billion – "in order to support job creation, business competitiveness, economic growth, sustainable development, and improve citizens' quality of life" in its regions and cities (European Union, 2014). Most of this investment in cohesion policy – through the combination of the European Regional Development Fund (ERDF), the European Social Fund (ESF), and the Cohesion Fund – has been targeted at creating jobs and growth in the less developed areas of the Union, by actively investing in improving people's skills, supporting small and medium-size enterprises and start-ups, reinforcing research and innovation capacities, improving transport and telecommunications infrastructure, and tackling environmental problems. In many parts of Europe, the EU has become the major investor in economic development.

However, while the EU is conducting this huge development effort, many European citizens are turning their back on European integration. The Brexit vote in the UK may be the most extreme expression of the rising discontent with the EU. However, the UK is not the exception. Over the last decade and a half there has been a growing distrust of the European project across many parts of Europe. According to different Eurobarometer surveys, in the mid-2000s only one quarter of the European population tended not to trust the EU. By the late 2010s – and one long economic crisis later – the share of European citizens expressing doubts on the European project had reached 45% of the population.

Riding on this populist wave, the rising distrust of the EU is being gradually translated into votes. Between 2013 and 2018 13.4% of voters in the EU cast their vote in national legislative elections for parties that are either strongly opposed or opposed to European integration. If parties that want a moderate rollback of the European agenda are considered, the share of the vote for Eurosceptic parties rises to 26.7% (Dijkstra et al., 2020).

The surge of anti-system voting, in general, and Euroscepticism, in particular, has attracted considerable attention. Individual factors, such as age, education and wealth, have featured prominently in scholarly research as drivers of anti-system voting (Goodwin & Heath, 2016; Hobolt, 2016; Ford & Goodwin,

2017; Essletzbichler et al., 2018; Gordon, 2018). So have interpersonal inequality (Rodrik, 2018) and rurality (Essletzbichler et al., 2018; Martin et al., 2018; Gordon, 2018). However, more recently a different strand of literature has adopted a more territorial stance. The rise of populism and Euroscepticism is, according to this opinion, intrinsically related to long-term economic and industrial decline (Martin et al., 2018; Rodríguez-Pose, 2018; Dijkstra et al., 2020). From this perspective, if territorial decline is the cause, more investment in development should be the solution. It is, therefore, posited that "development policies for lagging and declining areas offer the most realistic and viable option [to curb the rising discontent]" (Rodríguez-Pose, 2018: 206). Hence, "if Europe is to combat the geography of EU discontent, fixing the so-called places that don't matter is possibly one of the best ways to start" (Dijkstra et al., 2020: 751). This implies that generating viable and solid development strategies for places lagging behind and/or suffering long-term economic decline should represent one of the soundest options to combat the wave of discontent and resentment against European integration (Dijkstra et al., 2020; Iammarino et al., 2019).

This is to a large extent what the EU aims to do with the one third of its budget targeted to the promotion of economic development across the continent. Yet, the paradox is that many of the places that benefited the most from European cohesion policy seem to be part and parcel of the discontent with – or resentment towards – European integration. This is, for example, the case of many of the major recipients of European funds in the UK. The EU channelled through cohesion policy a considerable amount of resources to Cornwall during the period between 2007 and 2013. However, Cornwall and the Isles of Scilly voted by a sizeable majority to exit the EU (Dustmann et al., 2017: 10). The share of Cornish voters opting for Brexit was 56.5%, with only two districts in the county voting to remain (Willett et al., 2019: 6). Similarly, in South Yorkshire, which between 2000 and 2006 received the highest level of support in the UK from the European Cohesion policy, 62% of voters chose Brexit (Di Cataldo, 2017: 815).

The negative connection between EU support and Euroscepticism is, however, not only limited to the United Kingdom and to Cohesion policy. In Poland, a strong correlation has been detected between EU agricultural support and hostility at the ballot box towards the EU (Hartnett & Gard-Murray, 2018).

Indeed, the number of studies that find no relationship whatsoever between EU spending, in general, and cohesion policy investment, in particular, and support for the EU is large. Most of the studies reaching this conclusion concern the Brexit vote. Neither Becker et al. (2017: 626-627), nor Huggins (2018) or Fidrmuc et al. (2019) find any relationship between European transfers and votes to remain in the EU, meaning that "the role of EU regional spending in the outcome of the UK's 2016 EU referendum was minimal" (Huggins, 2018: 393). In Poland it was found that "EU agricultural funding may drive higher rates of Eurosceptic voting by reducing positive feelings for the EU among recipients" (Hartnett & Gard-Murray, 2018: 18). As put by Fidrmuc et al. (2019), it seems that money can't buy EU love.

Despite these strong assertions, the role of EU expenditure – if at all – in the rise of Euroscepticism remains understudied. Most assessments of the link between the territorial allocation of EU funding and Eurosceptic voting patterns are anchored in national case studies – and, most notably, in UK research linked to Brexit. The very limited number of studies posing the question from a European dimension (e.g. Borin et al., 2018; Schraff, 2019) generally rely on large territorial units and survey data, rather than on real electoral outcomes. This means that, for the whole of the EU, whether investment in regional development and territorial cohesion has attenuated the rise of Euroscepticism remains an open question.

This is precisely what this paper aims to achieve: to assess whether greater levels of cohesion policy investment in creating jobs and growth, improving human capital, innovation and accessibility, and protecting the environment, among other things, have stemmed the ascent of Euroscepticism or, by contrast, have been irrelevant in this respect, or even fuelled it.

The approach adopted in the paper moves the analysis forward relative to other studies that have tackled a similar topic from a European-wide perspective (e.g. Borin et al., 2018; Henceroth and Oganesyan, 2019; Schraff, 2019) on a number of counts. First, with more than 63,000 electoral districts covered in all 27 member states of the EU plus the UK, the paper is far more comprehensive in its geographical coverage than anything that has been attempted so far. Second, it considers differences between the

components of the cohesion policy – namely the European Social Fund (ESF), the European Regional Development Fund (ERDF), and the Cohesion fund (CF) – in their potential connection to levels of Euroscepticism across the EU. Third, it assesses regional variations in the intensity of Eurosceptic vote, distinguishing between parties strongly opposed to European integration, parties opposed, and those moderately opposed. Fourth, it looks at differences by programming period, considering the overall cohesion policy investment between 2000 and 2013, as well as probing the third (2000-2006) and fourth (2007-2013) programming periods individually. Finally, the analysis is also conducted by policy domain. This allows us to study the policy mixes that have, if at all, worked as a barrier to the rise of Eurosceptic vote, by discerning the contribution of investments at a regional level by the EU in a number of domains, ranging from business support and energy to transport infrastructure and urban and rural regeneration.

The results of the analysis highlight that EU investment in regional development has contributed to reduce the share of votes for all types of Eurosceptic parties, from those more radically to those more moderately opposed to European integration. This relationship is robust to the introduction of control variables representing factors that may reflect support for Euroscepticism or populism across Europe, to considering different periods of investment, and even to changes in the unit of analysis. However, the connection between EU investment in regional development and a reduction in Eurosceptic vote is highly contingent on the type of investment carried out in different regions across the EU and on their efficiency.

The paper proceeds as follows. The next section briefly describes cohesion policy and looks at the potential link between cohesion policy investments and support for Eurosceptic parties, as captured by the relatively limited literature on the topic. This is followed by the presentation of the analysis, describing the model, the data, and the methodology. The presentation and examination of the results of the econometric analysis ensue, before concluding with a discussion about potential policy implications.

Cohesion policy and the rise of Euroscepticism

Cohesion policy in the EU: Has it delivered on its goals?

Cohesion policy is, together with the common agricultural policy, one of the EU's two largest policies in budgetary terms. For the programming period 2014-2020, it represented close to one third of the overall EU budget, implying an investment intensity of €87 per head per year for the total of the EU (Table 1). The distribution of the investment intensity varied, however, depending on the type of region. The 'less developed' regions – those with a GDP per head in PPS equal or below 75% of the EU average – concentrated the bulk of the funds. The investment intensity in those regions reached €180 per head per annum. 'Transition' regions – those with GDP per head between 75% and 90% – attracted €66 per capita per year, while support in the 'more developed' regions – those above 90% – was limited to €22 (Table 1). The European Commission proposal for 2021-2027 expands the transition category to regions with a GDP per head in PPS between 75% and 100% of the EU average.

Table 1. Annual investment intensity by category of region, 1989-2027

EUR per head at 2011 constant prices	1989-1993	1994-1999	2000-2004	2004-2006	2007-2013	2014-2020	EC Proposal 2021-2027
Less developed *	110	210	259	179	188	180	200
Transition		49	67	67	101	66	51
More developed	13	32	29	29	21	22	21
Cohesion Fund	36	54	48	49	60	62	31
Total **	42	86	89	83	100	84	89
EU	EU-12	EU-15	EU-15	EU-25	EU-27	EU-28	EU-27***

Source: Structural Fund Reports, SFC and REGIO calculations. Annual deflator of 2%. *
ERDF+ESF, ** ERDF+ESF+CF. *** EU-27 = EU-28 minus UK

The cohesion policy has been one of the main pillars of EU intervention since the 1989 reform of the Structural Funds, which trebled the funding dedicated to regional development in a mere three years.

However, the amount of funding allocated to the different types of regions has varied over time, reaching its peak between 2007 and 2013, when the overall investment intensity was €100 per person per year. For the less developed regions the highest intensity was reached during the period 2000-2004, with €259 of annual investment per person (Table 1).

There is considerable variation in the level of support across countries. If we take, exclusively, the annual investment intensity in the less developed regions, sizeable differences among countries are in evidence. Figure 1 presents the national variations in annual investment intensity in the period between 2007 and 2020. Whereas investment in German, Italian, and UK less developed regions never topped €200 per capita per year, in countries such as Czechia, Greece, Hungary, or Portugal, the investment intensity was around €400 per capita on an annual basis between 2007 and 2013. Even within the countries benefiting the least from regional investment, internal diversity can be large. Cornwall and the Isles of Scilly, for example, received an average of €550 per head during the 2007-2013 programming period (Dustmann et al., 2017: 10), almost treble the country average.

Figure 1. Annual investment intensity in less developed regions, 2007-2020
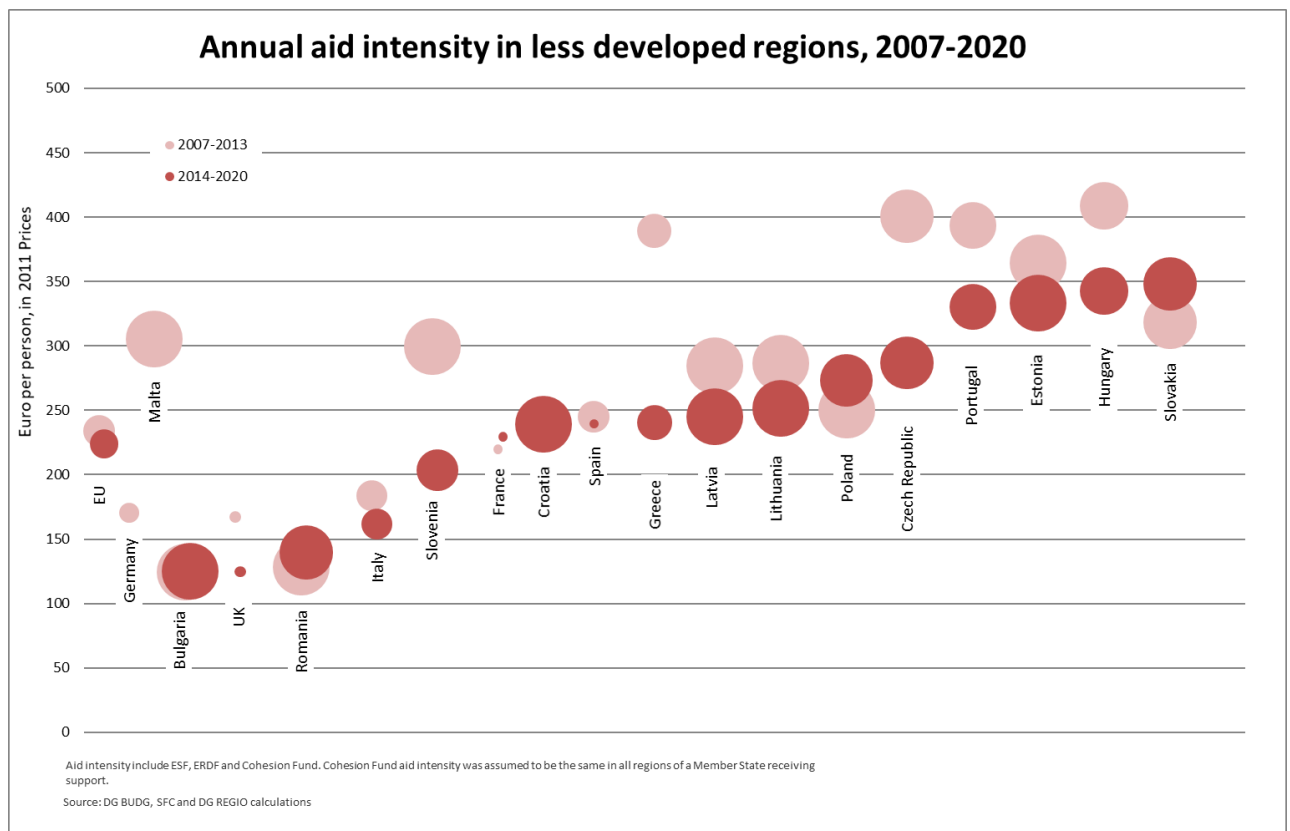
To what extent has this substantial investment in regional development been successful? The success – or lack of it – of European regional development intervention has been a hotly contested topic for quite some time. A large share of the earlier work on the returns of the European regional development effort highlighted that the impact was low or negligible (e.g. Boldrin and Canova, 2001; Dall'erba and Le Gallo, 2007, 2008; Mohl and Hagen, 2010). From this perspective, EU regional development investment delivered limited economic growth or employment and was considered little more than a waste of resources (Boldrin and Canova, 2001). More recent work has been, overall, significantly more positive about the returns of cohesion policy (e.g. Cappelen et al., 2003; Becker et al., 2010; Pellegrini et al., 2013; Ferrara et al., 2017). In particular, an increasing amount of research highlights, with some caveats, the positive economic growth returns of investment in the less developed regions of the EU (Tomova et al., 2013; Maynou et al., 2014; Cerqua and Pellegrini, 2018; Crescenzi and Giua, 2020), indicating that the European cohesion policy has undergone a learning process, increasing its effectiveness over time (Rodríguez-Pose and Novak, 2013; Fiaschi et al., 2018).[1]

Cohesion policy and Euroscepticism

While the discussion about the effectiveness of EU cohesion policy has been intense, much less is known about the extent to which the cohesion policy has contributed to stymie the rise of Eurosceptic support across Europe.

Let us start by saying that fighting against Euroscepticism is not one of the stated goals of European Cohesion intervention. Nevertheless, by investing heavily in human resources, innovation, business support, improving accessibility, protecting the environment, and by having the overall objective of promoting economic development and creating jobs, cohesion policy has been for the best of three decades trying to address the very problems at the heart of the rise in voter discontent in Europe. It has been found that transfers that reflect the needs of specific European regions – as, in theory, is the case of cohesion policy – improve the perception of the EU by local citizens (Dellmuth and Chalmers, 2018). This is particularly strong for investments in human capital, infrastructure, and the environment (Dellmuth and Chalmers, 2018). Cohesion transfers also provide an element of redistribution to the least developed regions of the EU, which could compensate for the cuts of national government

expenditure (Abreu and Öner, 2020). These are increasingly considered a source of discontent and resentment against the system (Gray and Barford, 2018; Fetzer, 2019). European intervention in less developed areas is also targeted at areas that would compensate for the "shrinking capacity of the local state to respond to the needs of their citizens for public services" (Gray and Barford, 2018: 558).

But can cohesion policy buy, as put by Fidrmuc et al. (2019), love for European integration? If one focuses exclusively on Brexit Britain, the answer is probably no. Research on the UK Brexit referendum results commonly concludes – regardless of the method used – that there has been no connection between cohesion investment in specific parts of the country and pro-remain votes in the 2016 referendum. Fidrmuc et al. (2019: 12) reach the conclusion that "Cohesion Policy receipts are essentially uncorrelated with the share of voters supporting remaining in the EU". Similarly, Becker et al. (2017: 627) state that "on balance, EU Structural Funds do not predict the Vote Leave share". Subsequent analyses reach comparable results (e.g. Crescenzi et al., 2017; Huggins, 2018; Crescenzi et al., 2020), despite the fact that the evidence of impact by EU investment in the lagging behind regions of the UK has been mostly positive (Di Cataldo, 2017; Di Cataldo & Monastiriotis, 2020). Overall, cohesion policy in the UK can be considered as "a significant stimulant to regional and national growth and, due to its focus on economically backward regions, a significant force for regional convergence in the country" (Di Cataldo & Monastiriotis, 2020: 45). However, this economic impact has not been translated enough into pro-European votes in supported areas of the UK. Pro-Brexit and Eurosceptic parties, such as the United Kingdom Independence Party (UKIP) and, after, the Brexit Party had above average results in these areas in referenda and European, national or local elections. This may be because EU investment in lagging behind areas of the UK could have been perceived by the population as a subsidy and as an attempt to 'buy love' by a foreign actor, rather than as a true investment (Fidrmuc et al., 2019). It may also be the case that the Brexit vote and votes for Eurosceptic parties in UK elections are less about the EU itself and represent more "a reflection of the deep levels of uncertainty, insecurity and frustration that people felt about governance decisions, scarce resources and the future for themselves and their children" (Willett et al., 2019: 1).

Hartnett and Gard-Murray (2018) reach similar conclusions in the case of Poland, using common agricultural policy expenditure, rather than cohesion policy. They highlight that "Polish farmers have voiced their frustration with aid conditions, with their eroding livelihoods, and with a sense of having been dealt an uneven hand in comparison with their EU competitors" (Hartnett and Gard-Murray, 2018: 2000). This has allowed the increasingly Eurosceptic Law and Justice party (PiS) to capitalise on frustrations in rural Poland.

There are several potential reasons as to why cohesion investment may have not managed to stem the rise in Eurosceptic voting. The first one is related to the scale of EU spending in recipient regions. While the amounts invested in many lagging behind areas of Europe are considerable, they probably remain insufficient to counter the growing economic and social insecurity (Willet et al., 2019). Second is what some have considered "an insufficient correlation between the funds and the set of socio-economic conditions that are shown to be responsible for hampering the economic success of many EU regions" (Crescenzi, 2008: 129) or even a lack of accord with the needs of the citizens living in the regions receiving the funding. Unrealistic expectations by citizens of what can be achieved by European cohesion investment may have facilitated the rise of discontent with the EU (Bachtler and Begg, 2016; Capello and Perucca, 2018). Third, the perceived 'value' of cohesion investment is strongly related to the awareness of the expenditure, as the majority of European citizens generally know little about EU policy intervention in their region (Chalmers and Dellmuth, 2015; Perceive, 2019). Fourth, the EU may not be given adequate credit for the returns of investment. The dominant narratives tend to attribute any success to national government intervention and use the EU as a scapegoat when success is less evident (Buti and Pichelmann, 2017) or where EU funding is not effectively spent (Rodríguez-Pose and Garcilazo, 2015).

However, not all research based on individual countries reaches the same negative conclusions. Studies focusing on France and Italy have unveiled a positive connection between EU cohesion policy funding and a lower support for Eurosceptic parties at the ballot box. Bachtrögler and Oberhofer (2018: 2) find that, for France, "a one percentage point increase in the (statistically significant) average employment growth effect of EU Cohesion policy on firms within a region induces a significant decrease of Marine

Le Pen's vote share by approximately two percentage points". Albanese et al. (2019: 17) show that "financial transfers injected by the EU regional policy toward Italian lagging areas have had the ability to change local political preferences. Compared to regions in other EU Objectives, the status of Convergence Objective implies a significant drop in populism". In the case of the 2013 Italian national election, more cohesion policy investment by the EU led to a drop in support for the Eurosceptic *Lega* and *Cinque Stelle* parties.

Country-based evidence is, therefore, contradictory. No universal consensus emerges as to the role of EU cohesion policy on support for parties in favour of EU integration at the ballot box. What about research covering the whole of the EU? This type of research is, so far, very limited. To the best of our knowledge, only three recent papers have delved into the relationship between cohesion policy investment and the rise of Euroscepticism. Borin et al. (2018) assess whether EU investments contribute to mitigate the rise of Euroscepticism, using data on voting preferences stemming from the European Social Survey (ESS) and applying a regression discontinuity design. They find that "a €1000 increase in the per capita funds received by a region over the 2000-2014 period reduces the voters' support for anti-EU parties by 10 percentage points" (Borin et al., 2018: 24). Similarly, Schraff (2019), matching, again, ESS data with EU regional funding information, concludes that what he terms 'EU compensation' reduces the probability of a Eurosceptic vote. He also finds that this effect depends very much on the intensity of development support, as "the EU seems to fail in compensating regions at the lower middle of the European wealth distribution. Moreover, distributive politics in heavily funded countries makes EU funding an important explanatory factor for Eurosceptic voting within Europe's poorest areas" (Schraff, 2019: 97). Henceroth and Oganesyan (2019) have approached this question from a different perspective, considering actual results from European parliamentary elections. They report that expenditure in European Structural and Investment funds can mitigate electoral losses for incumbent parties, meaning that cohesion policy expenditure plays a small but, nevertheless, growing role in the casting of votes in European elections.

Hence, the picture emerging from French, Italian and European-wide studies contradicts the initial perception arising from Brexit studies that cohesion policy did not represent a deterrent for

Euroscepticism. There is a reduced but growing body of research that supports the idea that EU cohesion policy has a relatively small but growing influence on electoral outcomes. From this point of view, EU investment – at least in some countries of the EU and, possibly, in the EU as a whole – can be a factor eating away support for Eurosceptic parties, making them less popular with the electorate in areas that receive a higher EU investment intensity (Borin et al., 2018).

Nevertheless, the overall picture remains blurred for several reasons. First, the evidence from country-specific studies is, as mentioned earlier, contradictory. Depending on the selected country, cohesion policy investments may or may not make a difference for EU support. Second, European-wide studies are limited by the fact that they normally rely on voter stated preferences extracted from survey data (e.g. Borin et al., 2018; Schraff, 2019). While this does not disqualify this type of studies, the number of observations from the ESS at a regional level is rather small. When real election data are used, authors, as in Henceroth and Oganesyan (2019), resort to Parliament election data. While European Parliament elections have become recently less of a second-order election (Hobolt and De Vries, 2016), voting preferences are still, to a large extent, shaped by factors that continue to be mostly unrelated to the EU policy agenda (Hix and Marsh, 2007). Finally, the number of regions covered in European-wide studies remains limited to large geographical scales. Borin et al. (2018) analysis is constrained to a total of 98 regions in Europe; Schraff's (2019) covers 123 regions. This is in stark contrast with the number of regions and districts that receive European funding or where votes are cast. European Structural and Investment funds are disbursed at a meso-regional level – the so-called current 281 Nomenclature of Territorial Units for Statistics (NUTS), level 2 regions – while the electoral districts in virtually all European countries are far smaller.[2]

The present research addresses these shortcomings in the analysis of the link between the European cohesion policy and votes for parties opposed to or sceptical of further European integration by a) resorting to electoral data coming from national elections – thus minimising the problem of second-order elections – and b) analysing this effect at the territorial dimension in which the vote takes place, that is, in more than 63,000 electoral districts in all member states of the EU. Moreover, the analysis distinguishes between the three different European funds used by cohesion policy, considering diverse

programming periods, and acknowledging the variation in the degree of Euroscepticism of the parties opposed to further European integration.

Model, data and methodology

Model and data

To assess the link between differences in cohesion policy investment per capita (i.e. cohesion intensity) across electoral districts in the EU and the share of Eurosceptic vote, we propose the following simple econometric model:

$$Eurosceptic\ vote_{i,2013-2018} = \alpha + \beta_1\ ln\ Cohesion\ Intensity_{i,2000-2013} + \gamma\ \bar{X}_{i,t} + v_c + \varepsilon_i\ (1)$$

where:

$Eurosceptic\ vote_{i,2013-2018}$ represents the share of votes for parties opposed to or sceptical of European integration in electoral district i at the latest national election taking place between 20 October 2013 in Luxembourg (first EU-28 election considered) and 4 March 2018 in Italy (last one analysed);

$ln Cohesion\ Intensity_{i,2000-2013}$ depicts the estimated cohesion policy investment per capita for the period between 2000-2013 in electoral district i. This is an estimate of the support paid by ERDF, ESF and Cohesion Fund related to programmes for the whole of the period – as well as for the programming periods 2000-2006 and 2007-2013 – at the electoral district level, expressed in Euro per inhabitant. These data are transformed using a log scale;

$\bar{X}_{i,t}$ is a vector of individual factors aggregated at the territorial level and place-based factors that may affect the share of support for parties opposed to or sceptical of European integration;

v_c represents country fixed effects, as the vote in national elections is likely to be driven by national political issues to a far greater extent than by European issues;

and ε_i is the error term.

The dependent variable, *Eurosceptic vote*, is extracted from official election results published by national electoral commissions or equivalent. The degree of Euroscepticism of a given party is defined by the Chapel Hill Expert Survey (CHES). In this survey, experts assess the political orientation of parties in the EU on several dimensions, including their level of support for European integration. We use this classification to group political parties in the EU and the UK according to their degree of Euroscepticism. Every party above the average in their opposition to European integration is branded as Eurosceptic. Three dimensions of Euroscepticism are considered: a) parties strongly opposed to European integration, involving mainly those that want – or wanted at the time the survey was conducted – to dismantle the EU, such as the *Rassemblement National* in France, the former UK Independence Party, or *Jobbik* in Hungary; b) parties opposed to integration, but not necessarily aiming to take down the EU, such as *Alternative für Deutschland* in Germany, the Italian *Lega*, or the Austrian Liberal Party; and c) parties moderately opposed to European integration, including those advocating a halt to the integration process and thorough reforms of the EU or the Euro, such as *Cinque Stelle* in Italy, *La France Insoumise*, *Fidesz* in Hungary, and the British Conservative party, at the time of the last available survey in 2017.

The controls are included in vector $\bar{X}_{i,t}$. This is made of three types of indicators that, based on the literature on the causes of antisystem voting, may affect the support for Eurosceptic parties in national elections. The first group comprises variables that represent the electoral district aggregates of those individual factors that have been identified as key drivers of populism: education, age, and wealth (Ford and Goodwin, 2014; Goodwin and Heath, 2016). Education is captured by the percentage of adults (between 25 and 64) with a higher education degree; age by the share of the population above the age of 64; and wealth, more indirectly, by the GDP per capita.

The second group contains indicators that reflect the territorial characteristics that, according to the more geographical literature on the topic (e.g. Martin et al., 2018; Rodríguez-Pose, 2018; Dijkstra et al., 2020), influence Eurosceptic voting. These include population density, economic growth, distance to the capital, and migration. Population density (Rodden, 2019) is measured for each electoral district using its weighted population density. Economic growth is calculated as the average annual rate of GDP

per capita growth over the period 2000-2014. Local levels of employment are estimated relative to the population between the ages of 17 and 74. Distance to the capital represents the distance 'as the crow flies' between the centre of the electoral constituency and the national capital. Migration is proxied by the net migration rate to a region between 2000 and 2016.

Finally, the third group of indicators in the vector comprises two electoral variables. The first is electoral turnout, defined as the number of valid votes expressed as a percentage of the total number of eligible voters. The second reflects the number of votes for parties not covered in the two waves (2014 and 2017) of the Chapel Hill Expert Survey (CHES) that are used to define the political orientation of individual parties.

The variable of interest is investment intensity – measured in Euros per capita of annual support – in cohesion policy for the period 2000-2013. The analysis is conducted for the entirety of investment in cohesion policy, as well as separately for its constituent funds: the ESF, on the one hand, and the ERDF and the Cohesion fund, on the other. The link between cohesion policy investment and Eurosceptic voting is also calculated for investment that took place during the 2000-2006 and 20007-2013 programming periods, and not just for 2000-2013.

Finally, the link between dependent variable and variable of interest is estimated as well by policy domain of cohesion investment. This is something that, with very few exceptions (e.g. Rodríguez-Pose and Fratesi, 2004; Dellmuth and Chalmers, 2018), has rarely been covered in the past. Eleven domains – Business support; Energy; Environment and natural resources; Human resources; IT infrastructure and services; Research and technological development; Social infrastructure; Tourism and culture; Transport infrastructure; Urban and rural regeneration; and Technical assistance and other interventions – are considered. The connection of these different investments and Eurosceptic voting is estimated by examining both the total cohesion investment intensity, the share devoted to a particular policy domain, and their interaction. This implies modifying model (1) in the following way:

$$Eurosceptic\ vote_{i,2013-2018} = \alpha + \beta_1 \ln Cohesion\ Intensity_{i,2000-2013} +$$

$$\beta_2\ Theme_{i,2000-2013} + \beta_3\ Interaction_{i,2000-2013} + \gamma\ \bar{X}_{i,t} + v_c + \varepsilon_i \qquad (2)$$

where:

$Theme_{i,2000-2013}$ represents the share (in percentage) of cohesion expenditure devoted to one of the eleven policy domains of investment during the period between 2000 and 2013;

$Interaction_{i,2000-2013}$ is the interaction between $Cohesion\ Intensity$ and $Theme$.

All the other parameters are as in Model 1.

A more detailed description of all the variables is included in Table A1 in Appendix.

Considering gaps in the data, the analysis is conducted for a maximum 63,203 electoral districts in the 27 EU member states, plus the UK. The smallest electoral districts considered are municipalities or equivalent in Austria, Bulgaria, Croatia, Finland, France, Italy, Netherlands, Portugal, Slovakia, Spain, or Sweden. Electoral constituencies are used for Cyprus, Denmark, Germany, Ireland, Latvia, Lithuania, Luxembourg, Romania, Slovenia, or the UK, while the larger NUTS3 level is the unit of analysis in Czechia, Estonia, Greece, Hungary, or Malta. Cantons are used for Belgium and local authority units for Poland.

Methodology

The empirical analysis is estimated using ordinary least squares (OLS). The main OLS estimations are complemented with Instrumental Variable (IV) analysis and Population Weighted estimations.

We resort to IV analysis as the most common way to reduce the potential bias of endogeneity in the data, as not only votes for Eurosceptic parties may be influenced by the independent variables, but support for parties opposed to European integration may have an impact on, say, the economic performance of a region and, therefore, its wealth. Moreover, the cross-sectional nature of the data used in the analysis prevents the use of internally generated instruments, which is a common method of tackling endogeneity in panel data estimations. Hence, we turn to an external instrument. The chosen external instrument is fertility. We instrument the economic performance of the territories used as unit of analysis with the fertility rate of the area. The reason behind the choice of this instrument is that the

economic performance of a region and, consequently, its wealth and the degree of support of EU cohesion policy is likely to be influenced by fertility rates, whereas geographical variations in fertility are usually unrelated to electoral outcomes and, therefore, exogenous. The first-stage regressions and the standard endogeneity tests confirm that this is the case.[3]

Population weighted regressions are conducted to take into account the potential distortions created by differences in the population size among the territorial units considered. The population weighted approach prevents the use of country fixed-effects, adding a new dimension to the analysis.

Estimating the impact of cohesion policy investments

Cohesion policy can influence people's opinion of the EU directly and indirectly. A direct impact can only occur if people are aware of this funding and of projects co-financed by the EU. Awareness of EU intervention is highest in countries with a high level of cohesion policy investments per capita (Flash Eurobarometer 480, 2019). In Poland, 82% of the respondents heard about such projects compared to only 16% and 15% in the UK and Denmark, respectively. The EU average was 40%. Most people (81%) who were aware thought that cohesion policy projects had a positive impact on their city or region. The level of awareness did not only depend on the amount of funding a country received but also on the type and quality of the projects financed, how the national, regional and local governments presented these projects, how local media covered them, and the overall level of political awareness in the country (Chalmers and Dellmuth, 2015: 402). The link between additional EU investment at a regional level and the increase in support for European integration is also highly contingent on individual identity, meaning that the direct impact of greater investment on support for European integration mostly depends not on the amount of support, but on citizens' social identity (Chalmers and Dellmuth, 2015)

An indirect impact does not require that people are aware, if cohesion policy investments have a positive impact on a region, people living in this region may become more positive in general, including with regard to the EU and European integration.

In this paper, we wanted to analyse the impact at the level of electoral districts. At this fine geographic level, data on the awareness of cohesion policy investments is not available. Therefore, we rely on investments by policy domain.

Cohesion policy investment per capita and votes for Eurosceptic parties

Before conducting the econometric analysis, we look at the relationship between the main variable of interest (the amount of investment intensity for EU Cohesion policy received by a region between 2000 and 2013) and the independent variable (the share of votes for parties strongly opposed or opposed to European integration). The result of plotting this association is presented in Figure 2.

Figure 2. Link between cohesion policy investment intensity (2000-2013) and Eurosceptic vote (2013-2018)
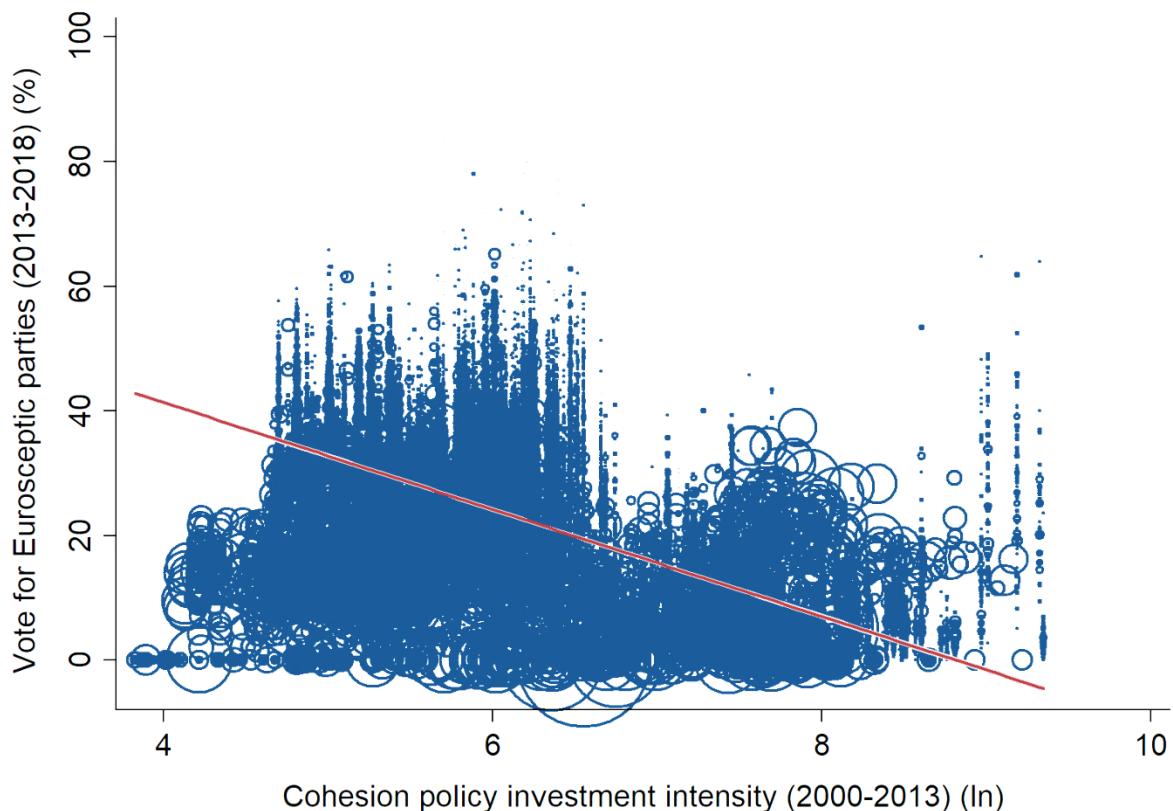
Circle size determined by population

The Eurosceptic vote is restricted to parties strongly opposed and opposed to European integration, according to the Chapel Hill Expert Survey. Votes for parties moderately opposed to European integration are not included in the figure.

The regression line shows that areas that have been the target of greater investment by the European cohesion effort are, in general, places where the support for Eurosceptic parties is lower. This would, in principle, confirm the views of those European-wide (Borin et al., 2018; Schraff, 2019) or French (Bachtrögler and Oberhofer, 2018) and Italian (Albanese et al., 2019) analyses highlighting that European policies may have contributed to mitigate the rise of Eurosceptic parties. The regression line also goes counter the possibly more widespread impression (e.g. Dustmann et al., 2017), as well as against most Brexit-based analyses (Becker et al., 2017; Huggins, 2018; Fidrmuc et al., 2019) that have reported no evidence of a link between EU cohesion policy and the outcome of the Brexit referendum. However, the negative relationship between the two variables contains – as can be seen in Figure 2 – a large number of outliers and may be significantly affected by disregarding other factors bound to affect the vote for Eurosceptic parties, ranging from the economic trajectory of individual regions during the period of analysis, their average level of education, wealth, migration balances, and their population density, as well as differences in turnout in legislative elections, among other factors.

Does this connection hold once additional factors that, according to the extant scholarly literature, have affected the rise of anti-system voting are taken into consideration? Table 2 reports the results of the OLS analysis for model (1). The coefficients for the control variables go in line with previous analyses (e.g. Dijkstra et al., 2020). Vote for parties strongly opposed and opposed to European integration is mainly connected to long-term economic decline, low levels of education, and low levels of employment. Rurality and ageing also make a difference for the prevalence of Eurosceptic votes in the case of the most extreme anti-European parties, although this relationship does not survive when parties more moderately opposed to European integration are included – see Dijkstra et al. (2020) for a fuller analysis. Low voter turnout is also conducive to greater support for Eurosceptic parties. When all these factors are considered, the share of the vote for Eurosceptic parties is higher in wealthier than in poorer areas of Europe (Table 2, Regression 1).

These results persist in the IV analysis (Table A2, Regression 1). The differences in the coefficients are minimal: the migration balance coefficients become solidly negative – meaning that the greater the positive migration balance between 2000 and 2016, the lower the share of the vote for Eurosceptic

parties – and the coefficients for distance to the capital change sign. The sign, dimension, and significance of the coefficients for the population weighted regressions are also reproduced when re-estimating the analysis with population weighted regressions, despite the lack of country fixed effects (Table A3, Regression 1).

Table 2. Eurosceptic voting (2013-2018) and cohesion policy investment during the period 2000-2013.

VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS
GDPpc growth	-2.061***	-0.781***	-1.648***	-1.007***
	(0.066)	(0.065)	(0.065)	(0.064)
Population density (ln)	-0.164***	-0.268***	-0.242***	-0.239***
	(0.032)	(0.031)	(0.032)	(0.031)
Distance to capital (ln)	-0.353***	-0.141***	-0.238***	-0.004
	(0.050)	(0.048)	(0.049)	(0.049)
GDPpc (ln)	14.767***	10.354***	14.683***	9.895***
	(0.360)	(0.364)	(0.362)	(0.365)
Employment share	-0.253***	-0.321***	-0.324***	-0.289***
	(0.011)	(0.011)	(0.011)	(0.011)
Share of elderly population	0.130***	0.226***	0.159***	0.222***
	(0.011)	(0.011)	(0.011)	(0.011)
Higher education share	-0.187***	-0.315***	-0.355***	-0.260***
	(0.008)	(0.009)	(0.009)	(0.009)
Net migration balance	0.092***	-0.049***	0.045***	-0.021**
	(0.009)	(0.009)	(0.009)	(0.009)
Cohesion intensity (ln)		-5.203***		
		(0.088)		
ESF intensity (ln)			-4.829***	
			(0.115)	
ERDF & Cohesion fund intensity (ln)				-3.013***
				(0.059)
Voter turnout	-0.075***	-0.084***	-0.085***	-0.079***
	(0.005)	(0.005)	(0.005)	(0.005)
Share of no CHES vote	-0.240***	-0.204***	-0.211***	-0.216***
	(0.005)	(0.004)	(0.004)	(0.004)
Country FE	YES	YES	YES	YES
Electoral districts	63,203	63,203	63,203	63,157
R^2	0.625	0.646	0.636	0.642
Adjusted R^2	0.625	0.646	0.636	0.642
F-test	9708	9328	8289	10082

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

The introduction of cohesion policy investment by no means changes the results, regardless of whether the full investment intensity between 2000 and 2013 is considered (Table 2, Regression 2), or the analysis is restricted to only the ERDF and Cohesion fund (Table 2, Regression 3) or ESF (Table 2, Regression 4). In all cases, cohesion policy investment displays a strongly negative and highly significant coefficient. This implies that, once other factors shaping Eurosceptic voter behaviour are controlled for, more cohesion policy investment is linked to lower support for parties opposed to European integration. This relationship endures in the population weighted regressions (Table A3) and, according to the coefficients in the IV analysis (Table A2), can be considered causal: more cohesion policy investment lowers the support for Eurosceptic parties. The connection between the intensity of cohesion policy – and, more specifically, between ESF and ERDF and Cohesion fund intensity – and the share of Eurosceptic voting also remains negative and highly significant when the unit of analysis is changed from electoral districts to NUTS3 regions (Table A4).

This strong relationship holds irrespective of the degree of opposition to European integration in Eurosceptic parties. It works for the most extreme Eurosceptic parties, as well as for those parties more moderately opposed to European integration (Table 3). It is also maintained regardless of the type of European Fund considered. It persists for the combination of the ERDF and the Cohesion Fund, for the ESF, as well as for the whole of cohesion policy (Tables 3 and 4). Finally, it is also robust to considering different programming periods. As shown in Table 4, the relationship holds when examining cohesion policy investment for the 2000-2006 and 2007-2013 programming periods individually. In all cases, the regression coefficients for cohesion policy investment intensity variables are negative and strongly significant.[4]

Table 3. Eurosceptic voting (2013-2018) – by degree of party opposition to European integration – and cohesion policy investment during the period 2000-2013

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Strongly opposed (1)			Strongly opposed and opposed (1&2)			Strongly to moderately opposed (1, 2 &3)		
	SF	ESF	ERDF	SF	ESF	ERDF	SF	ESF	ERDF
Cohesion intensity (ln)	-1.772***			-5.203***			-0.707***		
	(0.049)			(0.088)			(0.097)		
ESF intensity (ln)		-1.364***			-4.829***			-0.933***	
		(0.062)			(0.115)			(0.121)	
ERDF & Cohesion fund intensity (ln)			-1.169***			-3.013***			-0.465***
			(0.035)			(0.059)			(0.064)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Electoral districts	63,203	63,203	63,157	63,203	63,203	63,157	63,203	63,203	63,157
R^2	0.683	0.680	0.683	0.646	0.636	0.642	0.751	0.751	0.752
Adjusted R^2	0.683	0.680	0.683	0.646	0.636	0.642	0.751	0.751	0.751
F-test	5127	5102	5110	9328	8289	10082	19827	19618	19635

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

Table 4. Eurosceptic voting (2013-2018) and cohesion policy investment by fund and Programming period

VARIABLES	Structural fund expenditure per inhabitant 2000-2006			Structural fund expenditure per inhabitant 2007-2013		
	CP	ESF	ERDF&CF	CP	ESF	ERDF&CF
Cohesion intensity (ln)	-4.193***			-4.221***		
	(0.084)			(0.075)		
ESF intensity (ln)		-3.426***			-4.336***	
		(0.100)			(0.103)	
ERDF & Cohesion fund intensity (ln)			-1.847***			-2.606***
			(0.051)			(0.052)
Controls	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES
Electoral districts	62,340	62,340	60,884	63,203	63,203	63,150
R^2	0.631	0.623	0.625	0.644	0.636	0.642
Adjusted R^2	0.631	0.623	0.624	0.644	0.636	0.641
F-test	10397	9025	10583	8424	8624	8870

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

Cohesion policy investments by policy domains

Fighting the rise of Euroscepticism is not an explicit goal of cohesion policy. The analysis below is also not intended as a guide to what policy domains should be prioritised. It could be that certain projects have an important long-term impact on economic and social development but may not have an impact on Euroscepticism. Nevertheless, we believe it is useful to understand which policy domains reduce votes for parties against European integration and at what investment intensities, as how European funds are spent – especially if the investment reflects real regional economic needs – can positively affect the perception of individuals about the EU and bolster support for European integration (Dellmuth and Chalmers, 2018).

Does the strength of these results depend on the type of cohesion policy investment? It has long been demonstrated that the type of cohesion policy investment in a region has important implications for growth outcomes (Rodríguez-Pose and Fratesi, 2004). Needs-based transfers have also been argued to lead to greater support for the EU, especially in the areas of human capital, infrastructure and environmental spending (Dellmuth and Chalmers, 2018: 15). Is it also the case for support for pro-European – or, conversely, Eurosceptic – parties? Table 5 presents the results of estimating model (2), which takes into consideration both the size of the cohesion policy investment throughout the 2000-2013 period and the share of investment by policy domain (or field of intervention).

Table 5 first confirms that the cohesion effort remains connected to a lower share of Eurosceptic vote, irrespective of the dominant type of intervention conducted in a given region. Among the eleven policy domains considered, greater investment in business support, energy, environment and natural resources, and IT are linked to higher shares of Eurosceptic voting. More investment in human resources, RTD, and social infrastructure are, by contrast, more connected to a lower share of Eurosceptic vote. Investment in transport infrastructure, tourism and culture, and urban and rural regeneration seem to leave the share of Eurosceptic vote unaffected.

The association between investment in each policy domain and support for Eurosceptic parties is highly dependent on the overall share of the cohesion policy investment in a region. Large shares of investment

in human resources, RTD, tourism and culture, and urban and rural regeneration seem, for example, to be linked to higher shares of Eurosceptic voting, the greater the level of cohesion policy investment. This means that although a larger share of cohesion policy investment in human capital is generally conducive to a lower share of Eurosceptic vote, as the amount of support rises in a region, the connection between greater investment in education, skills, and training weakens, until becoming – at very high levels of investment – connected with a greater vote for parties opposed to European integration. More investment in energy, environment and natural resources, IT, social infrastructure, and transport infrastructure seems to yield greater returns in terms of a lower share of Eurosceptic voting only at very high levels of cohesion policy investment.

In this respect, the results of Table 5 indicate that the highest returns in combatting Euroscepticism across the EU with cohesion policy funding have been achieved with investment in social infrastructure, as it is connected with a lower overall share of Eurosceptic vote and this effect increases as the investment in social infrastructure rises.

Table 5. Eurosceptic voting (2014-2018) and ERDF and cohesion policy investment (2000-2103), by intensity of investment and share of expenditure in each field of intervention

VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) OLS	(7) OLS	(8) OLS	(9) OLS	(10) OLS	(11) OLS
ERDF& Cohesion fund intensity (ln)	-2.996*** (0.096)	-2.510*** (0.071)	-2.896*** (0.064)	-3.348*** (0.063)	-2.484*** (0.078)	-3.682*** (0.080)	-3.047*** (0.060)	-3.107*** (0.077)	-2.797*** (0.064)	-3.147*** (0.069)	-3.564*** (0.066)
Business support (%)	0.126*** (0.025)										
Interaction	-0.006 (0.004)										
Energy (%)		0.455*** (0.042)									
Interaction		-0.083*** (0.009)									
Environment and natural resources (%)			0.042** (0.017)								
Interaction			-0.020*** (0.003)								
Human resources (%)				-0.698*** (0.047)							
Interaction				0.135*** (0.010)							
IT (%)					0.315*** (0.058)						
Interaction					-0.092*** (0.010)						
RTD (%)						-0.228*** (0.013)					
Interaction						0.036*** (0.002)					
Social Infrastructure (%)							-0.182*** (0.048)				
Interaction							-0.035*** (0.008)				
Tourism and culture (%)								-0.009 (0.027)			
Interaction								0.011** (0.005)			
Transport infrastructure (%)									-0.011 (0.011)		
Interaction									-0.006*** (0.002)		

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Urban and rural regeneration (%)											-0.014
											(0.021)
Interaction											0.029***
											(0.004)
Technical assistance & other (%)											-0.381***
											(0.019)
Interaction											0.111***
											(0.005)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Electoral districts	63,157	63,157	63,157	63,157	63,157	63,157	63,157	63,157	63,157	63,157	63,157
R^2	0.645	0.643	0.644	0.645	0.644	0.644	0.647	0.643	0.643	0.648	0.645
Adjusted R^2	0.645	0.643	0.643	0.644	0.644	0.644	0.647	0.642	0.643	0.647	0.644
F-test	9401	9787	9669	9600	9747	9518	9125	9391	8801	9258	9192

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

Conclusion

With the recent rise of support for Eurosceptic parties at the ballot box across many parts of Europe, increasing attention has been focused on what can be done in order to prevent and, eventually, stop this trend. In particular, the EU, as one of the three main targets of anti-system and populist parties in Europe (the other two being the elites and migrants), has been in the limelight. It spends considerable funds in the support of less developed regions, but citizens in many of these regions are either not aware of this effort or consider it insufficient and/or ineffective. They are increasingly turning to political options that oppose European integration or, in some cases, advocate the demise of the EU (Dustmann et al., 2017).

But is it true that European cohesion policy investment has been incapable of containing the rise of Euroscepticism? Is it true that regions that benefit the most are more or equally likely than other regions to vote for parties opposed to European integration? This paper has addressed these questions in the whole of the EU. It has gone beyond previous efforts to cover the topic in that it has taken into account the whole of the EU rather than individual countries, using voting outcomes rather than surveys, for a very large number of electoral constituencies – and compared the results with those at a regional level. It has also studied different levels of Euroscepticism and different cohesion policy funds and programming periods. Furthermore, it has investigated different types of intervention, by considering the different policy domains supported by cohesion policy across European regions.

The results of the empirical analysis suggest that, far from being irrelevant in the rise of Eurosceptic vote around Europe, cohesion policy has played and can continue to play an important role in keeping the rise of discontent in Europe at bay and, consequently, stymying the ascent of Eurosceptic and anti-system forces. Votes for anti-European integration parties in places like Cornwall or Sheffield have not been triggered by more European investment. If anything, cohesion policy has helped assuage the discontent felt by people living in long-term declining areas, affected by low levels of education, and by lack of decent job opportunities. European investment could have also somewhat compensated for a perceived neglect by Westminster.

The roots of people's discontent, of their growing resentment against the 'system' are deep and would require of more and better targeted forms of intervention. It would also mean that the dominant focus of current territorial intervention on both core areas (mainly by national governments) and lagging behind areas (mainly by the EU) needs to be complemented by more effective intervention in middle-income areas, long suffering from economic decline. Carefully-targeted, place-sensitive intervention in areas that are often perceived – even by themselves – as "places that don't matter" would represent an important step in addressing the roots of Eurosceptic and anti-system voting.

The EU, through its cohesion policy, can and should play a more central role in leading this type of intervention. Expanding the current cohesion policy beyond the less developed areas to encompass economic and industrial decline in middle-income regions can become, if done adequately, one of the best tools to tackle the problems of many regions suffering relative economic and industrial decline and to set them again on a sustainable development path, addressing in this way many of the grievances fuelling widespread discontent and rising resentment.

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DISCLOSURE STATEMENT

ENDNOTES

1. See Pieńkowski & Berkowitz (2016) for an excellent summary of the literature assessing the impact of European cohesion policy.

2. The main problem with focusing on more than 63,000 electoral districts is that European cohesion investment data are not available at that scale. We, therefore, assume that European transfers are spent equally across electoral districts within a given region. However, that is not always the case (Dellmuth, Schraff, and Stoffel 2017; Papp 2019). In order to address this issue, we have reproduced the analysis using the finest territorial scale for which European cohesion funding is available: NUTS3 level regions. The results of the analysis, included in Tables A4 to A6 in the Appendix, mostly confirm those of the analysis conducted at electoral district level.

3. These results can be provided upon request.

4. The signs and significance of all the estimations remain robust to the change in unit of analysis from electoral districts to NUTS3 regions (Tables A5 and A6 in Appendix). The only differences are some reduction in the dimension of the relationship and the fact that the negative connection between structural fund intensity and the share of Eurosceptic voting weaken significantly when the votes for moderately Eurosceptic parties are considered (Table A5, Regressions 7, 8, and 9).

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Appendix

Table A1. Definition of the variables included in the analysis.

Variable name	Definition	Source
Dependent variable		
Vote share for Eurosceptic parties	Share of votes for parties strongly opposing, opposing and moderately opposing - depending on regression - European integration, as % of total number of votes for parties covered by the Chapel Hill Surveys	Chapel Hill Expert Survey (CHES)
Control variables		
GDPpc growth	Growth of GDP per head. Average annual real growth of GDP/head at NUTS-3 and metro regions levels, 2000-2014	Eurostat regional accounts – Cambridge Econometrics – DG REGIO
Population density	Weighted population density at 1 km² resolution. The weighted population density of the spatial unit is determined on the basis of population density (reference year 2011) measured at the level of 1 km² grid cells.	Own calculations
Distance to capital	Distance to the national capital. The distance in km (as the crow flies) is measured as the geodesic distance between the geographic centroid of the spatial unit and the centroid of the national capital	Own calculations
GDPpc	GDP per capita in PPS at NUTS-3 and metro regions levels, expressed as index of the EU-28 average, 2015	Calculated from Eurostat data
Employment share	Total number of workplace-based employed divided by the population aged 17-74 at NUTS 3 and metro region levels 2015	Calculated using Eurostat regional accounts data
Share of elderly population	Share of population aged 65+ in total population at NUTS-3 level, 2017	Eurostat
Higher education share	Share of adults (aged 25-64) with tertiary educational level, at NUTS-2 level, 2017	Eurostat
Net migration balance	Net migration (% of total population, annual average) at NUTS-3 level, 2000-2016	Eurostat
Voter turnout	Turnout of the election. This is defined as the number of valid votes expressed as a percentage of the total number of eligible voters	CHES
Share of no CHES vote	Votes for parties not covered by the Chapel Hill Expert Surveys (2014 or 2017), as share of total number of valid votes	CHES

Instrument		
Fertility	Total fertility rate at NUTS-3 level, 2016	Eurostat
Cohesion policy variables		
Cohesion intensity	Estimated Cohesion Policy aid intensity for programming periods between 2000 and 2013. This is a regional (NUTS-2 & NUTS-3) estimate of the support paid by ERDF, ESF and Cohesion Fund, expressed in Euro per inhabitant	Own calculations using DG Regio data
ESF intensity	Estimated Cohesion Policy aid intensity (ESF) for programming periods between 2000 and 2013. This is a regional (NUTS2) estimate of the support paid by the European Social Fund (ESF), expressed in Euro per inhabitant	Own calculations using DG Regio data
ERDF& Cohesion fund intensity	Estimated Cohesion Policy aid intensity (ERDF and CF) for programming periods between 2000 and 2013. This is a regional (NUTS3) estimate of the support paid by the European Regional Development Fund (ERDF) and by the Cohesion Fund (CF) related to programmes of period 2000-2006, expressed in Euro per inhabitant.	Own calculations using DG Regio data
Cohesion policy variables by field of intervention		
Business support	Estimated Cohesion Policy aid intensity for programming periods between 2000 and 2013 in business support (NUTS-3)	Own calculations using DG Regio data
Energy	Estimated Cohesion Policy aid intensity for programming periods between 2000 and 2013 in energy (NUTS-3)	Own calculations using DG Regio data
Environment and natural resources	Estimated Cohesion Policy aid intensity for programming periods between 2000 and 2013 in the environment and natural resources (NUTS-3)	Own calculations using DG Regio data
Human resources	Estimated Cohesion Policy aid intensity for programming periods between 2000 and 2013 in human resources (NUTS-3)	Own calculations using DG Regio data
IT	Estimated Cohesion Policy aid intensity for programming periods between 2000 and 2013 in IT (NUTS-3)	Own calculations using DG Regio data
RTD	Estimated Cohesion Policy aid intensity for programming periods between 2000 and 2013 in RTD (NUTS-3)	Own calculations using DG Regio data
Social infrastructure	Estimated Cohesion Policy aid intensity for programming periods between 2000 and 2013 in social infrastructure (NUTS-3)	Own calculations using DG Regio data

Tourism and culture	Estimated Cohesion Policy aid intensity for programming periods between 2000 and 2013 in tourism and culture (NUTS-3)	Own calculations using DG Regio data
Transport infrastructure	Estimated Cohesion Policy aid intensity for programming periods between 2000 and 2013 in transport infrastructure (NUTS-3)	Own calculations using DG Regio data
Urban regeneration	Estimated Cohesion Policy aid intensity for programming periods between 2000 and 2013 in urban regeneration (NUTS-3)	Own calculations using DG Regio data
Technical assistance & other	Estimated Cohesion Policy aid intensity for programming periods between 2000 and 2013 in technical assistance & other (NUTS-3)	Own calculations using DG Regio data

Table A2. Eurosceptic voting (2013-2018) and cohesion policy investment during the period 2000-2013 (IV analysis).

VARIABLES	(1) IV	(2) IV	(3) IV	(4) IV
GDPpc growth	-10.835***	-9.604***	-9.891***	-9.959***
	(0.285)	(0.358)	(0.295)	(0.341)
Population density (ln)	-0.142***	-0.182***	-0.191***	-0.168***
	(0.036)	(0.035)	(0.035)	(0.035)
Distance to capital (ln)	0.517***	0.518***	0.517***	0.576***
	(0.061)	(0.058)	(0.059)	(0.058)
GDPpc (ln)	15.388***	13.741***	15.289***	13.699***
	(0.435)	(0.466)	(0.425)	(0.476)
Employment share	-0.015	-0.061***	-0.076***	-0.041***
	(0.015)	(0.015)	(0.015)	(0.015)
Share of elderly population	0.218***	0.244***	0.228***	0.243***
	(0.014)	(0.013)	(0.013)	(0.013)
Higher education share	-0.179***	-0.226***	-0.280***	-0.203***
	(0.009)	(0.010)	(0.010)	(0.010)
Net migration balance	-0.056***	-0.094***	-0.072***	-0.085***
	(0.012)	(0.011)	(0.012)	(0.011)
Cohesion intensity (ln)		-1.878***		
		(0.168)		
ESF intensity (ln)			-2.878***	
			(0.142)	
ERDF & Cohesion fund intensity (ln)				-1.001***
				(0.103)
Voter turnout	-0.110***	-0.110***	-0.113***	-0.109***
	(0.006)	(0.006)	(0.006)	(0.006)
Share of no CHES vote	-0.217***	-0.206***	-0.202***	-0.210***
	(0.005)	(0.005)	(0.005)	(0.005)
Country FE	YES	YES	YES	YES
Electoral districts	63,203	63,203	63,203	63,157
R^2	0.522	0.552	0.547	0.544
Wald chi2	149835	165919	158225	161603

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

Table A3. Eurosceptic voting (2013-2018) and cohesion policy investment during the period 2000-2013 (Population weighted regressions).

VARIABLES	(1) WLS	(2) WLS	(3) WLS	(4) WLS
GDPpc growth	-2.841***	-2.593***	-2.826***	-2.673***
	(0.145)	(0.157)	(0.150)	(0.151)
Population density (ln)	-2.494***	-2.304***	-2.394***	-2.392***
	(0.152)	(0.149)	(0.154)	(0.147)
Distance to capital (ln)	-0.473**	-0.581***	-0.472**	-0.578***
	(0.184)	(0.200)	(0.196)	(0.191)
GDPpc (ln)	11.605***	10.265***	10.933***	10.592***
	(0.805)	(0.848)	(0.842)	(0.827)
Employment share	0.051**	-0.001	0.014	0.015
	(0.025)	(0.030)	(0.027)	(0.028)
Share of elderly population	0.675***	0.708***	0.713***	0.693***
	(0.050)	(0.052)	(0.052)	(0.051)
Higher education share	-0.173***	-0.188***	-0.183***	-0.186***
	(0.020)	(0.022)	(0.021)	(0.021)
Net migration balance	-0.210***	-0.203***	-0.222***	-0.195***
	(0.045)	(0.046)	(0.045)	(0.045)
Cohesion intensity (ln)		-1.537***		
		(0.221)		
ESF intensity (ln)			-1.884***	
			(0.292)	
ERDF & Cohesion fund intensity (ln)				-0.672***
				(0.129)
Voter turnout	-0.302***	-0.295***	-0.297***	-0.300***
	(0.015)	(0.014)	(0.014)	(0.015)
Share of no CHES vote	-0.115***	-0.125***	-0.122***	-0.119***
	(0.017)	(0.018)	(0.018)	(0.017)
Country FE	NO	NO	NO	NO
Electoral districts	63,203	63,203	63,203	63,157
R^2	0.369	0.385	0.380	0.377
Adjusted R^2	0.369	0.385	0.380	0.376
F-test	255.3	229.7	228.5	235

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

Table A4. Eurosceptic voting (2013-2018) and cohesion policy investment during the period 2000-2013. Analysis at NUTS3 level.

VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS
GDPpc growth	-0.991***	-0.427*	-0.795***	-0.578**
	(0.243)	(0.230)	(0.238)	(0.241)
Population density (ln)	-1.126***	-1.004***	-1.058***	-0.992***
	(0.381)	(0.352)	(0.367)	(0.366)
Distance to capital (ln)	0.115	0.316	0.232	0.296
	(0.217)	(0.208)	(0.208)	(0.216)
GDPpc (ln)	6.391***	4.658***	5.620***	4.853***
	(0.961)	(0.908)	(0.945)	(0.934)
Employment share	-0.024	-0.056***	-0.044**	-0.045**
	(0.021)	(0.020)	(0.020)	(0.020)
Share of elderly population	0.193***	0.195***	0.194***	0.187***
	(0.058)	(0.055)	(0.057)	(0.056)
Higher education share	-0.134***	-0.175***	-0.167***	-0.167***
	(0.037)	(0.038)	(0.039)	(0.038)
Net migration balance	0.075	0.017	0.050	0.047
	(0.047)	(0.046)	(0.046)	(0.047)
Cohesion intensity (ln)		-2.444***		
		(0.322)		
ESF intensity (ln)			-2.146***	
			(0.458)	
ERDF & Cohesion fund intensity (ln)				-1.142***
				(0.194)
Voter turnout	0.060	0.063	0.049	0.074*
	(0.046)	(0.044)	(0.046)	(0.045)
Share of no CHES vote	-0.207***	-0.166***	-0.179***	-0.185***
	(0.028)	(0.029)	(0.028)	(0.029)
Country FE	YES	YES	YES	YES
NUTS3 Regions	845	845	845	838
R^2	0.812	0.828	0.820	0.822
Adjusted R^2	0.804	0.821	0.812	0.814

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

Note: Only the regions of the EU27 member states plus the UK where electoral constituencies are equal to NUTS3 regions or are part of NUTS3 regions are included in the analysis. This criterion excludes regions in Germany, Greece, Latvia, and Slovenia.

Table A5. Eurosceptic voting (2013-2018) – by degree of party opposition to European integration – and cohesion policy investment during the period 2000-2013. Analysis at NUTS3 level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Strongly opposed (1)			**Strongly opposed and opposed (1&2)**			**Strongly to moderately opposed (1, 2 &3)**		
	SF	ESF	ERDF	SF	ESF	ERDF	SF	ESF	ERDF
Cohesion intensity (ln)	-0.805***			-2.444***			-0.864*		
	(0.186)			(0.322)			(0.519)		
ESF intensity (ln)		-0.822***			-2.146***			-1.425*	
		(0.265)			(0.458)			(0.732)	
ERDF & Cohesion fund intensity (ln)			-0.461***			-1.142***			-0.525
			(0.121)			(0.194)			(0.340)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
NUTS3 Regions	845	845	838	845	845	838	845	845	838
R^2	0.862	0.861	0.861	0.828	0.820	0.822	0.905	0.905	0.905
Adjusted R^2	0.857	0.855	0.855	0.821	0.812	0.814	0.901	0.901	0.901

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

Note: Only the regions of the EU27 member states plus the UK where electoral constituencies are equal to NUTS3 regions or are part of NUTS3 regions are included in the analysis. This criterion excludes regions in Germany, Greece, Latvia, and Slovenia.

Table A6. Eurosceptic voting (2013-2018) and cohesion policy investment by fund and Programming period. Analysis at NUTS3 level.

VARIABLES	Structural fund expenditure per inhabitant 2000-2006			Structural fund expenditure per inhabitant 2007-2013		
	CP	ESF	ERDF&CF	CP	ESF	ERDF&CF
Cohesion intensity (ln)	-1.993***			-2.395***		
	(0.309)			(0.311)		
ESF intensity (ln)		-1.433***			-2.152***	
		(0.373)			(0.448)	
ERDF & Cohesion fund intensity (ln)			-1.215***			-1.459***
			(0.203)			(0.211)
Controls	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES
NUTS3 Regions	754	754	685	845	845	837
R^2	0.799	0.791	0.804	0.830	0.821	0.826
Adjusted R^2	0.791	0.782	0.795	0.823	0.813	0.819

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

Note: Only the regions of the EU27 member states plus the UK where electoral constituencies are equal to NUTS3 regions or are part of NUTS3 regions are included in the analysis. This criterion excludes regions in Germany, Greece, Latvia, and Slovenia.