

EU transfers and Euroscepticism: can't buy me love?*

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Abstract

The future of an institution, such as the European Union, ultimately depends on people's support. This paper investigates whether EU redistributive policies have improved public attitudes towards European integration, both in terms of public opinion and political preferences. We focus on Cohesion Policy funds, whose allocation allows us to single out these effects by means of a regression discontinuity approach. The results show that EU transfers have mitigated the rise of Eurosceptical attitudes and reduced political consensus for anti-EU parties. The effects are homogeneous across different socio-economic groups, including the most disadvantaged ones. The improvement in public support for the EU does not appear to be exclusively a spillover of the positive economic effect of funding; we show evidence suggesting the existence of a 'reciprocity-effect' channel, i.e. citizens in recipient regions recognize the beneficial role of the EU as the source of funding.

Keywords: Euroscepticism; EU transfers; EU crisis; Cohesion Policy; voting; regression discontinuity, redistributive politics.

JEL classifications: D72, F14, H11, I38.

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1 Introduction

‘Only the people can change and enrich
things in the institutions and transmit
them to future generations’

— Jean Monnet

Over the past years, anti-establishment movements and anti-openness tendencies have gained political support throughout western countries. In Europe this trend has gone hand in hand with growing resentment towards the European Union. So far, the victory of the ‘Leave’ campaign in the 2016 Brexit referendum has probably been the most remarkable outcome of this trend. However, different sources show that disaffection with the European Union has been on the rise in almost all the EU member states,¹ a trend that since the financial crisis has become more pronounced.²

Several observers have called for a more active role of the EU, to sustain the recovery in the regions hardest hit by the crisis and to reduce the job displacements associated with globalization and technological change.³ Deeper integration of budgetary resources and increased spending capacity are advocated both to pursue structural convergence across regions, and to enhance countercyclical policies and social security nets. Within the Euro area, the creation of a fiscal union would pave the way for such policies (Bénassy-Quéré et al., 2018). Aside from the direct economic effects of these proposals, it has been argued that under a shared EU social-security net, the benefits from EU membership would be more appreciable to its citizens, reinforcing support for, and the legitimacy of, the European integration process (Balassone et al., 2014).

In this paper we investigate how EU transfers influence citizens’ attitudes towards European integration and how this translates into electoral support for Eurosceptical parties. This analysis relates to the heart of the topical debate on the shape of EU integration and represents the first attempt to causally investigate the following question: does devoting more EU resources to fiscal policies and social security programmes improve how the EU is perceived by the recipients?

We focus on the European Regional Cohesion Policy — the core EU policy on reducing regional disparities (Bachtler et al., 2013) — in the EU15 and combine information from the European Social Survey (ESS), the Eurobarometer, data sources on political parties and transfer records from EU institutions. EU transfers are not randomly allocated: first, they are designed to target poorer and less developed EU regions; second, final transfer amounts are determined by both the quantity and quality of approved projects, which in turn depends on institutional, political and socio-economic regional characteristics likely correlated with perceptions of the EU.

To account for this endogeneity issue, we take advantage of the quasi-experimental framework generated by the eligibility rule of *Convergence Objective* funds based on per capita regional GDP

¹See, among others, van Erkel and van der Meer (2016) and Biancotti et al. (2017).

²Colantone and Stanig (2018); van Erkel et al. (2016); Hobolt and de Vries (2016); Foster and Frieden (2017); Guiso et al. (2019).

³See, for instance, Dustmann et al. (2017), Boeri and Jimeno (2016), Bénassy-Quéré and Giavazzi (2018).

(see Becker et al. 2010).⁴ This allocation rule provides an exogenous variation in the amount of EU transfers at the regional level, which we exploit to identify the causal effect of EU funds on perceptions of the EU and voting patterns using a fuzzy regression discontinuity design approach (RDD).

The RDD results show that EU transfers have a positive impact on public support for European integration and reduce the propensity to vote for anti-EU parties. We estimate that being included in the *Convergence Objective* improves the individual attitudes towards the EU by about 0.5 points, on a scale from 0 to 10, and reduces voters' support for anti-EU parties by 12 percentage points. The effects are homogeneous across socio-economic groups, including relatively unskilled and less-educated individuals, which have been shown to be more vulnerable to the backlash of globalization and technological change as well as to be more prone to embracing anti-establishment positions (Autor et al., 2016; Guiso et al., 2017). Several pieces of evidence support the hypothesis that the effects are not solely driven by improvement in economic conditions, albeit it being a relevant channel. Indeed, our results suggest the existence of a 'reciprocity-effect' channel, i.e. citizens in recipient regions recognize the beneficial role of the EU as the source of funding.

Previous literature, mainly in political sciences, has investigated the influence of EU transfers on public support for European integration but has not reached clear-cut conclusions. Eichenberg and Dalton (1993) find that countries' shares of the EU budget do not affect citizens' support for the EU, but later studies have reached opposite conclusions (Anderson and Reichert, 1995; Hooghe and Marks, 2005; and Diez-Medrano, 2010).⁵ Gross and Debus (2018) show that sub-national parties established in regions that receive more funds show a more favourable stance regarding European integration. Recent studies examining the results of the Brexit referendum do not find any significant effect of EU Cohesion Policy on the propensity to vote to stay in the EU (Fidrmuc et al., 2016; Becker et al., 2017). The lack of a causal identification framework might explain the inconsistent results of the previous literature. To the best of our knowledge, this paper is the first to exploit exogenous variations in transfers to provide an estimate of the causal relationship.

Our work also adds to the literature on reciprocity and the support-buying effect of public transfers. In this framework, public transfers are understood to increase support for the government among the beneficiaries. Similar conclusions are reached by rational-vote theories. While overall the existing empirical literature supports the prediction that transfers can buy political support (see, among others, Levitt and Snyder, 1997; Chen, 2008, 2013; Manacorda et al., 2011), our work adds two main contributions. First, this is the first attempt to investigate the reciprocity-effect of transfers in the EU context. The complexity of the European institutional framework, characterized by multiple layers of government, could blur the source of the transfer

⁴Becker et al., (2010) propose this identification strategy to assess the impact of Cohesion Policy funds on regional economic growth and employment.

⁵Significantly, as compared with Eichenberg and Dalton (1993), the later studies exploit more recent surveys that cover the years in which the European Cohesion and Structural Fund Programmes were in place.

to the eyes of recipients, making the answer to our question less straightforward. Second, we focus on an indirect transfer scheme, implying that it does not directly target individuals or households, but rather increases the regional government’s budget to implement specific projects (e.g. infrastructural investments); in this context, we might expect that transfers are less appreciable at the individual level and hence making it interesting to investigate if any effect on the individuals’ opinions and voting behaviour can be detected.

The rest of the paper is structured as follows. Section 2 introduces the institutional framework and the data exploited in the analysis. Section 3 presents the empirical strategy. Section 4 shows the effect of EU transfers on public opinion and electoral approval for Eurosceptic parties. Section 5 investigates the channels and mechanisms. Section 6 concludes.

2 Data and institutional context

Our data on EU sentiment and electoral preferences comes from the European Social Survey (ESS), an academically driven cross-national survey that has been conducted across Europe since its establishment in 2001. The first wave of the ESS was in 2002 and included 22 countries. Previously, data on public opinion towards the EU was collected by the European Institution only via the Eurobarometer survey run in all EU Member States. Despite its longer history, the Eurobarometer has a much lower sample coverage and size compared to the ESS (approximately 1000 face-to-face interviews per country are conducted, around half the size of the ESS). In particular, the Eurobarometer regional coverage makes it challenging to do inference at the regional level. For these reasons, we prefer to exploit the ESS as our main data source, while we exploit the Eurobarometer data in the robustness analysis only. To measure attitudes towards EU integration we exploit the following question from the ESS: *‘Now thinking about the European Union, some say European unification should go further. Others say it has already gone too far. Using this card, what number on the scale best describes your position?’* The scale is from 0 to 10, with 0 labelled as *‘Unification has already gone too far’*, while 10 is labelled as *‘Unification should go further’*.

The main reason we run a regional-level analysis is that, according to the principle of Financial Solidarity, the EU Cohesion Policy provides regional-level transfers according to a region’s development and economic situation, measured by GDP per capita. EU Cohesion Policy transfers are delivered under three *Objectives*: the *Convergence Objective*, to support less developed regions (GDP per capita below 75 per cent of the EU average); the *European Territorial Cooperation Objective*, targeted at the more developed regions (GDP per capita above 90 per cent of the EU average); the *Regional Competitiveness and Employment Objective*, aimed at supporting the in-between regions (GDP per capita between 75 per cent and 90 per cent of the EU average). Until 2006 the *Convergence Objective* also covered some ‘special’ regions for demographic, geographic and political reasons, even if their per capita GDP exceeded 75 per cent of the EU

average.⁶

With a budget of over €200 billions, the *Convergence Objective* is one of the most sizeable of the EU programmes, absorbing about 35 per cent of the EU budget. It follows that although nearly all regions receive some amount of EU transfers, those under the *Convergence Objective* receive disproportionately more. From 2000-2014, the average per capita transfer within the *Convergence Objective* was nearly €2100, compared to around €180 for the other regions (for the Cohesion Policy funds per capita distribution, see Appendix Figure A.1). Consistently, according to the Eurobarometer survey in 2013 the share of EU population aware of EU funding of local projects was substantially higher in *Convergence Objective* regions (56 per cent) compared with the remaining regions (34 per cent).

The budget, targets and fund allocation of the three *Objectives* are defined within programmes of variable length. Since 2002, namely the period covered by the European Social Survey, we observe two full programmes: the first programme runs from 2000-06; the second from 2007-14.⁷ We define our treatment as the amount of Cohesion Policy funds per capita transferred to each region during each period.

Our main analysis focuses on EU15 countries, excluding the member states that joined the EU after 2004. This choice stems from two main reasons: 1) lack of consistent data for the non-EU15 countries, which largely reduce the actual sample sizes; 2) lack of variation in the actual assignment of funds among annexed regions and presence of a confounder, i.e. the EU accession.

More specifically, as to the first point, the accession of most new member states occurred near the end of the first programming period (2000-2006), in 2004, making difficult to draw conclusion on the effectiveness of the EU funding on regions that are treated unevenly throughout the first programme. In addition, we do not observe individual-level information for the period of the analysis for most new members, as they are not continuously covered by the ESS.⁸

As to the second point, the estimation of the effect of EU funding on new member state regions, especially on sentiment and political outcomes, is particularly challenging. In fact, new member states not only benefited from EU funding, but also, and more prominently, to the EU accession as a whole. As almost all the regions of new member states became recipients of EU funding in the programming periods we consider,⁹ the appropriate counter-factual to disentangle its effect from the one of EU membership is essentially missing — i.e. new member state regions not eligible for EU funding.

Despite these caveats, as an additional robustness check, we conducted the analysis also on

⁶These regions include the seven ‘most remote regions’, some areas in Sweden and Finland with very low population density and Northern Ireland, which receives special Community assistance to promote reconciliation between the communities and the emergence of a stable and peaceful society.

⁷The official programming period goes from 2007 to 2013. Yet, the last round of transfers was delivered in 2014. Hence, we prefer to refer to 2007-14 as a full programming period.

⁸Information for Cyprus, Latvia, Lithuania, Malta, Slovakia, Bulgaria, Romania and Croatia is missing for some of the relevant years of the analysis.

⁹In our country sample just two regions of new member states are not eligible of EU funding (Prague and Central Hungary).

an extended sample that include new member states' regions for which ESS data were available (see Section 4.3).

Data on EU regional transfers are obtained from the official European Commission records on EU regional policy eligibility and actual allocated transfers. Individual-level information on attitudes and political preferences come from the European Social Survey (ESS). Despite Greece and Luxembourg are in the EU15, they are not in our sample because no information on individual characteristics is available in the ESS after 2010. The final sample consists of regions of 13 countries: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden and the United Kingdom; our geographical unit of observation is the region, defined at the NUTS 2 level.¹⁰ However, for five countries (Belgium, Denmark, France, Germany, United Kingdom) ESS data are available at NUTS 1 level only.¹¹ In our sample 28 regions were always supported by the *Convergence Objective* throughout the period 2000-14, while 80 were never included in the *Convergence Objective*.

In sum, our dataset is constructed as follows: for every respondent of the ESS, we observe the region in which he/she resides as well as the party which he/she feels closer to. By exploiting the residence information, we link each ESS respondent to European Commission records on EU regional policy eligibility and actual allocated transfers, in euros, both under the first and second programming period. Moreover, we link each party favoured by ESS respondents to information on the party's stance on the EU and migration as contained in the Chapel Hill Expert Survey (CHES),¹² as well as the party's stance on trade according to member-level voting records of the European Parliament. Since neither the Chapel Hill Expert Survey or other sources provide reliable proxies for the trade stance of parties,¹³ we look at actual votes on international trade casted by members of the European parliament (MEPs) elected in the 6th, 7th and 8th terms (from 2004 to 2017), which are also linked to specific national parties. The database of MEP voting behaviour was provided by VoteWatch Europe and allows us to retrieve a direct indicator of parties' stance on protectionism and free trade based on their actual behaviour in the legislative process.

Overall, we identify as anti-EU around 25% of the parties in our sample. Similarly, also anti-trade and anti-immigration parties account for about one fourth of the parties in our sample. The political parties' characteristics in our sample suggest that the overall political orientation

¹⁰The reference classification used to define a region is the Nomenclature of Territorial Units for Statistics (NUTS). Since the EU regional policy is defined at the NUTS 2 level, this regional classification is our benchmark.

¹¹In order to match the EU funding information with the ESS, for some country we need to consider NUTS1 regions instead of NUTS2, losing some country-level variation. NUTS1 regions are treated (untreated) if all the NUTS2 regions are included in (excluded from) the *Convergence Objective* program. Only in two cases sub-regional level treatment is heterogeneous, thus, we consider as treated NUTS1 regions where the vast majority of people live in NUTS2 regions that are treated.

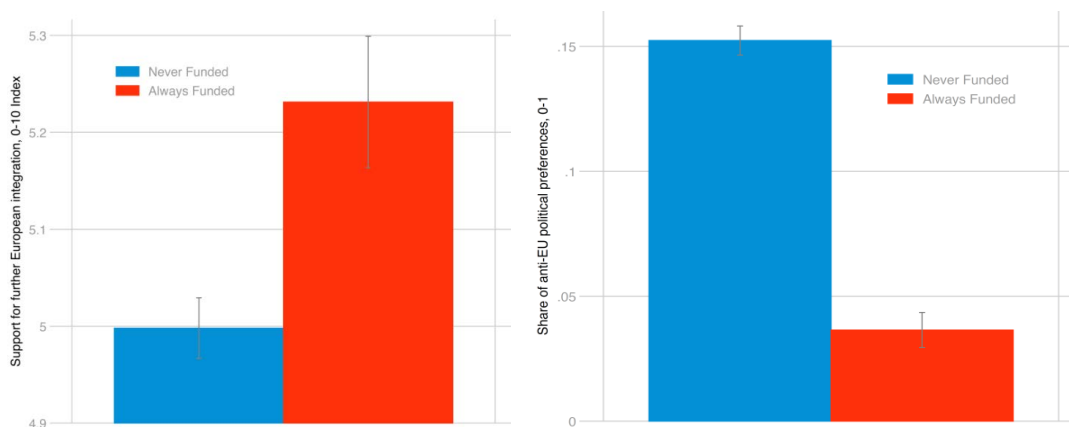
¹²The Chapel Hill Expert survey assesses political party positions along several dimensions. In our analysis, we look at the overall score on European integration and we define as anti-EU parties those which either oppose or strongly oppose it (score equal or below 2, on a 1-7 scale; 1: strongly oppose). According to our dichotomous classification, around 70% of the populist parties in van Kessel (2015) and in Norris and Inglehart (2016) also oppose EU integration. We mark as anti-immigration those parties that favors tough immigration policy (score equal or above 7, on a 0-10 scale; 10: strongly favors tough policy).

¹³For a detailed discussion on this point, see Biancotti et al. (2017).

of a party (left/right position) correlates both with the anti-EU and with the anti-trade stance in a similar way, i.e. far left and far right parties are similarly Eurosceptic and anti-trade. On the other hand, when it comes to pro/anti-immigration stance, parties divide along more traditional lines, with the Left in favour of permissive immigration policies and the Right supporting restrictive ones, as expected.¹⁴

In Figure 1 we provide a first descriptive evidence of different attitudes towards the EU integration between the *Convergence Objective* regions and the other ones.¹⁵ At the end of the period considered, on average, the support for further European integration was significantly higher in regions that received regular transfers from the *Convergence Objective* (Panel A).¹⁶ Results are similar looking directly to political preferences (Panel B): individuals living in *Convergence Objective* regions were less likely to choose parties with an anti-EU stance. In the next section we tease out the causal effect of EU funding.

Figure 1: Average support for European integration in funded and non-funded regions



Note: sample based on regions always supported by the *Convergence Objective* throughout the period 2000-2014 and on regions that never received funding. Outcomes are measured at the end on the entire period.

3 Empirical strategy

We exploit the eligibility rule that determines inclusion in the *Convergence Objective* to identify the causal effect of Cohesion Policy transfers on attitudes towards the EU and on political preferences for pro- (or anti)-EU parties. As in Becker et al., (2010), the RDD strategy exploits an

¹⁴Descriptive evidence on parties' stance is reported in the Appendix. Panels A and B of Appendix Figure A.2 show well-defined hump-shaped correlations between anti-trade/anti-EU and left/right position. Panel C, in turns, shows that positions on migration can be predicted with a linear model.

¹⁵Summary statistics at the regional level on the average attitude towards the EU integration and on the share of anti-EU, anti-trade and anti-immigration political preferences are reported in Appendix Table A.1.

¹⁶Here we consider only regions always supported by the *Convergence Objective* throughout the period 2000-2014 and regions that never received funding.

exogenous variation in transfers: regions whose GDP per capita falls just below 75 per cent of the EU average are included in the *Convergence Objective*, thus being entitled to much larger transfers than regions whose GDP per capita is just above the 75 per cent threshold. Notably, some regions, albeit exceeding the 75 per cent threshold, still benefited from *Convergence Objective* funds. This implies that the threshold does not perfectly determine treatment exposure, but still creates a discontinuity in the probability of treatment. We estimate the treatment effect using a fuzzy RD design. This approach can be thought of as a binary treatment-binary instrument instrumental variable model. Consistently, the fuzzy RD estimand can be interpreted as a weighted local average treatment effect (LATE), where the weights reflect the ex ante probability the region is near the 75 per cent threshold (Lee and Lemieux, 2010).¹⁷

Our running variable is relative GDP per capita as estimated by the European Commission in 1999 and 2006.¹⁸ The *Convergence Objective* allocation rule actually generates an exogenous variation in the amount of EU regional policy funds received by each region at the 75 per cent threshold, which we exploit to identify the causal effect of interest (Appendix Figure A.3 illustrates our first stage relation).¹⁹

A causal interpretation of our estimands requires the standard RD assumptions: a) the distribution of all the observable and unobservable regional characteristics, except for the EU funds received, is continuous around the cut-off and, b) regions cannot manipulate their assignment variable. Moreover, because of imperfect compliance, it also requires c) monotonicity, i.e. crossing the cutoff cannot simultaneously cause some units to take up and others to reject the treatment (Lee and Lemieux, 2010). Regarding the first assumption, we show that demographic and economic characteristics are balanced around the threshold at baseline (see Section 4.3), confirming the evidence provided by Becker et al. (2010) and Accetturo et al. (2014) in a similar setting; moreover, to our knowledge no other policy makes use of the same cut-off to identify recipient regions. As to the second assumption, we, as the literature before us,²⁰ argue that it is highly unlikely that regions manage to manipulate their declared GDP per capita in order to settle just below the 75 per cent cut-off. In fact, the cut-off is computed by the European Commission based on the GDP per capita of all the regions and specifically on the figures for the last three years of *available* data at the time when the deliberation over the funds' assignment is made. In line with our predictions, formal statistical tests confirm absence of manipulation. We discuss these aspects in more detail in Section 4.3. As to the last assumption, positing the existence of defiers in our setting does not sound reasonable. Consistently, there is no evidence

¹⁷Following Imbens and Angrist (1994), LATE is defined as the average treatment effect “for the sub-population affected by the instrument,” which in our context equates to regions complying to the 75 per cent rule.

¹⁸In order to evaluate eligibility for the different regional programmes the European Commission computes the GDP per capita of EU NUTS 2 regions as the average of the most recent three years of available data, before the start of the programming period (i.e. 1996-1998 for the 2000-2006 programme, 2003-2005 for the 2007-2014 programme). In our analysis we employ the official estimates elaborated by the European Commission which exclude posterior data revisions.

¹⁹The discontinuity at the threshold is even more pronounced considering the ratio of funding over regional GDP, as compared to per-capita transfers (see Appendix Figure A.4).

²⁰See Becker et al. (2010, 2013) and Pellegrini (2012).

of regions which refuse *Convergence Objective* payments.

Our setting allows to estimate the difference in public sentiment and political support for the EU between regions receiving a large versus a small amount of transfers, *ceteris paribus*. Indeed, while all EU regions receive some transfer from the EU, regions below the 75 per cent threshold receives more than 10 times as many funds as those above it. Hence, we define as treatment the binary *Convergence Objective* status and we estimate a local average treatment effect at the 75 per cent threshold with an RD design. Because of the presence of always-takers, that is ‘special’ regions which are included in the *Convergence Objective* despite not complying with the eligibility rule, we implement a fuzzy RD.

The outcomes are measured at the end of each programming period. To avoid sample-size reductions due to the ESS coverage and to account for the fact that the second programme officially ends in 2013, we consider the bi-annual averages closer to the end of the programming period (2004-2006 and 2012-2014). Baseline regressions consider a pooled sample of the two programming periods with period-specific control dummies, as in Becker et al. (2010).

The results of our baseline estimates can be interpreted as the effect of being included in the *Convergence Objective* on our outcome variables. To improve on interpretation and provide a quantification of the policy’s impact in monetary terms, we also consider a specification in which the treatment is defined continuously as the amount of per capita funds received by each region under the Cohesion Policy. Under the assumption that the effect of funds on the outcomes is linear, we can exploit an instrumental variable approach to estimate the electoral and sentiment effect of each additional euro spent in the EU Cohesion Policy at the 75 per cent cut-off (LATE).

4 Main results

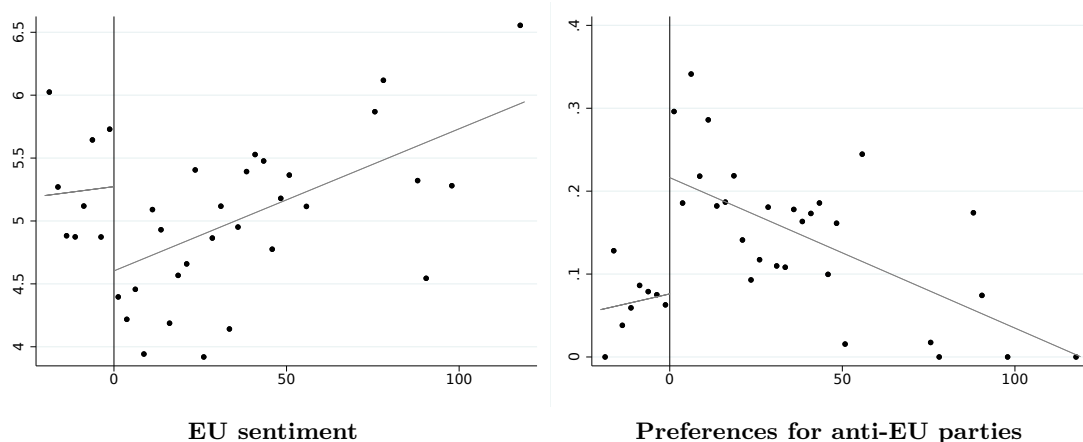
4.1 Effects on pro-EU attitudes and political appraisals: graphical analysis

In Figure 2, we plot the attitude towards EU integration at the end of the second programme (2007-2014), averaged across equal-sized bins, over the per capita GDP in purchasing power standard (PPS) relative to the EU average, as computed by the EU commission to assess the eligibility of a region to the first programme (2000-2006). In other words, in Figure 2 we are considering the 2000-2014 as a single programming period. This is a reasonable exercise since regions included in the *Convergence Objective* during both periods substantially overlap and the pre-2000 eligibility rule largely determines the probability of receiving *Convergence Objective* status both for the first and the second programme (see Appendix Figure A.5 and A.6). On top of making representation more intuitive, the results are meaningful as they allow us to infer the impact of the program, net of potential cross-program spillovers.²¹

²¹Nonetheless, the pictures are similar when consider separate scatter plots for the first and the second programme, see Figure A.7 and A.8 in the Appendix for EU sentiment and anti-EU political preferences respectively.

The left panel of Figure 2 shows that the average attitude towards European integration drops at the 75 per cent threshold, implying that, *ceteris paribus*, regions to the left of the 75 per cent cut-off show more positive sentiment towards the European Union compared with regions just to the right. Building on this evidence, the right panel shows that differences in sentiment towards the EU translate into differences in political preferences: indeed, the share of individuals that are inclined to opt for an anti-EU party is much larger in the regions that happen to be just to the right of the 75 per cent threshold.²² Regions just at the right of the threshold are those that —on average— report the lowest level pro-EU sentiment and the highest share of citizens supporting anti-EU parties, even compared with the others in the ‘non-treated’ group.²³

Figure 2: EU sentiment and preferences for anti-EU parties and pre-2000 relative GDP per capita in ‘treated’ and ‘untreated’ regions



Note: the figures show averages of EU sentiment and anti-EU political preferences in equally sized bins of 2.5% at the end of the second programming period. The values on the x-axis are those in the official indexing computed by the European Commission in 1999. The zero-vertical line represents 75 per cent of the EU average per capita GDP in PPS as defined by the EU commission for the first programming period (2000-06). Linear interpolations on the left and on the right of the threshold are reported, as suggested by common specification tests (see Lee and Lemieux, 2010).

4.2 Effects on pro-EU attitudes and political appraisals: regression analysis

We estimate two regression models. First, we assess the effect of the *Convergence Objective* status on attitudes towards the EU and political preferences through the following fuzzy RD

²²We report linear interpolations on the left and on the right of the threshold as suggested by common specification tests (see Lee and Lemieux, 2010). Outcome variables are averaged in equally sized bins of 2.5%. In the Appendix Figure A.9 we also report non-binned scatter plots.

²³The mean pro-EU score in regions just above the threshold (i.e. with per capital GDP between 75 and 85 per cent of the EU average) is about 0.2 points —or 5%— lower than those with larger per capital income (i.e. further on the right in Figure 2).

model:

$$Y_{it}^a = a + b\text{ConvergenceObjective}_{i,t} + f(X_{i,t}) + Z'_{i,t} + d_t + u_{i,t},$$

where on the left-hand side, Y_{it}^a is the average individual-specific outcome variable of interest measured at the end of programming period t in region i . On the right-hand side, $\text{ConvergenceObjective}_{i,t}$ is a dummy taking value 1 if region i qualifies for *Convergence Objective* status before the start of the programme t , $X_{i,t}$ is our running variable, i.e., the assignment variable for programming period t (ratio between region i 's GDP per capita in PPS and the EU average in each of the two pre-treatment periods), Z'_{it} is a vector of controls, d_t are dummies for each programme and $u_{i,t}$ is the error term.

We test various orders of polynomials in the running variable, $f(X_{i,t})$, implying that we lean towards the parametric RDD approach as our preferred estimation model.²⁴ Indeed, given the limited sample size, there is no critical mass of data points around the cut-off and hence, a non-parametric approach is unlikely to have enough power to precisely estimate the effect at the cut-off. According to the main specification tests (Lee and Lemieux, 2010), a simple linear model adequately depicts the relationship between our outcome and the running variable; hence, it is considered our baseline estimate. To reduce the influence of observations in the tails, we exclude those falling in the upper and lower 5 per cent of the (pre-treatment) per capita income distribution. To minimize concerns related to regions' comparability around the 75 per cent cut-off, we include potential confounding factors $Z'_{i,t}$ as controls.²⁵ We include: geo-demographic factors — population density and a measure of geographical remoteness²⁶ — and whether the region has been included in the *Convergence Objective* in the previous period.

Convergence Objective status at time t is instrumented by the predicted values of the following first-stage regression:

$$\text{ConvergenceObjective}_{i,t} = \alpha + \beta \text{Rule}_{i,t} + f(X_{i,t}) + Z'_{i,t-1} + \delta_t + \varepsilon_{i,t},$$

where Rule_{it} is a dummy taking value one if region i meets the 75 per cent assignment rule of the programming period t (when regions' eligibility is determined), δ_t are programme fixed effects and $\varepsilon_{i,t}$ is random noise. Standard errors are clustered at the regional level and bootstrapped. Notice that $\text{ConvergenceObjective}_{i,t}$ and $\text{Rule}_{i,t}$ are not collinear because there exist *special* regions which received Convergence Objective funds despite not abiding to the assignment rule.

Second, we estimate a comparable econometric model but for the treatment, which is now defined continuously as the funds received under the EU Cohesion Policy at the program-region unit. As the payments amount is endogenous, it is instrumented by the eligibility rule (i.e. the 75 per cent threshold). This instrument satisfies the relevance condition (see Appendix Figure A.3)

²⁴As discussed in Jacob, Zhu and Bloom (2012), this can be particularly important when data that are very far from the cut-point are included in the analysis or when the relationship between the outcome and the assignment variable is highly non-linear.

²⁵The issue is discussed extensively in Froehlich (2007).

²⁶The remoteness of a region is measured as its distance from the region with the minimum average distance from all the others.

and under the RDD assumptions, it also satisfies the exclusion restriction. Assuming linearity in the relationship, this specification allows us to estimate directly the vote- and sentiment- buying effect of each additional euro spent in the EU Cohesion Policy at the 75 per cent cut-off (LATE). More specifically, we estimate:

$$Y_{it}^a = a + b \text{EUFunds}_{i,t} + f(X_{i,t}) + Z'_{i,t} + d_t + u_{i,t}.$$

Similarly to the first regression model, the first-stage regression is now

$$\text{EUFunds}_{i,t} = \alpha + \beta \text{Rule}_{i,t} + f(X_{it}) + Z'_{i,t}\Gamma + \gamma_t + \varepsilon_{i,t}.$$

The results are summarized in Table 1 which reports both the specification based on binary *Convergence Objective* status (columns 1 to 3) and the estimations exploiting payments per capita that each region received during each programme (from columns 4 to 6).

According to all the specifications, Cohesion Policy funds have a positive and statistically significant effect on attitudes towards EU integration. The estimates are consistent across the specifications. Considering the most flexible model as a benchmark (column 3), the inclusion in the *Convergence Objective* programme increases the individuals' attitudes towards the EU by about 0.5 points, on a scale of 0 to 10. Since the sample average of our measure of pro-EU sentiment is around 5 points, the estimated improvement in pro- European Union sentiment due to the inclusion in the *Convergence Objective* is substantial, about 10 per cent.

These results are confirmed by the estimates in terms of funds per capita/per year (columns 4-6), considering that the estimated difference in per capita funding between *Convergence Objective* regions and non-*Convergence Objective* regions at the threshold amounts on average to about €700 per programming period (i.e. around €100 per year).²⁷ In this second set of regressions we instrument the funding amount with the *Convergence Objective* eligibility rule.²⁸ According to the political preferences expressed by ESS respondents, improved sentiment towards the European Union is also associated with weaker support for anti-EU parties. Table 1 shows that EU funding negatively affects the propensity to choose parties with a more negative stance towards European integration by around 12 percentage points. Again both the magnitude and significance of the effects are confirmed by the RD estimates in terms of per capita funding.

These results challenge the idea that EU transfers do not play any role in shaping public attitudes towards Europe, a view that has gained popularity after the Brexit referendum. Indeed, we can perform some back-of-the-envelope calculations based on our results to get some insights on how much additional funds would have been necessary to change the Brexit referendum results.

First, the average regional EU sentiment, as measured by the ESS, is positively and signifi-

²⁷It should be noted that our results are valid only locally, at the threshold. This is why we calibrate the amount of funding on the jump we observe at the threshold, i.e. 100€/per person per year.

²⁸We exclude from the sample only four regions receiving an amount of funds higher than the average funds received by eligible regions, despite not meeting the eligibility rule, similarly as in Pellegrini et al. (2013).

cantly correlated with the regional vote for Remain. The correlation coefficient between the two variables is around 0.7 and, based on a simple OLS regression on UK regions,²⁹ an increase in the average EU-sentiment of 0.1 points is related to an additional 1.4% in the pro-Remain vote share. It means that an increase in the pro-EU sentiment indicator of about 0.14 points in the UK population would have provided 2 additional p.p. in favor of Remain, enough to overturn the outcome of the Referendum (51.9% Leave vs 48.1% Remain). Given the estimated effect showed in Table 1, the win of the Remain vote would have been achieved if about one third of the UK population were included in the Convergence programme. In monetary terms, this corresponds to doubling the European Regional Development Fund (ERDF) allocated to the UK in the 2007-2013 period, i.e. a 3% increase in the overall ERDF budget in that period.

Obviously, these calculations have to be taken with a grain of salt. Our identification strategy, i.e. the RD design, allows to have a causal estimate of the effect of EU funds, but in our calculations we are assuming that it holds also along the entire distribution. In addition, we assume that the effects estimated for the entire pool of EU regions apply also to UK voters, excluding any idiosyncratic pattern in the Brexit referendum.

Table 1: RDD results: effects of EU funding on EU sentiment and political preferences

Treatment Var Outcome Var	Convergence (1)	Objective status (2)	(3)	Per capita funds (€100/year)		
				(4)	(5)	(6)
EU sentiment	0.797*** (0.299)	0.494** (0.202)	0.487** (0.205)	0.519*** (0.159)	0.45*** (0.17)	0.475** (0.228)
Share of anti-EU political preferences	-0.181*** (0.048)	-0.117*** (0.032)	-0.119*** (0.032)	-0.118*** (0.03)	-0.107*** (0.027)	-0.124*** (0.035)
N. Obs.	192	192	192	192	192	192
Interaction	NO	NO	YES	NO	NO	YES
Controls	NO	YES	YES	NO	YES	YES

Standard errors are clustered at the regional level and bootstrapped. Average individual sentiment towards the EU ranges from 0 (anti-EU) to 10 (pro-EU). The share of anti-EU political preferences is the share of individuals in the regions who prefer a party with a negative stance towards the EU (score lower or equal to 3, on a scale of 0-10, source: CHES). All the specifications include a time dummy. Columns 1 and 4 use a linear specification in the running variable; columns 2, 3, 4 and 5 include external controls for pre-treatment population density, geographical remoteness, treatment status in previous programme; columns 3 and 6 allow the function's slope to change at the cut-off.

4.3 Robustness

Validity of RDD approach

Our results withstand the typical robustness checks of the RDD setup. First, we can exclude *a priori* the possibility of threshold manipulation, since it is unreasonable that regions manage

²⁹For this exercise we used the regional vote for Remain as the dependent variable and average EU-sentiment in 2016 as measured by the ESS as covariate.

to self-select to the left of the cut-off threshold; as already mentioned, the per-capita measure of income used by the European Commission is lagged and based on a three-year average. From a theoretical perspective, since the allocation rule is based on a relative cut-off, rigging the system would require a level of coordination hardly sustainable in equilibrium. Moreover, formal tests show no evidence of systematic manipulation of the running variable (McCrary, 2008; Cattaneo et al., 2018).³⁰

A second potential issue regards the balancing properties of our samples ('treated' and 'non-treated') at the threshold. By definition, the regions included in the *Convergence Objective* differ at baseline in terms of development from regions which are targeted by the remaining *Objectives*. Yet, any of these differences would not undermine our identification strategy, as long as the dimensions along which the two groups differ do not vary discontinuously at the threshold we consider. In Appendix Table A.2 we show that this is exactly the case. Overall, regions not funded by the *Convergence Objective* show better infrastructures, better health and labour market outcomes and tend to receive more migrants before the start of the first programming period. Yet, none of those potential confounders jumps discontinuously at our threshold, as is clear from the last two columns. Last, we need to verify that also EU sentiment in the pre-treatment period, i.e. 1999, does not jumps discontinuously at the first programme threshold. To do so, since the ESS data only start in 2002, we exploit information from the Eurobarometer survey. In particular, to measure public sentiment towards the EU, we consider the question — '*Generally speaking, do you think that your country's membership of the European Union is a good thing, a bad thing, or neither bad nor good?*' — . This question is included in the survey since 1973.³¹ The last rows of Appendix Table A.2 report the result of this analysis, showing that, despite the pre-treatment differences in funded and not funded regions, EU sentiment in 1999 does not jumps discontinuously at the 2000-2006 threshold.³² Overall, the evidence suggests that the two groups' characteristics are ex-ante balanced once we apply a quasi-experimental scheme, suggesting that the RD design is not invalidated.

Inclusion in the sample of East-EU countries

As discussed in detail in Section 2, we chose to limit our main analysis to the original EU15 member states for several reasons: lack of consistent data for the member states that joined the EU after 2004, presence of a confounding factor — the EU accession — and lack of variation across new member regions in the assignment of funds (i.e. almost all new regions are in the

³⁰Results are available upon request.

³¹The Eurobarometer survey is conducted on behalf of the European Commission and consists of approximately 1000 face-to-face interviews per country, around half the size of the ESS. This is the reason why we choose the ESS instead of the Eurobarometer survey as main data source. Reports are published twice yearly. Here we use the information from Eurobarometer 52.0 conducted in 1999.

³²This does not mean that the 1994-1999 programme had not effect on EU sentiment. In fact, despite many regions that met the *Convergence Objective* threshold in the 2000-2006 programme also qualified under the criterion of the previous programme (1994-1999), the sample of treated and untreated regions is not the same. Once we exploit the 1994-1999 eligibility rule, we found evidence that treated regions in 1994-1999 do have a lower share of anti-EU individuals at the end of that programming period, in 1999. Results are available upon request.

treated group).

Keeping these caveats in mind, we show in Appendix Table A.3 that our baseline results are confirmed, both qualitatively and quantitatively when we include in the analysis the new member states for which individual-level characteristics are available.³³

Alternative proxies for EU approval

In this section, we show that our results are confirmed when using alternative proxies for pro-/anti-EU positions.

First, we consider as outcome trust towards the EU parliament;³⁴ second, we look at the average regional favorite parties stance towards the EU;³⁵ third, we build our proxies of pro-/anti-EU sentiment from a different data source: the Eurobarometer.³⁶

Results, reported in Table A.4 and A.5 of the Appendix, are consistent with our baseline. EU funding increases trust towards the EU parliament, the average regional favorite parties stance towards the EU and the share of pro-EU citizens, while the average anti-EU sentiment and the share of Eurosceptics are reduced.

Alternative model specifications and tails' trimming

As shown in Table 1, results are not sensitive to alternative specifications, some of which include controls designed to balance any potential residual differences at the baseline between treated and control regions, making our RDD assumptions more likely to hold. We dig further into this issue by considering RDD specifications with a quadratic polynomial in the running variable: the estimates reported in Tables A.6 of the Appendix show consistent and stable patterns in terms of magnitude, sign and significance.

In our setting, given the low number of observations, including country fixed effects is too demanding for our model. In order to control more flexibly for geographical heterogeneity, in the baseline regression we include among the others potential confounding factors a measure of 'remoteness' (i.e. the distance from the most central region). As a further robustness check, in Table A.7 of the Appendix we show that our baseline results are robust to the inclusion of macro-regional controls (Northern, Central and Southern Europe), albeit when looking at the sentiment towards the EU the statistical significance is somewhat lowered.

Results are confirmed also when the effects of the funding scheme are estimated excluding non compliant regions from the sample, following a sharp RD design (see Table A.8 in Appendix).

³³We add to the baseline sample the regions of Czech Republic, Estonia, Hungary, Poland and Slovenia. We also check that results are robust with other proxies for EU approval (results are available upon request).

³⁴We exploit the following question of the ESS: 'Tell me on a score of 0-10 how much you personally trust the European Parliament'.

³⁵In our baseline we have considered the share of individuals in the regions who prefer a party with a negative stance towards the EU (score lower or equal to 3, on a scale of 0-10). Here we test whether the results hold when considering the entire range of support, instead of specific tail.

³⁶We look at the responses to the same question we exploited to test the pre-sample balancing properties: 'Generally speaking, do you think that your country's membership of the European Union is a good thing, a bad thing, or neither bad nor good?'. We exploit information from Eurobarometer 66.1 in 2006 as to the outcome of the first period, and the average between Eurobarometer 79.5 in 2013 and Eurobarometer 82.4 in 2014 as to the outcome of the second period, since payments are delivered in both years.

Results are robust to expressing EU funding in terms of GDP at Purchasing Power Standards (PPS), rather than in per capita, as shown in the Appendix Table A.9. The treatment effect is calibrated on the estimated funding difference between *Convergence Objective* regions and non-*Convergence Objective* regions at the threshold, i.e. 0.5 p.p. of the regional GDP at PPS per year.

The timeline of EU funding payments could differ from the actual expenditure of funds. To assess the robustness of our results with respect to the potential gap between the time of payments and the one of expenditure we exploit a new dataset released by the European Commission.³⁷ In Appendix Table A.10 we instrument with the usual eligibility rule the real expenditure of EU funding at three different time intervals: at the exact time of the assessment of individual-level perception of the EU; in a small time window before the assessment (two years before); throughout the entire programming period. Our results are confirmed. In addition, it seems that more sizable effects are found when EU spending is concentrated close to the moment of the individual assessment recorded by the ESS.

To alleviate concerns about historically ingrained effects, we have shown above that regions around our threshold did not differ in terms of EU support the year before the start of the programming period. Now, we employ a Diff-in-Diff-RDD estimation strategy, looking at the effect of EU funding on the *changes* of EU attitudes and political preferences. Since the ESS only start in 2002, we cannot apply this setting the two programming periods under investigation.³⁸ In Table A.11 in the Appendix we estimate the effects of the second programme by taking the change in the outcomes between 2006 and 2014. The estimates confirm that Cohesion policies in the second programme increase the average EU sentiment of individuals. The effect on political preferences is also consistent, despite the lower statistical significance, probably due to the smaller sample size.

Our results are generally unaffected by changes in the cut-off level used to exclude data points in the tails of the forcing variable distribution (see Table A.12 in Appendix). In addition to the 5 per cent trimming used in baseline specifications, we also consider full sample estimates as well as other trimming levels (1 per cent, 10 per cent). Further restrictions of our estimation bandwidth would come at a cost in terms of observation loss which is too large compared to our sample size.

Placebo thresholds

Finally, we perform a set of falsification tests on our main results. First, we check the most substantial discontinuity in funding occurs at the 75 per cent cut-off. Indeed, as shown in Figure A.10, this seems to be the case. Notably, no significant discontinuity emerges at the 90 per cent cut-off, that is, the eligibility threshold that discriminates between the *European Territorial Cooperation Objective* and the *Regional Competitiveness and Employment Objective*. Second,

³⁷The European Commission has recently released a dataset that provides ‘*in a single source, regionalised (NUTS-2) annual EU expenditure data (in current prices) for specific EU funds*’. We thank an anonymous referee for pointing it out.

³⁸This is also the main reason why we do not adopt this strategy as the baseline specification.

we run a set of placebo RDDs to check if jumps in the outcome variables occur only at the true treatment cut-off. We plot the estimated treatment effect on two main outcomes, namely EU sentiment and anti-EU political preferences, for a set of fictitious thresholds plus the 75 per cent one. If the 75 per cent threshold is the true discontinuity point, then we expect its coefficient to be the maximum in the (pro)-EU sentiment graph and minimum in the anti-EU political preferences, and the only one statistically different from zero. The results of the placebo exercises are summarized in Figures A.11 and A.12. Regarding pro-EU sentiment, there are no large, significant jumps at the placebo thresholds. As far as political preferences are concerned, again the only significant effect is observed at the 75 per cent cut-off. In sum, the falsification tests show that the relationship between the forcing variable and our outcome variables of interest is not fundamentally discontinuous and that the only relevant discontinuity is generated by the *Convergence Objective* allocation rule.

5 Heterogeneity and mechanisms

5.1 Individual level heterogeneity

In this section we exploit the ESS individual level information to investigate whether specific socio-economic groups are driving our results. In particular, exposure to globalization/technological change is likely to be a relevant source of heterogeneity, as previous contributions have shown that individuals highly exposed to these shocks tend to be more likely to support anti-establishment, populist and Eurosceptic positions (Autor and Dorn, 2016; Colantone and Stanig, 2018; Guiso et al. 2017; Dustmann et. al 2017). This is confirmed also in our setting by the anti-EU sentiment correlations with individuals' socio-economic traits from the ESS (see Appendix Figure A12). Anti-EU sentiment is stronger among low-skill workers, individuals with lower educational attainment, those with income perceived to be insufficient to meet their family's needs, and who spend large amounts of time watching entertainment TV.³⁹

We exploit these insights to build a definition of individuals exposed to globalization and hence, more prone to anti-EU rhetoric. We identify two clusters of individuals who are expected to be at polar opposites in their exposure to globalization/technological change: the 'non-exposed' and the 'exposed'. The clustering is performed according to education level and occupational skill. In particular, the group of 'exposed' individuals comprises low-skilled workers with a number of years of schooling below the median value. To the 'non-exposed' group belong managers and professionals with schooling above the median. Each group represents around 10 per cent of the entire population.

Ex-ante, it is not obvious whether we should expect heterogenous effects across the two groups. Many factors might be at play: more educated individuals may be more aware of European policies, including regional transfers; low skill individuals may benefit proportionally

³⁹This evidence is also in line with previous contributions by Gabelm (1998); McLaren (2002) and Hoogh and Marks (2005).

more in terms of job creation from the infrastructural investments financed by the Cohesion Policy; those individuals most exposed to globalization backlashes might be so estranged that Cohesion Policy transfers are just not enough to change their perceptions of the EU etc.

Table 2 shows that EU funding positively and significantly affects perceptions of the EU for both the ‘non-exposed’ and the ‘exposed’ group. Consistently with the literature, ‘exposed’ individuals show substantially lower EU sentiment and are more likely to hold anti-EU political preferences. This reassures us that our definition of ‘exposure’ is indeed capturing the right subset of the population. However, in the context of our analysis, the most interesting coefficient is the interaction term, which is much smaller and not statistically different from zero. In other words, the effect of receiving funding is similar for individuals whose characteristics make them more or less exposed to the negative impact of globalization and suggesting in turn that also the preferences of ‘exposed’ individuals, who are indeed more incline to express Eurosceptical positions, are significantly affected by the transfers. This finding has high policy relevance, as it suggests funding might be effective at reducing anti-EU positions of even those individuals which are mostly disengaged with the European Union.

Table 2: RDD results: the effect of EU funding on different socio-economic groups in the population

Outcome Var	EU sentiment	Share of anti-EU political preferences
Convergence Objective status	0.446** (0.206)	-0.095*** (0.031)
Convergence Objective status × exposed	-0.001 (0.100)	-0.028 (0.021)
Exposed	-0.830*** (0.050)	0.071*** (0.011)
Per capita funds (€100/year)	0.514** (0.235)	-0.116*** (0.037)
Per capita funds (€100/year) × exposed	-0.001 (0.070)	-0.022 (0.016)
Exposed	-0.830*** (0.052)	0.073*** (0.011)
N. Obs.	356	356
Interaction	YES	YES
Controls	YES	YES

Standard errors are clustered at the regional level and bootstrapped. Average individual sentiment towards the EU ranges from 0 (anti-EU) to 10 (pro-EU). The share of anti-EU political preferences is the share of individuals in the regions who prefer a party with a negative stance towards the EU (score lower or equal to 3, on a scale of 0-10, source: CHES). The group of ‘exposed’ individuals comprises low-skilled workers with a number of years of schooling below the median value. To the ‘non-exposed’ group belong managers and professionals with schooling above the median.

5.2 Economic and reciprocity-effect channels

To better qualify our results, in this section we look into the channels through which transfers affect citizens' preferences. The main question we try to address is whether the 'EU-origin' of the funds matters in driving our results via a reciprocity-effect. In other words, we wonder if the increase in appreciation for the EU of individuals in recipient regions has to do, to some extent, to the fact that they are aware of the funds, they recognize the EU as the 'source' of the transfers and they reciprocate (i.e. there exists a reciprocity-effect). The alternative explanation is that Cohesion Policy's funds positively affect public opinion solely thorough an economic channel, irrespectively of the fact that the EU is the 'source' of the transfers.

Indeed, there is evidence that EU transfers have positive economic effects. Specifically, the literature on the effect of Cohesion Policy funds has shown that EU funds positively affect economic conditions in recipient regions (Becker et al., 2010, 2013; Pellegrini et al., 2013, European Commission, 2016a,b). A second strand of literature has shown that individual economic conditions (e.g. personal income, unemployment status etc.) are inversely related to the propensity to support anti-establishment, populist or Eurosceptical positions (Colantone and Stanig, 2018, Guiso et al., 2017, Algan et. al , 2018). Then, in principle, we cannot exclude that the effect of transfers on EU sentiment we document in this paper may be fully driven by the improvement of economic conditions induced by the transfers, regardless of the 'EU-origin' of the funds.

The mechanism through which funds affect preferences seems especially relevant for the political economy implications of EU redistributive policies. For instance, in the presence of a reciprocity-effect, EU institutions would benefit from designing or advertising interventions in a way to make their 'EU-origin' more recognizable. In what follows, we provide suggestive evidence that indeed the 'EU-origin' of funds matters for regional funds to promote a favorable appraisal of the EU among the beneficiaries.

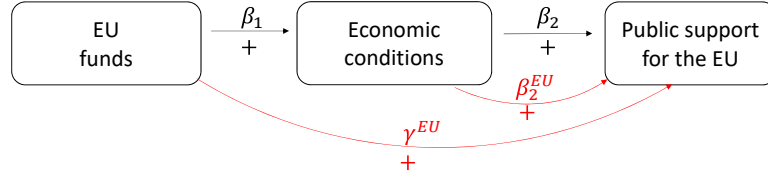
As mentioned above, a specific role for the 'EU-origin' of the funds requires that people are aware of the Cohesion Policy and acknowledge it as good, especially in more funded regions. Evidence from the 2013 Flash Eurobarometer survey (no. 384) seems to support these prerequisites: both the share of respondents aware of the existence of EU funds and that with a positive opinion about EU regional policies in each region positively correlate with the transfers received under the Cohesion Policy (see Appendix Figure A.15). RDD estimates confirm that EU funding positively affects people's awareness and acknowledgment.⁴⁰

In order to assess more directly the existence of a 'reciprocity channel' we define it in a simple conceptual framework and propose an empirical strategy to identify it separately from the 'pure economic' one. Figure 3 presents a conceptual map of the two explanations, with the 'reciprocity channel' components depicted in red. The 'pure economic channel' hinge on the

⁴⁰Over the entire period (2000-2013), €100 per year per capita increase the share of people aware of projects financed by the EU in the area by 28 p.p. and positive opinions about regional EU policies by 18 p.p. These estimates are based on a fuzzy RDD where the independent variable is the cumulated funds received under the EU Cohesion Policy by each region over the two programming periods. This choice was needed since the outcome variable is not available at the end of the first programme. The results are available upon request.

hypothesis that EU funds improve economic conditions ($\beta_1 > 0$), and this, in turn, enhances the support for the EU integration as any other positive economic shock ($\beta_2 > 0$). Conceptually, the ‘reciprocity channel’ can be explained in two possible ways: i) it can be thought as an extra-effect related to the improvement in economic conditions, stemming from people acknowledging that the EU generated this welfare gain ($\beta_2^{EU} > 0$); ii) it may originate from the mere perception of benefiting from the EU transfers, irrespectively of the actual effectiveness of the policy in improving economic conditions ($\gamma^{EU} > 0$).

Figure 3: Effects of EU funds on the support for the EU: a scheme of possible mechanisms



Let β_T be the ‘total’ effect of EU transfers on sentiment. It may be decomposed in the two channels as follows:

$$\beta_T = \underbrace{\beta_1 \beta_2}_{\text{pure economic effect}} + \underbrace{\beta_1 \beta_2^{EU} + \gamma^{EU}}_{\text{reciprocity effect}},$$

where the ‘pure economic channel’ is given by the combination of the impact of funds on the economy and that of economic conditions on pro-EU public sentiment ($\beta_1 \beta_2$), and the ‘reciprocity channel’ is the sum of an extra-effect related to the improvement in economic conditions and a totally autonomous component ($\beta_1 \beta_2^{EU} + \gamma^{EU}$). Then, the existence of a ‘reciprocity channel’ would imply $\beta_T - \beta_1 \beta_2 > 0$, that is the condition that we investigate empirically.

In a nutshell our estimation strategy is as follows: *i*) we estimate the impact of EU funds on economic conditions (β_1); *ii*) we exploit a different economic shocks, unrelated to the EU, to

get an estimate of β_2 ; *iii*) we combine the two to quantify the benchmark ‘pure economic effect’ ($\beta_1\beta_2$); *iv*) by comparing this latter with our original estimates of the effect of Cohesion Policy on EU approval (β_T) we get an estimate of the ‘reciprocity effect’ (i.e. $\beta_T - \beta_1\beta_2$). Notice that our aim is to assess whether the overall effect of EU funds exceeds the one generated by any other positive economic shock of the same magnitude, but we do not disentangle the mediated effect and autonomous component within the ‘reciprocity channel’ (i.e. γ^{EU} and $\beta_1\beta_2^{EU}$). This is another relevant issue that is left for future research.⁴¹

We consider regional employment as our proxy of personal economic conditions. Previous contributions have shown that this variable is both affected by the EU funding and related to individuals’ trust on the EU, as well as on preferences for anti-EU/anti-establishment/populist parties.⁴² Moreover, employment conditions are deemed more salient by citizens as compared to other economic outcomes, such as GDP or investments (Bachtrögler and Oberhofer, 2018). We take the regional growth rate of employment over the first programming period (2000-2007), since during the second period labor market conditions in different regions were affected to a very different extent by the Global Financial Crisis and by the Sovereign Debt Crisis.

Our baseline results about the overall positive effects of the transfers on EU appraisal (see Table 1) are broadly confirmed by RD estimated on the 2000-2007 programme, albeit some reduction in precision due to the lower number of observations (β_T in Table 3).⁴³ Relying on the same RD model, we also confirm previous literature’s findings on EU transfers improving labor market conditions. Being included in the *Convergence Objective* increases employment growth rate by around 3-7 p.p. over the programming period (β_1 in Table 3).⁴⁴

To quantify the effect of a variation of employment on pro-EU sentiment and political preferences we resort to an exogenous change in labor market conditions in an instrumental variable approach.⁴⁵ To this aim, we exploit as instrument the labor market shock generated by the increased competition from China’s imports, especially after its accession to the WTO in 2001. Several studies have documented the job displacement effects in industries and regions most exposed to imports’ competition from developing countries, which support the relevance condition of the selected instrument (Autor et al., 2013; Dauth et al., 2014). In addition, Colantone and

⁴¹This issue concerns the economic effectiveness of EU Cohesion Policy and the extent to which it enhances the pro-EU consensus, as opposed to a totally unrelated component. The identification of γ^{EU} could be addressed in a mediation analysis framework, whose aim is typically to estimate how a certain treatment affects the outcome through an intermediate variable, called mediator (Baron and Kenny, 1986). However, in our context this would require a specific identification strategy that cannot be trivially found in the available information (e.g. we would need some exogenous shock that affects the pro-EU consensus only through a perturbation of the economic effectiveness of the EU regional transfers).

⁴²See, among others, European Commission (2016a,b), Becker et al. (2018), Algan et al. (2018), Dustmann et al. (2017).

⁴³In Table 3 we report results for our baseline specifications described in section 4.2 (columns 3-5) and for a different setting, a sharp RDD excluding from the sample those regions not complying with the 75% cut-off rule (columns 1-2), as in Table A.8 in Appendix.

⁴⁴This effect is broadly in line with that estimated by Becker et al. (2018) for the post-2000 period.

⁴⁵The procedure is similar to that proposed by Imai et al. (2011) in the context of mediation analysis with randomized treatment and non-randomized mediator. In our setting we also allow for the ‘mediator’ to affect the outcome in different ways depending on whether the original shock triggering the change in employment is the treatment itself or a different one.

Table 3: RDD results: extra-effect of the ‘EU-origin’ of the funds

	Convergence Objective status				Per capita funds	
	Compliant regions		Full sample		(€100/year)	
	EU sentiment (1)	Anti-EU political choices (2)	EU sentiment (3)	Anti-EU political choices (4)	EU sentiment (5)	Anti-EU political choices (6)
β_T Funds → EU	0.425 (0.268)	-0.106** (0.041)	0.357 (0.297)	-0.089** (0.041)	0.408 (0.304)	-0.092** (0.046)
β_1 Funds → Empl.	0.07* (0.036)		0.029 (0.04)		0.063 (0.041)	
β_2 Empl. → EU	4.578*** (0.967)	-0.607*** (0.141)	4.083*** (0.796)	-0.53*** (0.102)	4.321** (1.808)	-0.526*** (0.168)
$\beta_1\beta_2$	0.320	-0.042	0.118	-0.015	0.272	-0.033
$\beta_T - \beta_1\beta_2$	0.105	-0.064	0.239	-0.074	0.136	-0.059
N. Obs.	85	85	96	96	96	96
Interaction	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES

Standard errors are clustered at the national level and bootstrapped. Average individual sentiment towards the EU ranges from 0 (anti-EU) to 10 (pro-EU). The share of anti-EU political choices is the share of individuals in the regions who prefer a party with a negative stance towards the EU (score lower or equal to 3, on a scale of 0-10, source: CHES). Columns 1 and 2 report the estimates obtained excluding from the sample those regions not complying with the 75% cut-off rule (sharp RDD); columns 3 to 5 report results for our baseline estimation strategies described in section 4.2.

Stanig (2018) reveal that nationalistic parties — which usually express unfavorable stances on the EU — tend to be more popular in those European regions that suffered the harshest competition from China. Guiso et al. (2019) obtain similar results on voting for populist parties in the Eurozone countries and Dippel et al. (2018) show that this effect passes essentially through labor market adjustments in most exposed regions, supporting the exclusion restriction in our setting.

We estimate predicted employment variations (2000-2007) attributable to the China-shock, following Colantone and Stanig (2018). Results confirm the negative and significant effect of China’s import shock on regional employment growth (see Table A.13 in Appendix).⁴⁶ We then add the regional employment growth attributable to China’s shock to our baseline RD model

⁴⁶Following Autor et al. (2013), a region-specific indicator of exposure to Chinese imports is constructed as the average growth rate of Chinese imports in a given country between 2000-2007, weighted by the industry employment shares of each NUTS-2 region in early nineties. The indicator is based on the intuition that the region’s labor market exposure to China’s competition depends on its ex-ante sectoral specialization or, more specifically, on the share of workers employed in industries more exposed to Chinese imports’ growth. Moreover, in order to assure that China’s shock indicator captures an exogenous changes in market competition rather than other domestic shocks potentially correlated with employment dynamics and public attitudes, the indicator is instrumented by the growth of United States’ imports from China (see Autor et al., 2013; Colantone et al., 2019; Colantone and Stanig, 2018). Results of first- and second-stage regressions of China’s shocks on employment growth are shown in Appendix Table A.13.

to estimate the effect of an exogenous variation of labor market conditions on pro-/anti-EU political support. Table 3 shows that employment growth affects positively the pro-EU attitude and negatively the preference for anti-EU parties (β_2). The effects are significant and relevant in magnitude; for instance, a 10 p.p. higher employment growth over the 7-years programming period is associated to a reduction of about 5 p.p. in the share of anti-EU voters.

Then, we compute the extra-effect of the ‘EU-origin’ of the funds, i.e. the ‘reciprocity-effect’, as the difference between the overall effect of the treatment (β_T) and the combined effect of the funds on employment growth and of an exogenous variation of employment growth on pro-/anti-EU political outcomes ($\beta_1\beta_2$). The ‘pure economic channel’, unrelated with the specific origin of the funds, can explain a significant part of the overall effect, especially in the case of the public attitude toward the EU. Nevertheless, in the case of the preferences for anti-EU parties, our estimates shows that the effect of EU funds is about twice that induced by an economic shocks of the same magnitude non-EU originated. We take these extra-effect results as suggestive evidence of the existence of a ‘reciprocity-effect’ channel. Notice that our results are derived under the assumption that positive shocks (e.g. EU funds) and negative ones (e.g. China’s shock) affect political outcomes symmetrically. Indeed it is possible that we are underestimating the actual reciprocity-effect, since there is evidence in the literature that voting behaviors tend to be more responsive to negative rather than positive shocks (Maloney and Pickering, 2015).

Finally, we dig further on the mechanisms at play comparing the effects of transfers on EU support with those on other related outcomes. These analyses are not only relevant per se for their political economy implications, but can bring further evidence about the existence of a ‘reciprocity channel’. When people are better off thanks to the EU funding they may have a more favorable opinion about all political institutions —included the EU’s ones (Anderson, 1998; Foster and Frieden, 2017)— and international integration —included that among EU member states (Guiso et al. 2017). If the ‘pure economic channel’ were the only one at play, the EU funds should trigger similar responses both for support for the EU and for national governments; likewise, other dimensions of international economic integration, as the sentiment toward trade and immigration, would be affected in a similar way.

First, ESS data allow to compare the effect of the EU transfers on EU and national institutions by looking at the public trust in the EU Parliament and the one in the National Parliament. Not surprisingly, average people’s trust towards these two institutions are in general highly correlated (Appendix Figure A.15). However, when we look at the effect of EU funds we find that trust in the EU Parliament is higher in *Convergence Objective* regions, whereas the one in the National Parliament is basically unaffected by Cohesion Policy transfers (Table 4). Second, we assess whether and to what extent opinions about international integration are affected by EU funding schemes. It turns out that political preferences towards anti-trade and anti-immigration parties are negatively affected by EU transfers (see Table 5), but the statistic significance is weaker and the magnitude of the coefficients is considerably smaller as compared with the results on the support for anti-EU parties. This is particularly striking considering the large overlap between

political platforms that sustain anti-EU and anti-trade positions (see Appendix Figure A.2 and Biancotti et al., 2017). This evidence further supports that our main results are at least in part driven by a ‘reciprocity effect’.

All in all, the improvement in the economic conditions induced by the funds seems a relevant channel through which Cohesion Policy affects citizens sentiment towards European institutions — even when abstracting from the ‘EU-origin’ of funding. Nevertheless, the evidence also shows that, on average, individuals acknowledge the specific role played by the EU and this enhances the effectiveness of Cohesion Policy in mitigating the spread of Euroscepticism.

Table 4: RDD results: effect of EU funding on trust in EU Parliament and national Parliament

Treatment Var	Convergence Objective status			Per capita funds (€100/year)		
Outcome Var	(1)	(2)	(3)	(4)	(5)	(6)
Trust in the EU Parliament	0.721*** (0.248)	0.447*** (0.165)	0.484*** (0.173)	0.469*** (0.157)	0.407*** (0.156)	0.582*** (0.212)
Trust in National Parliament	-0.279 (0.34)	-0.272 (0.222)	-0.158 (0.233)	-0.181 (0.226)	-0.248 (0.205)	0.122 (0.319)
N. Obs.	192	192	192	192	192	192
Interaction	NO	NO	YES	NO	NO	YES
Controls	NO	YES	YES	NO	YES	YES

Standard errors are clustered at the regional level and bootstrapped. Average trust in the EU Parliament and in national Parliament range from 0 (no trust) to 10 (complete trust). Columns 1 and 4 use a linear specification in the running variable; columns 2, 3, 4 and 5 include external controls for pre-treatment population density, geographical remoteness, treatment status in previous programme; columns 3 and 6 allow the function’s slope to change at the cut-off.

Table 5: RDD results: effect of EU funding on other dimensions of international integration

Treatment Var	Convergence Objective status		Per capita funds (€100/year)	
Outcome Var	Share of anti-immigration preferences	Share of anti-trade preferences	Share of anti-immigration preferences	Share of anti-trade preferences
	(1)	(2)	(3)	(4)
	-0.093* (0.056)	-0.039 (0.045)	-0.117 (0.078)	-0.078 (0.051)
N. Obs.	192	192	174	174
Interaction	YES	YES	YES	YES
Controls	YES	YES	YES	YES

Standard errors are clustered at the regional level and bootstrapped. The share of anti-immigration and anti-trade political preferences is the share of individuals in the regions who prefer a party with a negative stance towards migration and international trade (score lower or equal to 3, on a scale of 0-10, source: CHES and Votewatch Europe).

6 Conclusions

The future of any institution hinges on citizens' support. Lately, the rise of populism and the spread of inward-looking agendas have challenged the very existence of supranational institutions, such as the European Union. In the EU these tendencies have generated momentum towards reforms. One much-debated element in the reform package is the proposal of a euro-area budget to strengthen the resilience of the Eurozone economy, allocating resources to promote competitiveness, convergence and stabilization. While a large body of literature has investigated the economic implications of fiscal transfers schemes, the potential political returns of such tools were so far not clear.

In this paper we show that EU transfers can improve public opinion support for the European Union, both in terms of sentiment and political preferences. We focus on EU regional Cohesion Policy within which the *Convergence Objective* programme offers a quasi-experimental framework that allows us to single out the effect using an RDD approach. To the best of our knowledge, ours is the first attempt to address this question by identifying a causal relationship.

It is hard to say whether our results could be generalized to other types of transfers. Indeed, *Convergence Objective* funds are large and persistent. At the same time, the programme we analyze provides transfers indirectly to citizens; hence, our estimates plausibly represent a lower bound for the effect of other, direct, types of transfers.

Most notably, our heterogeneity analysis shows that EU transfers improve perceptions of European integration within all social groups, including those which are highly exposed to the negative effects of globalization and technological change (i.e., individuals which are especially eurosceptic). This evidence suggests that going beyond the traditional 'location-based' EU redistribution and developing broad-based and clearly recognizable redistributive measures targeted at disadvantaged individuals might deliver the largest gains.

In terms of mechanism, our results support the hypothesis that *Convergence Objective* transfers do not affect sentiment solely through an improvement in economic conditions, suggesting the existence of a reciprocity-effect channel, i.e. citizens recognize the specific role of the EU in providing financial support. A policy implication of this result is that EU institutions might gain popularity from designing or advertising interventions in a way to make their 'EU-origin' more recognizable.

Our analysis does not imply that the *Convergence Objective* programme, and more generally the EU Regional Policy, are the most appropriate and effective measures for pursuing the economic goals of supporting growth and employment in disadvantaged regions. Indeed, our findings can coexist with a scenario in which transfers are economically inefficient and even generate rent-seeking behaviours (Accetturo et al., 2014).

Concerning the political debate about EU redistributive policies, this paper's results challenges the idea that EU transfers do not play any role in shaping public attitudes towards Europe, a view that has gained popularity after the Brexit referendum. Evidence based on our estimates and back-of-the-envelope calculations suggest that doubling the European Regional Development

Fund (ERDF) allocated to the UK in the 2007-2013 period — which corresponds to about a 3% increase in the overall ERDF budget in that period — would have been associated to a 2 p.p. increase in pro-EU voting, enough to overturn the Brexit Referendum results.

From a broader perspective, our results draw from the European context to contribute to the discussion on the support-buying effect of public transfers from different government levels (e.g. supra-national, national, and regional). We show that even indirect transfers are an effective way of fostering positive attitudes towards the institutions responsible for financing, an aspect that should not be disregarded in the context of policy evaluations.

References

- Accetturo, Antonio, Guido De Blasio, and Lorenzo Ricci**, “A tale of an unwanted outcome: Transfers and local endowments of trust and cooperation,” *Journal of Economic Behavior and Organization*, 2014, 102, 74–89.
- Algan, Yann, Sergei Guriev, Elias Papaioannou, and Evgenia Passari**, “The European Trust Crisis and the Rise of Populism,” *Brookings’s Papers on Economic Activity*, 2018.
- Anderson, Christopher and Shawn Reichert**, “Economic benefits and support for membership in the EU: A cross-national analysis,” *Journal of Public Policy*, 1995, 15 (3), 231–249.
- Autor, David, David Dorn, Gordon Hanson, and Kaveh Majlesi**, “Importing Political Polarization? The Electoral Consequences of Rising Trade Exposure,” *NBER Working Paper 22637*, 2016.
- Bachtler, John and Carlos Mendez**, *EU Cohesion Policy and European integration: The dynamics of EU budget and regional policy reform*, Routledge, 2016.
- Bachtrögl, Julia and Harald Oberhofer**, “Euroskepticism and EU Cohesion Policy: The Impact of Micro-Level Policy Effectiveness on Voting Behaviour,” *WIFO Working Papers*, 2018.
- Balassone, Fabrizio, Sandro Momigliano, Marzia Romanelli, and Pietro Tommasino**, “Just round the corner? Pros, cons, and implementation issues of a fiscal union for the euro area,” *Questioni di Economia e Finanza*, 2014, 245, 1–42.
- Baron, Reuben M. and David A. Kenny**, “The moderator - mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations,” *Journal of Personality and Social Psychology*, 1986, 51 (6), 1173–1182.
- Beck, Thorsten and Geoffrey Underhill**, *Quo Vadis? Identity, policy and the future of the European Union* number March, VoxEU eBook, 2017.
- Becker, Sascha O., Peter H. Egger, and Maximilian von Ehrlich**, “Going NUTS: The effect of EU Structural Funds on regional performance,” *Journal of Public Economics*, 2010, 94 (9-10), 578–590.
- , —, and **Maximilian Von Ehrlich**, “Absorptive Capacity and the Growth and Investment Effects of Regional Transfers,” *American Economic Journal: Economic Policy*, 2013, 5 (4), 29–77.
- , —, and **Maximilian von Ehrlich**, “Effects of EU Regional Policy: 1989-2013,” *Regional Science and Urban Economics*, 2018, 69, 143–152.

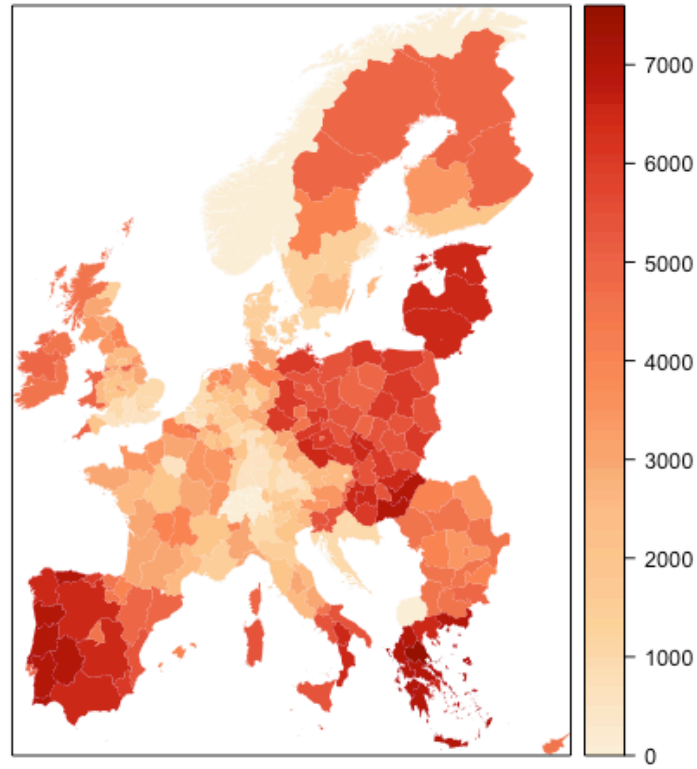
- , **Thiemo Fetzer**, and **Dennis Novy**, “Who voted for Brexit? A comprehensive district-level analysis,” *Economic Policy*, 2017, 32 (92), 601–650.
- Bénassy-Quéré, Agnès** and **Francesco Giavazzi**, *Europe’s Political Spring: Fixing the Eurozone and Beyond*, CEPR Press, 2017.
- , **Markus Brunnermeier**, **Henrik Enderlein**, **Emmanuel Farhi**, **Marcel Fratzscher**, **Clemens Fuest**, **Pierre-Olivier Gourinchas**, **Philippe Martin**, **Jean Pisani-Ferry**, **Hélène Rey**, **Isabel Schnabel**, **Nicolas Véron**, **Beatrice Weder di Mauro**, and **Jeromin Zettelmeyer**, “Reconciling Risk Sharing with Market Discipline: A Constructive Approach to Euro Area Reform,” *CEPR Policy Insight*, 2018, (91).
- Biancotti, Claudia**, **Alessandro Borin**, and **Michele Mancini**, “Euroscepticism: Another Brick in the Wall,” *mimeo*, 2017.
- Boeri, Tito** and **Juan F Jimeno**, “Learning from the Great Divergence in unemployment in Europe during the crisis,” *Labour Economics*, 2016, 41, 32–46.
- Chen, Jowei**, “Are poor voters easier to buy off? A natural experiment from the 2004 Florida hurricane season,” Technical Report, mimeo, Stanford University 2008.
- , “Voter Partisanship and the Effect of Distributive Spending on Political Participation,” *American Journal of Political Science*, 2013, 57 (1), 200–217.
- Colantone, Italo** and **Piero Stanig**, “The Trade Origins of Economic Nationalism: Import Competition and Voting Behavior in Western Europe,” *American Journal of Political Science*, 2018, 62 (4), 1–18.
- , **Rosario Crinó**, and **Laura Ogliari**, “Globalization and Mental Distress,” *Journal of International Economics*, 2019, (forthcoming).
- Dauth, Wolfgang**, **Sebastian Findeisen**, and **Jens Suedekum**, “The Rise of the East and the Fat East: German Labor Markets and Trade Integration,” *Journal of the European Economic Association*, dec 2014, 12 (6), 1643–1675.
- Diez-Medrano, Juan**, *Framing Europe: Attitudes to European Integration in Germany, Spain, and the United Kingdom*, Princeton University Press, 2010.
- Dippel, Christian**, **Robert Gold**, **Stephan Heblich**, and **Rodrigo Pinto**, “Instrumental Variables and Causal Mechanisms: Unpacking The Effect of Trade on Workers and Voters,” *NBER Working Paper 23209*, 2017.
- Durante, Ruben**, **Paolo Pinotti**, and **Andrea Tesei**, “The Political Legacy of Entertainment TV,” *International organization*, 2019, *forthcoming*.

- Dustmann, Christian, Barry Eichengreen, Sebastian Otten, André Sapir, Guido Tabellini, and Gilfy Zoega**, *Europe's Trust Deficit - Causes and Remedies* 2017.
- Eichenberg, Richard C and Russell J Dalton**, "Europeans and the European Community: The dynamics of public support for European integration," *International organization*, 1993, 47 (4), 507–534.
- Fidrmuc, Jan, Martin Hulenyi, and Cigdem Borke Tunali**, "Money Can't Buy EU Love: European Funds and the Brexit Referendum," *CESifo Working Paper No. 6107*, 2016.
- Foster, Chase and Jeffry Frieden**, "Crisis of trust: Socio-economic determinants of Europeans' confidence in government," *European Union Politics*, 2017, 18 (4), 511–535.
- Frölich, Markus**, "Regression discontinuity design with covariates," *IZA Discussion Paper 3024*, 2007.
- Gabel, Matthew**, "Public Support for European Integration: An Empirical Test of Five Theories," *The Journal of Politics*, 1998, 60 (2), 333–354.
- Gamble, Andrew**, "State capacity, populism and the EU budget," in Thorsten Beck and Geoffrey Underhill, eds., *Quo Vadis? Identity, policy and the future of the European Union*, CEPR Press, 2017.
- Green, Donald P, Shang E Ha, and John G Bullock**, "Enough already about "black box" experiments: Studying mediation is more difficult than most scholars suppose," *The Annals of the American Academy of Political and Social Science*, 2010, 628 (1), 200–208.
- Gross, Martin and Marc Debus**, "Does EU regional policy increase parties' support for European integration?," *West European Politics*, 2018, 41 (3), 594–614.
- Guiso, L, H Herrera, M Morelli, and T Sonno**, "Global Crises and Populism: the Role of Eurozone Institutions," *Economic Policy*, 2019.
- Guiso, Luigi, Helios Herrera, Massimo Morelli, and Tommaso Sonno**, "Demand and Supply of Populism," *CEPR Discussion Papers*, 2017.
- , **Paola Sapienza, and Luigi Zingales**, "Monnet's error?," *Economic Policy*, 2016, 31 (86), 247–297.
- Hobolt, Sara B and Catherine De Vries**, "Turning against the Union? The impact of the crisis on the Eurosceptic vote in the 2014 European Parliament elections," *Electoral Studies*, 2016, 44, 504–514.
- **and James Tilley**, *Blaming europe?: Responsibility without accountability in the European Union*, Oxford University Press, 2014.

- Hooghe, Liesbet and Gary Marks**, “Calculation, community and cues: Public opinion on European integration,” *European Union Politics*, 2005, 6 (4), 419–443.
- Imai, Kosuke and Dustin Tingley**, “Unpacking the Black Box of Causality: Learning about Causal Mechanisms from Experimental and Observational Studies,” *American Political Science Review*, 2011, 105 (4).
- Inglehart, Ronald F and Pippa Norris**, “Trump, Brexit, and the Rise of Populism: Economic Have-Nots and Cultural Backlash,” *Harvard Kennedy School RWP16-026*, 2016.
- Jacob, Robin T, Pei Zhu, Marie-Andrée Somers, and Howard Bloom**, “A Practical Guide to Regression Discontinuity,” *MDRC Building Knowledge to Improve Social Policy*, 2012, (July), 1–100.
- Lee, David S and Thomas Lemieux**, “Regression Discontinuity Design in Economics,” *Journal of Economic Literature*, 2010, 48 (1), 281–355.
- Levitt, Steven D and James M Snyder**, “The Impact of Federal Spending on House Election Outcomes,” *Journal of Political Economy*, 1997, 105 (1), 30–53.
- Maloney, John and Andrew Pickering**, “Voting and the economic cycle,” *Public Choice*, 2015, 162 (1-2), 119–133.
- Manacorda, Marco, Edward Miguel, and Andrea Vigorito**, “Government Transfers and Political Support,” *American Economic Journal: Applied Economics*, 2011, 3 (1), 1–28.
- McLaren, Lauren M**, “Public support for the European Union: cost/benefit analysis or perceived cultural threat?,” *Journal of Politics*, 2002, 64 (2), 551–566.
- Pellegrini, Guido, Flavia Terribile, Ornella Tarola, Teo Muccigrosso, and Federica Busillo**, “Measuring the effects of European Regional Policy on economic growth: A regression discontinuity approach,” *Papers in Regional Science*, 2013, 92 (1), 217–233.
- Van Erkel, Patrick F A and Tom W G Van Der Meer**, “Macroeconomic performance, political trust and the Great Recession: A multilevel analysis of the effects of within-country fluctuations in macroeconomic performance on political trust in 15 EU countries, 1999-2011,” *European Journal of Political Research*, 2016, 55 (1), 177–197.
- Van Kessel, Stijn**, *Populist Parties in Europe. Agents of Discontent?*, Palgrave MacMillan, London, 2015.

A Appendix: additional Figures and Tables

Figure A.1: EU Cohesion Policy funds per capita (cumulative, 2000-14)

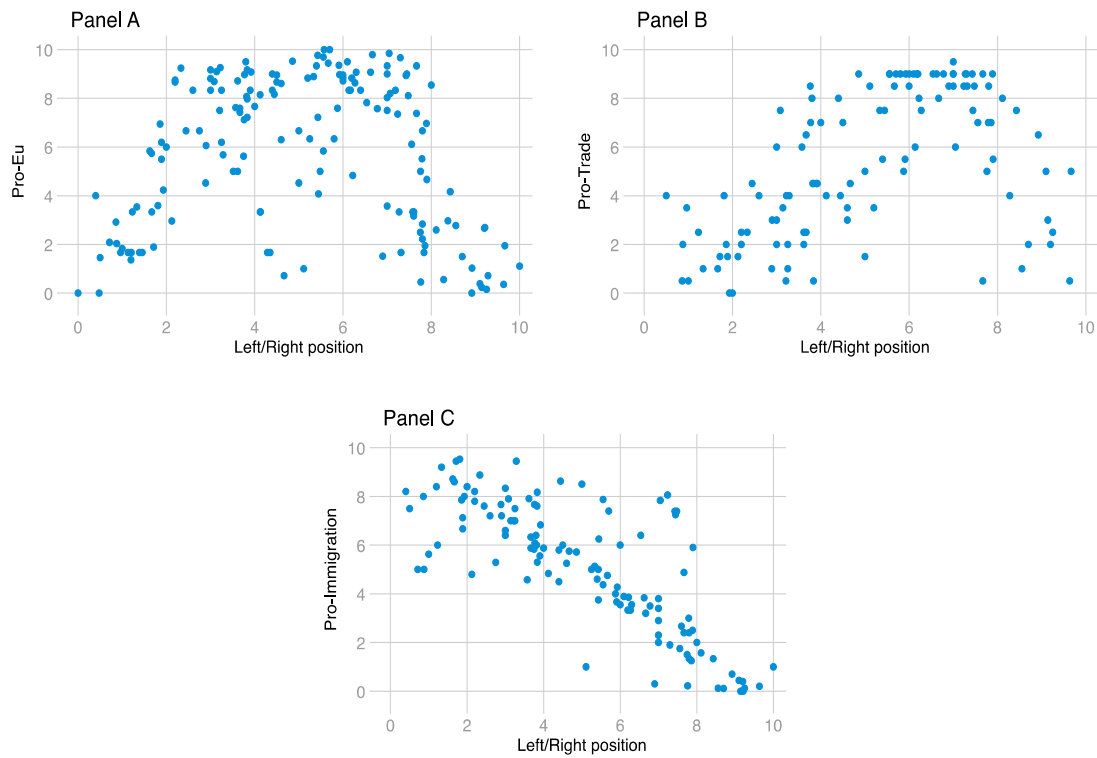


Source: European Commission

Table A.1: Descriptive statistics, averages at the regional level, pooled sample

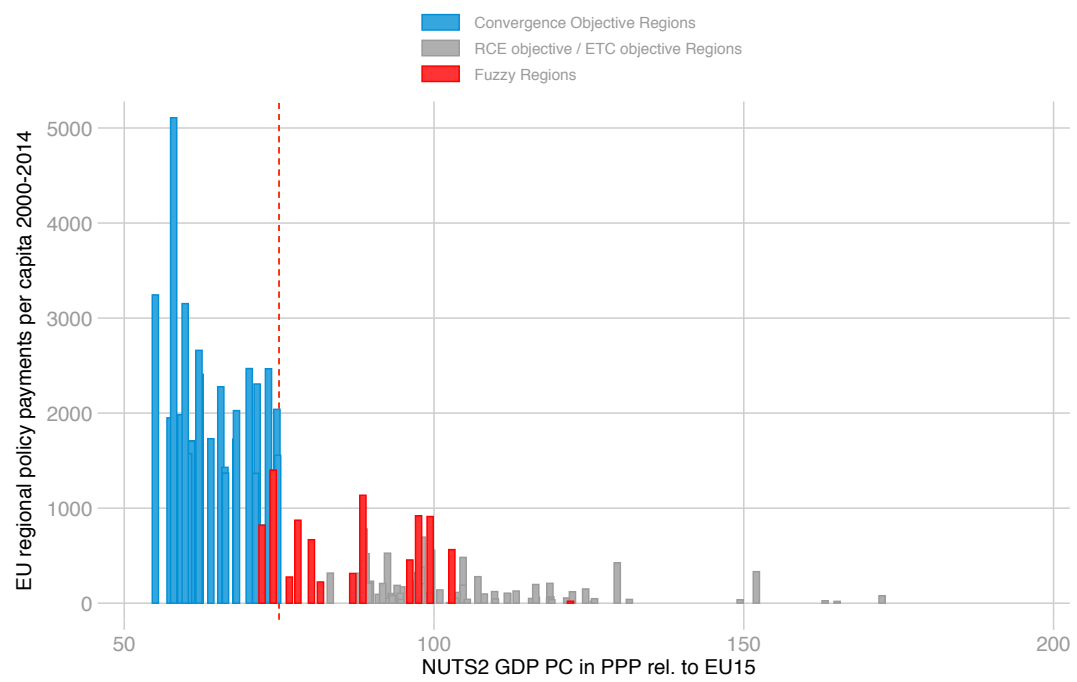
	Mean	St. Dev.	5%	50%	95%
EU sentiment	5.023	0.634	4.042	5.036	6.067
Anti-EU political preferences	0.114	0.112	0.000	0.084	0.315
Anti-trade preferences	0.239	0.165	0.039	0.207	0.589
Anti-immigration preferences	0.232	0.188	0.000	0.235	0.534

Figure A.2: Parties' left-right positions and their stances on EU, trade and immigration



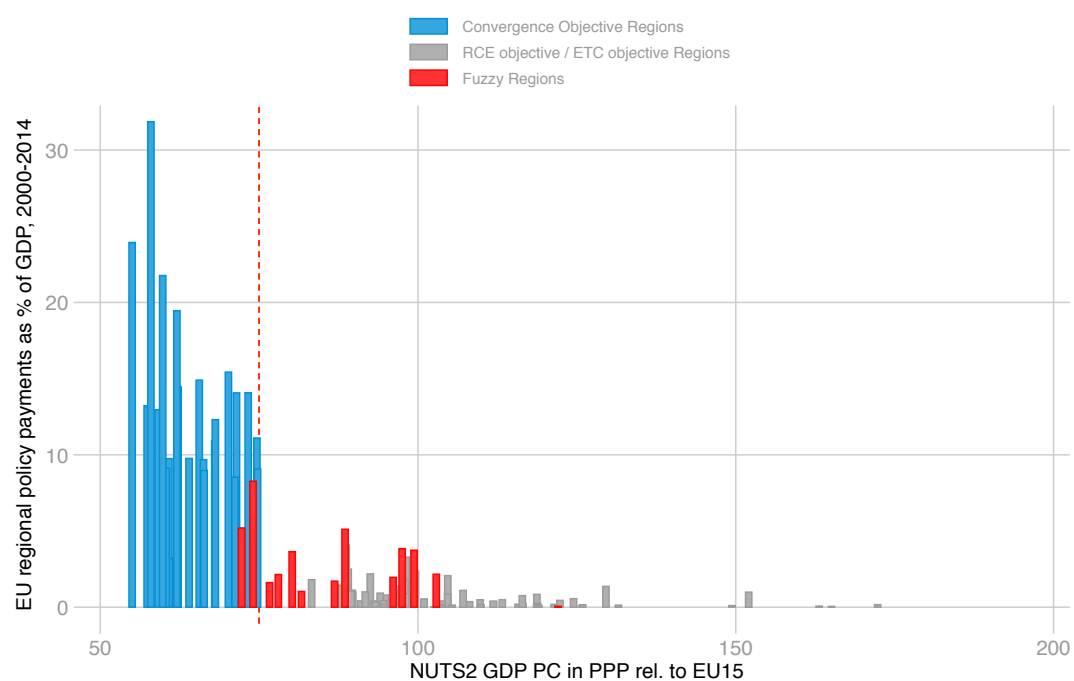
Source: own elaboration based on European Social Survey, Chapel Hill Expert Survey, Votewatch EU. Note: each observation represents a political party active in the period 2004-2014 in the 13 countries of our sample. For each party, we report the most updated information on its stance, so that around 70% of the parties in the sample have been evaluated in 2014. Panel B considers only parties represented in the European parliament.

Figure A.3: Per capita EU regional transfers, 2000-14



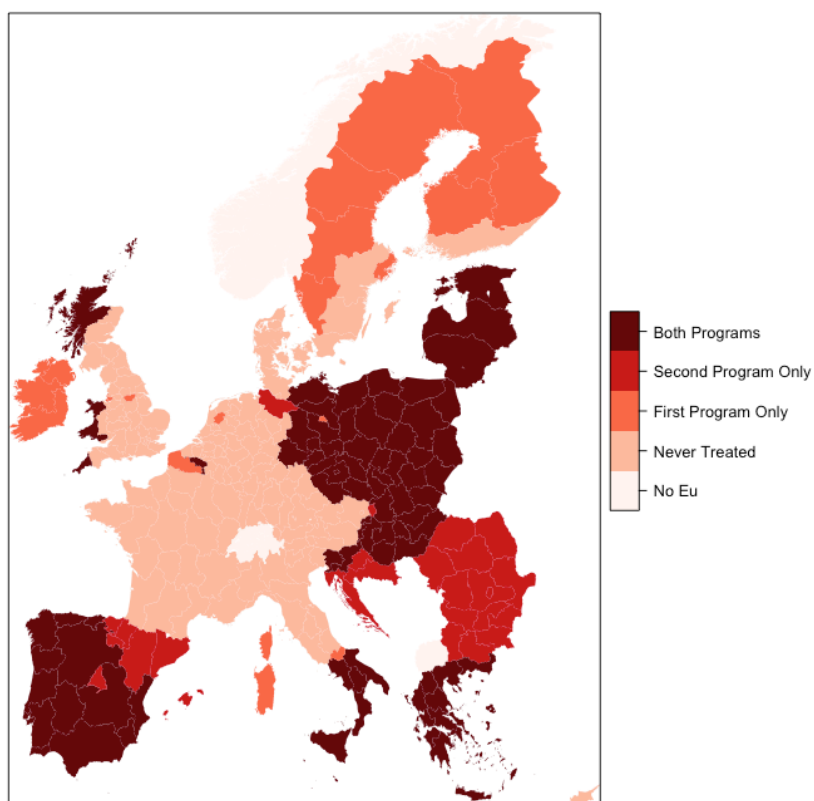
Note: X-axis values are the official indexing computed by the European Commission in 1999.

Figure A.4: Funds from EU regional policies as share of regional GDP, 2000-14



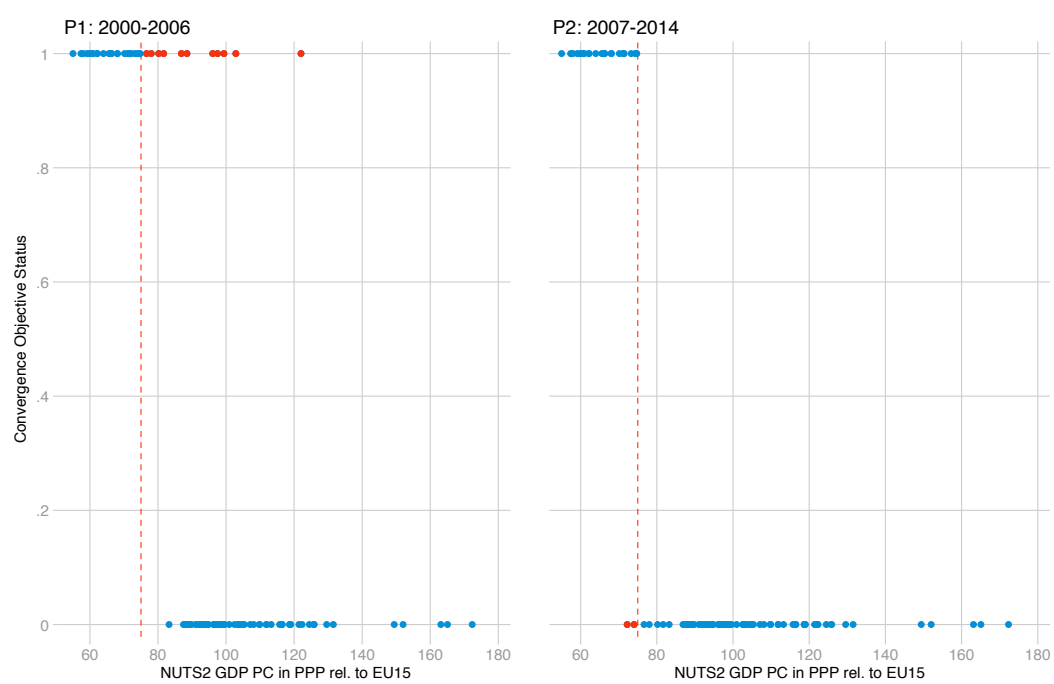
Note: X-axis values are the official indexing computed by the European Commission in 1999.

Figure A.5: *Convergence Objective* regions, by programming period.



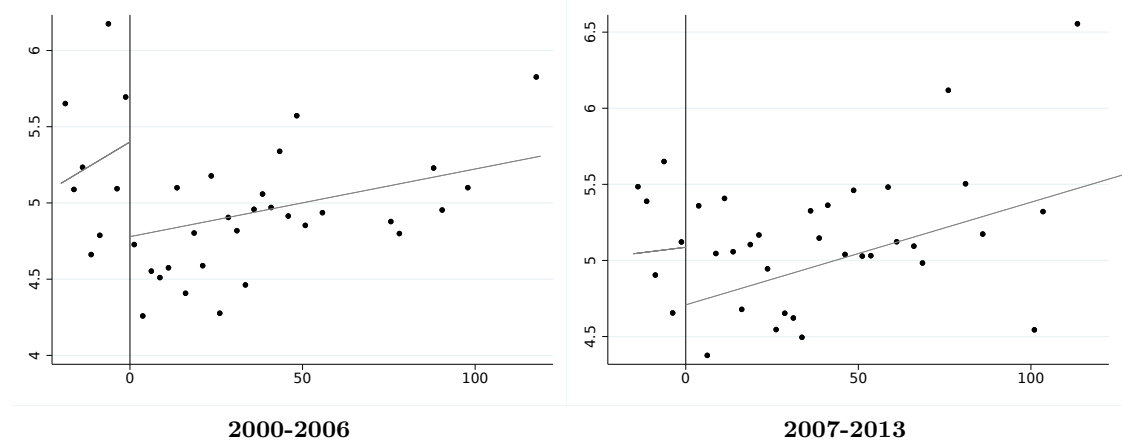
Source: European Commission

Figure A.6: *Convergence Objective status and First Programme eligibility rule, 2000-14*



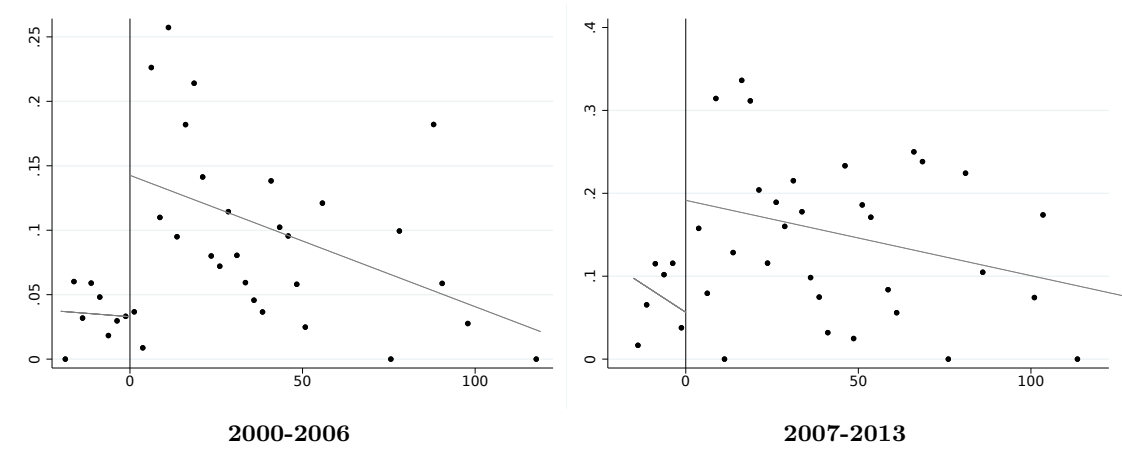
Source: European Commission

Figure A.7: EU sentiment and relative GDP per capita in ‘treated’ and ‘untreated’ regions: first and second programme



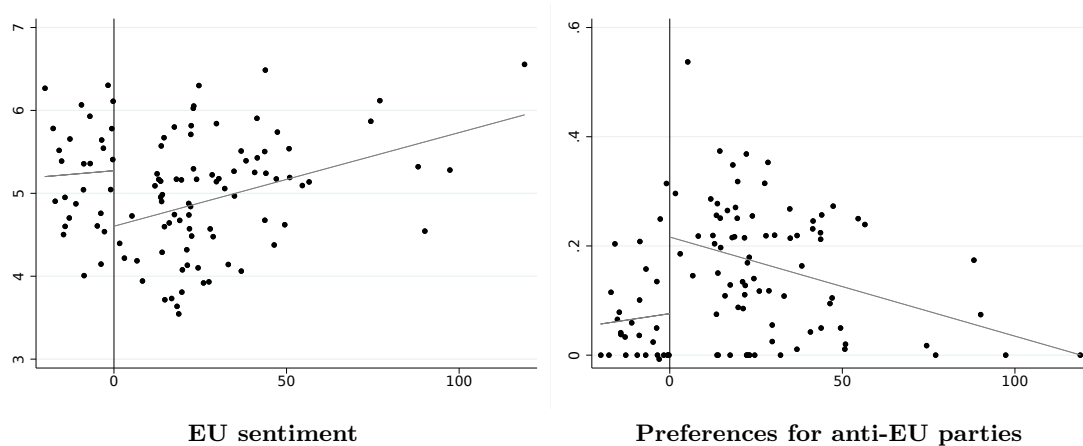
Note: the figure shows the averages of EU sentiment at the end of the programming period in equally sized bins of 2.5%. The zero-vertical line represents 75 per cent of the EU average per capita GDP in PPS as defined by the EU commission for the programming period.

Figure A.8: Preferences for anti-EU parties and relative GDP per capita in ‘treated’ and ‘untreated’ regions: first and second programme



Note: the figure shows the averages of anti-EU political preferences at the end of the programming period in equally sized bins of 2.5%. The zero-vertical line represents 75 per cent of the EU average per capita GDP in PPS as defined by the EU commission for the programming period.

Figure A.9: EU sentiment and preferences for anti-EU parties and pre-2000 relative GDP per capita in 'treated' and 'untreated' regions: all regions



Note: the figures show EU sentiment and anti-EU political preferences in each region of the sample at the end of the second programming period. The values on the x-axis are those in the official indexing computed by the European Commission in 1999. The zero-vertical line represents 75 per cent of the EU average per capita GDP in PPS as defined by the EU commission for the first programming period (2000-06).

Table A.2: Balancing properties of the sample pre-treatment

	RDD design				
	Not Funded	Funded	diff.	Convergence Objective status	Per capita funds (€100/year)
Life expectancy	61.582	60.787	-0.795*** (0.278)	-0.009 (2.296)	-0.098 (1.486)
Km roads	0.050	0.024	-0.026*** (0.011)	0.005 (0.023)	0.007 (0.012)
Employment rate	0.938	0.831	-0.107*** (0.02)	-0.024 (0.125)	-0.026 (0.041)
Investment per capita (€000s)	5.553	3.684	-1.870*** (0.245)	-0.422 (0.798)	-0.583 (0.607)
Employment (000s)	1587	839	-747*** (309)	93 (879.566)	-252 (722.081)
Hours worked (millions)	2578	1481	-1097*** (489)	177 (1442.987)	-521 (1142.853)
Investment (billions)	18.861	8.573	-10.288*** (3.643)	1.655 (10.084)	-1.568 (7.549)
Population (millions)	3.525	2.309	-1.215 (0.685)	0.127 (2.016)	-0.569 (1.743)
Migrants arrival per capita	0.018	0.014	-0.004 (0.004)	11.646 (33.193)	14.033 (27.348)
Non-EU migrants arrival per capita	0.014	0.008	-0.006*** (0.002)	3.962 (9.635)	4.550 (6.992)
Anti-EU sentiment (scale 1-3)	1.564	1.411	-0.153*** (0.06)	-0.161 (0.351)	-0.145 (0.198)
Share of anti-EU	0.127	0.058	-0.069*** (0.02)	-0.090 (0.098)	-0.075 (0.061)
Share of pro-EU	0.528	0.587	0.059 (0.039)	0.015 (0.236)	0.024 (0.135)

Standard errors are clustered at the national level and bootstrapped. Average anti-EU sentiment ranges from 1 (pro-EU; EU membership is a good thing for the country) to 3 (anti-EU; EU membership is a bad thing for the country); source: Eurobarometer. The share of anti-EU (pro-EU) opinions is the share of individuals saying that EU membership is a bad (good) thing for the country. RDD estimates are based on the specification that allows for changes in the slope of the running function at the cut-off and includes controls for pre-treatment population density, geographical remoteness, treatment status in previous programme.

Table A.3: RDD results: effects of EU funding on EU sentiment and political preferences, including new member states

Treatment Var Outcome Var	Convergence (1)	Objective status (2)	(3)	Per capita funds (€100/year)		
	(1)	(2)	(3)	(4)	(5)	(6)
EU sentiment	0.774*** (0.296)	0.470** (0.199)	0.460** (0.211)	0.439*** (0.145)	0.391** (0.158)	0.385** (0.184)
Share of anti-EU political preferences	-0.184*** (0.050)	-0.125*** (0.034)	-0.126*** (0.037)	-0.104*** (0.031)	-0.104*** (0.031)	-0.117*** (0.034)
N. Obs.	223	223	223	223	223	223
Interaction	NO	NO	YES	NO	NO	YES
Controls	NO	YES	YES	NO	YES	YES

Standard errors are clustered at the regional level and bootstrapped. Average individual sentiment towards the EU ranges from 0 (anti-EU) to 10 (pro-EU). The share of anti-EU political preferences is the share of individuals in the regions who prefer a party with a negative stance towards the EU (score lower or equal to 3, on a scale of 0-10, source: CHES). All the specifications include a time dummy. Columns 1 and 4 use a linear specification in the running variable; columns 2, 3, 4 and 5 include external controls for pre-treatment population density, geographical remoteness, treatment status in previous programme; columns 3 and 6 allow the function's slope to change at the cut-off.

Table A.4: RDD results: effect of EU funding on trust in EU Parliament and political preferences

Treatment Var Outcome Var	Convergence (1)	Objective status (2)	(3)	Per capita funds (€100/year)		
	(1)	(2)	(3)	(4)	(5)	(6)
Trust in EU Parliament	0.721*** (0.248)	0.447*** (0.165)	0.484*** (0.173)	0.469*** (0.157)	0.407*** (0.156)	0.582*** (0.212)
Favourite-party stance towards EU	1.314** (0.544)	0.987*** (0.377)	1.023*** (0.384)	0.855*** (0.315)	0.898*** (0.323)	1.125*** (0.412)
N. Obs.	192	192	192	192	192	192
Interaction	NO	NO	YES	NO	NO	YES
Controls	NO	YES	YES	NO	YES	YES

Standard errors are clustered at the regional level and bootstrapped. Average trust in the EU Parliament ranges from 0 (no trust) to 10 (complete trust). The average favourite-party stance towards EU ranges from 0 to 10 (source: CHES). Columns 1 and 4 use a linear specification in the running variable; columns 2, 3, 4 and 5 include external controls for pre-treatment population density, geographical remoteness, treatment status in previous programme; columns 3 and 6 allow the function's slope to change at the cut-off.

Table A.5: RDD results: effects of EU funding on EU sentiment based on Eurobarometer

Treatment Var	Convergence Objective status			Per capita funds (€100/year)		
Outcome Var	Anti-EU sentiment (1)	Share of anti-EU (2)	Share of pro-EU (3)	Anti-EU sentiment (4)	Share of anti-EU (5)	Share of pro-EU (6)
	-0.196** (0.091)	-0.069* (0.041)	0.113** (0.054)	-0.195** (0.1)	-0.069 (0.05)	0.109* (0.057)
N. Obs.	169	169	169	169	169	169
Interaction	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES

Standard errors are clustered at the regional level and bootstrapped. Average individual anti-EU sentiment ranges from 1 (pro-EU; EU membership is a good thing for the country) to 3 (anti-EU; EU membership is a bad thing for the country). The share of anti-EU (pro-EU) opinions is the share of individuals saying that EU membership is a bad (good) thing for the country. All the specifications are linear in the running variable and include an interaction term to allow the function's slope to change at the cut-off, a time dummy and external controls for pre-treatment population density, geographical remoteness, treatment status in previous programme.

Table A.6: RDD results: effects on EU sentiment and political preferences, quadratic polynomial of the running variable

Treatment Var	Convergence Objective status			Per capita funds (€100/year)		
Outcome Var	(1)	(2)	(3)	(4)	(5)	(6)
EU sentiment	0.945* (0.536)	0.536** (0.261)	0.541* (0.282)	0.516** (0.22)	0.48** (0.23)	0.51** (0.259)
Trust in EU Parl.	0.789 (0.483)	0.429** (0.218)	0.426* (0.244)	0.431* (0.247)	0.384* (0.228)	0.48** (0.245)
Share of anti-EU political preferences	-0.208** (0.102)	-0.116*** (0.039)	-0.116*** (0.044)	-0.113** (0.05)	-0.104*** (0.038)	-0.119*** (0.039)
Favourite-party stance towards EU	1.467 (0.992)	0.953** (0.453)	0.962* (0.51)	0.801* (0.448)	0.855** (0.41)	0.902** (0.451)
N. Obs.	212	212	212	212	212	212
Interaction	NO	NO	YES	NO	NO	YES
Controls	NO	YES	YES	NO	YES	YES

Standard errors are clustered at the regional level and bootstrapped. Average individual sentiment towards the EU ranges from 0 (anti-EU) to 10 (pro-EU). The share of anti-EU political preferences is the share of individuals in the regions who prefer a party with a negative stance towards the EU (score lower or equal to 3, on a scale of 0-10, source: CHES). Average trust in the EU Parliament ranges from 0 (no trust) to 10 (complete trust). The average favourite-party stance towards EU ranges from 0 to 10 (source: CHES). All the specifications are quadratic in the running variable; columns 2, 3, 5 and 6 include external controls for pre-treatment population density, geographical remoteness, treatment status in previous programme; columns 3 and 6 allow the function's slope to change at the cut-off.

Table A.7: RDD results: controlling for macro-regions fixed effects

Treatment Var Outcome Var	Convergence Objective status (1)	Per capita funds (€100/year) (2)
EU sentiment	0.194 (0.152)	0.181 (0.198)
Trust in EU Parl.	0.427*** (0.162)	0.567** (0.221)
Share of anti-EU political preferences	-0.083*** (0.024)	-0.096*** (0.034)
Favourite-party stance towards EU	0.638** (0.271)	0.821** (0.353)
N. Obs.	192	192
Interaction	YES	YES
Controls	YES	YES

Standard errors are clustered at the regional level and bootstrapped. Average individual sentiment towards the EU ranges from 0 (anti-EU) to 10 (pro-EU). The share of anti-EU political preferences is the share of individuals in the regions who prefer a party with a negative stance towards the EU (score lower or equal to 3, on a scale of 0-10, source: CHES). Average trust in the EU Parliament ranges from 0 (no trust) to 10 (complete trust). The average favourite-party stance towards EU ranges from 0 to 10 (source: CHES). The specifications is linear in the running variable and allows the function's slope to change at the cut-off; it includes external controls for pre-treatment population density, geographical remoteness, treatment status in previous programme and macro-regional dummies.

Table A.8: RDD results: sharp design excluding non compliant regions

Treatment Var	Convergence Objective Status		
Outcome Var	(1)	(2)	(3)
EU sentiment	0.570*** (0.2)	0.529** (0.207)	0.526** (0.219)
Trust in EU Parl.	0.497*** (0.17)	0.47*** (0.167)	0.543*** (0.179)
Share of anti-EU political preferences	-0.138*** (0.029)	-0.129*** (0.032)	-0.135*** (0.032)
Avg. EU stance of preferred parties	1.098*** (0.36)	1.077*** (0.387)	1.192*** (0.4)
N. Obs.	174	174	174
Interaction	NO	NO	YES
Controls	NO	YES	YES

Standard errors are clustered at the regional level and bootstrapped. Average individual sentiment towards the EU ranges from 0 (anti-EU) to 10 (pro-EU). The share of anti-EU political preferences is the share of individuals in the regions who prefer a party with a negative stance towards the EU (score lower or equal to 3, on a scale of 0-10, source: CHES). Average trust in the EU Parliament ranges from 0 (no trust) to 10 (complete trust). The average favourite-party stance towards EU ranges from 0 to 10 (source: CHES). Columns 1 and 4 use a linear specification in the running variable; columns 2, 3, 4 and 5 include external controls for pre-treatment population density, geographical remoteness, treatment status in previous programme; columns 3 and 6 allow the function's slope to change at the cut-off.

Table A.9: RDD results: EU funding in terms of GDP at PPS

Treatment Var Outcome Var	Funds/GDP (0.5 p.p. of regional GDP at PPS/year)		
	(1)	(2)	(3)
EU sentiment	0.500*** (0.157)	0.445*** (0.171)	0.531** (0.237)
Trust in EU Parl.	0.452*** (0.149)	0.403*** (0.154)	0.632*** (0.223)
Share of anti-EU political preferences	-0.113*** (0.029)	-0.105*** (0.027)	-0.138*** (0.04)
Avg. EU stance of preferred parties	0.824*** (0.309)	0.889*** (0.326)	1.236*** (0.447)
N. Obs.	192	192	192
Interaction	NO	NO	YES
Controls	NO	YES	YES

Standard errors are clustered at the regional level and bootstrapped. Average individual sentiment towards the EU ranges from 0 (anti-EU) to 10 (pro-EU). The share of anti-EU political preferences is the share of individuals in the regions who prefer a party with a negative stance towards the EU (score lower or equal to 3, on a scale of 0-10, source: CHES). Average trust in the EU Parliament ranges from 0 (no trust) to 10 (complete trust). The average favourite-party stance towards EU ranges from 0 to 10 (source: CHES). Columns 1 and 4 use a linear specification in the running variable; columns 2, 3, 4 and 5 include external controls for pre-treatment population density, geographical remoteness, treatment status in previous programme; columns 3 and 6 allow the function's slope to change at the cut-off.

Table A.10: RDD results: expenditure of EU funding at different time intervals

Treatment Var	Per capita expenditure (€100/year)		
Outcome Var	(1)	(2)	(3)
EU sentiment	0.542* (0.286)	0.479** (0.233)	0.474** (0.235)
Trust in EU Parl.	0.691** (0.281)	0.603*** (0.227)	0.612*** (0.227)
Share of anti-EU political preferences	-0.144*** (0.044)	-0.127*** (0.037)	-0.127 *** (0.035)
Avg. EU stance of preferred parties	1.316** (0.582)	1.154** (0.465)	1.159** (0.453)
N. Obs.	192	192	192
Interaction	YES	YES	YES
Controls	YES	YES	YES

Standard errors are clustered at the regional level and bootstrapped. In column 1 we report the effects of the EU funds spent during the last two years of each programming period (T), when individual characteristics are measured; in column 2, of the EU funds spent in the four years before T; in column 3, throughout the two entire programming periods. Average individual sentiment towards the EU ranges from 0 (anti-EU) to 10 (pro-EU). The share of anti-EU political preferences is the share of individuals in the regions who prefer a party with a negative stance towards the EU (score lower or equal to 3, on a scale of 0-10, source: CHES). Average trust in the EU Parliament ranges from 0 (no trust) to 10 (complete trust). The average favourite-party stance towards EU ranges from 0 to 10 (source: CHES). The specifications is linear in the running variable and allows the function's slope to change at the cut-off; it includes external controls for pre-treatment population density, geographical remoteness, treatment status in previous programme.

Table A.11: RDD results: effect of EU funding on changes in EU sentiment and anti-EU political preferences between the two programmes

Treatment Var	Convergence Objective status			Per capita funds (€100/year)		
Outcome Var	(1)	(2)	(3)	(4)	(5)	(6)
EU sentiment	0.700* (0.361)	0.444* (0.228)	0.803 (0.53)	0.683*** (0.237)	0.498* (0.268)	1.123 (1.577)
Share of anti-EU political preferences	-0.073** (0.033)	-0.04 (0.04)	-0.054 (0.109)	-0.071* (0.038)	-0.044 (0.047)	-0.068 (0.368)
N. Obs.	94	94	94	94	94	94
Interaction	NO	NO	YES	NO	NO	YES
Controls	NO	YES	YES	NO	YES	YES

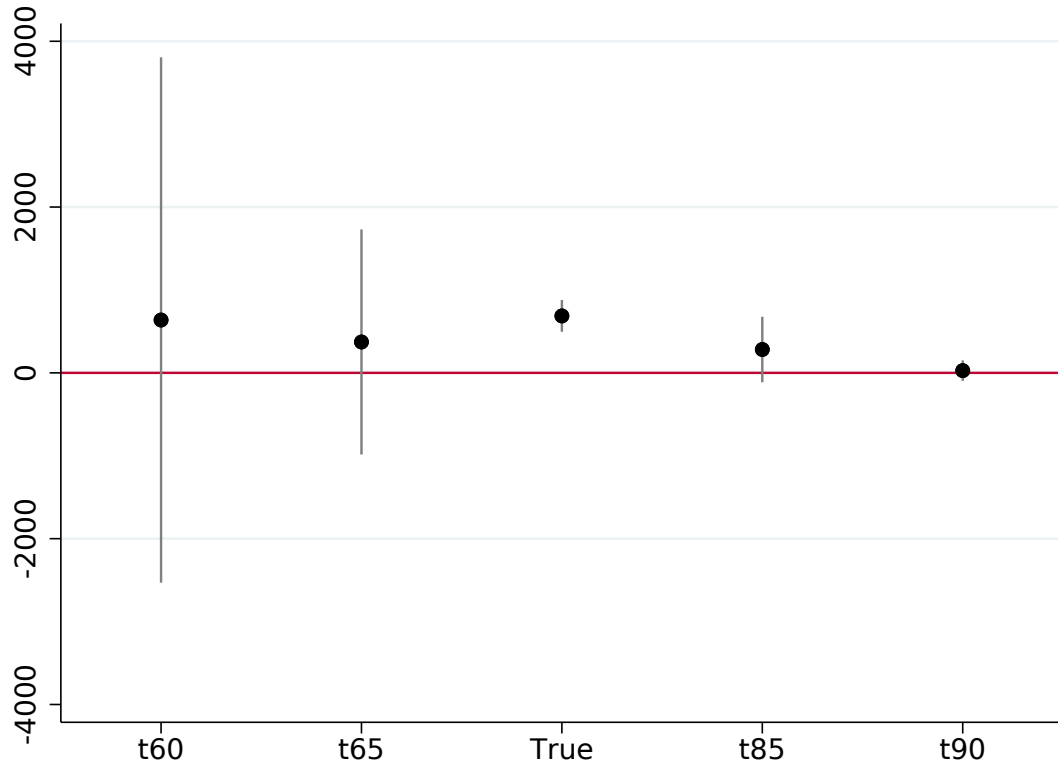
Standard errors are clustered at the national level and bootstrapped. Average individual sentiment towards the EU ranges from 0 (anti-EU) to 10 (pro-EU). The share of anti-EU political preferences is the share of individuals in the regions who prefer a party with a negative stance towards the EU (score lower or equal to 3, on a scale of 0-10, source: CHES). All the specifications include a time dummy. Columns 1 and 4 use a linear specification in the running variable; columns 2, 3, 4 and 5 include external controls for pre-treatment population density, geographical remoteness, treatment status in previous programme; columns 3 and 6 allow the function's slope to change at the cut-off.

Table A.12: RDD results: effects on EU sentiment and political preferences, with different trims of the tails

Treatment Var Outcome Var	Convergence (1)	Objective status (2)	(3)	Per capita funds (€100/year)		
	(1)	(2)	(3)	(4)	(5)	(6)
EU sentiment	0.403** (0.203)	0.441** (0.195)	0.559** (0.244)	0.428* (0.221)	0.493** (0.215)	0.751*** (0.275)
Trust in EU Parl.	0.349** (0.165)	0.415** (0.164)	0.535*** (0.205)	0.422** (0.213)	0.548*** (0.21)	0.538** (0.254)
Share of anti-EU political preferences	-0.11*** (0.029)	-0.111*** (0.028)	-0.13*** (0.036)	-0.121*** (0.032)	-0.123*** (0.033)	-0.137*** (0.041)
Avg. EU stance of preferred parties	0.919*** (0.351)	0.931*** (0.346)	1.121** (0.457)	0.946** (0.388)	0.985** (0.388)	1.444*** (0.513)
N. Obs.	212	208	172	212	208	172
Interaction	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES
Trim	NO	1%	10%	NO	1%	10%

Standard errors are clustered at the regional level and bootstrapped. Average individual sentiment towards the EU ranges from 0 (anti-EU) to 10 (pro-EU). The share of anti-EU political preferences is the share of individuals in the regions who prefer a party with a negative stance towards the EU (score lower or equal to 3, on a scale of 0-10, source: CHES). Average trust in the EU Parliament ranges from 0 (no trust) to 10 (complete trust). The average favourite-party stance towards EU ranges from 0 to 10 (source: CHES). All the specifications are linear in the running variable and include an interaction term to allow the function's slope to change at the cut-off, a time dummy and external controls for pre-treatment population density, geographical remoteness, treatment status in previous programme.

Figure A.10: Placebo estimates on 2000-14 per-capita EU regional policy payments



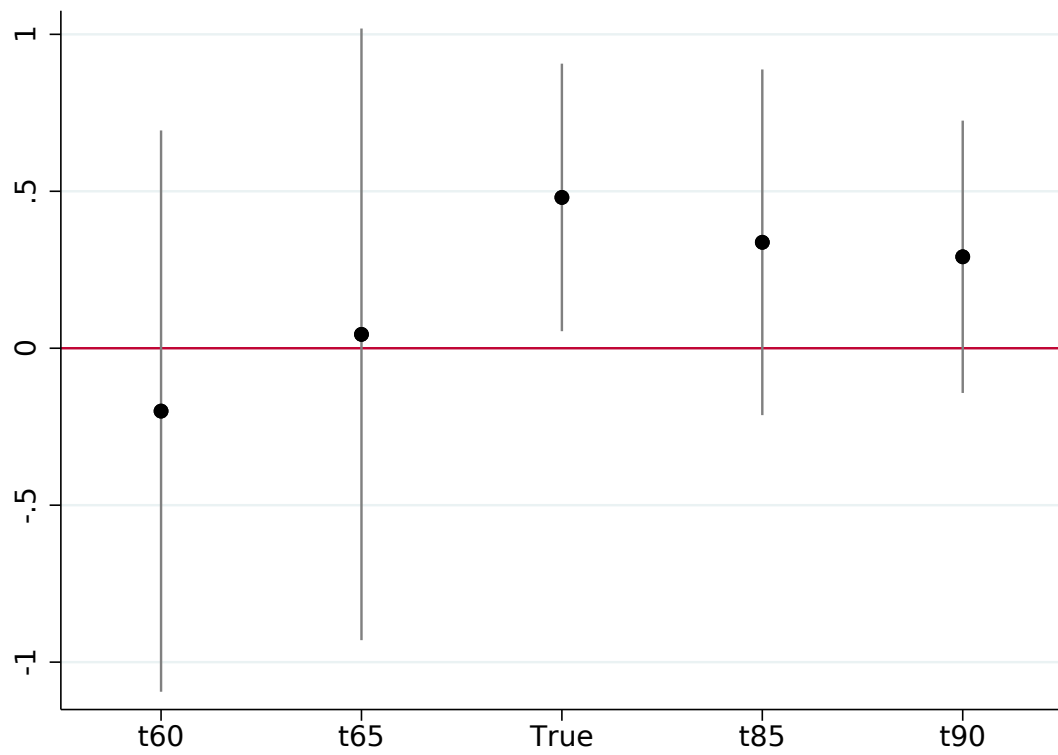
Note: Confidence intervals at the 95 per cent significance level.

Table A.13: Employment growth and China's shock

	Employment growth
China's Shock	-0.022** (0.009)
N. Obs	180
First stage	
US imports from China	0.032*** (0.008)
Kleibergen-Paap F-Statistic	15.00

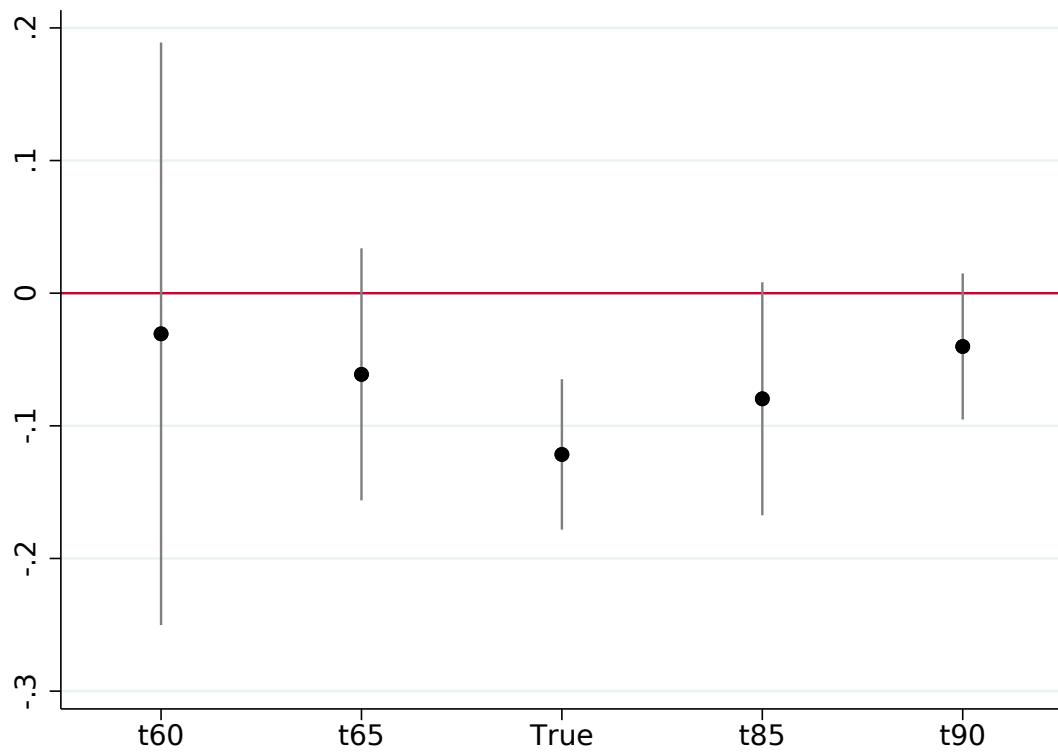
Dependent variable is employment growth between 2000 and 2007 at the regional level. China's import shock and United States' imports from China are taken from Colantone and Stanig (2018). The regressions are based on the entire set of EU15 regions and country fixed effects are included.

Figure A.11: Placebo estimates on pro-EU Sentiment



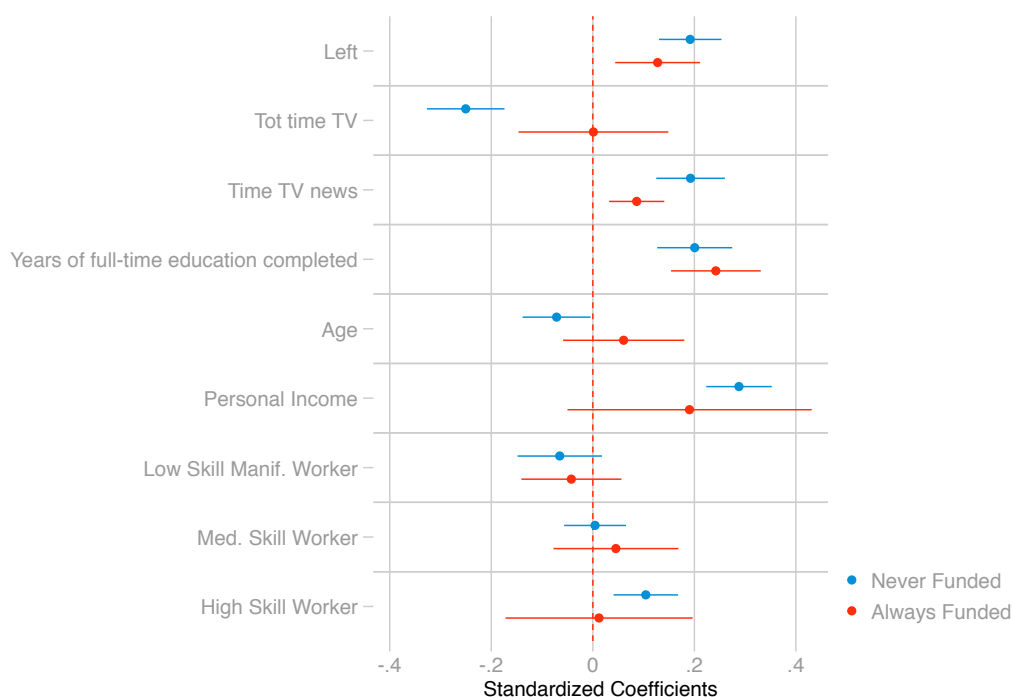
Note: Confidence intervals at the 95 per cent significance level. Average individual sentiment towards the EU ranges between 0 (anti-EU) and 10 (pro-EU).

Figure A.12: Placebo estimates on anti-EU political preference (Share of respondents)



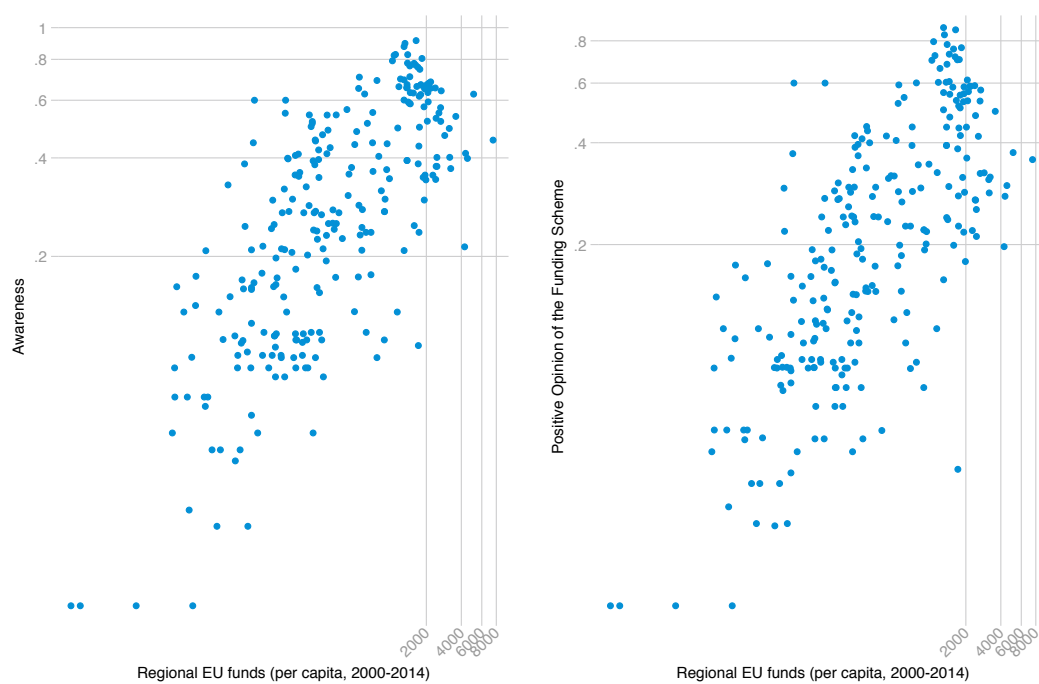
Note: Confidence intervals at the 95 per cent significance level. The share of anti-EU political preferences is the share of individuals in the regions who prefer a party with a negative stance towards the EU (score lower or equal to 3, on a scale of 0-10, source: CHES).

Figure A.13: Support for European integration: conditional correlations with individual characteristics (2012-14).



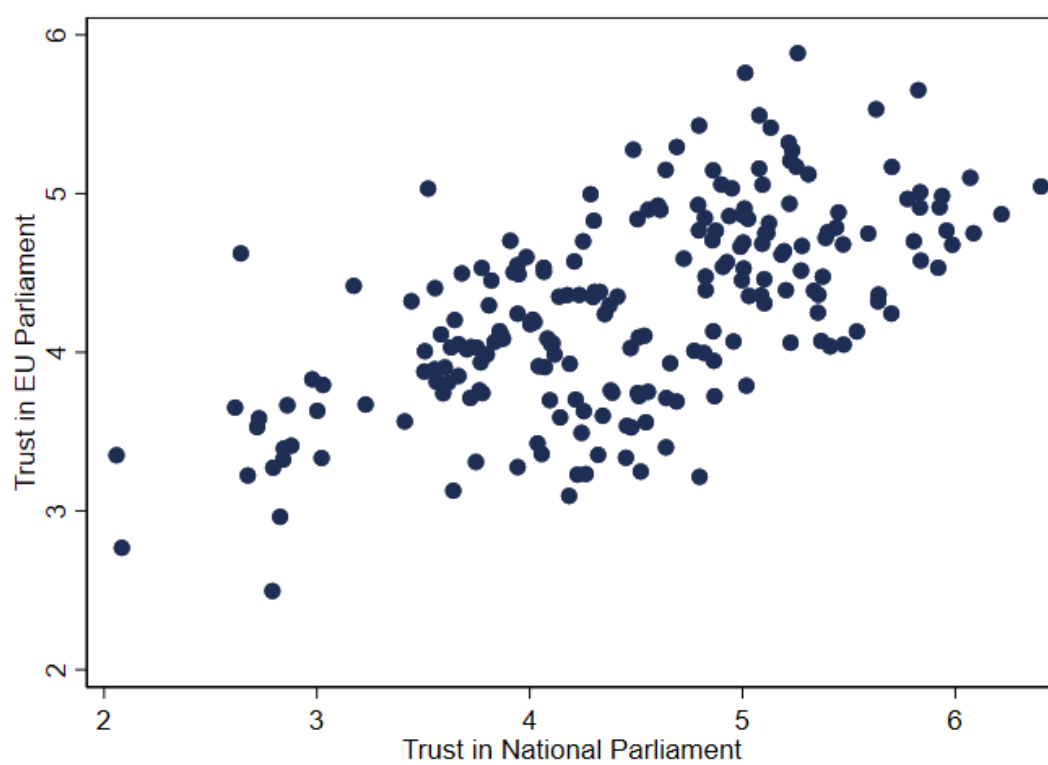
Note: the figure depicts the standardized coefficients of multivariate pooled OLS regressions over the 2012-14 period (the end of the second programming period we consider) with pro-EU sentiment as dependent variable. Always-funded regions are defined as regions obtaining Convergence Objective funds during both programmes. Regions that are included in the Convergence Objective only during one of the two programmes are not in the sample. Other controls not represented in the figure are: regional real income per capita level, a proxy for the regional economic cycle (3-year change in regional income), gender, retirement status and other occupational conditions (e.g. housework, undereducation, non-reported occupation), year fixed effects. 95 per cent confidence intervals. Weighted regressions with sampling weights.

Figure A.14: Citizens' awareness/opinion about EU funding and Cohesion Policy transfers.



Source: Flash Eurobarometer no. 384, 2013.

Figure A.15: Regional trust in EU and National Parliament (2000-2006 and 2007-2013).



Source: own elaboration based on European Social Survey.