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Why regional spending does not affect support for the European Union

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ABSTRACT


It is usually assumed that spending by the European Union translates into greater support for the EU among those who benefit from that spending. Empirical work has, however, produced mixed findings as to the association between the EU's regional development spending and EU support. To better test this relationship, we link a unique dataset on EU spending in Wales at a hyper-local level to survey panel data that measures EU support at, and in the years following, the Brexit referendum. Using this novel data, we find no evidence of an association between spending and various measures of EU support. We demonstrate that this is, at least partially, due to the fact that very few people know of spending in their local area, and that this knowledge is itself only weakly related to amounts of spending. We further show that views of spending are largely driven by perceptual biases rather than actual spending. Our findings contribute to our understanding of the drivers of EU support, but also the effect of public spending on attitudes more generally.

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Following the Brexit referendum in 2016, there has been renewed interest in what causes people to like or dislike EU membership. Traditionally, the two main approaches to explaining EU support have focused on identity or economic utility (see Hobolt & De Vries, 2016 for an overview). While proponents of the former approach argue that it is attachment to the nation that shapes attitudes toward European integration (Hooghe & Marks, 2004, 2005, 2009;

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McLaren, 2004, 2007), the utilitarian approach focuses on the economic advantages from integration. These include the benefits of membership accruing to those high in 'human capital' (Gabel, 1998a, 1998b), but also the economic utility at the national, or regional, level garnered from economic integration and the direct benefit of cash transfers from Brussels (Anderson & Reichert, 1995; Brinegar & Jolly, 2005; Foster & Frieden, 2021; Garry & Tilley, 2009; Mahler *et al.*, 2000).

Empirical evidence has generally favoured identity over economic explanations. This is perhaps unsurprising since the economic costs and benefits of EU membership are often diffuse. Few people directly see how the increased capital and labour mobility of EU membership affect their wages, chances of employment or job security. Just as remote is the EU budget: most people have little knowledge of its details and how it may affect their lives. This has led scholars to test the effects of EU spending programmes that people can potentially observe more directly. Most notably they do this by measuring spending at geographically finer levels to establish a clearer connection between experience of spending and attitudes (Borin *et al.*, 2021; Borz *et al.*, 2022; Crescenzi *et al.*, 2020; Fidrmuc *et al.*, 2019). Yet the findings of this research agenda are mixed. Some studies find that support for EU membership is predicted by EU regional spending within states (Borin *et al.*, 2021; Mahler *et al.*, 2000); others find little relationship (Capello & Perucca, 2019; Duch & Taylor, 1997; López-Bazo, 2022), and there is also inconclusive evidence when it comes to the effect of spending on emotional attachment to the EU (Borz *et al.*, 2022; Capello & Perucca, 2019).

In this paper, we focus on the effects of regional spending on EU support by examining transfers at a much more local level: spending in people's neighbourhoods. Since most funded projects are highly localised, it is important to measure spending where it happens. Moreover, to examine whether any lack of effect of spending on attitudes is driven by lack of awareness of EU transfers, we also measure citizens' actual knowledge of locally funded projects. We thus match people's own descriptions of spending to actual projects, but also assess what affects those perceptions over time using panel data.

Our empirical focus is Wales in the UK at the end of the 2014–2020 spending round. This is a 'most likely' case to examine the effect of EU spending on attitudes, since one of the key themes of the Remain campaign prior to the 2016 Brexit referendum was the economic benefit of EU membership (Hobolt, 2016). We would thus expect people to be more attuned to sources of funding in this period. Moreover, focusing on this region enables us to examine the effects of localised spending by geo-coding all EU project spending in Wales to postal geographies consisting of a few thousand households. We then use survey data to match the localised spending to

vote choice at the 2016 EU referendum and attitudes towards the EU in subsequent years. This allows us to test whether spending affected referendum vote choice, subsequent switching of support and the strength of that support. The key contribution of this study is therefore hyper-localised spending data that measures projects at the level at which most people encounter them, and the matching of this to representative survey data.

Our findings show that, even using very fine-grained local spending data during a period of high salience, there is no association between regional spending and EU support. To better understand this, we examine perceptions of spending. Using data from a three-wave panel we find that those perceptions are only weakly driven by actual spending. In fact, much more important in generating perceptions of spending are people's existing attitudes towards the EU. These findings have important implications for the literature on how economic conditions influence support for the EU, since they illustrate that economic perceptions, more often than not, are driven by predispositions rather than real world change.

How EU spending affects attitudes towards the EU

There is an extensive literature on why citizens support the EU. Early studies focused on utilitarian explanations of support based on an individual cost-benefit analysis. The basic idea is that economic integration in Europe favours citizens with higher levels of income and human capital (education and occupational skills) and therefore such people will be more supportive of European integration (Anderson & Reichert, 1995; Gabel, 1998a, 1998b; Gabel & Palmer, 1995; Tucker *et al.*, 2002). Indeed, research has consistently shown that socioeconomic factors influence public support, including evidence suggesting that education has become a more important determinant of EU support over time with the less educated becoming less enthusiastic about integration (Hakhverdian *et al.*, 2013). Evidence has been less consistent when it comes to how national-level economic factors shape EU support, however. The simple argument that net beneficiary countries are more supportive has, at best, found mixed empirical support (Aiello *et al.*, 2019; Anderson & Kaltenthaler, 1996; Carrubba, 1997; Eichenberg & Dalton, 1993).¹

In the 2000s, perhaps partially due to this lack of consensus on direct economic effects, the literature on Euroscepticism shifted towards more identity-focused explanations. Here, it is national identities and attitudes towards people from other cultures that affect views about closer EU integration (Carey, 2002; Hooghe & Marks, 2005, 2009; McLaren 2005). Indeed, Euroscepticism is often seen as a part of a more general realignment of European electorates along a transnational or cultural cleavage, about questions of immigration, multiculturalism and the boundaries of European integration (Bornschieer *et al.*, 2012; Kriesi *et al.*, 2008).

Yet while identity explanations may provide a large part of why people differ when it comes to attitudes towards the EU, the possibility of direct economic effects never went away. And the question still remains as to whether more tangible benefits from EU membership, namely spending in the form of regional transfers, can shift attitudes. Do these direct transfers cause people to see the EU more favourably? While the EU is not a 'redistributive state' in the traditional sense (Majone, 1999), it does have a sizable budget, and its regional spending – aimed at reducing inter-regional disparities – forms the largest redistributive part.

The intuition that such spending would positively affect support for the EU draws on the literature about how government spending shapes support for incumbents. For example, research on strategic politicians assumes that incumbents can bolster their re-election chances by targeting public spending to their constituents (Dixit & Londregan, 1996). Given that, politicians should try to use public budgets to try and keep constituents happy (Chen, 2013; Levitt & Snyder, 1997; Shepsle & Weingast, 1981) with the implication that public spending influences political attitudes and behaviour.² Similarly, we might expect voters to weigh up the costs and benefits of EU support in line with the utilitarian explanation. The economic self-interest literature argues that our perspectives on economic policy are significantly shaped by how we think these policies will affect our future incomes (Bechtel *et al.*, 2014; Gabel, 1998b; Mariotto & Pellegata, 2023). According to this explanation, people who perceive that regional spending benefits them will be more likely to support the EU. Indeed, there is evidence that the EU's regional funds have a positive effect on economic growth and household incomes in supported regions (Becker *et al.*, 2010; Lang *et al.*, 2023).

Yet there is mixed evidence as to whether EU transfers at the national level change support. This may be because levels of net country contributions are also correlated with a large number of other variables, meaning that disentangling specific effects is almost impossible. Moreover, the causal relationship between regional funding can be difficult to establish, since regions that are better-off due to EU funding may attract different types of residents, including those who are more pro-European (Mayne & Katsanidou 2023; Katsanidou & Mayne, 2024). Or it may be that we are not measuring the economic benefits of EU transfers at the level where citizens actually experience them. These problems have led to a greater focus on more localised estimates of spending within countries. There are two strands to this work. The first takes the EU as a whole, the second looks at specific countries. Duch and Taylor (1997) look at the effect of regional development fund spending across large regions of the EU classified by the Nomenclature des Unités Territoriales Statistiques (NUTS) standard at level 1. These units are large: Italy has just five. While Duch and Taylor conclude that there was no effect of regional spending on regional support using data from 27 regions, Mahler

et al. (2000) use data from 92 NUTS-1 regions, across 11 countries in the mid-1990s, to show a positive relationship between spending and EU support.

More recent work has typically used better data and more sophisticated research designs, but has shown similarly inconsistent results. While some show positive effects of EU spending on EU support (Borin *et al.*, 2021; Dąbrowski *et al.*, 2019; Dellmuth & Chalmers, 2018) and votes for pro-EU political parties (Borin *et al.*, 2021; Rodríguez-Pose & Dijkstra, 2021; Schraff, 2019), others find very weak or no overall effect of spending on attitudes (Borz *et al.*, 2022; Capello & Perucca, 2019; López-Bazo, 2022).³ Although there are clear differences between these studies, not least in their country or regional coverage, extent of economic control variables and exact dependent variable, there is a basic similarity in that all use NUTS-2 regions as their geographical unit.⁴ This allows exact matching between funds spent and region, as funding is allocated at this level. They are also somewhat more precise than NUTS-1: while Italy has five NUTS-1 regions, there are 21 NUTS-2 regions. Nonetheless, these are still very large geographical areas, typically containing hundreds of thousands or millions of people. These designs are able to capture the spillover effects of large, well-known projects (for example, sports stadia), but may not pick up the connection between spending that someone encounters on a more everyday basis, and from which they may benefit in a similar fashion, and that person's subsequent support for the EU. This is of particular concern given the large array of relatively small capital projects that make up a lot of EU regional spending.

One solution to both of these problems – large geographical units and multiple highly correlated causes – is to focus on individual country studies. Here, lower-level geographical regions can be used and other factors can often be held constant. Recent work has focused on the British case and the 2016 EU membership referendum.⁵ Almost immediately after the referendum, Becker *et al.* (2017) produced a comprehensive model of voting for the 382 local authorities – the principal unit of local government – in Britain, concluding that EU spending did not predict Brexit support. Huggins (2018) uses a similar design and finds the same result.⁶ Crescenzi *et al.* (2020) utilise a sharp spatial RDD design to exploit variation in EU regional spending between West Wales and East Wales regions, since only the former received EU regional spending. They find that electoral wards in treated West Wales were more prone to voting Remain only when unemployment had reduced prior to the referendum.⁷ Yet, this literature suffers from its own measurement problem. Allocating spending at very local levels is not straightforward and the typical solution of matching the 'headquarters' of a project to a locality is still far removed from how people might encounter spending, whether first or second-hand, in their everyday life. Project headquarters may not be near where the project actually affects people and most projects are likely to be still more localised

than areas that encompass hundreds of thousands of people, such as municipal governments.

Regardless of this spending measurement problem, there is also an important missing link in much of this work: perceptions of spending. As Huggins (2018, p. 393) notes, 'the ability of EU spending to affect EU support is often conditional upon citizens being aware of the spending in the first place'. For people to reward the EU for spending they first need to notice that spending. To test this mechanism, we need to both match spending to where people live as granularly as possible and, crucially, measure perceptions themselves, since even spending calculated at a very local level may not be recognised by the people who live there. While there is a limited amount of work that takes seriously perceptions of spending, those perceptions are typically not 'validated'. Survey evidence, where researchers ask people whether they think they have benefitted from EU spending, consistently suggests that perceptions of benefit are strongly correlated with both EU support and a European identity (Aiello *et al.*, 2019; Borz *et al.*, 2022). The problem is that we have no way of knowing whether people's perceptions match reality. Or, to put it another way, what if people's perceptions are incorrect? If they are incorrect, then it seems very likely that they are a product of people bringing their perceptions of reality into line with their attitudes.

The phenomenon of partisanship driving perceptions is well known to students of economic voting (Achen & Bartels, 2017; Evans & Andersen, 2006), but there is also evidence that attitudes towards EU membership act as a similar perceptual screen (Hobolt *et al.*, 2013; Hobolt & Tilley, 2014). There are two aspects to this. The first is information seeking: we look for information to confirm our biases. Partisans routinely seek out information from sources with whom they agree, and which therefore create the least cognitive dissonance (Peterson & Iyengar, 2021; Prior, 2013). The second aspect is projection: we are more likely to perceive outcomes and responsibilities that fit our biases. Thus, people more favourable towards the EU membership see economic outcomes as rosier if they think the EU is responsible, but also think the EU is responsible when economic outcomes are rosier (Hobolt & Tilley, 2014). Indeed, these projection effects persist even when people are presented with factual information (Sorace & Hobolt, 2021), just as they do for partisanship (Flynn *et al.*, 2017; Kuklinski *et al.*, 2000; Nyhan & Reifler, 2010). It is not a huge leap to think that these same processes might occur with regional spending or transfers. If people are already favourable towards the EU then they may be more likely to seek out, or at least remember, information on spending, but also think that there has been spending even if there has not.

In this paper, we directly deal with the issues of spending measurement and perceptions of spending.⁸ We comprehensively measure actual project spending at a very local level and match this to survey respondents. This

allows us to test, in a variety of ways, whether spending in someone's neighbourhood is correlated with views on EU membership. We also directly measure whether people perceive spending in their area and whether that perception is accurate or whether it is produced by perceptual biases. We do all of this in one of the nations of the UK, Wales, over the 2014–2020 spending round, which encompassed the Brexit referendum. We take Wales as a 'most-likely case' to study the relationship between EU spending and EU support for a number of reasons. First, as a whole it was a large recipient of funds, though levels varied widely within Wales. For example, Crescenzi *et al.* (2020, p. 3) suggest that, of public spending, 'about 30 per cent of capital investments in Wales have been made through Cohesion Policy'. Second, we look at a region of the UK during the EU referendum and its aftermath. Our survey data thus allows us to measure referendum vote, change in opinion and strength of the political identities formed after Brexit. Third, and related to this, the time period and setting means that EU spending had much higher levels of general visibility (Hobolt, 2016). In particular, people on the Remain side of the debate were often keen to draw attention to specific projects that had happened or would not be renewed. Finally, public opinion in Wales at the time of the referendum was almost perfectly evenly balanced (53 per cent of people voted Leave). This allows us to test the impact of spending in an environment in which greater numbers of people dislike the EU than in the other regions of Europe which receive large amounts of spending.

This leads us to the following expectations. First, we draw on the idea of support driven by utility considerations, as well as the literature on strategic politicians 'buying support', and thus hypothesise that greater spending is correlated with greater enthusiasm for the EU.

H₁: Greater EU spending in someone's local area is associated with greater support for EU membership.

We then turn to the underlying driver of this potential relationship: perceptions of spending. We hypothesise that perceptions of spending are associated with actual spending in an area.

H₂: Greater EU spending in someone's local area is associated with greater perceived spending in the local area.

As discussed, perceptions of outcomes are often biased by people's prior views; we expect perceptions of EU spending to be no different. We suggest two different effects. The first is that people who support the EU will be more likely to seek out, or remember, information about EU project spending: thus, EU supporters will be more likely to correctly name spending. The second effect is projection by people who support the EU: they will be more likely to say that there is spending, as that fits with their pre-existing attitudes,

but will then be unable to name specific projects. Of course, it is also possible that perceptions of EU spending increase support for the EU, so while we can examine the association, we cannot be certain about the causal relation between these attitudinal variables.

H₃: People who support EU membership are more likely to perceive EU spending in their local area and correctly identify it.

H₄: People who support EU membership are more likely to perceive EU spending in their local area but be unable to correctly identify it.

Data and measures

To test these hypotheses, we draw on two original sources of data. The first is a hand-coded database of all EU regional spending in Wales at the individual project level, geocoded to extremely small units. The second is an original representative panel survey of adults in Wales, first conducted in March 2021.

EU funding

The European Union's regional spending programme is intended to support economic development and reduce inequality between regions in the Union. All regions are eligible for funding, though poorer regions receive the vast share of it. We distinguish between Structural Fund Programmes (SFP) and Rural Development Programmes (RDP). The former includes spending by the European Regional Development Fund (ERDF), European Social Fund (ESF) and Cohesion Fund (CF), whereas the latter comes from the European Agricultural Fund for Rural Development (EAFRD) and the European Maritime and Fisheries Fund (EMFF). SFP spending aims to promote economic development in poorer regions, while RDP spending aims to increase economic development in rural areas.

We measure only funding that comes directly from the European Commission and cover the whole of the 2014–2020 funding period. This includes the build-up to and aftermath of the 2016 Brexit referendum and thus includes all projects prior to the initial survey wave in March 2021. We nonetheless also code timing according to what year projects finished, started or were planned to start in. In terms of geography, we code all projects so as to allow identification of spending at the smallest local area possible.

Importantly, we geo-code actual project spending. This involved reading material associated with each project and ascertaining where money was spent or physical infrastructure was built, rather than assigning spending to the headquarters of the project bidder, as all existing studies do. For example, the 'Tourism Attractor Destinations' project, which received nearly £30 million, involved developing or enhancing ten large tourism attractions

across Wales, including the Colwyn Bay waterfront and Caernarfon Castle in North Wales. For this project, we therefore coded how much money was spent in each of the different ten areas. Like this example, most projects can be allocated to one or more local areas.⁹ Our geographical unit is the 'postcode sector': a British postal geography with a mean population of around 5000 people – there are over 11,000 postcode sectors in the UK.

There are several reasons to measure spending at such a local level. First, these units are likely to correspond to what most people would consider their 'local area': a large village, a large part of a small town or a small part of a city. This means that we are accurately reflecting the question we ask in our survey about the respondent's local area. Second, this local area or neighbourhood is likely the level where people may be most aware of spending projects. It is the unit in which we live, know friends or neighbours and may even work. Third, most of the EU projects are relatively small (the median spend in a postcode sector for both RDP and SFP projects was around £200,000) and therefore spillover effects from any large projects are unlikely. Finally, even larger physical spending projects must be spent in specific local areas. The buildings or infrastructure must be built there, or the interventions must take place there. While there is a risk in using this level of granularity that we may exclude larger projects across wider areas, we have ensured that, where possible, we assign specific locations even to complex projects such as roadbuilding or city infrastructure developments.¹⁰ Full details of how we allocated projects to postcode sectors are in Appendix 1.

Due to the high variation between geographic units, and because many postcode sectors have no spending, we use the natural log of spending plus one. You can see this in [Figure 1](#), which is a cartogram showing SFP spending levels in postcode sectors, weighted by population size. SFP spending is clearly far from evenly distributed, with a visible divide between East Wales, which attracted little spending, and West Wales. As [Figure 2](#) shows, RDP spending, on the other hand, is more evenly distributed although, unsurprisingly for a rural programme, there is little spending in the major cities of the south.

Crucially, we do not simply use spending in an individual's own postcode sector, but calculate spending across neighbouring areas using GIS methods. We measure distances between postcode sectors using the centroid of each sector, calculated using Vincenty's formula, and count spending in sectors within 2 km of respondents. This means that we can measure the effect on respondents of projects within postcode sectors that are 2 km from a respondent's house on respondents, giving us a very precise picture of local area spending.

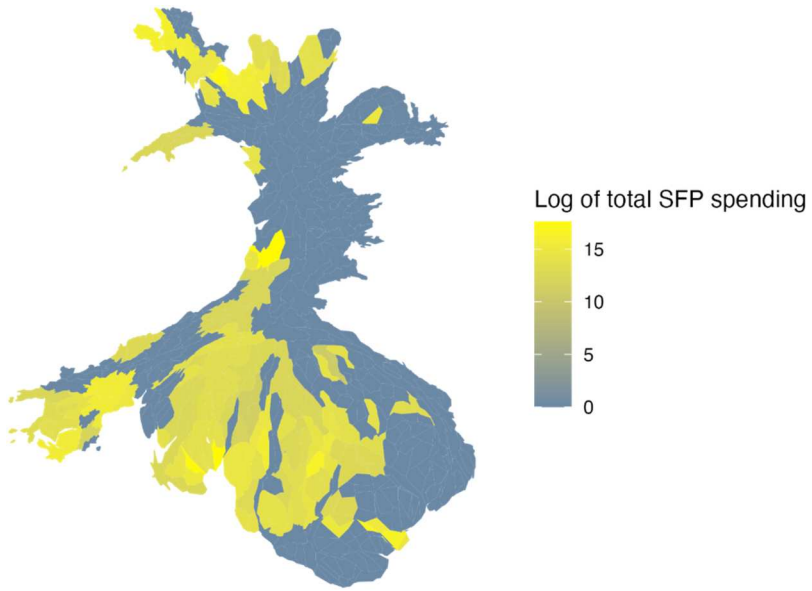


Figure 1. SFP spending by postcode sector (log), weighted by population size.

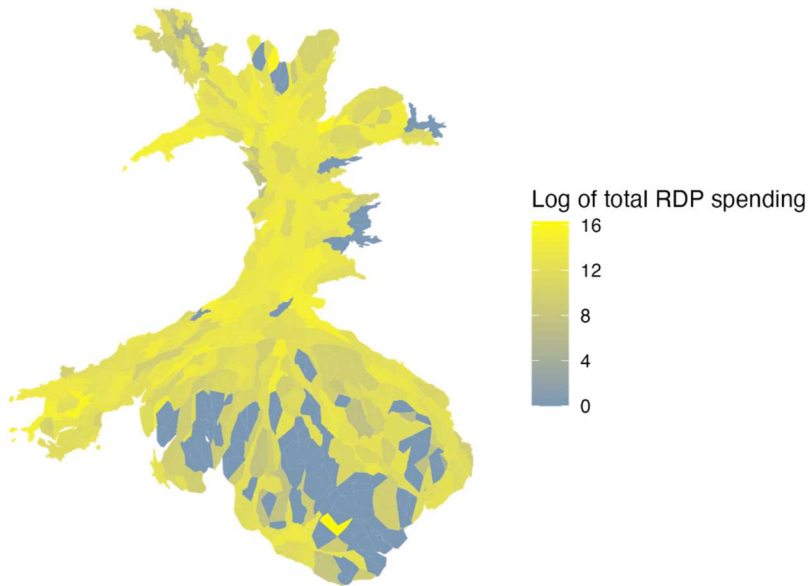


Figure 2. RDP spending by postcode sector (log), weighted by population size. Note: Figures show the natural log of spending amount in each Welsh postcode sector with the area of each postcode sector weighted by population size. Darker areas received less spending and lighter areas received more spending.

Survey data

We use an original panel survey of a representative sample of adults in Wales first carried out in March 2021 ($N = 1054$). We also re-contacted 2021 respondents in April 2022 ($N = 651$, 62 per cent retention rate) and April 2023 ($N = 632$, 60 per cent retention rate). The survey was conducted online by YouGov, with respondents drawn from their British panel. We asked respondents an initial yes/no question about EU spending in their local area:

Some areas in Wales previously received money from the EU for various projects; e.g. new roads, grants for local businesses and farms, broadband improvements, community centres, etc. Did your local area receive money from the EU over the last few years? [Yes; no; don't know]

The question specifically references the last few years in order to match the 2014–2020 funding period. It is worth noting that any 'don't knows' to this type of closed-ended political knowledge question are likely to be real (Luskin & Bullock, 2011). People who answered yes were then asked an open-ended question:

Do you happen to remember any of the specific projects which had EU money spent on them in your local area? Please name as many as you can think of.

By asking people to justify their earlier positive response, we thus maximise the likelihood of respondents giving specific information if they know it. We hand coded the open-ended responses according to whether they matched projects in our database. Answers were marked as correct if people identified a project on the database within 2 km of the postcode sector in which they lived. This reflects the question wording of projects in people's 'local area' and matches our coding of the spending data but, as discussed later, our results are robust to this choice. Responses were marked as incorrect if they identified real projects outside of this range, identified projects not on the database, or were too vague to be coded. Overall, we followed a fairly generous coding strategy and there was no assumption that respondents had to accurately name specific projects. For example, people who said 'road improvements' were marked as giving a correct answer if there was a road improvement project within the 2 km limit.¹¹ A detailed account of our coding, as well as specific examples, can be found in Appendix 2.

We measure support for EU membership in three different ways. First, we take people's vote in 2016. This was measured prior to our survey, and typically shortly after the referendum, by YouGov. Second, we measure whether people had switched away from that view by 2021 using a question which asks people:

In hindsight, do you think Britain was right or wrong to vote to leave the European Union? [Right, wrong; don't know]

Table 1. Multinomial logit models predicting 2016 Brexit vote.

	Leave	Remain
Log of total SFP spending within 2 km	-.02	-.02
Log of total RDP spending within 2 km	-.02	-.01
Intercept	1.49*	1.53*

Note: * $p < 0.05$, $N = 1042$. Models include controls for rurality of the local area. The reference category is people who did not vote (or were unable to vote) in 2016.

Finally, we look at people's strength of Brexit identity. To do this we measure whether they identify as a Leaver or Remainer, and then the strength of that attachment using two standard questions:

Since the EU referendum, some people now think of themselves as 'Leavers' and 'Remainers', do you think of yourself as a Leaver, Remainer or neither?

How important is being a [Remainer / Leaver] to you? [Not at all important; not very important; very important; extremely important]

In all models, we also include controls for the postcode sector's placement on an urban-rural scale that categorises locations as 'urban', 'town and fringe' or 'rural', in accordance with the UK Office for National Statistics' categories (ONS, 2021).

Results

We start with the basic question of whether there is a relationship between spending and the direction and strength of views towards EU membership. Table 1 shows the coefficients from a multinomial logit model predicting vote choice in 2016, relative to not voting. We find no association between spending in someone's local area, whether structural spending (SFP) or rural development (RDP), and whether people voted to Leave or Remain. Table 2 shows the coefficients from a series of similar multinomial logit models, but this time predicting vote switching between 2016 and 2021. Here we therefore look separately at 2016 Remain voters, 2016 Leave voters and 2016 non-voters, and predict their position in 2021 using the hindsight question. The reference category in all three models is no change; for

Table 2. Multinomial logit models predicting switching of Brexit position.

2016 Vote 2021 Position	Leave		Remain		None	
	Remain	None	Leave	None	Remain	Leave
Log of total SFP spending within 2 km	.02	-.01	.03	.02	.01	.05
Log of total RDP spending within 2 km	-.02	.06	.05	-.01	.05	.08
Intercept	-1.98*	-1.83*	-3.29*	-3.75*	.06	-.001
<i>N</i>	443		396		173	

Note: * $p < 0.05$ Models include controls for rurality of the local area. The reference category is no change in all three models.

Table 3. OLS models predicting strength of Brexit identity.

	Leaver strength	Remainer strength
Log of total SFP spending within 2 km	-.00	.00
Log of total RDP spending within 2 km	-.01	.02
Intercept	3.18*	2.77*
<i>N</i>	322	428

Note: * $p < 0.05$. Models include controls for rurality of the local area and are run separately for Leavers and Remainers. Identity strength is measured on 1–4 scale with 4 indicating that the identity is extremely important.

example, the reference category for Leave voters in 2016 would be that Britain was right to leave the EU. Again, there seems to be no connection between spending and choosing to switch towards, or away from, a Euro-sceptic position. Finally, Table 3 shows the coefficients from linear models predicting, separately, how strongly people identify with the Remain and Leave sides. Similar to Tables 1 and 2, we find that there is no connection between spending and the strength of people's feelings towards the EU.

Overall, there appears little support for an association between EU spending and how people feel about the EU. As we discussed, an important part of any explanation for this result may be that people are unaware of spending. Table 4 shows that this may well be the case. Here we simply describe how many people accurately identified projects in their area. There are, in effect, four categories: people who responded don't know; people who said there was no spending in their local area;¹² people who initially said that there was spending but then were unable to identify it;¹³ and people who initially said that there was spending and correctly identified a project within 2 km. Table 4 shows this breakdown.

Clearly, most people were unaware of spending in their local area. 60 per cent of people said 'don't know' to the initial question and nearly a quarter of people said that there was spending but were unable to describe any actual projects. In the end, only 8 per cent of people correctly identified specific EU funded projects in their local area. It is worth noting that the 32 per cent of people who perceive spending in their local area is almost identical to the 33 per cent of people across fifteen member states in 2015 who report benefiting in their daily life 'from any project funded by the EU', according to Aiello *et al.* (2019).¹⁴ Yet, of that 32 per cent in our sample who identify

Table 4. The proportion of people who correctly name EU spending projects in their local area.

Response	Proportion of respondents
Don't know	60%
Did not perceive spending in local area	8%
Perceived spending in local area, but was incorrect	24%
Perceived spending in local area, and was correct	8%

Note: $N = 1050$ of Wave 1 survey.

Table 5. Multinomial logit model predicting awareness of EU spending.

	No spending	Incorrect	Correct
Log of total SFP spending within 2 km	-.02	.03*	.11*
Log of total RDP spending within 2 km	.03	.00	.02
Remainer	-.06	1.66*	.89*
Leaver	.38	.46	.14
Non-identifier	-	-	-
Intercept	-2.29*	-1.80*	-3.62*

Note: * $p < 0.05$, $N = 1042$. Model includes controls for rurality of the local area. The reference category is 'don't know'.

spending, the vast majority – nearly three quarters – were unable to actually cite a single project from which their local area had benefitted.

This raises the question of what predicts awareness of spending. We hypothesised that awareness would relate to actual spending, but also in-group biases. To test this, we run a multinomial logit model to predict into which category a respondent falls. The reference category is 'don't know'. Table 5 shows the coefficients from these models: spending does partially predict correct perceptions. People in areas with more SFP spending are more likely to correctly identify spending. RDP spending by contrast does not predict awareness. These effects are small in percentage point terms, however. Taking an 'average person'¹⁵ the predicted probability of correctly identifying spending is 3 per cent when SFP spending in the local area is zero and 12 per cent when spending is £3,000,000 (the 90th percentile of respondents). Even very large amounts of spending only mean that slightly over a tenth of respondents can correctly identify a single specific project in their local area.

There is a much larger effect of Brexit identity. Remainers are far more likely to say that there was spending, even when they are wrong. As Figure 3 shows, about a quarter of Leavers give an incorrect answer and around 9 per cent give a correct one. Yet, over a third of Remainers give an incorrect answer and over 20 per cent are able to correctly identify spending. As we discussed earlier, there are two possible reasons for why Remainers' perceptions are different: information seeking and projection. Our results suggest both are in play. Information seeking because Remainers are more likely to say there is spending and correctly name projects than Leavers or non-identifiers. Projection because Remainers are more likely to say there is spending, but not name any projects, compared to Leavers and non-identifiers.

Of course, we might be cautious about the information seeking explanation, as the causal arrow could be the other way around: the small number of people who accurately perceive project spending could become more enthusiastic about EU membership. This does not appear to be the case, however. As we have panel data, we can model people's perceptions

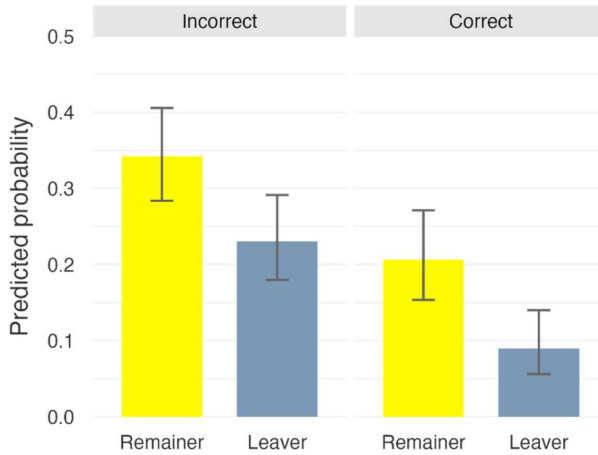


Figure 3. Predicted probabilities of awareness of EU spending by Brexit identity. Note: These figures come from the model in Table 5; they hold spending levels at the 60th percentile and all other variables at their mean.

of spending and Brexit identity in the current period, while controlling for previous views. This means that we are able to partially disentangle the causal direction of perceptions of spending and EU attitudes. Table 6 shows the coefficients from two multinomial logit models with lagged dependent variables, using all three waves of the survey. The first model regresses spending perceptions on Brexit identity, including spending perceptions lagged by one period as a regressor. The second regresses Brexit identity on spending perceptions, including identity lagged by one period as a regressor. The top panel of Table 6 shows that there is good evidence that Remainers are the most likely to shift to correctly, and incorrectly, identifying spending. This supports our argument: information seeking and projection are important factors in producing perceptions of spending.

Table 6. Multinomial logit panel models: Brexit view and perceptions of spending over time.

	Correct	Incorrect
Remain	1.02*	.64*
Leave	.27	.15
Intercept	-3.94*	-1.99*
	Remain	Leave
Correct	.40	.41
Incorrect	.63*	.17
Intercept	-1.76*	1.72*

Note: * $p < 0.05$. $N = 1193$. Brexit identity is measured by identifying as a Leaver or Remainer. The reference category for spending is DK/no spending. The reference category for Brexit identity is neither. Each model includes the lagged DV as a regressor.

Conversely, the bottom panel of [Table 6](#) shows there is no evidence that people who correctly perceive spending are more likely to shift to Remain.

Overall, there is a weak link between actual spending and perceptions of spending, but there are also large biases to how people see spending. This is probably an important part of any explanation for why EU spending has little effect on attitudes toward the EU. Much of the explanation for who does notice spending is not about actual projects, although this does matter to some extent, but rather projection and biased information seeking.

Robustness tests

We test the robustness of our findings in several ways. First, we vary the geographical units. We replicated all the analyses using a different distance parameter, this time setting two more liberal specifications of spending within either 4 km or 10 km. Appendix 3 shows that results from these different specifications are substantively the same as the main results. We also ran models that excluded the Welsh capital of Cardiff to check whether the concentration of projects there is important: it is not (see Appendix 7). And we re-ran our main models with SFP and RDP spending combined into a single variable, as well as running both spending streams in separate models. Again, the results are essentially unchanged (see Appendix 8).

Second, we ran all models with additional controls for age, political attention, education, occupation and local levels of unemployment. These factors are all potentially important, but especially age and general political interest as they are both likely to be correlated with more specific political awareness and views on Brexit. As Appendix 4 shows, all the main results are unchanged.

Third, we included the timing of projects as a factor in the models. Here, we weighted the aggregate spending variables using an exponential decay function with a base of 5, at a constant rate of decay. The exponent represents the number of years before the survey year (2021). Projects which were finished were weighted to their last year of spending; ongoing projects were weighted to the survey year; and projects which were yet to start at the time of the survey were assigned weight zero. Projects which were yet to start at the time of coding, but were likely ongoing, were weighted to the survey year. As Appendix 5 shows, more recent projects did have a little more effect on correct awareness of spending, but there were no changes to the null or inconsistent results of spending on EU support.

Finally, we were also able to look at spending by a different layer of government: the UK government's spending. At the end of 2021 the UK government introduced 'Levelling Up' funds to replace EU regional funding. In April 2022 and April 2023, we asked respondents in Wales whether they could name any such projects in their local area; we also geo-coded projects in the same way as EU spending.

Table 7. The proportion of people who correctly name ‘Levelling Up’ projects in their local area.

Response	2022	2023
Don't know	85%	76%
No perceived spending in local area	9%	13%
Perceived spending in local area, but was incorrect	1%	6%
Perceived spending in local area, and was correct	4%	5%
<i>N</i>	651	629

As [Table 7](#) shows, despite widespread publicity, there was very little awareness of actual projects associated with Levelling Up spending. [Appendix 6](#) also demonstrates that there is no relationship between the level of spending and people's party support, nor levels of spending and switches in party support between the 2019 general election and 2022. This suggests that low awareness is guaranteed, regardless of project or funder.

Discussion

Strategic politicians are often assumed to ‘buy support’ by directing spending in certain areas at the expense of others. We might, therefore, expect that EU regional spending would bolster support for EU institutions. Yet there is a lack of good evidence as to how voters actually relate real spending to their views of the EU. In this paper, we use hyper-localised spending data matched to representative survey data to examine this relationship in a context of high EU saliency. Despite this favourable context, we find no relationship between local spending and someone's views about the EU, in line with other recent findings ([Borz *et al.*, 2022](#); [Capello & Perucca, 2019](#); [López-Bazo, 2022](#)).

We are also able to show that an important part of any explanation for this lack of relationship is due to people's inaccurate perceptions of spending. Whereas prior research has shown strong relationships between perceptions of spending and EU support at the individual level ([Aiello *et al.*, 2019](#); [Borz *et al.*, 2022](#)), we argue this is likely illusory. Few people can correctly identify spending in their local area. Perceptions of spending are thus free of any real knowledge and mainly driven by pre-existing attitudes. As we show with both cross-sectional and panel data, EU supporters seek, or remember, more information about spending in order to bolster their pre-existing views, but also project their views onto spending by the EU by perceiving spending when there is none.

Our analysis also sheds light on the Brexit vote. Many commentators were surprised by the way in which some regions with higher levels of EU spending, most notably Wales and Cornwall, voted to leave the EU in 2016. Given our findings, this should not have been a shock. Not only are most people unaware of spending in their local area, even for supposedly high-visibility projects, but this awareness of spending is predominantly driven by

perceptual biases rather than actual spending. Combined with our parallel findings for UK government spending, it seems that politicians of any stripe may be fighting an uphill battle if they wish to engender positive attitudes through public spending.

Nonetheless, we should be careful not to over-generalise. After all, Britain is not a typical EU member state in at least two important ways. First, Britain was leaving the EU during this period after a divisive referendum. On the one hand, that could mean that people's views about the EU were more fixed and less amenable to change than the average person in the average member state. This may be a particular concern when people were already preparing themselves for a UK exit from the EU. On the other hand, as mentioned previously, the high saliency of EU spending during this period provides a case in which we might expect people's knowledge to be higher than average, yet we see little evidence of that knowledge. And that lack of knowledge makes a connection between spending and attitudes very difficult, no matter the flexibility of people's attitudes. The second difference is in terms of economic and political structures. In particular, Copeland and Diamond (2022, p. 46) argue that 'the absence of any overarching strategic framework or national industrial policy' and the weakness of regional tiers of government meant that the effect of EU spending on stated objectives, such as improving productivity, was often very small in Britain. It is unclear whether this is a uniquely British problem though.¹⁶ Moreover, there are advantages to focusing on this one case: we have been able to create a novel database of localised geocoded projects that sheds light on the (lack of a) link between EU spending and EU support during a historic period in EU politics.

Overall, we find limited evidence for the idea that EU spending drives support for the EU. Two necessary, if not sufficient, causes of this lack of relationship are the low awareness of EU spending and the weak relationship between actual spending and perceptions of spending. Indeed, perceptions of spending appear to be more about perceptual biases based on EU support than real experiences with specific projects. Given these findings, we should perhaps be sceptical of claims that expanding regional spending will deepen commitment to the EU, as we should towards spending by other similar organisations and governments. EU spending, at least at current levels, appears unable to trigger even awareness of such spending, let alone positive attitudes towards the spender.

Notes

1. Recent studies at the national level have tended to focus instead on how national economic performance (Foster & Frieden, 2021) or the benchmarking of EU benefits vis-à-vis national performance (De Vries, 2018) influence EU support.

2. This relationship is also found in the ‘regime support’ literature for authoritarian governments. Here public spending is used to fund patronage or mobilise party supporters even when this may have unclear outcomes (Magaloni, 2006; Remmer, 2007; Handlin, 2016; Bodea *et al.*, 2019).
3. Of course, this does not rule out other political effects of spending. For example, Henceroth and Oganessian (2019) find a relationship between EU structural spending at a regional level and incumbent support within the region at European Parliamentary elections. Equally, some argue that the effects are conditional. For example, Chalmers and Dellmuth (2015) show no effect of regional transfers on people without a European identity or with low levels of education, but a positive effect on those with a European identity and higher levels of education.
4. One important exception is Rodríguez-Pose and Dijkstra (2021) who measure vote choice as a proxy for EU support, and funding at the smaller NUTS-3 level (there are 107 NUTS-3 regions in Italy, for example). Nonetheless, these remain large areas which typically have many hundreds of thousands of inhabitants.
5. Although, in a similar vein, Albanese *et al.* (2022) show, using an RDD, that voting for populist parties at the municipality level in Italy is lower when spending is higher. Bachtrögl and Oberhofer (2018) use firm-level employment effects by NUTS-2 regions in France to show that support for Marine Le Pen in the 2017 presidential election was lower when effective spending was higher. Of course, neither cases directly measure EU support, but rather populist vote share.
6. Using the more standard methodology of the cross-national studies, Fidrmuc *et al.* (2019) modelled voting in the 37 NUTS-2 regions of the UK and also found no relationship between spending and referendum vote.
7. Note that, in this study, treated wards are identified by beneficiary rather than actual spending within wards and the ward-level data used to obtain EU referendum results is incomplete.
8. López-Bazo and Royuela (2019) use an instrumental variable design to study the effect of perceptions of personal benefit from EU regional spending on support for European integration, instrumenting perceptions using intensity of spending by region. But, while they find evidence that support for integration drives the perceived benefits of spending, they can only model this at the NUTS-3 level.
9. Where spending was in multiple locations we were normally able to identify which areas received which amounts of spending. Where this information was not available, we divided spending equally among the areas.
10. Although we primarily geo-code projects according to postcode sector, we also designate some projects as either spending across all of Wales or spending at a county level (Wales’ administrative ‘principal areas’). The former are projects which did not spend money in any particular area, for example making online training available to all people in Wales. The latter are projects in which money was spent across one, or more, of the 22 counties and could not be broken down further. For example, this might include advice to new small businesses available in specific counties. We excluded these cases from our analysis.
11. In terms of the specific projects mentioned, the most common were usually roads or large building projects. Community projects tended to be referenced in more general terms such as ‘community groups’.

12. This category includes people who were correct in that there was no spending and people who were incorrect in that there was spending. In principle, the differences between these two groups are interesting, but, in practice, there are only 77 respondents in this category, so examining these groups further is difficult.
13. Most of the people in this category said 'don't know' when asked the open-ended question, but it also includes people who named projects that did not exist, projects that were not funded by the EU or not funded in the period studied, or real projects outside the area. See Appendix 2 for more details.
14. Although Borz *et al.* (2022) find slightly lower numbers when asking about specific programmes. They report that 17 per cent of people in twelve member states in 2017 said that they had benefited in their 'daily life from a project funded by' the ERDF, CF and ESF.
15. Here we take the mean values of the other variables in the model, so the number does not represent a particular type of person.
16. Significant geographic variation in the communication of EU spending, particularly at a local level, could also explain this weak link (Molica & Salvai, 2019; Dąbrowski *et al.*, 2020; Mendez *et al.*, 2020).

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Data availability

All data and replication files associated with the empirical analyses in this paper are open access and deposited with the UK Data Service ReShare.

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