You (Br)exit, I stay: The effect of the Brexit vote on internal migration*

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Abstract

The profound divisions that emerged around the UK's decision to leave the European Union have stimulated a heated debate on whether the referendum, by exposing intolerance and exacerbating societal tensions, has affected individuals' choices. The UK is one of the most mobile societies in Europe, and internal migration plays a key role in national well-being and in the efficient functioning of the labour and housing markets. In this article, we examine the consequences of polarizing politics on individuals' propensity to migrate internally. We show that, in the aftermath of the vote, individuals were less inclined to move when they were aligned with the Brexit preferences of their district. As 'Remainers' found themselves on the losing side, they were more likely than 'Leavers' to value the alignment to their district, given their 'misalignment' to the country. We also show that, when they do move, non-aligned individuals tend to relocate to a district to which they can then feel (re)aligned.

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1 Introduction

Major "polity-shaping" events, like the United Kingdom (UK)'s 2016 decision to leave the European Union (EU), can have important consequences on people's attitudes and behaviour. The profound divisions that emerged early in the Brexit campaign have stimulated a heated debate on whether the outcome of the referendum, by increasing intolerance, can undermine social cohesion. The Brexit vote has deepened existing divisions in the British society over key issues, like national identity, globalization, diversity and multiculturalism (Hobolt, 2016; Ford and Goodwin, 2017). In particular, the vote has generated salient 'affective polarization', as individuals segregate themselves socially and distrust people from the opposing side of the Brexit vote (see, e.g., Duffy et al., 2019; Hobolt et al., 2020). What makes 'affective polarization' different from an 'issue polarization' – the divergence of positions on policy – is that people tend to dislike the opposing side even in the absence of disagreement on some salient issues (Duffy et al., 2019).

Not surprisingly, these divisions are affecting personal relations. For example, according to the Edelman's 2019 Trust Barometer, 70% of the respondents are angrier (since the referendum) about politics and society, and 17% of them report that the referendum has led to fallouts with family and friends.[1] The outcome of the EU referendum has also been an emotive event that affected individuals' life satisfaction, average level of mental distress and subjective well-being (see, e.g., Vandoros et al., 2019; Powdthavee et al., 2019; Saville, 2020).

In this article, we investigate whether polarizing politics and a hostile culture of 'othering' political rivals can affect broader social relationships by changing individuals' probability to migrate internally. The UK is one of the most highly mobile societies in Europe, and more than 2.5 million residents move every year across local authority districts in

[1]Available online: `https://www.edelman.co.uk/research/breakdown-trust-has-turned-us-disunited-kingdom`. These divisions are also affecting people's vision of the future, not only in terms of economic prospects but also for their safety, as 40% of the respondents see violent protests as more likely.

England and Wales.[2] Internal migration plays a key role in national well-being, it underpins the efficient functioning of the labour and housing markets, and enables individuals and families to achieve their goals (Bernard et al., 2014; UNDP, 2009).

Numerous older and more recent studies investigating internal migration have revolved around the questions of who moves and where they move to. Comparative economic advantages across regions, such as employment returns and wage differentials, as well as housing market contractions are among the strongest pull and push factors operating at both the origin and destination localities (Jackman and Savouri, 1992; Morrison and Clark, 2011; Etzo, 2011; Thomas et al., 2015; Langella and Manning, 2019b). At the same time, key life-course transitions, such as education completion, labour force entry, union formation and childbearing, crucially affect the propensity to migrate and thus drive local mobility (Clark et al., 2003; White and Lindstrom, 2005; Bernard et al., 2014). Particularly relevant for this research, location decisions are also affected by place-based attractiveness, which is shaped by the quality of social life, the availability of local public goods, the ethnic composition of the destination, and the 'context of reception' in terms of hostility towards new residents (see, e.g., Bracco et al., 2018; Langella and Manning, 2019a; Bove et al., 2020).

We focus on a highly salient and divisive event, the EU referendum, and examine whether its outcome affected individuals' internal migration decisions, depending on their pre-referendum political alignment to their district of residence along the lines of the Brexit identity. To do so, we leverage individual survey-based data from the UK Household Longitudinal Study (UKHLS) around the referendum date, and employ a similar research design to that of Metcalfe et al. (2011) and Powdthavee et al. (2019). This relies on the assumption that the outcome of the Brexit vote was unknown and largely unanticipated (prior to the referendum date), and that the dates on which individuals were

[2]We follow the definition used by the Office for National Statistics, where internal migration is defined as "any move made within the UK that crosses a local authority boundary" (ONS, 2016).

interviewed in UKHLS waves were independent of its timing. As such, in the absence of the referendum, migration propensities would have changed identically for politically aligned and non-aligned individuals.

Our analysis reveals that individuals' migration decisions are indeed influenced by deviations from community preferences. In particular, we find a post-referendum reduction in the probability of moving to another district when individuals are politically aligned to their district of residence. At the same time, we find that this 'alignment-induced' effect is mostly driven by Remainers. On the one hand, as Remainers found themselves on the losing side, they were more likely to value the alignment to their district, given their 'misalignment' to the country as a whole. As those who preferred to remain in the EU became also worse off in terms of mental state (e.g., Powdthavee et al., 2019), they were less inclined to leave neighbours who share similar values in the aftermath of the referendum. On the other hand, as Leavers won nationally, we find that local alignment matters relatively less for them, and only when their district's share of Leave votes is particularly high. Finally, we show that our results are driven by a 'homophilous propensity'; that is, the inclination of individuals to move to areas where people with similar political views and ideology already live. Using information on the destination districts, we show that, after the referendum, non-aligned individuals are more likely to move to a district to which they feel aligned.

2 Brexit, political ideology and internal migration

On 20 February 2016, the UK Prime Minister David Cameron formally announced, under the terms of the EU Referendum Act 2015, a referendum to decide whether the UK should leave or remain in the EU. Four months later, following an intense campaign whose contradicting claims are still disputed, 51.9 per cent of British voters chose to support the Leave option. To date, a lively debate revolves around the kinds of division

the referendum has generated and how the national split exposed by the Brexit vote has strengthened social and political polarization in the country. Yet, whereas there is a lot of research on its own right on the economic consequences of Brexit (Sampson, 2017), we still know little about the effect of the Brexit vote on individual behaviour and social divisions (Hobolt et al., 2020).

In this article, we explore one particularly overlooked but highly salient outcome: the propensity to relocate. The United States (US) has been the main focus of research on how partisanship affects internal migration, and is therefore a useful reference point. In fact, considerable attention has been given in recent years to the role of migration in the geographic sorting of the American electorate (Sussell, 2013; Tam Cho et al., 2013; Johnston et al., 2016; Rohla et al., 2018; Carlson and Gimpel, 2019). This attention has been partially stimulated by the observation that political divisions in American politics have produced a spatially polarized electorate, with counties becoming increasingly predominated by one of the two main parties (Bishop, 2009).

The main channel underpinning this result is the existence of a "political homophily mechanism"; that is, the tendency to favour the company and presence of others who share similar political values (Bishop, 2009; Tam Cho et al., 2013). Through some process involving homophily, segregation, and socialization, human beings are more likely to associate with like-minded individuals, and select into locations that largely reflect their political preferences and ideological views, which can satisfy a need for belonging (see, e.g., Rodden, 2010; Tam Cho et al., 2013; Motyl et al., 2014; Gimpel and Hui, 2015; Rohla et al., 2018; Carlson and Gimpel, 2019). Particularly in a society with high levels of residential mobility, political profiles – in addition to demographic, occupational, and income considerations – play an important role in residential sorting (Rodden, 2010).

As Americans choose locations compatible with their lifestyle and beliefs, and political ideology increasingly mirrors political party identification, they sort themselves into politically homogeneous communities that ultimately produce "partisan enclaves" (Lev-

endusky, 2009; Tam Cho et al., 2013; Rohla et al., 2018). Ultimately, strong social ties can reinforce similar political preferences and voting behaviour among neighbours, and these often endure for generations (Rodden, 2010). Yet, while "provocative, and certainly part of the popular discourse", the scholarly evidence on the strength of partisan enclaves in the US is at best mixed (Iyengar et al., 2019). For one, Mummolo and Nall (2017) show that, whereas a statistically significant effect of partisanship on where people live exists, its magnitude is relatively small.[3] In addition, and perhaps more crucial, existing research has largely focused on the geographic sorting of the American electorate, and little attention has been given to other countries. A recent work of Efthyvoulou et al. (2021) presents evidence that migration flows in England and Wales between 2002 and 2015 are in fact higher when districts share similar political preferences, and that political alignment contributes to individuals' sense of 'fitting in'. Yet, as the analysis covers the pre-referendum period, there is no evidence of the effect of Brexit as such.

Against this background, we perform a pre-post comparison analysis of the EU referendum outcome in order to explore whether the change in migration patterns from before to after the referendum date of 23 June 2016 was different for different groups of people, depending on their political alignment to their district of residence. The very high rate of internal migration, coupled with historical high levels of "affective" polarization (Boxell et al., 2020) make the UK an interesting and novel case study to examine whether political homophily affects individuals' propensity to migrate internally, outside the US case.

There are at least two complementary behavioural explanations for our main research question. First, we could expect the referendum outcome to make people more polarized. In fact, the national split revealed and reinforced by the Brexit vote has popularized the notion of a "divided Britain", an expression frequently used to capture a growing

[3]A likely explanation, they argue, is that people prioritize housing affordability and neighbourhood quality over political concerns and this hierarchy of priorities limits the opportunities for individuals to actually engage in partisan residential sorting.

sense of social and political polarization (Duffy et al., 2019). As Brexit identities have reinforced themselves in the aftermath of the referendum, often surpassing traditional party identities,[4] political differences became more salient, affecting in turn migration decisions. Second, the referendum returns could have made more visible and consequential latent divisions that already existed in the population or provided new information about the aggregate political preferences of the district of residence. This could be particularly important in light of the high degree of uncertainty around the Brexit outcome and the forecasting errors of financial markets and opinion polls, which did not anticipate the victory of "Leave".[5] We do not try to isolate the role of the these two explanations. Plausibly, not all individuals were driven by the same considerations, and, as a matter of fact, the same individual might have been pushed by more than one driver. Our analysis aims at capturing the overall effect of the EU referendum outcome on migration decisions through an increased desire for political homophily. Overall, this discussion leads to the formulation of our main hypothesis:

***Hypothesis**: In the aftermath of the Brexit vote, individuals are less inclined to move if they are aligned with the Brexit preferences of their district.*

[4]Using data from the British Social Attitudes Survey, Curtice et al. (2019) note that, far more people identify strongly as a 'Remainer' or a 'Leaver' nowadays than do so as a strong supporter of a political party.

[5]It might be argued that observing how family and friends thought about the referendum could have influenced citizens' expectations and anticipations of the referendum results at the local level. Although social networks often provide contextual information that allows voters to form expectations about local election results, a relatively large segment of the population is still unable to correctly forecast the results based on information from their own "crowd" (Murr, 2016; Leiter et al., 2018). At the same time, it was arguably more difficult to correctly predict the results at a more aggregate level, like the local authority district, rather than anticipating how people in the same neighbourhood, for example, would vote. And even when citizens were able to correctly predict the referendum results in their district, our research design does not require local level results to be unexpected – as opposed to the overall outcome at the national level.

3 Data and Methodology

We use individual-level data from the UKHLS, also known as Understanding Society. UKHLS follows a representative sample of households over time, interviewing all individuals aged 16 or above (once per wave), and includes a wide range of questions on political and social attitudes. Interviews are carried out face-to-face in respondents' homes by trained interviewers or through a self-completed online survey, and respondents are coded based on residence at the local authority district (LAD) level. A great deal of effort is made by the survey institute to keep the time intervals between waves constant across individuals (Lynn, 2009; Buck and Stephanie, 2012).[6]

We focus on respondents in England and Wales as the two countries expressed about the same level of support for the Leave option as the UK. At the same time, most of the internal migration flows in the UK are observed across areas within England and Wales (Swinney and Williams, 2016), and recent studies on residential mobility use data on these two countries alone (e.g., Thomas et al., 2015). We exploit information from three UKHLS waves that cover the short period around the EU referendum: wave 7 (Jan 2015 to Jun 2017), wave 8 (Jan 2016 to Jun 2018), and wave 9 (Jan 2017 to Jun 2019). In our final sample, we include respondents who expressed a preference for Leave or Remain in the question about EU membership, and who were interviewed at least once before the referendum date and at least once after the referendum date.[7] The latter ensures that we are comparing the pre- and the post-referendum migration behaviour of the same individuals.[8] This sampling procedure results in an individual-level panel consisting of

[6]For instance, Powdthavee et al. (2019) report that nearly 90% of the wave 7 individuals were re-interviewed within the same quarter of the following year (e.g., in January 2015 and then in January to March 2016).

[7]In this way, our wave 7 sample contains only observations that were collected before the referendum.

[8]As such, we do not need to employ matching techniques to deal with potential imbalances between pre-referendum and post-referendum surveyed individuals.

52,467 observations across the three waves (2.9 observations, on average, per individual), with 56% of them collected post-referendum.[9]

Our outcome variable, $Moving_{it}$, captures the timing of migrating to a new area. Specifically, following Langella and Manning (2019a), we construct a binary variable taking value 1 if the respondent i is observed in a different district (LAD) in survey wave t than in survey wave $t-1$.[10] According to this variable, 5% of the respondents moved once over the sample period (single movers), and 0.7% of them moved more than once (multiple movers). To infer individuals' preference for EU membership, we explore their answer to the following question, which was only asked in wave 8: "Should the United Kingdom remain a member of the European Union or leave the European Union?" – with 54% of the respondents reporting a preference to 'Remain' and 46% favouring the 'Leave' option. It should be stressed that the answers to this question do not necessarily reflect the respondents' actual vote, and, more importantly, do not indicate whether these people did actually vote in the referendum – which can potentially explain why these percentages do not match the actual referendum outcome (52% Leave versus 48% Remain). Indeed, as pointed out by Powdthavee et al. (2019), it is possible that some UKHLS respondents changed their minds between the date of the survey and the day of the referendum, or did not vote in the referendum.[11]

We define a subset of 'aligned individuals' as those who are politically aligned to their district; that is, those whose preferences for EU membership are compatible with the

[9]Specifically, the distribution of observations across the three waves is as follows: 18,192 pre-referendum observations in wave 7; 4,974 pre-referendum and 13,101 post-referendum observations in wave 8; and 16,200 post-referendum observations in wave 9.

[10]To obtain the values for wave 7, we exploit information from wave 6 of the UKHLS (Jan 2014 to Jun 2016).

[11]For instance, Goodwin and Heath (2016) report that voter turnout was higher in areas with greater support for the Leave option.

preferences of their district. More formally, we define *Alignment* as:

$$Alignment_i = \begin{cases} 1 & \text{if } P_i = P_d \\ 0 & \text{otherwise} \end{cases} \tag{1}$$

where P_i captures the Remain/Leave preference of individual i, as recorded in UKHLS wave 8, and P_d captures the Remain/Leave preference of i's district of residence d based on the LAD's actual vote in the referendum. In particular, a district is coded as 'pro-Remain' ('pro-Leave') if the district's share of votes for the Remain (Leave) option exceeds 50%. However, to assess the migration implications for individuals living in districts with a higher degree of alignment, we also consider alternative *Alignment* measures where the district's share of votes for one of the two options exceeds 55%, 60%, 65% and 70%.[12]

To investigate the impact of political alignment on internal migration, we exploit the timing of the referendum and employ a difference-in-differences (DiD) framework. Our identification strategy relies on the comparison of the changes in relocation patterns before and after the referendum across individuals who are politically aligned and those who are not politically aligned. Formally, our empirical model can be written as follows:

$$\begin{aligned} Moving_{it} = \alpha + \beta_1 Post\text{-}referendum_{it} + \beta_2 (Post\text{-}referendum_{it} \times Alignment_i) \\ + \beta_3 Alignment_i + \gamma \mathbf{X}_{it} + \theta_i + \lambda_t + \epsilon_{it} \end{aligned} \tag{2}$$

[12]Even though the ocial referendum results were published at the LAD level, voting data at the level of electoral wards can also be obtained from Rosenbaum (2017). This dataset covers 1,261 spatial units in England (13% of the total number of wards in the UK), and offers full ward-level information on Remain/Leave shares across 58 LADs. Performing a simple comparative analysis based on this dataset shows that small geographic units within the same district are quite homogeneous with respect to their Leave/Remain preferences: the standard deviation of the Remain share within LADs is 0.077 (on average), whereas the corresponding figure across LADs is 0.143. And, in fact, this difference becomes even larger when we restrict the comparison to the smallest LADs in terms of land size. Overall, the analysis here suggests that the decision to relocate across districts is more likely to be shaped by political considerations than the decision to relocate to other geographic areas within the same district.

where *Post-referendum*$_{it}$ is a dummy variable that takes value 1 if the individual was interviewed in UKHLS wave 9 or after the referendum date in UKHLS wave 8, and 0 if the individual was interviewed in UKHLS wave 7 or before the referendum date in UKHLS wave 8; $\mathbf{X}_{it}$ is a vector of control variables; θ_i represents individual fixed effects; λ_t represents wave fixed effects; and ϵ_{it} is an error term, clustered at the individual and district levels (two-way clustering). Based on this specification, β_1 captures the baseline difference in moving patterns before and after the referendum, whereas β_2 is our parameter of interest capturing the pre-post differences in moving patterns between aligned and non-aligned individuals. Note that the non-interactive effect of *Alignment*$_i$ (as captured by β_3) is absorbed by the individual fixed effects.

This method builds on the idea that the outcome of the Brexit vote at the national level was unknown and largely unanticipated prior to the referendum date (Powdthavee et al., 2019), and that this unexpected outcome deepened the political divisions within the British society. As such, political alignment should affect relocation patterns in the period following the referendum in a different way than in the period preceding the referendum.[13] Thus, by subtracting the post-referendum effect of alignment from its pre-referendum effect, β_2 provides a reasonable estimate of the extent to which political preferences affect moving decisions. To ensure that alignment is not endogenous to the outcome variable (and thus the estimates are not subject to post-treatment bias), we use a non-time-varying alignment measure that takes into account the district of residence at the beginning of the sample period (before any moves occur); that is, P_d in Eq. (1) represents the Remain/Leave preference of the district where the individual was living in UKHLS wave 6. To further mitigate this concern, we exclude individuals who moved more than once across the three waves, which gives an effective sample of 52,095 observations (2.9 observations,

[13]In other words, we assume that, under a different referendum outcome (or if the referendum did not take place at that time), the differences in migration patterns between aligned and non-aligned individuals would be the same across all survey waves.

on average, per individual). In the Online Appendix, however, we show that our inferences do not change when we relax these two conditions.

The inclusion of individual fixed effects, θ_i, controls for any unobserved, individual-specific and time-invariant characteristics that may continue to bias the estimates when an unbalanced panel is used in the estimation (Lechner et al., 2016).[14] Furthermore, adding vector $\mathbf{X}_{it}$ in Eq. (2) accounts for important individual-specific time-varying factors that can potentially influence people's relocation decisions or their preferences towards Brexit, such as income, employment status, marital status and household size. Table A.1 in the Appendix provides the full list of control variables included in vector $\mathbf{X}_{it}$ – even though some of them are dropped in our estimations since they do not change over time (within individuals).

4 Empirical Findings

4.1 Main results

Table 1 presents the linear probability model (LPM) estimation results of Eq. (2). Column (1) reports the estimates of β_1 and β_2 when *Alignment* for individual i is defined as having the same Remain/Leave preference as the majority (>50%) of people residing in i's district, whereas columns (2)-(5) report the corresponding estimates at higher degrees of alignment; i.e., when the individual's preference for the Remain or the Leave option coincides with the preference of at least 55%, 60%, 65% and 70% of the citizens of the same district. The results confirm that shared political preferences play an important role for the decision to migrate after the referendum: the estimate on the interaction between *Post-referendum* and *Alignment* is negative in all specifications, and becomes

[14]Note that, since the attrition in very low in our sample, the ordinary least squares and the fixed effects estimates are qualitatively similar in terms of coefficient size and statistical significance.

larger and statistically more significant as we move towards more restrictive samples of aligned individuals. Substantively, the effect is non-negligible: for instance, according to our estimate in column (4), the pre-post referendum difference in the probability of moving to another district is 1.6 percentage points lower for aligned individuals (based on the 65% threshold) than for non-aligned individuals – a decrease that amounts to 1.2 standard deviations of the outcome variable.

[Table 1 about here]

Table 2 dissects the estimates of Table 1 by individual preferences over EU membership. Our hypothesis here is that the alignment-induced differences in migration patterns following the EU referendum may vary by the respondent's own preference regarding the outcome. In other words, the shock of the Brexit verdict may have caused different migration responses for aligned individuals, depending on whether these individuals favoured remaining in or leaving the EU. To test for this hypothesis, we split the sample of respondents into Remain and Leave supporters, and run the same regression set-up as before. In this way, we compare the effect of the referendum for Remain (Leave) supporters who are aligned with that for Remain (Leave) supporters who are not aligned.

The results indicate that the aforementioned pre-post alignment effects are mostly driven by those who preferred continued EU membership: the β_2 estimates in columns (1)-(5) have the expected negative sign, reach statistical significant in nearly all specifications, and are much larger in magnitude than those in columns (6)-(10). For instance, a 'Remainer' who lives in a district with at least 65% vote for Remain is less likely to relocate after the referendum compared to 'Remainer' who lives in a district with less than 65% vote for Remain (column (4)), and this reduction amounts to 1.8 standard deviations of the outcome variable. On the other hand, the corresponding reduction for a 'Leaver' who lives in a pro-Leave district is only 0.9 standard deviations of the outcome variable (column (9)). This is in line with the recent study by Powdthavee et al. (2019), who find

that 'Remainers' experienced a negative shock in their well-being and suffered "mental distress" in the aftermath of the UK's vote to leave the EU. As such, these individuals were less likely to take the risk of moving away from a pro-Remain district, in which they felt a strong sense of belonging.[15]

[Table 2 about here]

4.2 Testing for pre-existing trends

A critical assumption in a DiD framework is the "parallel trends" assumption; that is, pre-intervention trends in outcomes are the same between treated and comparison groups. In our setting, the main concern is that the estimates of β_2 in Eq. (2) capture pre-existing trends in migration patterns, which are unrelated to the timing of the referendum. Indeed, it is plausible, for example, that unobserved and heterogeneous trends in omitted time-varying variables are more prevalent in aligned individuals and that these omitted variables cause changes in migration behaviour that we falsely attribute to the referendum timing. To tackle this possibility, we focus on the sub-sample of survey participants who were also interviewed in the previous wave, and re-estimate the specifications of Table 2 using data from UKHLS waves 6, 7 and 8 (rather than 7, 8 and 9) and setting the referendum date to be one year prior to the actual date.[16] As before, we also restrict the sample to include respondents who were interviewed both before and after the placebo referendum date and did not move more than once during the 3-wave period.

[15] In fact, the Remain camp sought to persuade voters to maintain the status quo, the less risky option, by evoking feelings of anxiety and playing on their risk-aversion (Vasilopoulou and Wagner, 2017). As risk-adverse individuals were both more likely to vote to remain in the EU (Liberini et al., 2019) and typically opt for the "devil they know" when faced with difficult issues (LeDuc, 2003; Clarke et al., 2017), Remainers may have been less willing to leave a district they know and they feel close to.

[16] Using placebo treatments constructed at arbitrary points at the left of the 'actual' cutoff point – and which should not affect the outcome – is a common way to address the possibility of pre-intervention trends in DiD studies based on survey data (see, e.g., Muñoz et al., 2020).

Table 3 reports the results of these regressions, where *Post-referendum*$^{\text{PL}}$ is a dummy variable that takes value 1 if the individual was interviewed after the placebo referendum date (i.e., 23rd June 2015), and 0 otherwise. None of the specifications return statistically significant estimates, confirming that our results are not influenced by pre-existing trends in aligned individuals who were simply "catching-up". Note that insignificant estimates are also obtained when we perform these tests for the specifications in Table 1.

[Table 3 about here]

4.3 Robustness checks

To provide further support to our key findings, we perform a number of robustness and sensitivity checks, which are reported in the Online Appendix.

Different sub-samples and error clustering. In Tables A.2a and A.2b, we re-run the regressions of Table 2 for different sub-samples of the data, each time removing all respondents in a specific government office region (GOR). Regardless of which sample is excluded, the β_2 estimates retain their size and statistical significance (at the 1% level) for Remain supporters. However, in line with our previous results, the corresponding effects for Leave supporters appear to be weaker and statistically less robust. In Table A.3, we experiment with alternative clustering of standard errors: at the district level alone, or at the individual level alone (one-way clustering). Our results are little affected by the method used to correct the standard errors.

Alternative model specifications. In Tables A.4, A.5 and A.6, we consider three alternative specifications of the baseline model. First, we add the small number of multiple movers to our sample (which were excluded earlier). Second, we re-define the *Alignment* variables based on the individual's district of residence at the time of the referendum, rather than their district of residence in UKHLS wave 6. Third, we let the *Post-referendum* indicator to capture individuals who were interviewed after the end of the third quarter

of 2016, rather than those interviewed after the 23rd of June 2016. The latter allows us to account for a time lag between the announcement of the referendum's outcome and its impact on actual moving. The results of these tests do not change the inferences drawn from earlier findings: as before, we can observe a significant alignment-induced reduction in *Moving* after the referendum, which is mostly driven by individuals who preferred continued EU membership.

Alternative estimation method. As recently shown by Timoneda (2021), the LPM with fixed effects (used throughout our analysis) produces very accurate estimates both with highly common data and rare events data.[17] Nevertheless, to address any remaining concerns about the accuracy of our chosen estimation technique, we check robustness to estimating the specifications of Tables 2 and 3 using a logit model instead of a LPM. As shown in Tables A.7 and A.8, the significance of the pre-post alignment effects persists, and the tests for pre-existing trends return, once again, insignificant estimates.[18]

4.4 Mechanisms: the desire for political homophily

Our results so far demonstrate that Remain supporters are significantly less likely to move after the referendum when they are strongly aligned to their district. We consider this as evidence that a desire for political homophily is at play; i.e., living in areas with political views similar to your own can satisfy your need for belonging and thus reduce the likelihood to relocate, especially when political divisions become deeper and threaten your well-being. To further corroborate the political homophily argument, we run a final round

[17]Using Monte Carlo simulations on common time-series cross-sectional data structures found in the literature, Timoneda (2021) shows that the ML (maximum-likelihood) and LPMFE (LPM with fixed effects) models produce identical predicted probabilities when the proportion of events in the sample is around 50 percent. Below 25 percent of events or rare events, however, the LPMFE model produces predicted probabilities much closer to the observed probability for a majority of the distribution, compared to the ML model.

[18]Using the method proposed by Puhani (2012) to calculate the treatment effect for a nonlinear DiD model, we also obtain predicted probabilities which are close to those of the LPM model.

of analysis and examine the existence of pre-post differences in geographic sorting along the lines of the Brexit identity. To do so, we restrict the sample to Remain supporters who moved once during the sample period, replace the dependent variable in Eq. (2) with a binary indicator taking value 1 if a respondent moves to a pro-Remain district (>50% vote for Remain), and interact the *Post-referendum* variable with a binary variable, *Conflict*, taking value 1 if the district of residence, before moving, is pro-Leave (>50% vote for Leave). We then estimate the equivalent specification for Leave supporters who moved once during the sample period – with the dependent variable capturing moving to a pro-Leave district and *Conflict* capturing living in a pro-Remain district before the move.

Panel (a) of Table 4 reports the results. We find that, after the referendum, non-aligned individuals are significantly more likely to move to a district to which they are aligned (compared to individuals who are already aligned): the estimate on the interaction term is positive and statistically significant at the 1% level for both 'Remain' movers (column (1)) and 'Leave' movers (column (2)). However, running the placebo regressions of Table 3 suggests that the estimate for 'Leave' movers is largely driven by pre-existing trends (column (2) in panel (b)). On the other hand, the evidence of pre-existing trends in the sample of 'Remain' movers is very weak: the corresponding estimate (column (1) in panel (b)) is three times smaller in magnitude and statistically significant at the 10% level only.[19] Overall, these results suggest that there was a rising trend in geographic political sorting even before the referendum, possibly due to correlations between partisan (Labour vs Conservative) identities and subsequent Brexit preferences. However, sharpened divisions in the British society in the aftermath of the Brexit vote, caused a much larger increase in geographic sorting of politically like-minded individuals – particularly among those who were mostly affected by the referendum.

[19]Formal t-tests (reported in Table 4) confirm that the estimate of *Post-referendum* $\times$ *Conflict* is statistically larger than the estimate of *Post-referendum*^{PL} $\times$ *Conflict*, only when we consider the sample of 'Remain' movers in column (1).

[Table 4 about here]

5 Conclusions

As the social consequences of Brexit continue to be the subject of debate, we explore how the divisions that emerged among citizens affect internal migration in the aftermath of the referendum. Numerous studies have explored how political divisions in American politics have produced a spatially polarized electorate, with counties becoming increasingly predominated by one of the two main parties. The unique circumstances of Brexit, with a clear-cut division suggested by a near 50-50 vote in the referendum, and the fractious discussions around its future, make the UK a particularly suitable test-bed to examine the consequences of polarizing politics on internal population movements. We show that UK citizens prefer ideologically-compatible locations along the lines of the Brexit identity. We find that, after the vote, the probability of moving to a new district is significantly lower for individuals who are aligned to their district of residence. Interestingly, this result is largely driven by Remain supporters, who found themselves 'misaligned' to the country and were more likely to experience a negative shock in their well-being after the vote. As such, these individuals were less likely to leave a district they were acquainted with and in which they felt a strong sense of belonging.

The estimated magnitudes of the alignment-induced reductions in moving patterns (caused by the referendum) are not only statistically significant but also economically meaningful. For example, if we compare two 'Remainers', one who lives in a district with at least 65% vote for Remain and one who lives in a district with less than 65% vote for Remain, the former will see a decline in their odds to relocate (compared to the latter) that amounts to 1.8 standard deviations of the outcome variable. These estimated effects pertain to the short-run; that is, in the immediate period following the referendum. However, if the referendum initially polarized attitudes towards the EU, the subsequent

Brexit process has ensured that the legacy of the referendum is still palpable as the public has become more divided. In fact, scholars and political commentators have increasingly warned about the increasing "tribalization" of British politics. These divisions do not only mirror divergences over the consequences of Brexit as such, but also in terms of people's sense of identity and the values they uphold, given the implications of EU membership for cross-border migration and issues of sovereignty (Curtice et al., 2019). As such, in the long run, the effect of political preferences on geographic polarization could contribute to exposing and exacerbating divisions across the British society, and disrupt the efficient functioning of the labour market by discouraging the migration of individuals to places where they are mostly needed.

Increasing the local homogeneity of citizens' political preferences can also increase the number of areas where election outcomes are not in doubt. A key concern in this respect is that by reinforcing the presence of politically homogeneous communities, deepening political divides do not only discourage the discussion of opposing viewpoints; they can also promote intolerance which can ultimately damage the social fabric of the country (Bishop, 2009).

Table 1: Moving Patterns and Alignment

	Moving				
	(1)	(2)	(3)	(4)	(5)
Post-referendum	0.000	0.001	0.002	0.002	0.002
	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Post-referendum × Alignment [50%]	-0.000				
	(0.003)				
Post-referendum × Alignment [55%]		-0.004			
		(0.003)			
Post-referendum × Alignment [60%]			-0.010***		
			(0.003)		
Post-referendum × Alignment [65%]				-0.016***	
				(0.005)	
Post-referendum × Alignment [70%]					-0.028***
					(0.006)
Vector $\mathbf{X}_{it}$	✓	✓	✓	✓	✓
Individual FE	✓	✓	✓	✓	✓
Wave FE	✓	✓	✓	✓	✓
Mean of DV	0.017	0.017	0.017	0.017	0.017
Mean of alignment	0.573	0.385	0.251	0.152	0.094
R-squared	0.344	0.344	0.345	0.345	0.345
Observations	52,095	52,095	52,095	52,095	52,095

Notes. DV is the dependent variable. Standard errors clustered at the individual and district level in parentheses. ***,**,* Statistically significant at the 1%, 5% and 10% level respectively.

Table 2: Moving Patterns and Remain vs Leave Alignment: Main Results

	Moving									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Post-referendum	0.003	0.003	0.004	0.004	0.004	-0.006	-0.001	0.001	0.001	0.001
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	(0.004)	(0.004)	(0.004)
Post-referendum × Remain alignment [50%]	-0.006									
	(0.004)									
Post-referendum × Remain alignment [55%]		-0.010*								
		(0.005)								
Post-referendum × Remain alignment [60%]			-0.019***							
			(0.006)							
Post-referendum × Remain alignment [65%]				-0.025***						
				(0.008)						
Post-referendum × Remain alignment [70%]					-0.031***					
					(0.008)					
Post-referendum × Leave alignment [50%]						0.006				
						(0.006)				
Post-referendum × Leave alignment [55%]							0.000			
							(0.004)			
Post-referendum × Leave alignment [60%]								-0.006		
								(0.004)		
Post-referendum × Leave alignment [65%]									-0.010*	
									(0.005)	
Post-referendum × Leave alignment [70%]										-0.023**
										(0.010)
Vector $\mathbf{X}_{it}$	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Individual FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wave FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mean of DV	0.021	0.021	0.021	0.021	0.021	0.013	0.013	0.013	0.013	0.013
Mean of alignment	0.365	0.254	0.178	0.129	0.106	0.817	0.539	0.338	0.179	0.079
R-squared	0.345	0.345	0.345	0.345	0.346	0.347	0.347	0.347	0.347	0.348
Observations	28,145	28,145	28,145	28,145	28,145	23,950	23,950	23,950	23,950	23,950

Notes. DV is the dependent variable. Standard errors clustered at the individual and district level in parentheses. ***,**,* Statistically significant at the 1%, 5% and 10% level respectively

Table 3: Moving Patterns and Remain vs Leave Alignment: Testing for Pre-Exisiting Trends

	Moving									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Post-referendum^{PL}	-0.004	-0.002	-0.002	-0.002	-0.001	0.004	0.002	0.004	0.002	0.002
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
Post-referendum^{PL} × Remain alignment [50%]	0.006									
	(0.005)									
Post-referendum^{PL} × Remain alignment [55%]		0.002								
		(0.006)								
Post-referendum^{PL} × Remain alignment [60%]			0.005							
			(0.008)							
Post-referendum^{PL} × Remain alignment [65%]				0.005						
				(0.011)						
Post-referendum^{PL} × Remain alignment [70%]					-0.008					
					(0.014)					
Post-referendum^{PL} × Leave alignment [50%]						-0.002				
						(0.005)				
Post-referendum^{PL} × Leave alignment [55%]							-0.000			
							(0.004)			
Post-referendum^{PL} × Leave alignment [60%]								-0.005		
								(0.004)		
Post-referendum^{PL} × Leave alignment [65%]									0.000	
									(0.005)	
Post-referendum^{PL} × Leave alignment [70%]										0.006
										(0.012)
Vector $\mathbf{X}_{it}$	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Individual FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wave FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mean of DV	0.020	0.020	0.020	0.020	0.020	0.013	0.013	0.013	0.013	0.013
Mean of alignment	0.318	0.198	0.116	0.067	0.041	0.813	0.517	0.303	0.133	0.028
R-squared	0.330	0.330	0.330	0.330	0.330	0.335	0.335	0.335	0.335	0.335
Observations	25,691	25,691	25,691	25,691	25,691	22,424	22,424	22,424	22,424	22,424

Notes. Post-referendum^{PL} is a dummy variable that takes value 1 if the individual was interviewed after the placebo referendum date (i.e., 23 June 2015), and 0 otherwise. The results are based on data from UKHLS waves 6, 7 and 8 (rather than 7, 8 and 9). DV is the dependent variable. Standard errors clustered at the individual and district level in parentheses. ***,**,* Statistically significant at the 1%, 5% and 10% level respectively

Table 4: Destination District For Movers: Does Alignment Matter?

Panel (a)	Moving to Remain district	Moving to Leave district
	(1)	(2)
Post-referendum	-0.254***	-0.050
	(0.056)	(0.094)
Post-referendum × Conflict	0.300***	0.283***
	(0.045)	(0.086)
Vector $\mathbf{X}_{it}$	✓	✓
Individual FE	✓	✓
Wave FE	✓	✓
Mean of DV	0.119	0.278
Mean of conflict	0.625	0.201
R-squared	0.365	0.189
Observations	1,693	900
Testing for Pre-Existing Trends		
Panel (b)		
Post-referendum$^{\text{PL}}$	-0.066	-0.058
	(0.072)	(0.099)
Post-referendum$^{\text{PL}}$ × Conflict	0.112*	0.178***
	(0.058)	(0.067)
Vector $\mathbf{X}_{it}$	✓	✓
Individual FE	✓	✓
Wave FE	✓	✓
Mean of DV	0.109	0.256
Mean of conflict	0.660	0.228
R-squared	0.318	0.173
Observations	1,557	890
Diff-test	0.005	0.168

Notes. Column (1) includes the Remain supporters who moved once during the sample period, whereas column (2) includes the Leave supporters who moved once during the sample period. Conflict is a dummy variable that takes value 1 if the mover originates from a district with the opposite preferences: >50% vote for Leave in column (1) and >50% vote for Remain in column (2). Post-referendum$^{\text{PL}}$ is a dummy variable that takes value 1 if the individual was interviewed after the placebo referendum date (i.e., 23 June 2015), and 0 otherwise. The pre-existing trends results are based on data from UKHLS waves 6, 7 and 8 (rather than 7, 8 and 9). DV is the dependent variable. Diff-test reports the p-value of a one-sided test, where H0: the difference between the estimates of *Post-referendum* × *Conflict* and *Post-referendum*^{PL} × *Conflict* is equal to zero, and H1: the difference between the two estimates is positive. Standard errors clustered at the individual and district level in parentheses. ***,**,* Statistically significant at the 1%, 5% and 10% level respectively.

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