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Fear and Loathing on the Campaign Trail: Did Immigration Cause Brexit?

Max VISKANIC

LIEPP, IC Migrations

max.viskanic@sciencespo.fr

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Fear and Loathing on the Campaign Trail: Did Immigration Cause Brexit?*

Max Viskanic[†]

January 13, 2020

Abstract

Can large immigration inflows impact electoral outcomes and specifically, what impact did immigration have on the vote in favour of leaving the European Union (Brexit) in the United Kingdom? In particular, I focus on how the increase in Polish immigration, the major group of immigrants post 2004, affected votes in favour of leaving the EU. I find a percentage point increase in Polish immigration to the UK to have caused an increase in votes in favour of Brexit of about 2.72-3.12 percentage points, depending on the specification. To obtain exogenous variation in Polish immigration, I collect data from the archives that reveals the location of Polish War Resettlement Camps after World War II, which location is plausibly exogenous to current political outcomes. Discussing potential mechanisms, I examine public opinion data in the British Election Study 2015 and find evidence of adversity towards immigration to be a root cause. Other considerations such as the National Health Service (NHS), incumbency and the general trust in politicians as well as the political institutions seem not to play a role.

Keywords: Political Economy; Voting; Migration; Brexit; EU; UK

JEL Classifications: C36, D72, J15, N44, R21, R23

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[†]LIEPP and IC Migrations, max.viskanic@sciencespo.fr

1 Introduction

Do large immigration inflows causally affect voting for right wing and populist parties? Specifically, I analyse what role Polish immigration played in the vote in favour of leaving the European Union (Brexit) in the United Kingdom (UK).

On the 23rd of June 2016 the UK decided by referendum to exit the European Union (EU). Given the that on the campaign trail a disproportionate amount of erroneous information (fake news) and false promises were made by the “Leave.EU” campaign, voting in favour of Brexit can be considered as a proxy for populist and identity based voting ([Browning \(2018\)](#)). A major topic in the debate prior to the referendum was the impact of increased immigration to the UK in recent years, especially from Eastern and Central European countries many of which joined the EU in 2004. Specifically, proponents of leaving the European Union wanted to regain control of their borders (“Take back control”) and thus mitigate migration flows, which is not possible when being part of the EU, given the free movement of people within the EU. The UK’s membership of the EU meant that the free movement of people in Europe was non-negotiable. Exiting the EU however would allow the UK to independently determine its immigration policy. Throughout the campaign there was increased scrutiny of migrant communities, especially the Polish community.¹

In this paper I show that a percentage point increase in Polish immigration post 2004 led to a statistically significant increase in votes in favour of Brexit of 2.72-3.12 percentage points, depending on the specification. I find a discernible effect of immigration on shaping political preferences of the native population. Overall, for every percentage point of Polish immigration, there is a 5 percentage point increase in people mentioning immigration to be the most important issue that politics in Britain faces today as answered in the first open ended question in the British Election Study 2015. I cannot find evidence that other competing reasons such as incumbency, general trust in politicians or investment in the NHS had any effects on the Brexit vote. On the other hand there is evidence that the vote on Brexit was not a protest vote and Local Authorities (LAs) with increased Polish immigration actually have a higher trust in British politicians in general. Those results are indicative that immigration played a root cause in the Brexit vote.

In order to estimate the causal impact of immigration I rely on an instrumental variable analysis. After World War 2 Polish army officers fighting in the Royal Air Force and general infantry were allowed to move with their families to the UK. The government then assigned them to War Resettlement Camps, which location is arguably orthogonal to political outcomes in the 21st century for many reasons. First of all the camps were

¹See amongst others: [Express \(2016\)](#), [BBC \(2016\)](#) or [Vox \(2016\)](#).

meant to be temporary allowing for Polish families to slowly repatriate to their home country. To the best of my knowledge and after several visits to the national archives in London, there is no document that determines the choice of location of the camps. All those camps were mainly composed of Nyssen Huts, hence of a temporary nature. Therefore it is relatively safe to assume that the initial location of the War Resettlement Camps is orthogonal to local political preferences. The second reason is that only 200 000 Polish soldiers and families were relocated to the UK after the Polish Resettlement Act in 1947. This number is relatively small and an upper bound for the number of Polish people that remained as many repatriated. Therefore the initial migration stock is unlikely to have shaped political opinions locally. In section 5.2 I test an implication of this statement empirically. The last main reason is that Polish immigration is greatly facilitated through the free movement of people at the point of its EU-Accession in 2004. This means that up until then it was quite complex for a Polish citizen to live in the UK. Hence the effect I am picking up is a sudden rise in the inflow of Polish immigrants and not the long-term exposure to Polish chain migration. A majority of migrants relocated through the Polish Resettlement Act though decided to stay in the UK (Biegus and Biegus (2013)). They then integrated in the local communities and presumably kept links with the mother country. Based on previous pioneering work by Card (2001), who showed statistically that new migrants allocate close to established immigrant networks, I predict that some new Polish migrants should allocate close to where their ancestors were resettled after WWII. When the EU-accession occurred in 2004, some new Polish migrants will allocate to certain areas for certain, presumably economic, reasons and some will allocated close to their ancestors. If the the ancestors are located in certain areas that for aforementioned reasons are orthogonal to political preferences, then I am able to estimate the *causal* impact of Polish immigration on voting for Brexit.

This paper relates to several strands of the literature.

The most relevant one is the stream examining the impact of immigration on extreme right and populist voting. The most recent publication is by Barone et al. (2016). In this paper the authors causally estimate the impact of immigration on three national elections using the prior allocation of immigrants before 1992 as an instrumental variable. The exclusion restriction being that a political scandal (“Mani Pulite”) led to the creation of completely new parties in 1993. In Halla et al. (forthcoming), the authors study the impact of immigration on voting in favour of the extreme right in the 1980s to 1990s. To obtain exogenous variation in the allocation of immigrants they use the prior settlement patterns of immigrants in the 1960s. Harmon (forthcoming) determines the impact of immigration to Denmark to have had a positive impact on votes in favour of anti-immigrants nationalist parties. His instrumental variables strategy uses the histor-

ical housing stock to address issues of endogeneity. [Otto and Steinhardt \(2014\)](#) study local elections in Hamburg under periods of high immigration to determine that in right wing xenophobic parties gained considerably. On the other hand [Mendez and Cutillas \(2014\)](#) show that the rise of Latin American immigrants led to an increase in votes for the major Left wing party, but an increased immigration from Africa led to more votes for the major right wing party. [Brunner and Kuhn \(2014\)](#) is the only paper that considers referendum outcomes. They determine the impact of cultural distance of immigrants to the native population on referenda about immigration. They instrument for the share of immigrants in the municipality by using local labour market conditions. What most of those papers have in common is that the instrument used to achieve exogenous variation in the allocation of new immigrants relies on the “shift-share” instrument introduced by [Card \(2001\)](#). This paper in this instance goes two steps further. First of all there is a clear facilitation of immigration post-2004, which renders it easier to distinguish between new immigration shocks (in this case post-2004) and the exposure to continuous migration (in aforementioned cases). Also the historical specificity of the initial allocation of Polish migrants post WWII (more details further) gives rise to a plausibly more exogenous initial settlement of immigrants.

Other (more recent) papers have started studying the role that politics play in immigration policy ([Gamalerio \(2018\)](#)) as well as studying the role the refugee crisis has had on extreme right voting ([Steinmayr \(2018\)](#) and [Vertier and Viskanic \(2018\)](#)). Both papers find negative effects of refugees on Far Right Nationalist parties in Austria and France respectively. The instruments used are very similar, [Steinmayr \(2018\)](#) uses group housing to instrument for the allocation of refugees, whereas [Vertier and Viskanic \(2018\)](#) use holiday villages all over France.

Many papers have in turn analysed the impact of immigration to the UK, especially on the labour market.² [Dustmann et al. \(2014\)](#) use data from the British Labour Force survey to estimate the impact of immigration in both a theoretical and empirical fashion. They find the skillset of immigrants to be very similar to the one of natives and no strong effects on aggregate employment, participation, unemployment and wages. Specifically [Manacorda et al. \(2011\)](#) find that the mild effects of immigration on the UK labour market are due to the imperfect substitutability between natives and immigrants. Related to this, [Gilpin et al. \(2006\)](#) use the 2004 accession wave of immigration and find no discernible evidence on unemployment claims. The authors paint a picture of a flexible UK labour market that has seen a modest, but broadly positive impact of immigration on the economy. [Nickell and Saleheen \(2015\)](#) analyse the specific occupational impact of

²[Wadsworth \(2015\)](#) provides a comprehensive review on the general impact of immigration on the UK Labour market.

immigration, they find small negative effects on wages but a strong impact of immigration on wages in the semi-skilled/unskilled occupational group.

More specifically, this paper is related to a stream in the literature trying to determine the root causes of Brexit, arguably one of the most important political decisions of the UK's and Europe's history. Papers in this stream mostly offer evidence as correlations (Becker et al. (2016), Arnorsson and Zoega (2016) and Goodwin and Heath (2016)). I add to these studies by providing an identification strategy to estimate the causal impact of immigration on the Brexit vote outcome.

A relatively new avenue of research considers the impact of rising trade exposure on electoral outcomes and thus on the determinants of populism. Autor et al. (2016) show that increased Chinese competition has led citizens to elect more extreme house representatives by examining congressman's voting records. Dippel et al. (2015) and Malgouyres (2017) examine the impact of rising trade exposure directly on election outcomes and find a positive effect on extreme right wing parties in Germany and France respectively.³ Other studies in political science such as Clarke et al. (2016) or Arzheimer (2009) have shown that anti-immigrant sentiment can give rise to votes in favour of extreme right wing parties.^{4,5}

Having those streams of the literature in mind, my contributions are both methodological and in terms of data generation.

First of all, I study one the most important political election in Europe's history and show the causal impact of large immigration inflows on the Brexit vote.

Secondly, I causally estimate the impact of large immigration inflows using a presumable exogenous instrument, which relies on pre-existing settlements. In the process of constructing the instrument I generate new data regarding the location of War Resettlement Camps, which could help further research in reconstructing migrant group earlier than available censuses.

The next section outlines the historical context, Section 3 formulates the empirical and identification strategy, Section 4 provides the main empirical results, Section 5 presents some robustness checks and a falsification exercise (5.2) and Section 6 concludes.

³In a Vox column O'Rourke (2016) makes the case for historical impacts of Globalisation to have been a major factor in the Brexit vote outcome.

⁴Whitaker and Lynch (2011) study specifically the rise of UKIP in Britain.

⁵A review on the Economic determinants of Electoral outcomes is compiled by Lewis-Beck and Stegmaier (2015).

2 Historical Context

The largest group of Non-British troops that fought in the Royal Air Force and general infantry during World War 2 were born in Poland. Also, occupied Poland's exiled government was located in London. As a result of the service of the Polish people in the British army, Churchill told parliament in 1945: "His Majesty's government will never forget the debt we owe to the Polish troops. I earnestly hope it will be possible for them to have citizenship and freedom of the British empire, if they so desire." [Pittsburgh-Post-Gazette \(Mar 2, 1945\)](#).

The legislative consequence of this was the Polish Resettlement Act of 1947. This allowed Polish troops and their families to move to the UK after WW2 and find initial shelter in one of the War Resettlement Camps located across the country. It was expected that Polish troops and their family (about 200 000 ([National Archives \(1932-1959\)](#))) would relocate within a year to Poland. Given Stalin's occupation of Poland and the employment opportunities caused by a lack of male labour force after the war, some Polish people decided to stay. Since the initial settlement was deemed temporary only Nissen huts and tents were established as location for the relocated soldiers and families. Within the National Archives and to the best of my knowledge there is no document, which gives evidence of any choice of location or census of the camps. A list of location of the camps is the only document used to construct the instrument. Given this sporadic planning and lack of documentation the initial assignment seems to be orthogonal to political preferences after the war. Section 5.2 will also offer a falsification test to corroborate those claims.

After some time a majority of Polish people integrated to the local communities around the location of the camps and hence became migrant networks for potential new arrivals post-2004 ([Biegus and Biegus \(2013\)](#)).

In order to validate the regressions presented below it is important to keep in mind that extensive post- and pre-accession controls i.e. the logarithm of Unemployment rates per LA in 2004 and 2014, the logarithm of Gross Value added (GVA) in 2014 and 2004 for the NUTS1, NUTS2, NUTS3 region, Latitude and Longitude as well as the logarithm of Population in 2014 are included. In the robustness checks I also include further controls related to the shares of natives. It is also important to mention that new LAs were defined and merged as a result of the Local Government Act of 1972. Therefore the allocation in 1947 cannot be related to any historical political force that prevails in those communities now. This complete redrawing of LAs brakes any potential political persistence that prevailed in those communities. In Section 5 I provide graphical evidence for the large scale redrawing of LAs as well as a randomisation exercise (Section 5.2) showing that the

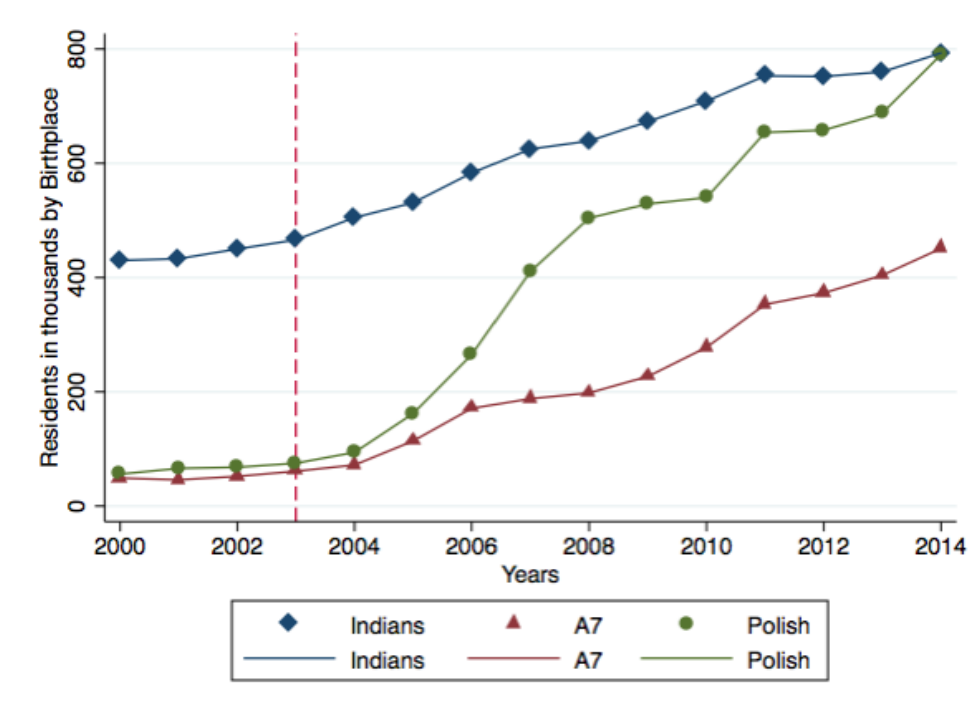
instrumented coefficient is not significant on political outcomes after the redrawing in 1973 as well as that the Distance to the closest War Resettlement Camp (my instrument) is also unrelated to political outcomes in 1973. This is to make sure that LAs have not been re-drawn in a way to take into account the distance to the War Resettlement Camps. This provides additional evidence of the fact that the initial allocation of War Resettlement Camps did not impact political preferences at the local level before 2004.

The 1951 census counted 162,399 people born in Poland in the UK and thus demonstrates the relatively low rate of repatriation after the war (about 20%).

After the EU-Accession of Poland in 2004, the number of Polish born immigrants in the UK increased rapidly, as can be seen in Figure 1 and Figure 2. In Figure 1 we can clearly see that Polish born residents have now overtaken Indian born residents as the largest immigrant group. In Figure 2, one can observe how relatively little immigrants from other A8 countries⁶ migrated to the UK, yielding initial evidence of the “special” relationship between the UK and Poland. As we can see pre-accession levels of Polish born residents are about 50 000, which probably are post-WW II ancestors.

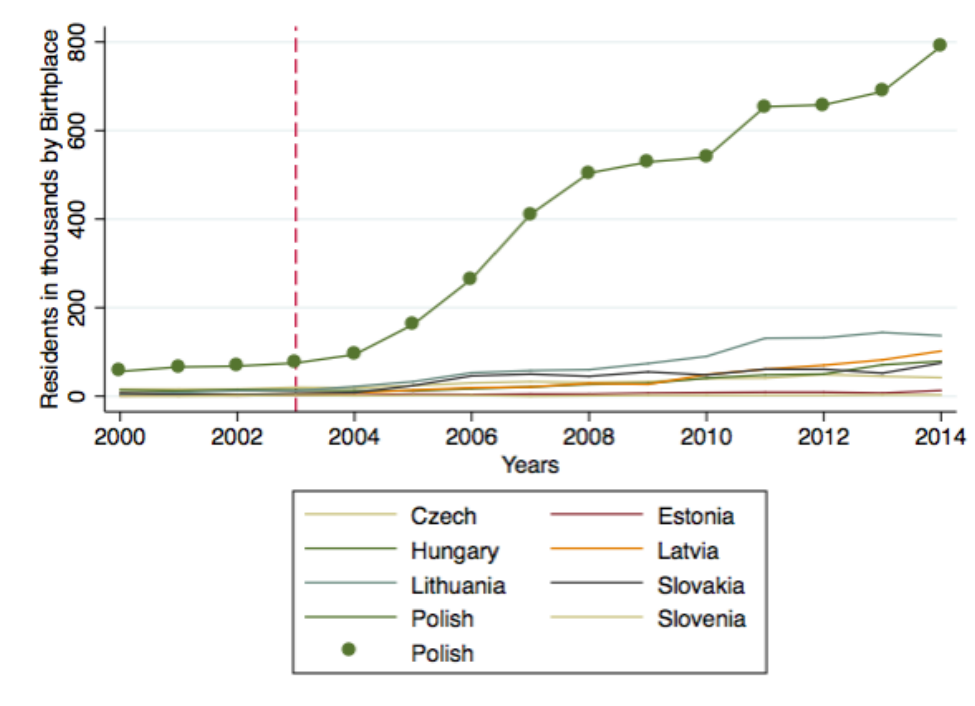
In 2016, the number of Polish born residents reached about 1 million, which at the time of writing makes it now the largest group of immigrants in the UK. This is implied by “overtaking India”.

Figure 1: Polish Immigration in comparison with other immigrants; Polish people are now the largest group of immigrants; the vertical line divides time in pre- and post-accession.



⁶Accession 8 countries are all the Eastern and Central European countries that joined the EU in 2004: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia.

Figure 2: The evolution of A8 Migrants since the year 2000; the vertical line divides time in pre- and post-accession.



3 Empirical Specification and Identification

In this paper I will estimate the causal impact of Polish immigration post 2004 on the Brexit vote and turnout outcomes in each LA with the following equation:

$$Y_i = \beta_0 + \beta_1 \frac{Polish_i}{Population_i} + \beta_k \Omega_i + \epsilon_i \quad (1)$$

In this case $\frac{Polish_i}{Population_i}$ will be the amount of people born in Poland that live in a certain LA over the total population in that LA expressed in percentage points.⁷ Ω_i are both current and past economic, social as well as geographic controls i.e. the natural logarithm of Gross Value Added in 2004 and 2014 at the NUTS1, NUTS2 and NUTS3 level as well as Unemployment in 2004 and 2014 per LA together with Latitude and Longitude and the natural logarithm of Population in 2014. Y_i is either turnout or the share of votes in favour of leaving the EU (Leave) in percentage points.

⁷In general, the best approach would be to subtract the Polish residents in 2003 to the residents present in 2014 and divide those by population in order to obtain the share of immigrants between 2003 and 2014. The problem with this approach is that for many LAs the share of Polish residents is not defined in 2003. I thus use the stocks of Polish born residents in 2014 to have as many observations as possible. Using the Census in 2001 would lead to inconsistent data sources and since it was conducted in 2001 it would also be measuring Polish residents 2-3 years too early. Examining Figure 1 we can see that this will not be problematic, given the low number of immigrants in 2003, which as mentioned before will probably be the people that moved to the UK because of the Polish Resettlement Act in 1947.

For reasons of geographic selection β_1 might be biased. New Polish immigrants might allocate to certain LAs because of some observable or unobservable characteristics that could be correlated with political outcomes in that place. For this reason I propose to use the Distance to the closest War Resettlement Camp as an instrument for the share of Polish immigrants. The idea being that new Polish Immigrants, approximated by the shares of foreign-born Polish people in 2014, will partially allocate close to where their ancestors after WW2 did. The ones that allocated closer to the War Resettlement Camps will allocate there because of ties to the ancestors. The further away the Polish immigrants allocate from those War Resettlement Camps, the less likely it is that they allocated there because of reasons of ancestry, but rather because of other factors such as for example better employment opportunities. This instrumental variables approach claims that, controlling for aforementioned controls, the Distance to the War Resettlement Camps can lead to filtering out the exogenous component in Polish immigrant allocation. The underlying assumption is that the distance to the War Resettlement Camps is per se unrelated to trends in political preferences, which is corroborated by the vast redrawing of LAs in 1972 together with the randomisation exercises carried out on the local elections in 1973 (5.2). The reason why I use distance and not for example a dummy in the regressions is that there are only 37 resettlement camps, where some of them are in the same LA. Since the location was temporary and rural, the distance to the centroid of the closest LA should be the best proxy to predict allocation of Polish immigrants in the future, as this is where their ancestors allocated before. The UK also has a very low number of LAs and hence distance creates more statistical power.⁸

The first stage regression includes the same controls as the second stage regression i.e. NUTS1, NUTS2, NUTS3 Gross Valued Added and Unemployment both pre- and post accession (2004 and 2014) together with Latitude and Longitude and the logarithm of Population in 2014.⁹

The first stage in the 2 Stage-Least-Squares regression can thus be written as:

$$\frac{Polish_i}{Population_i} = \gamma_0 + \gamma_1 Distance_i + \beta_k \Omega_i + \varepsilon_i \quad (2)$$

Where $Distance_i$ is the distance to the closest War Resettlement Camp. The controls

⁸There is some anecdotal evidence that some Polish immigrants were employed in mining and other types of unskilled work after WW2. I have not been able to get the exact number of Polish employees per company, but for future work it could be interesting to weight the distance potentially by industry share or economy strength in order to get a more fine grained measure to predict Polish immigrants allocation. It is unclear though whether this economic weighting might not result in additional concerns of endogeneity as it is not reported, which job the majority of Polish workers performed after WW II.

⁹Some scholars (notably [Davies \(2016\)](#)) have shown that the Leave Vote was especially strong in places, where historically Labour was stronger. With the randomisation exercises in 5.2. on elections in 1973, I avoid this critique.

are the same as in the main specification. Given the aforementioned reasons I expect γ_1 to be negative and highly significant, given that new immigrants should partially sort towards prior established immigrant networks. I fit both a linear first stage (as specified) as well as one using $Distance_i$, $Distance_i^2$ and $Distance_i^3$ as instruments.¹⁰ The reason being the shape of the data shown in Figure 4.

4 Empirical Results

In the following sections I present the data description, summary statistics, the main results as well as the main mechanism for the findings. In section 5 I will provide Robustness checks and randomisation exercises (5.2).

4.1 Data Description and Summary Statistics

Using the Office for National Statistics (ONS)¹¹ micro dataset I am able to obtain data on population by country of birth as well as many socio-economic variables i.e. Unemployment, Gross Value Added (at the NUTS1, NUTS2 and NUTS3 level) both post- and pre-accession per LA in the United Kingdom, which I include as controls in all the regression. The earliest complete data for every LA in England and Wales is 2004, whereas the most recent available is 2014.¹²

From the national archives in the United Kingdom in Richmond, I have collected the location and address of the camps, where former polish soldiers were allocated after WW2. In order to calculate the distance from the LA to the War Resettlement Camp I use the centroid of the municipality.

The public opinion data is retrieved from the British Election study in 2015 collected by Fieldhouse et al. (2016). This is a survey on political attitudes carried out on a representative part of the British electorate. Here I recode certain variables and aggregate them to the NUTS2 level and assign them to the LAs in question (further details below).

Table 1 refers to the 287 LAs for which detailed migration data is available.¹³ For all others in the sample only data on the amount of British-born residents and total population were available.

We can see that the size of LAs is fairly heterogenous. General economic indicators improved from 2004 to 2014 and unemployment also increased during that time. The share of Polish people averages at 1.21%, and the share of British people at 88.03% with

¹⁰Higher powers of $Distance_i$ than $n = 3$, do not increase the fit.

¹¹www.ons.co.uk

¹²Except for the variable on Polish born residents, which are still missing at some Local Authorities even in 2014.

¹³Given some data constraints in terms of birthplace and economic/social controls, the used sample includes only LAs in England and Wales.

strong heterogeneity across LAs. Turnout is comparatively high and the share of votes in favour of leaving the EU is high at over 54% in the sample. Latitude and longitude are my two included geographical controls, which pinpoint the centroid of the LA.¹⁴

Table 1: Summary statistics for the LAs with detailed Migration data.

Variable	Mean	Std.Dev.	Min.	Max.
Population	171.28	115.91	33	1094
log(GVA2004 - NUTS1)	11.54	0.48	10.53	12.34
log(GVA2004 - NUTS2)	10.27	0.47	8.89	11.37
log(GVA2004 - NUTS3)	8.90	0.58	7.45	10.53
log(GVA2014 - NUTS1)	11.85	0.53	10.78	12.81
log(GVA2014 - NUTS2)	10.58	0.51	9.16	11.95
log(GVA2014 - NUTS3)	9.20	0.61	7.64	11.18
Turnout	73.77	4.96	59.25	83.57
Leave	54.55	9.95	21.38	83.57
Share of British	88.03	11.18	43.79	100
Unemployment 2004	4.38	1.88	1.8	13.1
Unemployment 2014	5.81	2.02	2.34	12.47
Distance	0.40	0.26	0.0007	1.44
Share of Polish	1.21	1.34	0	6.90
Latitude	52.03	1.12	50.26	55.15
Longitude	-1.36	1.34	-5.07	1.74

The observed Unit is the LA. GVA is calculated using the income approach and I take the natural logarithm. Unemployment, Turnout, vote in favour of Leave and shares of immigrants/natives are measured in percentage points. Population is measured in thousands. Distance as well as latitude and longitude are directly taken from Google Maps. NUTS1, NUTS2 and NUTS3 are different classifications for territorial units.

4.2 The First Stage

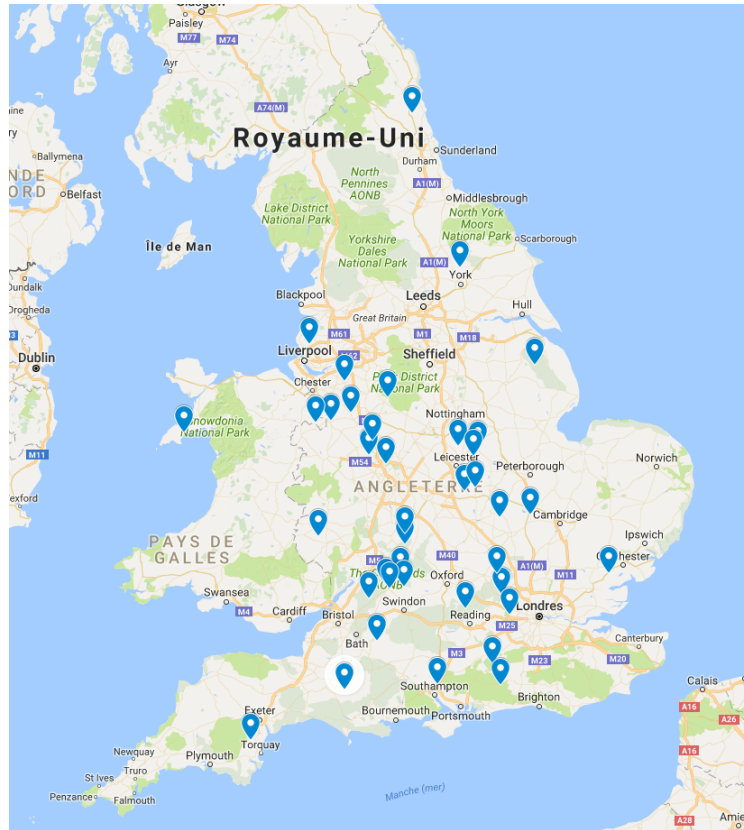
Figure 3 provides some initial graphical evidence for a quasi-random location of the War Resettlement camps in 1947. The locations are spread all over England and Wales, but not in an apparently deterministic way. Later in the paper I will show that this initial allocation is not related to any political outcomes as well as that the first stage does not significantly differ if controls are included or not.

¹⁴In the whole discussion so far, there is no political variable used as control. The most relevant seem potentially the outcomes for European elections. I will explain why including them makes little sense here. In [Becker et al. \(2016\)](#) the authors show that the UKIP vote outcomes for the European Elections in 2014 are very good predictors of the Brexit Vote in 2016. This is consistent with the estimation here. The fact is that in this setting using the outcome of European elections in 2014 as a control, would be committing a fallacy known as “bad control” ([Angrist and Pischke \(2009\)](#)). The UKIP vote outcome in 2014 is probably caused by the very same immigration taking place post-2004. As a result any political outcome post-2004 can be seen as an outcome variable and generally be influenced by immigration. Before 2004, there are no strong right wing parties that could predict the Brexit vote outcome.

Figure 4 shows a clear negative pattern, whereby the shorter the distance to the closest War Resettlement Camp, the higher the concentration of Polish born immigrants in the LA. Given the shape of the plot I will use two different specifications in the first stage. One specification will be the linear distance. Given some graphical evidence of non-linearity I also fit a model with the square and the cube of the distance¹⁵ to the closest War Resettlement Camp. In the end, the effects of both instruments are very similar.

Fitting the first stage in the linear case gives a parameter estimate that is negative and highly significant. The parameter size is -1.15 with standard error of 0.30 (Table 2). Parameter estimates do not significantly differ with or without controls. An F-Test for the excluded instrument with controls is 14.7, which puts me in a relatively safe zone for inference. Nevertheless, I will also provide Conditional Likelihood Ratios (CLRs) that are valid even under weak instruments.

Figure 3: Location of War Resettlement Camps in England and Wales in 1947.

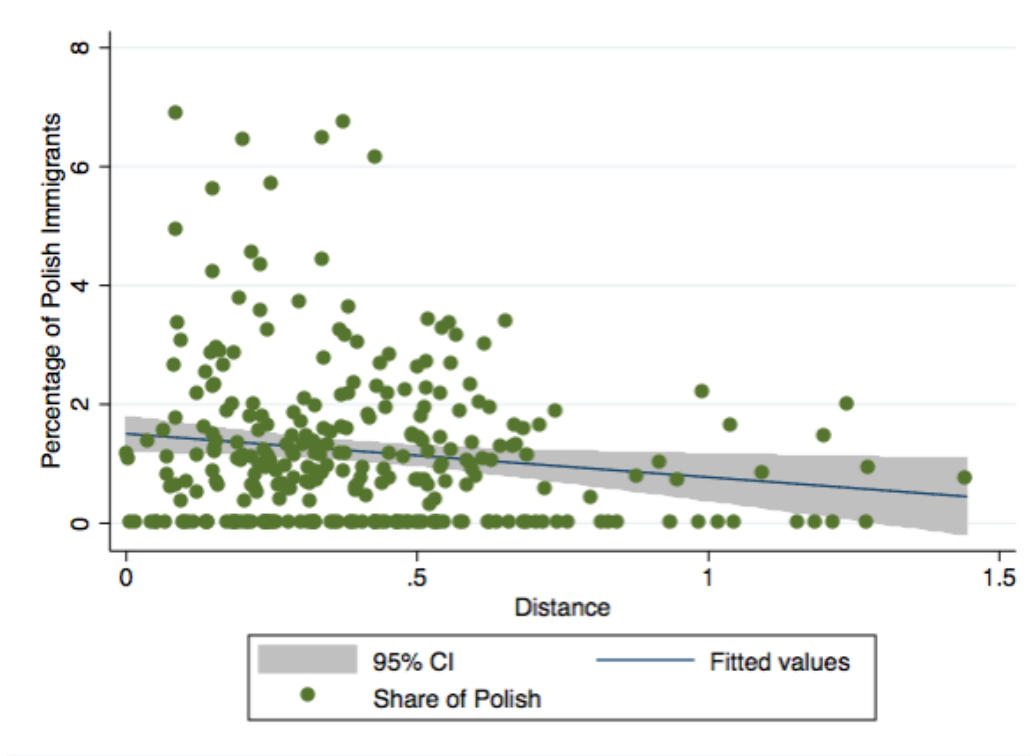


4.3 Main Results

Table 2 contains cross-sectional evidence of the correlation of Polish immigrants with turnout and outcomes on votes in favour of Brexit. Polish immigrants sort significantly

¹⁵I.e. with $Distance_i$, $Distance_i^2$ and $Distance_i^3$ as the three instruments.

Figure 4: Percentage of Polish immigrants plotted on distance to closest War Resettlement Camp.



more, but not largely, towards areas, where less people voted but those that did, voted more in favour of Brexit (Column 3 and 6). A reason for this could be that new Polish migrants often immigrate without many financial resources [Okolski and Salt \(2014\)](#) and might therefore allocate to places that are relatively less well-off.¹⁶ Using the linear instrument, we can see that a one percentage point increase in Polish immigrants has causally led to an increase in votes in favour of Brexit of about 2.72 percentage points (Column 4). Using the non-linear first stage, I find the effect of an increase in one percentage point of Polish immigrants to increase votes in favour of Brexit by about 3.12 percentage points (Column 5) and in this case the Conditional Likelihood Ratio also excludes 0. We can also see that there is a negative non significant impact of immigration on voter turnout.

Performing a back of the envelope calculation I try to determine whether the 3.12% swing in votes caused by Polish immigration could have reversed the Brexit vote outcome. This is an approximate calculation and should not be taken as hard evidence. In my dataset, I find that 199 LAs have a positive share of Polish born residents and those LAs have an average size of about 202,000.¹⁷ Taking into account a 3.12% swing, average

¹⁶This is corroborated by the fact that most of the economic controls are negatively correlated with the vote in favour of Leave and positively with turnout.

¹⁷The exact number is 201,945.

Turnout at 73.77% and an adult population share of around 75% for national Statistics (2011), we have the following potential swing vote:

$$3.12\% \times (199 \times 202,000) \times 73.77\% \times 75\% \approx 693905$$

693 905 is about two thirds of the actual difference between Brexit and Remain votes of 1 Million. Therefore we can see that Polish immigration could have not accounted for the total swing in Brexit votes. At the same time it is important to keep in mind that those calculations are very stylised and rely importantly on the assumption of a linear effect.

Table 2: The first stage regressions together with the effect of Polish immigration on Brexit votes.

	(1) $\frac{\text{Polish}}{\text{Population}}$	(2) $\frac{\text{Polish}}{\text{Population}}$	(3) Leave	(4) Leave	(5) Leave	(6) Turnout	(7) Turnout	(8) Turnout
Distance_i	-0.73*** (0.25)	-1.15*** (0.30)						
$\frac{\text{Polish}}{\text{Population}}$			0.62** (0.31)	2.72* (1.55)	3.12** (1.52)	-0.29** (0.13)	-0.71 (0.49)	-0.56 (0.48)
CLR				[-0.29,7.69]	[0.13,10.81]		[-2.12,0.32]	[-4.57,0.92]
Regression	OLS	OLS	OLS	2SLS(1)	2SLS(3)	OLS	2SLS(1)	2SLS(3)
Controls	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	287	287	287	287	287	287	287	287
Adjusted R^2	0.017	0.132	0.541	0.468	0.438	0.805	0.794	0.800

Robust Standard errors in parentheses. The observed unit is the LA. Columns 1 and 2 are the first stage regressions whereas the the other columns are two stage least squares regressions with controls on voting outcomes. Columns 5 and 8 use the non-linear first stage. CLR is the conditional Likelihood Ratio. Controls include $\ln(\text{GVA})$ for NUTS, NUTS2 and NUTS3 and $\ln(\text{Unemployment})$ for 2004 and 2014 as well as Latitude and Longitude and $\ln(\text{Population})$ in 2014.

The F-Statistic for the excluded instrument is 14.6 (Column 2).

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

4.4 Mechanism: Examining Public Opinion Data

One major mechanism through which immigration can shape electoral outcomes is by affecting political preferences. A good way to proxy this is to rely on public opinion surveys. In the following part I re-code parts of the British election study 2015 collected by [Fieldhouse et al. \(2016\)](#) and use them as outcome variables aggregated to the NUTS2 level to measure the impact of Polish immigration on political opinion.

I replace the Leave and Turnout outcomes with variables regarding immigration, the case of a protest vote, trust in British politicians, naming the Secretary General of the UN correctly, raising or lowering spending on the NHS, people's attitude towards the future and towards democracy. The detailed description and re-coding of those variables can be found in the appendix.

Overall we can clearly see that for a percentage point increase in Polish immigrants there is a 5 percentage point increase of people mentioning immigration as the main problem facing Britain today. Therefore areas where more Polish people exogenously allocated, there is an increase in immigration resentment. This corroborates the evidence that Polish immigration had some effect on shaping electoral preferences of the native population. This is shown in Column 1 in both Tables [3](#) and [4](#) and the effect is more pronounced with the non-linear first stage. Together with this also subjects described their last vote not to be a protest vote (Column 2). On average people also have slightly higher trust in politicians and about three percentage points of people are on average better at naming the Secretary general of the UN (per percentage point increase in Polish immigration) as can be seen in columns 3 and 4. There is no significant difference in public opinion on the NHS, nor on considerations of the future or about how satisfied individuals are about democracy (Columns 5, 6 and 7). Tables [4](#) includes the results for the non-linear first stage. What one can draw from this empirical evidence is the fact that LAs affected by higher Polish immigration, see immigration as the main issue facing British society. At the same time, they do not seem to be affected by their future hopes, their belief in democracy and their views on other social issues such as the NHS. On the other hand people seem more aware politically speaking i.e. they did not cast a protest vote, trust their politicians to a greater extent and they are on average more able to name the secretary general of the United Nations. This evidence suggests that the increased vote in favour of leaving the European Union is actually due to additional concern for immigration caused by Polish immigration.

Table 3: The effect of Polish immigration on public opinion with the linear first stage.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Issue-Immigration	Protest-Vote	Trust-Politicians	UN-SG	NHS-Investment	Future-Optimism	Democracy
<i>Polish Population</i>	0.05*** (0.02)	-0.08*** (0.02)	0.16** (0.08)	0.03** (0.01)	-0.05 (0.03)	-0.02 (0.02)	-0.01 (0.02)
CLR	[0.02,0.13]	[-0.18,-0.04]	[0.02,0.40]	[0.01,0.08]	[-0.15,0.01]	[-0.07,0.01]	[-0.05,0.02]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	287	287	287	287	287	287	287
Adjusted R^2	.	.	0.391	.	0.387	0.381	0.605

Robust Standard errors in parentheses. The observed Unit is the LA. The outcome variables are described in the Appendix All regressions are 2SLS regressions carried out with the linear first stage. CLR is the conditional Likelihood Ratio. Controls include $\ln(\text{GVA})$ for NUTS, NUTS2 and NUTS3 and $\ln(\text{Unemployment})$ for 2004 and 2014 as well as Latitude and Longitude and $\ln(\text{Population})$ in 2014. The F-Statistic for the excluded instrument is 14.6.

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

Table 4: The effect of Polish immigration on public opinion with the non-linear first stage.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Issue-Immigration	Protest-Vote	Trust-Politicians	UN-SG	NHS-Investment	Future-Optimism	Democracy
<i>Polish Population</i>	0.06*** (0.02)	-0.08*** (0.02)	0.18** (0.08)	0.03** (0.01)	-0.03 (0.03)	-0.03 (0.02)	-0.02 (0.01)
CLR	[0.03,0.21]	[0.03,0.21]	[0.04,0.52]	[0.01,0.20]	[-0.21,0.02]	[-0.144, 0.00]	[-0.20,0.03]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	287	287	287	287	287	287	287
Adjusted R^2	.	.	0.350	.	0.441	0.308	0.595

Robust Standard errors in parentheses. The observed Unit is the LA. The outcome variables are described in the Appendix. All regressions are 2SLS regressions carried out with the non-linear first stage. CLR is the conditional Likelihood Ratio. Controls include $\ln(\text{GVA})$ for NUTS, NUTS2 and NUTS3 and $\ln(\text{Unemployment})$ for 2004 and 2014 as well as Latitude and Longitude and $\ln(\text{Population})$ in 2014.

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

5 Robustness

In this section I offer a battery of robustness checks and a falsification exercise (5.2). Section 5.1. deals with the possibility that I might be picking up effects of many groups of immigrants and not necessarily the one of Polish immigrants. The next subsection looks at whether the initial allocation of Polish War Resettlement camps is related to historical political outcomes and thus checks if I am not picking up a pre-eminent political trend. I also show graphical evidence of the redrawing of LAs that brakes potential pre-eminent trends in political preferences.

5.1 Other Immigrant Groups

In order to show that the War Resettlement Camps uniquely predict the share of Polish people, I run the first stage using as a dependent variable the share of immigrants of all countries except for Poland in Table 5. The importance of this exercises is to show that the impact is of only Polish immigration and not corroborated with any other share of immigrants. The instrument should be specific to Polish immigration. We can observe that the distance to the closest War Resettlement Camp does not reliably predict the share of immigrants of other countries. This evidence strongly corroborates the validity of the instrument.

Table 5: Distance of the closest WRC as a predictor of Non-Polish Immigrants

	(1) <i>Non-PolishImmigrants</i> <i>Population</i>
Distance	-1.96 (1.26)
Regression	OLS
Controls	Yes
Observations	287
Adjusted R^2	0.758

Robust Standard errors in parentheses.

The observed unit is the LA.

Controls include $\ln(\text{GVA})$ for NUTS1, NUTS2 and NUTS3 and

$\ln(\text{Unemployment})$ for 2004 and 2014 as well as Latitude and Longitude and $\ln(\text{Population})$ in 2014.

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

Additionally, I perform a Robustness check that deals with the possibility that election outcomes might be caused by other immigrant groups and not specifically by the impact of Polish immigration. Given data limitations, specifically on the number of Non-Polish immigrants, I carry out Robustness checks taking the number of British born people as reference. Taking into account other specific immigration groups such as for example other A8 accession countries or Indian residents creates too much attrition in observations.¹⁸

The first exercise is to run the main specification controlling for the logarithm of the share of British people. In Table 6 we can see those results. The effects on Turnout still remain non-significant and the impact on Brexit vote is very similar to our main result. This is the inverse exercise as including all other migrants groups.

Additionally, I carry out another analysis by constructing an instrument based on Card (2001) for the share of British people. I take the latest share of pre-Accession British natives available (2000) to instrument for the share of British people in the year 2014 and use this as an additional regressor in the main specification. In Table 7 we can see that the results are more pronounced, but of similar magnitude. They remain significant on the Leave vote and not significant on Turnout.

Table 6: The impact of Polish Immigration on Brexit and Turnout controlling for the share of British natives

	(1)	(2)	(3)	(4)	(5)	(6)
	Leave	Leave	Leave	Turnout	Turnout	Turnout
<i>Polish Population</i>	1.02*** (0.30)	3.28** (1.61)	3.50** (1.49)	-0.17 (0.11)	-0.60 (0.49)	-0.35 (0.49)
CLR		[0.28, 8.58]	[0.47, 9.37]		[-2.07, 0.43]	[-2.31, 1.03]
Regression	OLS	2SLS(1)	2SLS(3)	OLS	2SLS(1)	2SLS(3)
Controls	Yes	Yes	Yes		Yes	Yes
Observations	287	287	287	287	287	287
Adjusted R^2	0.590	0.510	0.494	0.823	0.811	0.821

Robust Standard errors in parentheses. The observed Unit is the LA. All regressions control for the natural logarithm of the share of British people. Regressions in columns (1) and (4) are OLS.

2SLS regressions use the linear first stage in columns (2) and (5) and the non-linear in columns (3) and (6). CLR is the conditional Likelihood Ratio. Controls include $\ln(\text{GVA})$ for NUTS1, NUTS2 and NUTS3 and $\ln(\text{Unemployment})$ for 2004 and 2014 as well as Latitude and Longitude and $\ln(\text{Population})$ in 2014.

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

¹⁸Per se, data on other immigrant groups is as readily available as for Polish residents, but this is very heterogenous across LAs. Having information on many immigrant groups simultaneously for one LA causes the attrition of observations.

Table 7: The impact of Polish Immigration on Brexit and Turnout using a [Card \(2001\)](#) type instrument for the share of British people

	(1)	(2)	(3)	(4)	(5)	(6)
	Leave	Leave	Leave	Turnout	Turnout	Turnout
<i>Polish Population</i>	1.66*** (0.33)	4.95** (1.96)	5.08*** (1.80)	0.11 (0.11)	-0.35 (0.55)	-0.02 (0.54)
<i>British Population</i>	0.45*** (0.09)	0.82*** (0.21)	0.83*** (0.20)	0.17*** (0.02)	0.13** (0.05)	0.16*** (0.05)
Regression	OLS	2SLS(1)	2SLS(3)	OLS	2SLS(1)	2SLS(3)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	287	287	287	287	287	287
Adjusted R^2	0.590	0.458	0.447	0.835	0.824	0.834

Robust Standard errors in parentheses. The observed Unit is the LA. The share of British people is instrumented with its past share in 2000. Regressions in columns (1) and (4) are OLS. 2SLS regressions use the linear first stage in columns (2) and (5) and the non-linear in columns (3) and (6). No Conditional Likelihood Ratios are provided as they apply to cases with only one instrumented variable. CLR is the conditional Likelihood Ratio.

Controls include $\ln(\text{GVA})$ for NUTS1, NUTS2 and NUTS3 and $\ln(\text{Unemployment})$ for 2004 and 2014 as well as Latitude and Longitude and $\ln(\text{Population})$ in 2014.

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

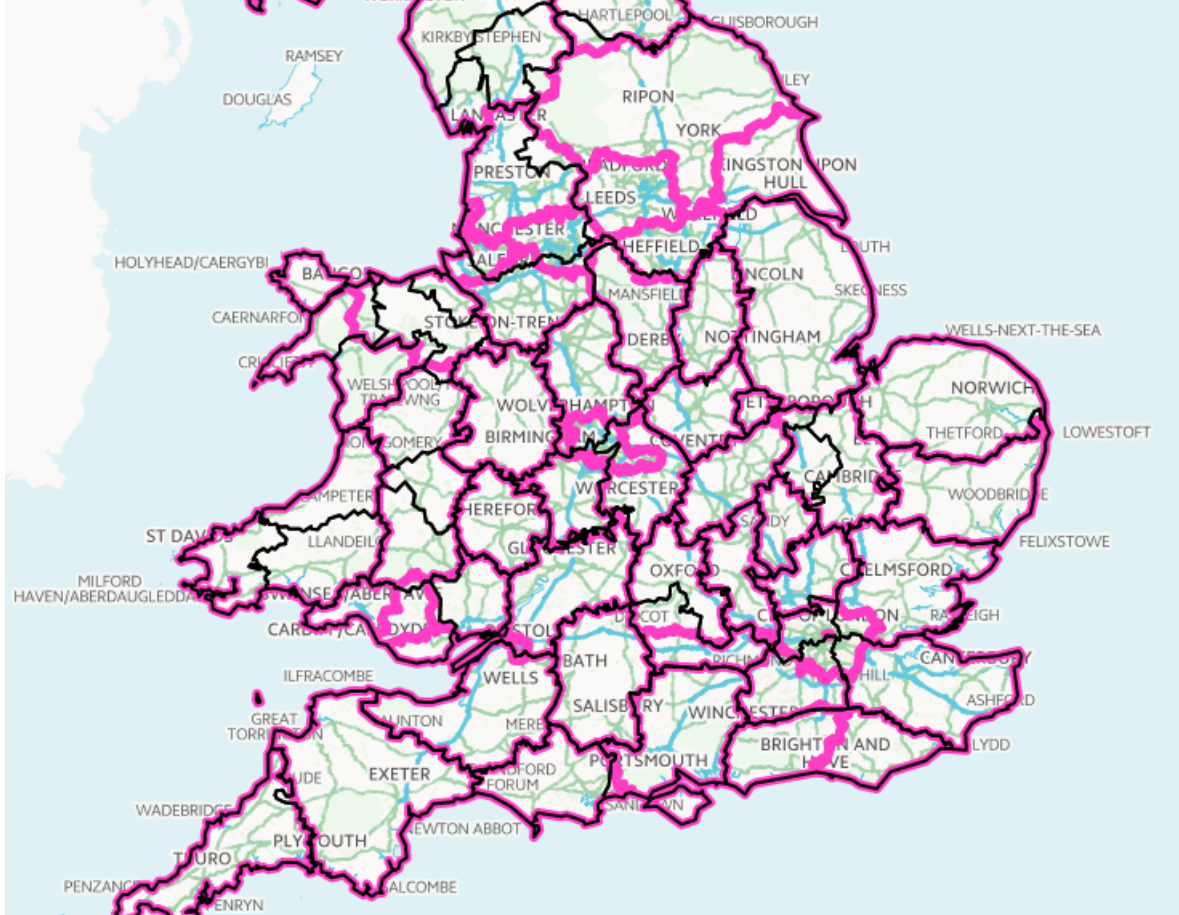
5.2 Predicting Outcomes in the local election of 1973

I would be picking up a pre-eminent trend in political preferences if the distance to the closest War Resettlement Camps were related to political outcomes in the past. For example if the War Resettlement Camps were located in certain areas because of some political considerations. We already know that about 20 years after Polish people were allocated to the War Resettlement Camps all LAs were re-drawn and this would theoretically brake this initial political persistence if it existed. Figure 5 provides evidence of vast redrawing of LAs. On the other hand, the re-drawing of those LAs might have been deterministic. In the following regression I take as an outcome variable the Difference between Conservative and Labour votes (The only two major parties standing for election in 1973) to show that the instrument is unrelated to political competition in 1973. In Table 8 we can see that the 2SLS coefficient is not significant on the difference between votes for Conservative and Labour candidates in 1973 local election and also the plain OLS regression of the Distance to the closest War Resettlement Camp yields a very imprecise point estimate.¹⁹ Therefore the redrawing of districts has not been deterministic and thus the validity of

¹⁹I use the outcome in local elections as they are aggregated at the LA level. Parliamentary election results are aggregated at the electoral constituency level.

my instrument is unaffected.²⁰ The first column is the OLS regression and columns (2) and (3) use the linear first stage and the non-linear first stage respectively.

Figure 5: Pre-1972 Local Authorities in thin black lines and present LAs in thick pink lines.



5.3 Outmigration

Immigration can have effects on the composition of the voting population across areas. In this section I test whether the immigration of Polish people has possibly led to the displacement of natives. It could be that Polish immigration displaced native voters, which in turn could affect voting outcomes if natives do not have representative political opinions. In Table 9 one can see the result of regressing the instrumented share of Polish people on the share of net outmigrants defined by $\frac{Population^{2014} - Population^{2004}}{Population^{2014}}$. Using both the linear and the non-linear first stage we can see that the effect is very small and highly inaccurate. Therefore there is no evidence that Polish immigration had effects on the composition of the voting population in LAs.

²⁰Some observations are missing, given that subsequent Government Acts do not allow to match all LAs in 2014 with LAs in 1973. Before LAs were even larger, making the matching impossible to perform statistical analysis.

Table 8: Validity of the instrument: Local elections in 1973

	(1) $Con^{1973} - Lab^{1973}$	(2) $Con^{1973} - Lab^{1973}$	(3) $Con^{1973} - Lab^{1973}$
$Distance_i$	-4.67 (4.39)		
$\frac{Polish}{Population}$		3.16 (3.18)	2.70 (3.18)
Regression	OLS	2SLS(1)	2SLS(3)
Controls	Yes	Yes	Yes
Observations	253	253	253
Adjusted R^2	0.282	0.262	0.270

Robust Standard errors in parentheses. The observed Unit is the LA. Both regression are 2SLS, column (1) uses the linear first stage and column (2) the non-linear first stage. $Con_{1973} - Lab_{1973}$ is the difference between vote shares for Conservative and Labour candidates in the 1973 local election. Controls include $\ln(GVA)$ for NUTS1, NUTS2 and NUTS3 and $\ln(Unemployment)$ for 2004 and 2014 as well as Latitude and Longitude and $\ln(Population)$ in 2014.

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

Table 9: The effect of Polish immigration on the share of Net Outmigrants.

	(1) $\frac{Population^{2014} - Population^{2004}}{Population^{2014}}$	(2) $\frac{Population^{2014} - Population^{2004}}{Population^{2014}}$
$\frac{Polish}{Population}$	0.03 (0.78)	-0.12 (0.80)
CLR	[-2.25, 1.55]	[-4.10, 1.43]
Regression	2SLS(1)	2SLS(3)
Controls	Yes	Yes
Observations	287	287
Adjusted R^2	0.431	0.412

Robust Standard errors in parentheses. The observed Unit is the LA. Both regressions are 2SLS and column (1) uses the linear and column (2) the non-linear first stage. CLR is the conditional Likelihood Ratio. Controls include $\ln(GVA)$ for NUTS1, NUTS2 and NUTS3 and $\ln(Unemployment)$ for 2004 and 2014 as well as Latitude and Longitude and $\ln(Population)$ in 2014.

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

6 Concluding Remarks

A large and homogenous immigration in a relatively short amount of time could increase populist voting. Specifically, I have shown that Polish immigration has causally increased the Brexit vote by 2.72-3.12 percentage points depending on the specification. Carrying out a back of the envelope calculation I show that the movements of vote shares could not have avoided leave from being preferred to remain. Examining potential mechanisms I find that the effect is mostly due to people's concern for immigration and that other often cited considerations do not seem to play a role.

The contributions of this paper are threefold. First of all, I propose a credible identification strategy to estimate the causal impact of immigration on voting outcomes when precise census data is not available. Furthermore I explain partially one of the most important elections in Britain's and also the EU's history. In the process of data collection of this paper I generate new original data from the archives, which contributes to the digitization of historical data to be used in the social sciences.

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Appendix

Detailed coding of the public opinion questions.

- **(1) Issue-Immigration:** What is the most important issue facing Britain today? This is an open-ended question asked in the survey. I look at every single of the about 3000 observations and if it is related to immigration I code a 1.²¹ Otherwise I code a 0.
- **(2) Protest-Vote** Was your vote a protest vote? If the response is yes I coded a 1, otherwise 0.
- **(3) Trust-Politicians** How much do you trust British politicians generally? 0 is equivalent to no trust and 10 is equivalent to trusting them a lot. The few times where the information is missing I recode it as a 5.
- **(4) UN-SG** Who is the secretary general of the United Nations (UN)? 1 if Ban Ki Moon (*The Secretary General of the UN at that time*) is identified correctly, 0 if any other name is guessed or no information is provided. I include this question in the survey in order to check whether LAs affected by Polish immigration could be less aware of current political developments and thus in some sense deprived.
- **(5) NHS-Investment** What is your view about putting money in the National Health Service (NHS)? Very important that it should be done is coded as 1, fairly important is coded as 2, it does not matter and “don’t know” is coded as 3, fairly important that it should not be done is coded as 4 and very important that it should not be done is coded as 5.
- **(6) Future-Optimism** Over the next ten years, how likely or unlikely is it that you will improve your standard of living? Very likely is coded as 1, somewhat likely is coded as 2, “don’t know” is coded as 2.5, somewhat unlikely is coded as 3 and very unlikely is coded as 4.

²¹I am very restrictive with coding a 1. The answer must clearly identify immigration as the main issue. If it is “foreigners” I include it, but if it is “overpopulation”, I do not.

- **(7) Democracy** On the whole, are you satisfied or dissatisfied with the way the democracy works in this country? Very satisfied is coded as 1, fairly satisfied is coded as 2, “don’t know” is coded as 2.5, a little dissatisfied is coded as 3 and very dissatisfied is coded as 4.



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Directeur de publication :

Bruno Palier

Comité de rédaction :

Andreana Khristova, Samira Jebli

Sciences Po - LIEPP
27 rue Saint Guillaume
75007 Paris - France
+33(0)1.45.49.83.61
liepp@sciencespo.fr

