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Abstract

The 2004 accession of 8 Eastern European countries (plus Cyprus and Malta) to the European Union (EU) was overshadowed by feared mass migration of workers from the East due to the EU's rules on free mobility of labour. While many incumbent EU countries imposed temporary restrictions on labour mobility, the United Kingdom did not impose any such restrictions. We document that following accession at least 1 million people (ca. 3% of the UK working age population) migrated from Eastern Europe to the UK. Places that received large numbers of migrants from Eastern Europe saw a significant increase in anti-European sentiment after 2004, measured by vote shares for the UK Independence Party (UKIP) in elections to the European Parliament. We show that the migration wave depressed wages at the lower end of the wage distribution and contributed to increased pressure on public services and housing.

Keywords: POLITICAL ECONOMY, MIGRATION, GLOBALIZATION, VOTING, EU

JEL Classification: R23, D72, N44, Z13

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1 Introduction

After decades of deepening of the political, economic and social ties between the European Union and its member countries, the referendum on the membership of the United Kingdom in the European Union held on 23 June 2016 marks a decided turning point in European history. Economists and political scientists rushed to interpret the referendum results and a common narrative that emerged is that the vote may be interpreted in the context of increased fears due to the distributional consequences of globalisation, suggesting that the vote to leave the European Union may be interpreted as a vote against further globalisation.

Yet, the merely cross sectional nature of these analyses should be treated with some caution as concerns about omitted variables and reverse causality are inherent. This paper is the first to use quasi-experimental variation to shed light on the question to what extent immigration was a driving force behind the decision of the UK to leave the European Union. We make headway by performing a panel-level analysis using a proxy for the underlying support of the Leave campaign: the electoral support for the United Kingdom Independence Party (UKIP) in the European Parliamentary elections. Further, addressing concerns about causality, we exploit the 2004 EU accession to the European Union as a natural experiment to provide us with variation in the exposure of local authority districts to EU migration. Our findings suggest that the radical anti-EU party UKIP gained significant support in areas that received a lot of migrants from Eastern Europe. We show that in these places political forces shifted away from the explicit pro-European parties towards the anti-EU parties, which put the two party political system in the UK under significant strain and is seen as having contributed to David Cameron being pushed by his own Conservative Party to call for a referendum in the first place.

Measuring changes in political preferences over time in the UK political system is very challenging. The underlying first-past-the-post electoral system for the British House of Commons implies that voters are strategic in casting their votes, as otherwise, their vote is ultimately lost. This implies that protest- or single issue

parties, such as the UKIP party, see very few votes in regular parliamentary elections for the British House of Commons. In fact, despite coming out first overall with a whopping 29% of the popular vote in the European Parliamentary elections in 2014, UKIP had not won a single seat in a regular election to the British House of Commons.¹ Another challenge for coherent empirical work is the review of electoral boundaries that affects almost every parliamentary election. This leads to gerrymandering and regular changes in the electoral boundaries and thus, the recomposition of the electorate across parliamentary elections, making it very difficult to map political preferences across space over time. Lastly, even if cross-walks were to exist, they would be of limited use because the first-past-the-post system bars the aggregation of votes across space, without introducing a significant amount of noise.²

We overcome these issues by focusing on the European Parliamentary (EP) elections. Following the European Parliamentary Elections Act of 1999, the 1999 European parliamentary elections were the first to be held in the United Kingdom, where the whole country used a system of proportional representation. Even though the Election results from 1999 onwards are reported at different level of spatial detail, the fact that a system of proportional representation is used allows a fairly safe aggregation into consistent spatial units to perform a panel analysis stretching across all four EP elections from 1999 onwards.

The second main avenue by which we make progress is by using immigration data by nationality broken down across the 380 British local authority districts. Freedom of movement is one of the four economic freedoms guaranteed by the EU common market: free movement of goods, services, labour and capital. With the EU accession of 10 new member countries in 2004, the United Kingdom, as opposed to many other continental European countries, decided not to impose temporary restrictions on the free movement of labour. The possibility of temporary restric-

¹The only UKIP seat in Parliament came from a defector from the Conservative Party, who then won his re-election in the 2015 elections.

²Such cross-walks would allow us to study electoral results over time and space only for the set of constituencies whose boundaries never changed over the sample period.

tions was included as part of the accession treaties as neighbouring countries, such as Germany and Austria feared significant pressures on local labour markets as a result of expected migration from Eastern Europe. We can thus use the timing of the EU accession in 2004, together with a measure of exposure to EU migration to perform a simple difference-in-difference analysis. The fact that we have data for EP elections in 1999, prior to accession, allows us to present evidence in support of the underlying common-trends assumption.

A central question rests on how this specific migration shock from Eastern Europe post 2004 may have contributed to growing anti-EU sentiment. We provide two sets of explanations. In addition to the results on the UKIP party's vote share, we also provide evidence for the underlying economic mechanism that drives the result. We show that migration from the 2004 EU accession countries to the United Kingdom put downward pressure on average wages. The effect is more pronounced at lower quantiles of the wage distribution.

While migration is expected to yield overall gains in living standard, there are likely to be distributional effects: the increased population figures put additional stress on the existing available infrastructure.³ The demand for public services, for schooling, housing and health care increases. The UK, with its easily accessible universal health care system NHS (National Health Service), while being spared spending cuts in the immediate aftermath of the financial crisis, seems to have struggled to keep up with increasing demand following stronger immigration. Similarly, the UK is known for very restrictive zoning laws and regulation, making the housing supply very inelastic not only in London, but also in the rest of the country. At the same time demand is bolstered by low interest rates, the ability to buy properties in cash-only transaction which attracts money from questionable sources and misguided help-to-buy schemes. Advancing on the property ladder is part of British identity, and growing net migration puts an already stretched housing market into overdrive. We show that places that saw significant in-migration

³See for example [Hainmueller and Hiscox \(2010\)](#), who study the relative effect of labor market competition versus access to services in the context of the US.

from EU accession countries see a significant increase in the share of households who live in rental housing between 2001 and 2011. In addition, we present evidence that the welfare system was put under additional strain due to increased demand, suggesting that a failure of local governments to respond to increased pressures on services, could have contributed to growing discontent with the EU and the implied free movement of labor.

This paper relates to an emerging literature that explores the relationship between exposure to globalization and political outcomes. The focus of this literature is to understand the rise of parties on the extreme ends of the political spectrum.⁴ In this very recent strand of literature, [Dippel et al. \(2015\)](#) link votes for far-right parties in Germany to trade integration with China and Eastern Europe. In the context of the US, [Autor et al. \(2016\)](#) argue that rising trade integration between the U.S. and China contributed to the polarization of U.S. politics. While most of these papers focus on the political consequences due to increased competition induced by liberalization policies implying (more) free movement of capital and goods and services, there is limited evidence on the role of (relaxed restrictions on) movements of labor as a factor of production. This paper fills this gap in the literature by looking at the growth of anti globalisation sentiment in the UK, whose labor market has seen exposure due to free movement of labor within the European Union.

The paper also relates to the well established literature studying the economic implications of migration on labor market outcomes. Most known are the contributions by [\(Bartel, 1989\)](#) and [\(Altonji and Card, 1991; Card, 2001\)](#), which explore the heterogenous impact of migration shocks on labor market outcomes in the context of the US. The findings generally supports the notion that there are distributional consequences with low skilled migration putting pressure on wages for low skilled natives (see e.g. [Borjas, 2003; Cortes, 2008](#)).

Our approach, especially regarding our measure of the EU accession shock cap-

⁴[Alesina et al. \(2000\)](#) provide a theoretical rationale for the link between economic integration and political disintegration.

tures a mixture of explicitly economic as well as more indirect mechanisms that have been highlighted in the political science literature. [Hainmueller and Hopkins \(2014\)](#), in a review piece bring together the two main underlying literatures in political economy and political psychology, explaining the development of attitudes towards immigration among natives. They suggest that personal economic circumstances only have a second order effect on political attitudes. Rather, there appear to be systematic interaction effects as discussed in [Newman \(2013\)](#). The central hypothesis, on which ground we construct our measure of exposure to migration from EU accession countries takes into account that a large influx of an immigrant group will activate threat among natives when it occurs in places where the immigrant group had largely been absent.

Our paper is also related to previous work on the rise of the UK Independence Party (UKIP), largely in political science. [Whitaker and Lynch \(2011\)](#) and [Clarke et al. \(2016\)](#) look at voting patterns for UKIP and document that, not surprisingly, Euroscepticism combined with anti-immigration sentiments is the main driving force of UKIP success. Their work, however, does not exploit the accession experiment in 2004 to identify a causal effect of migration on anti-EU sentiment.⁵

Evidence on potential channels for Euroscepticism in the UK comes from two papers, looking at two specific outcomes. [Bell et al. \(2013\)](#) look at how migration to the UK from Eastern Europe after 2004 affected crime. They document that migration from Eastern Europe had a small negative impact on property crime, but no effect on violent crime. Changes in crime rates are thus not a likely channel explaining the increase in anti-EU sentiment following the Eastern European migration shock. While [Bell et al. \(2013\)](#) study the same ‘natural experiment’ of EU accession in 2004, they concentrate on crime, but do not consider UKIP vote shares and other outcomes or channels for anti-EU sentiment, as we do. [Giuntella et al. \(2015\)](#) analyze pressure on NHS services from migration to the UK. Somewhat surprisingly, they find a reduction in NHS waiting times in areas with high migration,

⁵In Europe more broadly, [Arzheimer \(2009\)](#) analyzed contextual factors explaining extreme right voting in Western Europe in the period 1980-2002.

but an increase in areas with inflow of UK nationals moving within the UK.⁶

We go beyond this previous literature by combining various aspects of previous work and by adding a detailed analysis of a multitude of channels that potentially explain changes in anti-EU sentiment following the EU expansion in 2004: we look at UKIP vote shares in four elections to the EU parliament, using data for 380 local authority districts in the UK, using thus the most disaggregated data available. Similar to [Bell et al. \(2013\)](#) and [Giuntella et al. \(2015\)](#), we exploit the 2004 accession shock as a natural experiment, but different from them, we do not look at only one specific aspect, namely crime or NHS waiting times, but UKIP vote shares as well as various labour market outcomes and effects on public services.

The rest of the paper is organized as follows. Section 2 provides further institutional context and describes our data sources. Section 3 explains our empirical strategy. Section 4 presents the main results on election results in EP elections in 1999, 2004, 2009 and 2014. Section 5 looks at mechanisms that potentially explain the shift in anti-EU sentiments. Section 6 concludes.

2 Context and a First Look at the Data

In this section we describe the historical context and detail the data that we use throughout the paper.

2.1 The European Union, Globalisation and Backlash

The European Union traces its origins to the 1950s. In 1957, (West) Germany, Italy, France and the 3 Benelux countries signed the Treaty of Rome, which created the European Economic Community (EEC) and established a customs union. In Article

⁶Most other work on migration in Europe focuses on the political fall out from refugee resettlement policies, which is qualitatively significantly different since its not an explicit defining feature of the European institutional framework. In this line of work, [Barone et al. \(2016\)](#) explore the impact of migration (from mainly Northern Africa) on political success of center right parties across Italy. [Steinmayr \(2016\)](#)'s analysis suggests, on the other hand, that settlement of refugees across Austria decreased popular support for the far-right, nationalist, anti-immigration parties.

48, the Treaty of Rome states:

Freedom of movement for workers shall be secured within the Community by the end of the transitional period at the latest. Such freedom of movement shall entail the abolition of any discrimination based on nationality between workers of the Member States as regards employment, remuneration and other conditions of work and employment.

Free mobility of labour is thus enshrined in the DNA of the EEC and its current incarnation, the European Union.

The UK negotiated access to the single market during the 1960s, but the process was interrupted twice due to French vetoes, but ultimately the UK joined the EEC in 1973. The February 1974 general election yielded a Labour minority government, which then won a majority in the October 1974 general election. Labour pledged in its February 1974 manifesto to renegotiate the terms of British accession to the EEC, and then to consult the public on whether Britain should stay in the EEC on the new terms, if they were acceptable to the government. A referendum on 5 June 1975 asked the electorate: "Do you think that the United Kingdom should stay in the European Community (the Common Market)?" 67.2 percent of the electorate answered 'Yes'. The 1975 referendum is described in detail in [Butler and Kitzinger \(1976\)](#).

The UK was instrumental in bringing about the Single Market guaranteeing the freedom of movement of goods, capital, labour, and services in the EEC. Since the 1975 Referendum, the European Economic Area has evolved into the central pillar of what became the European Union with the Maastricht Treaty of 1993. The further political and economic integration was formalized through the treaties of Amsterdam in 1997, Nice in 2001 and Lisbon in 2009.

On 1 May 2004 eight Eastern European countries (plus Cyprus and Malta) joined the European Union. Due to fears of migratory pressures into the social welfare system or into the labor markets, many continental EU countries lobbied successfully for a phasing in of the common market's free movement of labour.

Austria and Germany, for example, imposed the maximum possible transition rules to restrict free movement of labour for up to seven years from the accession date. The UK was among the few countries to permit access to its labour market to Eastern Europeans from day one (but not into its welfare system).

In parallel to the increasing role of the EU, opposition to further integration increased in the UK. The UK opted out of joining the single currency, the Euro. The United Kingdom Independence Party (UKIP) formed as an essentially single-issue party working towards the UK's exit from the European Union. While domestically UKIP was not successfully in gaining parliamentary presence due to the UK's first-past-the-post election system, it was more successful in elections to the European Parliament (EP). The reason was twofold. First, following the European Parliamentary Elections Act of 1999, European parliamentary elections in the UK were held using a system of proportional representation. Second, being EP elections, voters' minds were more clearly set on European issues as opposed to national elections. Both combined helped UKIP to gain seats in the EP and in fact increase its vote share and number of EP seats over time.

The rise of UKIP bears some resemblance to the rise of the Front National in France and the Alternative fuer Deutschland (AfD) in Germany. One common theme is the skepticism against globalisation in its various forms: economic integration in the European Union brings free mobility of labour and thus leads to increased competition for jobs, especially for low-skilled workers, as we will discuss in the next subsection. Even beyond the EU, migration and trade not only bring opportunities, but also risks for certain parts of the labour force. Donald Trump's presidential campaign also runs on an anti-immigration, anti-globalization platform. It comes as no surprise that, at one of his rallies, Nigel Farage, the leader of UKIP, spoke about "a key parallel between the 2016 Presidential Elections and the Brexit vote: the plight of white blue-collar workers who may have lost their jobs in an era of globalization."⁷

⁷See <http://www.politico.eu/article/nigel-farage-preaches-brexit-gospel-in-cleveland/>, accessed 07.09.2016.

2.2 Migration to the United Kingdom

In 2004, eight Eastern European countries plus Malta and Cyprus joined the European Union.⁸ The United Kingdom, along with Sweden, was one of the few countries that did not opt to impose temporary restrictions on the freedom of movement. Most continental European countries decided to phase in the freedom of movement only after the accession countries had been a member of the European Union for up to seven years. In 2008, Romania and Bulgaria joined the European Union. Here, the UK decided to opt into restricting their freedom of movement.

The decision to open the borders in 2004 to Eastern Europeans was taken by Tony Blair's government. A central reason for opening the borders where the thriving UK economy and a set of estimates from a Home Office commissioned study, predicting that "only around 5,000-13,000 Eastern Europeans [were] to arrive to the United Kingdom per year" (see [Dustmann et al., 2003](#)). Subsequently, the then head of the Home Office Jack Straw admitted that the decision to open the borders immediately after accession was a "spectacular mistake".⁹ The Home Office commissioned report on "The impact of EU enlargement on migration flows" was carried out by prominent economists, that explored historical evidence and quantitative studies, concluding that

"even in the worst case scenario, migration to the UK as a result of Eastern enlargement of the EU is not likely to be overly large. The evidence brought together indicates that net migration from the AC-10 [10 EU Accession countries] to the UK will be broadly in line with current migration movements. " (pg. 9, [Dustmann et al., 2003](#))

The reliance on historical data, which naturally constrains the analysis to periods with relatively high migration cost (communication cost, language barriers

⁸The Eastern European countries were Poland, Czech Republic, Slovakia, Hungary, Slovenia along with the three baltic states. Malta and Cyprus were the smallest accession countries in terms of population and have contributed only marginally to migration to the UK.

⁹See <http://www.telegraph.co.uk/news/uknews/immigration/10445585/Labour-made-a-spectacular-mistake-on-immigration-admits-Jack-Straw.html>, accessed 20.08.2016.

and physical cost of distance) and resulting, low migration elasticities, in addition to the possible impact of general equilibrium effects (Germany and most other countries restricting free movement for the whole discretionary period) may have contributed to the discrepancy between the projections and actually realized migration flows. While this paper will not attempt to understand the causes for this discrepancy, it is important to highlight that understanding the underlying nature for these discrepancies will be important for future research.

Migration from EU accession countries to the United Kingdom was significantly larger than anticipated. Figure 1 presents the stock of migrants from groups of EU accession countries as identified from the 2011 census by their respective country of birth, cross-tabulated with the year of arrival to the United Kingdom. According to these figures, the stock of individuals who were born in any of the 8 Eastern European accession countries that arrived up to 2003 was just around 193,180. Around 30% of this stock consists of Eastern Europeans who have migrated to the UK prior to 1981. Of this stock, the largest group were people born in Poland, who made up 42% of the stock of Eastern Europeans having arrived prior to 2004.¹⁰ After 2004, there was a dramatic up-tick in arrivals from Eastern Europe. The number of Polish-born migrants increased by a factor of 7, while the overall number of Eastern Europeans in the UK increased by a factor of 5, up to 1,036,116 or approximately 2% of the 2001 population. Of the net inflow of 842,936, only 238,227 or 28% moved to London. This compares with net in-migration from Western European EU member countries of around 214,736, the vast majority of which is concentrated in the London region absorbing 57%.

The raw figures suggest two stylized facts: first, migration from Eastern European countries is sizable and far outstripped migration from Western European countries (for which the free movement naturally also applied) and second, the spatial distribution of migrants from Eastern European seems quite distinct compared

¹⁰Historically, the UK had a large Polish population due to the second World War. After Poland's defeat against Germany and the Soviet Union, the Polish government in exile was set up in London. The remainder of the Polish Army was fighting alongside the British from several bases across the UK.

to those from Western Europe.

These two stylized facts motivate our use of a simple measure of the EU 2004 Accession migration shock drawn from the 2011 and 2001 census:

$$\text{AccessionShock}_c = \frac{\text{EU accession migrants}_{c,2011} - \text{EU accession migrants}_{c,2001}}{\text{EU migrants}_{c,2001}}$$

This shock measure, motivated by the political science literature that documents an explicit interaction effect suggesting that a given inflow of migrants has a larger effect in areas that start out with a low baseline stock of migrants (see [Newman, 2013](#)) further combines the two features suggested by the raw data. The numerator captures the change in the size of the resident population that were born in EU accession countries in one of the 380 local authority districts c between the 2001 and 2011 census. Since, as indicated in Figure 1, the aggregate in-migration dynamics from EU accession countries prior to EU accession is very flat, we can think of the bulk of the variation in the numerator as stemming from the migration post 2004. This is divided by the stock of migrants from EU countries that have been member of the European Union up to 2004.¹¹ The ratio thus captures both the extent of and the distinctiveness in the spatial distribution of in-migration from EU accession countries relative to migration from the (predominantly wealthy) Western European countries.

As indicated, our AccessionShock_c measure hard codes an interaction effect well established among political scientists: a given inflow of migration interacts meaningfully with the existing stock to produce anti-migration or anti-globalization sentiment. To see this, suppose that two local authority districts A and B each have a baseline population of 100,000 inhabitants and let us assume that each receives an absolute inflow of Eastern European migrants of 3,000 individuals, or 3% of the population. Suppose that for district A 1% of the initial population has a migration background, while for district B, that share is 3%. While the level of the supply

¹¹Our results are robust to alternative normalisations as explained in detail later in the paper.

shock affecting the labor market is equivalent in absolute terms (3% of the resident population), our AccessionShock_c measure would take a value of 1 for district B, while it takes a value of 3 for district A. That is to say, the bigger the baseline stock of immigration, the smaller is the effect that a given migration shock has on creating anti-European sentiment.¹²

We will also show that our results are not driven by migration from non EU countries. This is not surprising since for Non-EU migrants, free movement rules do not apply. Hence the UK can tailor its migration policies to impose stringent limits on migration from non-EU member countries. It has chosen to do so with the introduction of the then “Highly Skilled Migrant Programm” (HSMP) in 2002 prior to accession, which aimed to restrict migration to the higher skill sectors.

As indicated, the migration wave into the UK from Eastern Europe ensuing the 2004 EU expansion was not evenly distributed across space. The spatial distribution in our Accession Shock measure is presented in the left panel of Figure 2. It becomes clear that the shock is sizable: the median value across local authority districts for the Accession Shock variable is 1.05, suggesting that, the stock of EU migrants at least doubled due to migration from the EU Accession countries alone. At the top end, the 75% percentile is around 1.79, suggesting an almost tripling of the stock of EU migrants solely due to migration from EU accession countries. Secondly, the spatial distribution of the shock is quite heterogenous with coastal towns, the North East of England as well as parts of the industrial heartland in the Midlands experiencing significant shocks.

Interestingly and importantly, migrants from Eastern Europe settled in locations that were previously not attracting migrants from Western Europe. This is illustrated in the right panel of Figure 2, which presents the share of the resident population in 2001 that is coming from the then 15 EU member countries. Migrants

¹²We show that our results are not driven by outliers in the accession shock measure and are robust to alternative specifications. This formulation also takes into account explicitly, that the electorate in EP elections includes all citizens of EU member states. That is to say, a Polish citizen has a right to vote in the EP elections in the United Kingdom. This implies that there may be a mechanic effect, whereby a larger stock of EU migrants mechanically decreases the vote share for anti-EU parties.

from Western Europe tend to concentrate in London, as well as the South East and South West of England.¹³ The median stock of migrants from Western Europe was just around %1 of the 2001 resident population, while the 75th percentile was just around 1.5%. Given that the flow of migration from Eastern Europe accounted for around 3% of the 2001 working age population, it becomes clear that the shock of migration from EU accession is sizeable relative to the existing stock and thus, economically and socially relevant. The distinct nature of the geographic pattern of migration of Eastern Europeans also illustrates why a classical shift-share analysis is problematic in this case. We will elaborate on this point further down.

We next turn to discussing how this paper makes headway measuring anti-EU sentiment using vote shares across European Parliamentary elections.

2.3 UKIP vote share as proxy for anti-EU sentiment

Throughout the paper, we will use the UKIP vote share in the European Parliamentary elections in 1999, 2004, 2009 and 2014 as a proxy variable for anti-EU sentiment.¹⁴ UKIP, when founded in 1991 was named the Anti-Federalist League as a single-issue Eurosceptic party. In 1993 it was renamed as UKIP and adopted a wider right-wing platform, with the UK's exit from the European Union as the explicit party goal. No other significant party in the British political system had the explicit goal of leaving the European Union as part of its party manifesto. Figure 4 plots a scatter plot of UKIPs 2014 European Parliamentary results and the share of the Leave vote in the 2016 EU referendum. The tight correlation between the UKIP vote share and the result of the referendum is obvious and has been analyzed in detail in [Becker et al. \(2016\)](#).

Tracking the spatially heterogenous changes in political preferences and atti-

¹³All our results are robust to dropping London, as will be discussed in detail in the robustness section.

¹⁴We also explored the use of Eurobarometer data to measure anti-EU sentiment. Unfortunately, the level of regional disaggregation in the Eurobarometer for the UK switched from NUTS2 level to NUTS1 level in 2004. While the UK has 40 NUTS2 regions, so potentially sufficiently many units to perform panel regressions, it only has 12 NUTS1 regions.

tudes over time in the UK is very difficult. The regular parliamentary elections are not very useful to detect changes in political attitudes for two reasons. First, the geographic unit, Westminster parliamentary constituencies, change in regular intervals as electoral boundaries are redrawn. Secondly, the first-past-the-post electoral system induces voters to vote strategically rather than cast protest votes. This explains why the UKIP party, despite coming out as first party in the European Parliamentary Elections in 2014, has only won a single parliamentary seat in the 2015 parliamentary election (and this seat had been originally won by a member of the Conservative Party that defected to UKIP).

The European Parliamentary elections are the only elections that allow a study of the evolution of political sentiment in a panel setup and this paper is the first to do so. Since 1999, MEPs from the UK are elected based on a system of proportional representation.¹⁵ This ensures that we can safely aggregate electoral outcomes across spatial units to construct consistent units. This is particularly important since the results for the 1999 EP election are reported at the Westminster parliamentary constituency level, while later elections are generally reported at the Local Authority District level, which is the spatial unit that we use throughout the paper. Appendix A.1 provides further detail how the individual election results are matched to local authority districts over time.

The extent of and the spatial distribution of the UKIP's support base has changed dramatically since 1999. This is illustrated in Figure 3, which presents the UKIP vote share distribution across the United Kingdom in the 1999 and the 2014 EP elections across local authority. Since 1999, UKIP has gained significant support in the coastal regions, Wales and parts of the old industrial heart-land of the midlands. A glance and comparison of the maps for the Accession Shock variable and the UKIP Vote share reveals what the empirical analysis will document: there is a significant

¹⁵To be precise the European Parliamentary Elections Act in 1999 changed the electoral system used for electing as from a first-past-the-post to a closed party list system in England, Scotland and Wales. The reform did not apply to Northern Ireland, which continues to use a Single Transferable Vote system. As many of the explanatory variables are not available for Northern Ireland and Northern Ireland is special in many other respects, we drop it from the analysis.

association between places that see a dramatic influx of migrants from Eastern Europe following the EU accession and increases in the vote share for UKIP. The last panel in Figure 3 presents, for reference, also the share of the spatial distribution of the vote leave referendum results. A comparison between panel B and panel C suggest the already observed tight relationship between UKIP vote share and support for the Leave campaign, with Scotland being a dramatic exception. We will explore in detail the underlying mechanisms as to why in certain contexts, the migration shock seems to correlate with increased support for UKIP compared to others.

2.4 Labour market adjustments, housing and pressure on public services

Migration can affect political attitudes and preferences through a multitude of channels. We explore a host of these explanations using a range of secondary data.

Labour market We work with data on labour market outcomes, in particular, wages across different quantiles of the wage distribution. The data we work with comes from the Annual Survey of Hours and Earnings which provides data on hourly wages across different quantiles of the wage distribution from 2002 to 2015. This data is reported by the place of residence, which is important since especially in Southern England, commuting is very common.¹⁶

Crime In popular debates, issues concerning increases in crimes, in particular, burglaries and other related property crimes were commonly attributed to migration from Eastern Europe. Attitudes against migration due to free movement can

¹⁶Since there are a lot of commuters, especially in Southern England, wage data provided by place of residence (which coincides with the location where votes would be cast) is most appropriate in this context. Our results are robust, albeit estimated less precisely, when using wage data provided at the place of work (see Appendix Table A2).

be influenced by such perceived associations. It is impossible to measure beliefs about this association at any spatial detail, but so long as we are willing to assume that (recorded) crime data has any significant correlation with beliefs, we can use this data as a proxy. We use available data from 2002-2014 across the 342 local authority districts for England and Wales to explore whether there is a relationship between different types of crime.

Demand for Benefits Across the UK, we obtained data on the demand for benefits as measured by the number of claimants of job seeker allowance, income support and incapacity benefits. Especially the job seeker allowance and incapacity benefits are said to be particularly accessible and the popular debate about migration suggested that there were significant concerns about the abuse of the generosity of the British welfare system. The data is available as a balanced panel covering the period from 2000 to 2015.

Housing We study house prices for terraced houses (the most common type of property) across local authority districts in the UK from 1997 to 2013. In addition, we look at the share of households who live in rental housing.

Dimensions of Deprivation Indices In order to proxy for socio-economic outcomes, in particular, access to public services, we work with data from the English Indices of Multiple Deprivation. The indices provide a ranking of deprivation across different deprivation domains for the 32,000 'lower super output areas' across England and Wales and have been constructed in a similar fashion, using similar inputs for the years 2004, 2007, 2010 and 2015. While we can not compare and interpret the numeric deprivation scores for different domains, we can compare the ranking of areas over time. A lower rank in a specific deprivation domain indicates that a location is worse off compared to the rest of England and Wales in that particular dimension. Since the spatial resolution we work with is at the local authority area level, we have to summarise the information on the ranking at the

local authority level. We do this by simply computing the average rank across the lower area statistical output areas that fall into a local authority district.

Seven distinct domains have been identified in the English Indices of Deprivation: Income Deprivation, Employment Deprivation, Health Deprivation and Disability, Education Skills and Training Deprivation, Barriers to Housing and Services, Living Environment Deprivation, and Crime.¹⁷

The derivation index in the income domain measures the proportion of the population in an area experiencing deprivation related to low income. A combined count of income deprived individuals per LSOA is calculated by summing the following five indicators: Adults and children in Income Support families, Adults and children in Income-Based Jobseeker Allowance families, Adults and children in Pension Credit (Guarantee) families, Adults and children in Child Tax Credit families. The Barriers to Housing and Services Domain measures the physical and financial accessibility of housing and key local services. The indicators is comprised of geographic barriers measuring proximity to local services such as general practice surgeries, schools, super markets, primary schools and post offices. In addition, it also combines information on household overcrowding, homelessness and difficulty in accessing the housing market.

2.5 Other baseline socio-economic characteristics

The empirical analysis will detail a simple matching strategy to construct ‘best matches’ for local authorities that were subject to accession shock in the upper quartile of the distribution. The matching regression will take advantage of a range of socio-economic characteristics that we obtain at the baseline, in particular the baseline distribution of skills, the size of different industries, baseline median wages, availability of rental housing and historical anti-EU sentiment proxied by the 1975 EU referendum result.

¹⁷See https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6871/1871208.pdf, accessed 05.09.2016.

3 Empirical strategy

This section details the three different empirical strategies that we pursue in this paper.

The first one is a simple difference-in-difference design that uses as treatment the Accession Shock variable that we defined above. The empirical specification will take the form

$$y_{crt} = \alpha_c + \beta_{rt} + \gamma \times Post_t \times AccessionShock_c + \epsilon_{crt} \quad (1)$$

where α_c captures local authority district fixed effects and β_{rt} captures region by year fixed effects. The local authority district fixed effects absorb any location specific underlying fixed political preferences or sentiment. The time fixed effects are specific by NUTS1 region. There are twelve total regions across the United Kingdom: 10 in England, including a separate region for London, and one each for Wales and Scotland.¹⁸

Our main dependent variable, y_{crt} , proxying for anti-globalisation sentiment is the log value of the share of votes for the UKIP party in the four European Parliamentary elections.¹⁹ We expect the sign of the coefficient estimate on the difference-in-difference interaction, γ , to be positive, $\gamma > 0$. The estimate captures the local average treatment effect of Eastern European migration on political attitudes against globalisation. The central concern for the causal interpretation of the estimate γ is that migration might be endogenous to underlying political preferences. For example, if migrants avoid to move to areas with pre-existing anti-immigration preferences, then this is likely to downward bias the true causal effect. Similarly, there are a lot of other concerns about the endogeneity of the

¹⁸Table A3 shows that the overall results are robust to using alternative sets of time fixed effects. However, given the underlying heterogeneity across the UK, consisting of England, Scotland and Wales with Scotland and Wales and other regions in the UK having achieved increased political autonomy, the region by year effects absorb a lot of time varying unobservable characteristics.

¹⁹The results are robust to using levels. Since the distribution of vote shares is skewed and since for all other dependent variables we work with log values, we are consistent internally by using logs throughout.

choice of residence of migrants to other variables, whose changes over time may be contributing to the growth in EU skepticism.

We address these concerns in two complementary ways. First, we present evidence in support of the underlying common trends assumption by showing that the UKIP vote share only started to co-move systematically with the migration measure in the EP elections of 2009 and 2014. This is reassuring, since we can consider the prior EP elections, those held in 1999 and 2004 as being before the treatment onset.²⁰

Second, we improve on the basic difference-in-differences design by performing a propensity-score matched difference-in-difference exercise. Our AccessionShock_c measure captures an interaction effect, suggesting that a given inflow of migration interacts with the existing stock to produce migration sentiment. Our measure could however be *distorted* in case the initial stock of EU residents is very low.²¹ The propensity score matched difference-in-difference addresses this concern, as long as we adequately match on *baseline levels of migration*, especially the size of the EU resident population prior to accession.

Since all local authorities received sizable inflows of migrants from the 8 Eastern European accession countries, there is no natural distinction into a treated and a control group. For the matching, we therefore deliberately concentrate on the local authorities that received accession shocks in the upper quartile of the distribution of AccessionShock_c and designate them as treated observations for the purpose of matching. We construct matched pairs of local authority districts that are prior to EU accession, observationally equivalent. In other words, for every local authority in the upper quartile of the accession shock distribution, we search for another local authority in the other three quartiles to find a control unit that, based on baseline characteristics, is observationally equivalent. Since the treated group is

²⁰The 2004 EU Parliament elections were held between 10 and 13 June 2004, just 6 weeks *after* the accession of Eastern European countries on 1 May 2004, so while formally taking place after accession, we still be consider it before the large influx of Eastern European migrants.

²¹Suppose for example a place has just 100 EU residents in 2001 and experiences an inflow of 1000 EU accession country migrants. This would result in an AccessionShock_c measure of 10, even if the shock relative to the size of the labour market may be small.

drawn from the upper quartile of the accession shock distribution, we do not expect results to be identical to those from the standard difference-in-differences exercise, unless treatment effects are constant across quartiles of treatment intensity. But we consider this exercise to be complementary: while it zooms into only one part of the distribution of treatment intensities (a potential downside), it makes further headway in ensuring compatibility between local authorities subject to large versus small accession shocks.

We proceed in two steps. In the first step, we use machine learning to inform which set of cross sectional covariates robustly predicts our AccessionShock_c measure. Best subset selection solves the following non-convex and combinatorial optimization problem:

$$\min_{\beta} \underbrace{\sum_{c=1}^C (\text{AccessionShock}_c - \beta_0 - \sum_{j=1}^p x_{cj}\beta_j)^2}_{\text{Residual Sum of Squares}} \text{ subject to } \sum_{j=1}^p \mathbf{I}(\beta_j \neq 0) \leq s \quad (2)$$

Where p is the set of regressors of which a subset s is chosen to maximize overall model fit. The result is a sequence of models $\mathcal{M}_0, \dots, \mathcal{M}_s, \dots, \mathcal{M}_p$, where the overall optimal model \mathcal{M}_{s^*} is chosen by using either Cross validation or some degree of freedom adjusted measure of goodness of fit, such as the Aikake Information criterion (AIC). Throughout, we use the AIC to decide upon the overall optimal model \mathcal{M}_{s^*} robustly explaining the variation in the Accession Shock measure.²²

In the second stage, we use the statistically optimal statistical model \mathcal{M}_{s^*} that best explains the cross sectional variation in the AccessionShock_c measure to perform propensity score matching (see [Dehejia and Wahba, 2002](#)). We identify matched pairs as those local authority districts whose absolute difference in propensity score is less than 0.05. In other words, we do nearest-neighbour matching with a caliper

²²It can easily be seen that this boils down to estimating 2^p regressions, which clearly becomes infeasible for even moderately large p . Lasso and other model selection algorithms overcome this curse of dimensionality by solving constrained versions of the best subset selection optimization problem (see [Hastie et al., 2009](#) for an overview).

of 0.05. Propensity scores were estimated with probit regressions using a large number of geographic and economic inputs measured prior to the EU accession. Online Appendix Table A1 contains the results of the matching regression. The regressors selected by best subset selection include the initial share of the population born in non-EU member countries as of 2001 and the EU migrants from EU member countries as of 2001. The inclusion of these characteristics ensures that our matched pairs have similar baseline levels of EU versus migration levels, thus alleviating the concern that the Accession shock measure between treated and control units is inflated. The matching regression also highlights that EU accession migrants were less likely to move to local authority districts classified as being part of an urban agglomeration, were more likely to move to areas where the local labour force had low educational attainment (below 4 GCSEs), where median wages were lower compared to the rest of the UK and where there was a significant share of social housing. This suggests that places with particularly poor fundamentals experienced significant exposure to the migration shock.

4 Main Results

We present the main results and show that the result is robust to many alternative ways of exploring the underlying data.

4.1 Main Results

Table 1 presents the basic results from the difference-in-difference analysis. In Panel A, the dependent variable is the log value of the share of UKIP votes.²³ Throughout, both in the unmatched panel analysis (columns 1 - 3) and in the matched panel analysis (columns 4 - 6) the coefficient on the difference-in-difference interaction is positive and significant, suggesting that a local authority district that saw a signif-

²³Results are similar when using the level vote share. We prefer the log vote share because it better deals with the skewness of the vote share distribution.

icant influx of migration from Eastern Europe saw significant uptick in UKIP vote share after 2004. The point estimate suggests that the median local authority district, with an accession shock measure of 1.06, experienced an almost 1.7% increase in the UKIP vote share, in the top decile the effect is equivalent to a 4% increase in the UKIP vote share. The 95% confidence interval across the different specifications suggests an average effect on UKIP vote share ranging between 1.1% - 5.0%, or an effect ranging between 0.4 - 0.9 percentage points.²⁴

In Panel B, we present the results for the explicitly pro-European Liberal Democrat party. The Liberal Democrat party was formed in 1988 through the merger between the Liberal Party and the Social Democratic Party. In the UK political system it is commonly associated to be on the left side of the political spectrum. The effects on support for the pro European Liberal Democratic Party are strongly negative, suggesting that the Liberal Democrats lost votes in places that experienced a significant inflow of migration from EU accession countries.

Panel C presents the effects studying the vote share for the extreme right wing British Nationalist Party, which typically achieves less than 4% of the popular vote. The effects are weakly negative, indicating that voters migrated from the BNP towards UKIP.²⁵

Throughout, the results in the matched panel are generally very similar, despite being estimated off the observations with the highest treatment intensity, i.e. with an accession shock measure in the upper quartile. We take this as evidence suggesting that the effect is rather linear.

In Table 2 we show that the vote share of UKIP only started to increase in places that were exposed to the accession shock after the 2004 EP election. The

²⁴A regression between UKIP vote share and the share of Leave votes in the 2016 EU referendum suggests a coefficient near 1, indicating that a 1 percentage point increase in the UKIP vote share in the 2014 EP elections resulted in an increase in the vote leave share by 1 percentage point. Taking these at face value would suggest that the already narrow EU referendum result could have been much narrower in case the UK would have opted for a phasing in of free movement as the rest of the EU member countries did in 2004.

²⁵The BNP results are only available for the elections from 2004 onwards for England and Wales and only from 2009 they are available for Scotland.

point estimate on the 2009 EP election result is positive but just failing to gain significance at the 10% level with a p-value of 13%. While the coefficient for 1999 is negative, which may be indicative of a trend, we can reassure ourselves, as in the matched panel in column (2), the point estimate for the 1999 election is dramatically lower and far from conventional significance levels, while the coefficients post 2004 are virtually unaffected.

There are two general concerns about the specific way that we measure the exposure to migration due to EU accession. We address these in the next section.

4.2 Robustness to Accession Exposure Measure

We first entertain a simple robustness check exercise, showing that our results are not driven by a set of local authorities that were specific outliers. This is particularly relevant as we already indicated that there may be concerns about the accession shock measure as we specify it to being distorted especially for places that have a low baseline level of EU migration as of 2001. Similarly, our accession shock measure captures migration from all EU accession countries. This introduces a certain degree of noise as for Romania and Bulgaria, which joined the EU in 2007, free movement was not immediately granted, though we still count the net migration (most of which is focused in the university sector) it as part of the Accession shock measure. In order to account for that, we zoom in on immigration stemming from the Polish group of migrants, which was the single biggest group of migrants in the post 2004 migration wave. Lastly, we also present results based on a horse race between migration from different source countries to show that the effects are not confounding the effects of migration from non-EU accession countries.

These three exercises can be found in Table 3. Panel A restricts the analysis to those local authority districts that saw a significant shock to the labour supply by restricting the sample to local authority districts that saw an increase in population due to migration from Accession countries of at least 1%. This is naturally a lower bound on the size of the shock, since it includes the non-working age population.

As expected, the point estimates slightly increase.

Panel B focuses on the Accession shock due to migration from Poland alone. Since Polish migration accounted for 58% of the inflow from EU accession countries we capture in the data, we should be able to estimate the effect solely based on that large sub-population. We obtain very similar results both in the panel and the matched panel, albeit the coefficients there are estimated with less precision.

Panel C explores whether a similar systematic pattern emerges for migration from non-EU accession countries, by exploring flows from old (EU15) member countries and flows from non-EU countries (mostly South Asia). A large caveat here is that we can not run the same type of difference-in-differences analysis, because for the old EU member countries free movement applied throughout the period, while special immigration rules applied for non-EU residents. Throughout we see that the effect is stemming from migration from EU accession countries. The interactions pre and post 2004 for the other migration measures are broadly inconclusive. This supports our conjecture that the flow of migration from EU accession countries was going to local authority districts that were previously much less exposed to migration.

In the next section we present result using an entirely different measure of the accession shock which is more in line with the economics literature using migration waves to study the effect of labour supply shocks on wages.

4.3 Alternative Measures of Accession Exposure

As indicated, one concern with the analysis is the implied non-linearity that we hard code by making the Accession Shock measure explicitly relative to the baseline level of EU15 migration (which is also subject to free movement). The intuition for that measure is that there is a direct interaction effect: a similar sized absolute inflow of migration has a differential effect on political attitudes in an environment that has, in the past, absorbed larger numbers of migrants, as compared to a place that has limited previous experience with migration. This measure of exposure,

while in line with the political science literature (see [Newman, 2013](#) and the review by [Hainmueller and Hopkins, 2014](#)), may be seen as going against the two competing mechanisms generally discussed in the economics literature: fiscal burden versus skill biased labor market effects.

We discuss an alternative method that embraces the more conventional way of measuring labour supply shocks. In particular, we redefine our Accession shock measure as capturing the population growth in a local authority district c that is due to migration from EU accession countries, that is we measure:

$$\text{Accession}_c = \frac{\text{EU accession migrants}_{c,2011} - \text{EU accession migrants}_{c,2001}}{\text{Population}_{c,2001}}$$

Instead of explicitly normalizing by the initial stock of EU migrants, we flexibly control for baseline levels of migration interacted with a set of year fixed effects, to allow places with different baseline migrant stocks to evolve differentially in terms of their political preferences. To be precise, for each of the three different populations: $s \in \{\text{EU15 countries, EU Accession countries, All Other Countries}\}$, we compute the respective initial stock relative to the 2001 population as

$$\text{Initial Stock}_{s,c,2001} = \frac{\text{Migrant Population}_{s,c,2001}}{\text{Population}_{c,2001}}$$

and then flexibly control for these initial shares by interacting with a set of year fixed effects.

This specification is not entirely isomorphic to our preferred specification, since the effect of migration from EU accession countries post 2004 is not interacting with the initial migrant stock, but is more in line with capturing a labour supply shock to the local labour market. The specification we estimate is:

$$y_{crt} = \alpha_c + \beta_{rt} + \gamma \times Post_t \times Accession_c + \sum_s \sum_t \eta_{s,t} \times Year_t \times Initial\ stock_{s,c,2001} + \epsilon_{crt} \quad (3)$$

As indicated, this specification allows for differential trends in the dependent variable by different baseline levels of (different) foreign populations.²⁶ Throughout, we obtain quantitatively very similar results as long as London is dropped from the analysis. London, accounting for 33 out of the 380 local authority districts is an outlier in terms of migration throughout: the sample distribution in terms of migrant stocks is shifted to the right for London. For example, the London borough with the lowest stock of EU15 migrants in 2001 (as a percentage of total population) still has an EU15 migrant share that is twice as large compared to the non-London local authority district with the lowest level of EU15 migration. Similarly, the London Borough with the largest stock of EU15 migrants in 2001 has three times as many migrants as the Local Authority district outside of London with the highest share of EU15 migrants. The average EU15 migrant stock for London boroughs is three times the average stock across the rest of the UK. For non-EU migrant stocks, these differences are even more pronounced. Hence, London boroughs have baseline levels of migration that are of order of magnitudes higher compared to local authority districts in the rest of the UK. It thus seems adequate to treat London separately, as we do in most of our analysis.

The results using that strategy are presented in Appendix Tables [A4](#), [A5](#), [A8](#), [A6](#), [A9](#). Throughout, we obtain very similar results, both qualitatively and quantitatively as long as London is dropped.

We next turn to discussing underlying mechanisms which may contribute to our understanding of how migrant inflows create higher UKIP vote shares.

²⁶We can also do a horse race with the inflows of the two other groups of people (EU and Elsewhere) interacted with a post 2004 dummy. Since the baseline stock is a strong predictor for EU and Elsewhere migrant inflows, this will result in the estimate on these interactions to be insignificant and imprecise.

5 Mechanisms

5.1 Labour Market

We first explore the effect of our main Accession shock measure on wages across different quantiles of the wage distribution. We use data from the Annual Survey of Hours and Earnings reported at the local authority district of residence from 2002 to 2015. The results are presented in Table 4. Throughout, we see that Accession shock migration is correlated with lower wages. The effect is concentrated in the lower quantiles of the wage distribution, with the point estimate for the effect for the 10-th percentile being twice as large as that for the effect on the median hourly wage.

While the size of the effects are statistically significant, they are not as economically significant as we may expect. The coefficient suggest that the average local authority district, with an EU accession shock measure of 1.45, sees a reduction in median hourly wages by 0.75%.²⁷ This suggest while the incidence of the shock is concentrated at the lower end of the wage distribution, it seems implausible to assume that migration from EU accession countries putting pressure on wages is the sole explanation for growing anti immigration sentiment.

We next explore the effect of EU accession migration on other margins.

5.2 Crime

Migration has been anecdotally attributed with changing patterns in crime. In the context of the UK, [Bell et al. \(2013\)](#) document that the migration wave from EU accession countries is correlated with a small reduction in levels of crime. They rely on a shift-share identification strategy. We already discussed previously that, while a shift-share strategy may provide a relevant instrument for migration from EU accession countries, it is not clear whether it adequately captures the under-

²⁷As indicated, using the more direct measure of the labor supply shock, we obtain a very similar effect as evidenced in Table A5. There, the effect of EU accession migration on median wages for the average local authority district is just around 0.67%.

lying skill composition of the inflowing migrants that arrive after EU accession. In particular, the initial stock of Polish residents in 2001 that arrived prior to EU accession mainly consisted of migrants who are in pension age (having lived in the UK since the second world war as remnants of the Polish Free Army that fought the Nazi's alongside the British), or consists of migrants who have entered the UK since 1991 for graduate studies or under high skilled migration visas. This means that, while the instrument is relevant, it may be relevant only in predicting the part of the inflow of Polish migrants that can be thought of as being high skilled, whose inflows may well be associated with lower levels of crime.

When studying a range of crime outcomes for England and Wales across Local Authority districts (rather than Police Force Areas used in [Bell et al. \(2013\)](#)) in Table 5, we find that migration from EU accession countries as captured by our measure is not correlated with crime across broad categories capturing property crime, violent crimes or crimes against public order in any systematic way.²⁸

5.3 Demand for Benefits

A commonly held belief among British voters is that migration into the UK welfare system is particularly strong concern. A study commissioned by the European Commission has evaluated the impact of “non-active” EU migrants on the social security systems of host countries. The report estimates that there are 600,000 non-active adult EU migrants living in the UK in 2012, of which an estimated 112,000 were job-seekers. The UK is a striking outlier in these statistics in two different extremes. On one hand, the data suggests that across the EU, the unemployment rate of EU migrants in the UK is the lowest (standing at 7.5%). On the other hand, the UK has the largest percent of EU migrant job-seekers who have never worked in their host country of residence standing over one third 37% (compared to 16%

²⁸Using the measure of the Accession shock variable that is more in line with the classic labour economics literature we find very similar results, see Appendix Table A6.

in France and 18% in Germany) in 2012.²⁹ This suggest that migration brings clear benefits to the UK economy, due to the low unemployment rates among this group. However, it also suggests that there are potentially cases of abuse facilitated by the ease of access to benefits, which may be poised to be leveraged by populists to create a very negative image of migration.

We explore the extent to which there are significant changes to the demand for types of benefits as measured by the number of benefits claimants per capita. In particular, we look at the log number of claimants for job seekers allowance per capita, the log number of claimants of income support and the log number of claimants for incapacity benefits. This data is available as a balanced panel for the period from 2000 to 2015 across local authority districts in the whole of the United Kingdom. Especially access to the job seekers allowance is particularly easy and may thus be picking up in places that see significant migration at least in the short run. The results are presented in Table 6.

The results suggest that local authority districts that see significant immigration from EU accession countries relative to the baseline stock of EU migrants, experience a marked uptick in the demand for job seeker allowance and incapacity benefits. The effects suggest that for a local authority district with an average migration shock measure of 1.45, the demand for job seekers allowance has increased by around 4.5%. While we can not explore whether this increased demand is driven by migrants as opposed to natives, it is likely to be a mixture of increased demand due to potential displacement effects and a genuine demand effect.

The effect for the demand for incapacity benefits is slightly weaker but in a similar ballpark.³⁰ Throughout, the results suggest that places that experienced an Accession shock saw an increased demand for benefits that are particularly accessible to migrants from EU countries. While it is not clear whether the extent of this increased demand reflects direct demand by migrants from EU accession countries

²⁹See <http://ec.europa.eu/social/main.jsp?langId=en&catId=89&newsId=1980>, accessed 06.09.2016.

³⁰Again, the result are robust to using the alternative strategy using the direct labor supply shock measure as evidenced in Online Appendix Table A7.

or increased demand by native UK residents, it suggests that there is evidence suggesting that migration brings increased pressure on the welfare system.

We next turn to some results pertaining to the access to housing.

5.4 Access to the Housing Market

Housing in the UK is an extremely contentious political topic, with housing conditions being generally quite poor and access to housing due to restrictive zoning laws being quite limited. The UK housing market, inside and outside London has seen accelerating house prices and high rental prices, while at the same time being accompanied by a withdrawal of the state from social housing projects provided by the local councils. Migration is commonly associated with increased house prices and restrictive access, which results in larger shares of households finding themselves in rental housing as opposed to owner occupied housing.

We work with two different data sets. For the whole of the UK, we compare the changes in the share of households within a local authority district that live in rental housing from a private landlord obtained from the 2001 and 2011 census. In 2001, on average only 8% of households lived in rental housing. This share has increased to 13% by 2011. The second variable, a measure of house prices is only available for England and Wales. We obtain annual time series of the price of the median terraced house sold within a local authority district between 1997 and 2013. The results are presented in Table 7. The estimated effects in Panel A suggest that in local authority districts with a large inflow of migrants from Accession countries, the share of households living in rental housing increased significantly. The point estimate suggests that the share of households living in rental housing increased by 0.6 - 1.1 percentage point.

Panel B explores the effect on house prices. The point estimates across the matched and unmatched panel are positive throughout but are only statistically significant in the unmatched panel. The point estimates there suggest that median sales prices for terraced houses increased by between 1- 1.5%.

The last margin we explore are rankings of small statistical areas across the UK in terms of deprivation as measured through a range of different indices across a multitude of dimensions.

5.5 Indices of Deprivation

The indices of deprivation provide a ranking across 32,000 fine spatial units (so called lower layer super output areas LSOAs) across England in terms of their deprivation along many different dimensions. The ranking is obtained after an index is computed and the respective scores are sorted. The methodology for the construction of the Deprivation indices has changed across the four years that we work with. That means, we can hardly compare the respective constituent scores, but we can compare the overall ranking over time. The data is available for 2004, 2007, 2010 and 2015 with the most significant changes in the methodology for construction of the indices happening between 2010 and 2015. Throughout, we compute the average deprivation rank of the LSOA's that nest into a local authority district along the various dimensions.

The seven domains of deprivation are: Income Deprivation, Employment Deprivation, Health Deprivation and Disability, Education Skills and Training Deprivation, Barriers to Housing and Services, Living Environment Deprivation, and Crime.³¹ Regarding the income and employment deprivation domain, it is important to realise that they summarise data pertaining to the demand for welfare benefits, with the important inputs for the income deprivation being the sum of five indicators: Adults and children in Income Support families, Adults and children in Income-Based Jobseeker Allowance families, Adults and children in Pension Credit (Guarantee) families, Adults and children in Child Tax Credit families. Hence, the income domain can be thought of as a measure of the access to benefits and would expect to see similar results in the income deprivation domain as we have already

³¹See https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6871/1871208.pdf, accessed 05.09.2016.

obtained in the previous section on the demand for benefits.

The Barriers to Housing and Services Domain measures the physical and financial accessibility of housing and key local services. The indicators is comprised of geographic barriers measuring proximity to local services such as general practice surgeries, schools, super markets, primary schools and post offices. In addition, it also combines information on household overcrowding, homelessness and difficulty in accessing the housing market. The health deprivation domain combines data from the NHS in terms of hospital admission, excess morbidity, incapacity benefits as well as information on exposure to anxiety disorders.

The Education deprivation domains combines features such as test scores in nation wide results (GCSE results), share of youth not entering higher education, absenteeism from secondary school and low qualification scores for the group of individuals between 16 to 25.

We perform the same set of panel regressions as we do throughout the paper using the log value of the deprivation rank in the respective domain as well as for the overall deprivation index, that combines the respective individual domains. A low rank number indicates that a place is more deprived. The data are only available for England and the results are presented in Table 8. The results are consistent throughout: places with high inflow of migrants from Eastern Europe are ranked worse in terms of income- and employment deprivation. These indices broadly capture increased demand for benefits as already indicated and may thus be picking up time varying changes directly. The results pertaining to education-, health- and access to housing and service are quite consistently negative but estimated with less precision. This is not too surprising as the variables used to construct these particular subindices are quite slow moving (e.g. geographic barriers) and thus, we would not expect to see immediate results.

The picture that is painted by this analysis is quite consistent. While we can not pin point the direct causal mechanisms, it suggests that migration from Eastern Europe following the accession of the 10 new member countries after 2004 may have

contributed to worsen socio-economic fundamentals in areas, that previously had much less exposure to migration from (typically high skilled) European migration.

6 Discussion and Conclusion

Free movement of labor is an important ingredient to ensure the functioning of a single market, especially a single currency union in which all adjustments to balance of payments differences need to be absorbed by movement of factors and factor prices since the exchange rates are fixed. As such, on efficiency grounds, free movement is central. However, this paper suggests that there are complex socio-economic interactions that may create a dynamic causing a back-lash against the type of globalization as implied by the European project.

Our results indicate that migration from EU accession countries contributed to the rise right wing parties. The results are strongest, when we work with a measure of the Accession flow that interacts with the initial baseline stock of migrants, suggesting that there is a more complex dynamic at play that goes beyond the simple economic mechanisms in the labour market. This is in line with a large literature in political science that has explored the underlying drivers of anti-immigration sentiments and attitudes. Nevertheless, we can not rule out that the economic mechanisms play no rule. There is quite strong evidence that the migration stock following EU accession was biased towards the lower end of the income distribution and that migrants flowed to areas that have seen previously little exposure to, especially migration from EU countries. Further we document that there are effects on other margins that have been articulated in the debates about the cost and benefits from migration. This paper suggests that migration flows need to be supported with significant accommodating policies to ensure that pressures on public services, housing and welfare are offset to prevent a backlash from happening.

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Figures and Tables for the Main Text

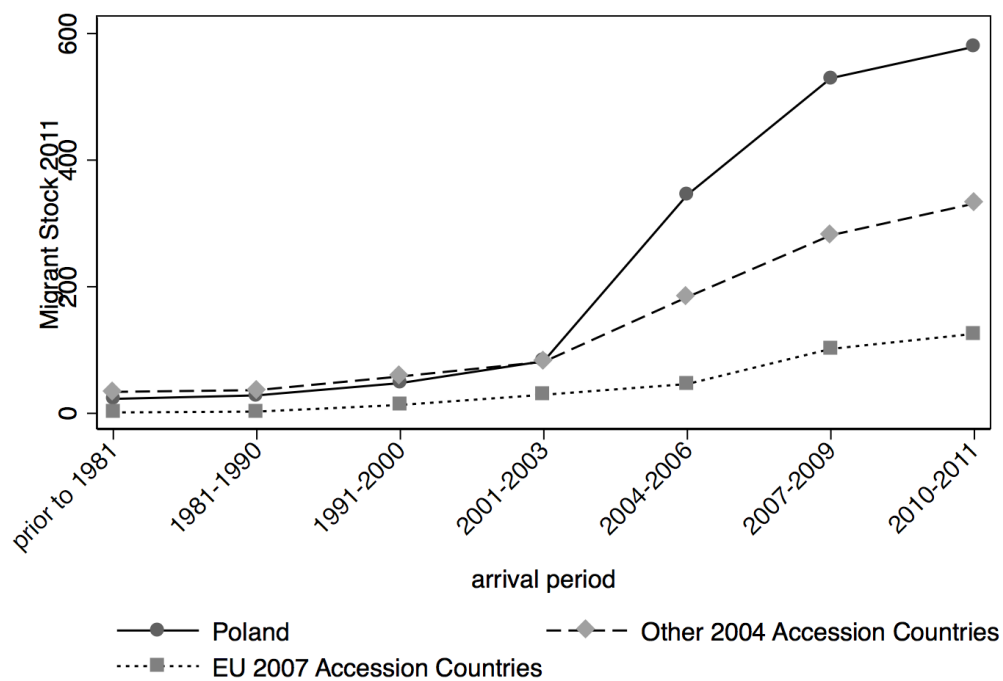
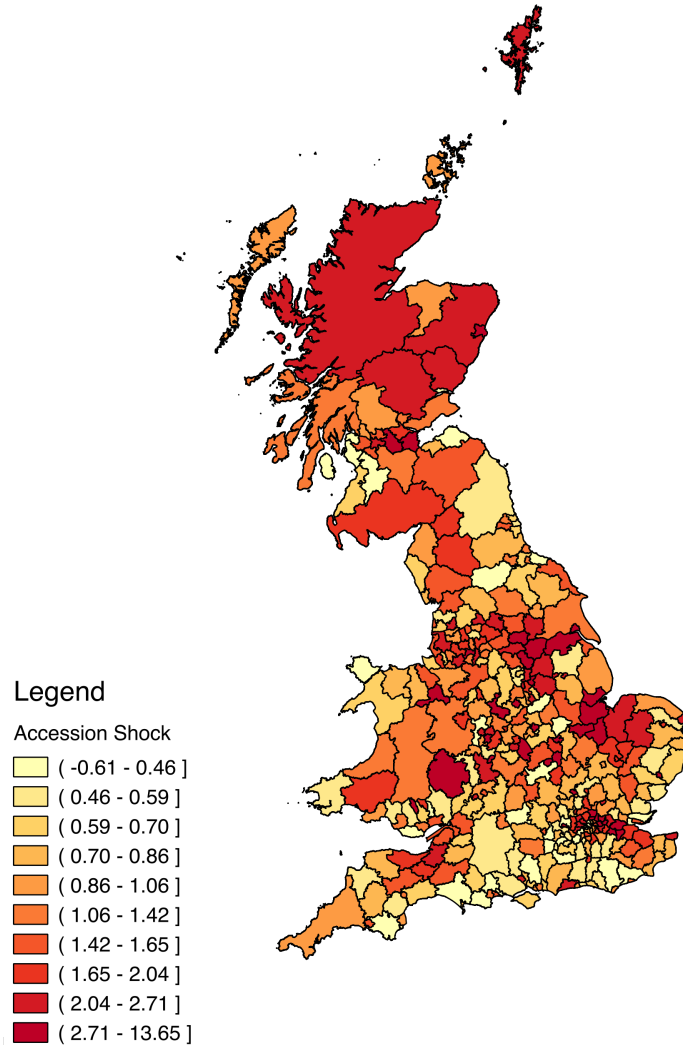


Figure 1: This figure presents the year of arrival for the stock of migrants as of the census date in 2011. It is quite clear that there was a significant influx of migrants from the 2004 accession countries, mostly driven by individuals from Poland.

Panel A: Accession Shock



Panel B: Stock of EU Migrants 2001

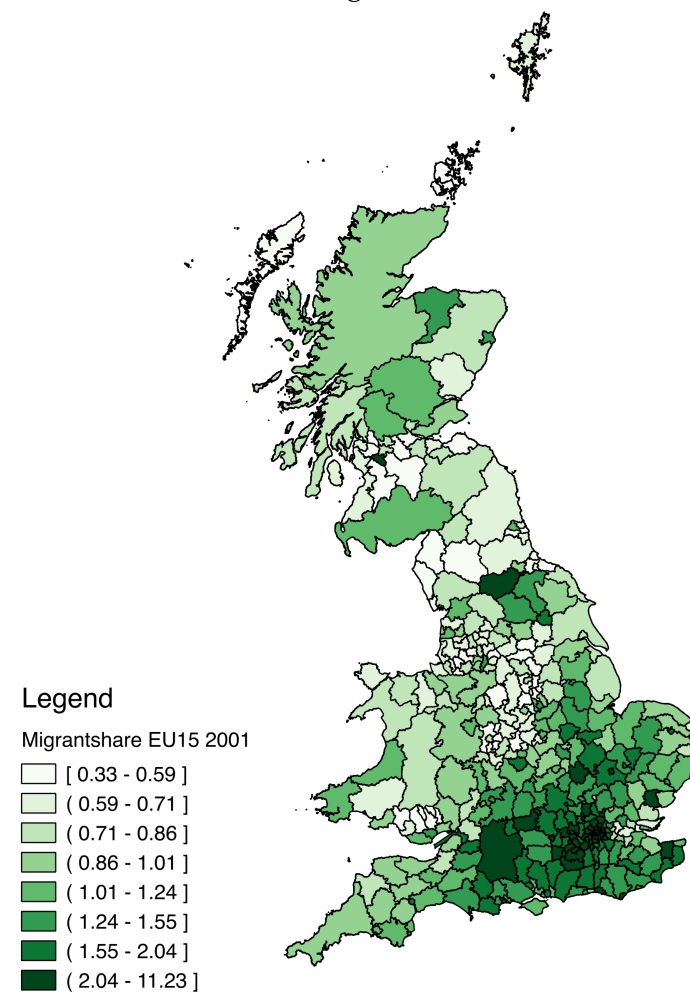
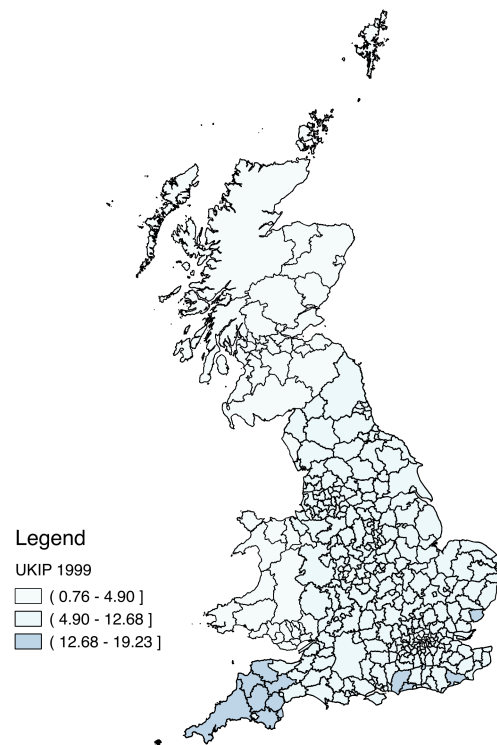
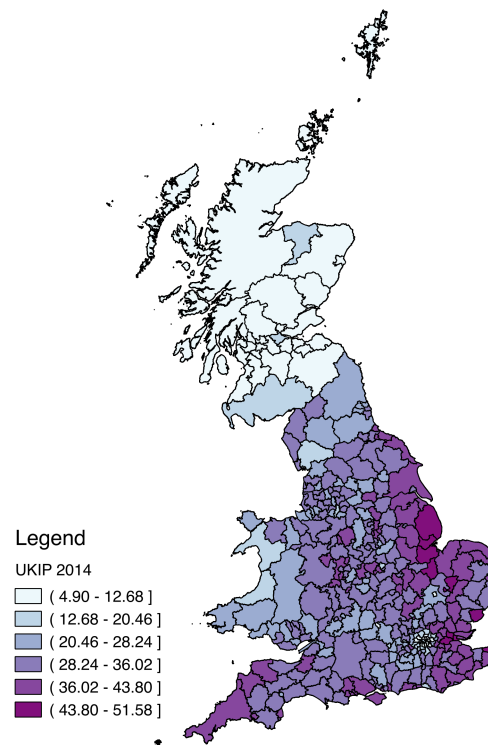


Figure 2: This map displays the spatial distribution of the EU Accession Migration shock across the UK (left panel), and presents the stock of the UK resident population that was born in EU member countries that were member in 2001 (right panel). The underlying data is 2001 and 2011 census measuring the resident population in a local authority by the country of birth.

Panel A: UKIP vote in 1999



Panel B: UKIP Vote in 2014



Panel C: Referendum % Vote leave

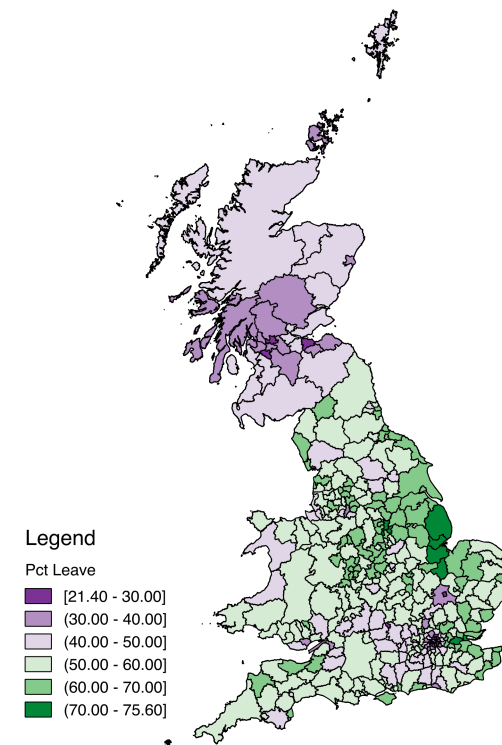


Figure 3: This map displays the UKIP vote share in the European Parliamentary elections in 1999 and 2014 (left and center), as well as the share of the electorate that voted leave in the 2016 EU referendum across local authority districts (right).

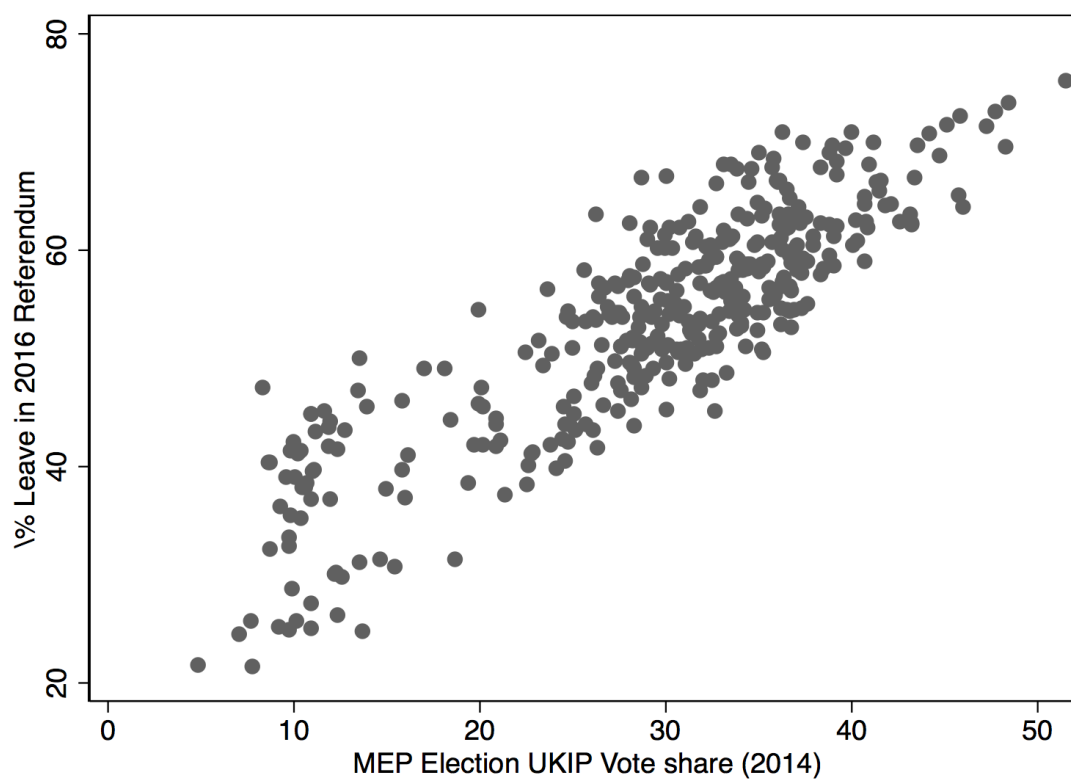


Figure 4: Figure presents the UKIP Vote shares in the 2014 European Parliamentary elections and the share of leave votes by local government authority district.

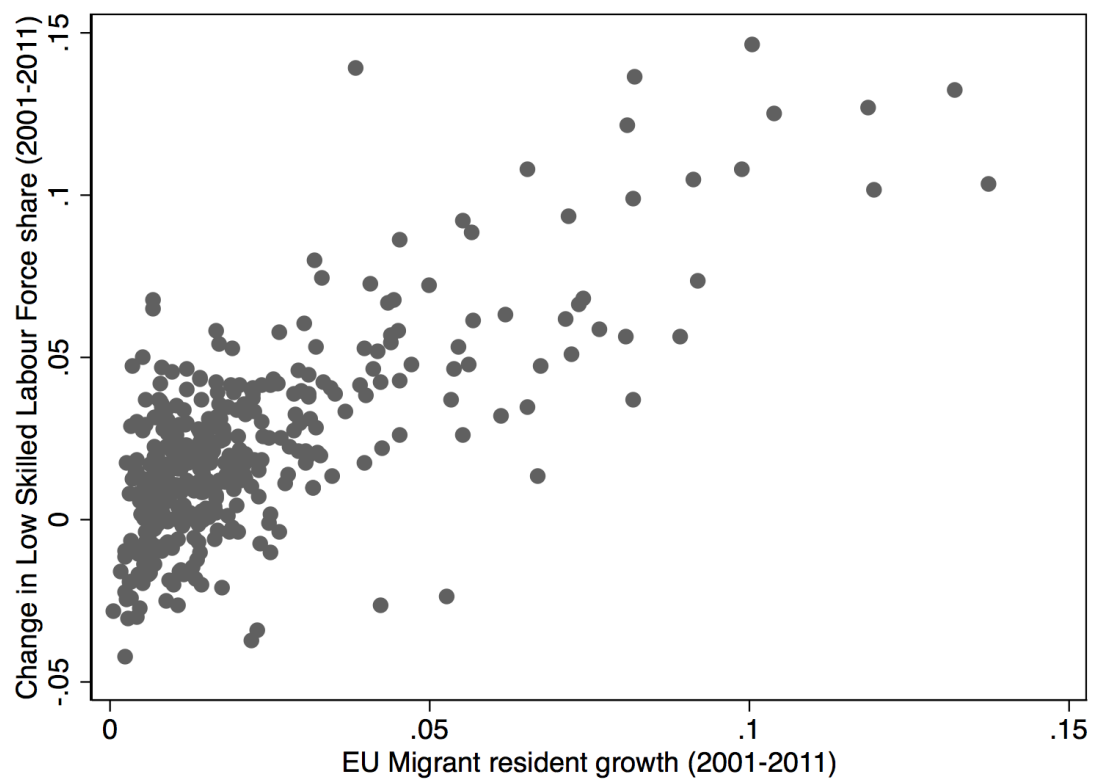


Figure 5: This figure plots the changes in EU resident population share between 2001 and 2011 and the change in the share of the labour force that are classified as low skilled.

Table 1: The Impact of Migration from EU Accession countries on the UKIP Vote Share in EP Elections.

	Whole sample			Matched sample		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Anti EU UKIP</i>						
After 2004 x Accession Shock	0.017*** (0.005)	0.016*** (0.005)	0.023*** (0.006)	0.015** (0.006)	0.017** (0.006)	0.016** (0.006)
LGA Districts	380	326	293	106	85	76
Observations	1520	1304	1172	424	340	304
<i>Panel B: Pro EU Liberal Democrats</i>						
After 2004 x Accession Shock	-0.045*** (0.013)	-0.054*** (0.015)	-0.043*** (0.013)	-0.008 (0.010)	-0.013 (0.010)	-0.010 (0.010)
LGA Districts	380	326	293	106	85	76
Observations	1520	1304	1172	424	340	304
<i>Panel C: British Nationalist Party</i>						
After 2004 x Accession Shock	-0.005 (0.007)	-0.007 (0.006)	-0.004 (0.008)	-0.010 (0.010)	-0.013 (0.009)	-0.010 (0.010)
LGA Districts	380	326	293	106	85	76
Observations	1086	978	879	297	255	228
Sample	All	England	Not London	All	England	Not London
LGA District FE	Yes	Yes	Yes	Yes	Yes	Yes
Region x Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Table reports results from a panel OLS regressions. The dependent variable is the log value of the UKIP Vote share in the EP elections from 1999 to 2014. Panel C has fewer observations as the British Nationalist Party vote share was not separately reported in 1999 and is also missing for Wales in 2004. Columns (4) - (6) restrict the analysis to matched pairs of observations whose propensity score difference predicting the upper quartile of the accession shock measure is less than 0.05. Standard errors clustered at the Local Government Authority District Level are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 2: Parallel Trends Check of the impact on Migration from EU Accession countries on the UKIP Vote Share in EP Elections.

	Different Samples	
	(1) s1	(2) s2
Election year 1999 x Accession Shock	-0.007 (0.005)	-0.003 (0.008)
Election year 2004 x Accession Shock	0.000 (.)	0.000 (.)
Election year 2009 x Accession Shock	0.007 (0.005)	0.009 (0.007)
Election year 2014 x Accession Shock	0.020*** (0.006)	0.019** (0.008)
LGA Districts	380	106
Observations	1520	424
Sample	All	All
LGA District FE	Yes	Yes
Region x Year FE	Yes	Yes

Notes: Table reports results from a panel OLS regressions. The dependent variable is the log value of the UKIP Vote share in the European Parliamentary elections from 1999 to 2014. Columns (2) restricts the analysis to matched pairs of observations whose propensity score difference predicting the upper quartile of the accession shock measure is less than 0.05. Standard errors clustered at the Local Government Authority District Level are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3: Robustness of the Impact of Migration from EU Accession countries on the UKIP Vote Share in EP Elections.

	Whole sample			Matched sample		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Migration above 1% of 2001 population</i>						
After 2004 x Accession Shock	0.021*** (0.007)	0.019*** (0.007)	0.030*** (0.008)	0.021*** (0.008)	0.020*** (0.007)	0.019*** (0.007)
LGA Districts	228	206	173	72	63	54
Observations	912	824	692	288	252	216
<i>Panel B: Only Polish migration</i>						
After 2004 x Polish Accession Shock	0.027*** (0.008)	0.024*** (0.009)	0.030*** (0.009)	0.029*** (0.011)	0.024* (0.014)	0.022 (0.014)
LGA Districts	380	326	293	136	108	99
Observations	1520	1304	1172	544	432	396
<i>Panel C: Controlling for other migration</i>						
After 2004 x Accession Shock	0.021*** (0.006)	0.023*** (0.006)	0.026*** (0.008)	0.024*** (0.008)	0.025*** (0.008)	0.021** (0.009)
After 2004 x EU 2001 Migrant Flow	-0.068 (0.055)	-0.099 (0.067)	-0.039 (0.089)	-0.145** (0.056)	-0.152** (0.073)	-0.088 (0.085)
After 2004 x Elsewhere Migrant Flow	0.002 (0.005)	0.001 (0.005)	0.000 (0.006)	0.018** (0.009)	0.014 (0.009)	0.008 (0.009)
LGA Districts	380	326	293	106	85	76
Observations	1520	1304	1172	424	340	304
Sample	All	England	Not London	All	England	Not London
LGA District FE	Yes	Yes	Yes	Yes	Yes	Yes
Region x Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Table reports results from a panel OLS regressions. The dependent variable is the log value of the UKIP Vote share in the EP elections from 1999 to 2014. Columns (4) - (6) restrict the analysis to matched pairs of observations whose propensity score difference predicting the upper quartile of the accession shock measure is less than 0.05. Standard errors clustered at the Local Government Authority District Level are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: Effect of Migration from EU Accession affecting lower end of wage distribution.

	Whole sample			Matched sample		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Median Hourly Pay</i>						
After 2004 x Accession Shock	-0.001 (0.002)	-0.002 (0.002)	-0.002 (0.002)	-0.005** (0.002)	-0.005* (0.003)	-0.005* (0.003)
LGA Districts	379	325	292	106	85	76
Observations	5227	4480	4030	1478	1190	1064
<i>Panel B: 25th Percentile Hourly Pay</i>						
After 2004 x Accession Shock	-0.005*** (0.002)	-0.006*** (0.002)	-0.005** (0.002)	-0.008** (0.003)	-0.008** (0.004)	-0.008** (0.004)
LGA Districts	379	325	292	106	85	76
Observations	5244	4493	4040	1479	1190	1064
<i>Panel C: 10th Percentile Hourly Pay</i>						
After 2004 x Accession Shock	-0.005*** (0.001)	-0.006*** (0.001)	-0.005*** (0.002)	-0.010*** (0.002)	-0.010*** (0.003)	-0.010*** (0.003)
LGA Districts	378	325	292	105	85	76
Observations	5167	4449	3999	1452	1184	1058
Sample	All	England	Not London	All	England	Not London
LGA District FE	Yes	Yes	Yes	Yes	Yes	Yes
Region x Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Table reports results from a panel OLS regressions. The data set is a balanced panel of hourly wages by location of residence from 2002 to 2014 across different quantiles. A few observations are missing as the Office of National Statistics deemed the statistics not precise enough. Columns (4) - (6) restrict the analysis to matched pairs of observations whose propensity score difference predicting the upper quartile of the accession shock measure is less than 0.05. Standard errors clustered at the Local Government Authority District Level are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5: Migration from EU Accession and crimes.

	Whole sample			Matched sample		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Violent Crime per capita</i>						
After 2004 x Accession Shock	0.012*	0.012*	0.005	0.010	0.009	0.008
	(0.007)	(0.007)	(0.008)	(0.008)	(0.009)	(0.009)
LGA Districts	342	320	287	90	84	75
Observations	4469	4161	3699	1192	1108	982
<i>Panel B: Public order crimes per capita</i>						
After 2004 x Accession Shock	0.005	0.003	0.001	0.001	-0.004	-0.005
	(0.009)	(0.009)	(0.011)	(0.014)	(0.015)	(0.016)
LGA Districts	342	320	287	90	84	75
Observations	4469	4161	3699	1192	1108	982
<i>Panel C: Property crimes per capita</i>						
After 2004 x Accession Shock	0.003	0.002	-0.001	0.013	0.010	0.009
	(0.006)	(0.007)	(0.009)	(0.008)	(0.011)	(0.011)
LGA Districts	342	320	287	90	84	75
Observations	4469	4161	3699	1192	1108	982
Sample	All	England	Not London	All	England	Not London
LGA District FE	Yes	Yes	Yes	Yes	Yes	Yes
Region x Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Table reports results from a panel OLS regressions. The dependent variable is given in the respective panel headings and available for England and Wales as an unbalanced panel from 2002 to 2015. Columns (4) - (6) restrict the analysis to matched pairs of observations whose propensity score difference predicting the upper quartile of the accession shock measure is less than 0.05. Standard errors clustered at the Local Government Authority District Level are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6: Effect of Migration from EU Accession on demand for benefits.

	Whole sample			Matched sample		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Jobseeker Allowance Claimants</i>						
After 2004 x Accession Shock	0.029*** (0.005)	0.032*** (0.006)	0.027*** (0.006)	0.032*** (0.010)	0.034*** (0.011)	0.032*** (0.011)
LGA Districts	380	326	293	106	85	76
Observations	6080	5216	4688	1696	1360	1216
<i>Panel B: Income Support Benefits Claimants</i>						
After 2004 x Accession Shock	0.005 (0.004)	0.006 (0.004)	0.001 (0.003)	0.011* (0.006)	0.012* (0.006)	0.008 (0.005)
LGA Districts	380	326	293	106	85	76
Observations	6067	5203	4675	1696	1360	1216
<i>Panel C: Incapacity Benefit Claimants</i>						
After 2004 x Accession Shock	0.019*** (0.005)	0.023*** (0.005)	0.030*** (0.007)	0.018** (0.007)	0.025** (0.010)	0.026** (0.011)
LGA Districts	380	326	293	106	85	76
Observations	6080	5216	4688	1696	1360	1216
Sample	All	England	Not London	All	England	Not London
LGA District FE	Yes	Yes	Yes	Yes	Yes	Yes
Region x Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Table reports results from a panel OLS regressions. The data set is a balanced panel of hourly wages by location of residence from 2002 to 2014 across different quantiles. A few observations are missing as the Office of National Statistics deemed the statistics not precise enough. Columns (4) - (6) restrict the analysis to matched pairs of observations whose propensity score difference predicting the upper quartile of the accession shock measure is less than 0.05. Standard errors clustered at the Local Government Authority District Level are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7: Migration from EU Accession and the housing market.

	Whole sample			Matched sample		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Households living in rented housing</i>						
After 2004 x Accession Shock	0.007*** (0.001)	0.008*** (0.002)	0.008*** (0.002)	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.002)
LGA Districts	380	326	293	106	85	76
Observations	760	652	586	212	170	152
<i>Panel B: log(Median Terraced House Price)</i>						
After 2004 x Accession Shock	0.007*** (0.002)	0.007*** (0.003)	0.011*** (0.003)	0.002 (0.003)	0.002 (0.003)	0.004 (0.003)
LGA Districts	342	320	287	89	83	74
Observations	5790	5416	4870	1513	1411	1258
Sample	All	England	Not London	All	England	Not London
LGA District FE	Yes	Yes	Yes	Yes	Yes	Yes
Region x Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Table reports results from a panel OLS regressions. The measure in Panel A is from the 2001 and 2011 census for England, Scotland and Wales. In Panel B, house prices are a balanced panel from 1997 to 2013 for England and Wales. Columns (4) - (6) restrict the analysis to matched pairs of observations whose propensity score difference predicting the upper quartile of the accession shock measure is less than 0.05. Standard errors clustered at the Local Government Authority District Level are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 8: Migration from EU Accession on dimensions of deprivation.

	Whole sample		Matched sample	
	(1)	(2)	(3)	(4)
<i>Panel A: Overall Deprivation Rank</i>				
After 2004 x Accession Shock	-0.010*** (0.003)	-0.003 (0.003)	-0.014*** (0.004)	-0.010*** (0.003)
LGA Districts	326	293	100	89
Observations	1304	1172	400	356
<i>Panel B: Income Deprivation Rank</i>				
After 2004 x Accession Shock	-0.012*** (0.004)	-0.006*** (0.002)	-0.010** (0.004)	-0.006** (0.003)
LGA Districts	326	293	100	89
Observations	1304	1172	400	356
<i>Panel C: Employment Deprivation Rank</i>				
After 2004 x Accession Shock	-0.013*** (0.003)	-0.011*** (0.003)	-0.018*** (0.005)	-0.016*** (0.004)
LGA Districts	326	293	100	89
Observations	1304	1172	400	356
<i>Panel D: Health Deprivation Rank</i>				
After 2004 x Accession Shock	-0.002 (0.005)	-0.006 (0.004)	-0.013*** (0.004)	-0.013*** (0.004)
LGA Districts	326	293	100	89
Observations	1304	1172	400	356
<i>Panel E: Education Deprivation Rank</i>				
After 2004 x Accession Shock	0.003 (0.003)	0.005 (0.004)	-0.006* (0.003)	-0.004 (0.003)
LGA Districts	326	293	100	89
Observations	1304	1172	400	356
<i>Panel F: Barriers to Housing and Services Rank</i>				
After 2004 x Accession Shock	-0.038** (0.017)	-0.014 (0.009)	-0.028 (0.021)	-0.014 (0.013)
LGA Districts	326	293	100	89
Observations	1304	1172	400	356
<i>Panel G: Living Environment</i>				
After 2004 x Accession Shock	0.003 (0.006)	0.004 (0.007)	-0.006 (0.007)	-0.005 (0.007)
LGA Districts	326	293	100	89
Observations	1304	1172	400	356
Sample	England	Not London	England	Not London
LGA District FE Yes	Yes	Yes	Yes	Yes
Region x Year FE Yes	Yes	Yes	Yes	Yes

Notes: Table reports results from a panel OLS regressions. The dependent variable is the log of the average rank in the respective deprivation index domain across the lower layer statistical output areas that fall into a local authority district. A low rank indicates that a place has more deprived areas compared to the rest of England in a respective domain. The data is available for England as annual panel for the years 2004, 2007, 2010 and 2015. Columns (3) - (4) restrict the analysis to matched pairs of observations whose propensity score difference predicting the upper quartile of the accession shock measure is less than 0.05. Standard errors clustered at the Local Government Authority District Level are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

A Data Appendix

A.1 Matching the EP Election results from 1999 to 2014

Since 1999, EPs are elected based on a system of proportional representation. Electoral data is reported by the UK Electoral Commission at a “Counting Area” level. In 1999, the EP election results were reported disaggregated by the then valid 650 parliamentary constituencies, which had been in force until 2005. From 2004 onwards, results are reported by Local Authority District, of which there are 380 across the United Kingdom.

This means that we can map the electoral outcomes across the EP elections from 2004 onwards quite smoothly at the level of local authority districts. For the 1999 election, we need to map the then parliamentary constituencies to the 380 local authority districts. The result for 1999, given that it is reported at the parliamentary constituency level is more detailed. However, not all parliamentary constituencies dissolve perfectly into the 380 local authority districts. Figure A1 illustrates this using the example of the Local Authority district Wiltshire in the South West of the country (indicated by the solid thick boundary). The local authority district fully absorbs the constituencies of Salisbury, Westbury, Devizes and Wiltshire North (shaded, boundaries indicated by thin black lines). However, it also intersects partly with the constituency Swindon North (dark grey). In order to assign vote shares for the authority district Wiltshire, we take advantage of the fact that the building blocks for constituencies are wards and we have detailed population figures at the ward level from the 2001 census. Across the UK in 2001, there were around 10,000 wards with about 5,000 inhabitants in each. We compute the number of votes for the Wiltshire local authority district as the sum of the votes from the fully absorbed constituencies and add the population weighted votes for the ward of the Swindon North constituency that intersects with the Wiltshire local authority district.

We proceed in this fashion throughout. This naturally introduces some mea-

surement error, but is the only way feasible to create a balanced panel at the local authority level.

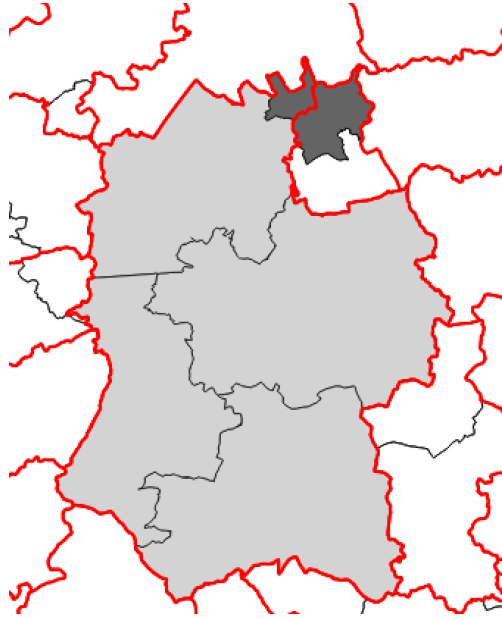


Figure A1: Figure presents method used to match the 1999 EP election results, provided at the Westminster constituency level to the results presented at the Local Authority districts of later EP elections.

B Appendix Figures and Tables

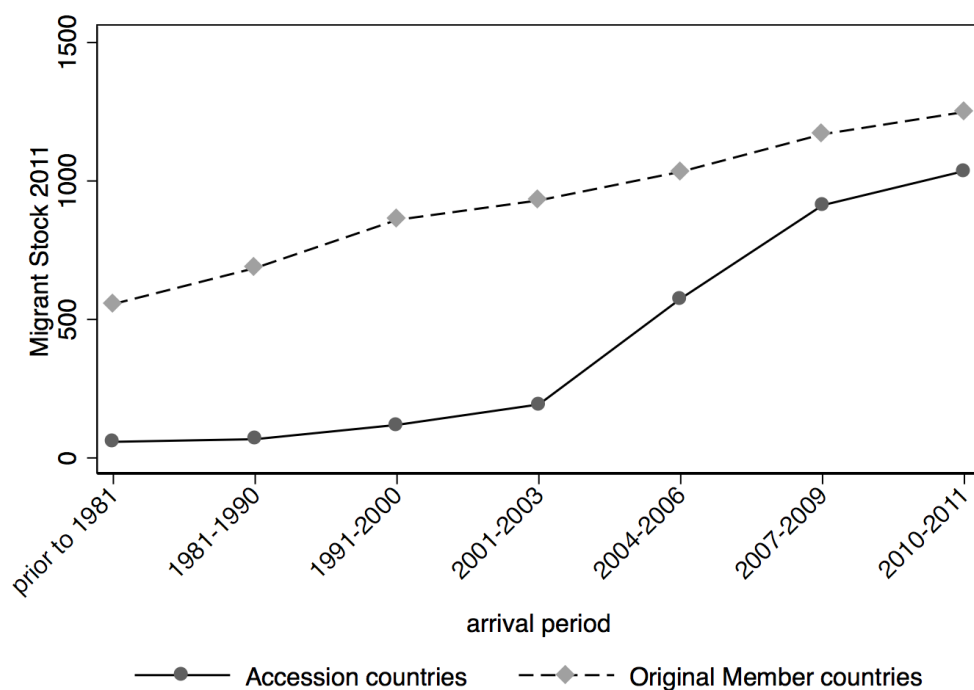


Figure A2: This figure presents the year of arrival for the stock of migrants as of the census date in 2011 split by whether the country of birth of a migrant is part of the EU member states as of 2001 or whether it is part of the 10 EU accession countries that joined the EU after 2004.

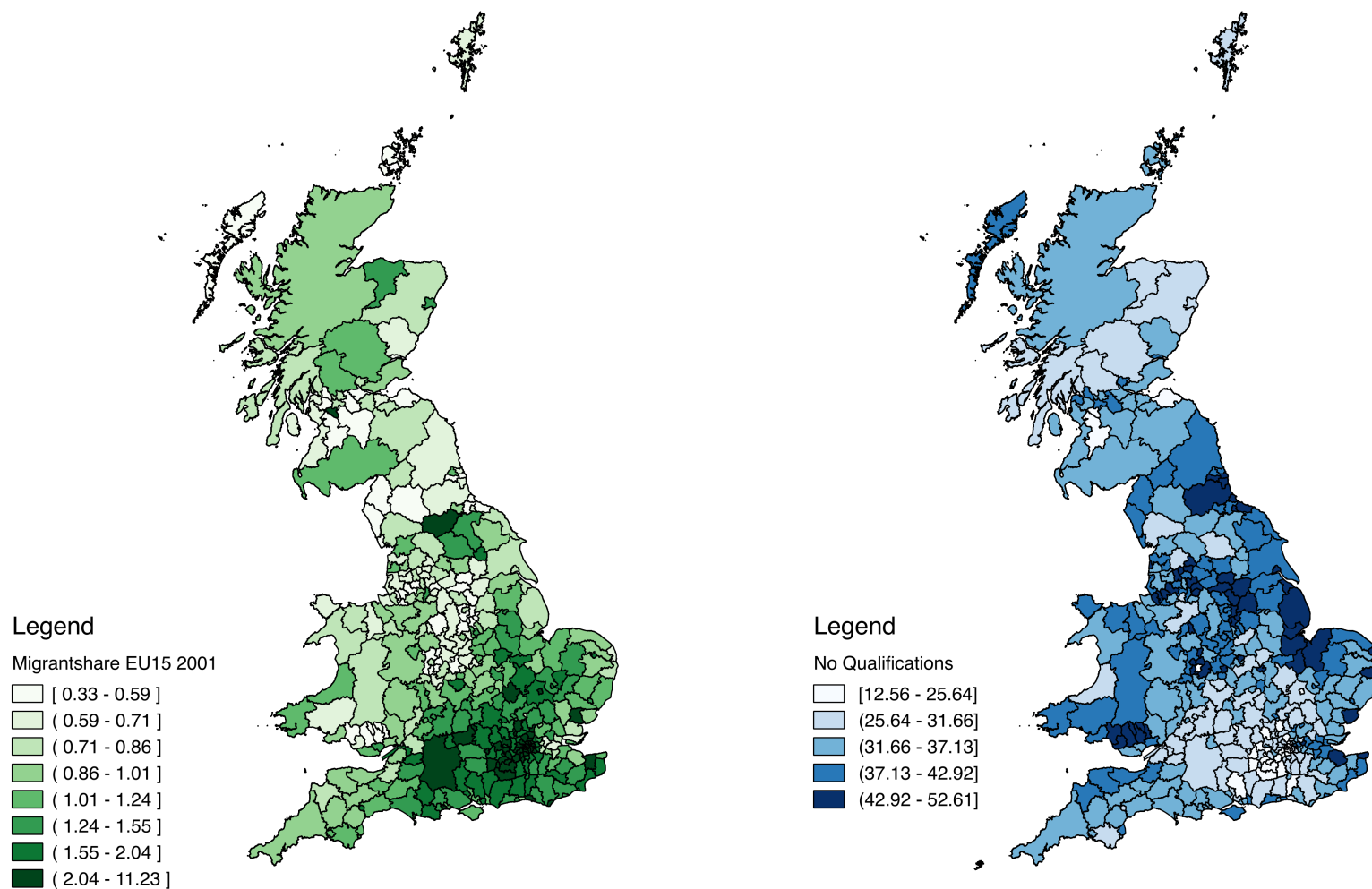


Figure A3: This map of the resident population of individuals born in EU member countries that were member of the European Union in 2001 (left panel). The right panel presents the share of the workforce with low educational attainment in 2001.

Table A1: Matching Regression.

	Accession Shock	
	(1)	(2)
Urban District	-0.753** (0.367)	-0.605* (0.328)
Non-EU Migrant resident share (2001)	28.117*** (5.530)	20.104*** (3.982)
EU Migrant resident share (2001)	-57.772** (27.708)	-41.795** (20.139)
placework_median_hourly_pay	-0.296** (0.116)	-0.381*** (0.109)
Deprivation Index (2001)	-0.174 (0.133)	
Agriculture employment share (2001)	3.000 (6.133)	
Mining employment share (2001)	42.084*** (15.752)	46.425*** (13.183)
Manufacturing employment share (2001)	-5.368 (3.429)	
Finance employment share (2001)	-8.582 (6.636)	
Transport employment share (2001)	6.977 (5.191)	15.948*** (4.595)
lowqual	-0.502 (6.878)	6.112*** (2.174)
Resident Population 16-64 share Qualification 4+ (2001)	-17.795** (8.330)	
Share of population aged 64plus (2001)	-6.309 (4.662)	
Share of Households living in Council rented housing (2001)	7.465*** (2.255)	5.509*** (1.470)
Share of Households living in private rental housing (2001)	4.261 (5.823)	
Leave Share 1975 Referendum	-0.486 (2.689)	
Region.Code==E12000001	0.000 (.)	0.000 (.)
Region.Code==E12000002	0.458 (0.488)	
Region.Code==E12000003	0.200 (0.473)	
Region.Code==E12000004	0.261 (0.469)	
Region.Code==E12000005	0.875* (0.519)	0.474 (0.337)
Region.Code==E12000006	0.182 (0.532)	
Region.Code==E12000007	-0.218 (0.876)	-0.488 (0.645)
Region.Code==E12000008	0.099 (0.544)	
Region.Code==E12000009	-0.374 (0.577)	
Region.Code==N92000002	0.000 (.)	0.000 (.)
Region.Code==S92000003	-0.589 (0.688)	-1.000*** (0.368)
Region.Code==W92000004	0.000 (.)	-0.455 (0.381)
Constant	5.455 (4.854)	-2.975* (1.681)
N	360	360
Country Dummies		

Notes: Table reports results from a the matching specification. The dependent variable is a dummy indicating whether a local authority district experienced an Accession shock in the upper quartile. Column (1) presents all cross sectional characteristics, while column (2) restricts the set of regressors to be those that are identified using best subset selection. Robust standard errors clustered at the Local Government Authority District Level are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A2: Robustness to working with hourly pay at the workplace level: Effect of Migration from EU Accession affecting lower end of wage distribution.

	Whole sample			Matched sample		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Median Hourly Pay</i>						
After 2004 x Accession Shock	0.002 (0.002)	0.003 (0.002)	0.003 (0.002)	-0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
LGA Districts	378	324	291	106	85	76
Observations	5969	5117	4589	1685	1359	1215
<i>Panel B: 25th Percentile Hourly Pay</i>						
After 2004 x Accession Shock	-0.001 (0.002)	-0.000 (0.002)	-0.000 (0.002)	-0.003 (0.002)	-0.002 (0.002)	-0.002 (0.002)
LGA Districts	379	325	292	106	85	76
Observations	5991	5131	4603	1692	1360	1216
<i>Panel C: 10th Percentile Hourly Pay</i>						
After 2004 x Accession Shock	-0.002 (0.001)	-0.002 (0.002)	-0.003* (0.002)	-0.005*** (0.002)	-0.004** (0.002)	-0.005*** (0.002)
LGA Districts	379	325	292	106	85	76
Observations	5795	4989	4461	1648	1340	1196
Sample	All	England	Not London	All	England	Not London
LGA District FE	Yes	Yes	Yes	Yes	Yes	Yes
Region x Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Table reports results from a panel OLS regressions. The data set is a balanced panel of hourly wages by location of work from 1997 to 2014 across different quantiles. A few observations are missing as the Office of National Statistics deemed the statistics not precise enough. Columns (4) - (6) restrict the analysis to matched pairs of observations whose propensity score difference predicting the upper quartile of the accession shock measure is less than 0.05. Standard errors clustered at the Local Government Authority District Level are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A3: Robustness to Alternative Specifications

	Whole sample			Matched sample		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Local Authority and Year FE</i>						
After 2004 x Accession Shock	0.012 (0.010)	0.015* (0.009)	0.028** (0.011)	0.004 (0.015)	0.008 (0.012)	0.005 (0.011)
LGA Districts	380	326	293	106	85	76
Observations	1520	1304	1172	424	340	304
<i>Panel B: Local Authority and Country by Year FE</i>						
After 2004 x Accession Shock	0.016* (0.009)	0.015* (0.009)	0.028** (0.011)	0.008 (0.010)	0.008 (0.012)	0.005 (0.011)
LGA Districts	380	326	293	106	85	76
Observations	1520	1304	1172	424	340	304
<i>Panel C: Local Authority and Region by Year FE</i>						
After 2004 x Accession Shock	0.017*** (0.005)	0.016*** (0.005)	0.023*** (0.006)	0.015** (0.006)	0.017** (0.006)	0.016** (0.006)
LGA Districts	380	326	293	106	85	76
Observations	1520	1304	1172	424	340	304
Sample	All	England	Not London	All	England	Not London

Notes: Table reports results from a panel OLS regressions. The dependent variable throughout is the log value of the UKIP Vote share in the EP elections from 1999 to 2014. Panel A, Panel B and Panel C use different time fixed effects. Columns (4) - (6) restrict the analysis to matched pairs of observations whose propensity score difference predicting the upper quartile of the accession shock measure is less than 0.05. Standard errors clustered at the Local Government Authority District Level are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A4: Alternative Exposure Measure: The Impact of Migration from EU Accession countries on the UKIP Vote Share in EP Elections.

	Whole sample			Matched sample		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Anti EU UKIP</i>						
Post 2004 $\times \Delta$ EU Accession/Initial Pop	0.270 (0.544)	0.259 (0.564)	1.242** (0.518)	2.060*** (0.730)	1.833** (0.715)	1.840** (0.711)
LGA Districts	380	326	293	92	74	72
Observations	1520	1304	1172	368	296	288
<i>Panel B: Pro EU Liberal Democrats</i>						
Post 2004 $\times \Delta$ EU Accession/Initial Pop	-1.098 (0.904)	-1.493 (0.923)	-1.986** (0.828)	-0.121 (1.101)	-0.126 (1.029)	-0.122 (1.023)
LGA Districts	380	326	293	92	74	72
Observations	1520	1304	1172	368	296	288
<i>Panel C: British Nationalist Party</i>						
Post 2004 $\times \Delta$ EU Accession/Initial Pop	-0.051 (0.650)	-0.001 (0.658)	0.195 (0.813)	-0.998 (1.228)	-1.076 (1.199)	-1.076 (1.193)
LGA Districts	380	326	293	92	74	72
Observations	1086	978	879	258	222	216
Sample	All	England	Not London	All	England	Not London
LGA District FE	Yes	Yes	Yes	Yes	Yes	Yes
Region x Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Table reports results from a panel OLS regressions. The dependent variable is the log value of the UKIP Vote share in the EP elections from 1999 to 2014 in Panel A. Panel C has fewer observations as the British Nationalist Party vote share was not separately reported in 1999 and is also missing for Wales in 2004. All regressions include baseline population shares for EU , Non-EU and EU Accession countries flexibly interacted with year fixed effects. Columns (4) - (6) restrict the analysis to matched pairs of observations whose propensity score difference predicting the upper quartile of the accession shock measure is less than 0.2. Standard errors clustered at the Local Government Authority District Level are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A5: Effect of Migration from EU Accession affecting lower end of wage distribution.

	Whole sample			Matched sample		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Median Hourly Pay</i>						
Post 2004 $\times \Delta$ EU Accession/Initial Pop	-0.165 (0.148)	-0.179 (0.153)	-0.152 (0.182)	-0.286 (0.232)	-0.269 (0.251)	-0.267 (0.250)
LGA Districts	379	325	292	92	74	72
Observations	5227	4480	4030	1280	1036	1008
<i>Panel B: 25th Percentile Hourly Pay</i>						
Post 2004 $\times \Delta$ EU Accession/Initial Pop	-0.479*** (0.162)	-0.529*** (0.172)	-0.419** (0.184)	-0.474* (0.239)	-0.491* (0.267)	-0.490* (0.266)
LGA Districts	379	325	292	92	74	72
Observations	5244	4493	4040	1285	1036	1008
<i>Panel C: 10th Percentile Hourly Pay</i>						
Post 2004 $\times \Delta$ EU Accession/Initial Pop	-0.410*** (0.134)	-0.499*** (0.136)	-0.480*** (0.156)	-0.798*** (0.219)	-0.967*** (0.225)	-0.964*** (0.225)
LGA Districts	378	325	292	91	74	72
Observations	5167	4449	3999	1263	1036	1008
Sample	All	England	Not London	All	England	Not London
LGA District FE	Yes	Yes	Yes	Yes	Yes	Yes
Region \times Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Table reports results from a panel OLS regressions. All regressions include baseline population shares for EU , Non-EU and EU Accession countries flexibly interacted with year fixed effects. The data set is a balanced panel of hourly wages by location of residence from 2002 to 2014 across different quantiles. A few observations are missing as the Office of National Statistics deemed the statistics not precise enough. Columns (4) - (6) restrict the analysis to matched pairs of observations whose propensity score difference predicting the upper quartile of the accession shock measure is less than 0.2. Standard errors clustered at the Local Government Authority District Level are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A6: Alternative Exposure Measure: Migration from EU Accession and crimes.

	Whole sample			Matched sample		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Violent Crime per capita</i>						
Post 2004 $\times \Delta$ EU Accession/Initial Pop	1.005 (0.623)	1.007 (0.629)	1.112 (0.747)	0.781 (0.974)	0.785 (0.985)	0.803 (0.979)
LGA Districts	342	320	287	76	72	70
Observations	4469	4161	3699	1014	958	930
<i>Panel B: Public order crimes per capita</i>						
Post 2004 $\times \Delta$ EU Accession/Initial Pop	-0.342 (0.932)	-0.526 (0.935)	-0.653 (1.192)	0.094 (1.731)	-0.092 (1.783)	-0.083 (1.773)
LGA Districts	342	320	287	76	72	70
Observations	4469	4161	3699	1014	958	930
<i>Panel C: Property crimes per capita</i>						
Post 2004 $\times \Delta$ EU Accession/Initial Pop	0.451 (0.553)	0.392 (0.560)	0.456 (0.690)	1.553* (0.928)	1.523 (0.934)	1.527 (0.928)
LGA Districts	342	320	287	76	72	70
Observations	4469	4161	3699	1014	958	930
Sample	All	England	Not London	All	England	Not London
LGA District FE	Yes	Yes	Yes	Yes	Yes	Yes
Region x Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Table reports results from a panel OLS regressions. The dependent variable is given in the respective panel headings and available for England and Wales as an unbalanced panel from 2002 to 2015. Columns (4) - (6) restrict the analysis to matched pairs of observations whose propensity score difference predicting the upper quartile of the accession shock measure is less than 0.05. Standard errors clustered at the Local Government Authority District Level are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A7: Alternative Exposure Measure: Effect of Migration from EU Accession on demand for benefits.

	Whole sample			Matched sample		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Jobseeker Allowance Claimants</i>						
Post 2004 $\times \Delta$ EU Accession/Initial Pop	2.443*** (0.512)	2.709*** (0.522)	2.929*** (0.575)	3.066*** (0.903)	3.466*** (1.001)	3.484*** (0.991)
LGA Districts	380	326	293	92	74	72
Observations	6080	5216	4688	1472	1184	1152
<i>Panel B: Income Support Benefits Claimants</i>						
Post 2004 $\times \Delta$ EU Accession/Initial Pop	0.267 (0.368)	0.182 (0.387)	0.301 (0.351)	0.659 (0.660)	0.923 (0.719)	0.924 (0.715)
LGA Districts	380	326	293	92	74	72
Observations	6067	5203	4675	1472	1184	1152
<i>Panel C: Incapacity Benefit Claimants</i>						
Post 2004 $\times \Delta$ EU Accession/Initial Pop	2.376*** (0.387)	2.680*** (0.417)	3.365*** (0.597)	2.814*** (0.872)	3.075*** (1.031)	3.074*** (1.026)
LGA Districts	380	326	293	92	74	72
Observations	6080	5216	4688	1472	1184	1152
Sample	All	England	Not London	All	England	Not London
LGA District FE	Yes	Yes	Yes	Yes	Yes	Yes
Region \times Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Table reports results from a panel OLS regressions. The data set is a balanced panel of hourly wages by location of residence from 2002 to 2014 across different quantiles. A few observations are missing as the Office of National Statistics deemed the statistics not precise enough. Columns (4) - (6) restrict the analysis to matched pairs of observations whose propensity score difference predicting the upper quartile of the accession shock measure is less than 0.05. Standard errors clustered at the Local Government Authority District Level are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A8: Alternative Exposure Measure: Migration from EU Accession and the housing market.

	Whole sample			Matched sample		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Households living in rented housing</i>						
Post 2004 $\times \Delta$ EU Accession/Initial Pop	0.712*** (0.106)	0.722*** (0.113)	0.803*** (0.141)	0.418*** (0.114)	0.441*** (0.133)	0.441*** (0.132)
LGA Districts	380	326	293	92	74	72
Observations	760	652	586	184	148	144
<i>Panel B: log(Median Terraced House Price)</i>						
Post 2004 $\times \Delta$ EU Accession/Initial Pop	0.271 (0.239)	0.272 (0.242)	0.564** (0.256)	-0.108 (0.307)	-0.126 (0.309)	-0.130 (0.306)
LGA Districts	342	320	287	76	72	70
Observations	5790	5416	4870	1292	1224	1190
Sample	All	England	Not London	All	England	Not London
LGA District FE	Yes	Yes	Yes	Yes	Yes	Yes
Region \times Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Table reports results from a panel OLS regressions. The measure in Panel A is from the 2001 and 2011 census for England, Scotland and Wales. In Panel B, house prices are a balanced panel from 1997 to 2013 for England and Wales. All regressions include baseline population shares for EU , Non-EU and EU Accession countries flexibly interacted with year fixed effects. Columns (4) - (6) restrict the analysis to matched pairs of observations whose propensity score difference predicting the upper quartile of the accession shock measure is less than 0.2. Standard errors clustered at the Local Government Authority District Level are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A9: Alternative Exposure Measure: Migration from EU Accession on dimensions of deprivation.

	Whole sample		Matched sample	
	(1)	(2)	(3)	(4)
<i>Panel A: Overall Deprivation Rank</i>				
Post 2004 $\times \Delta$ EU Accession/Initial Pop	-0.716** (0.323)	-0.786*** (0.204)	-1.080*** (0.318)	-1.081*** (0.316)
LGA Districts	326	293	86	84
Observations	1304	1172	344	336
<i>Panel B: Income Deprivation Rank</i>				
Post 2004 $\times \Delta$ EU Accession/Initial Pop	-0.618** (0.286)	-0.671*** (0.201)	-0.777** (0.317)	-0.778** (0.316)
LGA Districts	326	293	86	84
Observations	1304	1172	344	336
<i>Panel C: Employment Deprivation Rank</i>				
Post 2004 $\times \Delta$ EU Accession/Initial Pop	-1.137*** (0.288)	-1.405*** (0.225)	-1.951*** (0.454)	-1.952*** (0.451)
LGA Districts	326	293	86	84
Observations	1304	1172	344	336
<i>Panel D: Health Deprivation Rank</i>				
Post 2004 $\times \Delta$ EU Accession/Initial Pop	-0.405 (0.366)	-1.163*** (0.344)	-1.110** (0.493)	-1.112** (0.490)
LGA Districts	326	293	86	84
Observations	1304	1172	344	336
<i>Panel E: Education Deprivation Rank</i>				
Post 2004 $\times \Delta$ EU Accession/Initial Pop	0.176 (0.275)	0.218 (0.288)	-0.106 (0.392)	-0.106 (0.390)
LGA Districts	326	293	86	84
Observations	1304	1172	344	336
<i>Panel F: Barriers to Housing and Services Rank</i>				
Post 2004 $\times \Delta$ EU Accession/Initial Pop	-1.682 (1.433)	-1.095 (1.012)	-0.285 (1.007)	-0.282 (1.002)
LGA Districts	326	293	86	84
Observations	1304	1172	344	336
<i>Panel G: Living Environment</i>				
Post 2004 $\times \Delta$ EU Accession/Initial Pop	-0.444 (0.386)	-0.675 (0.418)	-1.270** (0.533)	-1.270** (0.530)
LGA Districts	326	293	86	84
Observations	1304	1172	344	336
Sample	England	Not London	England	Not London
LGA District FE Yes	Yes	Yes	Yes	Yes
Region \times Year FE Yes	Yes	Yes	Yes	Yes

Notes: Table reports results from a panel OLS regressions. The dependent variable is the log of the average rank in the respective deprivation index domain across the lower layer statistical output areas that fall into a local authority district. A low rank indicates that a place has more deprived areas compared to the rest of England in a respective domain. The data is available for England as annual panel for the years 2004, 2007, 2010 and 2015. Columns (3) - (4) restrict the analysis to matched pairs of observations whose propensity score difference predicting the upper quartile of the accession shock measure is less than 0.05. Standard errors clustered at the Local Government Authority District Level are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.