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ABSTRACT

Immigration and Preferences for Redistribution in Europe*

We examine the relationship between immigration and attitudes toward redistribution using a newly assembled data set of immigrant stocks for 140 regions of 16 Western European countries. Exploiting within-country variations in the share of immigrants at the regional level, we find that native respondents display lower support for redistribution when the share of immigrants in their residence region is higher. This negative association is driven by regions of countries with relatively large Welfare States and by respondents at the center or at the right of the political spectrum. The effects are also stronger when immigrants originate from Middle-Eastern countries, are less skilled than natives, and experience more residential segregation. These results are unlikely to be driven by immigrants' endogenous location choices.

JEL Classification:	D31, D64, I3, Z13
Keywords:	income redistribution, population heterogeneity, welfare systems, immigration

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1   Introduction

Private and public generosity (charity and welfare) travel more easily within the same ethnic lines, nationality and religious affiliation.[1] Alesina and Glaeser (2004) argue that one of the reasons why the welfare state is more generous and expensive in Western Europe than in the US is that European countries have been traditionally much more homogeneous than the US, a country built by waves of relatively recent immigrants. However in the last two decades immigration in Western Europe has substantially increased and has become (and will remain for the foreseeable future) a major political issue. The question, then, is: does immigration reduce support for redistributive policies in Europe? The answer provided by this paper is "yes", but with important qualifications.

To answer the question, we assemble a unique data set of fully harmonized population census/register data at the regional level for 140 regions in 16 different European countries (in the years 2000 and 2010), which is then matched with attitudinal data from the biannual 2002-2016 rounds of the European Social Survey. We investigate the relationship between immigration and natives' attitudes to redistribution by exploiting within-country (i.e., regional) variation in the share of immigrants, thus holding constant Welfare policies at the national level. Our paper combines a large geographical coverage (sixteen different European countries) with (i) immigration data at the regional level, and (ii) an empirical methodology based on a rich set of fixed effects, which allows for addressing some of the endogeneity problems (e.g., welfare magnets) that have plagued previous multi-country descriptive studies. We cannot hold constant welfare policies that vary at the local level, an issue which may be of limited importance in some countries (e.g., France) but are more relevant in others (e.g., Sweden or Germany). In any event, we analyze the robustness of our results to various potential confounders such as the non-random location choices of immigrants (or to the residential sorting of natives). The results are also robust to excluding Federal States where welfare policies are largely set at the regional level, suggesting that they are not driven by welfare magnet effects.

We first find that local (i.e., regional) exposure to immigrants in the residence region affects natives' perception of the number of immigrants at the national level and, therefore, also

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[1]See Alesina and Giuliano (2011) and Stichnoth and Van der Straeten (2013) for a survey on the literature on redistributive policies, and Alesina and La Ferrara (2005) for a survey on the effect of social heterogeneity on social capital and trust; see also Algan et al. (2016) for recent results.

their perception about the identity (natives versus immigrants) of the potential beneficiaries of the Welfare State. We then uncover that native respondents in our sample display lower support for redistribution when the share of immigrants in their residence region is higher. This attitudinal effect is sizeable in reltative terms, in comparison to the effect of individual variables such as education or income that are important determinants of preferences for redistribution (Alesina and Giuliano, 2011). For example, the anti-redistribution effect of a one-quintile increase in the immigrants' share is about half as large as the attudinal impact of a one-quintile increase in household income.[2]

This average effect hides considerable heterogeneity along a number of dimensions: types of receiving countries, natives' individual characteristics, and immigrant types. The most important dimension of the individual heterogeneity we uncover is political affiliation. The anti-redistribution impact of immigration is almost entirely driven by individuals placing themselves at the center or the right of the political spectrum, while the attitudes of leftist individuals are barely affected. We also find that the reaction against redistribution is significantly stronger among natives who hold negative views about immigrants or think that immigrants should not be entitled to welfare benefits. We address the issue of the endogeneity of political affiliations to immigration by showing that it is statistically small and by applying a bounds analysis to demonstrate that it is unlikely to affect our coefficient estimates. Secondly, the attitudinal effect of immigration greatly depends on immigrants' countries of origin and skills. Immigrants originating from the Middle-East (North-Africa included) generate a larger anti-redistribution effect (about three times more negative) relative to other types of immigrants. We also uncover that immigrants' skills, both in terms of formal education and labor market occupation, shape natives' attitudinal reaction: a higher proportion of more skilled immigrants (relative to natives) tends to significantly mitigate the anti-redistribution effect of immigration. Thirdly, the negative association between immigration and support for redistribution is significantly stronger in destination countries with more generous Welfare States (e.g., Nordic countries and France) relative to countries with smaller Welfare States (e.g., the UK or Ireland).

The attitudinal response to immigration is also more pronounced among less educated

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[2]More specifically, a one standard-deviation increase in the log share of immigrants reduces natives' support for redistribution by 6.2% of the standard-deviation of attitudes. We cannot compare this effect with the impact of a one standard deviations increase in household income because the income variable is not continuous (but, rather, categorical) in the ESS data.

individuals and among members of the middle and upper class. Furthermore, natives' reaction against redistribution appears to be driven by both the recent cohorts of immigrants arrived in the last decade (2000-2010) and by earlier cohorts arrived before 1990. Finally, we uncover that, for a given share of immigrants in a region, a higher residential segregation of immigrants is significantly associated with a further reduction in the support for redistribution.

Our paper relates to the literature on population diversity and demand for redistribution. Beliefs about who is a worthy recipient of public generosity correlate with race, especially in the United States. Many studies find that the white American majority is much less supportive of redistribution than members of minority groups (holding income constant) – see Alesina and La Ferrara (2005) for a survey. Using individual data for the U.S., Luttmer (2001) shows evidence for "group loyalty effects", namely that support for redistribution increases if members of the respondent's own ethnic group are over-represented among welfare recipients. Using experimental data, Fong and Luttmer (2009) study the role of racial group loyalty on generosity, measured by charitable giving in a dictator game (where respondents choose how to divide $100 between between themselves and a charity dedicated to Hurricane Katrina victims), and find that racial discrimination in giving importantly depends on subjective racial identification (how close one feels to one's own racial group). With more specific reference to immigration, Tabellini (2018) looks at the Great Migration in the US in the first part of the last century and shows results consistent with those of the present paper, namely that natives became less favorable to social policies in cities which received more immigrants (and more so when immigrants were culturally or religiously further away from the natives). These effects hold despite the economic benefits brought about by the immigrants.

Turning more specifically to Europe, Dahlberg et al. (2012) analyze changes in natives' attitudes to redistribution resulting from the arrival of refugees in Sweden in the late 1980s and early 1990s and find a strong negative effect, especially among high-income earners. They take advantage of the existence between 1985 and 1994 of a "refugee placement program" which allocates refugees to municipalities in Sweden, essentially without refugees having a say as to where they can be placed; hence, they thereby solve the problem of endogenous immigrants' location choice. Indeed, one difficulty when analyzing the consequences of immigration on welfare policies is that immigrants (especially the poorest) may

be attracted to so called "welfare magnets". Boeri (2010) and Borjas (1999) find evidence of such welfare magnet effects respectively in the context of the US and in the context of Western Europe (see also Razin and Wahba, 2015). How this effect may bias the results for attitudes to redistribution is not obvious: immigrants may indeed flow to countries or regions with more generous welfare systems, however these are precisely the countries in which individuals tend to be more favorable towards redistribution, so that the direction of the bias is unclear. This is addressed in our analysis, at least partly, by focusing on within-country (i.e., regional) variation in immigrants' shares. Senik et al. (2009) use the European Social Survey to analyze the role of individual characteristics (especially attitudes toward immigration) in determining attitudes to redistribution in response to increased perceived immigration. There is also a large, mostly descriptive political science literature (see, e.g., Burgoon et al., 2012; Burgoon, 2014) that stresses the role of occupational exposure to immigration and of immigrants' integration, respectively. Finally, Alesina et al. (2018) perform an original survey on six countries (the US and five major Western European countries: the UK, Sweden, Germany, Italy and France) and show two sets of results. First, natives are vastly misinformed about immigrants, regarding their number, country of origin, education level and reliance on the welfare state. Second, there is a strong correlation between natives' beliefs about immigrants and their preferences for redistribution. They also find, as we do, that this relationship is stronger for self-reported right-wing respondents.

This paper is organized as follows. The next section describes in detail the novel data set we assemble. Section 3 presents our empirical strategy. Section 4 describes our main results, robustness checks, and the heterogeneity analysis. The last section concludes.

2   Data

We construct a novel data set on the stocks of immigrants at the regional level for a total of 140 regions in 16 Western European countries. While there have been several efforts to compile global bilateral immigrant stocks across countries (e.g. Docquier et al., 2009; Özden et al., 2011), we provide a new data set of immigrant population by origin country and by educational level in each region (NUTS) of Europe by harmonizing population censuses and registers in the years 1991, 2001 and 2011. We then combine this data set with individual attitudinal data drawn from the European Social Survey across more than 140 regions in

western Europe.

2.1 Stock of immigrants at the regional level

2.1.1 Primary sources of data

We draw on population census and register data, from the 1991, 2001 and 2011 rounds – see Table A.11 in the appendix. Census data were used for 10 countries: Austria, Belgium, Ireland, Italy, France, Greece, Portugal, Spain, Switzerland, and the United Kingdom. These data were either provided by the national statistical offices or taken from IPUMS International.[3] For countries not taking periodic censuses but keeping population registers, we extracted data from those registers.[4] In order to obtain immigrants stock data by educational level, we sometime rely on the European Labor Force Survey (due to the lack of suitable census data) – see Table A.12 in the appendix.[5]

We compile the immigrant stock data in the regions of residence of the 16 European countries we cover by using the NUTS geocode standard for referencing the subdivisions of countries. The NUTS standard defines minimum and maximum population thresholds for the size of the NUTS regions: between 3 and 7 millions for NUTS1 units, between 800,000 and 2 millions for NUTS2 units, and between 150,000 and 800,000 for NUTS3 units. NUTS regions are generally based on existing national administrative subdivisions.[6]

Definition of migrants   Official records usually apply two different definitions as to what constitutes a migrant: either being born in a foreign country, or being a citizen of a foreign country. When harmonizing the data, we gave priority to the definition based on country of birth. Birthplace data is available from most of the primary sources, expect for the

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[3]For the UK, the census data we used (as provided by the ONS) does not cover Scotland nor Northern Ireland. Those two countries run separately their own census which we could not have access to.

[4]This is the case for 6 countries: Denmark, Finland, Germany, Norway, the Netherlands and Sweden.

[5]We use the European Labor Force Survey (ELFS) instead of population censuses in three countries: Belgium, Switzerland and Germany. In Belgium and Switzerland, we chose not to rely on census data because of the high share of foreign-born with unknown level of education. In Germany, the census does not report the birthplace, only the Labor Force Survey does.

[6]For example in mainland France, NUTS1 mirrors the 9 French areas "Zones d'etudes et d'amenagement du territoire " while the NUTS2 corresponds to the 22 French "Regions" and NUTS3 to the 96 French "Departements".

1991 rounds of the Austrian and Greek censuses, as well as for the 1991 and 2001 rounds of the German registers. In order to have a consistent definition of immigrants over time that is comparable across countries, we had to impute the number of foreign-born in the few instances in which data are missing. We follow the approach of Brücker et al. (2013) by using the ratio between foreign citizens and foreign-born in year t in order to infer the number of foreign born in the previous years $t - 10$ or $t - 20$. [7]

Countries of origin Following the end of the cold war, many countries redrew their political boundaries. The coding of birthplace data, which varies from one population census to another, often only reports the original territory as it existed before the split into newly constituted countries. For example, in many censuses of the 16 European countries, Serbia, Croatia or Bosnia are aggregated under the name of the former Yugoslavia. We treated as a single entity the countries that belonged to each of the following territory: the former Yugoslavia, the former Czechoslovakia, the Netherlands Antilles, the Channel Islands, Sudan and South Sudan, Indonesia and East Timor. With respect to the ex-USSR, we choose to impute (when not known) the number of immigrants originating from the individual countries that comprise that area as follows: observing the total number of migrants from USSR in a given destination region, we allocated these migrants to each individual countries by using the IAB brain-drain database Brücker et al. (2013) which provides, at the national level,

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[7]In practice we impute the number $\widehat{N}_{r,o,t}$ of foreign-born from origin country o living in region r at time t by using the observed number of foreign citizen $C_{r,o,t}$ in the same year, region and coming from the same origin country:

$$\widehat{N}_{r,o,t} = r_{o,t+10} * C_{r,o,t}$$

with $r_{o,t+10} = \frac{N_{o,t+10}}{C_{o,t+10}}$ the ratio at time $t + 10$ between national-level number of foreign-born and foreign-citizen from origin o and living in the same destination country of region r. For Austria and Greece, we impute the number of foreign-born in 1991 by using the ratio between foreign-born and foreign-citizen in 2001. For Germany, we impute the number of foreign-born in 1991 and 2001 by using the ratio in 2011. In order to assess the precision of such imputation, we predicted the number of foreign-born in Austria and Greece in 2000 following the same approach (i.e., using the 2011 ratio between foreign-born and foreign-citizen) and compared the imputed 2000 values and the observed 2000 values of foreign-born by origin country and region of residence. In both Austria and Greece, we obtained a coefficient of correlation above 0.97 between the observed and the imputed values. For Germany, we checked how the 2000 imputed values by origin countries correlate with the DIOC data 2000 values at the national level (Docquier and Marfouk, 2006). Considering only origin countries with positive DIOC numbers of migrants, we obtained a coefficient of correlation above 0.96 – and in particular a similar number of migrants from the ex-USSR, the so-called ethnic Germans.

the number of immigrants by individual origin.[8] After harmonization, we have 217 different countries of origin in 1991, 2001 and 2011. The share of the population for whom the place of birth is missing or too imprecise is below 1% for most receiving countries and not higher than 4% for two countries (the UK and Switzerland).

Education data　We distinguish three levels of education using the International Standard Classification of Education: primary (ISCED 0/1/2, i.e. lower secondary, primary and no schooling); secondary (ISCED 3/4 : high-school leaving certificate or equivalent) and tertiary education (ISCED 5A/5B/6 or higher).

2.1.2　Other sources of data at the regional level

Occupation data　We use the 2011 Census database of Eurostat that harmonises statistical definitions and classifications in order to ensure the comparability of population census data across different countries. This database gives information on the 2011 population structure at the NUTS regional level. In particular, we use data on the number of foreign-born and native workers in various occupations, categorized by the ISCO 1-digit classification. This occupational data is available for every country used in the analysis expect for Austria, Belgium and France.[9]

Segregation data　We also draw on a dataset providing the distribution of the immigrant population at a very high spatial resolution in order to measure the residential segregation of immigrants within NUTS regions of Europe. This dataset has been assembled by the Joint Research Centre (JRC) of the European Commission that harmonized 2011 population censuses in 8 different countries: France, Germany, Ireland, Italy, Netherlands, Portugal, Spain and UK. The ensuing data is a uniform grid giving the numbers of immigrants in cells of 100 by 100 meters in each of these 8 European countries. The primary source of data is the population at the census tract level. However, the geographical resolution and geometries

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[8]For example, for a given year and destination region, we impute the number of Ukrainian migrants by multiplying the number of migrants from the USSR in the same year and destination region with the share of Ukrainians among all USSR migrants in the same year and destination country, as provided by the IAB dataset.

[9]For details, see https://ec.europa.eu/eurostat/web/population-and-housing-census/census-data/2011-census

of census sampling units are extremely variable across European countries. In the case of the Netherlands, sampling areas are at the postal code level (groups of buildings including around 25 households). Other countries report data at higher resolution (from 0.01 to 1.7 square km) using census sampling areas with a regular grid (Germany) or polygons with variable shapes and sizes. These differences in geometries and resolution were harmonized through the dasymmetric mapping method.[10] We aggregate this data at the regional level by constructing an index of immigrants' spatial segregation within each NUTS region. We will explain the construction of this index in the results section 4.3.4.

2.2   Individual attitudinal data

Data on individual attitudes towards redistribution are from the European Social Survey (ESS), which contains information on a wide range of socioeconomic and political values for individuals in 28 European countries. The data are available for seven biannual survey waves starting in 2002 and have been widely used.[11] We measure preferences towards redistribution by relying on answers to the statement *"The government should take measures to reduce differences in income levels "*. We use a 5-point scale variable V_1 that measures the extent to which the respondent agrees with the previous statement: agrees strongly (5), agrees (4), neither agrees nor disagrees (3), disagrees (2), disagrees strongly (1).

We also use the 2008 and 2016 rounds of the ESS that include a rich set of specific questions on attitudes towards Welfare. In particular, respondents are asked to what extent they agree that *"For a society to be fair, differences in people's standard of living should be small "* (V_2). Respondents also report how much responsibility they think governments should have to ensure a reasonable standard of living for the old (V_3), the unemployed (V_4), as well as to ensure sufficient child care services for working parents (V_5). Finally, respondents report their views on social benefits, and in particular the extent to which they agree with

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[10]This method me redistributes the population (by origin country) from the original census areas to a regular grid at 100 m resolution. The method allocates higher shares of the total population to cells characterized by a higher surface occupied by buildings and with an urban land cover classification, as compared to cells occupied, for example, by green areas or with an agricultural land.For details, see https://bluehub.jrc.ec.europa.eu/datachallenge/data

[11]For preferences towards redistribution see Burgoon et al. (2012); Finseraas (2008); Luttmer and Singhal (2011); Senik et al. (2009). For views about immigration see Card et al. (2005) and Ortega and Polavieja (2012).

the following three statements: *"social benefits place too great strain on economy "* (V_6), *"social benefits cost businesses too much in taxes and charges "* (V_7), *"social benefits make people lazy "* (V_8).

Table 1 shows that, somewhat surprisingly, these eight different variables are not as strongly correlated as one may expect, with coefficients of correlation below 0.5 (variables have been recoded in such a way that a higher value corresponds to stronger support for Welfare and redistribution). We construct a composite index of attitudes as the first component of a Principal Component Analysis of these eight variables.[12]

In the analysis of the effect of immigration on attitudes towards redistribution, we use both this overall index of Welfare attitudes and the support for reduction in income differences (V_1) as dependent variables. The advantage of the index is to combine the diverse facets of Welfare attitudes into one single indicator instead of relying on only one dimension. The advantage of the attitudinal outcome V_1 is to be available for every round of the ESS while the index can only be constructed in the 2008 and 2016 rounds. Finally, we standardize these two dependent variables (Z-score formula) in order to make the results more comparable (i.e., variables are rescaled to have a mean of 0 and a standard deviation of 1).

Table 1: Cross-correlations of Welfare attitudes

Variables	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8
V_1: Favors reduction in income differences	1.00							
V_2: Favors small differences in standard of living for a fair society	0.41	1.00						
V_3: Favors government responsibility for the standard of living for the old	0.22	0.20	1.00					
V_4: Favors government responsibility for the standard of living of the unemployed	0.24	0.24	0.48	1.00				
V_5: Favors government responsibility for child care services	0.19	0.17	0.43	0.42	1.00			
V_6: Disagrees that social benefits place too great strain on economy	0.08	0.07	0.09	0.19	0.11	1.00		
V_7: Disagrees that social benefits cost businesses too much	0.08	0.07	0.05	0.17	0.08	0.44	1.00	
V_8: Disagrees that social benefits make people lazy	0.11	0.11	0.08	0.27	0.12	0.38	0.36	1.00

2.3 Matched data on attitudes and immigrant stocks

The ESS provides relatively precise information on the place of residence of the respondents: at the regional NUTS2 level for most countries expect for Belgium, France, Germany and the UK for which only larger NUTS 1 regions are available. In Ireland, smaller NUTS 3 region are available. In few instances the coding of the place of residence in the ESS data does

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[12]The weights obtained by the PCA are very similar for each of the height different variables

not fully coincide with the NUTS classification or is sometimes inconsistent across different survey rounds. To address this issue, in some instances we aggregate different NUTS regions into one larger unit.[13] Moreover, three NUTS regions are not covered by the ESS survey, and four regions are extremely poorly covered, and were therefore excluded them from the analysis.[14]

Once these small adjustments are made, we can combine the ESS attitudinal survey with the immigrant stock data across 148 different regions of residence – either NUTS2 or NUTS1 – in the 16 European countries we cover over the period 2002-2016. Table A.13 in the Appendix provides the exhaustive list of the regions included in the analysis. We match each ESS round in a given decade to the immigrant stock data at the beginning of the same decade. We thus merge all biannual ESS rounds from 2002 to 2008 with the 2000 immigrant stocks, and all biannual ESS rounds from 2010 to 2016 with the 2010 immigrant stocks.

2.3.1 Sample

Since we are interested in the effect of immigration on natives' support for redistribution, we restrict the ESS sample to native-born individuals, i.e. born in their current European country of residence. We consider only respondents with both non-missing data on attitudes towards redistribution (variable V_1) and non-missing data on individual characteristics. Pooling all biannual ESS rounds from 2002 to 2016, we obtain a repeated cross-section of 134,033 individuals without missing information. [15] In the estimation sample there are on average 905 individual observations by region, with a minimum of 33 in the Italian region of Liguria (ITC3) and a maximum of 6200 in the Belgium Flemish region (BE2). When using the composite index of Welfare attitudes, we obtain an estimation sample of 31,223 individual

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[13]The northwestern region of Switzerland with Zurich (CH03-CH04), the Southern part of Finland with Helsinki (FI1B-FI1C), and the Trentino province with the Bolzano province in Italy (ITH1-ITH2)

[14]This is the case of the regions of Ceuta and Melilla in Spain (with only 30 and 15 respondents in the entire 2002-2016 period), the Acores and Madeira in Portugal (not covered), Aland in Finland (with 44 respondents), Molise (not covered) and the Valle d'Aosta (with 38 respondents) in Italy. In the other regions, the number of respondents is typically around 1500, and always greater than 100.

[15]This sample represents 66% of the initial sample because it keeps observations where all control variables are jointly non-missing. We checked that this restricted sample does not differ substantially from the initial sample in terms of attitudes, political preferences and socio-demographics: We obtain standardized differences (Rosenbaum and Rubin, 1985) always lower than 7%, which indicates that there are no important imbalances between the two sample.

observations in the 2008 and 2016 rounds of the ESS.

2.4   Descriptive Statistics

Immigrants in Europe   Over the last decades, immigration has increased in every European country, and has dramatically accelerated since the early 2000s, particularly in Spain, Italy and Ireland (see Figure A.1 in the Appendix). This increase is due to a inflow of immigrants coming from countries outside of the EU15, and mainly from Central and Eastern Europe, the Middle East, and South America (see Figure A.2 in the Appendix). As shown by Figure 1, the population share of immigrants in 2010 is very heterogenous across countries, but also across regions within the same country. For example, northern regions of Italy host much more immigrants than southern regions, which is also true for western regions of Germany relative to eastern regions.

Preferences for redistribution   The average support for reduction in income differences (variable V_1) is also heterogeneous across European countries, with higher support in Greece and France relative to Denmark and Germany (Figure A.3). Preferences for redistribution have been very stable over the last decades, as the Figure A.4 shows in the Appendix. Between 2002 and 2016 the average support for redistribution has varied by at most 10% relative to its initial level, and this is true for every European country. How attitudes towards redistribution would have looked liked in the absence of immigration remains an open question. In order to estimate the no-immigration counterfactual, we will exploit sources of variation in individual attitudes across regions within the same country. Indeed, Figure 2 shows that there is a significant within-country variability in the average support for redistribution: for example, there is lower support for redistribution in western regions of Germany relative to eastern regions, as well as in the North of Italy relative to the South.[16]

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[16]A variance-decomposition analysis reveals that, at the regional level, 35% of the variation in attitudes is due to within-country variation. On differences between Western and Eastern parts of Germany, see Alesina and Fuchs-Schündeln (2007)

Figure 1: Population share of immigrants in 2010 at the regional level
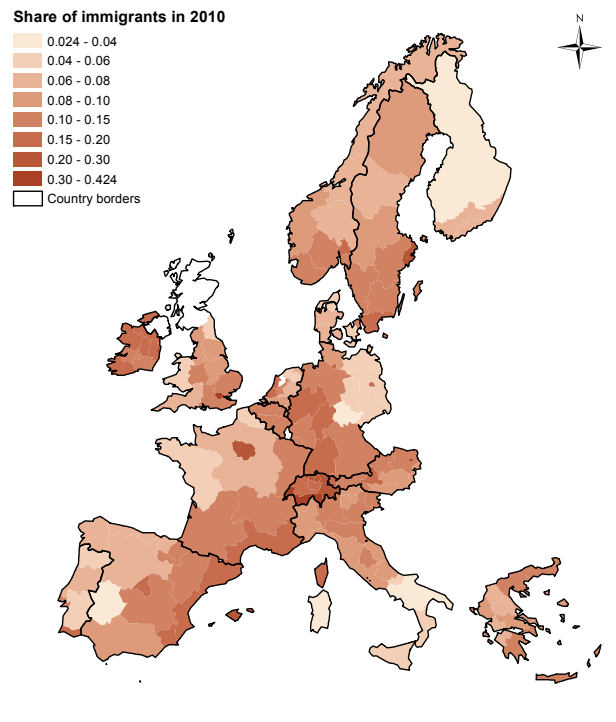
3 Empirical strategy

3.1 Specification

We estimate the following linear regression for native-born individual i, living in region n of country c at survey round t:

$$y_{inct} = Mig_{nt}\beta + X_{it}\alpha + Z_{nt}\lambda + \delta_{ct} + \epsilon_{int} \tag{1}$$

where y_{int} is individual i's support for redistribution as described in the data section. Mig_{nt} is the share of immigrants (i.e. foreign born) in the population of region n at the beginning of the decade of year t. Given the skewness of the distribution of the share of foreign-born, we use the logarithm of the population share in the empirical estimation.[17] The regression includes country-year fixed effect δ_{ct}. The vector Z_{nt} includes controls at the

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[17]The results remain robust when using a quadratic specification. Details are available from the authors.

Figure 2: Average support for reduction in income differences at the regional level

Average support for redistribution [1,5]
- 2.97 - 3.10
- 3.10 - 3.24
- 3.24 - 3.38
- 3.38 - 3.52
- 3.52 - 3.66
- 3.66 - 3.80
- 3.80 - 3.94
- 3.94 - 4.08
- 4.08 - 4.22
- 4.22 - 4.36
- 4.36 - 4.50
- 4.50 - 4.64
- Country borders
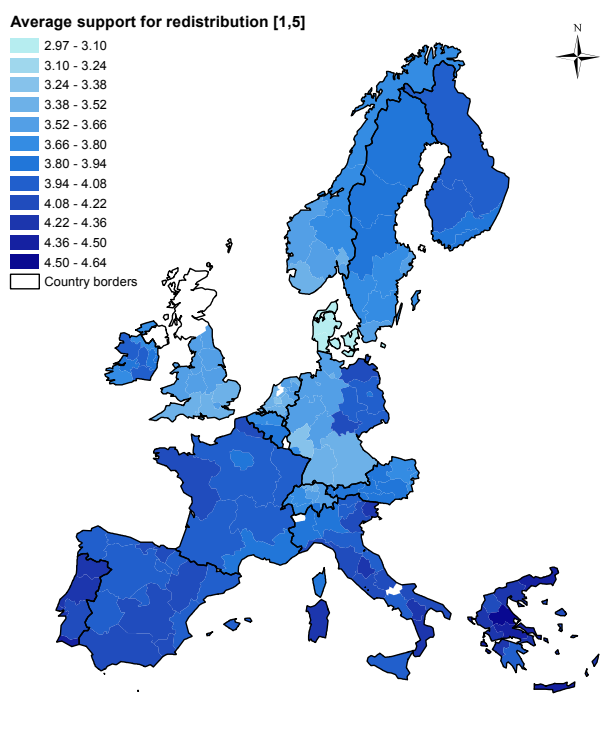
regional level such as the native population (log), GDP per capita (log), unemployment rate, and the share of tertiary educated among the native population. The vector X_{it} controls for individual socio-demographic characteristics, such as the respondent's gender, age, education, main activity during the week before the interview, the size of his/her household, parental education and immigration background, as well as usual place of residence. We test the sensitivity of the results to the inclusion of a richer set of individual controls related either to the individual's income and social class[18] or to the individual's political views and ideology.[19] We cluster standard errors at the region-by-year level to account for possible

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[18]Current or former occupation (2-digits isco88 categories), household income quintile, and self-assessed standard of living.

[19]Self-declared placement on a left-right political scale, opinions about whether people should be treated equally and have equal opportunities, opinions about the importance of helping people and caring for others well-being, and views about whether most people try to take advantage of you, or try to be fair.

correlation of the individual-level residuals ϵ_{int} within the same region and year.

The specification we propose exploits cross-sectional variations in the immigrants' share across regions within the same country. In theory we could effectively include a set of region fixed effects in order to control for time-invariant heterogeneity at the regional level. However, we face data constraints that precludes us from exploiting variation over time in individual attitudes. The ESS is a repeated cross-section of individual interviews, not a longitudinal survey. Furthermore, the ESS is not representative at the regional level, but only at the country level. This lack of representativeness results in that the regional average of individual attitudes cannot be compared over time (i.e., from one survey rounds to another) in a meaningful way, because the pool of respondents varies and is not sampled in a representative way. Also, as previously documented, attitudes appear quite persistent over time (at the country level). This suggests that a cross-sectional empirical specification might be more appropriate to capture the long to medium-run effect of immigration, relative to a Diff-in-Diff regression exploiting short-term variations in attitudes.

3.2 Endogeneity

In cross-country studies about immigration and redistribution, a key endogeneity question is the self-selection of immigrants, the "welfare magnet" issue. It is possible that immigrants self-select in places with more generous welfare policies, although it is not a priori obvious whether this would imply that preferences for redistribution change more drastically in these places. On the one hand, in places with more generous welfare polices poorer immigrants "cost" (or are perceived to cost) more to the natives, on the other hand the natives must be in principle more favorable to the welfare state by reveled preferences. As already emphasized, the unit of observation in this study is the region; hence, the country-year fixed effects control for country-level heterogeneity and hold constant welfare policies set at the national level. However, immigrants are not randomly distributed across regions within the same country.

Thus, it could still be that immigrants are attracted by regions offering relatively more generous social services (e.g., social housing), even within the same country. In order to address the issue of potential regional welfare magnets, we exclude Federal countries where regions have more autonomy to set welfare policies locally. Immigrants may also reside in relatively poorer regions (e.g. due to constraints on the housing market), where people have higher (or lower) preferences for redistribution. To test this, we include the share of

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households in or at risk of poverty at the regional level. We find that the results are robust to the inclusion of these potential confounders.

An additional concern is that immigrants may self-select into regions with higher economic growth and higher prospect for upward income mobility. Since people have lower support for redistribution when the prospects for upward mobility are higher, this could generate a negative correlation between support for redistribution and share of immigrants.[20] We address this concern by: (i) controlling for long-run regional GDP growth between the 1960s and 2000 (ii) controlling for negative trade shocks and industrial decline over the last two decades (iii) excluding capital regions, and (iv) using the share of immigrants in 1990 (instead of 2000 and 2010) as main regressor.

Finally we consider the residential choice of the native population, which can be driven by attitudes toward immigrants. For example, native individuals that are intolerant towards ethnic minorities are unlikely to choose to live in areas with large immigrant populations. To the extent that racially intolerant natives tend to have a lower support for redistribution (as is observed in the ESS survey), this type of residential sorting would yield an upward bias in any correlation between immigrants' share and attitudinal support for redistribution. Given that we find a negative association between immigration and support for distribution (see next section), this type of bias is not a concern a priori since it plays against us. In any case, the NUTS regions used in the analysis are very large spatial areas, with typically around 1.5 millions inhabitants, and always more than 200,000 inhabitants. As Dustmann and Preston (2001) argues, the ethnic composition of such large areas may be regarded as beyond the control of individuals whose mobility is likely to be geographically limited.

4   Results

4.1   Main findings

We begin by establishing that the natives' perception of the number of immigrants in their country (at the national level) is affected by the share of immigrants in their residence region. Table 2 shows that a one percentage-point increase in the regional immigration share is associated with a 0.3 percentage-point increase in the perceived national share of

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[20]For recent evidence on the relationship ship between perceptions of social mobility and preferences far redistribution see Alesina, Stantcheva and Teso (2018)

immigrants. This suggests that the natives' perception of the identity of potential welfare recipients (native or non-native) is determined by what they observe locally, i.e. by the local composition of the population.

Table 2: Perceived share of immigrants in the country and actual share in the residence region

Dep var :	"Of every 100 people in the country how many are foreign-born?"				
Share of immigrants	0.196***	0.325***	0.307***	0.310***	0.304***
	(0.039)	(0.050)	(0.046)	(0.045)	(0.044)
R2	0.14	0.14	0.21	0.22	0.24
N	32,358	32,358	32,358	32,358	32,358
Country-year FE	X	X	X	X	X
Regional control		X	X	X	X
Basic Individual-controls			X	X	X
Income controls				X	X
Ideology controls					X

Note: The dependent variable is the answer to the question: "Out of every 100 people living in the country, how many do you think were born outside the country?", available only in the 2002 and 2016 rounds of the European Social Survey. Regional controls include: native population (log), GDP per capita (log), unemployment rate, share of tertiary educated among the native population. Individual controls include: year of birth*sex , sex*education, household composition, employment status (unemployed, self-employed, retired..), education of parents and country of birth of parents, type of respondent's domicile (big city, suburbs, small town, village). Individual income controls include: current or former occupation (isco88 2 digits), household income quintile in the country, and feeling about current household's income. Ideology controls include: Placement on left right scale, opinions about whether people should be treated equally and have equal opportunities, opinions about the importance to help people and care for others well-being, opinions about whether Most people try to take advantage of you, or try to be fair. Standard errors are clustered at the NUTS- year level. *** p<0.01, ** p<0.05, * p<0.1

Native Europeans display, on average, a lower support for redistribution when the share of immigrants in their region of residence is higher. Table 3 shows that the negative association between immigration and pro-redistribution attitudes is very stable across specifications. In addition to country-year fixed effects, we progressively add to the regression regional con-

trols (column 2), individual socio-demographics (column 3), income and occupation controls (column 4), and proxies for altruism, aversion for inequality and sense of fairness (column 5). We estimate very similar effects for both measures of preferences for redistribution, i.e. the index of welfare attitudes that we constructed and the support for reducing income differences. When the full list of controls is included in column 5 of Table 3 , we obtain a highly statistically significant coefficient of -0.10, which suggests that a one standard-deviation increase in the log share of immigrants (0.62) reduces natives' support for redistribution by 6.2% of the standard-deviation of attitudes. In order to get some sense of the relative size of this effect, note that an increase in income by one quintile implies a decrease of 8% of the standard deviation of preferences for redistribution. The anti-redistribution effect of a one-quintile increase in the immigrants' share (i.e., 0.42) is thus about 50% as large as a one-quintile increase in household income. We cannot compare the effect of immigration with the impact of a one standard deviation increase in household income because the income variable is not continuous but rather categorical in the ESS data. Also, note that, by construction the share of immigrants at the regional level can only explain variation in attitudes across and not within regions. We could thus also compare the effects of immigration to the typical cross-regional variation in attitudes, rather than to the overall variation: a one-standard-deviation increase in the share of immigrants lowers preferences for redistribution by about 20% of the cross-regional standard-deviation of natives' attitudes.

4.2 Robustness

Table 4 tests the robustness of the results to various issues discussed in section 3.2. Table 4 shows that, relative to the baseline specification (column 1), results remain unchanged when we use the share of immigrants in 1990 (instead of 2000 and 2010) as main regressor (column 2). Also, we obtain similar estimates when we: (i) control for long-run regional GDP growth between the 1960s and 2000 (columns 5 and 6), (ii) include a region-specific exposure to Chinese import shocks (column 7) or the share of the manufacturing sector in the early 1990s (column 8), (iii) exclude capital regions (column 4), and (iv) exclude Federal countries that have more autonomy to set welfare policies at the regional level (column 3). The robustness of the results holds for both dependent variables (Panel A and Panel B). Only the inclusion of the regional poverty rate (column 9) generates a smaller and insignificant estimate of the effect of immigration, but only when the index of welfare attitudes is used

Table 3: Immigration and Attitudes towards Redistribution: Average Effect

Dep var. :	**Index of welfare attitudes**				
Share immigrants (log)	-0.060**	-0.108***	-0.116***	-0.110***	-0.104***
	(0.028)	(0.033)	(0.032)	(0.033)	(0.030)
R2	0.10	0.11	0.13	0.15	0.28
N	31,223	31,223	31,223	31,223	31,223
Dep var. :	**Support for reduction in income differences**				
Share immigrants (log)	-0.153***	-0.127***	-0.121***	-0.116***	-0.101***
	(0.020)	(0.023)	(0.023)	(0.021)	(0.017)
R2	0.09	0.10	0.13	0.15	0.22
N	134,033	134,033	134,033	134,033	134,033
Country-year FE	X	X	X	X	X
Regional control		X	X	X	X
Basic Indiv-controls			X	X	X
Income controls				X	X
Ideology controls					X

Note: The dependent variable *Index of welfare attitudes* is constructed as the first component of a principal component analysis using height attitudinal variable (see Data section), and is available only in the 2008 and 2016 rounds of the ESS. The dependent variable *Support for reduction in income differences* uses answers to the question as to whether "The government should take measures to reduce differences in income levels". All dependent variable are standardized (Z-score formula). Regional controls include: native population (log), GDP per capita (log), unemployment rate, share of tertiary educated among the native population. Individual Controls include: year of birth*sex , sex*education, household composition, employment status (unemployed, self-employed, retired..), education of parents and country of birth of parents, type of respondent's domicile (big city, suburbs, small town, village). Individual income controls include: current or former occupation (isco88 2 digits), household income quintile in the country, and feeling about current household's income. Ideology controls include: Placement on left right scale, opinions about whether people should be treated equally and have equal opportunities, opinions about the importance to help people and care for others well-being, opinions about whether Most people try to take advantage of you, or try to be fair. Standard errors are clustered at the NUTS-year level. *** p<0.01, ** p<0.05, * p<0.1

as outcome (Panel A).

4.2.1 Placebos

Finally, we run placebos test in Table A.1 of the Appendix, using three attitudinal dependent variables that should not, in principle, be affected by immigration: attitudes towards the environment, opinions about traditions and customs, and views on whether it is important to seek fun and things that give pleasure in life. As already mentioned, we find no statistical significant correlations for these outcomes.

4.3 Heterogeneity

We now explore various heterogeneity aspects of our main results.

4.3.1 Receiving countries

Table 5 examines the heterogeneity of the attitudinal effect of immigration depending on the generosity of the national Welfare State. We define the binary variable *High Welfare State* that equals one when the country's GDP share of welfare spending (social protection, health and education) is higher than the sample median and include its interaction with the share of immigrants in the regression.[21] The inclusion of country-year fixed effects absorbs the direct effect of living in a High Welfare State on attitudes towards redistribution. We find that the negative association between immigration and support for redistribution is significantly stronger in receiving countries with relatively more generous Welfare States (e.g., Nordic countries and France) relative to countries with smaller Welfare State (e.g., the UK or Ireland). Among the latter, the attitudinal effect of immigration becomes much less significant. Table A.2 in the Appendix shows that these results are very robust to the different potential confounders that we mentioned previously.

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[21]Government expenditures are drawn from COFOG Eurostat data and are averaged over the 1998-2004 period. Welfare spending is defined as the sum of expenditures in social protection (social transfers, safety net and aid, social housing, etc.), in health and education. See Table A.7 for details

Table 4: Robustness Checks: Average Effect

	Baseline	Immigrants in 1990	Excluding Federation	Excluding Capitals	Long-term growth	Long-term growth	De-industrialization	De-industrialization	Regional Poverty
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A				Dep var. : **Index of welfare attitudes (pca, 2008 and 2016 rounds)**					
Share immigrants (log)	-0.116***		-0.086**	-0.127***	-0.089*	-0.124**	-0.122***	-0.127***	-0.050
	(0.032)		(0.043)	(0.033)	(0.048)	(0.051)	(0.032)	(0.032)	(0.032)
Share immigrants in 1990 (log)		-0.099***							
		(0.027)							
yearly GDP growth from 1980-85 to 2000					0.059				
					(0.390)				
yearly GDP growth from 1965-70 to 2000						1.192			
						(3.336)			
Import shock with China 2007-1991							-0.024		
							(0.021)		
Employment share of manufacturing in 1990								-0.421**	
								(0.195)	
Share poor households (log)									-0.454***
									(0.086)
N	31,223	31,223	19,725	26,455	22,905	20,302	30,127	28,591	25,069
Panel B				Dep var. : **Support for reduction in income differences**					
Share immigrants (log)	-0.121***		-0.127***	-0.121***	-0.129***	-0.073**	-0.123***	-0.129***	-0.111***
	(0.023)		(0.028)	(0.022)	(0.026)	(0.030)	(0.023)	(0.024)	(0.027)
Share immigrants in 1990 (log)		-0.099***							
		(0.017)							
yearly GDP growth from 1980-85 to 2000					-0.316				
					(0.318)				
yearly GDP growth from 1965-70 to 2000						-3.454***			
						(1.310)			
Import shock with China 2007-1991							-0.007		
							(0.018)		
Employment share of manufacturing in 1990								0.094	
								(0.113)	
Share poor households (log)									-0.015
									(0.066)
N	134,033	134,033	87,895	112,293	98,835	86,370	125,988	118,554	109,085
Country-year FE	X	X	X	X	X	X	X	X	X
Regional control	X	X	X	X	X	X	X	X	X
Basic Indiv-controls	X	X	X	X	X	X	X	X	X

Note: Data on regional GDP growth from the 1960s is taken from Gennaioli et al. (2014), which provides a dataset at the NUTS 2 level for most of the European countries. *Import shock with China 2007-1991* is a variable taken from Colantone and Stanig (2018). This variable measures the exposure of a region to the growth in Chinese imports depending on the ex-ante industry specialization. *Share poor households* is a measure of the number of people at risk of poverty or social exclusion defined and provided by the Eurostat Database. See Data Appendix for details.

4.3.2 Natives' individual characteristics

Education and income Table 6 explores how the effect of immigration depends on native individuals' characteristics. When using the index of welfare attitudes as the dependent

Table 5: Heterogeneous effects across receiving countries: Size of the Welfare State

Dep var. :	Index of welfare attitudes				
Share immigrants (log)	0.068**	-0.012	-0.014	-0.001	-0.013
	(0.032)	(0.040)	(0.040)	(0.041)	(0.038)
Share immigrants (log) * High Welfare State	-0.208***	-0.157***	-0.167***	-0.178***	-0.148***
	(0.048)	(0.045)	(0.045)	(0.045)	(0.041)
N	31,223	31,223	31,223	31,223	31,223
Dep var. :	Support for reduction in income differences				
Share immigrants (log)	-0.019	-0.038	-0.040	-0.037	-0.036*
	(0.022)	(0.027)	(0.027)	(0.025)	(0.020)
Share immigrants (log) * High Welfare State	-0.215***	-0.145***	-0.132***	-0.128***	-0.104***
	(0.032)	(0.025)	(0.024)	(0.023)	(0.020)
N	134,033	134,033	134,033	134,033	134,033
Country-year FE	X	X	X	X	X
Regional control		X	X	X	X
Basic Indiv-controls			X	X	X
Income controls				X	X
Ideology controls					X

Note: *High Welfare State* is a binary taking one if the GDP share of welfare spending (social protection, health and education) is higher than the sample median. *High Welfare State* takes one for Austria, Germany, Denmark, Finland, Norway, Sweden and France. It takes zero for the rest of the EU15 countries and Switzerland. Standard errors are clustered at the NUTS- year level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

variable, we find significant differences in the attitudinal response to immigration depending on respondents' education or income. As column 1 of Table 6 shows, the anti-redistribution effect of immigration is twice less pronounced among tertiary-educated individuals relative to non-tertiary educated respondents. This finding is consistent with the concept of "educated preferences", i.e. the fact that more educated respondents are significantly less intolerant towards immigrants and place greater value on cultural diversity (Hainmueller and Hiscox, 2007). Also, relative to households in the middle of the income distribution (in the 2nd, 3rd and 4th income quintile), the attitudes of households in the bottom income quintile are

significantly less affected by immigration (column 2 and 3). This could be explained by the fact that, in Europe, tax systems are generally progressive and bear relatively more on the middle and upper class than on the lower class. As immigrants are often net recipients of welfare benefits (they take more in benefits than they contribute in taxes), the fiscal burden of the welfare policies directed towards (poorer) immigrants is more likely to be felt by the middle and upper class relative to the lower income classes. [22]

In column 4, we look at the differential attitudinal response of 6 groups based on income and education: the poor (bottom income quintile), the middle class, and the rich (top income quintile), with or without tertiary education. When focusing on the index of welfare attitudes (upper panel), we find that immigration has the least negative attitudinal effect among poor individuals without tertiary education (defined as the bottom income quintile). Among this group, immigration has no significant impact, which can be due to two opposing forces. On the one hand, low-educated, low-income natives may dislike ethnic diversity and reduce their support for redistribution when welfare recipients are more likely to be immigrants (Group Loyalty effects). On the other hand, this group of natives is the most exposed to tighter labor market competition with immigrants, and may thus demand more redistribution as an insurance (or compensation) against a higher risk of downward income mobility. We also find that the anti-redistribution effect of immigration is the highest among middle and upper class natives without tertiary education. When using the other dependent variable, we find no detectable heterogeneity in the attitudinal response.

Political affiliation Table 7 shows that the attitudinal response to immigration crucially depends on the respondent's political affiliation. Relative to center-rightists (i.e., non-leftists), the preferences for redistribution of leftist individuals are significantly less negatively affected by the level of immigration. The average negative anti-redistribution effect of immigration seems almost entirely driven by center-rightist respondents. When using the index of welfare attitudes as dependent variable, we find no significant impact of immigration on leftists' attitudes. Given that immigrants are on average poorer than natives, this result could be explained by the relatively higher aversion of leftist individuals to inequality (or to poverty): the latter likely maintain their support for a system of redistribution directed towards poorer immigrants in order to mitigate the inequality-increasing effect of

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[22]Alesina et al. (2018) show that at least for their six countries under consideration, natives in general overestimate the reliance of immigrants on the national welfare state.

Table 6: Heterogeneity across individual characteristics : Education and Income

Dep var. :	Index welfare attitudes			
Share. immigrants (log)	-0.135***	-0.124***	-0.154***	-0.159***
	(0.034)	(0.036)	(0.037)	(0.037)
Tertiary educated respondent * Share. immigrants (log)	0.067**		0.077***	
	(0.026)		(0.026)	
Household income in bottom quintile * Share. immigrants (log)		0.043*	0.058**	
		(0.023)	(0.023)	
Household income in top quintile * Share. immigrants (log)		0.024	0.003	
		(0.029)	(0.028)	
Non-Tertiary Educated Poor * Sh. immigrants(log)				0.137**
				(0.055)
Tertiary-Educated Poor * Sh. immigrants(log)				0.063***
				(0.024)
Tertiary-Educated Middle income * Sh. immigrants(log)				0.091***
				(0.026)
Tertiary-Educated Rich * Sh. immigrants(log)				0.070*
				(0.038)
Non-Tertiary Educated Rich * Sh. immigrants(log)				0.051
				(0.046)
N	31,223	31,223	31,223	31,223

Dep var. :	Support for reduction in income differences			
Share. immigrants (log)	-0.121***	-0.117***	-0.125***	-0.126***
	(0.022)	(0.020)	(0.022)	(0.022)
Tertiary educated respondent * Share. immigrants (log)	0.015		0.020	
	(0.018)		(0.016)	
Household income in bottom quintile * Share. immigrants (log)		0.008	0.013	
		(0.012)	(0.012)	
Household income in top quintile * Share. immigrants (log)		-0.014	-0.018	
		(0.029)	(0.027)	
Non-Tertiary Educated Poor * Sh. immigrants(log)				0.009
				(0.025)
Tertiary-Educated Poor * Sh. immigrants(log)				0.017
				(0.013)
Tertiary-Educated Middle income * Sh. immigrants(log				0.025
				(0.020)
Tertiary-Educated Rich * Sh. immigrants(log)				0.019
				(0.038)
Non-Tertiary Educated Rich * Sh. immigrants(log)				-0.033
				(0.031)
N	134,033	134,033	134,033	134,033
country-year FE	X	X	X	X
regional control	X	X	X	X
Basic Indiv-controls	X	X	X	X
Income controls	X	X	X	X

Note: Each regression include country-year fixed effects, regional controls, basic individual controls and income controls(see previous tables' notes for details). Each variable that is interacted with the log share of immigrants is included in the controls of the regression. Standard errors are clustered at the NUTS- year level. *** p<0.01, ** p<0.05, * p<0.1

immigration.

Table A.3 in the Appendix shows that, among non-leftist respondents, the attitudinal response of rightwing individuals (i.e., the 33% of respondents placing themselves at the right of the political spectrum) is similar to the one of individuals placing themselves at the center (another 33% of respondent). So the relevant cleavage appears to be between leftists and center-rightist individuals. These results are very robust to potential confounders related to within-country immigrants' selection into region of residence (see Table A.4 in the Appendix).

An additional potential concern is that the self-declared political affiliation is itself endogenous to the share of immigrants. A large literature has indeed documented the effect of immigration on natives' political preferences (Halla et al., 2017; Barone et al., 2016; Dustmann et al., 2016). In line with these previous studies, we find that a higher share of immigrants in the residence region is significantly associated with a higher probability that natives self-report as center-rightist. This could potentially generate statistical biases in the OLS estimate of the attitudinal response of rightist individuals (see section 6.3 in the Appendix for a more thorough explanation).[23] To address this issue, we derive econometric bounds à la Lee (2009) based on a set of weak assumptions (see derivation in Appendix). In Table A.8, we find that, reassuringly, the upper bound of the attitudinal effect of immigration remains significantly negative among center-rightist individuals.

Attitudes towards immigrants Table 8 examines the heterogeneity of the results depending on individual attitudes towards immigrants. Relative to other natives, respondents who think that immigrants make the country a worse place to live (about 30% of the sample) lower their support for redistribution significantly more in response to higher levels of immigration. Similarly, the native individuals who consider that migrants should have no rights to welfare until they become citizens are more negatively affected by immigration. These findings hold for both attitudinal dependent variables, but the differential response is larger for the index of welfare attitudes: relative to other natives, the anti-redistribution effect of

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[23]The bias may arise because the individuals who change their political affiliation (from left to right) in response to higher immigration may display attitudes towards redistribution that are systematically different from the rest of the sample. For example, if those who change their reported political preferences due to higher immigration are also particularly against redistribution (for reasons independent of immigration), this would generate a negative bias in the OLS estimate of the effect of immigration on rightist 'support for redistribution.

immigration is about twice stronger for natives with anti-immigrants views.

The same issue of endogeneity as in the case of political affiliation may arise, however, about natives' sentiments towards immigrants. We take into account this endogeneity by deriving the same econometric bounds as mentioned above. When we examine the attitudinal effect of immigration on natives who think that immigrants make the country a worse place to live, we find that, reassuringly, the upper bound of the effect remains significantly negative (see Table A.9 in the Appendix). When we look at the attitudinal effect on natives who think that immigrants should have no rights to welfare, the upper bound we estimate fails to reject the possibility that the true effect is zero (see Table A.10 the Appendix).

Table A.5 shows that the differential effect of immigration along the left-right political spectrum remains unchanged in magnitude when we allow immigration to have differential effects across the educational level and the income of respondents, and even his/her views about immigrants. The differential response of rightist and leftist natives cannot be accounted for by differences in education, income, and attitudes towards immigrants (at least as captured by the two variables we use). The heterogeneity of attitudinal responses across educational and income levels seems of a much lower magnitude relative to the heterogeneity across political affiliations.

Table 7: Heterogeneity across individual characteristics : Political affiliation

Dep var. :	Index of welfare attitudes				
share. immigrants (log)	-0.107***	-0.140***	-0.141***	-0.138***	-0.147***
	(0.026)	(0.034)	(0.033)	(0.033)	(0.032)
Leftist respondent * share. immigrants (log)	0.121***	0.120***	0.119***	0.118***	0.113***
	(0.033)	(0.034)	(0.033)	(0.032)	(0.031)
N	31,223	31,223	31,223	31,223	31,223
Dep var. :	Support for reduction in income differences				
share. immigrants (log)	-0.166***	-0.133***	-0.126***	-0.122***	-0.126***
	(0.019)	(0.022)	(0.022)	(0.020)	(0.018)
Leftist respondent * share. immigrants (log)	0.055***	0.055***	0.068***	0.067***	0.067***
	(0.020)	(0.020)	(0.020)	(0.019)	(0.018)
N	134,033	134,033	134,033	134,033	134,033
Country-year FE	X	X	X	X	X
Regional control		X	X	X	X
Basic Indiv-controls			X	X	X
Income controls				X	X
Ideology controls					X

Note: Each regression includes as a control the respondent's political affiliation measured by a 11 points left-right political scale. Standard errors are clustered at the NUTS- year level. *** p<0.01, ** p<0.05, * p<0.1

Table 8: Heterogeneity across individual characteristics : Attitudes towards immigrants

Dep var. :	Index welfare attitudes (pca, 2008 and 2016 rounds)				
share. immigrants (log)	-0.045	-0.078**	-0.081**	-0.075**	-0.082***
	(0.028)	(0.034)	(0.033)	(0.033)	(0.030)
Immigrants make the country a worse place to live* share. immigrants (log)	-0.107***	-0.097***	-0.103***	-0.104***	-0.067***
	(0.031)	(0.029)	(0.028)	(0.027)	(0.026)
Immigrants make the country a worse place to live	-0.549***	-0.526***	-0.550***	-0.565***	-0.336***
	(0.078)	(0.074)	(0.071)	(0.069)	(0.064)
N	31,001	31,001	31,001	31,001	31,001
share. immigrants (log)	-0.048	-0.093***	-0.098***	-0.092***	-0.093***
	(0.030)	(0.036)	(0.035)	(0.035)	(0.032)
Immigrants should have no rights to welfare* share. immigrants (log)	-0.081***	-0.077***	-0.080***	-0.081***	-0.050*
	(0.029)	(0.029)	(0.028)	(0.027)	(0.026)
Immigrants should have no rights to welfare	-0.385***	-0.370***	-0.372***	-0.375***	-0.213***
	(0.077)	(0.078)	(0.075)	(0.074)	(0.069)
N	30,667	30,667	30,667	30,667	30,667

Dep var. :	Support for reduction in income differences				
share. immigrants (log)	-0.144***	-0.118***	-0.108***	-0.101***	-0.093***
	(0.020)	(0.023)	(0.023)	(0.021)	(0.017)
Immigrants make the country a worse place to live* share. immigrants (log)	-0.025*	-0.023*	-0.035***	-0.041***	-0.019
	(0.014)	(0.014)	(0.013)	(0.013)	(0.012)
Immigrants make the country a worse place to live	-0.053	-0.048	-0.142***	-0.179***	-0.038
	(0.036)	(0.035)	(0.034)	(0.032)	(0.029)
N	132,478	132,478	132,478	132,478	132,478
share. immigrants (log)	-0.120***	-0.090***	-0.079***	-0.067**	-0.063**
	(0.024)	(0.031)	(0.030)	(0.027)	(0.025)
Immigrants should have no rights to welfare * share. immigrants (log)	-0.025	-0.020	-0.037*	-0.038**	-0.016
	(0.019)	(0.019)	(0.019)	(0.018)	(0.017)
Immigrants should have no rights to welfare	-0.125**	-0.109**	-0.165***	-0.173***	-0.058
	(0.053)	(0.054)	(0.053)	(0.051)	(0.048)
N	32,221	32,221	32,221	32,221	32,221
Country-year FE	X	X	X	X	X
Regional control		X	X	X	X
Basic Indiv-controls			X	X	X
Income controls				X	X
Ideology controls					X

4.3.3 Immigrants' characteristics

Origin countries We investigate the heterogeneous effects of immigrants depending on their country of origin. We examine origins by broad continents: EU15, East and Central Europe (including Russia), Asia, Middle-East (incl. Turkey), Sub-Saharan Africa, and the Americas. Table 9 reveals that, holding constant the number of immigrants (relative to the population), an increase in the share of Middle-Eastern origins among immigrants is associated with lower support for redistribution. This means that immigrants originating from the Middle-East generate a larger anti-redistribution effect relative to other types of immigrants. This is true for both dependent variables. Using the estimates of the 3rd column of the bottom panel (when the dep. var. is the support fo reduction in income differences), we can derive that an increase in the number of Middle-Eastern immigrants by 10% of the total immigrant population reduces natives' pro-redistribution attitudes by 3% of a standard-deviation. An increase in the number of non-Middle-East immigrants by 10% of the immigrant population only generates a reduction by 0.7% of a standard-deviation in attitudes. [24] This implies that for a given increase in 10% of the immigrant population, the decline in natives' support for redistribution will be 2.2% of a standard-deviation larger when the latter is entirely driven by an increase in Middle-East migrants relative to an increase in non-Middle-East migrants.

Education and occupational skills We explore whether immigrant skills shape natives' attitudinal response to immigration. As in previous literature (Mayda, 2006), we begin by proxying labor market skills with educational attainment. More specifically, we use the immigrant-native ratio in the share of tertiary-educated individuals (15-60 years old) in order to measure the extent to which immigrants are more skilled (educated) relative to natives. The top panel of Table 10 shows that this measure of relative skill ratio is positively and significantly associated with natives' support for redistribution. This means that a higher proportion of more educated immigrants (relative to natives) tends to mitigate the anti-redistribution effect of immigration. In other words, tertiary-educated immigrants generate a less negative attitudinal response relative to non-tertiary immigrants. The estimates in

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[24]This is true when the share of immigrants from the Middle-East is equal to the sample average which stands at 16%. Using the estimates of the bottom panel of Table 9, and noting F_m and F_o the number of Middle-East and non-Middle East countries, we obtain that $dY = \frac{dF_m}{F}(-0.11 - 0.22 * (1 - \frac{F_m}{F}))$ and $dY = \frac{dF_o}{F}(-0.11 + 0.22 * \frac{F_m}{F})$ with $F = F_m + F_o$. Thus, for $\frac{dF_m}{F} = \frac{dF_o}{F} = 10\%$,

Table 9: Heterogenous effects : Immigrants' origin countries.

Dep var. :	Index of welfare attitudes				
Share of immigrants (log)	-0.030	-0.095***	-0.100***	-0.094***	-0.086***
	(0.027)	(0.033)	(0.032)	(0.032)	(0.030)
Share of Middle-East origins among immigrants	-0.492**	-0.267	-0.327*	-0.337*	-0.354**
	(0.225)	(0.181)	(0.175)	(0.174)	(0.166)
N	31,223	31,223	31,223	31,223	31,223
Dep var. :	Support for reduction in income differences				
Share of immigrants (log)	-0.123***	-0.115***	-0.110***	-0.105***	-0.089***
	(0.022)	(0.023)	(0.024)	(0.021)	(0.018)
Share of Middle-East origins among immigrants	-0.508***	-0.244**	-0.226**	-0.214**	-0.231***
	(0.161)	(0.109)	(0.106)	(0.099)	(0.083)
N	134,033	134,033	134,033	134,033	134,033
Country-year FE	X	X	X	X	X
Regional control		X	X	X	X
Basic Indiv-controls			X	X	X
Income controls				X	X
Ideology controls					X

Column 4 of the top panel of Table 10 suggest that a one-standard-deviation increase in the relative educational skill ratio generates an effect big enough to offset the anti-redistribution impact of a one-standard-deviation increase in the log share of immigrants.[25] This can be due either to the fact that tertiary-educated immigrants rely less on the welfare system or because they are more assimilated and culturally closer to natives. In any event this result holds only when we use the index of welfare attitudes as dependent variable. We find no statistically significant effect for the other dependent variable (bottom panel).

Due to the imperfect transferability of formal education and the ensuing skill down-grading of immigrants at destination (Dustmann et al., 2012), education may not be an

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[25]A one standard-deviation increase in the relative educational skill ratio (0.37) translates into an increase in support for redistribution by 5.7% of a standard-deviation in terms of attitudes while a one-standard-deviation increase in the log share of immigrants (0.62) generates a decline of 4.4% of a standard-deviation of attitudes

appropriate concept to measure the labor market skills of immigrants. Drawing on 2011 population censuses, we use instead data on the participation of immigrants (and natives) in various occupations. In particular, we focus on the ISCO category "elementary occupations" that consist of simple and routine tasks, including for example taking care of apartment houses, collecting garbage, simple farming, hand-assembling of components, or simple tasks connected with construction. Immigrants are generally observed to be over-represented in those low-skilled occupations, but to different extents across regions.[26] We thus use the immigrant-native ratio in the employment share of these low-skilled occupations in order to proxy for the extent to which immigrants are unskilled relative to natives. As expected, and in line with the skill ratio in education, we find in Table 11 that this inverted measure of the occupational skill ratio is negatively and significantly correlated with natives' support for redistribution – as measured with the index of welfare attitudes in the top panel. Using the 4th column of the top panel of Table 11, the estimates suggest that a one standard-deviation increase in the Immigrant-Native ratio in low-skilled occupations reduces the support for redistribution by 5.5% of a standard-deviation.

In the top panel of Table 11, the main effect of the share of immigrants seems to become insignificant when we include the skill ratio in occupation. Table A.6 in the Appendix shows that, when we restrict the sample to center-rightist individuals (for whom the average attitudinal response to immigration is the strongest), we recover a significant negative association between the immigrants' share and the index of welfare attitudes. Also, we obtain a statistically significant correlation between the skill ratio in occupation and center-rightists' attitudes for both dependent variables (and not only for the index).

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[26]Overall in Europe the employment share of "elementary occupations" stands at 20% for immigrants and 8% for natives. See the Data Appendix for data sources.

Table 10: Heterogenous effects by immigrant's skills in terms education

Dep var. :	Index of welfare attitudes				
share. immigrants (log)	-0.021	-0.066*	-0.073**	-0.069**	-0.071**
	(0.032)	(0.034)	(0.034)	(0.034)	(0.033)
Relative skill ratio in tertiary education	0.124*	0.160***	0.161***	0.154***	0.121**
	(0.071)	(0.053)	(0.055)	(0.057)	(0.056)
N	31,223	31,223	31,223	31,223	31,223
Dep var. :	Support for reduction in income differences				
share. immigrants (log)	-0.164***	-0.136***	-0.129***	-0.125***	-0.111***
	(0.024)	(0.024)	(0.024)	(0.022)	(0.018)
Relative skill ratio in tertiary education	-0.033	-0.034	-0.026	-0.035	-0.040
	(0.048)	(0.033)	(0.032)	(0.030)	(0.027)
N	134,033	134,033	134,033	134,033	134,033
Country-year FE	X	X	X	X	X
Regional control		X	X	X	X
Basic Indiv-controls			X	X	X
Income controls				X	X
Ideology controls					X

Note: The variable *Relative skill ratio in tertiary education* is the the immigrant-native ratio in the share of tertiary-educated individuals (15-60 years old). Standard errors are clustered at the NUTS- year level. *** p<0.01, ** p<0.05, * p<0.1

Table 11: Heterogenous effects by immigrant's skills in terms of occupation

Dep var. :	Index of welfare attitudes				
share. immigrants (log)	-0.042	-0.025	-0.036	-0.023	-0.016
	(0.045)	(0.035)	(0.035)	(0.034)	(0.031)
Immigrant-Native ratio in low-skilled occupation	-0.013	-0.061**	-0.063**	-0.062**	-0.055**
	(0.024)	(0.028)	(0.027)	(0.027)	(0.023)
N	24,136	24,136	24,136	24,136	24,136

Dep var. :	Support for reduction in income differences				
share. immigrants (log)	-0.116***	-0.121***	-0.121***	-0.101***	-0.078**
	(0.033)	(0.040)	(0.038)	(0.036)	(0.032)
Immigrant-Native ratio in low-skilled occupation	0.174*	0.068	0.065	0.064	0.033
	(0.102)	(0.066)	(0.060)	(0.057)	(0.050)
N	66,296	66,296	66,296	66,296	66,296

Country-year FE	X	X	X	X	X
Regional control		X	X	X	X
Basic Indiv-controls			X	X	X
Income controls				X	X
Ideology controls					X

Note: The variable *Immigrant-Native ratio in low-skilled occupation* is the the immigrant-native ratio in the employment share of ISCO "elementary occupation", only available in 2011 population censuses. The sample only includes post-2008 rounds of the ESS.

Standard errors are clustered at the NUTS- year level. *** p<0.01, ** p<0.05, * p<0.1

Immigrants' time of arrival We examine the joint effect of the 1990's population share of immigrants and of the inflow of migrants between 1990 and 2010 on natives' attitudes elicited after 2008. We proxy the inflow of immigrants very imperfectly, using the variation over time in the immigrant stock. In this way, we estimate whether natives' attitudes are differently affected by immigrants who arrived long ago versus immigrants who arrived presumably more recently. Note that a change in the stock of immigrants is a combination of different factors (new arrivals, attrition due to death, return migration or emigration to third countries) we cannot disentangle with in our data. Given the above, it should be clear that we tend to underestimate recent inflows. Note also that we choose to keep the 2008 round of the ESS attitudinal data to avoid losing half of the sample when using the index of Welfare attitudes as dependent variable.

When looking at the average effects on either the index of Welfare attitudes in Table 12A or the support for reducing income difference in Table 12B, we find that the share of immigrants arrived before 1990 significantly reduce natives' preference for redistribution. Importantly, this result holds when controlling for recent inflows of immigrants (Panel A) and thus suggests that earlier cohorts of immigrants continue to have a negative influence on natives' attitudes, in spite of the fact that they arrived more than 20 years ago.

The recent inflows of immigrants have a negative effect too, but less statistically significant on average. When restricting the sample to center-rightist individuals in Panel B, we find that the cohort of immigrants arrived between 2000 and 2010 is significantly associated with a reduction in center-rightist natives' support for redistribution, for both dependent variables in Table 12A and 12B. Interestingly we find no detectable impact for the cohort arrived in the 1990-2000 period, which indicates that natives are only affected by the most recent immigrant inflows.

We can compare the relative magnitude of the effects of past stocks and recent inflows of immigrants on center-rightist natives' attitudes, using for the example the estimates in the 3rd column of Table 12A. A one-standard-deviation increase in the 1990 share of immigrants (0.8) lowers center-rightist natives' pro-redistribution attitudes by 12% of a standard-deviation. A one-standard-deviation increase in the 2000-2010 inflow (0.2) reduces attitudes by only 5.4% of standard-deviation. The impact of earlier stocks thus appears larger than for recent inflows.

Table 12A: Effects of past stocks and recent inflows of immigrants

Dep var. :	Index of welfare attitudes				
Panel A: Average effect					
1990 share of immigrants (log)	-0.056**	-0.104***	-0.114***	-0.107***	-0.095***
	(0.024)	(0.033)	(0.032)	(0.033)	(0.030)
2000-1990 immigrant inflow	0.148**	0.021	0.013	0.014	0.034
	(0.071)	(0.065)	(0.064)	(0.064)	(0.057)
2010-2000 immigrant inflow	-0.379***	-0.164	-0.179	-0.154	-0.127
	(0.092)	(0.113)	(0.114)	(0.115)	(0.115)
N	31,223	31,223	31,223	31,223	31,223
Panel B : Effect among center-rightist individuals					
1990 share of immigrants (log)	-0.158***	-0.155***	-0.152***	-0.142***	-0.129***
	(0.024)	(0.035)	(0.034)	(0.034)	(0.034)
2000-1990 immigrant inflow	0.016	-0.028	-0.025	-0.023	-0.017
	(0.075)	(0.074)	(0.072)	(0.071)	(0.067)
2010-2000 immigrant inflow	-0.476***	-0.229*	-0.275**	-0.240*	-0.173
	(0.093)	(0.132)	(0.130)	(0.128)	(0.129)
N	20,310	20,310	20,310	20,310	20,310
Country-year FE	X	X	X	X	X
Regional control		X	X	X	X
Basic Individual-controls			X	X	X
Income controls				X	X
Ideology controls					X

Note: The variable *immigrant inflow* is the difference in the log share of immigrants from one given year to another. The sample includes the 2008 and 2016 rounds of the ESS.
Standard errors are clustered at the NUTS- year level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 12B: Effects of past stocks and recent inflows of immigrants

Dep var. :	Support for reduction in income differences				
Panel A: Average effect					
1990 share of immigrants (log)	-0.133***	-0.129***	-0.125***	-0.114***	-0.089***
	(0.019)	(0.027)	(0.026)	(0.024)	(0.020)
2000-1990 immigrant inflow	0.048	-0.012	-0.005	0.007	0.041
	(0.040)	(0.036)	(0.034)	(0.033)	(0.029)
2010-2000 immigrant inflow	-0.299***	-0.090	-0.119**	-0.098*	-0.082
	(0.075)	(0.063)	(0.060)	(0.056)	(0.054)
N	83,551	83,551	83,551	83,551	83,551
Panel B : Effect among center-rightist individuals					
1990 share of immigrants (log)	-0.204***	-0.163***	-0.149***	-0.135***	-0.124***
	(0.020)	(0.026)	(0.026)	(0.023)	(0.021)
2000-1990 immigrant inflow	-0.041	-0.038	-0.020	-0.006	0.006
	(0.043)	(0.044)	(0.040)	(0.039)	(0.037)
2010-2000 immigrant inflow	-0.336***	-0.122*	-0.171**	-0.144**	-0.116*
	(0.080)	(0.067)	(0.066)	(0.062)	(0.060)
N	55,260	55,260	55,260	55,260	55,260
Country-year FE	X	X	X	X	X
Regional control		X	X	X	X
Basic Individual-controls			X	X	X
Income controls				X	X
Ideology controls					X

Note: The variable *immigrant inflow* is the difference in the log share of immigrants from one given year to another. The sample only includes the round of the ESS after 2008 (including 2008). Standard errors are clustered at the NUTS- year level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

4.3.4 Residential segregation

For a given number of immigrants in a region, itse effect on natives' perceptions and attitudes is likely to depend on whether immigrants are concentrated in ethnic enclaves or are dispersed across neighborhoods. To investigate this question, we take advantage of a high spatial resolution data set providing the distribution of immigrants in a grid-cell of 100m by 100m within NUTS region (see section 2.1.2). We measure immigrants' segregation using the spatial dissimilarity index :

$$\frac{1}{2p(1-p)} \sum_{j=1}^{J} \frac{t_j}{T} |p_j - p|$$

where p_j is the share of immigrant in the grid-cell j, p the share of immigrants in the entire region, and $\frac{t_j}{T}$ is the proportion of grid-cell's population j in the entire region's population T. Conceptually, the dissimilarity index measures the percentage of the immigrant population that would have to change residence for each neighborhood to have the same percentage of immigrant as the region overall. The index ranges from 0 (complete integration) to 1 (complete segregation).[27]

Panel A of Table 13A explores the joint effect of the immigrants' share and spatial segregation on natives' attitudes (measured by the composite index). We find that, holding constant the share of immigrants in the region, a higher segregation of immigrants (higher dissimilarity) is significantly associated with lower support for redistribution among natives. A one-standard-deviation increase in the dissimilarity index translates into a decline of pro-redistribution attitudes by about 10% of a standard-deviation (column 4). This could be due to the fact that, when the residential segregation is higher, immigrants tend to maintain their cultural habits and assimilate less into the host society, which tends to increase the cultural distance to natives. [28] However, we find no significant impact of the dissimilarity index when using the other attitudinal dependent variable in Table 13B.

Another question we explore is whether, for a given level of segregation, the attitudinal effect of an increase in the number of immigrants in the region is more or less pronounced when residential segregation is higher. In theory, we can think of two opposite mechanisms. On

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[27]The dissimilarity index is highly correlated with other measures of segregation, and in particular with the index used by Alesina and Zhuravskaya (2011), for which we obtain a correlation coefficient of 0.8.

[28]Whether residential ethnic clustering strengthens or reduces immigrants' cultural identity (i.e., the retention of an affiliation with their origin country) remains a controversial question in the literature – see for example the conflicting results found by Bisin et al. (2016) and Constant et al. (2013).

the one hand, we can expect that the anti-redistribution effect of an increase in immigration is amplified by higher levels of segregation, that is, when the new immigrants predominantly self-select into ethnic enclaves, thereby potentially increasing cultural polarisation and the salience of cultural conflicts with the natives. On the other hand, when segregation is higher, an increase in the number of immigrants may possibly be less noticed by the native population because the latter is less likely to enter into contact with new immigrants clustered in ethnic neighborhoods. If so, the attitudinal response is likely to be less pronounced since the perceived number of immigrants will remain almost unchanged. Table 13B provides evidence supporting the latter mechanism: we find that the interaction term of immigrants' share and spatial dissimilarity is significantly positive. This means that the anti-redistributive effect of an increase in the immigrants' share is weaker when segregation is higher. Specifically, when spatial dissimilarity is one-standard-deviation higher relative to the sample mean, the anti-redistribution effect of immigration is reduced by about one half (-4% versus -8% of a standard-deviation in attitudes, as shown in column 4). This result holds when we use the support for reducing income differences as a dependent variable. When the index of welfare attitudes is used in Table 13A , we find no detectable heterogeneous effects depending on segregation.

Table 13A: Heterogenous effects: Immigrants' Segregation within Region

Dep var. :	Index of welfare attitudes				
Panel A: Joint Effects					
Log Share of immigrants (standardized)	-0.096***	-0.089***	-0.093***	-0.089***	-0.080***
	(0.025)	(0.029)	(0.027)	(0.028)	(0.023)
Spatial dissimilarity index (standardized)	-0.120***	-0.093***	-0.096***	-0.101***	-0.086***
	(0.034)	(0.032)	(0.031)	(0.031)	(0.026)
N	14,353	14,353	14,353	14,353	14,353
Panel B : Interacted Effects					
Log Share of immigrants (standardized)	-0.102***	-0.092***	-0.095***	-0.091***	-0.082***
	(0.023)	(0.029)	(0.028)	(0.028)	(0.024)
Spatial dissimilarity index (standardized)	-0.126***	-0.097***	-0.098***	-0.104***	-0.089***
	(0.030)	(0.030)	(0.029)	(0.028)	(0.024)
Log Share of immigrants * Spatial dissimilarity index	-0.018	-0.009	-0.006	-0.009	-0.007
	(0.023)	(0.020)	(0.021)	(0.020)	(0.017)
N	14,353	14,353	14,353	14,353	14,353
Country-year FE	X	X	X	X	X
Regional control		X	X	X	X
Basic Individual-controls			X	X	X
Income controls				X	X
Ideology controls					X

Note: The variables *Log Share of immigrants* and *Spatial dissimilarity index* are standardized to have mean of 0 and a standard deviation of 1. The *Spatial dissimilarity index* is only available in 2011 population censuses of 8 countries (France, Germany, Ireland, Italy, Netherlands, Portugal, Spain and UK). The sample only includes post-2008 rounds of the ESS. Standard errors are clustered at the NUTS- year level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 13B: Heterogenous effects: Immigrants' Segregation within Region

Dep var. :	Support for reduction in income differences				
Panel A: Joint Effects					
Log Share of immigrants (standardized) .	-0.131***	-0.116***	-0.113***	-0.099***	-0.081***
	(0.017)	(0.021)	(0.021)	(0.020)	(0.019)
dissimilarity spatial std.	-0.036**	-0.022	-0.019	-0.024	-0.020
	(0.017)	(0.022)	(0.021)	(0.019)	(0.017)
N	38,778	38,778	38,778	38,778	38,778
Panel B : Interacted Effects					
Log Share of immigrants (standardized)	-0.118***	-0.102***	-0.100***	-0.088***	-0.069***
	(0.015)	(0.017)	(0.017)	(0.017)	(0.015)
Spatial dissimilarity index (standardized)	-0.032*	-0.014	-0.011	-0.017	-0.013
	(0.018)	(0.022)	(0.021)	(0.020)	(0.017)
Log Share of immigrants * Spatial dissimilarity index	0.041***	0.045***	0.044***	0.039***	0.039***
	(0.015)	(0.013)	(0.012)	(0.012)	(0.011)
N	38,778	38,778	38,778	38,778	38,778
Country-year FE	X	X	X	X	X
Regional control		X	X	X	X
Basic Individual-controls			X	X	X
Income controls				X	X
Ideology controls					X

Note: The variables *Log Share of immigrants* and *Spatial dissimilarity index* are standardized to have mean of 0 and a standard deviation of 1. The *Spatial dissimilarity index* is only available in 2011 population censuses of 8 countries (France, Germany, Ireland, Italy, Netherlands, Portugal, Spain and UK). The sample only includes post-2008 rounds of the ESS. Standard errors are clustered at the NUTS- year level. *** p<0.01, ** p<0.05, * p<0.1

5   Conclusion

Europe is becoming more and more diverse. Over the short period we cover, the share of foreign-born has increased in our sample by 50% on average (from 8.4% in 2000 to 12.8% in 2015) and has more than doubled since 1980, with about two thirds of the increase generated by immigration from outside of Europe. While this increase in population diversity may have important economic benefits in the long-run (Alesina et al., 2016), in the short-run immigration and diversity are perceived by many as a threat to social cohesion and put welfare systems (as we document) and democracies (as we have witnessed) at risk. This paper shows that the increase in population heterogeneity in Europe correlates with attitudinal shifts against redistribution among European-born voters. This is especially the case for center-right voters in regions belonging to countries with large welfare systems and high levels of residential segregation between immigrants and natives. The effects are also stronger, not surprisingly, when immigrants are less skilled and when they come from culturally more distant countries.

While our results are consistent with group loyalty effects (i.e., the fact that individuals prefer to redistribute towards the in-group – people of same race/culture/nationality) and less so towards the out-group, they are not exclusive of other channels that determine natives' attitudinal response to immigration.[29] Other motives include taxpayers' fear of having to pay for the benefits of (poorer) immigrants that are sometimes portrayed as free-riding on the welfare system. Another possible channel relates to concerns of tighter labor market competition caused by immigrant labor and native workers' perception of higher risks of downward income mobility. To insure against this risk, native workers may demand more redistribution. Conversely, when immigrants are perceived to complement natives' labor and increase natives' wages, natives may lower their demand for redistribution since they are less likely to be on the receiving end of the welfare state. As already mentioned, we do not seek to disentangle these different motives as we believe that such attempt is unlikely to provide convincing results when using observational data.[30] Instead, we focused our investigation on

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[29]The concept of ingroup favoritism has been developed by social psychologists such as Tajfel (2010).

[30]Using survey experiments, Alesina et al. (2018) explore how natives' perceptions of immigrants influence their preferences for redistribution and find that beliefs about the origin and economic contribution of immigrants play the most important role. See also Dustmann and Preston (2007) for an attempt to assess the relative importance of labour market concerns, welfare concerns, and cultural concerns in determining attitudes towards immigration policies. See for example Scheve and Slaughter (2001); Mayda (2006); Fin-

providing new evidence on the association between immigrants' shares and natives' support for redistribution at the regional level while at the same time accounting in the empirical analysis for a number of confounders that have plagued previous cross-country descriptive studies in the context of Europe.

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6 Appendix

6.1 Figures

Figure A.1: Population share of immigrants in Europe
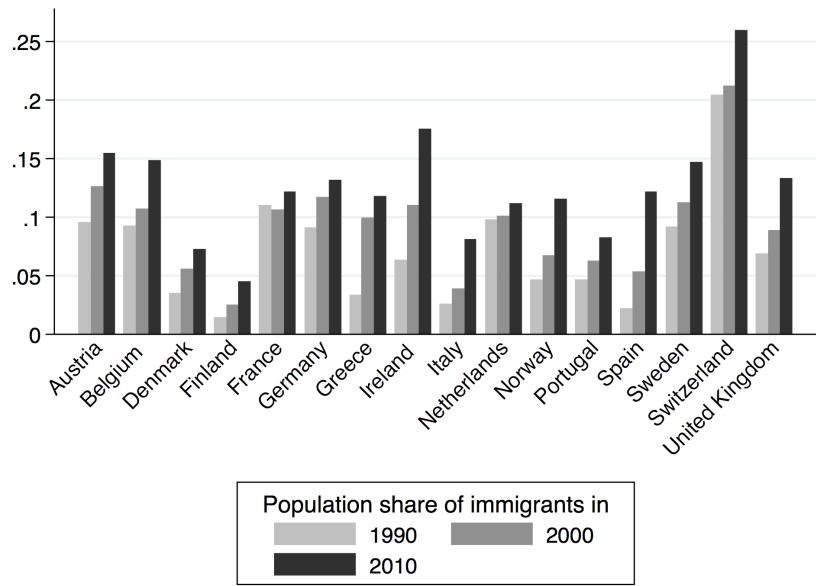
Figure A.2: Population share and origins of immigrants in Europe
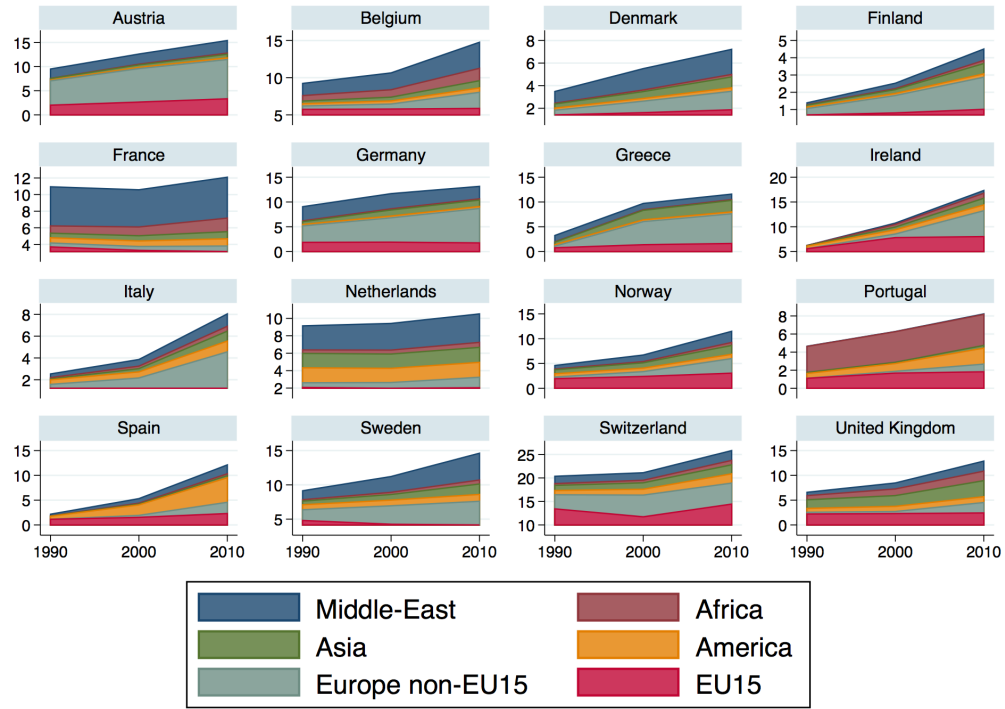
Figure A.3: Average support for reduction in income differences in 2002 (scale from 1 to 5)
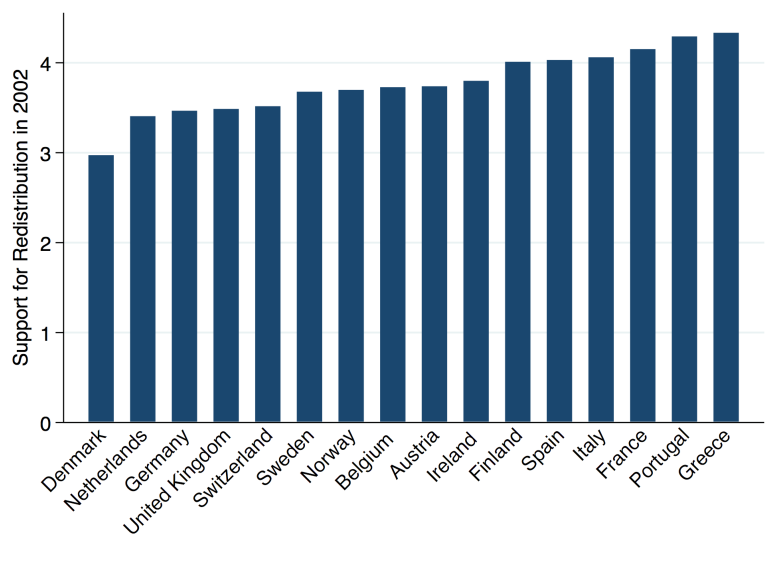
Figure A.4: Evolution over time in the support for redistribution (base 2002=1)
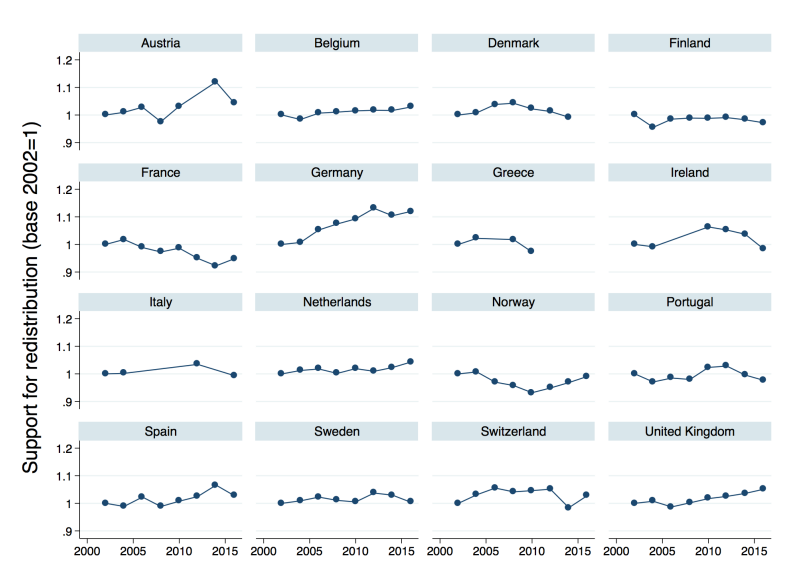
6.2 Tables

Table A.1: Placebos

Dep var. :	Important to care for nature and environment				
ln share. foreign	-0.006	-0.021	-0.019	-0.019	-0.019
	(0.011)	(0.027)	(0.025)	(0.025)	(0.018)
N	134,602	134,602	134,602	134,602	134,602

Dep var. :	Important to seek fun and things that give pleasure				
ln share. foreign	-0.010	0.007	0.014	0.011	0.014
	(0.012)	(0.021)	(0.021)	(0.021)	(0.020)
N	134,539	134,539	134,539	134,539	134,539

Dep var. :	Important to follow traditions and customs				
ln share. foreign	0.113***	0.040*	0.020	0.018	0.028
	(0.014)	(0.023)	(0.022)	(0.022)	(0.017)
N	134,553	134,553	134,553	134,553	134,553
Country-year FE	X	X	X	X	X
Regional control		X	X	X	X
Basic Indiv-controls			X	X	X
Income controls				X	X
Ideology controls					X

Table A.2: Robustness Checks of Heterogenous Effects: Size of the Welfare State

	Baseline	Immigrants in 1990	Excluding		Long-term growth		De-industrialization		Regional Poverty
			Federation	Capitals	1980-85 to 2000	1965-70 to 2000	import shock	1990 manufacturing share	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A				Dep var. : **Index of welfare attitudes (pca, 2008 and 2016 rounds)**					
Share immigrants (log)	-0.014	-0.018	-0.007	-0.049	0.081	-0.050	-0.013	-0.031	0.005
	(0.040)	(0.031)	(0.047)	(0.045)	(0.060)	(0.057)	(0.041)	(0.040)	(0.046)
Share immigrants (log) * High Welfare State	-0.167***	-0.131***	-0.135***	-0.129**	-0.251***	-0.151**	-0.180***	-0.156***	-0.099*
	(0.045)	(0.041)	(0.048)	(0.056)	(0.057)	(0.063)	(0.044)	(0.044)	(0.051)
N	31,223	31,223	19,725	26,455	22,905	20,302	30,127	28,591	25,069
Panel B				Dep var. : **Support for reduction in income differences**					
Share immigrants (log)	-0.040	-0.037	-0.056*	-0.047*	-0.037	-0.037	-0.033	-0.034	-0.042
	(0.027)	(0.022)	(0.032)	(0.027)	(0.037)	(0.030)	(0.027)	(0.027)	(0.034)
Share immigrants (log) * High Welfare State	-0.132***	-0.100***	-0.118***	-0.123***	-0.133***	-0.075*	-0.146***	-0.152***	-0.117***
	(0.024)	(0.021)	(0.027)	(0.030)	(0.030)	(0.038)	(0.024)	(0.023)	(0.031)
N	134,033	134,033	87,895	112,293	98,835	86,370	125,988	118,554	109,085
Country-year FE	X	X	X	X	X	X	X	X	X
Regional control	X	X	X	X	X	X	X	X	X
Indiv-controls	X	X	X	X	X	X	X	X	X

Table A.3: Heteregenous attidudinal response : at the Left, Center and Right of the political scale

Dep var. :	Index welfare attitudes (pca, 2008 and 2016 rounds)				
share. immigrants (log)	-0.097***	-0.124***	-0.125***	-0.123***	-0.132***
	(0.029)	(0.034)	(0.034)	(0.034)	(0.034)
Leftist respondent * share. immigrants (log)	0.110***	0.103***	0.102***	0.101***	0.097***
	(0.034)	(0.033)	(0.032)	(0.032)	(0.030)
Rightist respondent (without center-right) * share. immigrants (log)	-0.020	-0.031	-0.030	-0.030	-0.029
	(0.022)	(0.021)	(0.022)	(0.021)	(0.020)
N	31,223	31,223	31,223	31,223	31,223
Dep var. :	Support for reduction in income differences				
share. immigrants (log)	-0.158***	-0.121***	-0.114***	-0.111***	-0.116***
	(0.020)	(0.023)	(0.023)	(0.021)	(0.019)
leftist respondent * share. immigrants (log)	0.047***	0.043***	0.055***	0.055***	0.056***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
rightist respondent * share. immigrants (log)	-0.016	-0.023	-0.024	-0.023	-0.020
	(0.019)	(0.019)	(0.017)	(0.016)	(0.015)
N	134,033	134,033	134,033	134,033	134,033
Country-year FE	X	X	X	X	X
Regional control		X	X	X	X
Basic Indiv-controls			X	X	X
Income controls				X	X
Ideology controls					X

Table A.4: Robustness Checks of Heterogenous Effects : Political Affiliation

	Baseline	Immigrants in 1990	Excluding		Long-term growth		De-industrialization		Regional
			Federation	Capitals	1980-85 to 2000	1965-70 to 2000	import shock	1990 manufacturing share	Poverty
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A					Dep var. : **Index of welfare attitudes**				
Share immigrants (log)	-0.141***	-0.130***	-0.077*	-0.139***	-0.083*	-0.124***	-0.153***	-0.155***	-0.077**
	(0.033)	(0.026)	(0.040)	(0.033)	(0.047)	(0.046)	(0.034)	(0.033)	(0.034)
Leftist respondent * share. immigrants (log)	0.119***	0.108***	0.084*	0.099***	0.104***	0.044	0.138***	0.122***	0.110***
	(0.033)	(0.024)	(0.043)	(0.036)	(0.036)	(0.030)	(0.035)	(0.038)	(0.035)
N	31,223	31,223	19,725	26,455	22,905	20,302	30,127	28,591	25,069
Panel B					Dep var. : **Support for reduction in income differences**				
Share immigrants (log)	-0.126***	-0.115***	-0.108***	-0.119***	-0.112***	-0.068**	-0.135***	-0.140***	-0.113***
	(0.022)	(0.017)	(0.026)	(0.021)	(0.026)	(0.028)	(0.023)	(0.023)	(0.026)
far-left respondent * share. immigrants (log)	0.068***	0.069***	0.067**	0.050**	0.056**	0.038*	0.088***	0.085***	0.053**
	(0.020)	(0.014)	(0.029)	(0.020)	(0.022)	(0.021)	(0.019)	(0.022)	(0.021)
N	134,033	134,033	87,895	112,293	98,835	86,370	125,988	118,554	109,085
Cuntry-year FE	X	X	X	X	X	X	X	X	X
Regional control	X	X	X	X	X	X	X	X	X
Indiv-controls	X	X	X	X	X	X	X	X	X

Table A.5: The differential attitudinal response to immigration across political is not explained by differences in income and education

Dep var. :	Index of welfare attitudes			
Share. immigrants (log)	-0.146***	-0.169***	-0.148***	-0.143***
	(0.032)	(0.036)	(0.034)	(0.034)
Leftist respondent * share. immigrants (log)	0.108***	0.106***	0.100***	0.096***
	(0.031)	(0.030)	(0.029)	(0.029)
Tertiary educated respondent* share. immigrants (log)		0.039	0.032	0.029
		(0.024)	(0.023)	(0.023)
household income in bottom quantile * share. immigrants (log)		0.040*	0.043**	0.043**
		(0.021)	(0.021)	(0.022)
household income in 5th quantile * share. immigrants (log)		-0.003	-0.004	-0.006
		(0.026)	(0.025)	(0.026)
Immigrants make the country a worse place to live* share. immig			-0.052**	-0.043*
			(0.023)	(0.023)
Immigrants should have no rights to welfare* share. immigrants (log)				-0.028
				(0.023)
N	31,001	31,001	31,001	30,461

Dep var. :	Support for reduction in income differences			
Share. immigrants (log)	-0.125***	-0.127***	-0.121***	-0.083***
	(0.018)	(0.019)	(0.019)	(0.029)
Leftist respondent* share. immigrants (log)	0.066***	0.066***	0.065***	0.057**
	(0.018)	(0.018)	(0.017)	(0.023)
Tertiary educated respondent* share. immigrants (log)		-0.003	-0.005	-0.000
		(0.014)	(0.014)	(0.021)
household income in bottom quintile * share. immigrants (log)		0.018*	0.019*	0.009
		(0.010)	(0.010)	(0.020)
household income in top quintile * share. immigrants (log)		-0.016	-0.016	-0.021
		(0.024)	(0.024)	(0.033)
Immigrants make the country a worse place to live** share. immig			-0.015	-0.006
			(0.011)	(0.022)
Immigrants should have no rights to welfare* share. immigrants (log)				-0.010
				(0.017)
N	132,478	132,478	132,478	31,929
country-year FE	X	X	X	X
regional control	X	X	X	X
Basic Indiv-controlss	X	X	X	X
Income controls	X	X	X	X
Ideology controls	X	X	X	X

Table A.6: Immigration skills in terms of occupation : Sample of center-rightist individuals

Dep var. :	Index welfare attitudes (pca, 2008 and 2016 rounds)				
Share. immigrants (log)	-0.096**	-0.077*	-0.077**	-0.063*	-0.052
	(0.045)	(0.039)	(0.039)	(0.038)	(0.037)
Immigrant-Native ratio in low-skilled occupation	-0.052*	-0.090***	-0.080***	-0.077***	-0.078***
	(0.026)	(0.028)	(0.027)	(0.026)	(0.025)
N	15,686	15,686	15,686	15,686	15,686

Dep var. :	Support for reduction in income differences				
Share. immigrants (log)	-0.174***	-0.143***	-0.145***	-0.127***	-0.113***
	(0.037)	(0.032)	(0.032)	(0.030)	(0.028)
Immigrant-Native ratio in low-skilled occupation	-0.053***	-0.063***	-0.042**	-0.033*	-0.031
	(0.020)	(0.021)	(0.020)	(0.020)	(0.019)
N	43,939	43,939	43,939	43,939	43,939
Country-year FE	X	X	X	X	X
Regional control		X	X	X	X
Basic Indiv-controls			X	X	X
Income controls				X	X
Ideology controls					X

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Table A.7: Size of Welfare State in destination countries

| | Share of national GDP (%) in Government | | |
	Total Revenues	Total Expenditures	Welfare Spending
France	49.59	52.04	33.44
Netherlands	42.69	43.53	25.16
Finland	52.81	49.41	32.10
Norway	55.09	45.86	29.98
Sweden	54.84	54.26	35.48
Austria	49.49	51.83	33.36
Belgium	49.27	49.73	28.78
Denmark	54.40	53.60	36.34
Germany	44.30	46.91	31.22
Greece	39.94	46.24	23.40
Ireland	34.69	33.06	19.94
Italy	44.29	47.07	27.64
Portugal	39.67	43.87	26.04
Spain	38.21	39.17	21.94
Switzerland	33.50	34.47	19.82
United Kingdom	36.20	37.10	24.26
Average	44.94	45.51	28.06

Government expenditures and revenues are drawn from EUROSTAT data and measured as average over the 1998-2004 period. Welfare spending is defined as the sum of expenditures in social protection (social transfers, safety net and aid , social housing,..), in health and education as defined by the COFOG Eurostat data

6.3 Bounds on the attitudinal effect of immigration among self-declared rightists

6.3.1 Framework

In order to examine how immigration affects the attitudes of self-declared rightists, we estimate the following linear regression for native-born individual i, living in the region n of country c at survey round t:

$$y_{inct} = Mig_{nt}\beta_r + X_{int}\alpha + \delta_{ct} + \epsilon_{int} \text{ if } R_{it} = 1 \tag{2}$$

among the sample of self-declared rightists $R_{it} = 1$. y_{int} is individual i's support for redistribution as described in the data section. Mig_{nt} is the log share of immigrant (i.e. foreign born) in the population of region n at the beginning of the decade of survey round of year t. We include country-year fixed effect δ_{ct}. The vector X_{int} includes controls at the regional level (native population (log), GDP per capita (log), unemployment rate, and the share of tertiary educated among the native population) and individual socio-demographic characteristics (gender, age, education, ...) We cluster standard errors at the region-by-year level to account for the possible correlation of the individual-level residuals ϵ_{int} within the same region and year.

The problem is that rightists' attitudes is an outcome that is observed only for respondents who self-declare as rightists, and this selection is potentially a function of treatment. Indeed, we find that higher immigration levels tend to significantly increase the probability to self-report as rightist (see columns 1A and 1B of Table A.8) . The OLS estimate of β_r might thus suffer from endogenous sample selection because the treatment variable Mig_{nt} also affects the probability to self-report as rightist. This might generate a bias in the OLS if individuals who change their political affiliation (from left to right) due to higher immigration display attitudes towards redistribution that are systematically different from the rest of the sample. Due to this, OLS estimate of β_r may not be informative because the immigration treatment affects the composition of the population of self-declared rightists.

To address this issue, I use the potential outcome framework (Rubin (1974)) in order to derive upper and lower bound estimates of a meaningful parameter of interest. Let M be the share of immigrants in the region of the respondent, which is a continuous treatment variable in the interval $[m_0, m_1]$. I define a set of potential attitudinal outcomes $Y(m)$ which are a function of m, the share of immigrants. I also define a the potential self-declared political affiliation $R(m)$ that takes one if the respondent self-report as rightist and zero otherwise. The only population among which a meaningful treatment impact can be defined is the group of individuals who would always self-report as rightist, no matter the immigration level, i.e. individuals satisfying $R(m) = 1, \forall m \in$

$[m_0, m_1]$ This the only group for which the attitudinal outcomes can be observed for every value of the treatment (i.e. immigration level). The parameter of interest is therefore the average effect of migration on always-rightists individuals defined by

$$\theta = \frac{d}{dm}\mathbb{E}[Y(m)|R(t) = 0, \forall t \in [0,1]]$$

I assume that the treatment effect is linear, that is, that θ is a constant. It follows that:

$$\theta = \frac{1}{m - m_0}\mathbb{E}[Y(m) - Y(m_0)|R(t) = 0, \forall t \in [0,1]]$$

6.3.2 Assumption and bounds

I first assume that the potential outcomes $Y(m)$ and rightist status $R(m)$ are independent of the immigration level M, conditional on a set of covariates X. The set of X include the above-mentioned regional and individual controls, and importantly, also the set of country-year fixed effects. Second I assume a monotone effect of the immigration level M on the self-declared political affiliation R. These are two standard assumption in the impact evaluation literature.

Assumption 1. *Randomly assigned immigration level M, conditional on X*

$$\{Y(m), R(m)\} \perp M|X, \ \forall m \in [m_0, m_1]$$

Assumption 2. *Monotonicity of R in M (no defiers)*

$$R(m) \geq R(m'), \ \forall m \geq m'$$

I can now distinguish different latent groups (which are not directly observable) depending on their potential political affiliation status. Let define the group A of always-rightists as those for which $R(t) = 1, \forall t \in [m_0, m_1]$. Let define the group of compliers C_m as those individuals for which $R(m) = 1$ and $R(t) = 0$ for at leat one $t < m$. The assumption of monotonicity of $R(m)$ implies that the observed group $\{R = 1, M = m\}$ is composed of *always-rightists* A and compliers C_m. The observed outcome $Y|R = 1, M = m$ is therefore a mixture of always-rightists and compliers C_m. Noting p_A the population share of always-rightists and p_{C_m} the share of compliers, assumptions 1 and 2 imply:

$$\mathbb{E}[Y|M = m, R = 1, X] = \frac{p_A}{p_A + p_{C_m}}\mathbb{E}[Y(m)|A, X] + \frac{p_{C_m}}{p_A + p_{C_m}}\mathbb{E}[Y(m)|C_m, X]$$

Building on Lee (2009), I derive bounds for $\mathbb{E}[Y(m)|A, X]$ based on a trimming procedure. The procedure for the lower bound as follows. As said, the observed group of rightist exposed to a immigration level m is composed of always-rightists A and compliers C_m. In the "worst-case"

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scenario , the highest potential outcome $Y(m)$ of always-rightists is lower than the lowest outcome of the compliers. In this case, we can remove the upper $\frac{p_{C_m}}{p_A+p_{C_m}}$ quantiles from the distribution of $Y|M = m, R = 1, X$ and use the average outcome for the remaining individuals. This gives us the lowest possible outcome for always-rightists exposed to treatment m. The upper bound can be derived in similar way, but now trimming the lower tail of the observed outcome distribution. Formally, Let $q(r)$ be the r-quantile of the distribution of $Y|M = m, R = 1, X$. Upper and lower Bounds of $\mathbb{E}[Y(m)|A, X]$ are respectively:

$$\mathbb{E}^U[Y(m)|A, X] = \mathbb{E}[Y|M = m, R = 1, Y \geq q(1 - \lambda_A), X]$$
$$\mathbb{E}^L[Y(m)|A, X] = \mathbb{E}[Y|M = m, R = 1, Y \leq q(\lambda_A), X]$$
$$\text{with } \lambda_A = 1 - \frac{P(R = 1|M = m, X) - P(R = 1|M = m_0, X)}{P(R = 1|M = m, X)}$$

Indeed, the population share of the latent group of always-rightists p_A is equal to $P(R(t) = 1, \forall t \in [m_0, m_1]|X)$ also equal to $P(R = 1|M = m_0, X)$ due to assumptions 1 and 2. Similarly, it is easy to show that $p_{C_m} = P(R = 1|M = m, X) - P(R = 1|M = m_0, X)$. As a result, $\lambda_A = \frac{p_A}{p_A+p_{C_m}} = 1 - \frac{P(R=1|M=m,X)-P(R=1|M=m_0,X)}{P(R=1|M=m,X)}$

When $M = m_0$, the observed group of rightist $R = 1$ correspond to the latent group of alway-rightists (under assumptions 1 and 2). And so $\mathbb{E}[Y(m_0)|A, X] = \mathbb{E}[Y|M = m_0, R = 1, X]$. As a consequence, we can obtain an upper and lower bounds of the average effect of immigration on always-rightist attitudes :

$$\theta^U = \frac{1}{m - m_0}\mathbb{E}_X\Big(\mathbb{E}[Y|M = m, R = 1, Y \geq q(1 - \lambda_A), X] - \mathbb{E}[Y|M = m_0, R = 1, X]\Big)$$
$$\theta^L = \frac{1}{m - m_0}\mathbb{E}_X\Big(\mathbb{E}[Y|M = m, R = 1, Y \leq q(\lambda_A), X] - \mathbb{E}[Y|M = m_0, R = 1, X]\Big)$$

6.3.3 Estimation

In order to estimate λ_A, I specify a simple linear probability model

$$R_{inct} = \gamma Mig_{nt} + X_{int}\alpha + \delta_{ct} + \varepsilon_{inct}$$

where X_{int} is the same set of regional and individual controls as included in equation 2, δ_{ct} the country-year fixed effects. Noting m_0 the minimum value of M, I obtain an estimate of λ_A as

$$\widehat{\lambda_A} = 1 - \frac{\widehat{\gamma}(Mig_{nt} - m_0)}{\widehat{\gamma}Mig_{nt} + X_{int}\widehat{\alpha} + \widehat{\delta_{ct}}}$$

In order to estimate $\mathbb{E}[Y|M = m, R = 1, Y \geq q(1 - \lambda_A), X]$, I first trim the conditional distribution of $Y|M = m, R = 1$ by removing observations below the $1 - \lambda_A$ quantile of the

distribution of rightists' attitudes, in each region-year (characterised by $Mig_{nt} = m$). I then specify a linear regression for the remaining observations :

$$Y_{inct} = \beta_U Mig_{nt} + X_{int}\xi + \delta_{ct} + \epsilon_{inct} \text{ if } Y_{inct} \geq q(1 - \lambda_A) \text{ and } R_{inct} = 1$$

When $Mig_{nt} = m_0$, $\widehat{\lambda_A} = 1$ and the condition $Y \geq q(1 - \lambda_A)$ does not remove any observations, so I can use the same model to estimate $\mathbb{E}[Y|M = m_0, R = 1, X]$. Therefore, the OLS estimate of $\widehat{\beta_U}$ provides a consistent estimate of the upper bound θ^U.

Similarly for the lower bound θ^L, I first trim the conditional distribution of $Y|M = m, R = 1$ by removing observations above the λ_A quantile of the distribution of rightists' attitudes, in each region-year. I then specify a linear regression among the rest of the observations:

$$Y_{inct} = \beta_L Mig_{nt} + X_{int}\xi + \delta_{ct} + \epsilon_{inct} \text{ if } Y \leq q(\lambda_A) \text{ and } R_{inct} = 1$$

The OLS estimate of $\widehat{\beta_L}$ provides a consistent estimate of the lower bound θ^L. Table A.8 shows the OLS estimates (column 2A) and the upper and lower bounds (column 3A and 4A) of the attitudinal effect of immigration for each attitudinal outcome and for two different of controls, namely regional controls (columns A) or regional and individual controls (columns B). We find that, reassuringly, the upper bound of the attitudinal effect of immigration remains significantly negative among center-rightist individuals.

Table A.8: Bounds on the effect of immigration on center-rightists' attitudes towards redistribution

	Self-declared center-rightist	Baseline OLS	Upper bound	Lower bound	Self-declared rightist	OLS baseline	Upper bound	Lower bound
	(1A)	(2A)	(3A)	(4A)	(1B)	(2B)	(3B)	(4B)
Outcome: Index of welfare attitudes								
Share immigrants (log)	0.010	-0.152***	-0.128***	-0.188***	0.020	-0.144***	-0.109***	-0.200***
	(0.013)	(0.034)	(0.032)	(0.034)	(0.013)	(0.033)	(0.031)	(0.033)
R2	0.03	0.13	0.14	0.14	0.05	0.16	0.17	0.18
N	31,223	20,310	19,878	19,719	31,223	20,310	19,364	19,189
Outcome: Support for reduction in income differences								
	0.020*	-0.161***	-0.095***	-0.209***	0.032***	-0.144***	-0.057***	-0.224***
	(0.011)	(0.022)	(0.022)	(0.021)	(0.010)	(0.023)	(0.022)	(0.021)
R2	0.03	0.12	0.12	0.12	0.05	0.17	0.17	0.18
N	134,033	88,630	83,985	84,101	134,033	88,630	81,015	81,620
country-year FE	X	X	X	X	X	X	X	X
regional control	X	X	X	X	X	X	X	X
indiv control					X	X	X	X

6.4 Bounds on the attitudinal effect of immigration among natives with anti-immigrant sentiments

When examining how immigration affects the attitudes of natives who hold anti-immigrants sentiments, the same issue of endogenous sample selection applies: the regional share of immigrants is likely to influence natives' attitudes towards immigrants. Indeed, we find that, in the ESS sample, a higher immigration level is significantly associated with a lower to probability to report anti-immigrant views (see columns 1A and 1B of Table A.9 and Table A.10). This might generate a bias in the OLS if individuals who change their views towards immigrants due to higher immigration levels display attitudes towards redistribution that are systematically different from the rest of the sample. To address this issue, we estimate the same econometric bounds of the OLS estimate that we derived previously.

Table A.9 shows the OLS estimates (column 2A) and the upper and lower bounds (column 3A and 4A) of the attitudinal effect of immigration on natives who think that immigrants make the country a worse place to live. We find that, reassuringly, the upper bound of the attitudinal effect remains significantly negative.

Table A.10 shows the OLS estimates (column 2A) and the upper and lower bounds (column 3A and 4A) of the attitudinal effect of immigration on natives who think that immigrants should have no rights to welfare. For both set of controls (regional or individual), the upper bound we estimate in columns 4A and 4B fails to exclude the possibility that the true effect is zero.

Table A.9: Bounds on the effect of immigration among natives thinking that immigrants make the country a worse place to live in

	Think that immigrants make the country a worse place to live	Baseline OLS	Lower bound	Upper bound	Think that immigrants make the country a worse place to live	OLS baseline	Lower bound	Upper bound
	(1A)	(2A)	(3A)	(4A)	(1B)	(2B)	(3B)	(4B)
Outcome: Index of welfare attitudes								
Share immigrants (log)	-0.008	-0.158***	-0.212***	-0.139***	-0.007	-0.146***	-0.189***	-0.144***
	(0.013)	(0.051)	(0.050)	(0.049)	(0.014)	(0.049)	(0.050)	(0.049)
R2	0.06	0.16	0.18	0.18	0.11	0.21	0.21	0.21
N	31,001	9,478	9,191	9,037	31,001	9,478	9,478	9,477
Outcome: Support for reduction in income differences								
Share immigrants (log)	-0.019**	-0.140***	-0.232***	-0.099***	-0.008	-0.130***	-0.181***	-0.118***
	(0.009)	(0.031)	(0.030)	(0.032)	(0.009)	(0.030)	(0.030)	(0.031)
R2	0.07	0.11	0.12	0.12	0.11	0.15	0.14	0.16
N	132,478	43,624	39,548	39,856	132,478	43,624	41,793	42,129
country-year FE	X	X	X	X	X	X	X	X
regional control	X	X	X	X	X	X	X	X
indiv control					X	X	X	X

Table A.10: Bounds on the effect of immigration among natives thinking that immigrants should have no rights to welfare

	Think that immigrants should have no rights to welfare	Baseline OLS	Lower bound	Upper bound	Think that immigrants should have no rights to welfare	OLS baseline	Lower bound	Upper bound
	(1A)	(2A)	(3A)	(4A)	(1B)	(2B)	(3B)	(4B)
Outcome: Index of welfare attitudes								
Share immigrants (log)	-0.062***	-0.166***	-0.324***	-0.023	-0.057***	-0.159***	-0.313***	-0.047
	(0.015)	(0.046)	(0.049)	(0.045)	(0.015)	(0.044)	(0.048)	(0.045)
R2	0.04	0.12	0.20	0.11	0.05	0.15	0.21	0.15
N	30,667	11,007	8,123	7,801	30,667	11,007	8,409	8,092
Outcome: Support for reduction in income differences								
Share immigrants (log)	-0.060***	-0.094**	-0.198***	0.022	-0.054***	-0.088**	-0.187***	0.031
	(0.015)	(0.042)	(0.035)	(0.044)	(0.015)	(0.039)	(0.033)	(0.044)
R2	0.04	0.08	0.13	0.08	0.05	0.12	0.14	0.12
N	32,221	11,584	8,532	8,459	32,221	11,584	8,808	8,754
country-year FE	X	X	X	X	X	X	X	X
regional control	X	X	X	X	X	X	X	X
indiv control					X	X	X	X

6.5   Data Appendix

Table A.11: Immigrant stocks by origin countries : data sources by destination country

country	regional level	year 1991 sources	year 1991 definition immigrants	year 2001 sources	year 2001 definition immigrants	year 2011 sources	year 2011 definition immigrants	data provider	weblink
Austria	NUTS2 (Bundeslander)	Census 1991	citizenship	Census 2001	birthplace	Census 2011	birthplace	STATISTIK AUSTRIA (STATcube)	http://www.statistik.at/
Belgium	NUTS3 (Arrondissements)	Census 1991	birthplace	Census 2001	birthplace	Census 2011	birthplace	Statistics Belgium	http://statbel.fgov.be/
Switzerland	NUTS 3 (Canton)	Census 1990	birthplace	Census 2000	birthplace	Census 2010	birthplace	Office federal de la statistique	http://www.statistique.admin.ch
Germany	NUTS1 (Lander)	Register 1991	citizenship	Register 2001	citizenship	Census 2011	birthplace	Statistisches Bundesamt DESTATIS	https://www.destatis.de
Denmark	NUTS3 (Landsdele)	Register 1991	birthplace	Register 2001	birthplace	Register 2011	birthplace	Statistics Denmark	http://www.statbank.dk/
Spain	NUTS3 (Provincias)	Census 1991	birthplace	Census 2001	birthplace	Census 2011	birthplace	Instituto Nacional de Estadstica INE	http://www.ine.es/
Finland	NUTS3 (Maakunnat)	Register 1991	birthplace	Register 2001	birthplace	Register 2011	birthplace	Statistics Finland	https://www.stat.fi/
France	NUTS3 (Departements)	Census 1990	birthplace	Census 1999	birthplace	Census 2011	birthplace	Institut national de la statistique (Saphir)	https://www.insee.fr
Greece	NUTS3 (Nomoi)	Census 1991	citizenship	Census 2001	birthplace	Census 2011	birthplace	IPUMS international (10% extract)	https://international.ipums.org
Ireland	NUTS3	Census 1991	birthplace	Census 2002	birthplace	Census 2011	birthplace	IPUMS international (10% extract)	https://international.ipums.org
Italy	NUTS2 (Regioni)	Census 1991	birthplace	Census 2001	birthplace	Census 2011	birthplace	ISTAT (Laboratorio Adele)	http://www.istat.it/
Netherlands	NUTS2 (Provincies)	Register 1995	birthplace	Register 2001	birthplace	Register 2011	birthplace	Centraal Bureau voor de Statistiek CBS	https://www.cbs.nl/
Norway	NUTS2 (Regions)	Register 1991	birthplace	Register 2001	birthplace	Register 2011	birthplace	Statistics Norway	http://www.ssb.no/
Portugal	NUTS2 (Regions)	Census 1991	birthplace	Census 2001	birthplace	Census 2011	birthplace	IPUMS international (5% extract)	https://international.ipums.org
Sweden	NUTS2 (National areas)	Register 1991	birthplace	Register 2001	birthplace	Register 2011	birthplace	Statistics Sweden	http://www.scb.se/
United Kingdom	NUTS1	Census 1991	birthplace	Census 2001	birthplace	Census 2011	birthplace	Office for National Statistics	https://www.ons.gov.uk

Table A.12: Immigrant stocks by educational attainment : data sources by country

| | | year 2001 | | year 2011 | |
country	regional level	sources	definition	sources	definition
Austria	NUTS2 (Bundeslnder)	Census 2001	birthplace	Census 2011	birthplace
Belgium	NUTS3 (Arrondissements)	ELFS 2001	birthplace	ELFS 2011	birthplace
Switzerland	NUTS 3 (Canton)	ELFS 2002	birthplace	ELFS 2011	birthplace
Germany	NUTS1 (Lander)	ELFS 2002	birthplace	ELFS 2011	birthplace
Denmark	NUTS3 (Landsdele)	Population register 2001	birthplace	Population register 2011	birthplace
Spain	NUTS3 (Provincias)	Census 2001	birthplace	Census 2012	birthplace
Finland	NUTS3 (Maakunnat - Landskap)	Population register 2001	birthplace	Population register 2011	birthplace
France	NUTS3 (Departements)	Census 1999	birthplace	Census 2011	birthplace
Greece	NUTS3 (Nomoi)	Census 2001	birthplace	Census 2011	birthplace
Ireland	NUTS3	Census 2002	birthplace	Census 2011	birthplace
Italy	NUTS2 (Regioni)	Census 2001	birthplace	Census 2011	birthplace
Netherlands	NUTS2 (Provincies)	Population register 2001	birthplace	Population register 2011	birthplace
Norway	NUTS2 (Regions)	Population register 2001	birthplace	Population register 2011	birthplace
Portugal	NUTS2(Regions)	Census 2001	birthplace	Census 2011	birthplace
Sweden	NUTS2 (National areas)	Population register 2001	birthplace	Population register 2011	birthplace
United Kingdom	NUTS1	Census 2001	birthplace	Census 2011	birthplace

ELFS: European Labor Force Survey

Table A.13: Lists of NUTS regions in the matched attitudinal immigrants stocks data

	Country	NUTS region	NUTS level	Region's name
AT	Austria	AT11	2	Burgenland
AT	Austria	AT12	2	Niedersterreich
AT	Austria	AT13	2	Wien
AT	Austria	AT21	2	Krnten
AT	Austria	AT22	2	Steiermark
AT	Austria	AT31	2	Obersterreich
AT	Austria	AT32	2	Salzburg
AT	Austria	AT33	2	Tirol
AT	Austria	AT34	2	Vorarlberg
BE	Belgium	BE1	1	Brussels region
BE	Belgium	BE2	1	Flemish region
BE	Belgium	BE3	1	Walloon region
CH	Switzerland	CH01	2	Lake Geneva region
CH	Switzerland	CH02	2	Espace Mittelland
CH	Switzerland	CH03-CH04	2	Northwestern Switzerland - Zurich
CH	Switzerland	CH05	2	Eastern Switzerland
CH	Switzerland	CH06	2	Central Switzerland
CH	Switzerland	CH07	2	Ticino
DE	Germany	DE1	1	Baden-Wurttemberg
DE	Germany	DE2	1	Bayern
DE	Germany	DE3	1	Berlin
DE	Germany	DE4	1	Brandenburg
DE	Germany	DE5	1	Bremen
DE	Germany	DE6	1	Hamburg
DE	Germany	DE7	1	Hessen
DE	Germany	DE8	1	Mecklenburg-Vorpommern
DE	Germany	DE9	1	Niedersachsen
DE	Germany	DEA	1	Nordrhein-Westfalen
DE	Germany	DEB	1	Rheinland-Pfalz
DE	Germany	DEC	1	Saarland
DE	Germany	DED	1	Sachsen
DE	Germany	DEE	1	Sachsen-Anhalt
DE	Germany	DEF	1	Schleswig-Holstein
DE	Germany	DEG	1	Thuringen
DK	Denmark	DK01	2	Hovedstaden
DK	Denmark	DK02	2	Sjlland
DK	Denmark	DK03	2	Syddanmark
DK	Denmark	DK04	2	Midtjylland
DK	Denmark	DK05	2	Nordjylland

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	Country	NUTS region	NUTS level	Region's name
ES	Spain	ES11	2	Galicia
ES	Spain	ES12	2	Principado de Asturias
ES	Spain	ES13	2	Cantabria
ES	Spain	ES21	2	Pas Vasco
ES	Spain	ES22	2	Comunidad Foral de Navarra
ES	Spain	ES23	2	La Rioja
ES	Spain	ES24	2	Aragun
ES	Spain	ES30	2	Comunidad de Madrid
ES	Spain	ES41	2	Castilla y Len
ES	Spain	ES42	2	Castilla-La Mancha
ES	Spain	ES43	2	Extremadura
ES	Spain	ES51	2	Catalua
ES	Spain	ES52	2	Comunidad Valenciana
ES	Spain	ES53	2	Illes Balears
ES	Spain	ES61	2	Andaluca
ES	Spain	ES62	2	Regin de Murcia
ES	Spain	ES70	2	Canarias
FI	Finland	FI19	2	West Finland
FI	Finland	FI1B-FI1C	2	Helsinki-Uusimaa- South Finland
FI	Finland	FI1D	2	North & East Finland
FR	France	FR1	1	Rgion parisienne
FR	France	FR2	1	Bassin Parisien
FR	France	FR3	1	Nord
FR	France	FR4	1	Est
FR	France	FR5	1	Ouest
FR	France	FR6	1	Sud Ouest
FR	France	FR7	1	Centre Est
FR	France	FR8	1	Mditerrane
GR	Greece	GR11	2	Anatoliki Makedonia, Thraki
GR	Greece	GR12	2	Kentriki Makedonia
GR	Greece	GR13	2	Dytiki Makedonia
GR	Greece	GR14	2	Thessalia
GR	Greece	GR21	2	Ipeiros
GR	Greece	GR22	2	Ionia Nissia
GR	Greece	GR23	2	Dytiki Ellada
GR	Greece	GR24	2	Sterea Ellada
GR	Greece	GR25	2	Peloponnisos
GR	Greece	GR30	2	Attiki
GR	Greece	GR41	2	Voreio Agaio
GR	Greece	GR42	2	Notio Agaio
GR	Greece	GR43	2	Kriti
IE	Ireland	IE011	3	Border
IE	Ireland	IE012	3	Midland
IE	Ireland	IE013	3	West
IE	Ireland	IE021	3	Dublin
IE	Ireland	IE022	3	Mid-East
IE	Ireland	IE023	3	Mid-West
IE	Ireland	IE024	3	South-East
IE	Ireland	IE025	3	South-West
IT	Italy	ITC1	2	Piemonte
IT	Italy	ITC3	2	Liguria
IT	Italy	ITC4	2	Lombardia
IT	Italy	ITF1	2	Abruzzo
IT	Italy	ITF3	2	Campania
IT	Italy	ITF4	2	Puglia
IT	Italy	ITF5	2	Basilicata
IT	Italy	ITF6	2	Calabria
IT	Italy	ITG1	2	Sicilia
IT	Italy	ITG2	2	Sardegna
IT	Italy	ITH1-ITH2	2	Trentino-Alto Adige- Sud Tirol
IT	Italy	ITH3	2	Veneto
IT	Italy	ITH4	2	Friuli-Venezia Giulia
IT	Italy	ITH5	2	Emilia-Romagna
IT	Italy	ITI1	2	Toscana
IT	Italy	ITI2	2	Umbria
IT	Italy	ITI3	2	Marche
IT	Italy	ITI4	2	Lazio
NL	Netherlands	NL11	2	Groningen
NL	Netherlands	NL12	2	Friesland
NL	Netherlands	NL13	2	Drenthe
NL	Netherlands	NL21	2	Overijssel
NL	Netherlands	NL22	2	Gelderland

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	Country	NUTS region	NUTS level	Region' s name
NL	Netherlands	NL23	2	Flevoland
NL	Netherlands	NL31	2	Utrecht
NL	Netherlands	NL32	2	Noord-Holland
NL	Netherlands	NL33	2	Zuid-Holland
NL	Netherlands	NL34	2	Zeeland
NL	Netherlands	NL41	2	Noord-Brabant
NL	Netherlands	NL42	2	Limburg
NO	Norway	NO01	2	Oslo and Akershus
NO	Norway	NO02	2	Hedmark and Oppland
NO	Norway	NO03	2	South Eastern Norway
NO	Norway	NO04	2	Agder and Rogaland
NO	Norway	NO05	2	Western Norway
NO	Norway	NO06	2	Trondelag
NO	Norway	NO07	2	Northern Norway
PT	Portugal	PT11	2	Norte
PT	Portugal	PT15	2	Algarve
PT	Portugal	PT16	2	Centro
PT	Portugal	PT17	2	Lisboa e Vale do Tejo
PT	Portugal	PT18	2	Alentejo
SE	Sweden	SE11	2	Stockholm
SE	Sweden	SE12	2	stra Mellansverige
SE	Sweden	SE21	2	Smland med arna
SE	Sweden	SE22	2	Sydsverige
SE	Sweden	SE23	2	Vstsverige
SE	Sweden	SE31	2	Norra Mellansverige
SE	Sweden	SE32	2	Mellersta Norrland
SE	Sweden	SE33	2	vre Norrland
UK	United Kingdom	UKC	1	North East
UK	United Kingdom	UKD	1	North West
UK	United Kingdom	UKE	1	Yorkshire and The Humber
UK	United Kingdom	UKF	1	East Midlands
UK	United Kingdom	UKG	1	West Midlands
UK	United Kingdom	UKH	1	East of England
UK	United Kingdom	UKI	1	London
UK	United Kingdom	UKJ	1	South East
UK	United Kingdom	UKK	1	South West
UK	United Kingdom	UKL	1	Wales