

# Populism and Social Polarization in European Democracies<sup>1</sup>

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## Abstract

The objective of this paper is to explain populist attitudes that are prevailing in a number of European democracies. Populist attitudes usually lead to social protests and populist votes. We capture the populist wave by relying on values that are traditionally viewed as populist—such as distrust of institutions and neighbors, rejection of migrations and strong preferences for law and order—rather than on voting behavior. Our study covers the period 2004 to 2018 and 25 European countries for which we match aggregated indicators of populist values and social polarization based on ESS and SILC survey micro-data. We show that social polarization varies dramatically across European regions, but at the same time some convergence is observed. Our estimations confirm, in most cases, a positive and statistically significant relation between social polarization and populist attitudes.

Keywords: populism, polarization, social divide

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## 1. Introduction

During the last 15 years, two parallel evolutions could be observed: mounting populist waves and widening social divides. We show that these evolutions were a matter of perception much more than of reality, a perception that was conveyed by resounding elections of populist characters (Bolsonaro in Brazil, Trump in the US, Orban in Hungary, and others), accompanied by upsurges of social protests such as the *Gilets Jaunes* in France, which received a wide coverage in the media. When looking at hard facts, we can observe that indeed populist attitudes as well as social divides prevail in most countries and that both phenomena are closely related, though their extent reveals to be quite stable over time but varies across countries.

We do not rely on voting behavior to capture the populist wave, but rather on values that are traditionally viewed as populist, such as distrust of institutions and neighbors, rejection of migrations and strong preferences for law and order. We collected these values for 25 European countries from 2004 to 2018. Social divides are measured by the index of polarization introduced by Esteban and Ray (1991, 1994, 2011), a measure that is often applied in political science to study conflicts. We match aggregated indicators of populist values and social polarization using, respectively ESS (European Social Survey) and SILC (Survey on Income and Living Conditions) survey micro-data.

A couple of words on these choices are in order. First, we explain populist attitudes rather than populist votes which are neither consistent nor homogeneous: they come from very different types of elections (local, regional, national and even European) and the definition of populist parties is often questionable and changing. Second, traditional measures of inequality and poverty do not capture well the complex reality of social divides and the tensions between the middle-class and both the lower and the upper tail of the income distribution. Polarization indicators do reflect such reality.

Our approach is at odds with the usual one that relates the populist vote to factors such as globalization, cost of living increase, immigration or unemployment. It is closer to the work by Norris and Inglehart (2018) who use the European Social Survey (ESS) data to explain populist vote and authoritarian/libertarian values with generational differences and cultural backlash, as main factors. We use the same data, but focus on social polarization as possible argument for populist attitudes.<sup>2</sup>

To be clear, there are four possible variables (or groups of variables) that are important: (a) populist votes, (b) populist attitudes and values, (c) social divides and (d) a number of economic factors. In this paper, we look at the effect of (c) on (b), while most of the literature focuses on the effect of one or several variables listed in (d) on (a).

This literature explains populist votes by factors such as an extended lack of income growth, combined with massive growth at the top of the income distribution; an education system that

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<sup>2</sup> In a recent survey on polarization measurement, Permanyer (2018) makes the distinction between income and social polarization indexes. Following Permanyer's classification, we use an 'income polarization' index. We prefer, however, to refer to it as a 'social polarization' index to keep the general view of income categories as social groups.

limits the opportunities of children from modest parental backgrounds; outsourcing of ‘good’ jobs to China and other emerging economies; technological change that has made many ‘routine’ middle-class jobs redundant. A couple of examples follow.<sup>3</sup>

Using seventeen years of the German Socio-Economic Panel, Geishecker and Siedler (2012) find strong and robust evidence that subjective job-loss fears foster affinity for parties at the far right-wing of the political spectrum. Nikolka and Poutvaara (2016) and Becker et al. (2017) show that the 2016 Brexit referendum result in the United Kingdom is strongly correlated with various characteristics of voters across districts. Individuals over 45 years old, having little or no qualification, living in areas with a strong tradition of manufacturing employment or with a high number of immigrants from the twelve 2004 EU accession countries, were identified as strong predictors of the Brexit vote. Autor et al. (2020) study the populist vote in the 2016 American presidential elections. They show that growing import competition from China contributed to a shift in congressional voting toward ideological extremes. In a study based on regional data for 14 Western European Countries over the period 1993 to 2016, Anelli et al. (2019) find that higher robotization exposure may lead to increasing support for national and radical right parties. In his analysis of populism across Europe and America, Rodrick (2017) shows that throughout history waves of globalization are prone to populist backlashes. Algan et al. (2017a) try to explain the Front National (FN) vote during the recent French presidential election. They show that a sense of deteriorating wellbeing is one of the main explanations of the rising support for the FN, cutting across most boundaries of age, education, or economic status.

Edo et al. (2019) analyze presidential elections results in France between 1998 and 2017. They show that extreme right and extreme left votes are associated with immigration. This association is positive for the extreme right and negative for the extreme left. However, it is stronger for the former than for the later. In our paper we follow Edo et al. (2019), who use an instrumental variable (IV) approach to address the potential bias due to endogenous immigration.<sup>4</sup> Bordignon et al. (2019) also analyze municipalities’ data but in a Northern Italian region, Lombardia, and conclude that “the share of immigrants follows a U-shaped curve, which exhibits a tipping-like behavior around a share of immigrants equal to 3.35%.” Finally, Algan et al. (2017b) study the relation between unemployment and the rise of populism, vote and values, using ESS microdata aggregated at the regional level. Their estimates, which include the great recession period, confirm a strong positive relation between the growth of unemployment and the increasing populist vote in European countries.

More in line with our study, another path of the literature is interested by non-economic factors driving populist attitudes. Guriev et al. (2020) analyze the link between the growth of mobile internet, 3G broadband, over the period 2008-2017 around the world and individuals’ government approval. Using Gallup World Poll surveys, they show that confidence in government increases with mobile expansion, at least if the access to the internet is not

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<sup>3</sup> See also Lefebvre and Pestieau (2018).

<sup>4</sup> We thank Panu Poutvaara, for his suggestion.

censored. This is also in line with experimental studies which contradict the view that economic factors account for a wide portion in populist attitudes and vote (Margalit, 2019).

Anticipating the results of our paper, we show that social polarization varies dramatically across European regions though, at the same time, some convergence is observed. Our estimations often confirm a positive and statistically significant relation between social polarization and populist attitudes.

We also show that, in most cases, our results are relatively invariant at the level of regions (NUTS1) instead of countries. These results are also consistent, with some rare exceptions, when we run our model separately for three different age-cohorts: born before 1946, born in 1946-1974, and born after 1974.

The paper is organized as follows. In section 2, we discuss our main variables, namely populist attitudes and polarization and show how they differ across countries and over time. In section 3, we test the relation between populist attitudes, the degree of social polarization and covariates, particularly immigration inflows, using OLS and IV-2SLS, to address potential endogeneity problems. In section 4 we present robustness checks, using regional and age-cohorts panel data. We conclude in Section 5.

## **2. Social divides and populist attitudes**

### **2.1. Data**

To study the link between social divides and populist attitudes, or behavior, we rely on two large European surveys, SILC (Eurostat, 2020) and ESS (European Social Survey, 2020).

SILC microdata are used to compute polarization indices that describe the possible fractures of living conditions across income classes. SILC is an annual survey that started in 2004 and includes data on economic and living conditions, in particular on the disposable income of households. The sample is representative of the population aged 16 years plus.

ESS data come in to compute several indicators related to individual populist attitudes and voting behavior. The surveys started in 2002, but ESS collects data during even years only. Some parts (or modules) are repeated every even year, others are more occasional, or even unique. ESS aims at collecting changes in individual ‘attitudes, beliefs and behavior patterns’ including political orientation and parties for which individuals voted in the last election that preceded the year in which the survey was taken. The sample is representative of the population aged 18 years plus.

We combine the information available from both surveys, and aggregate it at the level of countries and years, implicitly assuming that both samples, randomly chosen from the same population, are representative. Table A1 in Appendix A, describes which data are available by country and years. Given that ESS runs its surveys every even year, while SILC started in most countries for every year in 2005, the final panel includes 25 countries, eight years (2004 to

2018, even years only), but only 157 data points<sup>5</sup> instead of  $25 \times 8 = 200$ , since some countries are missing, especially in 2004.<sup>6</sup> With the exception of Greece, Italy, and Iceland, all countries are present at least five times out of eight, but the panel is obviously unbalanced. As a robustness check, we also estimate the same equations using a panel data of regions (NUTS 1 level), instead of countries. Given that NUTS information is not available in ESS before the 2010 wave, the final panel is composed of 279 observations.<sup>7</sup>

## 2.2. Populist attitudes

Political scientists use two types of variables to address populism: (a) Votes or membership participation to populist parties or (b) values and attitudes, which can be considered supporting or related to populist behavior. We chose option (b) for the reason that in surveys evidence on populist values is much more reliable than voting behavior: Interviewees often do not remember the vote they casted, or feel uncomfortable to confess they voted for a populist party or personality, and others simply did not vote (some 30% in many countries), as we can see from ESS data reported in Appendix Table A2.

We follow Norris and Inglehart (2018), who introduced indicators of ‘distrust of institutions,’ ‘anti-immigration feelings’ and ‘leaning for law and orders’ (authoritarianism) in their work. These are computed using ESS individual answers to specific questions. We added a fourth indicator reflecting ‘distrust of people,’ which also prevails in populist behavior (Olivera, 2014). Appendix Table A3 displays the questions used. For each indicator and each individual, we added the scores given as answers to the corresponding questions, and normalized them between 0 and 100. Table 1 contains a summary by country over three periods (2004-2008, 2010-2014 and 2016-2018). Countries are classified in four homogenous groups. As can be observed, there are large variations with and within each subgroup depending on the indicator at hand. But more importantly, and contrary to what is usually assumed, there are no clear time trends.

[Insert Table 1]

As already mentioned, voting data are not consistent. Nevertheless, we used the ESS sample to obtain some evidence that extreme right voting and abstentions are positively related to distrust of institutions, anti-immigration attitudes, authoritarianism and distrust of people, by running logistic regressions in which the dependent variable (extreme right voting results or abstentions) values 0 or 1). We also include gender, education and year of birth (age cohort) as control variables. Results are shown in Table 2.

[Insert Table 2]

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<sup>5</sup> For some analyses, only 152 observations are available.

<sup>6</sup> On average, SILC’s sample size is almost ten times larger than ESS’s. To keep indicators comparable across both surveys, we use specific weights variables, provided by ESS and SILC, to correct for sampling bias. For details, see footnotes in Tables 2 and 3, respectively.

<sup>7</sup> In SILC, information on regions (NUTS 1) is unavailable for two countries: Germany and The Netherlands. For these countries, and for estimation purposes, we combine yearly ESS regional observations with SILC country observations.

Votes for extreme right parties and abstentions may both reflect a rejection of the political system. They are positively related to each populist attitude, particularly to anti-immigration attitudes, in the first case, and to distrust in institutions, in the second.<sup>8</sup> The only puzzling result is the negative effect of authoritarianism on abstentions in the last two columns of Table 2. In each case, the same analysis was run controlling for heterogeneity across countries and years and the results are relatively stable. In most cases, the estimated parameters vary but their sign and statistical significance do not change. Gender, education and age cohorts' effects are also relatively stable and, in most cases, with the expected sign. The results confirm huge vote abstention rates among younger generations of less educated people and among those who voted, females, high educated and aged people's votes go less often to extreme-right parties.<sup>9</sup> The same age and education gradients are reported by Nikolka and Poutvaara (2016) in the case of leave votes in the 2014 British Brexit referendum.

### 2.3. Social polarization

Income inequality and poverty measures are often used to obtain a representation of the state of a society.<sup>10</sup> But it has become increasingly clear that these measures do not reflect the 'feeling of being left behind' that characterizes the lower middle class and that fuels political and social instability in a number of ways. First, increasing 'social barriers' between groups implies that individuals feel less familiar with and connect less to other people. Secondly, it is difficult to develop trust in others if they are seen to have unfair advantages. Finally, unequal communities may disagree over how to share (and finance) public goods, and those disagreements can turn breaking social ties and lessen social cohesion. Broken trust leads to intolerance and discrimination. To assess these social divides, we assumed that simple poverty measures are insufficient, and we resorted to polarization measures that have been widely used to analyze ethnic conflicts and linguistic differences. Based on a recent study by OECD (2019), we postulate that a polarization process is at work in European societies and that it is possible to measure it making the distinction between three main income categories within the population, low-income, middle-income and upper-income classes, on the basis of their relative position to a country's median income. As shown in this OECD study, the middle-class is under pressure, particularly in Western industrialized countries, where the increasing cost of life and job insecurity simultaneously impact their living conditions and reduce their social mobility opportunities.<sup>11</sup>

The idea of polarization can be described using a certain number of steps. Assume that we have a given exogenous partition into income groups  $j$  and  $k$ ,  $n_{i,j}$  and  $n_{i,k}$  in country  $i$  where  $n_{i,j}$  and  $n_{i,k}$  are the shares of income group  $j$  and  $k$  in country  $i$ . Income 'diversity' can then be defined by  $\sum_j \sum_k n_{i,j} \cdot n_{i,k}, j \neq k$ . If, in addition, one can estimate distances  $\delta_{i,jk}$  measured by, say the 'ability to make ends meet' between groups  $j$  and  $k$ , then 'distance weighted diversity' can be

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<sup>8</sup> See Table A2, in Appendix A, for extreme right voting and vote abstentions scores by country and period.

<sup>9</sup> As a robustness check, we estimate the same models controlling for region, instead of country, and year heterogeneity, but for a shorter period (2010-2018). The results, reported in Table A4 in Appendix, are very close to those reported in Table 2.

<sup>10</sup> For an overview of the recent evolution of income inequality around the world, see Bourguignon (2018).

<sup>11</sup> On diminishing social mobility, see OECD (2018).

written as  $\sum_j \sum_k n_{i,j} \cdot n_{i,k} \cdot \delta_{i,jk}$ .<sup>12</sup> Esteban and Ray's (2011) formulation of polarization is very close to diversity, but they include a parameter  $(1 + \theta)$ ,  $\theta \in [0, 1.6]$ , which expresses the fact that members of group  $i$  put a larger weight (for instance in terms of confidence) on those of the same group than on other ones, or are more antagonistic to those who do not belong to their own group:  $p_i = \sum_j \sum_k n_{i,j}^{1+\theta} \cdot n_{i,k} \cdot \delta_{i,jk}$ .

To obtain the polarization index  $p_{it}^s$  that will be used in our paper, we simply add in the last expression a subscript  $t$  for time (even years from 2004 to 2018) and a superscript  $s$  for each of two types of distances between groups that will now be used:

$$p_{it}^s = \sum_j \sum_k n_{it,j}^{1+\theta} n_{it,k} \cdot \delta_{it,jk}^s, \text{ with } \theta \in [0, 1.6]. \quad (1)$$

Using SILC microdata and following OECD (2019) definitions, we segment populations in each year and country in three groups. Middle-income group involves individuals in households with disposable income (standardized using the OECD equivalence scale) between 0.75 and twice the median standardized disposable income. The lower-income group contains those individuals in households with disposable income less than  $\frac{3}{4}$  of the median disposable income. The upper-income group contains those whose income is larger than twice the median disposable income.

SILC microdata also allow to compute two types of distances which reflect living conditions gaps across income classes. First, a subjective measure based on the answer given by the households' reference individual, on her/his 'ability to make ends meet.' The answer is qualitative and goes from 'with great difficulty' to 'very easily' on a scale from 1 to 6. For each income group, we take the percentage of individuals with score 1 ('with great difficulty') or 2 (with 'difficulty'). Secondly, we use a so-called 'material deprivation index' (Townsend, 1979) which corresponds to the addition of binary answers (yes or no) to an array of SILC questions. Their precise formulation can be found in Appendix Table A5, which also contains questions that make it possible to compute Townsend's deprivation index (see also Verbunt and Guio, 2019). For each income group, we take the average percentage of individuals who cannot afford two or more of these items.

Table 3 provides the distances between the lowest and the highest income classes for the 'ability to make ends meet' and for the index of 'deprivation'. The difference between Central-Western and Northern Europe, on the one hand, and Southern and Eastern Europe, on the other, is, as expected, striking. Across the period, however, the distance between income classes, particularly the gap measured by the index of material deprivation, diminished dramatically in a majority of Eastern countries.<sup>13</sup> At the same time, it increased in other European countries whose population were more affected by the financial crisis: Greece and Spain, but also Ireland and the United Kingdom.

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<sup>12</sup> Note that this expression is equivalent to the Gini coefficient.

<sup>13</sup> As expected, the share of high-income households reporting difficulties to make ends meet or experimenting material deprivation is extremely low in Central-Western and Northern European countries. In Southern countries, however, deprivation concerns around 4-5% of high-income households, a number that remained stable over the period, while difficulties to make ends meet increased, from roughly from 8% to 12%. On the contrary, among high income households in Eastern countries, deprivation diminished dramatically over the period, from more than 10% to less than 5%, while difficulties to make ends meet kept stable, around 5-6% on average.

[Insert Table 3]

Regarding identification, Esteban and Ray (1991, 1994) show that, under given axioms, the parameter  $\theta$  can take values ranging from 0 to 1.6. In what follows, we have chosen the most commonly used value, that is  $\theta = 1$ .<sup>14</sup>

Using the above distances and the identification value, we compute polarization indexes with distances based on subjective or material deprivation scores, listed in Table 4.

[Insert Table 4]

Focusing first on the indices based on the subjective ‘ability to make ends meet’ we observe, as Wang et al. (2018) did, that average polarization is higher in Southern and Eastern countries and lower in Northern countries.<sup>15</sup> We observe however also that, between 2004 and 2018, increases are particularly important in Nordic and Central-Western countries. Only Finland experiences a decline in polarization. For the two other subgroups, results are mixed. In Southern countries, polarization increases dramatically in Cyprus and Spain while in Greece it decreases. In Eastern Europe, Czechia, Estonia and Poland also happen to become less polarized.

The pattern is somewhat different for ‘deprivation scores.’ On average, our indices are quite stable over time in all regions, with the exception of Southern Europe. They also tend to be higher in Southern and Eastern countries than in the two other subgroups. There are, however, some countries (Austria, France, Denmark, Finland, the Czech Republic and Estonia) in which polarization decreases and others in which it increases (Ireland, United Kingdom, Spain, the Netherlands, Sweden and Hungary). There is no clear pattern here, but this is also so for populist attitudes. We now turn to the main part of this paper, namely the relation between those two sets of variables.

### 3. Polarization and populist attitudes

In this section we present the results of OLS estimates of the following (unbalanced panel of countries and years) equation, with 152 or 157 even year-country observations:

$$y_{i,t}^r = \alpha^{r,s} + \beta_1^{r,s} p_{i,t}^s + \beta_2^{r,s} \Delta m_{i,t} + \sum_l \gamma_l^{r,s} x_{i,t}^l + \varepsilon_{i,t}^{r,s}, \forall r, \forall s \quad (2)$$

where  $y_{i,t}^r$ , the left-hand side variable, is one of the four aggregated populist attitudes (superscript  $r = 1, \dots, 4$  represents  $r = 1$  to 4 represents distrust of institutions, anti-immigration, authoritarianism and distrust of people), described in Table 1;  $i$  and  $t$  represent the country and the year. The right-hand side variable  $p_{i,t}^s$ , is one of the two  $s$  polarization indices based on ‘ability to make ends meet’ or ‘deprivation’;  $\Delta m_{i,t}$  is the change of the immigration stock (as a

<sup>14</sup> This is also the choice made in the conflict or polarization literature. See Montalvo and Reynal-Querol (2005) and Desmet, Ortuño-Ortín, and Weber (2017). Using additional axioms, Geng (2012) shows that the range can be shrunk to a single point  $\theta = 1$  to obtain the Reynal-Querol functional form.

<sup>15</sup> Wang et al. (2018) also rely on Esteban and Ray’s (1994) approach and on SILC data (2004-2012) for the computation of polarization indexes.



share of total population of the country) over the five last years; the variables  $x_{i,t}^l$  are covariates: GDP per capita and its change over the five last years, urban population (the share of total population of the country), European regions and year controls;  $\alpha^{r,s}$ ,  $\beta_1^{r,s}$ ,  $\beta_2^{r,s}$  and  $\gamma_l^{r,s}$  are parameters to be estimated and  $\varepsilon_{i,t}^{r,s}$  is the error term.

To compute the immigration stock, we rely on detailed cross-country migration data from the United Nations Population Division (UN, 2020). For each of the 25 European countries, we compute the net immigration stock of people who were born abroad. Given that the information is available every five years only, we interpolated the immigration stock for missing years. We use the ratio between the immigration stock and total population (WDI, 2020) in our estimations. GDP per capita and the rate of urbanization are also taken from WDI (2020).

The OLS estimates are displayed in Table 5.<sup>16</sup> In this table, the polarization index relies either on the ‘ability to make ends meet’ distances, or on the ‘deprivation index’ distances. In all four regressions (where the left-hand side variables are distrust in institutions, anti-immigration, authoritarianism and distrust of people), the polarization index picks a positive sign that is significantly statistically different from 0 (in some at the 10 percent level). The increase in immigration stocks pick a significant and positive effect for authoritarianism and distrust of people, only.

The level of GDP as well as its increase over the last five years picks up a negative effect on populism, which is expected. The only exception is the positive and significant effect in the case of authoritarianism. Additionally, the coefficient of the relative importance of the urban population is negative but not significant in some cases, notably when the dependent variable corresponds to anti-immigration attitudes.

In all cases we control for heterogeneity across European regions and for year effects.<sup>17</sup> Even if the aim of these controls is to avoid the estimation bias due to unobserved heterogeneity and, in first place, sample attrition, in Table 5, we can observe statistically significant effects with respect to the reference region, Central Western countries, in three cases. First, a positive effect for Eastern European countries on anti-immigration attitudes. Second, a negative effect for Northern European countries on distrust of people attitudes and of institutions (with polarization based on the deprivation index). Finally, a positive effect on authoritarianism in Southern European countries. The R-squares are reasonable, with the exception of the anti-immigration and authoritarianism populist attitudes, which goes against conventional wisdom.

[Insert Table 5]

In equation (2), immigration flows are exogenous. As an alternative, we also estimate a model in which the five-year changes in immigration,  $\Delta m_{i,t}$ , is endogenous. Here, the hypothesis is that if in European countries populist attitudes and extreme-right parties’ votes are driven by

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<sup>16</sup> Contrary to most studies on populism, we rely on aggregated data at country level for our estimations. We are aware of a potential bias due to aggregation but, by definition, the polarization index is an aggregate measure, based on an aggregated concept. Anyway, the same relation could be tested at other levels of aggregation, as we illustrate in the next section with regional (NUTS 1) and with age cohorts panel data.

<sup>17</sup> We also included crossed effects between European regions and year in all estimations. Only regional effects are reported in tables.

the perception of immigration inflows, immigration inflows are also potentially affected by accepting immigrants, as reflected by votes and by new immigration regulations. To address this potential endogeneity, we estimate equation (2) using instrumental variables two-stage least squares (IV-2SLS). To do this, we instrument European countries' immigration inflows following the shift-share approach based on immigrants' shares from different origins proposed by Edo et al. (2019). As instruments, we use the estimated last five-year immigration inflow,  $\Delta \hat{m}_{i,t}$ , as well as the estimated stock of immigrant five year before,  $\hat{m}_{i,t-5}$ , computed as described in Appendix B.

In Table 6 we report IV-2SLS estimates for the same models as in Table 5, with the past five-year change in the immigration stock,  $\Delta m_{i,t}$ , as the instrumented variable. The Cragg-Donald Wald F-statistic value for these models is higher than 10, which indicates that the hypothesis of weak instruments is rejected. The Sargan test does not present evidence against the null hypothesis that the over-identifying restrictions are valid, except in the case of trust on people attitudes when the polarization index relies on “difficult to make ends meet” distances.

In most cases, the results shown in Table 6 (IV-2SLS) confirm those obtained using OLS estimations, particularly for the covariates. On the contrary, they show a positive and statistically significant effect of immigration flows on populist attitudes, with the remarkable exception of anti-immigration. In all cases the effect of social polarization on populist attitudes is stronger once we correct our estimations for potential bias due to immigration inflow endogeneity.

[Insert Table 6]

#### 4. Robustness checks

Most studies also analyze matched socio-economic and voting results at local levels (municipalities, counties or regions). And there is no doubt that, in European countries, extreme contrasted situations are observed at the local level.

As a robustness check, we ran IV-2SLS regressions, identical to those in Table 6, with an alternative panel composed of NUTS 1 regions instead of countries. The results are reported in in Appendix Table A6 and to a large extent they confirm those obtained with the panel of countries. It is particularly so for the case of the positive effect of social polarization on populist attitudes, which is at the center of our analysis.

The results reported in Table A6 correspond to the period 2010-2018, the same panel of 25 European countries, and 279 observations. As expected, given that both the instrumented variable and the instruments are defined at country level, Wald F-Statistics indicate that the hypothesis of weak instruments is rejected. However, the Sargan test reject in two cases the null hypothesis that the overidentification restrictions are valid, for distrust of institutions and authoritarianism attitudes. This is probably due to data limitations.<sup>18</sup>

It can also be argued that social polarization and populist attitudes are simultaneously influenced by a non-controlled, confounding factor, in which case our estimations would be

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<sup>18</sup> See notes on Table A6 in Appendix.

biased. This is potentially the case of the 2008 financial and economic crisis which affected European countries' populations at different degrees. It could be also the case when huge labor market or tax reforms were undertaken during the period covered in one or more countries. We did not address specifically these potential sources of bias, mainly due to the limited possibilities offered by our panel of matched SILC and ESS aggregated data. To be more complete, we also estimated our model including country and year effects, but the results are unsatisfactory. Instead of that, and as shown before, we included in all estimations European regions and year controls, adding crossed effects among them.

However, we cannot exclude another potential confounding factor affecting the results reported in previous tables. In Section 2.1, we show that vote abstention and extreme-right vote across age-cohorts differ. This is in line with Norris and Inglehart (2018), who also documented differences in populist attitudes and votes across age-cohorts in European countries. At the same time, social polarization within age-cohorts differs as well, with a decreasing gradient from the young to the aged cohort.<sup>19</sup> Therefore, as a robustness check, we ran the same IV-2SLS models' estimations for different age-cohorts: born before 1946, born between 1946 and 1974 and born after 1974.

Table 7, contains the results related to the distrust of institutions attitude for the three age-cohorts. The results are strongly consistent with those reported in Table 6. The estimated parameters are nearly invariant across age-cohorts for immigration inflow (the instrumented variable), and for the negative effect associated to GDP per capita. A remarkable exception is the polarization index, whose effect on 'distrust of institutions' attitudes is higher for baby-boomers (born 1946-1974) than for the other cohorts. Another exception is urban population, whose effect on populist attitudes is always negative but more pronounced among the young generation (born after 1974). On the contrary, a more favorable economic environment (GDP per capita growth) has higher depressing effect on populist attitudes among the older.

[Insert Table 7]

We ran similar IV-2SLS regressions by age-cohorts for the other populist attitudes. To summarize, the estimated parameters associated in each case with social polarization and immigration inflow variables are shown in Table 8. It appears that the effect of social polarization on these populist attitudes is less pronounced than for trust of institutions. Anti-immigration is statistically significant for the young cohort only. The effect of immigration inflow on anti-immigration is also more pronounced among young people, and baby-boomers when the polarization index is founded on 'ability to make ends meet.' These results are puzzling when we compare them with those reported in Table 6 for the whole population.<sup>20</sup> But, at the same time, they confirm the interest of running separate regressions by age-cohort.

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<sup>19</sup> We run a covariance analysis on social polarization indexes computed for the three age-cohorts using the whole panel of countries. The results, reported in Appendix Table A7 in Appendix, show that differences in social polarization across age-cohorts matter, after controlling for country and year effects.

<sup>20</sup> These differences are obviously the result of aggregation. In other words, differences in social polarization and populist attitudes across age-cohorts are, by construction, neglected in estimations reported in Table 7. Comparing these results with those reported in Table 6, aggregation clearly matters in some cases, particularly for anti-immigration attitudes.

Finally, we ran two other robustness checks at country level. We first recomputed social polarization indexes using a different value of parameter ( $\theta = 0.5$ , instead of  $\theta = 1.0$ ).<sup>21</sup> Recall that  $\theta$  is a measure of the weight that members of a group (in our case defined by low, middle and high income groups) put on those of the same group relative to others ones. Second, we recomputed immigration inflows without considering the net stock of immigrants from Europe, Canada, US, Australia and New Zealand. In both cases, the results obtained were consistent with those reported in Table 6.<sup>22</sup>

## 5. Conclusions

Our aim was to explain populist attitudes (that may eventually lead to populist votes) by a number of factors, the most important being the degree of social polarization, which measures the extent of social divides that plague our societies. Polarization is significantly positively correlated with all four populist attitudes, particularly when immigration inflows are treated as an endogenous variable and the model is estimated using IV-2SLS. To our knowledge this is the first attempt to correlate populism using such indicators of polarization that reflect the socio-economic divides better than standard measures of inequality or poverty.

To compute our measure of social polarization, in each country we fractionalize population into three groups, low, middle and high income. The distances between the income groups are the ratios of people experiencing either difficulties ‘to make ends meet,’ or ‘material deprivation.’

We show that social polarization varies dramatically across European regions. The highest scores are found in Southern and Eastern countries and the lowest scores in Northern countries, but at the same time some convergence is observed. Our estimations confirm, in most cases, a positive and statistically significant relation between social polarization and populist attitudes.

Furthermore, our results confirm the effect of immigration inflows on populist attitudes. The only exception, unexpectedly, is the effect of immigration on anti-immigration values. We find however a positive and statistically significant relation when testing our model for the younger European age-cohorts.

Summing up, social polarization appears as a key determinant of populist attitudes among Europeans, but there is also an anti-immigration effect. These results may appear to contradict the view that economic factors only account for a limited portion in individuals’ populist attitudes and votes (Margalit, 2019).<sup>23</sup> We think that this is not the case in our study. Social polarization must not be considered as an economic variable *per se*, but also as a measure of potential tensions and conflicts within the society. As such, it drives populist attitudes and values like distrust of institutions, distrust of others, anti-immigration and authoritarianism.

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<sup>21</sup> For instance, Wang et al. (2018) adopt  $\theta = 0.5$  in their study on income polarization in European countries. Their study covers the period 2004-2012 and also relies on SILC data.

<sup>22</sup> These results are available from authors upon request.

<sup>23</sup> On this issue, see also Guriev (2018).

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**Table 1. Populist attitudes by region country and period**

Region	Country	Distrust of institutions			Anti-immigration			Authoritarianism			Distrust of people		
		2004-08	2010-14	2016-18	2004-08	2010-14	2016-18	2004-08	2010-14	2016-18	2004-08	2010-14	2016-18
Central-Western	Austria	61.0	60.7	55.5	51.6	51.4	51.5	63.9	71.1	70.0	46.0	46.7	42.3
	Belgium	56.4	57.1	57.1	50.5	50.7	46.2	66.6	66.9	66.1	49.5	48.7	47.5
	France	63.2	66.2	66.5	51.3	52.0	48.8	58.4	59.4	59.8	51.1	50.6	49.1
	Germany	63.4	60.1	56.6	49.0	44.0	43.3	63.2	64.9	62.6	48.4	47.0	44.1
	Ireland	60.5	67.0	59.5	43.0	47.9	38.5	68.5	68.7	67.0	41.4	43.6	40.8
	Switzerland	49.1	46.0	43.5	42.4	41.2	40.4	62.1	66.3	64.1	41.0	41.2	39.1
	United Kingdom	61.9	62.1	60.7	52.9	51.4	41.1	64.9	67.0	63.1	44.7	44.0	44.0
Southern	Cyprus	52.2	67.8	71.0	58.0	65.9	56.8	76.7	78.4	75.1	54.9	61.8	60.4
	Greece	65.6	83.8	-	64.4	70.0	-	79.8	77.2	-	64.0	62.7	-
	Italy	-	77.0	70.4	-	51.2	57.9	-	75.7	72.9	-	54.1	54.3
	Portugal	72.5	77.2	69.3	52.7	53.2	41.2	65.0	64.9	60.5	57.6	57.7	54.8
	Spain	59.8	72.1	70.4	45.2	45.1	41.0	73.0	71.1	70.1	50.8	50.0	50.0
Northern	Denmark	41.9	46.9	-	45.2	44.6	-	62.9	64.9	-	33.2	33.3	-
	Finland	47.1	50.4	49.2	40.1	41.1	40.3	64.7	64.5	63.6	36.5	35.9	33.7
	Iceland	47.7	61.7	55.4	37.7	36.2	30.0	56.9	57.0	55.7	36.0	36.8	34.4
	Netherlands	48.9	48.3	46.6	46.2	44.7	43.4	63.8	63.7	61.3	41.4	39.9	38.8
	Norway	52.7	45.1	42.8	46.7	43.4	42.0	63.6	64.4	64.6	34.9	34.8	33.8
	Sweden	51.2	46.7	47.8	38.2	35.4	36.3	55.7	57.2	57.4	37.1	37.3	36.9
Eastern	Czechia	70.9	69.8	62.0	56.5	60.0	62.1	68.3	69.9	68.7	53.6	53.1	49.4
	Estonia	64.1	63.4	59.8	54.3	49.4	52.7	64.6	66.0	63.4	47.8	45.0	43.9
	Hungary	73.7	65.6	59.3	58.0	55.6	63.7	70.9	72.5	68.5	56.8	53.4	52.7
	Lithuania	-	72.6	67.1	-	49.4	49.9	-	66.1	65.4	-	50.3	50.4
	Poland	77.3	74.9	70.1	41.6	41.3	44.4	75.4	76.6	73.9	59.5	57.4	57.1
	Slovakia	65.0	71.0	64.7	52.3	55.5	61.1	72.8	74.7	70.7	57.3	57.8	59.8
	Slovenia	64.2	76.1	71.9	53.6	53.2	55.3	68.8	74.6	73.8	54.8	54.0	51.5
Regions <sup>a</sup>	Central	59.4	59.9	57.1	48.7	48.4	44.3	63.9	66.3	64.7	46.0	46.0	43.8
	Southern	61.5	72.4	70.2	52.0	54.7	46.3	71.6	71.5	68.6	54.4	56.5	55.1
	Northern	49.5	50.4	48.4	41.8	40.2	38.4	60.9	61.4	60.5	37.2	36.9	35.5
	Eastern	69.2	70.1	64.6	52.7	52.5	56.6	70.1	72.4	69.8	55.0	53.5	52.4

Source: ESS 2004-2018 (all available waves).

Notes: ESS weight variable: *pspwght*. For Greece, Italy, Denmark and Lithuania, the averages by region and period, exclude countries with incomplete period information.



**Table 2. Voting and populist attitudes. Logistic regressions**

RHS Variables	Voted for an extreme right-wing party in last elections		Eligible, but did not vote in last elections	
	Without controls	With controls	Without controls	With controls
Distrust of institutions	0.713 *** (0.047)	0.784 *** (0.053)	1.437 *** (0.026)	1.301 *** (0.029)
Anti-immigration	2.439 *** (0.048)	3.044 *** (0.054)	0.233 *** (0.026)	0.134 *** (0.028)
Authoritarianism	1.254 *** (0.058)	0.470 *** (0.064)	-0.524 *** (0.031)	-0.511 *** (0.033)
Distrust of people	0.442 *** (0.053)	0.161 *** (0.060)	0.616 *** (0.031)	0.643 *** (0.032)
Gender				
- male	(ref.)	(ref.)	(ref.)	(ref.)
- female	-0.295 *** (0.018)	-0.309 *** (0.012)	0.052 *** (0.010)	-0.040 *** (0.011)
Education				
- primary school	0.010 (0.163)	0.082 *** (0.030)	0.233 *** (0.129)	0.391 *** (0.014)
- low secondary school	0.171 *** (0.018)	0.170 *** (0.020)	0.336 *** (0.009)	0.391 *** (0.010)
- secondary school	0.087 *** (0.015)	0.061 *** (0.016)	-0.012 (0.008)	-0.117 *** (0.009)
- higher education	(ref.)	(ref.)	(ref.)	(ref.)
Age cohorts				
- born before 1946	-0.208 *** (0.016)	-0.208 *** (0.016)	-0.563 *** (0.011)	-0.612 *** (0.011)
- born 1946 - 1974	0.009 (0.016)	0.009 (0.016)	-0.178 *** (0.007)	-0.177 *** (0.008)
- born after 1974	(ref.)	(ref.)	(ref.)	(ref.)
Intercept	-4.485 *** (0.051)	-3.789 *** (0.098)	-2.272 *** (0.028)	-2.250 *** (0.032)
Other controls				
Country effects	-	18	-	18
Year effects	-	8	-	8
Country * Year effects	-	118	-	164
No. of observations	118,295	118,295	246,332	246,332

Source: ESS 2004-2018 (all available waves).

ESS weight variable: *pspwght*.

Note: \*\*\*, \*\*, \* statistically significant at the 1%, 5% and 10% level, respectively.

**Table 3. Distance between upper-income and low-income classes (in percent points)**

Region	Country	$\delta$ = Ability to make ends meet			$\delta$ = Deprivation		
		2004-08	2009-14	2015-18	2004-08	2009-14	2015-18
Central-Western	<i>Mean</i>	25.7	31.1	29.7	42.8	43.9	40.6
	Austria	18.8	27.9	25.5	40.4	38.3	32.6
	Belgium	32.8	39.5	42.0	44.3	45.8	47.2
	France	30.9	36.0	36.4	49.7	48.6	46.7
	Germany	17.4	22.7	16.5	49.7	53.1	41.3
	Ireland	32.4	41.7	38.8	42.2	60.0	58.2
	Switzerland	14.6	20.7	22.8	21.7	20.1	21.8
	United Kingdom	21.5	29.0	27.8	34.2	44.1	41.3
Southern	<i>Mean</i>	51.3	55.6	53.7	57.7	63.7	62.2
	Cyprus	61.7	63.6	72.3	71.7	70.5	71.7
	Greece	62.6	57.3	54.5	60.9	72.8	74.1
	Italy	48.0	52.9	45.1	46.8	55.2	50.4
	Portugal	49.7	55.3	50.1	66.2	63.1	59.7
	Spain	36.6	49.0	46.3	45.9	57.1	55.0
	<i>Mean</i>	17.4	19.5	18.8	29.9	29.2	29.0
Northern	Denmark	14.1	18.6	18.8	29.7	30.2	29.1
	Finland	17.2	15.4	13.7	44.5	38.9	36.6
	Iceland	17.9	24.7	25.0	25.2	21.5	25.1
	Netherlands	26.3	27.6	27.7	33.5	38.1	41.6
	Norway	14.4	15.1	14.4	21.9	21.8	24.4
	Sweden	16.2	15.8	16.4	25.6	24.9	25.2
	<i>Mean</i>	45.0	49.7	42.0	63.6	62.6	53.1
Eastern	Czechia	49.8	50.1	39.2	64.1	63.9	48.9
	Estonia	27.8	39.7	25.4	65.7	56.7	41.1
	Hungary	53.2	64.8	58.3	68.4	74.2	68.2
	Lithuania	43.3	46.2	42.5	64.2	60.1	60.1
	Poland	57.5	51.2	39.9	66.5	66.6	53.1
	Slovakia	43.9	46.1	43.2	60.6	59.9	54.4
	Slovenia	44.0	49.5	45.8	55.5	57.0	49.5

Source: SILC 2004-2018 (all available waves).

Notes: Alienation across social classes is measured by using distances between either (a) average percentage of individuals reporting difficulties to make ends meet (1 = with great difficulties or 2 = with difficulties) or (b) average percentage of individuals with material deprivation (cannot afford two or more items). For a more detailed description of the corresponding SILC questions, see Table A5 in Appendix. SILC weight variable: *RB050*.

**Table 4. Polarization indices**

Region	Country	$\delta$ = Ability to make ends meet			$\delta$ = Deprivation		
		2004-08	2009-14	2015-18	2004-08	2009-14	2015-18
Central-Western	<i>Mean</i>	<i>0.035</i>	<i>0.040</i>	<i>0.041</i>	<i>0.057</i>	<i>0.057</i>	<i>0.056</i>
	Austria	0.026	0.036	0.036	0.051	0.049	0.045
	Belgium	0.048	0.057	0.064	0.063	0.068	0.075
	France	0.040	0.044	0.045	0.062	0.061	0.059
	Germany	0.024	0.034	0.026	0.066	0.076	0.064
	Ireland	0.043	0.047	0.047	0.058	0.068	0.075
	Switzerland	0.019	0.027	0.030	0.028	0.026	0.030
	United Kingdom	0.028	0.037	0.036	0.045	0.054	0.052
Southern	<i>Mean</i>	<i>0.057</i>	<i>0.062</i>	<i>0.063</i>	<i>0.068</i>	<i>0.077</i>	<i>0.076</i>
	Cyprus	0.063	0.065	0.080	0.079	0.078	0.083
	Greece	0.066	0.057	0.052	0.072	0.093	0.085
	Italy	0.059	0.065	0.060	0.062	0.069	0.067
	Portugal	0.058	0.064	0.062	0.074	0.071	0.073
	Spain	0.042	0.060	0.061	0.056	0.072	0.075
Northern	<i>Mean</i>	<i>0.022</i>	<i>0.025</i>	<i>0.026</i>	<i>0.040</i>	<i>0.040</i>	<i>0.041</i>
	Denmark	0.020	0.025	0.025	0.042	0.041	0.039
	Finland	0.025	0.022	0.018	0.063	0.057	0.052
	Iceland	0.019	0.023	0.024	0.028	0.023	0.028
	Netherlands	0.031	0.035	0.040	0.042	0.050	0.059
	Norway	0.019	0.021	0.021	0.030	0.031	0.036
	Sweden	0.021	0.023	0.026	0.035	0.039	0.041
Eastern	<i>Mean</i>	<i>0.052</i>	<i>0.056</i>	<i>0.052</i>	<i>0.066</i>	<i>0.067</i>	<i>0.064</i>
	Czechia	0.054	0.050	0.045	0.066	0.063	0.057
	Estonia	0.041	0.055	0.038	0.078	0.071	0.058
	Hungary	0.055	0.065	0.064	0.060	0.067	0.076
	Lithuania	0.057	0.056	0.058	0.073	0.068	0.077
	Poland	0.066	0.064	0.053	0.067	0.075	0.067
	Slovakia	0.046	0.050	0.046	0.051	0.061	0.053
	Slovenia	0.049	0.056	0.058	0.062	0.067	0.065

Source: SILC 2004-2018 (all available waves).

Note: The range of variation of the polarization indices reported here, assuming  $\alpha=1$ , is 0 to 0.12; with 0 corresponding to an egalitarian society and 0.12 to maximum polarization with extreme groups concentrating near the entire population. For instance, the polarization index based on ability to make ends meet varies from 0.017(Iceland, 2006) to 0.102 (Cyprus, 2017), while the polarization index based on deprivation goes from 0.014 (Iceland, 2008) to 0.091 (Greece, 2011).

**Table 5. Populist attitudes, polarization and covariates. OLS regressions**

RHS Variables	Polarization index: $\delta$ = Ability to make ends meet				Polarization index: $\delta$ = Deprivation index			
	Distrust of institutions	Anti-immigration	Authoritarianism	Distrust of people	Distrust of institutions	Anti-immigration	Authoritarianism	Distrust of people
Polarization index ( $p_{it}^s$ )	1.100** (0.486)	1.015* (0.589)	1.827*** (0.379)	1.620*** (0.315)	0.859* (0.448)	1.022* (0.541)	1.227*** (0.362)	0.492 (0.315)
$\Delta$ Immigration stock ( $\Delta m_{it}$ )	-0.035 (0.029)	-0.026 (0.036)	0.073*** (0.023)	-0.029 (0.019)	-0.042 (0.030)	-0.031 (0.036)	0.056** (0.024)	-0.045** (0.021)
<u>Covariates &amp; Controls</u>								
Urban population	-0.158*** (0.036)	0.040 (0.043)	-0.066** (0.028)	-0.047** (0.023)	-0.146*** (0.037)	0.045 (0.044)	-0.049 (0.030)	-0.034 (0.026)
GDP per capita	-0.050*** (0.008)	0.008 (0.010)	0.022*** (0.007)	-0.025*** (0.005)	-0.046*** (0.009)	0.014 (0.011)	0.029*** (0.008)	-0.026*** (0.007)
$\Delta$ GDP per capita	-0.271*** (0.068)	-0.278*** (0.082)	0.067 (0.053)	-0.075* (0.044)	-0.288*** (0.071)	-0.285*** (0.086)	0.059 (0.058)	-0.089* (0.050)
<u>European regions</u>								
Central Western	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.
Southern	-0.027 (0.043)	0.059 (0.052)	0.033 (0.033)	0.062** (0.028)	-0.016 (0.043)	0.070 (0.052)	0.058 (0.035)	0.085*** (0.030)
Eastern	-0.002 (0.063)	0.176** (0.076)	0.039 (0.049)	-0.022 (0.041)	-0.006 (0.064)	0.175** (0.077)	0.030 (0.052)	-0.036 (0.045)
Northern	-0.054 (0.038)	-0.056 (0.045)	-0.016 (0.029)	-0.064*** (0.024)	-0.066* (0.037)	-0.063 (0.045)	-0.036 (0.030)	-0.088*** (0.026)
Constant	0.893*** (0.030)	0.529*** (0.045)	0.449*** (0.027)	0.533*** (0.025)	0.746*** (0.065)	0.441*** (0.078)	0.441*** (0.052)	0.558*** (0.045)
n	157	157	157	157	152	152	152	152
R <sup>2</sup>	0.827	0.537	0.827	0.537	0.825	0.537	0.609	0.861

Source SILC and ESS aggregated panel

Notes: Standard errors in parentheses (\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ ). Also included as controls year dummies and European region\*year dummies.

**Table 6. Populist attitudes, polarization and covariates. IV-2SLS regressions**

RHS Variables	Polarization index: $\delta$ = Ability to make ends meet				Polarization index: $\delta$ = Deprivation index			
	Distrust of institutions	Anti-immigration	Authoritarianism	Distrust of people	Distrust of institutions	Anti-immigration	Authoritarianism	Distrust of people
Polarization index ( $p_{it}^s$ )	1.834*** (0.539)	1.464** (0.589)	2.616*** (0.464)	2.188*** (0.367)	1.364*** (0.501)	1.338** (0.526)	1.784*** (0.460)	0.974** (0.399)
$\Delta$ Immigration stock ( $\Delta m_{it}$ )	0.150** (0.063)	0.087 (0.069)	0.271*** (0.055)	0.114*** (0.043)	0.183** (0.074)	0.110 (0.078)	0.304*** (0.068)	0.170*** (0.059)
<u>Covariates &amp; Controls</u>								
Urban population	-0.192*** (0.038)	0.019 (0.041)	-0.102*** (0.032)	-0.074*** (0.026)	-0.183*** (0.041)	0.022 (0.043)	-0.090** (0.037)	-0.069** (0.032)
GDP per capita	-0.058*** (0.009)	0.003 (0.010)	0.013* (0.008)	-0.031*** (0.006)	-0.056*** (0.010)	0.008 (0.011)	0.019** (0.010)	-0.035*** (0.008)
$\Delta$ GDP per capita	-0.250*** (0.069)	-0.265*** (0.075)	0.090 (0.059)	-0.059 (0.047)	-0.280*** (0.076)	-0.280*** (0.080)	0.068 (0.070)	-0.081 (0.060)
<u>European regions</u>								
Central Western	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.
Southern	-0.081* (0.046)	0.026 (0.051)	-0.025 (0.040)	0.021 (0.031)	-0.073 (0.049)	0.034 (0.051)	-0.005 (0.045)	0.031 (0.039)
Eastern	0.032 (0.064)	0.197*** (0.070)	0.076 (0.055)	0.004 (0.044)	0.032 (0.069)	0.199*** (0.073)	0.073 (0.063)	0.001 (0.055)
Northern	-0.034 (0.038)	-0.044 (0.042)	0.005 (0.033)	-0.048* (0.026)	-0.052 (0.040)	-0.054 (0.042)	-0.021 (0.037)	-0.075** (0.032)
Constant	0.697*** (0.059)	0.443*** (0.064)	0.390*** (0.051)	0.462*** (0.040)	0.687*** (0.071)	0.404*** (0.075)	0.376*** (0.065)	0.502*** (0.057)
n	157	157	157	157	152	152	152	152
R <sup>2</sup>	0.770	0.498	0.414	0.829	0.737	0.475	0.245	0.733
C-D Wald F-statistic	16.53	16.53	16.53	16.53	12.50	12.50	12.50	12.50
Sargan test	1.052	0.007	0.850	7.473***	0.420	0.010	2.235	1.095
(p)	(0.305)	(0.933)	(0.357)	(0.006)	(0.517)	(0.919)	(0.135)	(0.295)

Source SILC and ESS aggregated panel.

Notes: Standard errors in parentheses (\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ ). Also included as controls year dummies and European region\*year dummies.

IV-2SLS instrumented variable:  $\Delta$  Immigration stock.

**Table 7. Distrust of institutions, polarization and covariates. IV-2SLS regressions.  
By age-cohorts**

RHS Variables	Polarization index: $\delta$ = Ability to make ends meet			Polarization index: $\delta$ = Deprivation index		
	Born < 1946	Born 1946-1974	Born > 1974	Born < 1946	Born 1946-1974	Born > 1974
Polarization index ( $p_{it}^s$ )	1.034** (0.487)	1.551*** (0.541)	1.189*** (0.412)	0.653* (0.348)	1.629*** (0.506)	0.679* (0.400)
$\Delta$ Immigration stock ( $\Delta m_{it}$ )	0.165** (0.082)	0.151** (0.069)	0.161** (0.064)	0.181** (0.084)	0.170** (0.075)	0.186*** (0.072)
Urban population	-0.112*** (0.042)	-0.188*** (0.040)	-0.228*** (0.039)	-0.113** (0.045)	-0.179*** (0.041)	-0.219*** (0.043)
GDP per capita	-0.060*** (0.010)	-0.060*** (0.009)	-0.058*** (0.009)	-0.061*** (0.011)	-0.053*** (0.010)	-0.058*** (0.011)
$\Delta$ GDP per capita	-0.307*** (0.080)	-0.248*** (0.073)	-0.208*** (0.071)	-0.307*** (0.050)	-0.282*** (0.076)	-0.232*** (0.077)
Constant	0.766*** (0.059)	0.710*** (0.065)	0.699*** (0.056)	0.768*** (0.063)	0.665*** (0.074)	0.712*** (0.069)
<u>European regions</u>						
Central Western	ref.	ref.	ref.	ref.	ref.	ref.
Southern	-0.075 (0.055)	-0.066 (0.047)	-0.054 (0.046)	-0.075 (0.055)	-0.058 (0.048)	-0.050 (0.049)
Eastern	0.069 (0.076)	0.041 (0.067)	0.001 (0.066)	0.069 (0.076)	0.044 (0.069)	-0.008 (0.070)
Northern	-0.052 (0.044)	-0.030 (0.041)	-0.067* (0.039)	-0.052 (0.044)	-0.028 (0.041)	-0.088** (0.040)
n	157	157	157	152	152	152
R <sup>2</sup>	0.645	0.754	0.782	0.626	0.743	0.757
C-D Wald F-statistic	12.32	14.85	16.13	11.43	12.38	13.81
Sargan test	3.310* (0.069)	0.416 (0.519)	0.163 (0.686)	3.645* (0.056)	0.072 (0.789)	0.015 (0.902)

Source: SILC and ESS aggregated panel by country.

Notes: Standard errors in parentheses (\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ ). Also included as controls year dummies and European region\*year dummies. IV-2SLS instrumented variable:  $\Delta$  Immigration stock.

**Table 8. IV-2SLS regressions.  
By age-cohorts**

RHS Variables	Polarization index: $\delta$ = Ability to make ends meet			Polarization index: $\delta$ = Deprivation index		
	Born < 1946	Born 1946-1974	Born > 1974	Born < 1946	Born 1946-1974	Born > 1974
<u>Anti-immigration</u>						
Polarization index ( $p_{it}^s$ )	0.062 (0.078)	0.085 (0.076)	0.127* (0.069)	0.066 (0.079)	0.100 (0.083)	0.125* (0.072)
$\Delta$ Immigration stock ( $\Delta m_{it}$ )	0.326 (0.461)	1.434** (0.593)	1.209*** (0.439)	0.315 (0.324)	0.919 (0.559)	1.303*** (0.402)
<u>Authoritarianism</u>						
Polarization index ( $p_{it}^s$ )	0.327*** (0.070)	0.303*** (0.062)	0.237*** (0.053)	0.320*** (0.073)	0.319*** (0.073)	0.245*** (0.059)
$\Delta$ Immigration stock ( $\Delta m_{it}$ )	1.555*** (0.417)	2.845*** (0.488)	1.953*** (0.340)	0.733** (0.299)	1.945*** (0.493)	1.585*** (0.329)
<u>Distrust of people</u>						
Polarization index ( $p_{it}^s$ )	0.303*** (0.083)	0.146*** (0.052)	0.052 (0.037)	0.317*** (0.092)	0.190*** (0.065)	0.089** (0.043)
$\Delta$ Immigration stock ( $\Delta m_{it}$ )	2.496*** (0.494)	2.097*** (0.409)	0.887*** (0.234)	0.917** (0.381)	1.017** (0.441)	0.281 (0.239)

Source: SILC and ESS aggregated panel by country and age-cohort.

Notes: Standard errors in parentheses (\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ ). Also included as controls urban population, GDP per capita,  $\Delta$ GDP per capita, year dummies and European region\*year dummies. IV-2SLS instrumented variable:  $\Delta$  Immigration stock.

## Appendix A

**Table A1. Matched ESS-SILC panel of European countries (data aggregated at country level)**

Region	Country	2004	2006	2008	2010	2012	2014	2016	2018	Total
Central-Western	Austria	X	X	-	-	-	X	X	X	5
	Belgium	X	X	X	X	X	X	X	X	8
	France	-	X	X	X	X	X	X	X	7
	Germany	-	X	X	X	X	X	X	X	7
	Ireland	X	X	X	X	X	X	X	-	7
	Switzerland	-	-	X	X	X	X	X	X	6
	United Kingdom	-	X	X	X	X	X	X	-	6
Southern	Cyprus	-	X	X	X	X	-	-	X	5
	Greece	X	-	X	X	-	-	-	-	3
	Italy	-	-	-	-	X	-	X	X	3
	Portugal	X	X	X	X	X	X	X	X	8
	Spain	X	X	X	X	X	X	X	X	8
Northern	Denmark	X	X	X	X	X	X	-	-	6
	Finland	X	X	X	X	X	X	X	X	8
	Iceland	X	-	-	-	X	-	X	-	3
	Netherlands	-	X	X	X	X	X	X	X	7
	Norway	X	X	X	X	X	X	X	X	8
	Sweden	X	X	X	X	X	X	X	X	8
Eastern	Czechia	-	-	X	X	X	X	X	X	6
	Estonia	X	X	X	X	X	X	X	X	8
	Hungary	-	X	X	X	X	X	X	X	7
	Lithuania	-	-	-	X	X	X	X	X	5
	Poland	-	X	X	X	X	X	X	X	7
	Slovakia	-	X	X	X	X	-	-	-	4
	Slovenia	-	X	X	X	X	X	X	X	7
Total		12	19	21	22	23	20	21	19	157



**Table A2. Extreme right voting and abstentions. Percentages in the last election**

Region	Country	Vote for an extreme right-wing party in last election (%)			Did not vote in last election (%)		
		2004-08	2010-14	2016-18	2004-08	2010-14	2016-18
Central-Western	Austria	6.8	13.7	17.5	14.9	22.5	15.0
	Belgium	9.9	3.8	2.7	8.7	11.3	9.7
	France	6.1	11.4	13.7	23.9	28.3	33.7
	Germany	1.3	2.6	6.6	20.5	18.4	15.4
	Ireland	0.0	0.0	0.0	24.4	26.6	24.4
	Switzerland	26.5	23.5	21.4	33.5	34.5	31.0
	United Kingdom	0.0	7.1	5.4	30.0	31.5	22.1
Southern	Cyprus	0.0	0.0	0.6	7.5	20.4	28.5
	Greece	46.3	29.9	-	11.1	21.5	-
	Italy	-	1.7	15.1	-	20.3	22.1
	Portugal	0.2	0.2	0.1	26.3	29.0	24.6
	Spain	0.0	0.0	10.1	18.6	19.6	17.6
Northern	Denmark	9.3	11.8	-	8.4	8.3	-
	Finland	2.1	11.9	13.8	18.6	18.5	16.3
	Iceland	0.0	0.0	0.0	8.6	12.7	9.1
	Netherlands	4.3	9.5	8.2	15.7	17.7	17.0
	Norway	17.6	14.2	10.7	16.0	14.3	11.3
	Sweden	0.0	4.5	4.5	9.9	8.3	6.1
Eastern	Czechia	0.0	20.8	33.8	43.9	37.1	37.7
	Estonia	0.0	0.0	0.0	40.5	31.0	27.9
	Hungary	0.8	12.4	12.6	23.0	27.7	26.0
	Lithuania	-	0.0	0.0	-	43.5	39.1
	Poland	29.5	34.3	52.1	32.2	29.3	26.8
	Slovakia	8.3	11.8	16.3	28.3	27.3	31.3
	Slovenia	39.4	30.6	29.3	27.9	30.3	30.4

Source: ESS Rounds: 2, 3 & 4 (2004, 2006 & 2008); 5, 6 & 7 (2010, 2012 & 2014); 8 & 9 (2016 & 2018).

Notes: Countries without extreme right-wing vote coded in ESS over the period 2004-2018: Estonia, Iceland, Ireland and Lithuania. Extreme right-wing parties identified based on ESS documentation on Political Parties (ESS, 2020, Appendix A3) and on Chapel Hill Expert Survey (2014). Individuals not eligible to vote or with missing answer are excluded.

**Table A3. Social values indicators built using selected ESS questions**

Indicator	Question asked	Scale
Distrust of institutions	Please tell me how much you personally trust each of the institutions: 1. Country's parliament ( <i>trstprl</i> ) 2. Political parties ( <i>trstprt</i> ) 3. Politicians ( <i>trstplt</i> )	0 – 10 0 – 10 0 – 10
Anti-immigration	1. Would you say it is generally bad or good for your country's economy that people come to live here from other countries? ( <i>imbgeco</i> ) 2. Would you say that your country's cultural life is generally undermined or enriched by people coming to live here from other countries? ( <i>imueclt</i> ) 3. Is your country made a worse or a better place to live by people coming to live here from other countries? ( <i>imwbcnt</i> )	0 – 10 0 – 10 0 – 10
Authoritarianism	Now I will briefly describe some people. Please listen to each description and tell me how much each person is or is not like you: 1. Important to behave properly ( <i>ipbhprp</i> ) 2. Important to live in secure and safe surroundings ( <i>impsafe</i> ) 3. Important that government is strong and ensures safety ( <i>ipstrgv</i> ) 4. Important to follow traditions and customs ( <i>imptrad</i> ) 5. Important to do what is told and follow rules ( <i>ipfrule</i> )	1 – 6 1 – 6 1 – 6 1 – 6 1 – 6
Distrust of people	1. Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people? ( <i>ppltrst</i> ) 2. Do you think that most people would try to take advantage of you if they got the chance, or would they try to be fair? ( <i>pplfair</i> ) 3. Would you say that most of the time people try to be helpful or that they are mostly looking out for themselves? ( <i>pplhlp</i> )	0 – 10 0 – 10 0 – 10

Source: ESS

Notes: Original ESS variables' acronyms between brackets. Each indicator is computed by summing up individuals' scores given to the corresponding questions. In each case, the sum is normalized between 0 to 1. To compute the 'distrust of institutions' and 'anti-immigration' indicators, the original order of answers (0-10) reordered to (10-0), so that higher scores show higher mistrust in political institutions and higher anti-immigration attitudes, respectively. The 'Distrust of people' indicator is also known as 'generalized trust' in the literature (See Olivera, 2014).

**Table A4. Voting and populist attitudes. Logistic regressions**  
**Panel of regions (NUTS1), 2010-2018**

RHS Variables	Voted for an extreme right-wing party in last elections	Eligible, but did not vote in last elections
Distrust of institutions	0.933 *** (0.064)	1.230 *** (0.035)
Anti-immigration	3.250 *** (0.066)	0.161 *** (0.034)
Authoritarianism	0.372 *** (0.077)	-0.544 *** (0.041)
Distrust of people	0.096 *** (0.073)	1.639 *** (0.040)
Gender		
- male	(ref.)	(ref.)
- female	-0.338 *** (0.024)	-0.045 *** (0.013)
Education		
- primary school	0.052 (0.038)	0.412 *** (0.018)
- low secondary school	0.233 *** (0.025)	0.381 *** (0.0103)
- secondary school	0.045 ** (0.020)	-0.114 *** (0.011)
- higher education	(ref.)	(ref.)
Age cohorts		
- born before 1945	-0.230 *** (0.023)	-0.558 *** (0.014)
- born 1945 - 1975	0.134 (0.0162)	-0.193 *** (0.010)
- born after 1975	(ref.)	(ref.)
Intercept	-4.849 *** (1.115)	-2.099 *** (0.040)
Other controls		
Region effects (NUTS1)	92	98
Year effects	4	4
No. of observations	79,234	158,727

Source: ESS 2010-2018 (NUT1 available waves).

ESS weight variable: *pspwght*.

Note: \*\*\*, \*\*, \* statistically significant at the 1%, 5% and 10% level, respectively.

**Table A5. Material deprivation and subjective index**

Indicator	Question asked	Answer
Ability to make ends meet index	<p>A household may have different sources of income and more than one household member may contribute to it.</p> <p>Thinking of your household's total monthly or weekly income, is your household able to make ends meet, that is pay your usual expenses..... (<i>HS120</i>)</p> <ul style="list-style-type: none"> <li>- with great difficulty</li> <li>- with difficulty</li> <li>- with some difficulty</li> <li>- fairly easily</li> <li>- easily</li> <li>- very easily</li> </ul>	<p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p>
Material deprivation index	<p>Looking at this card, can I just check whether your household could afford the following?</p> <ul style="list-style-type: none"> <li>- To pay for a week's annual holiday away from home? (<i>HS040</i>)</li> <li>- To eat meat, chicken or fish (or vegetarian equivalent) every second day? (<i>HS050</i>)</li> <li>- To pay an unexpected, but necessary, expense of 500€? (<i>HS060</i>)</li> </ul> <p>Do you have:</p> <ul style="list-style-type: none"> <li>- a telephone? (<i>HS070</i>)</li> <li>- a colour TV? (<i>HS080</i>)</li> <li>- a computer? (<i>HS090</i>)</li> <li>- a wash machine? (<i>HS100</i>)</li> <li>- a car? (<i>HS110</i>)</li> </ul> <p>Can your household afford to keep its home adequately warm? (<i>HH050</i>)</p> <p>Have you got either a bath or a shower for sole use of the household (<i>HH080</i>)</p> <p>Do you have an inside flushing toilet for sole use of the household? (<i>HH090</i>)</p>	<p>0 – 1</p> <p>0 – 1</p> <p>0 – 1</p> <p>0 – 1</p> <p>0 – 1</p> <p>0 – 1</p> <p>0 – 1</p> <p>0 – 1</p> <p>0 – 1</p> <p>0 – 1</p>

Source: SILC.

Notes: Original SILC variables' identification between brackets. The deprivation index is computed in two steps. First, we add the 11 binary answers to obtain a 0-11 scale. In a second step, we reorder this scale, so that the material deprivation index corresponds to the total number of negative answers to the list of questions.

**Table A6. Populist attitudes, polarization and covariates. IV-2SLS regression. Panel of regions (NUTS1), 2010-2018.**

RHS Variables	Polarization index: $\delta$ = Ability to make ends meet				Polarization index: $\delta$ = Deprivation index			
	Distrust of institutions	Anti-immigration	Authoritarianism	Distrust of people	Distrust of institutions	Anti-immigration	Authoritarianism	Distrust of people
Polarization index ( $p_{it}^s$ )	0.397* (0.221)	0.504* (0.303)	1.198*** (0.191)	1.495*** (0.172)	0.629*** (0.191)	0.746*** (0.262)	1.023*** (0.168)	1.114*** (0.157)
$\Delta$ Immigration stock ( $\Delta m_{it}$ )	0.021 (0.072)	0.118 (0.099)	0.385*** (0.063)	0.085 (0.056)	0.033 (0.073)	0.129 (0.100)	0.381*** (0.064)	0.096 (0.060)
Urban population	-0.176*** (0.032)	-0.085* (0.043)	-0.161*** (0.027)	-0.133*** (0.025)	-0.179*** (0.032)	-0.103** (0.043)	-0.154*** (0.028)	-0.124*** (0.026)
GDP per capita	-0.069*** (0.007)	-0.011 (0.010)	0.016*** (0.006)	-0.034*** (0.006)	-0.067*** (0.007)	-0.007 (0.010)	0.022*** (0.006)	-0.028*** (0.006)
$\Delta$ GDP per capita	-0.132* (0.069)	-0.607*** (0.095)	0.240*** (0.060)	-0.029 (0.054)	-0.130* (0.069)	-0.629*** (0.095)	0.250*** (0.061)	-0.014 (0.057)
<u>European regions</u>								
Central Western	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.
Southern	0.011 (0.024)	-0.018 (0.033)	0.008 (0.021)	-0.010 (0.019)	0.010 (0.023)	-0.024 (0.032)	0.022 (0.020)	0.005 (0.019)
Eastern	-0.115*** (0.025)	0.014 (0.034)	0.064*** (0.021)	-0.062*** (0.019)	-0.108*** (0.024)	0.021 (0.033)	0.090*** (0.021)	-0.032* (0.020)
Northern	-0.112*** (0.022)	-0.113*** (0.030)	-0.072*** (0.019)	-0.076*** (0.017)	-0.108*** (0.022)	-0.115*** (0.030)	-0.081*** (0.019)	-0.091*** (0.018)
Constant	0.881*** (0.032)	0.524*** (0.044)	0.440*** (0.028)	0.527*** (0.025)	0.849*** (0.035)	0.481*** (0.048)	0.405*** (0.030)	0.500*** (0.028)
n	279	279	279	279	276	276	276	276
R <sup>2</sup>	0.755	0.427	0.619	0.745	0.759	0.438	0.618	0.718
C-D Wald F-statistic	61.52	61.52	61.52	61.52	58.31	58.31	58.31	58.31
Sargan test	12.919*** (0.000)	2.636 (0.104)	26.735*** (0.000)	0.000 (0.987)	10.217*** (0.001)	1.607 (0.205)	28.126*** (0.000)	0.038 (0.845)

Source SILC and ESS aggregated panel by NUTS 1.

Notes: Standard errors in parentheses (\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ ). Also included as controls year dummies and European region\*year dummies.

IV-2SLS instrumented variable:  $\Delta$  Immigration stock. Some caveats on the characteristics of the NUTS 1 regions panel and on these estimations are necessary.

First of all, as indicated in Section 2.1, this panel is smaller than the country panel given that NUTS information is only available from 2010 on in ESS. Second, in ESS NUTS 2 is available, but only NUTS 1 in SILC, therefore aggregated variables, polarization indexes and populism attitudes, are computed at NUTS 1 level. Third, given the information on immigrants stock (UN, 2020) is at country level, we kept immigration inflow, as well as the other covariates, defined at country level. Finally, information on NUTS is missing for two countries in SILC: Germany and The Netherlands. For these countries, and for estimation purposes, we combine yearly ESS regional observations with SILC country observations.

**Table A7. Social polarization by country and age-cohort**

RHS Variables	Social polarization	
	$\delta$ = Ability to make ends meet	$\delta$ = Deprivation index
Age cohorts		
- born before 1946	-0.010 *** (0.001)	-0.014 *** (0.016)
- born 1946 - 1974	0.001 (0.001)	-0.006 *** (0.016)
- born after 1974	(ref.)	(ref.)
Intercept	0.025 *** (0.009)	0.047 *** (0.013)
Other controls		
Country effects	25	25
Year effects	8	8
Country * Year effects	157	152
No. of observations	471	456

Note: \*\*\*, \*\*, \* statistically significant at the 1%, 5% and 10% level, respectively.

## Appendix B

### The Instrumentation of Immigration Inflows

We instrument European countries' immigration inflows following a shift-share approach based on immigrants' shares from different origins, as in Edo et al. (2019). We first define five major origins: (i) Sub-Saharan Africa; (ii) North-Africa, Near and Middle East Asia; (iii) East Asia and Pacific, excluding Australia and New Zealand; and (iv) Latin-American and the Caribbean countries; and (v) Europe, Canada, US, Australia and New Zealand.

For each country  $i$  and year  $t$ , we estimate the five-year variations (*between  $t-5$  and  $t$* ) in the net stock of immigrants as follows:

$$\Delta \widehat{m}_{i,t} = \frac{\widehat{m}_{i,t} - \widehat{m}_{i,t-5}}{\widehat{m}_{i,t-5}},$$

where  $\widehat{m}_{i,t} = \widehat{imm}_{i,t} / \widehat{pop}_{i,t}$ , where  $\widehat{imm}_{i,t}$  and  $\widehat{pop}_{i,t}$  represent, respectively, the estimated stocks of immigrants and total population in country  $i$  at time  $t$ .

In order to estimate these stocks, we first proceed to estimating of the net stock of immigrants. We assume that for each country, it can be derived keeping unchanged, since 1990, the share of immigrants by world regions' origin, as follows:

$$\widehat{imm}_{i,t} = \sum_{g=1}^{g=5} \left[ \left( \frac{imm_{i,1990}^g}{imm_{1990}^g} \right) \cdot imm_t^g \right],$$

where  $imm_{i,1990}^g$  is the net stock of immigrants in 1990 from origin  $g$  in country  $i$ ,  $imm_{1990}^g$  the aggregated net stock of immigrants from origin  $g$  for the whole sample of European countries in 1990 and  $imm_t^g$  the same aggregated stock in year  $t$ .

Once the net stock of immigrants for each country and year is obtained, we estimate total population assuming it evolved following the estimated evolution of immigration, as follows<sup>24</sup>:

$$\widehat{pop}_{i,t} = pop_{i,t} + (\widehat{imm}_{i,t} - imm_{i,t}).$$

In our 2SLS estimations, we use as instruments the estimated five-year inflow of immigration,  $\Delta \widehat{m}_{i,t}$  and the estimated net stock of immigration five years before,  $\widehat{m}_{i,t-5}$ .

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<sup>24</sup> Edo et al. (2019) instrumented population for French departments adding instrumented immigration with instrumented French-born and naturalized citizen populations across departments. For this purpose, they use in all cases educational levels' shares. We were unable to follow the same approach for European countries given that for the net stock of immigrants, UN (2020) data, information on immigrants' education is not available.