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## **Are Natives Collar-blind? Migration Flows and Attitudes Toward Immigration**

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**Abstract:** This article investigates how European public opinion responded to short-term variations in foreign-born immigration over the past decade (2010-2019). Combining regional data from the European Social Survey and the European Union Labour Force Survey, we test how the public opinion on migration changed with the net rate of international migrants in 115 EU regions from 13 Western European countries. We find that a short-term increase in non-European born, foreign immigration within a given region is associated with more restrictive views regarding migration policy among the native population, regardless of the education level of immigrants. Immigrants' origin thus emerges as a key predictor of natives' attitudes and largely outweighs educational attainment. However, we do not reject the possibility that immigrants' education level matters: When non-European immigration increases, attitudes towards immigration are relatively more negatively affected among natives with financial difficulties when immigrants are not tertiary educated, but not when those immigrants have tertiary education.

**Keywords:** attitudes to immigration, migration flows, public opinion, regions

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## 1. Introduction

Attitudes toward immigration are becoming part of a new political cleavage in many countries (Kriesi *et al.* 2012). While a growing share of foreign-born residents is viewed positively by those stressing the benefits of immigration, others regard these demographic changes with suspicion. Against this backdrop, opposition to immigration has gained a lot of attention from social scientists. While many studies examine individual drivers of attitudes towards immigration (see Dražanová *et al.* 2023 for a meta-analysis), research has also shown that contextual drivers, in particular the size of immigration, can have a significant effect on public opinion (Alesina et al., 2018). At the same time, several recent studies have documented the role played by immigrants' characteristics as potential drivers of attitudes towards migration in Europe (Markaki and Longhi, 2013; Bridges and Mateut, 2014; Weber, 2015; Hale Williams and Chasapopoulos, 2019). This work contributes to this literature by exploring the link between the size and composition of international migration flows and individuals' attitudes towards immigration in European regions, therefore advancing our understanding of the macro-level drivers of attitudes to migration in European countries. More specifically, it provides insight into how public opinion responds to the arrival of foreign-born immigrants at the regional level. This is especially relevant in the light of the recent arrival of Syrian and Ukrainian refugees in Western Europe, to which the public response has been very different as Europeans in most countries appeared much more welcoming of the latter (see Dražanová and Geddes, 2022).

Previous empirical research has examined the impact of regional factors on attitudes towards immigrants in Europe, and how the size of immigration and the characteristics of immigrants predict attitudes to immigration. In this regard, our paper is similar to Markaki and Longhi (2013) and Hale Williams and Chasapopoulos (2019). However, we differentiate ourselves from these studies in several ways. While these works focus on the effect of between-region variations in the share of foreign-born immigrants, we primarily consider how short-term, within-region variations predict attitudes to immigration. Traditionally, the share of the foreign-born population residing in a territory is usually the product of long-term changes and migration history, whose effects can be hard to disentangle from other macro-level, contextual drivers of attitudes to immigration such as economic conditions, cultural and religious beliefs, as well as national or regional policies. In this regard, we believe the predictive power of immigration on public opinion is better identified by focusing on migration pressure, or how natives' attitudes towards immigration change with the recent arrival of foreign-born immigrants.

Our work is more closely related to the strand of literature that investigates the relationship between natives' exposure to short-term migration flows and subsequent changes in their attitudes toward immigrants. Among them, Karreth et al. (2015) find that increasing diversity is associated with negative attitudes toward immigrants among natives on the political right, while Newman and Velez (2014) document how rapidly growing immigration can lead to increased hostility when immigrants are perceived as a threat by the native population. In the US context, Newman (2013) finds support for the acculturating contexts hypothesis, which argues that residing in local contexts undergoing substantial and unprecedented ethnic change constitutes a concrete and

previously overlooked contextual dimension of the cultural threat of immigration. Along the same lines, Heizmann and Huth (2021) found that the dynamic short-term inflows of migration within countries are of greater relevance for perceived immigrant threat than the long-term situation. Looking at Greek islands that were exposed to the arrival of refugees, Dinas et al. (2019) show that Greek exposure to refugee flows alone can fuel support for extreme-right, anti-immigration parties. Schmidt-Catran and Czymara (2023)'s cross-county study concluded that public opinion becomes more positive during times of high immigration at the national level. Finally, our work is related to Schmidt (2021), who studies the dynamics of public opinion towards immigration in Western Europe and shows that ethnic prejudice plays a larger role for natives in opposing immigration than economic or cultural threat perceptions.

Our paper extends this line of research by looking at the predictive power of regional migration flows on attitudes towards immigration at the European level, which has not yet been studied. One exception is Murard (2017), who examines the impact of immigration on preferences for redistribution and attitudes toward migration policy, finding a positive correlation between the arrival of migrants and anti-immigration attitudes between 2002 and 2012. Unlike him, we focus our attention on the past decade (2010-2019), a period when European countries experienced major economic turbulences and rising immigration. We also analyze the composition of these migration flows, distinguishing between migrants' origin and skill level. The differential effects of immigration on public opinion based on migrants' origin and education are important to study, not least because they can provide insights into how certain groups may experience unique challenges or opportunities in the host society and help policymakers ensure that all immigrants have access to equal opportunities.

We ask the following research question: How do short-term, regional variations in foreign-born immigration predict changes in natives' attitudes towards migration policy?

Our analysis combines multiple sources of individual-level. We use the European Social Survey (ESS) to measure natives' policy preferences regarding the levels of immigration. The data covers 60 021 individual respondents surveyed between 2010 and 2019 from 13 European countries across 115 regions. Our measure of regional immigration is obtained using year-to-year changes in the share of foreign-born individuals at the NUTS2 level, obtained from the European Labour Force Survey.

Our goal is to explain the differences in individual attitudes to immigration through variations in the share of immigrants within European regions and across time. The complexity of our design requires an accurate specification of influential factors at each level of analysis. In the present research, the data has a four-level hierarchical structure with individuals (micro-level) nested in region-years, regions and countries (macro-level). When, as here, nested data across multiple levels of analysis are present, it is appropriate, both theoretically and statistically, to employ multilevel models. We apply four-level random effects multilevel models that allow the estimation of effects based on intra-regional differences over time and stable differences between regions (Fairbrother, 2014; Bell et al., 2019). Immigration in Europe occurs not only across countries but also across regions within countries. To maximize the variation in immigrant shares across regions at the highest possible level of granularity, we focus on NUTS2 regions whenever possible.

We find that in the short run, immigration is associated with a negative reaction from public opinion. More specifically, inflows of non-European immigrants are negatively correlated with natives' attitudes. More importantly, we find that immigrants' origin is a good predictor of the reaction of public opinion to immigration while the education level of those immigrants is not, and that the extent to which immigrants' origin matters does not depend on their education level. These findings, however, do not necessarily imply that natives do not care about immigrants' education level or that they are *collar-blind*, i.e. that they are unable to perceive this education level. Further analysis suggests that the educational attainment of immigrants matters: When non-European immigration increases, attitudes towards immigration are relatively more negatively affected among natives with financial difficulties than other natives when immigrants are not tertiary educated, but not when those immigrants have tertiary education.

Our paper makes a direct contribution to the studies looking at the relationship between immigrants' presence and public opinion on immigration in Europe. Hatton (2016) finds that pro-immigration opinion is negatively related to the share of immigrants living in a country. At the regional level, several empirical papers examine the impact of immigrants' presence on attitudes towards immigrants (Rustenbach, 2010; Green et al., 2010; Markaki and Longhi, 2013; Bridges and Mateut, 2014; Weber, 2015; Hale Williams and Chasapopoulos, 2019). For instance, Weber (2015)'s results show a negative correlation between the national proportion of immigrants and perceived threat. Across European NUTS1 regions, both Markaki and Longhi (2013) and Hale Williams and Chasapopoulos (2019) find that regions with a higher percentage of immigrants born outside the EU have a higher probability that natives express negative attitudes to immigration. Among the few papers investigating local migration flows,

Kawalerowicz (2021) finds that anti-immigrant attitudes in the UK are more likely to be expressed by natives who live in constituencies where there has been a large change in diversity between 2001 and 2011. On the same topic, Karreth et al. (2015) show that increasing and visible diversity in Austria, Germany, and Switzerland is associated with negative attitudes toward immigrants, but only among natives on the political right. Like us, Murard (2017) studies the effect of regional flows of international migrants on preferences regarding migration policy. He finds that where immigrants tend to compete with natives for jobs due to similar skills or occupations, natives prefer policies that support welfare and put restrictions on migration. Finally, this work is related to a recent working paper by Di Iasio and Wahba (2021), which proposes a symmetric approach to ours and studies the causal impact of attitudes to immigration on migration flows. Their findings indicate a negative causal relationship between anti-immigration attitudes and migration inflows to the EU. If natives' hostility acts as a deterrent for migrants, this reinforces concerns about the self-selection of immigrants to areas where natives have more positive views on immigration.

Our paper also contributes to the growing literature studying the effect of immigration on political preferences. In this field, the link between immigration and redistribution is a major topic (see Elsner and Concannon, 2020 for a recent review). Previous sociological works (Senik et al., 2009) have documented the negative association between exposure to immigrants and support for welfare spending. Exploiting within-country variations in the share of immigrants at the regional level, Alesina et al. (2021) find that native respondents display lower support for redistribution when the share of immigrants in their residence region is higher (see also Eger and Breznau, 2017). The link between immigration and support for redistribution is further documented by



Moriconi et al. (2019), who find that larger inflows of highly educated immigrants are associated with European citizens shifting their votes toward parties that favor an expansion of the welfare state. On the other hand, inflows of less-educated immigrants induce European parties to endorse platforms less favorable to social welfare. Finally, Gonnot (2021) explores how the presence of immigrants and their vote on redistribution policies affect citizens' attitudes towards immigration. Recently, several studies have also investigated the connection between support for populist and far-right political parties and immigration in various countries. Dustmann et al. (2018) analyze refugee resettlement and voting behavior in Denmark. Otto and Steinhardt (2014) study the effect of immigration on the vote for the German People's Union in Hamburg and Halla et al. (2017) look at votes for the Freedom Party of Austria. At the European level, Moriconi et al. (2018)'s study of NUTS2 regions concludes that an inflow of less-skilled immigrants increases the propensity of natives to vote for populist parties, while an inflow of highly skilled immigrants reduces that propensity. In the same vein, recent works have shown that immigration was one of the key factors in the decision of the UK to leave the European Union (Portes, 2021). Barone et al. (2014) conclude against the contact hypothesis at the city level, finding that immigration generated a sizable causal increase in votes for the centre-right coalitions with a political platform less favorable to immigrants in Italy.

Finally, by focusing on the effect of short-term immigration on public opinion, our work speaks to the recent strand of literature addressing temporal dynamics of attitudes to immigration using digital footprint (Rowe et al., 2021; Bosco et al., 2022). These works highlight how immigration sentiment is highly responsive to contemporary events and

can help understand the mechanisms through which migration-related events can shape public opinion.

## 2. Theoretical Background

This paper builds on the large body of literature on the determinants of attitudes to immigration. Natives' fears over immigration are usually regarded as a mix of economic and cultural concerns.

The theory of economic competition posits that natives and immigrants are economic rivals. In the labour market, this implies that immigration is perceived by natives as a threat to wages and job security (Citrin et al., 1997; Facchini et and Mayda, 2012; Scheve and Slaughter, 2001). Negative perceptions about immigrants also appear to be driven by the fear that foreigners represent a net fiscal burden through their impact on tax and expenditure levels (Dustmann and Preston, 2006, 2007; Boeri, 2010), leading to restrictive preferences about redistribution and effectively lower public spending in some instances (Razin et al., 2002; Speciale, 2012). Several works have shown that the perceived economic threat from immigrants plays a substantial part in driving natives' attitudes (Slaughter, 2001; Hanson et al., 2007; Facchini and Mayda, 2009; Hainmueller and Hiscox, 2010; Pardos-Prado and Xena, 2019). Besides labor market competition, a study by Naumann et al. (2018) documents that highly skilled European natives prefer highly skilled over low-skilled immigrants as a result of tax concerns, especially when fiscal exposure to migration is high. In America, natives also view educated immigrants in high-status jobs more favorably than those who lack plans to work (Hainmueller and

Hopkins, 2014). Card et al. (2012) find that concerns about changes in local amenities such as the composition of the neighborhood and workplace are more important in explaining variation in natives' attitudes toward immigration than concerns about economic factors such as wages and taxes. Hoxhaj and Zuccotti (2021) also find that the positive association between a higher concentration of immigrants and attitudes towards them decreases as the socioeconomic conditions of neighborhood areas worsen.

Besides self-interest theories that link anti-immigrant sentiment to worries about labor market competition or financial constraints, sociotropic economic explanations also hold up as a plausible channel driving public opinion. According to this theory, native-born

Individuals react to immigrants based on how they perceive their economic impact on the country as a whole. If this is the case, native-born may prefer highly qualified immigrants based on their expected influence on the national economy or likelihood of paying taxes (Hainmueller and Hiscox 2007).

The cultural threat, or conflict, theory, postulates that natives perceive immigrants as a challenge to their ethnicity and values. It holds that observable differences lead to discrimination and often hostility between groups with a preference for their own ethnicity (Gorodzeisky and Semyonov, 2016; Hainmueller and Hiscox, 2007; Malhotra, 2013). As a result, where immigrants are socio-ethnically different, their arrival may upset the demographic and social structure of society and elicit more negative responses (see for instance Hainmueller and Hangartner, 2013) or increased support for xenophobic, far-right parties (see for instance Barone et al., 2014). In both the US and Europe, there is significant variation in support for immigration based on immigrants' countries of origin (Dustmann and Preston 2007; Hainmueller and Hangartner 2011).

Symmetrically, it is important to highlight how the context of immigration matters for public opinion. According to the contact theory, a larger immigrant group can increase the incidence of contact between natives and newcomers at the local level, therefore reducing prejudice and the perception of threat in the long run. In this regard, the work of Coenders and Scheepers (2008) and Hopkins (2010) suggest that negative reactions to immigrants are most likely in response to competition from recent foreign arrivals, rather than existing ethnic diversity. Their findings are in line with those of Newman (2013), who found that growth in local Hispanic populations triggers threat and opposition to immigration among whites only in US counties with few initial Hispanics. Therefore, natives who have been recently exposed to immigrants, and experienced a rapid increase in the number of immigrants living around them are likely to be immune to prejudice-reducing contact with immigrants, while feelings of economic or/and ethnic competition are then more likely to emerge.

Considering the previous discussion, we expect attitudes to immigration to vary based on immigrants' ethnicity and education. In particular, if the public generally prefers highly educated immigrants as they are seen as more desirable and less likely to be a burden on the host society (Mayda, 2006; Naumann, Stoetzer and Pietrantuono, 2018) economic concerns among European natives are more likely to be activated by inflows of immigrants with lower skills and education. Second, to the extent that cultural distance between natives and immigrants influences public opinion (Gorodzeisky and Semyonov, 2016), the arrival of non-European immigrants should be associated with more negative attitudes to immigration.

The relative importance of economic and cultural channels also matters. For instance, Dustmann and Preston (2007) show that welfare concerns play a more important role in the determination of attitudes to further immigration than labor market concerns in the UK. Mayda (2006) finds that both economic and non-economic factors significantly influence anti-immigration attitudes. A recent decomposition analysis by Mueller et al. (2020) establishes that economic mechanisms are significant determinants of attitudes, but that other non-economic factors play a more decisive role. Against this backdrop, comparing the predictive power of immigrants' origin against their educational attainment will contribute to testing whether non-economic factors are relatively more or less important than economic ones in explaining variations in public opinion.

### 3. Data and methods

In this paper, we combine data from multiple sources to create a dataset that includes individual-level information on native individuals' attitudes toward immigration and several regional variables.

At the individual level, the present analysis relies on biannual data from the European Social Survey (ESS). It contains 60,021 respondents from 13 European countries across 115 regions. Because our primary objective is to identify how public opinion reacts to short-term, within-region changes in attitudes to immigration, we only include in our analysis countries surveyed by the ESS at least twice over the time period under

scrutiny (2010-2019).<sup>1</sup> Due to historical, economic, cultural, and social differences between Western and Central and Eastern European regions, as well as their respective migration history and current migration level, we focus our analysis only at Western European countries. We classify as Western countries Austria, Belgium, Denmark, Germany, Finland, France, Ireland, Italy, Norway, Portugal, Spain, Sweden, and the United Kingdom. Using the ESS allows us to disentangle attitudes to immigration across several European regions and within regions across time because people of the same region are observed at different time periods. Table A.1 in the Appendix shows the number of respondents for each region and each year included in the sample.

ESS respondents were selected by means of strict probability samples of the resident populations aged 15 years and older at the country level. Respondents also provided information on their socio-demographic characteristics that we use as control measures in our model. We included a set of demographic variables such as age, gender, educational attainment, type of community the respondent resides in (urban versus rural), subjective income difficulties, and minority and citizenship status as controls. These are the factors mostly found to affect attitudes toward immigration (Dražanová et al., 2023). We restrict our sample to natives (defined as respondents born in the country where they were interviewed). We integrate the micro-attitudinal data from the ESS with contextual data at the regional and region-year level to capture the size and composition of the foreign-born population as well as differences in their origin and skill level. These regional-level variables are gathered from various sources, particularly EULFS and the OECD's database, which are described in more detail below.

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<sup>1</sup> We discuss the implication of this modelling strategy in section 3.3 (Empirical strategy)

### 3.1 Attitudes to immigration

The ESS survey instrument has been widely used by scholars to measure attitudes towards immigration (Hainmueller and Hopkins, 2014). We analyze *attitudes toward policy preferences regarding the level of immigration*. This dependent variable mostly deals with policy debates regarding immigration inflows and captures individuals' preferences for the future. Our policy dependent variable is a composite index that measures the overall willingness to allow only a few or many different types of immigrants into the country. Respondents were asked three questions: (1) To what extent do you think [country] should allow people of the same race/ethnic group as the majority to come and live here? (2) To what extent do you think [country] should allow people of different races/ethnic groups as the majority to come and live here? And (3) To what extent do you think [country] should allow people from the poorer countries outside Europe to come and live here?<sup>2</sup> The answers are coded on a four-point scale ranging from (1) allowing many to come and live here to (4) allowing none. We created an average index and rescaled it so that it ranges from 0 to 1.<sup>3</sup> The original coding has been reversed so that higher numbers mean more positive attitudes. We included all

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<sup>2</sup> These variables are respectively *imsmetn*, *imdfetn*, and *impcntr*.

<sup>3</sup> The Cronbach's Alpha for the three items is 0.89, thus confirming that the three questions measure the same underlying concept.

respondents who have answered at least two of the three items comprising our dependent variable.<sup>4</sup>

### 3.2 Regional migration data

We use repeated, cross-sectional data from the European Labour Force Survey (EULFS) to construct variables that capture the average and the short-term variations in the regional share of migrants at the NUTS2 level between 2010 and 2020.<sup>5</sup> These level and change variables are assigned to each ESS respondent based on the year they were

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<sup>4</sup> Attitudes of immigration measured in the form of indices comprising several related questions have been widely used by scholars studying attitudes to immigration (see for example Davidov and Meuleman, 2012; Solheim, 2021; Just and Anderson, 2015 for the use of the policy index and Gorodzeisky and Semyonov, 2018; McLaren and Paterson, 2019 for the contribution index.

<sup>5</sup> We use the intermediate geographic level, NUTS2, commonly referred to as “regions” in our analysis. For most European countries, EULFS data are available at NUTS-2 level, which corresponds to “basic regions for the application of regional policies”. For countries like Austria, Germany, and the UK, where the NUTS-2 level data are unavailable, we implement our analysis at the NUTS-1 level (which is used to define major socio-economic regions). In all cases, regional information in the EU-LFS is representative of the population living in the region, whether they are located in cities or rural areas.



interviewed and his or her region of residence.<sup>6</sup> Besides demographic information, the EULFS also reports the birthplace of each individual, distinguishing fifteen different regions of origin<sup>7</sup>. Following previous works using regional migration flows as an explanatory variable (see for instance Moriconi et al., 2019; and Murard, 2017), we compute a measure of the share of immigrants as a share of the total population at the regional level:

$$S_{r,t}^s = \frac{M_{r,t}^s}{Pop_{r,t}}$$

where  $M$  is the total stock of migrants in region  $r$  born in a foreign country, with skills (tertiary educated or not) and/or origin (Europe or non-European)  $s$  in year  $t$ .<sup>8</sup> Thus,  $S$

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<sup>6</sup> As a general rule, respondents surveyed between July of year  $t$  and June of year  $t+1$  are assigned the share of foreign-born in year  $S_t$  and respective average  $avg_t$ .

<sup>7</sup> These regions are the country-groups/regions of residence separately identified: EU15 country different from the country of residence, EU country that joined the EU in 2004, EU country that joined EU in 2007/2013, EFTA, Other European country, North Africa, Other Africa, Near and Middle East, East Asia, South and Southeast Asia, North America, Central America and Caribbean, South America and Australia and Oceania. Germany does not provide information on the birthplace of its foreign-born population. Accordingly, we impute the birthplace of the foreign-born population using information on the nationality of immigrants.

<sup>8</sup> European immigrants include immigrants born in European countries as well as North America and Australia, which are culturally, ethnically and socio-economically close to European countries.

represent that group of immigrants as a share of the total population. The average immigration variable is then constructed as:

$$avg_r^s = \frac{\sum_{t \in T} S_{r,t}^s}{|T|}$$

and captures the average share of immigrants with skills and/or origins in region  $r$  over the time period  $T$  under investigation. For each region  $r$ ,  $T$  corresponds to the period of time between the first and last year an individual was surveyed by the ESS in region  $r$ .<sup>9</sup>

There are two ways to operationalize these regional demographics of interest, and we employ a longitudinal as well as a cross-sectional perspective for each (see methods section). Longitudinally, our main variable of interest captures how Europeans react to shares of (non-)European (non-)tertiary educated foreign-born individuals that are below or above the regional average during the period of investigation.

Table A2 in the Appendix presents basic statistics for the variables we include in the model. Variables are averaged over the considered period at the individual level, region-year level and regional level.

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<sup>9</sup> In our dataset, the earliest interviews were carried out in 2010 and the latest in 2020.

### 3.3 Empirical strategy

As an empirical strategy, we employ random effects multilevel modeling tailored to the structure of repeated cross-sectional data that allows us to decompose the variance of the outcome (immigration attitudes) into a within- and between-region part (Fairbrother 2014; Bell et al. 2019). These models are four-level hierarchical linear models, with individuals nested in region-years nested in regions nested in countries respectively (Schmidt-Catran and Fairbrother, 2016).

The four-level random intercept multilevel models are estimated using restricted maximum likelihood (*reml*).

Our final four-level model<sup>10</sup> is defined as:

$$Y_{ijkc} = \beta_{0ijkc} + \beta_1 X_{ijkc} + \beta_2 S_{jkc}^S + \beta_3 avg_{kc}^S + \beta_4 W_{jkc} + \beta_5 Z_c + f_c + \mu_{kc} + v_{jkc} + e_{ijkc}$$

where, within each region-year pair  $j$ , region  $k$  and country  $c$ , respondent  $i$ 's attitudes to immigration ( $Y$ ) are a function of their individual characteristics (vector  $X$ ), the demeaned version of the variable  $S$  capturing the annual change in foreign-born immigrants, whether at the aggregate level or distinguishing between skill level and origin, the average regional share of foreign-born immigrants  $avg$  – also skill level and origin - over the whole time period considered, region-year characteristics (vector  $W$ )

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<sup>10</sup> A classic four-level model would also feature level-4 fixed effects and country level characteristics. However, we do not control for any country-level characteristics in our model.

and year dummies (vector  $Z$ ).  $\beta_{0ijkc}$  is the mean of attitudes to immigration of individuals in region-year  $j$ , region  $k$ , and country  $c$ ,  $\beta_1$  is the level-1 fixed effects,  $\beta_2$  and  $\beta_4$  are the level-2 fixed effects,  $\beta_3$  is the level-3 fixed effects. In the random part of the model  $f_c$  is the residual random effect of country  $c$ ,  $\mu_{kc}$  is the residual random effect of region  $k$ ,  $v_{jkc}$  is the residual random effect of region-year  $j$  and  $e_{ijkc}$  is the random individual variation. The random effects  $\mu_{kc}$ ,  $v_{jkc}$  and  $f_c$  are assumed normally distributed with mean 0 and variance  $\tau_\mu$ ,  $\tau_v$  and  $\tau_f$  respectively.

A series of individual sociodemographic controls are included. We control for a person's age (in years), gender (female), and education (four categories with less than lower secondary as reference). Dummy variables are included to control for individuals who live in urban areas (urban area=1) and report having income difficulties (income difficulty=1). We also include a minority dummy for respondents whose at least one parent was born outside of the country and/or is part of an ethnic minority (minority=1). Finally, we also control for respondents' citizenship status (non-citizens=1), since our sample is restricted to respondents who were born in the country but might not be citizens.

The demeaned variable for immigration  $S$  yields within regional effects or, in other words, the longitudinal within-region change component (WE) (previously referred to as inflows or short-term variations) for each observation at region-year, while the mean variable  $avg$  captures cross-sectional between regional effects (BE). The advantage of this four-level multilevel model is that it distinguishes between-regional effects and within-regional change while controlling for compositional differences at the individual level (see Fairbrother, 2014). Within-effects automatically control for all regional characteristics that are time-invariant and are not afflicted by omitted variable bias due

to any time-constant aspects on the regional level such as stable differences in political, historical or legal factors. Between effects are, in turn, based only on time-stable differences between regions.

Apart from controlling for within and between regional effects, we also control for clustering at the country level since possible clustering at the country level might still occur (Schmidt-Catran and Fairbrother, 2016). We employ year dummies to model general time trends.

We also collect data about GDP and unemployment rate from the OECD database and Eurostat to use as controls for time-varying differences across regions that could influence individuals' attitudes to immigration. A contextual variable regarding regional population density was also added to the model. Since these are not of our primary interest, only between-region (and not also within-region) macro indicators are included. A similar approach has been used by McLaren (2012) and Jeannet (2020) for country-level controls.

We do not control specifically for any country-level characteristics. Nevertheless, we assume that individuals from the same country are significantly more similar in their attitudes to immigration than individuals from different countries. This is confirmed by the likelihood ratio (LR) tests comparing a three-level model (individuals nested within region-year and region) to a four-level model (individuals nested within region-year, region and country) ( $\chi^2_1 = 104.17, p < 0.001$ ). Thus, respondents from the same country are significantly more alike in their attitudes to immigration than respondents from different countries.

Clustering at the country level also distinguishes our analysis from the one conducted by Hale Williams and Chasapopoulos (2019). While Hale Williams and Chasapopoulos (2019) employ multilevel modelling, they do not cluster regions within countries. As shown in Table A3 in the Appendix in the null model, when including countries as a level-4 cluster, they represent the most important clustering factors on immigration attitudes and the regional variation becomes negligible.

It is important to incorporate four-level structures in the models when they arise in the data and lead the higher-level clusters to differ substantially from one another on the response variable. Fitting models with a lower number of levels to data with, in fact, more hierarchical clusters could lead to misattributing response variation to only the included levels. This in turn may lead to drawing misleading conclusions about the relative importance of different sources of influence on the response. For example, it likely leads Hale Williams and Chasapopoulos (2019) to overstate the importance of regions as a source of variation in attitudes to immigration. That is, much of the variation that they attribute to regions may be driven by country-to-country differences in attitudes to immigration (i.e. country policies, practices, context and compositional effects). They thus run the risk of making incorrect inferences and drawing misleading conclusions about the relationships between regional effects on attitudes to immigration. Table A3 shows two null (or so-called “empty”) models in order to partition the variance of our dependent variable of interest across the four levels. This model provides information on the variance components of immigration attitudes at each level of analysis (Level 1 - individual, Level 2 – region-year, Level 3 – region and Level 4 - country). It includes only an intercept, region-year random effects, region random effects, country random effects and an individual-level residual error term. The overall

mean attitude toward immigration policy across countries, all regions, all region-years and all respondents is estimated to be 0.562 on a scale of 0-1.<sup>11</sup>

The null model shows that 88,3 % of the variation in attitudes toward immigration policy lies between individuals within region-years, 5 % lies between region-years within regions and 6,7 % lies between countries. There is no variation between regions within countries for attitudes toward immigration policy. However, as we are interested mostly in the effect of region-year variations, this shall not pose a problem for our models. At first, 5 and 6,7 percent might seem small, but the longitudinal variance excludes all variation that is due to time-invariant idiosyncrasies between regions as well as between countries. The resulting within (WE) effects in further models thus exclude the impact of all-time stable confounding aspects, which is an advantage of our modeling strategy compared to usual cross-sectional estimates.

Most of the variation in attitudes to immigration is found at the individual level, which is consistent with previous literature regarding differences in immigration attitudes. However, there is also a modest variation at the country and region-year level, thus justifying a multilevel approach.

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<sup>11</sup>  $\beta_0$  is strictly a precision weighted mean of the supercluster means which typically gives more weight to small superclusters than would a simple weighted average of these means (see, for example, Raudenbush and Bryk, 2002, page 40).

## 4. Results

Our baseline analysis captures how public opinion varies with the average and short-term variations in the regional share of foreign-born individuals over the 2010-2019 period. All models presented hereafter include individual controls mentioned above as well as regional, time-varying variables that are likely to influence public opinion towards immigration over time such as GDP, unemployment, and the density of population.<sup>12</sup>

Figure 1 presents the results of the multi-level model estimated with restricted likelihood and four levels of nesting (country, region, region-year and individuals). By including both the average level of foreign-born presence and the short-term variations due to migration pressure measured as deviations from this mean (inflows or outflows, see section 3.2), we capture in both absolute and relative terms how public attitudes vary with the size of immigration. More specifically, the *avg* variable measures variations in opinion on immigration that are imputable to differences between regions, while the *change* variable captures the reaction of individuals with respect to within-region changes in the share of immigrants over time.

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<sup>12</sup> Coefficients for individual and regional control variables for all subsequent models are reported in Table A.4-A10 in the Appendix.



On aggregate, we find no significant association between the share of foreign-born immigrants in a given region and attitudes towards migration policy.<sup>13</sup> Our analysis suggests a negative, significant association between a short-term increase in the share of immigrants and native's attitudes.<sup>14</sup> The estimated coefficient indicates that a one percentage point increase in the share of foreign-born immigrants at the regional level is associated with a 0.01 decrease in support for immigration among natives' on a normalized scale of 0-1.<sup>15</sup>

These results are in line with the works of Coenders and Scheepers (2008) and Hopkins (2010), who found that negative reactions to immigrants are more likely to occur in response to competition from recent foreign arrivals, rather than existing diversity. They are, however, at odds with the findings of Schmidt-Catran and Czymara (2023), who documented a positive effect of short-term variations in the foreign-born population on attitudes toward immigration in Europe. In this regard, it is worth stressing that their analysis is conducted at the country level – while we operate at the regional level - and across a larger time span (2002 – 2018) than ours.

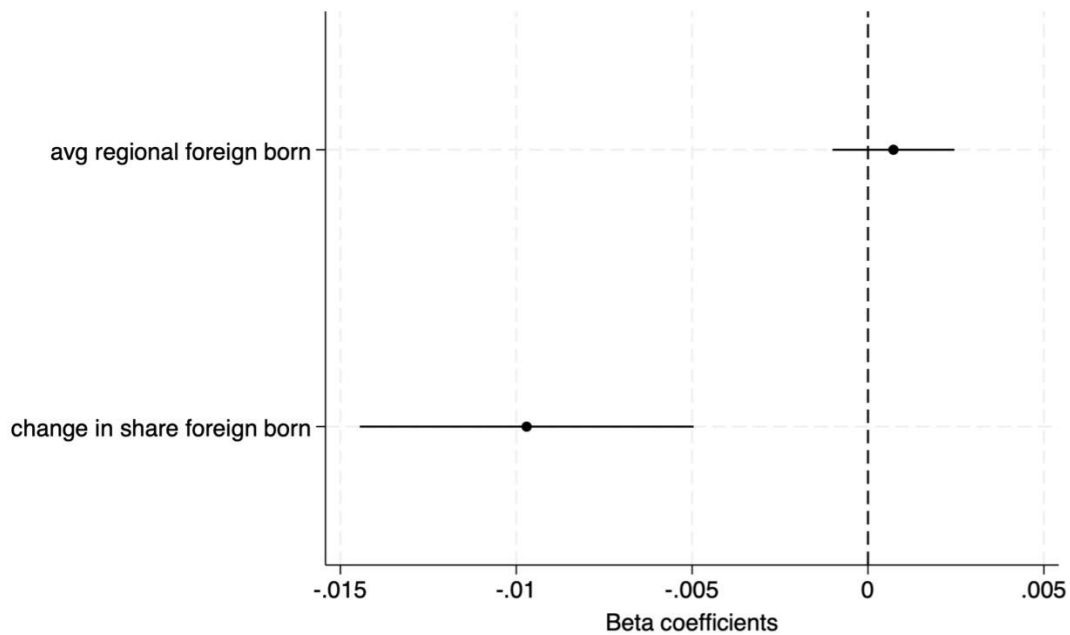
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<sup>13</sup> A positive coefficient indicates more positive attitudes toward migration policy, i.e. greater support for further immigration.

<sup>14</sup> Changes in immigration levels are measured on a year-to-year basis. However, because the ESS survey is usually conducted every two years, and sometimes across two consecutive years. As a result, the coefficient capturing the effect of changes in immigration corresponds to short-term variations in immigration over a period between one and two years.

<sup>15</sup> Although one could be tempted to interpret this result as a 1-percent for 1-percent change, attitudes towards migration policy are measured through an ordinal four-point scale and not a continuous scale - See Section 3.1.

Figure 1 about here



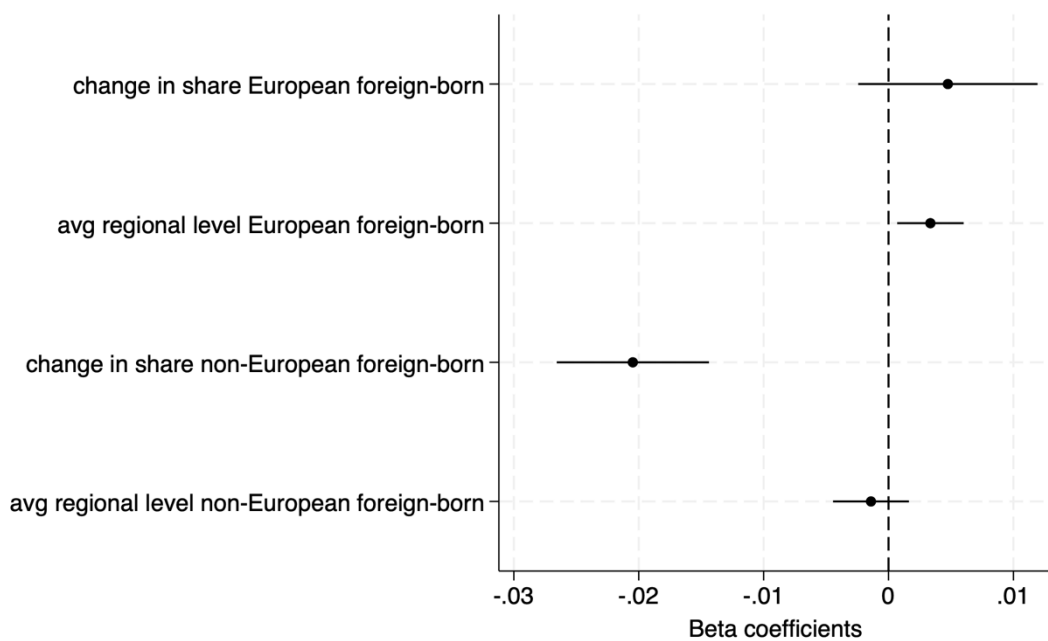
In what follows, we explore in greater detail the association between the evolution of public opinion and the composition of immigrant flows. Based on the theoretical discussion regarding the cultural and economic factors behind attitudes to immigration in Section 2, we expect the negative association between short-term changes in immigration and public opinion to be mostly driven by less educated and non-European immigrants.

We first focus on immigrants' origin. Figure 2 distinguishes between the flows of European and non-European immigrants. The existing literature points to a negative bias towards immigrants that are ethnically and culturally more distant (Murard, 2017; Moriconi, 2019), a characteristic that in the present analysis largely applies to non-European immigrants. Indeed, the coefficients for non-European immigrants are negative and statistically significant, suggesting that a one percentage point increase in

the share of non-European immigrants at the regional level is associated with a 0.02 decrease in Western European natives' opinion about immigration policy. Moreover, we find no significant negative correlation between the arrival of European immigrants and natives' attitudes. The coefficients, although not significant, point towards a positive relationship. The aggregate coefficient in Figure 2 therefore appears to be entirely driven by non-European immigration.

Although the difference between the two *avg* coefficients itself is not significant, natives' opinion about immigration policy is more positive in regions that host a higher share of EU immigrants, suggesting that the contact hypothesis has more traction where migrants are ethnically closer to natives.

Figure 2 about here

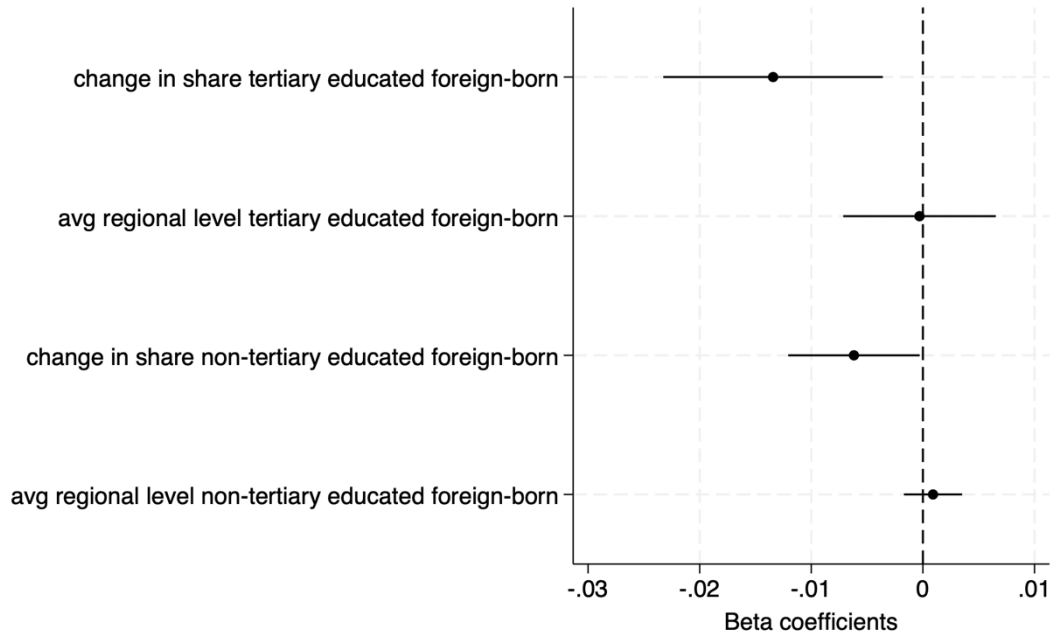


We next focus our attention on immigrants' educational attainment. Previous works have shown that highly educated immigrants are usually associated with a more positive

response from public opinion (see for instance Murard (2017)). Yet, as can be seen in Figure 3, we find no evidence that this is the case in Western Europe. The coefficient associated with changes in the share of tertiary-educated and non-tertiary-educated migrants are both negative and statistically significant, but the effect is larger for tertiary-educated foreign-born immigrants.

At face value, this finding seems at odds with the predictions of the theoretical literature. However, natives can fail to correctly perceive the education level of recently arrived immigrants. First, economic consequences and labor market effects may take time to materialize. Second, as made clear in Newman (2013), for a competitive minority group to activate hostility among the majority, the competitive relations have to be perceived and translated into the belief that the minority group poses a threat. In our application, this is most likely to arise based on the ethnicity and country of origin of immigrants rather than their education level. Unlike ethnicity, tertiary education is not readily observable from distant contact with immigrants. Moreover, media framing has been shown to play a large part in distorting the reality of immigration, reinforcing discriminatory assumptions and stereotypes towards immigrants (see for instance Benesch et al., 2019; Schneider-Strawczynski and Valette, 2021; Schmidt, 2021; Agovino et al., 2022). While largely unable to assess the education level of immigrants, it is therefore possible that natives are biased against them and regard immigration as fundamentally uneducated.

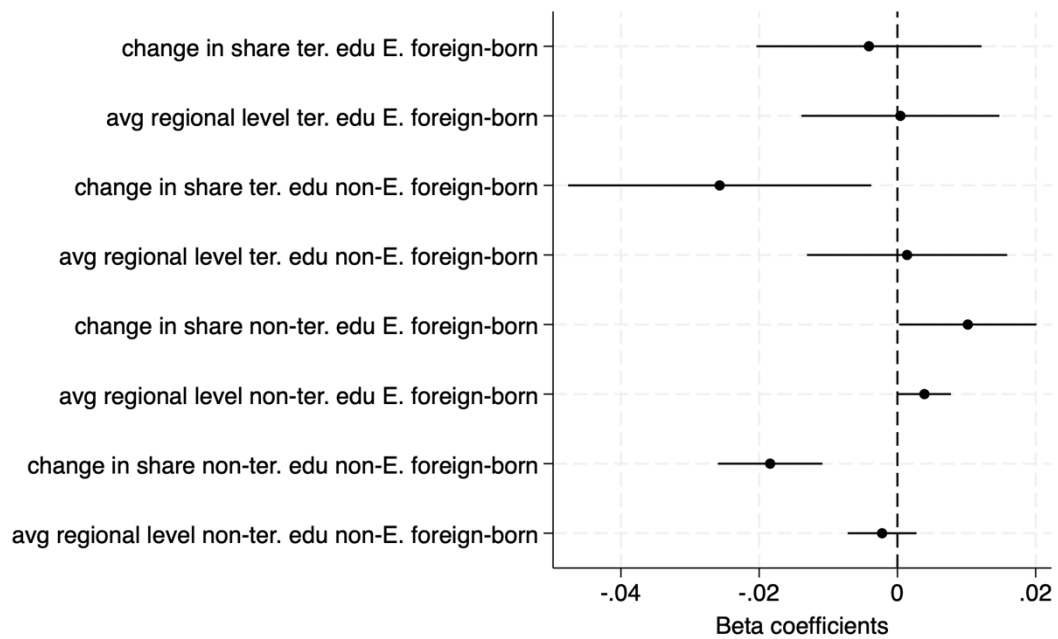
Figure 3 about here



In Figure 4, we investigate whether the distinction between immigrants' origin and education level can provide greater insights. Our results confirm that the origin of immigrants is paramount to explaining the association between short-term variations in the share of the foreign-born population and natives' attitudes to immigration. Inflows of non-European immigrants, regardless of their level of education, are significantly associated with more negative views towards immigration, while this association is either non-significant or very small in magnitude (and positive) for European immigrants.

A short-term increase in the share of non-European immigrants, with or without tertiary education, is therefore associated with significantly more restrictive views about migration policy. Both coefficients are similar in magnitude (around - 0.02) and not statistically different from each other, indicating that natives' support for immigration is negatively correlated with inflows of non-European immigrants regardless of those immigrants' education level. The origin of immigrants therefore serves as a better predictor of public attitudes to immigration than their education level.

Figure 4 about here



In our reading, there are two possible explanations behind this finding. The first one is that only the birthplace of immigrants matters when it comes to attitudes to immigration. In other words, natives care only about immigrants' origin and not about their education level when forming opinions about migration policy. An alternative explanation is that natives are *collar-blind*: They care about immigrants' education but cannot, based on limited contact with those immigrants, determine their true education level. As a result, they wrongly infer from observable characteristics correlated with origin such as ethnicity or religion that these immigrants are less educated.<sup>16</sup> Note that

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<sup>16</sup> For instance, Meltzer et al. (2018) found that non-European immigrants are significantly more likely to be perceived as an economic threat than their European counterparts.

this does not imply that natives do not care about immigrants' origin per se, but rather that they care about both their education level and origin.

In order to test the *collar-blind* hypothesis, we investigate how the association between immigration and public attitudes towards migration policy varies with natives' economic position. To do so, we interact a dummy variable capturing natives' income difficulties with the change in the level of immigration. This dummy variable is constructed based on ESS respondents' feelings about their household income and used to proxy natives' exposure to the potential economic threat of immigration.<sup>17,18</sup>

The results are presented in Figures 5 and 6. We report no significant differences when we interact the dummy variable for income difficulties with the change in the level of immigration based on immigrants' educational attainment (Figure 5). On the contrary, we find that the coefficient for non-European immigration is 40% larger for respondents with income difficulties.

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<sup>17</sup> Respondents' answers were coded on a four-point scale: (1) Living comfortably on present income, (2) Coping on present income, (3) Difficult on present income, and (4) Very difficult on present income. We created a dummy variable for respondent's income difficulties coded 0 if respondents answer 1 or 2 to the previous question, and 1 if the respondent answered 3 or 4.

<sup>18</sup> As discussed in a large theoretical and empirical literature (Citrin et al., 1997; Facchini et al. and Mayda, 2012; Scheve and Slaughter, 2001), natives can regard less educated and less skilled immigrants as a threat to their job security (the labour market effect) as well as public finances (the fiscal effect).

Figure 5 about here

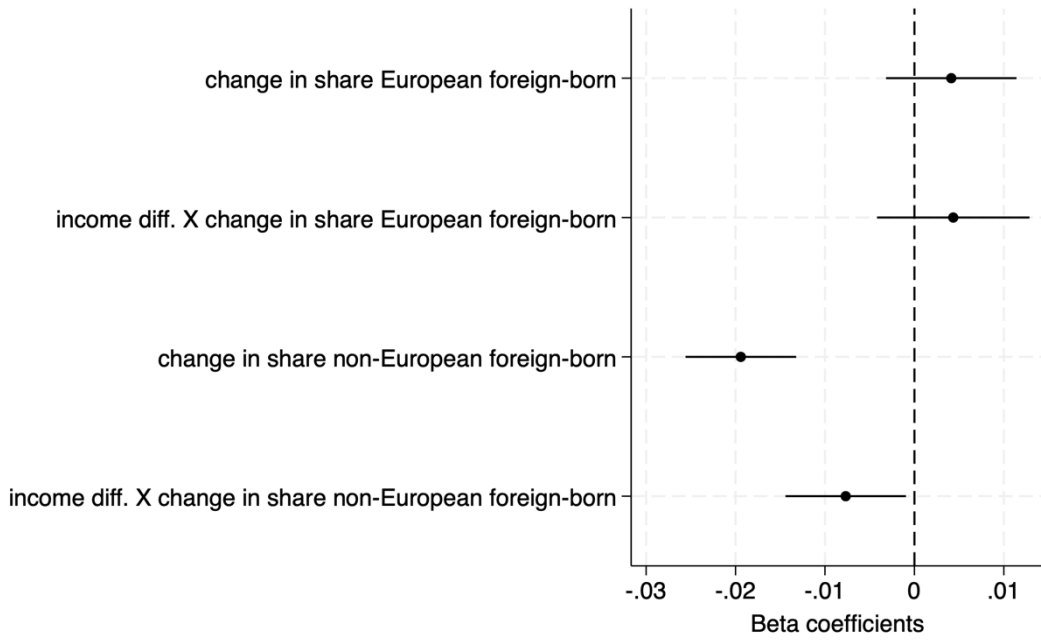
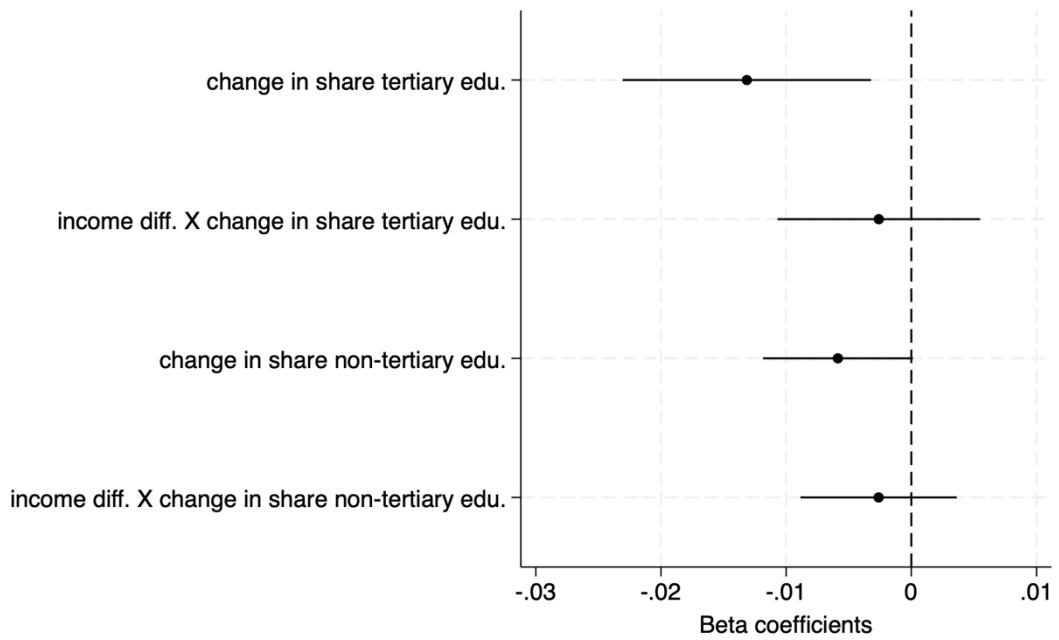


Figure 6 about here





Although informative, these results do not reject either of the explanations offered above. If only immigrants' origin matters, natives that are more vulnerable from an economic standpoint could simply exhibit greater opposition to immigration on cultural grounds. Considering that our main specification contains various controls for the educational attainment level of respondents,<sup>19</sup> this alternative remains however unlikely. On the other hand, a stronger, more negative association between attitudes to immigration policy and immigration from non-European countries among natives with financial difficulties is also in line with the *collar-blind* hypothesis.

Against this backdrop, our last specification interacts the dummy variable with all four types of migration flows based on origin and education. According to the *collar-blind* hypothesis, economically vulnerable natives should react more strongly than other natives to non-European immigrants regardless of their education level.

Instead, Figure 8 shows that the interaction coefficient is significant only when non-European immigrants do not have tertiary education. Our results indicate that natives with financial difficulties become relatively more opposed to immigration than other natives only when immigrants are not tertiary educated and from outside Europe.

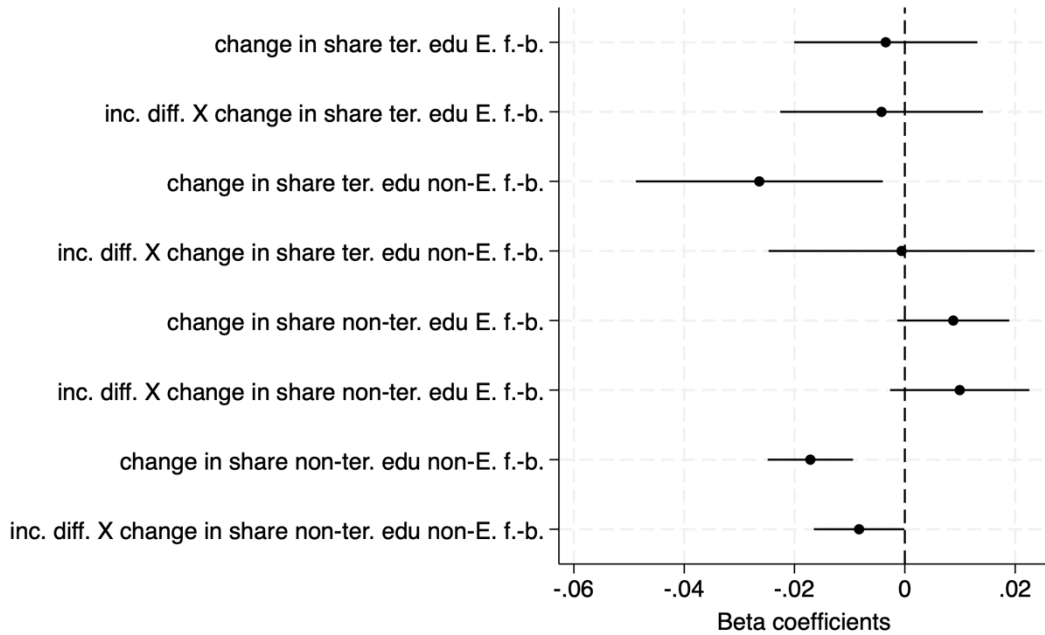
Our analysis therefore seems to reject the *collar-blind* hypothesis: While the origin of immigrants trumps their education level as a predictor of opinions, it also appears to activate the economic channel, i.e. a negative reaction from natives based on the perceived economic threat from immigration. However, this evidence is not compelling

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<sup>19</sup> Educational attainment is the single most powerful individual factor explaining attitudes towards immigration, not only regarding policy issues but also general impressions (Dražanová et al., 2023).

and warrants further research on the collar-blind hypothesis in response to public opinion on immigration.

Figure 7 about here



## 5. Discussion and Conclusion

In recent years, European countries have experienced a surge in migration flows and public resentment against immigrants among their domestic population.

This paper proposes a novel empirical design to study how public attitudes to immigration reacted to increased migration pressure across European regions over the past decade. We explore the nature of this relationship beyond cross-region differences and focus our attention on the role of within-region, short-term immigration to predict

public opinion. Controlling for important individual cofounders and contextual drivers of attitudes to immigration, we examine how variations in migration pressure correlate with public opinion towards natives' support for immigration and their views of immigrants' contribution to their destination country. Our analysis is informed by theories of economic competition between natives and immigrants, cultural backlash, and the contact hypothesis, which are all part of the canonical framework developed by social scientists to study public opinion toward immigration.

At the aggregate level, our findings indicate that in the short run, immigration is associated with a negative reaction from public opinion. Further analysis of the composition of migration flows is consistent with theories of ethnic competition. In particular, inflows of non-European immigrants in Western Europe are negatively correlated with natives' attitudes. More importantly, we find that immigrants' origin is a far better predictor of the reaction of public opinion to immigration than the education level of those immigrants. Moreover, our results indicate that the extent to which immigrants' origin matters does not depend on their education level.

These findings, however, are not sufficient to reject the possibility that natives do not care about immigrants' education level or that they are *collar-blind*, i.e. that they are unable to perceive this education level. Rather, we find that the educational attainment of immigrants matters when exploring the differentiated response of natives based on their economic situation. When non-European immigration increases, attitudes towards immigration are relatively more negatively affected among natives with financial difficulties than other natives when immigrants are not tertiary educated, but not when those immigrants have tertiary education.

This evidence, however, is not compelling and we leave it to further research to study in greater detail the interplay of cultural and economic factors in driving the response of public opinion to immigration.

We must also stress that our empirical design does not allow for causal predictions about the role played by immigrant inflows on public opinion and predict with certainty the risks of tensions that may arise from increased migration pressure. Indeed, exploring the causal relationship between migration flows and attitudes towards immigration would require accounting for endogeneity biases such as the self-selection of migrants into areas with better economic conditions or where natives happen to be less hostile to immigrants. For instance, tertiary-educated migrants may choose their destination more freely, with fewer constraints than their less-educated counterparts. Likewise, European immigrants are likely to face fewer constraints in the choice of destination when migrating because of their greater freedom of movement. To the extent that further immigration tends to polarize attitudes to immigration, whereby regions with more positive (resp. negative) opinions tend to become more positive (resp. negative) with the arrival of new immigrants, the correlation found in our study could thus be artificially inflated.

Finally, it is possible that natives with the most negative attitudes simply move out of regions receiving more immigrants, and that our results are driven by a crowding-out effect (Dustmann and Preston, 2001).

That said, we believe the present analysis informs the current political debate about the consequences of short-term migration flows on public attitudes to immigration in several ways. First, we establish that natives living in Western Europe are likely to

respond more negatively to future inflows of non-European immigrants than their European counterparts. Second, an important implication of our findings is the need to pay attention to both the origin and education of immigrants simultaneously when investigating the potential consequences of immigrants' presence on public opinion towards immigration, at least in Western Europe. At a time when economic systems are increasingly reliant on migrant labor and millions of Ukrainian refugees have been dispatched across Europe, our findings have important implications for the assimilation of new immigrants in host societies, their integration into the labor market, as well as political consequences in terms of support for anti-immigration and xenophobic political movements. Third, our study of regional migration flows furthers our understanding of how European public opinion may respond to different types of local migration and can help policymakers and practitioners anticipate potential risks of tensions as a result of future migration.

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## Appendix

**Table A1. Number of observations per region and year**

Region	year of survey								Total
	2010	2012	2013	2014	2015	2017	2018	2019	
<b>Austria</b>									
AT1	0	361	502	615	0	0	916	0	2394
AT2	0	127	308	332	0	0	518	0	1285
AT3	0	107	617	637	0	0	791	0	2152
<b>Belgium</b>									
BE10	74	0	0	89	0	0	66	0	229
BE21	281	0	0	224	0	0	255	0	760
BE22	147	0	0	133	0	0	145	0	425
BE23	207	0	0	195	0	0	195	0	597
BE24	159	0	0	140	0	0	140	0	439
BE25	194	0	0	217	0	0	210	0	621
BE31	0	0	0	57	0	0	67	0	124
BE32	154	0	0	199	0	0	178	0	531
BE33	137	0	0	168	0	0	131	0	436



BE34	0	0	0	50	0	0	0	0	50
BE35	72	0	0	70	0	0	61	0	203
<b>Germany</b>									
DE1	255	0	0	295	0	0	228	0	778
DE2	371	0	0	355	0	0	356	0	1082
DE3	89	0	0	140	0	0	73	0	302
DE4	224	0	0	179	0	0	62	0	465
DE7	162	0	0	162	0	0	124	0	448
DE8	116	0	0	120	0	0	51	0	287
DE9	168	0	0	222	0	0	244	0	634
DEA	487	0	0	427	0	0	414	0	1328
DEB	117	0	0	112	0	0	97	0	326
DED	248	0	0	261	0	0	133	0	642
DEE	177	0	0	146	0	0	66	0	389
DEF	77	0	0	78	0	0	79	0	234
DEG	192	0	0	156	0	0	58	0	406
<b>Denmark</b>									
DK01	364	0	0	354	0	0	172	0	890
DK02	200	0	0	201	0	0	351	0	752
DK03	332	0	0	341	0	0	349	0	1022
DK04	382	0	0	346	0	0	393	0	1121
DK05	197	0	0	142	0	0	204	0	543
<b>Spain</b>									
ES11	79	0	0	133	0	0	0	125	337
ES12	0	0	0	51	0	0	0	0	51
ES21	72	0	0	89	0	0	0	74	235
ES24	0	0	0	58	0	0	0	0	58
ES30	252	0	0	211	0	0	0	169	632
ES41	103	0	0	105	0	0	0	86	294
ES42	70	0	0	85	0	0	0	88	243
ES43	52	0	0	52	0	0	0	0	104
ES51	169	0	0	222	0	0	0	180	571
ES52	144	0	0	181	0	0	0	142	467
ES61	358	0	0	336	0	0	0	295	989
ES62	0	0	0	50	0	0	0	0	50
ES70	50	0	0	69	0	0	0	60	179
<b>Finland</b>									
FI19	484	0	0	544	0	0	437	0	1465
FI1B	454	0	0	504	0	0	446	0	1404
FI1C	416	0	0	424	0	0	363	0	1203
FI1D	459	0	0	502	0	0	421	0	1382
<b>France</b>									
FR10	209	0	0	216	0	0	213	0	638
FRB0	55	0	0	75	0	0	75	0	205
FRC1	0	0	0	0	0	0	55	0	55
FRD1	0	0	0	51	0	0	0	0	51
FRD2	0	0	0	0	0	0	50	0	50
FRE1	114	0	0	84	0	0	122	0	320
FRE2	0	0	0	78	0	0	70	0	148
FRF1	0	0	0	58	0	0	54	0	112
FRF3	88	0	0	0	0	0	56	0	144
FRG0	103	0	0	104	0	0	118	0	325
FRH0	91	0	0	130	0	0	122	0	343
FRI1	90	0	0	111	0	0	110	0	311
FRI3	84	0	0	0	0	0	51	0	135
FRJ1	54	0	0	77	0	0	71	0	202
FRJ2	68	0	0	125	0	0	85	0	278
FRK2	169	0	0	126	0	0	185	0	480
FRL0	92	0	0	157	0	0	146	0	395
<b>Ireland</b>									
IE04	0	0	0	533	0	0	424	0	957
IE05	0	0	0	725	0	0	636	0	1361

IE06	0	0	0	819	0	0	763	0	1582
<b>Italy</b>									
ITC1	0	0	62	0	0	206	0	0	268
ITC4	0	0	65	0	0	335	0	0	400
ITF3	0	0	63	0	0	217	0	0	280
ITF4	0	0	0	0	0	230	0	0	230
ITF5	0	0	0	0	0	50	0	0	50
ITF6	0	0	55	0	0	59	0	0	114
ITG1	0	0	88	0	0	185	0	0	273
ITG2	0	0	0	0	0	66	0	0	66
ITH3	0	0	0	0	0	204	0	0	204
ITH4	0	0	0	0	0	69	0	0	69
ITH5	0	0	0	0	0	257	0	0	257
ITI1	0	0	50	0	0	97	0	0	147
ITI3	0	0	0	0	0	87	0	0	87
ITI4	0	0	74	0	0	171	0	0	245
<b>Norway</b>									
NO01	273	0	0	282	0	0	301	0	856
NO02	102	0	0	93	0	0	79	0	274
NO03	272	0	0	256	0	0	219	0	747
NO04	222	0	0	155	0	0	177	0	554
NO05	252	0	0	227	0	0	238	0	717
NO06	143	0	0	130	0	0	109	0	382
NO07	132	0	0	124	0	0	134	0	390
<b>Portugal</b>									
PT11	818	0	0	75	381	0	226	106	1606
PT15	80	0	0	0	0	0	0	0	80
PT16	368	0	0	230	59	0	160	61	878
PT17	663	0	0	0	208	0	206	0	1077
PT18	75	0	0	103	0	0	69	0	247
<b>Sweden</b>									
SE11	212	0	0	347	0	0	276	0	835
SE12	247	0	0	220	0	0	192	0	659
SE21	125	0	0	155	0	0	113	0	393
SE22	196	0	0	205	0	0	185	0	586
SE23	280	0	0	301	0	0	260	0	841
SE31	128	0	0	137	0	0	129	0	394
SE32	58	0	0	87	0	0	61	0	206
SE33	78	0	0	102	0	0	98	0	278
<b>United Kingdom</b>									
UKC	103	0	0	94	0	0	106	0	303
UKD	257	0	0	187	0	0	226	0	670
UKE	211	0	0	128	0	0	190	0	529
UKF	166	0	0	131	0	0	149	0	446
UKG	197	0	0	135	0	0	125	0	457
UKH	204	0	0	150	0	0	199	0	553
UKI	120	0	0	102	0	0	114	0	336
UKJ	295	0	0	236	0	0	288	0	819
UKK	177	0	0	146	0	0	187	0	510
UKL	134	0	0	96	0	0	90	0	320
UKM	227	0	0	165	0	0	169	0	561
UKN	60	0	0	54	0	0	62	0	176
<b>Total</b>	<b>16837</b>	<b>595</b>	<b>1884</b>	<b>19101</b>	<b>648</b>	<b>2233</b>	<b>17337</b>	<b>1386</b>	<b>60021</b>

Table A2: Summary statistics

	Full sample				
	N	Mean	S.D.	Min	Max
Policy	58 887	0.56	0.26	0	1
<i>Individual level</i>					
age	59 850	50.10	19.01	14	104
university	57 765	0.31	0.46	0	1
tertiary without degree	57 765	0.06	0.23	0	1
Upper secondary	57 765	0.33	0.47	0	1
Lower secondary	57 765	0.16	0.36	0	1
female	60 012	0.51	0.50	0	1
Living in urban area	60 021	0.29	0.45	0	1
Income difficulty	59 467	0.16	0.37	0	1
minority	59 470	0.84	0.27	0	1
non citizen	60 004	0.01	0.06	0	1
<i>Region-year level</i>					
Change in share of foreign-born	306	-0.094	1.508	-4.106	5.439
Change in share of foreign-born from Europe	306	-0.010	0.791	-2.370	3.620
Change in share of foreign-born outside Europe	306	-0.083	1.011	-2.882	3.508
Change in share of tertiary educated foreign-born	306	-0.060	0.777	-4.296	3.202
Change in share of non-tertiary educated foreign-born	306	-0.046	1.037	-2.892	3.646
Change in share of tertiary educated European foreign-born	306	-0.024	0.472	-2.457	1.875
Change in share of tertiary educated non-European foreign-born	306	-0.039	0.366	-1.837	1.591
Change in share of non-tertiary educated European foreign-born	306	0.011	0.513	-1.409	1.874
Change in share of non-tertiary educated non-European foreign-born	306	-0.041	0.770	-2.121	2.593
<i>Regional level</i>					
Share of foreign-born	115	11.285	6.211	2.085	42.500
Share of foreign-born from Europe	115	6.292	3.978	1.544	21.777
Share of foreign-born outside Europe	115	4.993	3.617	0.497	22.353
Share of tertiary educated foreign-born	115	2.862	2.329	0.287	14.302
Share of non-tertiary educated foreign-born	115	8.486	4.283	1.683	29.470
Share of tertiary educated European foreign-born	115	1.651	1.365	0.212	8.432
Share of tertiary educated non-European foreign-born	115	1.198	1.144	0.060	8.206
Share of non-tertiary educated European foreign-born	115	4.629	2.931	1.184	13.838
Share of non-tertiary educated non-European foreign-born	115	3.787	2.661	0.443	16.082
GDP per capita (PPS)	115	26929	7422	16037	57365
% unemployed 15+	115	10.226	5.410	2.6	28.6
Population density	115	325.469	866.176	3.30	6957.2

**Table A3. Multilevel regressions of attitudes toward immigrants, individual controls only**

	Attitudes Toward Policy			
	Model 0		Model 1	
	$\beta$	S.E.	$\beta$	S.E.
age			-0.001***	(5.56e-05)
university			0.154***	(0.003)
tertiary without degree			0.0817***	(0.005)
Upper secondary			0.055***	(0.003)
Lower secondary			0.035***	(0.003)
female			0.004*	(0.002)
Living in urban area			0.024***	(0.002)
Income difficulty			-0.059***	(0.002)
minority			0.032***	(0.003)
non citizen			0.021	(0.015)
Intercept	0.562***	(0.021)	0.574***	(0.019)
<i>Random effects</i>				
country	0.005	(0.002)	0.004	(0.001)
region	0.001	(0.0003)	4.64e-13	(1.93e-12)
Region-year	0.004	(0.0004)	0.003	(0.0003)
Individual	0.059	(0.0003)	0.053	(0.0003)
N respondents	58 887		55 670	
N countries	13		13	
N regions	115		115	
N region-years	306		306	

**Table A4. Multi-level estimation results, total immigration – Attitudes towards immigration policy**

	$\beta$	S.E.	$\beta$	S.E.
<i>Individual-level</i>				
age	-0.00175***	(5.56e-05)	-0.00175***	(5.56e-05)
university	0.153***	(0.00353)	0.153***	(0.00353)
tertiary without degree	0.0807***	(0.00518)	0.0805***	(0.00518)
Upper secondary	0.0545***	(0.00353)	0.0543***	(0.00353)
Lower secondary	0.0352***	(0.00386)	0.0352***	(0.00386)
female	0.00448*	(0.00197)	0.00444*	(0.00197)
Living in urban area	0.0241***	(0.00238)	0.0239***	(0.00239)
Income difficulty	-0.0594***	(0.00284)	-0.0589***	(0.00284)
minority	0.0319***	(0.00369)	0.0319***	(0.00369)
non-citizen	0.0205	(0.0152)	0.0207	(0.0152)
<i>Contextual level</i>				
avg regional level foreign-born	0.00184**	(0.000572)	0.000724	(0.000886)
change in share foreign-born	-0.00948***	(0.00243)	-0.00970***	(0.00242)
regional gdp per capita			1.32e-06*	(5.87e-07)
regional unemployment			-0.00238*	(0.00106)
regional density			-2.22e-07	(5.02e-06)
2013 year	0.110	(0.0735)	0.125	(0.0765)
2014 year	0.0402***	(0.00680)	0.0388***	(0.00686)
2015 year	0.0692*	(0.0276)	0.0690*	(0.0277)
2017 year	-0.0168	(0.0721)	-0.00914	(0.0750)
2018 year	0.101***	(0.00961)	0.0901***	(0.00993)
2019 year	0.130***	(0.0165)	0.107***	(0.0179)
<i>Random effects</i>				
country	0.004	(0.002)	0.005	(0.002)
region	0.0004	(0.0002)	0.0002	(0.0002)
Region-year	0.001	(0.0002)	0.001	(0.0002)
Individual	0.053	(0.0003)	0.053	(0.0003)
Intercept	0.503***	(0.0221)	0.500***	(0.0297)
N respondents	55,670		55,670	
N countries	13		13	
N regions	115		115	
N region-years	300		300	

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

**Table A5. Multi-level estimation results, immigration by origin – Attitudes towards immigration policy**

	$\beta$	S.E.	$\beta$	S.E.
<i>Individual-level</i>				
age	-0.00175***	(5.56e-05)	-0.00175***	(5.56e-05)
university	0.153***	(0.00353)	0.153***	(0.00353)
tertiary without degree	0.0808***	(0.00518)	0.0806***	(0.00518)
Upper secondary	0.0546***	(0.00353)	0.0544***	(0.00353)
Lower secondary	0.0353***	(0.00386)	0.0353***	(0.00386)
female	0.00449*	(0.00197)	0.00446*	(0.00197)
Living in urban area	0.0243***	(0.00239)	0.0241***	(0.00239)
Income difficulty	-0.0594***	(0.00284)	-0.0589***	(0.00284)
minority	0.0319***	(0.00369)	0.0319***	(0.00369)
non-citizen	0.0205	(0.0152)	0.0206	(0.0152)
<i>Contextual level</i>				
change in share European foreign-born	0.00468	(0.00368)	0.00475	(0.00366)
avg regional European level foreign-born	0.00398**	(0.00143)	0.00335*	(0.00136)
change in share non-European foreign-born	-0.0200***	(0.00311)	-0.0205***	(0.00311)
avg regional non-European level foreign-born	0.000120	(0.00130)	-0.00141	(0.00155)
regional gdp per capita			1.42e-06*	(5.87e-07)
regional unemployment			-0.00247*	(0.00105)
regional density			-1.12e-06	(5.15e-06)
2013 year	0.112	(0.0765)	0.128	(0.0817)
2014 year	0.0400***	(0.00633)	0.0384***	(0.00638)
2015 year	0.0667**	(0.0258)	0.0673**	(0.0258)
2017 year	-0.0139	(0.0751)	-0.00534	(0.0804)
2018 year	0.102***	(0.00897)	0.0906***	(0.00930)
2019 year	0.138***	(0.0156)	0.115***	(0.0169)
<i>Random effects</i>				
country	0.005	(0.002)	0.005	(0.002)
region	0.0005	(0.0001)	0.0003	(0.0001)
Region-year	0.001	(0.0001)	0.001	(0.0002)
Individual	0.053	(0.0003)	0.053	(0.0003)
Intercept	0.495***	(0.0232)	0.488***	(0.0310)
N respondents	55,670		55,670	
N countries	13		13	
N regions	115		115	
N region-years	300		300	

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

**Table A6. Multi-level estimation results, immigration by education level – Attitudes towards immigration policy**

	$\beta$	S.E.	$\beta$	S.E.
<i>Individual-level</i>				
age	-0.00175***	(5.56e-05)	-0.00175***	(5.56e-05)
university	0.153***	(0.00353)	0.153***	(0.00353)
tertiary without degree	0.0807***	(0.00518)	0.0805***	(0.00518)
Upper secondary	0.0545***	(0.00353)	0.0544***	(0.00353)
Lower secondary	0.0353***	(0.00386)	0.0352***	(0.00386)
female	0.00447*	(0.00197)	0.00444*	(0.00197)
Living in urban area	0.0240***	(0.00239)	0.0239***	(0.00239)
Income difficulty	-0.0594***	(0.00284)	-0.0589***	(0.00284)
minority	0.0319***	(0.00369)	0.0319***	(0.00369)
non-citizen	0.0206	(0.0152)	0.0208	(0.0152)
<i>Contextual level</i>				
change in share tertiary educated	-0.0118*	(0.00501)	-0.0134**	(0.00502)
avg regional level tertiary educated	0.00268	(0.00290)	-0.000302	(0.00349)
change in share non-tertiary educated	-0.00677*	(0.00301)	-0.00618*	(0.00301)
avg regional level non-tertiary educated	0.00140	(0.00145)	0.000906	(0.00133)
regional gdp per capita			1.41e-06*	(6.24e-07)
regional unemployment			-0.00230*	(0.00108)
regional density			3.97e-07	(5.36e-06)
2013 year	0.113	(0.0734)	0.124	(0.0771)
2014 year	0.0410***	(0.00721)	0.0402***	(0.00726)
2015 year	0.0711*	(0.0281)	0.0718*	(0.0281)
2017 year	-0.0155	(0.0719)	-0.0115	(0.0757)
2018 year	0.102***	(0.0103)	0.0912***	(0.0106)
2019 year	0.130***	(0.0169)	0.109***	(0.0182)
<i>Random effects</i>				
country	0.005	(0.002)	0.005	(0.002)
region	0.0004	(0.0001)	0.0003	(0.0001)
Region-year	0.001	(0.0001)	0.001	(0.0002)
Individual	0.053	(0.0003)	0.053	(0.0003)
Intercept	0.504***	(0.0222)	0.498***	(0.0304)
N respondents	55,670		55,670	
N countries	13		13	
N regions	115		115	
N region-years	300		300	

\*\*\* p<0.001, \*\* p<0.01, \*

**Table A7. Multi-level estimation results, immigration by origin and education level – Attitudes towards immigration policy**

	$\beta$	S.E.	$\beta$	S.E.
<i>Individual-level</i>				
age	-0.00175***	(5.56e-05)	-0.00175***	(5.56e-05)
university	0.153***	(0.00353)	0.153***	(0.00353)
tertiary without degree	0.0808***	(0.00518)	0.0806***	(0.00518)
Upper secondary	0.0546***	(0.00353)	0.0544***	(0.00353)
Lower secondary	0.0353***	(0.00386)	0.0354***	(0.00386)
female	0.00449*	(0.00197)	0.00445*	(0.00197)
Living in urban area	0.0242***	(0.00239)	0.0241***	(0.00239)
Income difficulty	-0.0594***	(0.00284)	-0.0590***	(0.00284)
minority	0.0319***	(0.00369)	0.0319***	(0.00369)
non-citizen	0.0205	(0.0152)	0.0206	(0.0152)
<i>Contextual level</i>				
change in share tertiary edu European foreign-born	-0.00288	(0.00840)	-0.00412	(0.00831)
avg regional level tertiary edu European foreign-born	-0.000724	(0.00672)	0.000433	(0.00731)
change in share tertiary edu non-European foreign-born	-0.0228*	(0.0113)	-0.0257*	(0.0112)
avg reg level tertiary edu non-European foreign-born	0.00918	(0.00796)	0.00140	(0.00739)
change in share non-tertiary edu European foreign-born	0.00938	(0.00512)	0.0102*	(0.00507)
avg regional level non-tertiary edu European	0.00489*	(0.00211)	0.00391*	(0.00196)
change in share non-tertiary edu non-European	-0.0187***	(0.00388)	-0.0184***	(0.00386)
avg regional level non-tertiary edu non-European	-0.00215	(0.00264)	-0.00221	(0.00254)
regional gdp per capita			1.49e-06*	(6.17e-07)
regional unemployment			-0.00246*	(0.00108)
regional density			-5.86e-08	(5.87e-06)
2013 year	0.116	(0.0766)	0.130	(0.0822)
2014 year	0.0430***	(0.00669)	0.0424***	(0.00670)
2015 year	0.0708**	(0.0261)	0.0729**	(0.0260)
2017 year	-0.0101	(0.0753)	-0.00351	(0.0809)
2018 year	0.107***	(0.00966)	0.0970***	(0.00987)
2019 year	0.142***	(0.0163)	0.119***	(0.0176)
<i>Random effects</i>				



country	0.005	(0.002)	0.005	(0.002)
region	0.0005	(0.0001)	0.0003	(0.0001)
Region-year	0.001	(0.0001)	0.001	(0.0001)
Individual	0.053	(0.0003)	0.053	(0.0003)
Intercept	0.494***	(0.0233)	0.485***	(0.0315)
N respondents	55,670		55,670	
N countries	13		13	
N regions	115		115	
N region-years	300		300	

\*\*\* p<0.001, \*\* p<0.01,

**Table A8. Multi-level estimation results, immigration by origin and income difficulties– Attitudes towards immigration policy**

	$\beta$	S.E.	$\beta$	S.E.
<i>Individual-level</i>				
age	-0.00175***	(5.56e-05)	-0.00175***	(5.56e-05)
university	0.153***	(0.00353)	0.153***	(0.00353)
tertiary without degree	0.0806***	(0.00518)	0.0804***	(0.00518)
Upper secondary	0.0544***	(0.00353)	0.0542***	(0.00353)
Lower secondary	0.0352***	(0.00386)	0.0352***	(0.00386)
female	0.00448*	(0.00197)	0.00444*	(0.00197)
Living in urban area	0.0242***	(0.00239)	0.0241***	(0.00239)
Income difficulty	-0.0599***	(0.00285)	-0.0594***	(0.00285)
minority	0.0318***	(0.00369)	0.0318***	(0.00369)
non-citizen	0.0204	(0.0152)	0.0205	(0.0152)
<i>Contextual level</i>				
change in share European foreign-born	0.00404	(0.00374)	0.00412	(0.00372)
Income difficulties X change in share European foreign-born	0.00441	(0.00435)	0.00435	(0.00435)
avg regional level European foreign-born	0.00398**	(0.00143)	0.00335*	(0.00136)
change in share non-European foreign-born	-0.0189***	(0.00316)	-0.0194***	(0.00316)
Income difficulties X change in share non-European foreign-born	-0.00763*	(0.00344)	-0.00768*	(0.00344)
avg reg level non-European foreign-born	0.000126	(0.00130)	-0.00138	(0.00155)
regional gdp per capita			1.43e-06*	(5.88e-07)
regional unemployment			-0.00247*	(0.00106)
regional density			-1.22e-06	(5.16e-06)
2013 year	0.112	(0.0765)	0.128	(0.0816)
2014 year	0.0399***	(0.00636)	0.0384***	(0.00640)
2015 year	0.0659*	(0.0259)	0.0665*	(0.0259)
2017 year	-0.0137	(0.0751)	-0.00507	(0.0803)
2018 year	0.102***	(0.00901)	0.0903***	(0.00933)
2019 year	0.139***	(0.0157)	0.116***	(0.0170)
<i>Random effects</i>				
country	0.005	(0.002)	0.005	(0.002)
region	0.0005	(0.0001)	0.0003	(0.0001)
Region-year	0.001	(0.0001)	0.001	(0.0001)
Individual	0.053	(0.0003)	0.053	(0.0003)
Intercept	0.495***	(0.0232)	0.489***	(0.0310)

N respondents	55,670		55,670	
N countries	13		13	
N regions	115		115	
N region-years	300		300	

\*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ ,

**Table A9. Multi-level estimation results, immigration by education and income difficulties– Attitudes towards immigration policy**

	$\beta$	S.E.	$\beta$	S.E.
<i>Individual-level</i>				
age	-0.00175***	(5.56e-05)	-0.00175***	(5.56e-05)
university	0.153***	(0.00354)	0.153***	(0.00354)
tertiary without degree	0.0806***	(0.00518)	0.0804***	(0.00518)
Upper secondary	0.0545***	(0.00353)	0.0543***	(0.00353)
Lower secondary	0.0352***	(0.00386)	0.0352***	(0.00386)
female	0.00447*	(0.00197)	0.00443*	(0.00197)
Living in urban area	0.0240***	(0.00239)	0.0239***	(0.00239)
Income difficulty	-0.0597***	(0.00286)	-0.0592***	(0.00286)
minority	0.0319***	(0.00369)	0.0319***	(0.00369)
non-citizen	0.0202	(0.0152)	0.0204	(0.0152)
<i>Contextual level</i>				
change in share tertiary edu foreign-born	-0.0115*	(0.00506)	-0.0131**	(0.00506)
Income difficulties X change in share tertiary edu foreign-born	-0.00253	(0.00413)	-0.00260	(0.00413)
avg regional level tertiary edu foreign-born	0.00267	(0.00290)	-0.000310	(0.00349)
change in share non-tertiary edu foreign-born	-0.00647*	(0.00306)	-0.00587	(0.00305)
Income difficulties X change in share non-tertiary edu foreign-born	-0.00256	(0.00319)	-0.00261	(0.00319)
avg reg level non-tertiary foreign-born	0.00141	(0.00145)	0.000908	(0.00133)
regional gdp per capita			1.41e-06*	(6.25e-07)
regional unemployment			-0.00231*	(0.00109)
regional density			3.86e-07	(5.36e-06)
2013 year	0.113	(0.0734)	0.124	(0.0771)
2014 year	0.0410***	(0.00723)	0.0402***	(0.00727)
2015 year	0.0711*	(0.0281)	0.0717*	(0.0282)
2017 year	-0.0152	(0.0719)	-0.0112	(0.0757)
2018 year	0.102***	(0.0103)	0.0911***	(0.0106)
2019 year	0.131***	(0.0170)	0.110***	(0.0183)
<i>Random effects</i>				
country	0.004	(0.002)	0.005	(0.002)
region	0.0004	(0.0001)	0.0002	(0.0001)
Region-year	0.001	(0.0001)	0.001	(0.0001)
Individual	0.053	(0.0003)	0.053	(0.0003)
Intercept	0.504***	(0.0222)	0.498***	(0.0304)

N respondents	55,670		55,670	
N countries	13		13	
N regions	115		115	
N region-years	300		300	

\*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ ,

**Table A10. Multi-level estimation results, immigration by education and origin and income difficulties– Attitudes towards immigration policy**

	$\beta$	S.E.	$\beta$	S.E.
<i>Individual-level</i>				
age	-0.00175***	(5.56e-05)	-0.00175***	(5.56e-05)
university	0.153***	(0.00353)	0.153***	(0.00354)
tertiary without degree	0.0806***	(0.00518)	0.0804***	(0.00518)
Upper secondary	0.0544***	(0.00353)	0.0543***	(0.00353)
Lower secondary	0.0353***	(0.00386)	0.0353***	(0.00386)
female	0.00447*	(0.00197)	0.00443*	(0.00197)
Living in urban area	0.0242***	(0.00239)	0.0240***	(0.00239)
Income difficulty	-0.0595***	(0.00292)	-0.0590***	(0.00292)
minority	0.0318***	(0.00369)	0.0318***	(0.00369)
non-citizen	0.0204	(0.0152)	0.0205	(0.0152)
<i>Contextual level</i>				
change in share tertiary edu European foreign-born	-0.00228	(0.00856)	-0.00346	(0.00847)
Income difficulties X change in share tertiary edu European foreign-born	-0.00389	(0.00938)	-0.00422	(0.00938)
avg regional level tertiary edu European foreign-born	-0.000853	(0.00673)	0.000365	(0.00732)
change in share tertiary edu non-European foreign-born	-0.0234*	(0.0115)	-0.0264*	(0.0114)
Income difficulties X change in share tertiary edu non-European foreign-born	-0.000736	(0.0123)	-0.000597	(0.0123)
avg reg level tertiary non-European foreign-born	0.00930	(0.00797)	0.00147	(0.00740)
change in share non-tertiary edu European foreign-born	0.00799	(0.00522)	0.00878	(0.00517)
Income difficulties X change in share non-tertiary edu European foreign-born	0.00987	(0.00644)	0.00995	(0.00644)
avg reg level non-tertiary European foreign-born	0.00492*	(0.00211)	0.00393*	(0.00196)
change in share non-tertiary edu non-European foreign-born	-0.0174***	(0.00398)	-0.0171***	(0.00395)

Income difficulties X change in share non-tertiary edu non-European foreign-born	-0.00824*	(0.00419)	-0.00830*	(0.00419)
avg reg level non- tertiary non- European foreign- born	-0.00219	(0.00265)	-0.00223	(0.00254)
regional gdp per capita			1.49e-06*	(6.19e-07)
regional unemployment			-0.00248*	(0.00108)
regional density			-1.32e-07	(5.88e-06)
2013 year	0.113	(0.0734)	0.130	(0.0822)
2014 year	0.0410***	(0.00723)	0.0425***	(0.00673)
2015 year	0.0711*	(0.0281)	0.0722**	(0.0261)
2017 year	-0.0152	(0.0719)	-0.00325	(0.0809)
2018 year	0.102***	(0.0103)	0.0969***	(0.00991)
2019 year	0.131***	(0.0170)	0.120***	(0.0176)
<i>Random effects</i>				
country	0.005	(0.002)	0.005	(0.002)
region	0.0005	(0.0001)	0.0003	(0.0001)
Region-year	0.001	(0.0001)	0.001	(0.0001)
Individual	0.053	(0.0003)	0.053	(0.0003)
Intercept	0.494***	(0.0233)	0.485***	(0.0315)
N respondents	55,670		55,670	
N countries	13		13	
N regions	115		115	
N region-years	300		300	

\*\*\* p<0.001, \*\* p<0.01