What Determines Attitudes to Immigration in European Countries? An Analysis at the Regional Level

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Non-Technical Summary

A large literature focuses on the determinants of attitudes towards immigrants and ethnic minorities, and how these vary across countries. The increase in negative attitudes to immigration in recent years, likely due to growing international migration, has continued to fuel the debate as both academics and policy makers have not yet reached a consensus on what drives natives to view immigration as threatening and why otherwise similar people living in different countries tend to vary greatly in their opinions.

Most of the literature focuses on individual and household characteristics that influence anti-immigration attitudes. Fewer studies focus on the role of national characteristics in shaping anti-immigration attitudes, and even fewer of them analyse the role of regions within countries. Nevertheless, there are important differences in economic performance across regions, and even within one country immigrants tend to cluster within few areas; such regional differences are lost if, as the majority of the literature has done up to now, we compare countries instead of regions. Furthermore, people are likely to form their opinions about immigration by drawing on the local/regional environment where they live rather than on the average characteristics of their country, which is often geographically large.

We combine individual and aggregate data to analyse what may contribute to cross-country and regional differences in attitudes to immigration. Our analysis focuses on 111 regions of 24 European countries between 2002 and 2008. We use the European Social Survey (ESS) to analyse how respondents evaluate the impact of immigration on the country's 1) economy, 2) culture, and 3) quality of life overall, and how these attitudes vary by individual and household characteristics. We use individual level data from the EU Labour Force Survey (LFS) to construct indicators of regional characteristics that may be relevant in shaping people's attitudes to immigration. By using the EU LFS we are able, for example, to test the impact of the share of immigrants born within and outside the EU, the impact of the qualification level and unemployment rate of immigrants and of natives.

Our findings suggest that an increase in the regional unemployment rate of immigrants and in the percentage of immigrants born outside the EU are both associated with increased concerns in the population over the impact of immigration on the country. However, an increase in the regional unemployment of natives is associated with a decrease in feelings of threat from immigration. We also find that higher proportions of both natives and immigrants with low qualifications are associated with lower feelings of economic threat from immigration, while anti-immigration attitudes are significantly higher in regions where natives on average overestimate the share of immigrants. Our findings thus contradict hypotheses based on economic competition and in particular, employment competition within the low-skilled, manual workforce. They also suggest that differences in anti-immigration attitudes across regions in Europe may not be as closely related to the current economic conditions of the region, as they might be driven by concerns over the conditions of the immigrant population in that region, in addition to an overall inflated estimation of the extent of immigration.

Finally, our empirical results indicate the need for future research to account for local conditions separately for natives and immigrants and for EU and non-EU immigrants, since their impact on anti-immigrant attitudes appears to diverge.

What Determines Attitudes to Immigration in European Countries?

An Analysis at the Regional Level[*]

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Abstract

Different disciplines within the social sciences have produced large theoretical and empirical literatures to explain the determinants of anti-immigration attitudes. We bring together these literatures in a unified framework and identify testable hypotheses on what characteristics of the individual and of the local environment are likely to have an impact on anti-immigration attitudes.

Most of the previous literature focuses on the explanation of attitudes at the individual level. When cross country comparisons are involved the heterogeneity across countries is modelled by fixed or random effects in multilevel models. We analyse anti-immigration attitudes across regions of 24 European countries to explain why people living in different regions differ in terms of their attitudes towards immigration. We isolate the impact of the region from regressions using individual-level data and explain this residual regional heterogeneity in attitudes with aggregate level indicators of regional characteristics. We find that regions with a higher percentage of immigrants born outside the EU and a higher unemployment rate among the immigrant population show a higher probability that natives express negative attitudes to immigration. Regions with a higher unemployment rate among natives however, show less pronounced anti-immigrant attitudes.

JEL Classification: F22; J15; J61; R19

Keywords: Anti-immigration attitudes; Regional characteristics; Europe

1. Introduction

Academic research in different disciplines of the social sciences (political science, psychology, sociology and economics) has a long history of attempting to understand what determines attitudes of majority populations towards immigrants and ethnic minority groups, and how they vary across countries (see Blumer 1958; Noel and Pinkney 1964; Blalock 1967). The first contribution of our paper is a structured summary of the main theories and empirical evidence that emerge from these different strands of literature.

The increase in negative attitudes to immigration in recent years, likely due to growing international migration, has continued to fuel the debate as both academics and policy makers have not yet reached a consensus on what drives natives to view immigration as threatening and why otherwise similar people living in different countries tend to vary greatly in their opinions. For example, cross national comparisons show that individuals from different countries vary significantly in their attitudes towards minorities even after controlling for socio-economic differences (Raijman et al. 2003). Citizens of Hungary, Poland and the Czech Republic are more likely to support immigration from rich European countries whereas Greeks, Portuguese and Italians are more likely to say they prefer to limit immigration from any country (Gorodzeisky 2011). According to Pichler (2010), feelings that immigration represents a threat for the receiving country are more pronounced in Greece, Portugal and Ukraine and appear to increase over time.

Most of the literature focuses on individual and household characteristics that influence anti-immigration attitudes. Country and regional characteristics are generally included using multilevel models, in which the heterogeneity in individual attitudes across countries and regions is included using fixed or random effects. Fewer studies focus on the role of national characteristics in shaping anti-immigration attitudes, and even fewer of them analyse the role of regions within countries. Regional science shows that there are important differences in economic performance across regions, and even within one country immigrants tend to cluster within few areas (Dustmann and Preston 2001; Longhi et al. 2005); such regional differences would be lost if, as the majority of the literature has done up to now, we compare countries instead of regions. Furthermore, people are likely to form their opinions about immigration by drawing on the local/regional environment where they live rather than on the average characteristics of their country, which is often geographically large. Paraphrasing Tobler's first law of geography (see e.g. Anselin 1988), we could say that immigrants living far away matter, but those living close by matter even more.

Among the studies focusing on regions, Schlueter and Wagner (2008) test the impact of the size of the immigrant population on anti-immigrant attitudes in European regions and find that between regions, a larger size of the immigrant population increases negative reactions but within regions, more immigrants increase intergroup contact and reduce immigrant derogation. However, Rustenbach (2010) finds that the size of the immigrant population and the regional GDP have no impact on attitudes, whereas national foreign direct investment and unemployment are associated with less negative attitudes towards immigrants. All these studies use aggregated data that are provided by official statistics and therefore may be of relatively limited relevance for the specific scope of their analysis.

In this paper we combine individual and aggregate data to analyse what may contribute to cross-country and regional differences in attitudes to immigration; in doing this we also analyse the relevance of theories explaining the formation of anti-immigration attitudes. Our analysis focuses on European countries at the regional level (NUTS1). Regions at NUTS1 level are much more similar in size than EU countries, thus making the comparison across regions more meaningful than comparisons across countries. Regions of this size remain large enough to minimise bias that might be due to self-selection in the location decisions of natives within smaller geographical areas (see also Dustmann and Preston 2001).[1]

Our second contribution is to the empirical literature, which mostly uses multilevel models. We use a different modelling technique which helps us focus the analysis on the explanation of regional differences in anti-immigration attitudes. We use the European Social Survey (ESS) to estimate models at the individual level which include individual and household characteristics and a full set of time-region dummies capturing the residual impact of regional characteristics on natives' anti-immigration attitudes. We then explain these regional differences in the probability of expressing anti-immigration attitudes by regional characteristics, which are computed using individual data from the EU Labour Force Survey (LFS). This allows us to overcome the problem of biased standard errors in individual level models including aggregate characteristics (Moulton 1990).

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[1] It is possible that natives that are more likely to view immigrants as a threat are also more likely to move to neighbourhoods where fewer or no immigrants live, while natives who are more likely to have pro-immigrants attitudes are more likely to move to areas where the share of immigrants is higher. If this is the case, the analysis of the correlation between anti-immigration attitudes and the share of immigrants is likely to lead to underestimation of the real impact. Dustmann and Preston (2001) argue that this bias is unlikely to happen in larger regions (roughly NUTS1) and suggest using the share of immigrants in larger regions as an instrument for the share of immigrants in smaller regions (NUTS2 or NUTS3).

Our third contribution is the use of individual level data (the EU LFS) for the construction of indicators of regional characteristics. While the previous empirical literature has relied on aggregated indicators published by e.g. Eurostat, by using the EU LFS we are able to compute the regional characteristics that are more relevant for our hypothesis testing. For example, we are able to compute separate indicators for immigrants born within and outside the EU, we can include separate indicators for unemployment rates of natives and immigrants, as well as indicators of the share of natives and immigrants with different qualification levels.

We find that a larger percentage of immigrants in the region is associated with higher anti-immigrant attitudes, but once we disaggregate between the percentage of immigrants born within and outside the EU, results indicate that such reactions are mostly driven by the percentage of non EU immigrants. In agreement with Rustenbach (2010), higher regional unemployment among natives is associated with more positive attitudes, although an increase in the unemployment rate of immigrants is associated with an increase in anti-immigration attitudes. Larger percentages of both natives and immigrants with low-level qualifications reduce anti-immigration attitudes.

2. Previous Literature on Attitudes towards Minorities

2.1. Theories on Attitudes Formation

Attitudes towards ethnic minorities and immigrants have been the focus of studies related to intergroup relations for many years. The issue of intergroup relations arises from the identification of one's identity and consequently from the line that separates and defines the boundaries between who is a native or part of the majority, and who is a foreigner or member of a minority. The identity of the minority groups can be formed around many characteristics. The differentiating factors can be race, language, or religion, which are highly correlated, but not limited, to specific countries and regions of origin of the immigrants. Other factors may be citizenship and nationality directly. Especially in the case of old colonial countries such as the UK and France and immigrant nations like the US, many earlier immigrants have now become citizens or are second or third generation "immigrants"; nevertheless, they are often still perceived as a minority out-group.

Theories on the formation of attitudes towards out-groups can be divided into two strands: the first strand includes social-psychological, affective or ideological explanations (e.g. Chandler and Tsai 2001; Hodson et al. 2009; Cohrs and Stelzl 2010; Duckitt and Sibley

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2010; Morrison et al. 2010), and the second includes rational-based group and labour market competition theories (e.g. Turner 1986; Borjas 1999; Slaughter and Scheve 2001; Scheepers et al. 2002; Tolsma et al. 2008; Schneider 2007).

Social-psychological explanations suggest that the starting point of conflict between groups is the need to be different and categorise people, while the driving force which leads to conflict between groups is an instinctive drive for social dominance (Krysan 2000). Social identity theories argue that people's sense of who they are stems from what groups they belong to or identify with (Sniderman et al. 2004). This identification often leads to in-group favouritism and a sense of group superiority which, when accompanied by a mentality of group dominance, results in generalisations about sets of negative group traits, usually referred to as stereotypes (Herbst and Glynn 2004). Stereotypes develop because they reinforce differentiation with members of the other group, they create extra boundaries between groups and make it more difficult for members to shift sides. Analyses focusing on group identity find that contact with a minority group triggers a defensive reaction and feelings of threat (Krysan 2000; Quillian 1996). Perceived threat is then translated into an irrational antipathy which is accompanied by faulty generalisations such as prejudice, or an overreaction about the negative consequences of immigration (Quillian 1996; Kónya 2005; Pehrson and Green 2010).

Another psychological proposition about attitude formation focuses on the type of personality of the respondent, his or her emotional state and view about his or her own self (Hodson et al. 2009; Christ et al. 2010; Duckitt and Sibley 2010). This approach argues that an individual's personality affects basic processes of perception and judgment, which are inherent in the formation of attitudes. Perception of one's self might alter the level of political awareness, the interpretation of political stimuli and the interrelation of ideas. Thus, low self-esteem and anxiety can trigger a negative defensive reaction towards minority groups (Sniderman and Citrin 1971).

Rational explanations of attitudes towards out groups build upon the calculation of material and non-material costs and benefits for the native population, both at the aggregate and individual level (Citrin et al. 1997); the driving force behind the formation of an individual's attitude towards immigrants is essentially a cost-benefit analysis (Hempstead and Espenshade 1996). Costs and benefits might be either objective or perceived, but it is their evaluation which shapes an individual's negative or positive predisposition towards immigration. Such costs and benefits might be centred around an individual's interest, in respect to his or her personal characteristics, or the interests of the group he or she belongs to.

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Previous literature refers to those interests in many ways: some might derive from individual personal circumstances, such as labour market status and occupation, gender, age and income; others might be broader and include more general and sociotropic evaluations of interest resulting from a broader sense of community or national "good" (Oskamp and Schultz 2005). The utilitarian assumption is that people have an instinctive drive to be better off and since all these 'goods' come in limited amounts, their allocation across groups is what causes conflict (Citrin et al. 1997; Hempstead and Espenshade 1996). Conflict differentiates and separates individuals while placing them in distinct groups that in turn have distinct group interests. Theories that provide rational interest explanations for anti-immigration attitudes, such as realistic conflict (Bobo 1983), deprivation theory (Citrin et al. 1997) and labour market competition theories (Bonacich 1972), consider cost and benefit along with group interests as the key causal mechanisms leading to anti-immigration attitudes.

2.2. Empirical Implementation

Attitudes towards minority groups can be classified into three groups: cognitive, affective, and behavioural (Kourilova 2011). The cognitive part, which relates to stereotypes, is captured in surveys by questions on how the respondent perceives minorities in terms of, for example, their intelligence, work ethic, propensity to commit crime (Burns and Gimpel 2000), or willingness to adapt to the customs of the host country (McDaniel et al. 2011). The affective part relates to prejudices and is captured in surveys by questions on whether the respondent is e.g. opposed to interethnic marriage, or is unwilling to socialise or work with people from the minority group (Tolsma et al. 2008). The behavioural part relates to discrimination and in surveys is captured by questions on the respondent's preferences to limit the population of a particular minority or to restrict certain employment, welfare or citizenship rights for the members of the minority (Scheepers et al. 2002; Raijman et al. 2003; Coenders et al. 2009; Levanon and Lewin-Epstein 2010; Kossowska et al. 2011).

Other questions that have been implemented in surveys refer to how respondents perceive the consequences of immigration in terms of taxes, availability of jobs, services, culture and so on (McDaniel et al. 2011). Since 2001, many survey questions also refer to government anti-terrorism policies which indirectly affect immigrants and minorities within countries that have been directly affected by terrorist attacks such as the US, Spain, and the UK (Kossowska et al. 2011).

While the questions related to stereotypes apply to minority groups that can be identified either by ethnicity or immigration status, the questions related to prejudices apply mostly when the minority group is defined by ethnicity. On the other hand, questions related to discrimination in political and employment rights only make sense when the minority group is defined by immigration status. In most empirical studies, however, there is no clear distinction between immigration status and ethnicity. Many papers that focus on attitudes towards immigrant rights use racial prejudices and stereotypes as a predictor for opposition to immigrant rights (Burns and Gimpel 2000; Raijman et al. 2003). For the United States, the literature focuses on attitudes towards specific ethnic groups and countries of origin, such as Hispanics, Blacks, Asians and Arabs, regardless of citizenship status (Berg 2009; Lyons et al. 2010). In studies of attitudes of Europeans on the other hand, the focus is placed mostly on immigration, sometimes with the conditional influence of the race and culture of the immigrants in question (e.g. Scheepers et al. 2002; Schneider 2007; Schlueter and Wagner 2008; Green et al. 2010; Pehrson and Green 2010; Rustenbach 2010; Gorodzeisky 2011).

Because of the data used, here we only focus on immigration status and leave the issue of ethnicity – and its relation with immigrant status – for other research (e.g. Markaki 2012).[2]

2.3. Empirical Findings: Individual and Household Characteristics

In terms of individual characteristics, some studies find that gender differences in racial attitudes are small and limited mostly to attitudes to racial policies (e.g. Hughes and Tuch 2003), although some find that women are more opposed to immigrants than men (Hainmueller and Hiscox 2007). On the other hand, with regards to border control policies in the US, men appear to be more isolationists than women (e.g. Hempstead 1996). Recent studies have also shown that women seem to be more concerned than men about the social integration and economic assimilation of illegal immigrants (Hughes and Tuch 2003; Berg 2010; Correia 2010; Amuedo-Dorantes and Puttitanun 2011). Women also appear to have more exclusionary reactions to immigrants coming from poor countries in Europe (Gorodzeisky 2011) and to report feeling higher levels of economic threat from immigration, while men seem to be more prone to feelings of cultural threat (Pichler 2010).

Age appears to have a small and often statistically insignificant effect when all other causes are accounted for (Hempstead and Espenshade 1996; Hainmueller and Hiscox 2007). When age exerts significant influence, it is always positively correlated to prejudices and anti-immigration attitudes (Hempstead and Espenshade 1996; Burns and Gimpel 2000; Pichler 2010). Altogether, older individuals are more likely to support exclusion of out groups (Gorodzeisky 2011).

More educated individuals are less likely to express prejudice, negative stereotypes towards minorities and racism; they seem to be more favourable to immigrants regardless of their origin or skill level, and less likely to evaluate immigration as having a negative effect on culture, crime or the economy (Herreros and Criado 2009). In the literature this is explained in two ways. First, according to the labour market competition theory, since immigrants mostly work in low-skilled manual jobs, they are likely to be complement – rather than substitute – to highly educated natives (e.g. Bonacich 1972; Bogard and Sherrod 2008; Hainmueller and Hiscox 2010). Second, the link between education and attitudes is rooted in the fact that educational systems tend to promote acceptance of different cultural values and beliefs (Hainmueller and Hiscox 2007).

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[2] This issue can be analysed by focussing on one country, such as the UK, with detailed data on both ethnicity and immigrant status. However, this would not allow cross-country comparisons.

Consistent with rational competition theories, employment status and income have been shown to be crucial predictors of attitudes to minorities. Unemployed people and blue collar workers are more likely to support the restriction of immigration from poorer countries since these types of immigrants are more likely to be low-skill workers and more likely to compete with unemployed and blue-collar native workers (Gorodzeisky 2011). Individuals working in highly skilled occupations have been found to be less prejudiced towards out groups (e.g. Noel and Pinkney 1964).

In terms of psychological status, 'dark' personalities (i.e. the so-called Dark Triad of narcissism, Machiavellianism and psychopathy as subclinical personality traits discussed by Hodson et al. 2009) have been shown to be more likely to express prejudice and fears of threat from immigration, while social participation and community engagement tend to decrease prejudice and negative reactions (e.g. Noel and Pinkney 1964).

That part of the literature concerned with cultural distance and opposition to ethnic intermarriage has shown that people who have strong family networks are more resistant to ethnic intermarriage. This supports the idea that family cohesion promotes interactions with culturally similar persons, and that people from different cultural backgrounds can be seen as threatening the cultural identity of one's own group (Huijnk et al. 2010). In addition, opinions towards ethnic diversity have been found to be highly correlated with intergroup relations (McIntosh et al. 1995; Thomsen et al. 2008; Cohrs and Stelzl 2010; Duckitt and Sibley 2010; Morrison et al. 2010).

As mentioned above, in many cases negative attitudes towards ethnic minorities and stereotypes towards specific ethnic groups are used as a predictor of anti immigrant or restrictionist views: people who hold strong negative stereotypes towards different ethnic groups in relation to their work ethic or predisposition to violence are more likely to prefer restricting immigration in the host country (Burns and Gimpel 2000; Golebiowska 2007; Pearson 2010). Similarly, threat to cultural values seems to drive more opposition to immigration than economic threat such as possible negative impacts of immigration on employment or wages (Schneider, 2008). More recent studies have focused on the role of multiculturalism in the formation of national identity and intergroup relations. Multiculturalism, as the acknowledgement and appreciation of racial and ethnic differences, may generate both negative and positive reactions: some members of the dominant group perceive it as a threat to national identity while others perceive it as an encouragement to decrease prejudice (Morrison et al. 2010). Studies that have tried to reconcile this

contradiction have found that multiculturalism increases perceptions of threat mostly among individuals with a strong national identity (e.g. Verkuyten 2009; Morrison et al. 2010).

2.4. Empirical Findings: The Local Context

The theories summarised in the previous sections also suggest that, besides individual characteristics, the local context is crucial when thinking about attitudes towards minorities and immigrants. The type of neighbourhood, area, city, region or country where an individual lives determine how many and what kind of immigrants or ethnic minorities he or she meets every day: the environment around the individual creates a filter which may condition the perceptions of the minority groups (Middleton 1976; Studlar 1977; Stein et al. 2000). A low skilled male worker in a poor suburb of London or Paris is likely to develop different attitudes towards minorities compared to a low skilled male worker in an affluent rural area in Sweden or Denmark. Borjas (1999) has found that the perceived impact of immigration on the labour market depends on the health of the economy in the host country as well as on how the native workforce compares with the immigrants in terms of skills and the size of the groups. Analyses of contextual influences on attitudes towards immigrant and minority groups have suggested two main explanations, which lead to opposite predictions: intergroup competition and intergroup contact theories. Intergroup competition argues that natives and immigrants compete for scarce resources and privileges: the scarcer these resources and the larger the immigrant group, the bigger the threat (Quillian 1995; Rowthorn and Coleman 2004). Intergroup contact theories argue that regular contact between the two groups eases tensions and reduces prejudice and exclusionary views because the groups are more likely to become familiar with each other and develop relationships that would counteract stereotypes and feelings of threat (Berg 2009).

Empirical studies analysing these theories incorporate aggregate level data in their models. According to both theories, two basic aggregate sources of threat should be included in the model: the economic circumstances of the area and the size of the minority group relative to the native population (Stein et al. 2000). While intergroup contact theory predicts that higher concentrations of immigrants and exposure to an ethnically diverse environment will foster more positive feelings between the two groups (Marschall and Stolle 2004), intergroup conflict theory predicts the opposite effect.

Empirical findings remain contradictory but more recent studies have found that other contextual factors have an influence on the way contact between the groups results in either increased or decreased conflict. Higher concentrations of minority groups in prosperous

areas, high status of natives and less segregated neighbourhoods lead to more positive relations (Branton and Jones 2005) while high concentrations of minorities in troubled and poor areas foster feelings of threat and increase conflict (Verkuyten et al. 2010; Vezzali et al. 2010; Vezzali and Giovannini 2011). These conditioning effects seem to hold for analyses at different geographical levels.

The preferred geographical level for this type of analysis depends on the focus of the study. Cross-national comparisons are broader in scope but may suffer from data incompatibilities and lack of detail; analyses at smaller geographical levels may be more comprehensive but less robust. Studies using contextual influences in municipalities, neighbourhoods and urban areas test both conflict and contact theories (e.g. Burns and Gimpel 2000; Rocha and Espino 2009) and find similar results as studies using countries and regions (Schlueter and Wagner 2008; Mirwaldt 2010).

Since Quillian's (1995) first cross-national study of attitudes towards immigrants, there have been numerous analyses focusing on country comparisons (Pettigrew 1998; Scheepers et al. 2002; Mayda 2006; Semyonov et al. 2006; Weldon 2006; Hainmueller and Hiscox 2007; Meuleman et al. 2009; Pichler 2010; Rustenbach 2010). Most of these studies test aggregate sources of competition at the regional and/or national level. Some find that a larger immigrant population increases both intergroup contact and perceived threat across regions, but also that intergroup contact reduces threat within regions (Schlueter and Wagner 2008). Schneider (2007) finds that the percentage of low-educated immigrants over the whole population has no effect on feelings of ethnic threat from immigration, while the percentage of non-western immigrants increases it. All studies agree that differences across countries and regions in the perception of ethnic threat are statistically significant and need to be accounted for, most often with the use of multi-level random or fixed effects models. Multi-level estimations focus on explaining attitudes at the individual-level while allowing for effects to vary across regions and/or countries in which individuals live. However, these estimations incorporate the heterogeneity across countries and regions rather than explain it. We address this gap in previous research by isolating the variation in anti-immigration attitudes across regions and explain it by aggregate measures of the regional context.

Finally, it has been shown that perceptions of the size of the out group have a stronger influence on attitudes than actual size does (e.g. Herda 2010). Respondents asked to estimate the percentage of immigrants in their country often overestimate the number of immigrants as much as 7 times, and negative reactions were largely influenced by this misconception rather

than by the actual size of the out-group (Alba et al. 2005; Brade et al. 2008; Boomgaarden and Vliegenthart 2009).

It is clear that a large number of individual and regional characteristics are likely to play a role in shaping individual attitudes to immigration and cross-regional differences in such attitudes. In the next section we present our modelling strategy to explain cross-national and cross-regional differences in attitudes to immigration.

3. Data and Measurement

3.1 The European Social Survey

The first part of our analysis is based on individual data from the ESS. The ESS is a repeated cross sectional household survey focusing on attitudes but also including background demographic and labour market characteristics of respondents. The ESS started in 2002; data are collected at two-year intervals and cover up to 33 countries (see www.europeansocialsurvey.org for more details). In our analysis we use four rounds of data (2002, 2004, 2006, and 2008) and include respondents from 111 regions of 24 European countries; the list of countries is in Table 1. The table also shows the total number of valid observations for each of the 24 countries over the four rounds; the minimum and maximum number of observations by region and round within each country; the classification of regional boundaries used and the round in which the country participated in the ESS survey. Although most countries participated in all four rounds, we also keep those who participated only in some rounds; in some cases we exclude those rounds for which the data are not comparable with the EU LFS, which we use to compute the regional aggregates. For most countries we use regions at NUTS1 level, but we use NUTS2 in those cases where NUTS1 regions are too large geographically.

Table 1. European Social Survey sample sizes

Country	Observations	Min	Max	ESS Round	Number of Regions	NUTS Level
Austria	4171	285	608	123	3	NUTS2
Belgium	4693	267	834	1234	2	NUTS1[a]
Bulgaria	2264	91	372	34	6	NUTS2
Cyprus	1291	601	690	34	1	NUTS1
Czech Republic	3751	704	1620	12 4	1	NUTS1
Germany	8065	9	367	1234	16	NUTS1
Denmark	4666	1135	1195	1234	1	NUTS1
Estonia	2916	820	1145	234	1	NUTS1
Spain	4124	4	301	1234	16	NUTS2[b]
Finland	6517	1534	1762	1234	1	NUTS1
France	3015	103	480	1234	7	NUTS1[c]
United Kingdom	6305	41	273	1234	12	NUTS1
Greece	2909	62	429	12 4	4	NUTS1
Hungary	4142	230	463	1234	3	NUTS1
Ireland	4646	251	1112	1234	2	NUTS2
Italy	1362	66	192	12	5	NUTS1
Luxembourg	1270	532	738	12	1	NUTS1
Netherlands	5759	1284	1713	1234	1	Country
Norway	5580	1221	1588	1234	1	Country
Poland	3213	20	161	234	16	NUTS2
Portugal	4391	24	572	1234	5	NUTS1[d]
Sweden	5534	1322	1446	1234	1	Country
Slovenia	3428	335	546	1234	2	NUTS2
Slovakia	3194	245	602	234	3	NUTS2[e]
Total	97208				111	

a) Bruxelles merged with Vlaams Gewest; b) Ceuta, Melilla and Canaria excluded; c) City of Paris merged with Paris region; d) Acores and Madeira excluded; e) Bratislava city merged with region Zapadne Slovensko

Expressed negative attitudes towards immigration are operationalised using three questions that ask respondents on a scale from 0 to 10 to evaluate immigration as being bad or good for the country's economy, which we call economic threat; as undermining or enriching the country's cultural life, which we call cultural threat; and as worsening or improving life in the country, which we call overall threat. We recode the ten-point scales into binary variables suitable for probit regressions with the value one given to those who answer 0-4 (immigration is bad for the economy; undermining cultural life; worsening life in the country) while a value of zero is given to those who answer 5-10 (immigration is good for the economy; enriching cultural life; improving life in the country).

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3.2 The EU Labour Force Survey

The aggregate indicators at the regional level are computed from the EU LFS, which is a large sample survey of households providing quarterly data on individual characteristics of people aged 15 and over, with a focus on labour market activities (see http://epp.eurostat.ec.europa.eu for more details). The EU LFS is conducted in 33 countries, including all EU countries included in the ESS. We use the annual individual-level dataset with design and population corrective weights to compute aggregates at the regional level and separately for the different years of the ESS; the mean (across regions and over time) of the aggregated variables is shown in Table 2.

As already mentioned, conflict theory predicts anti-immigration attitudes to increase with immigrant group size, while contact theory expects diversity to promote familiarity and tolerance (Stein et al. 2000; Schlueter and Scheepers 2010). We test these theories by including in the models the percentage of immigrants over the whole population; and the percentages of immigrants from EU and from non-EU countries to account for regional diversity in inter-group contact. The distinction between EU and non-EU immigrants is based on country of birth. Table 2 shows a clear distinction across European countries. Most eastern European countries have less than 2.5 percent of immigrant population; the exceptions are Slovenia and Estonia. The large proportion of immigration in Estonia is due to its legacy with the USSR and its definition of immigration: most of these immigrants are likely to be native Russians, consistently with the figures in Table 2. Most of Western Europe shows comparatively higher levels of immigration, with the most notable exception of Italy, which participated only in the first two rounds of the ESS. The high proportion of immigrants to Luxembourg is likely due to the presence of part of the European Commission: most immigrants to Luxembourg are from other EU countries.

Table 2. Mean percentages of EU LFS aggregate variables by country

Country	Immigrants	EU born	Non EU born	Natives unemployed	Immigrants unemployed	Natives low qualifications	Immigrants low qualifications	Natives high qualifications	Immigrants high qualifications
Austria	11.18	2.16	9.02	4.06	9.41	16.74	30.65	17.41	17.31
Belgium	11.3	5.93	5.37	7.07	15.17	25.87	35	34.48	32.62
Bulgaria	0.23	0.07	0.2	8.01	3.53	17.79	7.79	22.45	42.73
Cyprus	14.91	4.74	10.17	3.51	4.82	23.95	27.44	34.76	33.5
Czech Rep.	2.4	0.16	2.25	6.43	10.25	7.58	20.61	13.44	19.96
Germany	7.11	1.68	5.43	10.19	21.04	13.36	36.33	24.91	20.76
Denmark	6.19	1.42	4.77	3.79	8.74	20.74	23.81	30.66	33.84
Estonia	15.35	0.18	15.17	6.9	8.26	12.1	5.44	31.94	39.72
Spain	8.26	1.34	6.92	8.96	13.72	47.41	44.38	32.3	24.78
Finland	2.26	0.71	1.76	8.66	18.73	20.53	26.25	33.19	27.25
France	9.81	3.08	6.73	8.5	14.38	26.39	41.14	26.72	25.87
UK	7.95	1.92	6.03	4.88	6.84	25.87	19.11	28.77	33.38
Greece	5.46	0.45	5	8.8	11.24	38.28	46.1	21.99	14.98
Hungary	1.65	0.13	1.53	6.52	6.03	15.3	13.44	19.83	30.3
Ireland	8.38	4.88	3.5	4.72	6.65	31	18.21	28.34	39.39
Italy	1.51	n.a[a]	n.a[a]	9.65	9.53	45.19	51.45	12.93	12.22
Luxembourg	31.6	26.05	5.55	2.7	5.4	24.99	42.23	21.36	26.92
Netherlands	11.01	1.98	9.04	3.12	8.16	27.19	31.64	28.6	25.39
Norway	8.25	2.7	5.54	3.2	7.45	17.1	20.39	32.44	37.26
Poland	1.23	0.42	0.98	13.74	7.58	11.77	16.57	19.12	31.08
Portugal	6.03	1.36	4.68	6.42	8.12	74.21	50.14	11.98	21.17
Sweden	13.23	4.06	9.17	5.31	12.85	16.89	21.02	27.74	30.67
Slovenia	6.7	0.57	6.12	5.26	7.2	15.79	28.98	20.91	13.42
Slovakia	0.84	0.04	0.81	15.3	17.59	8.15	9.99	14	26.35

Entries are averages across regions and ESS rounds; a) Italy does not provide information on country of birth.

Since the literature suggests that regional job scarcity can trigger negative reactions to immigration due to labour market competition between natives and immigrants (Rustenbach 2010), we include in the models regional unemployment rates for natives and immigrants. The unemployment rates are computed using the ILO standard definition of unemployment and are calculated as the percentage of economically active natives or immigrants who are unemployed.[3] The unemployment rate among natives ranges from 2.7 percent in Luxembourg to 15.3 percent in Slovakia. Among the stronger economies in the EU, on average Germany shows the highest unemployment rate for natives at 10.19 percent. In almost all cases, the percentage of unemployed immigrants significantly exceeds that of the natives. On average, immigrants in Germany have 11 percentage points higher unemployment compared to natives (21.04 percent). Bulgaria has the lowest average immigrant unemployment rate at 8 percent.

Labour market competition theories suggest that highly skilled immigrants would provoke negative reactions in regions with highly skilled natives and vice versa (Gorodzeisky 2011), although social capital and contact theories would suggest that high education in either group will foster more positive reactions to immigration altogether (Herreros and Criado 2009). To analyse these theories we compute the percentage of economically active immigrants and natives with high and low qualifications. Table 2 suggests that most countries host two types of immigrants: while in most cases the proportion of immigrants with low level qualifications is higher than the proportion of natives with low level qualifications, the same is true also for the proportions of those with high level qualifications. The exceptions to this rule come mostly from countries with a higher percentage of EU immigration, where more immigrants are highly educated compared to natives. This suggests that the distribution of qualifications among immigrants is different than among natives, with immigrants more likely to have either low or high, but not mid-level, qualifications.

3.3 Aggregate Data from Other Sources

As suggested by previous literature, the overall performance and health of the economy in a given country can provide an indication of available resources as well as the potential capacity of the economy to integrate a growing workforce, and thereby might have an impact on the way the effects of immigration are being perceived (Quillian 1996). For this reason, the annual regional economic growth rate is also included in the analysis alongside the other

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[3] The economically active population is defined here as the total number of persons who are of working age and who are not disabled, retired, in education or unpaid family workers.

aggregate regional variables. Economic growth is calculated using the regional GDP per capita published by Eurostat and corresponds to the percentage change on the previous year.[4] The growth rate is preferred to the GDP per capita in thousands that has been used in the literature (e.g. Rustenbach 2010), because of its focus on the annual performance of the regional economy rather than its initial capacity and because the growth rate is less dependent on the size of the economy and more likely to be comparable across countries and regions.

Table 3, which shows the means of the additional aggregate variables by country and over time, suggests that among the 24 countries in our analysis, the countries with the highest average regional growth rates between 2002 and 2008 are Slovakia with 16.6 percent, Estonia with 11.5 percent and Poland with 11.5 percent. Regions in the UK, Germany, Portugal and Ireland show the lowest average growth rates with 0.7, 2.6 and 2.7 percent, respectively.

Furthermore, recent research has shown that natives tend to over-estimate the size of the immigrant population in their country and suggests that this "innumeracy" – rather than the actual size of the immigrant population – is what drives negative reactions to immigration (Herda 2010). Round 1 of the ESS asks respondents to give an estimate of the percentage of immigrants in their country. We assume that people's estimation of immigration in their country is likely to be informed by their perception of the number of immigrants living in their region. Therefore we compute the mean estimation within each region by aggregating the initial individual-level variable. We then compare the perceived (ESS) to the actual (EU LFS) proportion of immigrants and compute a dummy that takes a value of one if the difference between perceived and actual proportion of immigrants in the region is larger than 9 percent and zero otherwise. Since this question is asked only in round one, we assume that the average estimation of the proportion of immigrants does not change over time; however, we compare it with the actual proportion of immigrants computed from the EU LFS for each of the ESS rounds. Hence, the overestimation dummy may vary over time. For those countries who did not participate in round one we have no way to compute the overestimation dummy and we therefore always set it to zero (no overestimation).

Table 3 shows that most countries are relatively homogeneous: people tend to largely overestimate the proportion of immigrants in all regions of Belgium, France, Greece, Hungary, Italy, the Netherlands, Portugal and Slovenia. Austria, Germany, Spain, the UK, Ireland, and Luxembourg show some variation across regions and over time. Because this variable may be seen as quite controversial, we run extensive sensitivity analyses around it

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[4] The data are publicly available and downloaded from Eurostat on the 06/09/2012.

(see also Section 5.3). Our empirical results do not change when we conduct the analysis after we compute the overestimation using the national average of immigrants rather than the regional. The results are also robust to the exclusion of those five countries that did not participate in round one, as well as to the omission of the overestimation variable from the analysis.

Table 3. Means of additional aggregate variables by country

Country	Change in GDP per capita (% change on previous year)	Regional overestimation larger than 9% (dummy)
Austria	n.a.[a]	0.56
Belgium	3.57	1
Bulgaria	12.94	0
Cyprus	6.28	0
Czech Republic	15.30	0
Germany	2.60	0.58
Denmark	3.57	0
Estonia	11.55	0
Spain	5.17	0.38
Finland	3.74	0
France	3.11	1
UK	0.65	0.92
Greece	5.70	1
Hungary	5.68	1
Ireland	2.73	0.25
Italy	n.a.[a]	1
Luxembourg	5.09	0.5
Netherlands	3.69	1
Norway	6.92	0
Poland	11.53	0
Portugal	2.67	1
Sweden	3.25	0
Slovenia	7.07	1
Slovakia	16.61	0

Entries are averages across regions and ESS rounds; a) not available

4. Modelling Strategy

We analyse cross-regional differences in anti-immigration attitudes using a two-step model similar to Bell et al. (2002). We first estimate an individual level model in which the probability that individual i expresses anti-immigration attitudes is explained solely by individual and household characteristics and is modelled via the latent variable A^*_{irt}:

$$A^*_{irt} = X'_{irt}\beta + D_{rt} + \varepsilon_{rt} \tag{1}$$

Where ε_{rt} are i.i.d. and follow a multivariate normal distribution. The respondent expresses negative attitudes towards immigration if A^*_{irt} is greater than zero. Negative attitudes towards immigration correspond to the three binary dependent variables; a) economic threat, b) cultural threat and c) overall threat. Hence, we estimate three separate probit models. Furthermore, since our focus is on natives' attitudes towards immigrants, we exclude all individuals not born in the country. We include ethnic minorities and second generation immigrants in the sample and include controls for belonging to an ethnic minority and for having one or both parents born abroad (second generation).

Explanatory variables (X'_{irt}) include demographic characteristics such as gender; four age group dummies (up to 25, 26-39, 40-59 and above 60); a dummy for second generation immigrants and one for those who belong to an ethnic minority. For the type of area of residence, we include dummy variables for individuals who described the area where they live as a 'big city', as a 'suburb of a big city' or as a 'rural area', in comparison to a 'small city' and 'town'. We also include dummies for education: less than lower secondary education and tertiary education, compared to lower and upper secondary education; and for activity status: ILO unemployed, retired and in paid work (i.e. either employed or self-employed) using all other economically inactive categories as a reference group. For types of occupations we include one dummy for senior officials, professionals and technicians and one for customer services, processors and elementary occupations, leaving administrative occupations, skilled trades and personal services, as reference group (following ISCO-88 International Standard Classification for Occupations). In this variable, both employed and unemployed respondents are classified based on their main/usual occupation. As a proxy of job security we include a dummy for whether the respondent has a job contract that is of unlimited duration, in contrast to those with a limited contract or no contract at all (those with no contract are e.g. self-employed, free lance, or out of work). A dummy is also included for

those with supervisory duties at work as well as one for union or trade organisation membership. In terms of perceptions, we include two dummy variables that capture economic evaluations: one for respondents who state that they are dissatisfied with the current state of their country's economy, and one for those who say they are finding it difficult to cope on their current income. The models also include a full set of time-region dummies D_{rt} to identify the respondents' region (r) and round (t) and to capture remaining differences across regions and over time in the probability of expressing anti-immigration attitudes. The D_{rt} dummies are negatives for those regions-years in which anti-immigration attitudes are lower than what we would expect given the individual characteristics included in the model (i.e. given the socio-demographic composition of the regional population), and positive for those regions-years in which anti-immigration attitudes are higher.

In the second step we use the time-region dummies D_{rt} as dependent variables of an aggregated-level model. We model these regional differences in average residual anti-immigration attitudes (D_{rt}) as estimated from equation (1) by aggregate level measures of regional conditions:

$$D_{rt} = \alpha + \gamma\, E'_{rt} + \eta_{rt} \tag{2}$$

where E'_{rt} include the percentage of immigrants – either overall or by country of origin (EU, non-EU), depending on the model; the percentage of unemployed among natives and among immigrants; the percentage of natives and of immigrants with low and with high qualifications; the annual growth rate of GDP and the dummy identifying those regions where natives tend on average to overestimate the proportion of immigrants. Since equation (2) is a linear model, we estimate it using OLS.

5. Empirical Results

5.1. Differences across Individuals

We first discuss the results of individual level models where we control for individual and household characteristics that may be associated with attitudes towards immigrants, while accounting for residual differences due to the respondents' region of residence. The majority of our findings, as shown in Table 4, are consistent with our expectations as well as with previous research. Respondents who are older than 60 years of age, those who are retired, those with less than lower secondary education, those working in elementary occupations and

those who are dissatisfied with the current state of the economy or have difficulties coping on their current income are more likely to express all types of threat from immigration. The opposite is found for those with higher or tertiary education, those working in jobs with supervisory duties and those working as managers and senior officials. In line with labour market competition theories, individuals in paid work or unemployed are more likely to evaluate immigration as threatening, compared to those who are economically inactive.

Women and those between the ages of 26 and 39 are more likely to fear economic threat from immigration but less likely to fear cultural threat. Members of unions and trade organisations are less likely to report feeling any kind of threat, which might be due to intra-class solidarity or may be encouraged through anti-prejudice campaigns increasingly organised by unions in recent years. We find that people living in big cities are less likely to view immigration as harmful, whereas respondents living in rural areas are more prone to express feelings of threat. If big cities attract more immigrants looking for work and if higher population density promotes inter-group contact, these findings are in agreement with contact theory.

Table 4. The impact of individual characteristics on anti-immigration attitudes

Predictors	Economic threat	Cultural threat	Overall threat
Female	0.040**	-0.010**	0.005
	(0.003)	(0.003)	(0.003)
Under 25 years old	0.002	-0.006	-0.027**
	(0.005)	(0.005)	(0.005)
26 to 39	0.016**	-0.008*	-0.007
	(0.004)	(0.004)	(0.004)
Above 60	0.020**	0.033**	0.049**
	(0.006)	(0.005)	(0.006)
Doing last 7 days: unemployed	0.034**	0.008	0.031**
	(0.008)	(0.008)	(0.008)
Doing last 7 days: paid work	0.010*	0.006	0.010*
	(0.004)	(0.004)	(0.004)
Doing last 7 days: retired	0.023**	0.027**	0.024**
	(0.006)	(0.006)	(0.006)
Supervisory duties	-0.014**	0.002	-0.001
	(0.004)	(0.003)	(0.004)
Member of union	-0.010**	-0.020**	-0.016**
	(0.003)	(0.003)	(0.003)
Unlimited job contract	0.012**	0.006	0.010*
	(0.004)	(0.003)	(0.004)
Less than lower secondary (ISCED 0-1)	0.035**	0.038**	0.038**
	(0.005)	(0.005)	(0.005)
Higher education (ISCED 5-6)	-0.114**	-0.088**	-0.102**
	(0.004)	(0.004)	(0.004)
Manager and senior officials	-0.054**	-0.045**	-0.047**
	(0.004)	(0.004)	(0.004)
Elementary Occupations	0.046**	0.039**	0.040**
	(0.004)	(0.004)	(0.004)
Difficult to cope on income	0.056**	0.040**	0.056**
	(0.004)	(0.004)	(0.004)
Dissatisfied with the economy	0.126**	0.085**	0.116**
	(0.003)	(0.003)	(0.003)
Big city residence	-0.018**	-0.012**	-0.002
	(0.005)	(0.004)	(0.005)
Suburbs of big city	-0.010*	-0.006	0.003
	(0.005)	(0.005)	(0.005)
Rural residence	0.016**	0.010**	0.019**
	(0.004)	(0.003)	(0.004)
One or both parents foreign born	-0.032**	-0.036**	-0.040**
	(0.006)	(0.006)	(0.006)
Belong to an ethnic minority	-0.049**	-0.040**	-0.044**
	(0.010)	(0.009)	(0.010)

Drt dummies	375	369	375
Chi squared (*Drt*)	3986.03	7128.53	5395.84
Prob > Chi2 (*Drt*)	0.000	0.000	0.000
Observations	97130	97247	97246
Log likelihood	-58980	-50840	-58034

Entries are marginal effects from probit models, standard errors in parentheses; models include a full set of dummies D_{rt} for region (*r*) and ESS round (*t*); *p<0.05 **p<0.01; Reference categories are: male; 40 to 59 years old; all other activities; non supervisory duties; never been member of union; limited contract/no contract work; lower secondary, upper secondary and other education; admin, skilled trades and personal services; living comfortably/coping on present income; satisfied with current state of economy (5 to 10); town or small village.

As previously mentioned, the estimations include control dummies for the region of residence and round of the ESS. The χ^2 tests at the bottom of Table 4 show that the D_{rt} are jointly statistically significant, which suggests that there are residual – non-random – differences in anti-immigration attitudes across regions and over time that we cannot explain using the individual level variables. Although initially 390, Table 4 shows that the total number of region-time dummies is 375 in the models for economic and overall threat and 369 in the model for cultural threat. In the estimations of the probit models some *Drt* dummies were dropped due to collinearity, possibly due to small sample size within particular regions and rounds.

The distribution of the region-time dummies is shown in Figure 1. Across the three measures of threat, the distributions appear to be very similar: in most cases the residual impact of the region-time dummies is relatively small and ranges between -1.33 and 0.55 for economic threat, -1.5 and 1.07 for cultural threat and -1.07 and 1.04 for overall threat. The slight difference between the three distributions suggests that the contribution of the individual characteristics to the explanation of anti-immigration attitudes depend on the specific dependent variable we focus on.
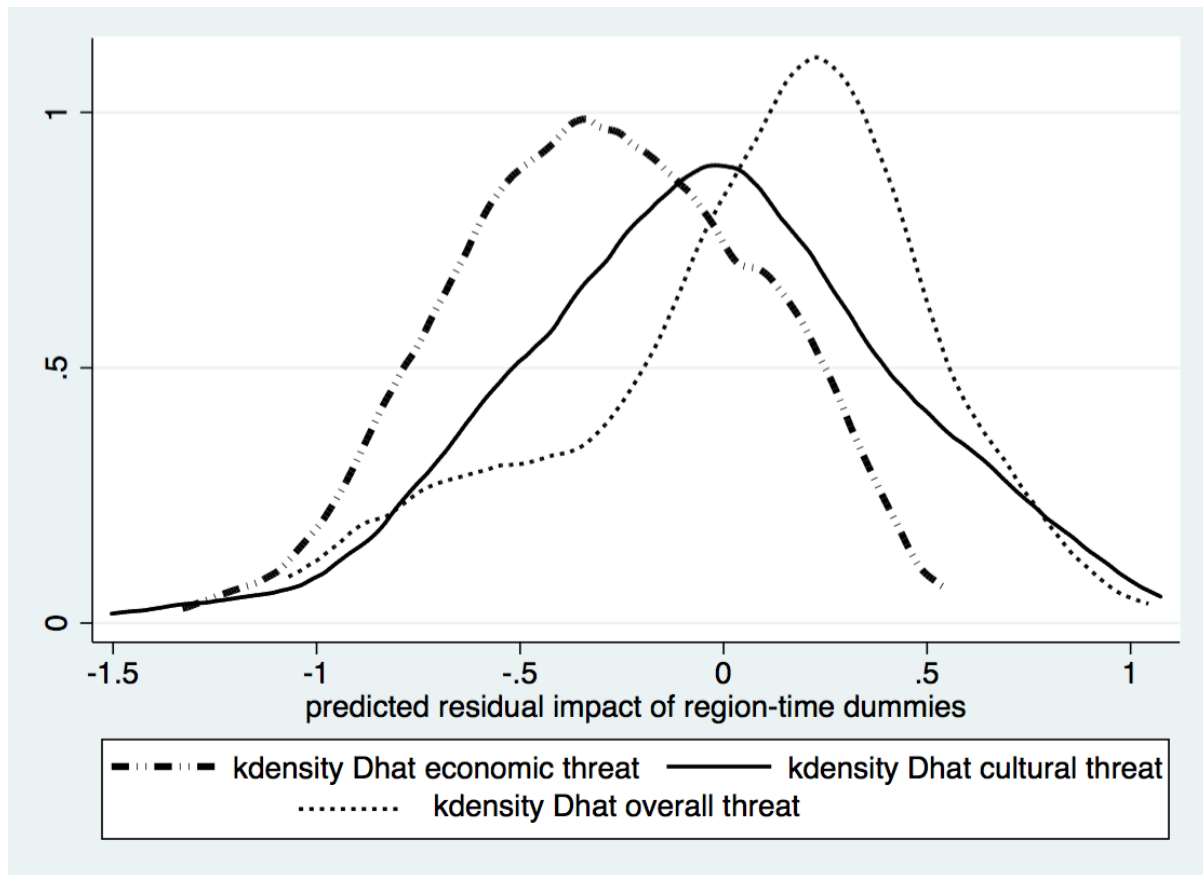
Variable	Obs.	Mean	Std. Dev.	Min	Max
$\widehat{D}_{rt}$ Economic threat	376	-0.293	0.367	-1.329	0.551
$\widehat{D}_{rt}$ Cultural threat	370	-0.043	0.459	-1.504	1.074
$\widehat{D}_{rt}$ Overall threat	376	0.057	0.437	-1.069	1.044

Figure 1. Residual impact of regions on threat

The means of the region-time dummies by country for the three types of threat from immigration are summarised in Table 5. Although country averages might conceal relevant differences across regions and years, there are still large country differences across the models. Respondents living in Austria, the Czech Republic, France, Italy, Norway and Ireland seem to be on average less likely to express economic threat but more likely to fear that immigrants represent a cultural and overall threat. Respondents in the United Kingdom, Cyprus, Estonia, Greece and Hungary are on average more likely than other respondents to fear all types of threat. Respondents in Bulgaria, Spain, Finland, Poland and Sweden are on average less likely to report feeling any kind of threat from immigration.

Table 5. Mean country residual differences D_{rt}

Country	Mean D_{rt} for economic threat	Mean D_{rt} for cultural threat	Mean D_{rt} for overall threat
Austria	-0.317	0.257	0.387
Belgium	-0.037	-0.084	0.290
Bulgaria	-0.539	-0.124	-0.454
Cyprus	0.200	0.941	0.429
Czech Republic	-0.065	0.417	0.309
Germany	-0.254	-0.168	0.145
Denmark	-0.050	0.123	-0.048
Estonia	0.105	0.485	0.582
Spain	-0.650	-0.219	-0.067
Finland	-0.314	-0.821	-0.186
France	-0.211	0.190	0.170
United Kingdom	0.065	0.459	0.403
Greece	0.270	0.874	0.781
Hungary	0.124	0.077	0.330
Ireland	-0.310	0.114	0.005
Italy	-0.496	0.124	0.290
Luxembourg	-0.681	-0.271	0.003
Netherlands	-0.238	-0.168	0.227
Norway	-0.337	0.115	0.228
Poland	-0.544	-0.616	-0.675
Portugal	-0.385	-0.128	0.291
Sweden	-0.343	-0.556	-0.426
Slovenia	0.022	0.152	0.207
Slovakia	-0.072	0.080	0.014

Values are averages across regions and ESS rounds.

Figures 2 3 and 4 geographically map the estimated residual impact (D_{rt}) in 2008 across the three measures of anti-immigration attitudes. The distribution of the predicted residuals is grouped into five quintiles represented by the different colour shades. Native respondents in regions shown in darker colours have higher estimated values in the D_{rt} dummies compared to those in regions with a lighter shade, after controlling for individual and household level characteristics. With the exception of Greece, Austria and those countries entered in the analysis as one region (Cyprus, Czech Republic, Denmark, Estonia, Finland, Luxembourg, Netherlands, Norway and Sweden), we find that anti-immigration attitudes can vary widely, not only across regions of the same country but also across the three types of attitudes. For example, native respondents living in eastern regions of Poland are less likely to express feeling that immigration represents a threat to culture than what we would expect once controlling for individual characteristics, whereas the opposite is found for those living in central Europe. Similarly, those living in three regions in the northeast of Spain are less likely

to express feelings of economic threat from immigration, compared to those in the neighbouring region of Cantabria and in Catalonia. These differences are reversed however, in the case of feelings of threat to the quality of life in the country.
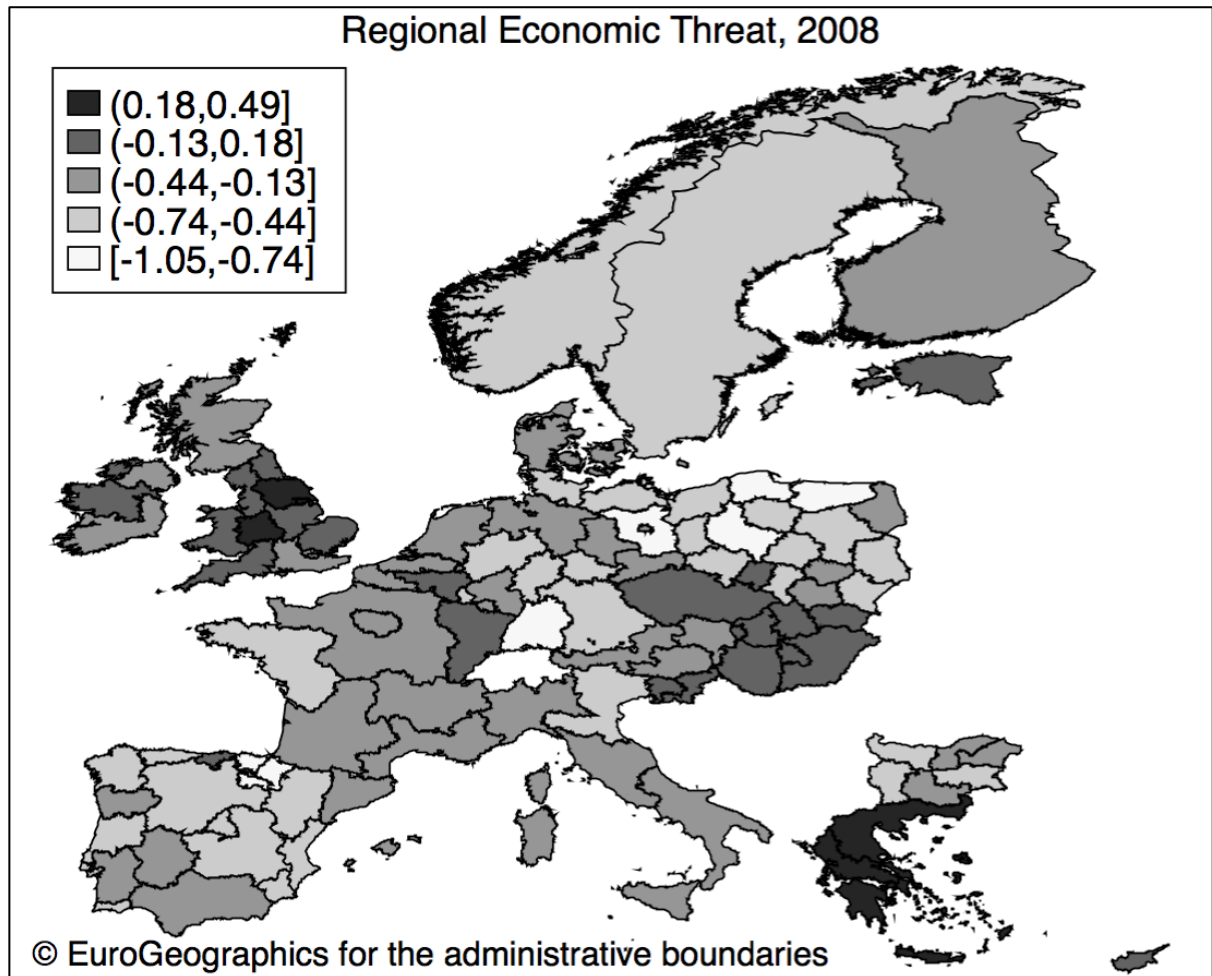

Figure 2. Mean residual impact of regions on economic threat in 2008 (five quintile groups)
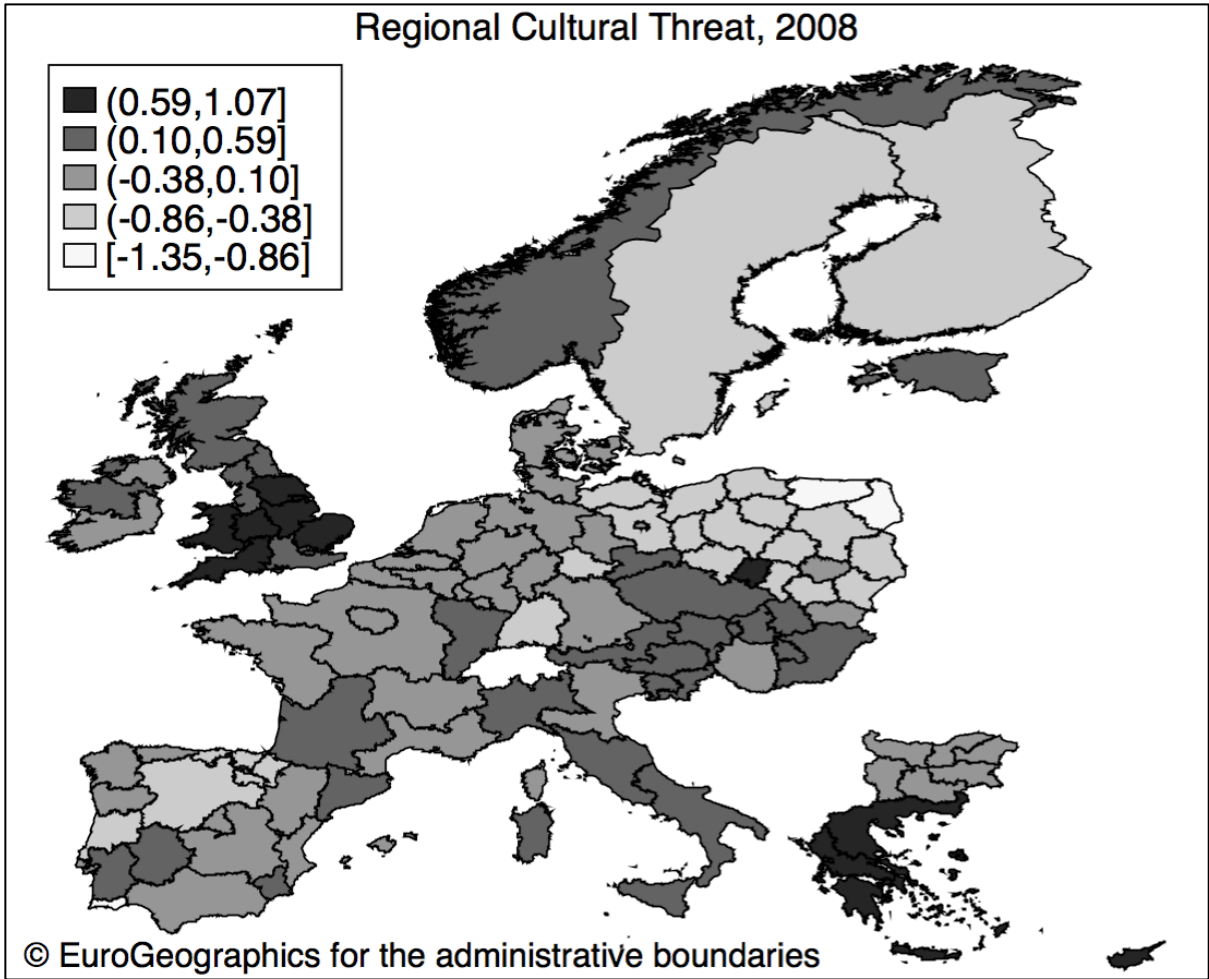
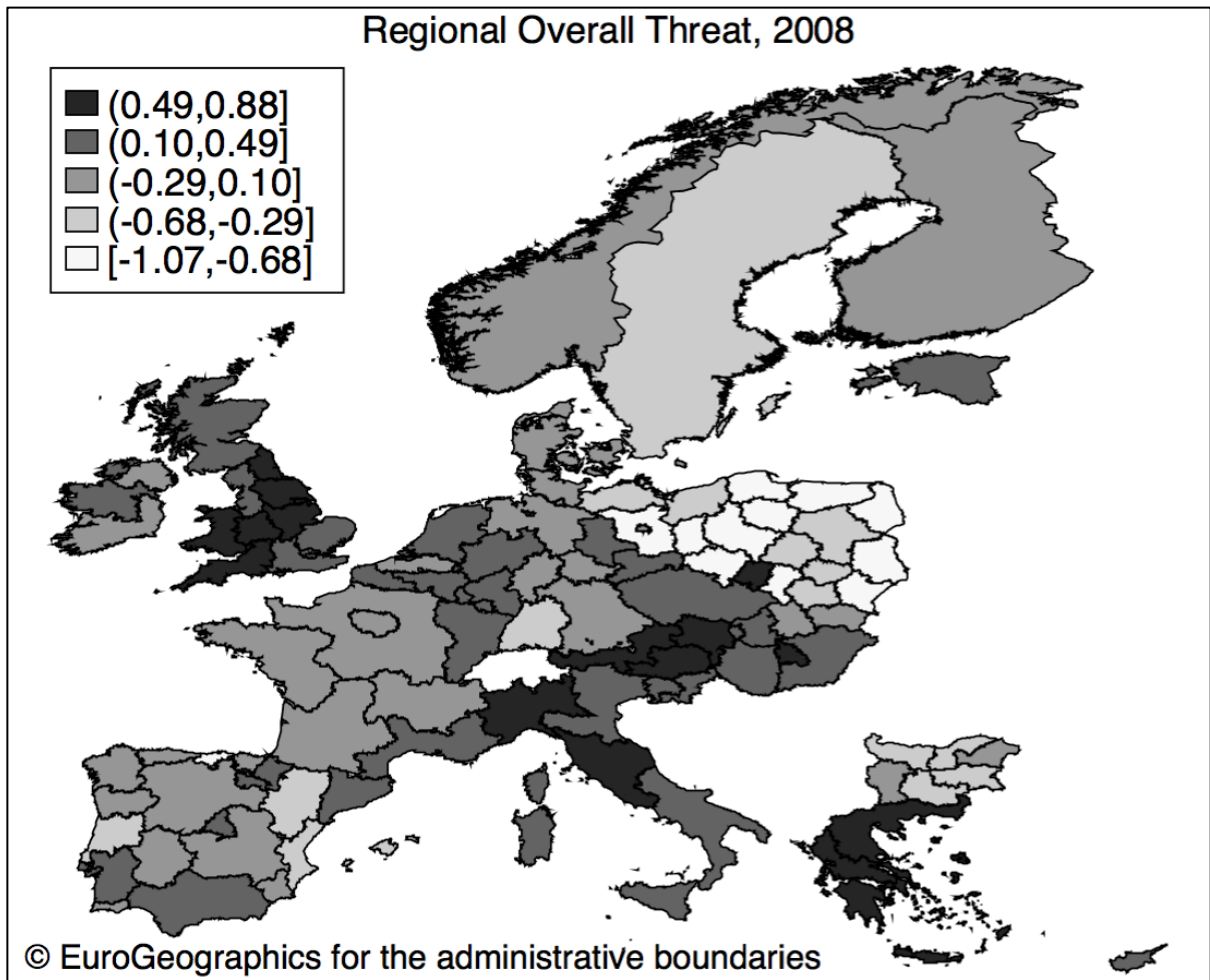Figure 3. Mean residual impact of regions on cultural threat in 2008 (five quintile groups)

Figure 4. Mean residual impact of regions on overall threat in 2008 (five quintile groups)

This heterogeneity might be due to historical and cultural differences across regions and countries but may also be a response to regional variation in resources and in immigration. We address this question in the next section.

5.2. Differences across Regions

The results of the estimation of equation (2), in which we model the region-time dummies as a function of regional factors, are shown in Table 6. The models in Columns (1) include the percentage of the immigrant population among the explanatory variables, while the models in Columns (2) distinguish between EU and non-EU immigrants. The table shows that the percentage of immigrants in the region has a small but statistically significant positive effect for economic, cultural and overall threat. A one percentage point increase in the percentage of immigrants in the region increases feelings that immigrants represent an economic threat

by 1 percent, that they represent a cultural threat by 1.2 percent, and that they are a threat overall, by 1.5 percent. However, when we separate EU from non-EU immigrants the results suggest that it is the percentage of non-EU rather than EU immigrants that increases anti-immigration attitudes. A one percentage point increase in the regional percentage of non-EU immigrants is expected to increase concerns over the impact of immigration on cultural life and life overall by 2.5 percent and on the economy by 1.8 percent.

A one percentage point increase in the unemployment rate of natives is expected to decrease the feeling that immigrants represent a threat to the economy by 1 percent, to culture by 2 percent and to the overall quality of life, by 2.2 percent. This result is in agreement with previous research that reports that both the regional and national unemployment rates decrease anti-immigrant attitudes (Rustenbach 2010). The theoretical choice, however, to account for native unemployment and immigrant unemployment separately is in a sense confirmed by empirical results that show the two variables having opposite association to regional attitudes. A one percentage point increase in the regional unemployment rate for immigrants increases concerns about the overall quality of life by 0.8 percent. This suggests that natives' concerns might be related to the economic situation of immigrants and whether they fare relatively well, thus not becoming an additional burden to the host country.

The regional percentage of highly qualified and economically active immigrants is not statistically significant, whereas a one percentage point increase in the percentage of natives who have high level qualifications reduces economic threat by about 1 percent. Contrary to labour market competition hypotheses, a one percentage point increase in the proportion of natives with low level qualifications reduces feelings of economic threat from immigration by 0.5 percent. The same is found for the percentage of immigrants who have low-level qualifications. The regional growth rate does not appear to have any statistically significant impact on feelings of threat from immigration.

Table 6. Regional determinants of feelings of threat

Predictors	D_{rt} Economic Threat		D_{rt} Cultural Threat		D_{rt} Overall Threat	
	(1)	(2)	(1)	(2)	(1)	(2)
% Immigrants	0.010*		0.012*		0.015**	
	(0.004)		(0.005)		(0.004)	
% EU Immigrants		-0.006		-0.016		-0.006
		(0.008)		(0.010)		(0.008)
% Non EU Immigrants		0.018**		0.025**		0.025**
		(0.005)		(0.007)		(0.005)
% Natives unemployed	-0.011*	-0.012**	-0.020**	-0.021**	-0.022**	-0.023**
	(0.004)	(0.004)	(0.006)	(0.006)	(0.005)	(0.005)
% Immigrants unemployed	0.004	0.003	-0.003	-0.004	0.008**	0.008**
	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)
% Natives with low qualifications	-0.005**	-0.006**	-0.000	-0.001	0.001	0.000
	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)
% Immigrants with low qualifications	-0.004**	-0.004**	-0.004*	-0.004	-0.001	-0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
% Natives with high qualifications	-0.009**	-0.011**	0.002	-0.001	-0.001	-0.004
	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)
% Immigrants high qualifications	-0.001	-0.000	-0.003	-0.002	-0.002	-0.001
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
% Change in GDP per capita	-0.004	-0.003	0.001	0.001	-0.005	-0.005
	(0.003)	(0.003)	(0.005)	(0.004)	(0.004)	(0.004)
Overestimation dummy	0.345**	0.355**	0.408**	0.425**	0.412**	0.424**
	(0.040)	(0.040)	(0.053)	(0.052)	(0.044)	(0.044)
Constant	0.065	0.082	0.034	0.065	-0.065	-0.041
	(0.108)	(0.108)	(0.143)	(0.141)	(0.120)	(0.119)
Observations	345	345	339	339	345	345
R^2	0.312	0.324	0.276	0.298	0.423	0.436

OLS, standard errors in parentheses; *p<0.05 **p<0.01

The overestimation dummy consistently shows the largest coefficient in all models. Feelings that immigrants represent a threat are between 34 and 42 percent higher in regions where natives significantly overestimate the presence of immigrants.

5.3. Sensitivity Analysis

Different econometric methods can be used to estimate the impact of individual, household, and regional characteristics on anti-immigration attitudes. In this paper we use a two-stage approach to estimate the impact of the regional characteristics; however, it is also possible to estimate the impact of both individual and aggregate level characteristics together in one

stage rather than two by estimating individual level probit models with standard errors clustered by region and round. The results of these models are consistent with the findings discussed in the main analysis, although one notable change relates to the impact of the economic growth in the region, which now seems to increase the probability that the respondent thinks that immigrants are a threat to the country's culture and quality of life. The inclusion of country dummies in these models, as expected, weakens the impact of the other regional characteristics, which remain statistically significant in the models analysing economic threat, but become statistically insignificant when estimating the propensity of native respondents to express feelings of threat to culture and life overall. This may suggest that differences across countries are likely to be more important than differences across regions in shaping fears that immigrants represent a threat to culture and life overall, while regional characteristics within each country are still relevant when discussing fears that immigrants represent a threat to the economy.

When these one-step models are estimated using OLS rather than probit the results change only little. The impact of the percentage of immigrants in the region is no longer statistically significant across the three dependent variables although the effect of the percentage of immigrants born outside the EU remains unchanged. The impact of economic growth in the region appears to increase feelings that immigrants are a threat to culture and life overall.

As discussed in section 4, for ease of interpretation we have recoded the original ESS dependent variables from a 10-point scale into binary variables. If we estimate the one-stage models using the original – rather than recoded – variables by means of OLS we find little differences in our results.

When we estimate our two-stage models, the dependent variable in the second stage – the residual effects represented by the estimated region-time dummies D_{rt} – represent effects that are estimated and may therefore be affected by measurement error, as we use the mean predicted effects and do not account for standard errors in their estimates. This may result in biased standard errors in the second stage models and may therefore lead to wrong inference. When we estimate the standard errors in the second stage models using bootstrap with 1,000 replications, our results remain unchanged. However, when we add country dummies in the second stage models, as expected almost all aggregate variables lose statistical significance, with the exception of the impact of the percentage of immigrants born outside the EU which remains a relevant predictor.

As already mentioned, the overestimation variable we use in our analysis is computed using ESS data (i.e. on a relatively small sample size), is available only for the first round and is not available for all countries. If we exclude this variable from the models most variables remain unchanged with the exception of the measure of economic growth, which becomes negative and statistically significant. If we include overestimation as the difference between the regional average estimation of the percentage of immigrants and the regional percentage of immigrants computed from the EU LFS our results remain unchanged with the exception once again, of the measure of economic growth, which becomes negative and statistically significant. If we compute the overestimation dummy at the country level rather than at the regional level we find no major differences in the estimated effects of the regional variables apart from the impact of the percentage of immigrants born outside the EU, which becomes statistically insignificant.

In summary, our results are rather robust to changes in the model specification with the only exception of the measure of economic growth which varies in its sign and statistical significance.

6. Conclusions

In this paper we discuss the theoretical and empirical contributions to the literature on anti-immigration attitudes that have been proposed by different disciplines within the social sciences. We then empirically analyse differences in natives' anti-immigration attitudes across 111 regions of 24 European countries between 2002 and 2008 using individual level data from the European Social Survey and indicators of regional conditions computed from the EU Labour Force Survey. We measure anti-immigration attitudes by means of three measures that ask respondents to evaluate the impact of immigration first on the country's economy, secondly on culture and thirdly on the quality of life overall. We control for individual and household level characteristics and isolate the residual impact of the region in native respondents' anti-immigration attitudes. We then explain the residual regional heterogeneity in attitudes with aggregate level measures of regional conditions that relate to population composition, economic performance, labour market and skills.

This paper contributes to the existing empirical literature on anti-immigration attitudes in two ways. First, rather than only analysing individual determinants, we use a two-stage estimation approach which helps us focus the analysis on the explanation of regional heterogeneity in attitudes. Second, by computing the regional variables from the individual level dataset of the EU Labour Force Survey rather than relying on aggregate data, we are able to test new hypotheses on the impact of the regional context on anti-immigration attitudes. This allows us for example to account separately for immigrants born within and outside the EU, to include unemployment rates separately for natives and immigrants, as well as proportions of natives and immigrants with low and high level qualifications.

Our findings suggest that an increase in the regional unemployment rate of immigrants and the percentage of immigrants born outside the EU are both associated with increased concerns in the population over the impact of immigration on the country. However, an increase in the regional unemployment of natives is associated with a decrease in feelings of threat from immigration. We also find that higher proportions of both natives and immigrants with low-level qualifications are associated with lower feelings of economic threat from immigration, while anti-immigration attitudes are significantly higher in regions where natives on average overestimate the level of immigration. Our findings thus contradict hypotheses based on economic competition and in particular, employment competition within the low-skilled, manual workforce. They also suggest that differences in anti-immigration attitudes across regions in Europe may not be as closely related to the current economic

conditions of the region, as they might be driven by concerns over the conditions of the immigrant population in that region, in addition to an overall inflated estimation of the extent of immigration.

Finally, our empirical results indicate the need for future research to account for local conditions separately for natives and immigrants and for EU and non-EU immigrants, since their associations with anti-immigrant attitudes appear to diverge.

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