Article

Labour-market competition, recession and anti-immigrant sentiments in Europe: occupational and environmental drivers of competitive threat

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Abstract

Research on attitudes towards immigration has overemphasized the subjective dimension of threat, while the objective bases of native-immigrant competition remained largely under-studied. I investigate the impact of both occupational and environmental sources of economic competition on attitudes towards immigration in Europe. Drawing on social stratification and labour economics theory, I discuss three dimensions of the occupation affecting exposure to competition: (i) skill specialization; (ii) monitoring costs; and (iii) the mix of manual versus communicational skills. Environmental correlates are tested by estimating the net change in anti-immigrant sentiments experienced during the first dip of the Great Recession, and by connecting this change to (i) country differences in the intensity of GDP contraction and (ii) prior growth in foreign-born shares. Applying two-step multi-level regression to a pool of the 2004 and the 2010 rounds of the European Social Survey, I find evidence consistent with both occupational and environmental sources of competitive threat.

Key words: Europe, migration, preferences, occupations, skills, crises

JEL classification: F22 international migration, J15 economics of minorities, races, indigenous peoples and immigrants, J24 human capital, skills, J70 labor discrimination, Z13 economic sociology

1. Introduction

A vast body of research in the social sciences has examined the determinants of natives' attitudes towards immigration (for a review see, e.g. Ceobanu and Escandell, 2010; Fussell, 2014; Hainmueller and Hopkins, 2014). One strand of research in this still expanding literature has investigated the economic roots of anti-immigrant sentiments by drawing on so-called realistic-conflict theories (RCTs).

RCTs argue that prejudicial attitudes have objective economic foundations as they are ultimately grounded on economic competition between ethnic minorities and the majority population (see, e.g. Bonacich, 1972; Bobo, 1988; Goldin, 1994; Hardin, 1995; Timmer and Williamson, 1998; O'Rourke and Sinnott, 2006). Although competition between natives and immigrants can take place over a wide range of valued economic goods, including access to welfare services and education (see, e.g. Senik *et al.*, 2009; Eger, 2010), the most immediate source of competitive pressure for natives is their own position in the labour market. Natives with a higher degree of exposure to labour-market competition should have a rational interest in limiting immigration because an increase in the supply of immigrant workers is likely to lower their wages and/or to increase job insecurity (see also Burns and Gimpel, 2000; Scheve and Slaughter, 2001; Ortega and Polavieja, 2012; Lancee and Pardos-Prado, 2013). Majority–minority competition is expected to increase in times of economic crisis, as well as with the size of competing minority groups (Blalock 1967).

Competitive pressures are thus expected to depend on both micro-level predictors, affecting individuals' degree of exposure to competition, as well as macro-level factors affecting the economic environment. Conventional RCTs have consequently been tested at both levels of analysis. These tests suffer, however, from a number of measurement problems and theoretical limitations that hinder the explanatory potential of RCTs.

Micro-level tests of RCTs have been hampered by an over-reliance on subjective measures of *feelings* of threat. Although feelings of threat are strongly correlated with anti-immigrant sentiments, it is not clear whether such correlation reflects the objective experience of economic competition or merely captures the *narrative* of prejudice (i.e. the way prejudicial attitudes are typically voiced in public discourse). In other words, the problem is that pure dislike for immigrants is often expressed in terms of perceived threat. This is why we need objective indicators to test RCTs. Objective indicators are, however, surprisingly scant in the literature. In most empirical studies, these indicators have been restricted to measures of respondents' education—only occasionally combined with indicators of employment status and income.[1] Yet education is actually a rather imperfect measure of exposure to labour-market competition and its use raises serious validity concerns (see Section 2.1), while neither income nor even labour-market status variables are sufficiently fine-tuned so as to capture competitive pressures in a precise and theoretically meaningful manner.

For their part, macro-level tests of RCTs have mostly drawn on cross-sectional measures of national/regional gross domestic product (GDP) (or unemployment) levels and foreign-born shares (see, e.g. Quillian, 1995; Kunovich, 2004; Coenders *et al.*, 2004, 2008*a,b*; Semyonov *et al.*, 2008; Gorodzeisky and Semyonov, 2009). The use of cross-sectional measures to estimate the effect of *change* in environmental conditions has been questioned on methodological grounds (see, e.g. Semyonov *et al.*, 2006; Meuleman *et al.*, 2009; Lancee and Pardos-Prado, 2013). Moreover, because these macro-level measures are typically too distant from people's immediate economic experiences, they cannot substitute for the lack of objective individual-level measures of exposure to economic competition. It thus seems apparent that testing for RCT requires finding better measures of competition than those typically available in the empirical literature. This in turn calls for better theory.

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1   Only occasionally, these two measures have been complemented with measures of respondents' occupation/class (e.g. Scheepers *et al.*, 2002; Kunovich, 2013).

RCTs have remained largely disconnected from contemporary developments in social stratification and labour economics.[2] This has deprived RCTs from the conceptual tools best suited to capture the drivers of inequality and competition in contemporary labour markets. As a result, the actual mechanisms governing economic competition have remained largely under-theorized, particularly at the micro-level. Ortega and Polavieja (2012) contend that, in order to better identify the objective drivers of anti-immigrant sentiments, it is essential to consider people's jobs and occupations and to focus on those specific dimensions that define the degree of closure/exposure to competitive market pressures. Building on this argument, the present study connects contemporary class theory (Goldthorpe, 2007) and recent research in labour economics (see Peri and Sparber, 2009; Ortega and Polavieja, 2012) to RCTs in sociology. I believe that this interdisciplinary approach can help us to provide RCTs with sounder micro-foundations, opening up a promising line of research on the economic bases of prejudicial attitudes.

This study investigates the impact of labour-market competition on anti-immigrant sentiments in Europe by testing for unusually rich indicators for both occupational and environmental sources of objective competitive threat—which I use in addition to respondents' levels of education, self-reported financial distress and subjective evaluations of the national economy. In so-doing, it provides a comprehensive multi-level test for the economic bases of anti-immigrant sentiments that, I would argue, is both theoretically grounded and empirically thorough.

I draw on an unusually rich dataset by combining the second (2004–2005) and the fifth (2010) rounds of the European Social Survey (ESS) (see Section 3). These two rounds include a special module containing very detailed information on several job dimensions linked to the degree of exposure to labour-market competition, and they cover the first dip of the 2008 global recession. This allows me to investigate occupational and environmental sources of competitive threat across 20 different European societies and two time points—one before and one after the 2008 global shock. I focus on three main research questions.

First, I investigate the link between occupational sources of exposure to labour-market competition and anti-immigrant sentiments. Specifically, I distinguish between three different objective dimensions of the occupation that are expected to influence its degree of closure/exposure to competition: (i) the extent to which occupation require specialized skill investments; (ii) the costs of monitoring workers' productivity and (iii) the mix of manual dexterity versus communicational intensity required in the job. Ortega and Polavieja (2012) tested similar versions of the first and the last indicators using the second round of the ESS only. I now expand on such study by pooling the second and the fifth rounds of the ESS together, by introducing a new indicator on monitoring costs (a dimension hitherto untested), and by using what I consider to be more refined measures of both skill specialization and the manual/communicational skill mix of occupations (see Section 2.2).

Second, I investigate the link between two macro-level variables and natives' attitudes towards immigrants in Europe, namely: (i) the size of GDP contraction during the first dip of the Great Recession and (ii) the rate of growth in foreign-born shares prior to 2004.

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2 This gap is probably due to the profound impact that social-psychological models have had on group-conflict theories in sociology, at least since the influential work of Blumer (1958).

The cross-national variation in GDP contraction during recession captures country differences in the intensity of business-cycle *change* (see also Gallie, 2013), while the variation in the rate of growth in foreign-born shares captures *change* in demographic pressures.[3] Using two-step regression techniques, I ask whether country differences in these two dynamic macro-level indicators are statistically associated with cross-country variation in the net change in anti-immigrant sentiments observed between 2004 and 2010, i.e. our two observation points in the dataset.

Finally, I investigate whether recession can have an impact on the anti-immigrant sentiments of natives who are not directly exposed to the experience of economic competition, vulnerability and hardship. In the political science literature, this type of impact is known as *socio-tropic* effects (see, e.g. Lewis-Beck and Stegmaier, 2000). Finding *socio-tropic* effects on anti-immigrant sentiments would provide evidence that the attitudinal impact of recession is widely spread across the population. The existence of *socio-tropic* effects is implied in standard group-level formulations of RCT (see Blalock 1967), but these effects have rarely been tested in conjunction with objective measures of competition.

2. The economic roots of anti-immigrant sentiments

2.1 Micro-level determinants of labour-market competition

Natives' education consistently comes out as the strongest and most robust micro-level non-attitudinal predictor of anti-immigrant sentiments in empirical research (see, e.g. Mayda, 2006; Ceobanu and Escandell, 2010). Defenders of RCT tend to interpret this finding as reflecting employees' labour-market power. Yet education constitutes a rather imperfect measure of exposure to labour-market competition for (at least) the following three reasons. *First*, schooling levels mostly capture the *general* component of human capital. By definition, general human capital has only limited *closure* properties, as it provides skills that are highly transferable across organizations, industries and occupations (Becker [1964] 1993).[4] *Second*, using schooling as the only measure of exposure to competition implies assuming that natives and immigrants with the same level of education are perfect substitutes in the labour market. This amounts to ignoring the existence of many other sources of exposure to competition operating *within* educational levels, including several key dimensions that are specific to the occupation (see also, for example, Heath and Cheung, 2007; Peri and Sparber, 2009; Kunovich, 2013). *Finally*, education is known to increase social trust, intellectual openness and tolerance; and it could also prompt social desirability in survey responses (Jackman and Muha, 1984; Hello *et al.*, 2006; Côté and Erickson, 2009). This means that its effects on people's attitudes towards minorities could operate through channels other than labour-market power. For all these reasons, education constitutes only a limited measure of exposure to labour-market competition.

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3   Recent research suggests that abrupt increases in the rate of immigration could be more relevant in spurring anti-immigrant sentiments than the actual stock of foreign-born (see Zick *et al.*, 2008; Meuleman *et al.*, 2009; Hopkins, 2010).

4   Note that institutional barriers to the certification of foreign educational credentials can indeed reduce competition with immigrants but such barriers constitute a very different mechanism of closure. General human capital *per se* offers only a limited shield.

2.2 Occupational dimensions leading to employment closure

Contemporary stratification theory draws on transaction cost and personnel economics to highlight the importance of two dimensions of the job that are likely to close the employment relation to outside competition: skill specialization (SS) and monitoring costs (MC) (see Goldthorpe, 2007, chapter 5). SS captures the extent to which workers have to make post-schooling human capital investments in order to learn to do the tasks required in their jobs well. SS requirements vary across jobs and occupations at all levels of formal qualification. This implies that for the same level of general human capital (as captured by schooling), some workers have to invest much more in acquiring job-specific skills than others.

A key property of SS investments is that they protect workers from outside competition. Protection derives from employers' need to safeguard their training investments, while promoting workers own investments in specific skills. The main instrument employers have to this end is the use of open-ended employment relations with upward-sloping tenure-earning profiles. This contractual design, which can take the form of an implicit contract, reduces firms' contractual hazard problems while providing workers with a shield against labour-market competition (see, for example, Sorensen, 1994; Williamson, 1994; Lazear, 1995, chapter 4; Goldthorpe, 2007, chapter 5).[5]

MC also generate important contractual hazard problems for employers. In jobs where employees' productivity is very difficult to monitor firms have to find a way to incentivize workers' long-term cooperation (i.e. to maintain a high level of productivity over time) without incurring in costly supervision. Again, the use of tilted or deferred compensation schemes in the context of an on-going employment relation has been identified as providing a rational solution to contractual hazard problems caused by costly supervision (Sorensen, 1994; Lazear, 1995, chapter 4). By using future rents as an incentive device, deferred compensation schemes can induce workers' sustained productivity even in the absence of close monitoring. Because the probability of being caught shirking is never zero, workers will have incentives to work hard in order to reap future wage increases. Note that productivity-enhancing schemes of this kind also imply some form of *closure* of the employment relation to outside competitors, since without the expectation of continuous employment deferred compensation would not provide credible incentives. In his latest formulation of class theory, Goldthorpe (2007, chapter 5) has identified SS and MC as the two crucial dimensions that differentiate employment contracts in contemporary capitalism.

There is a further skill dimension that is specifically relevant to labour-market competition between natives and immigrants, namely the degree of communicational versus manual dexterity intensity required in the job. Both Peri and Sparber (2009) and Ortega and Polavieja (2012) note that natives enjoy a comparative advantage vis-à-vis immigrants in performing tasks that require high communicational skills, but this advantage vanishes in occupations with high manual dexterity content. In this latter case, any outside job competitor will be equally able to perform the required tasks regardless of her language proficiency and/or

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5   Compensation schemes of this kind might include different types of contracts: for example, employees might be offered a fixed-term contract during the training period on the expectation to be converted into a permanent contract later on. This is why the type of contract might be in itself a deceiving measure of open-ended employment relations in cross-sectional analyses, particularly in countries where temporary contracts are the main route of access to employment.

cultural skills. It thus follows that the manual/communicational skill content of any given occupation (MCSC) will be directly associated with the degree of exposure to native-immigrant competition.[6]

In summary, SS, MC and MCSC can be considered three key occupational determinants of exposure to/closure from competitive pressures. Investigating how these occupational dimensions influence workers' attitudes towards immigrants provides a unique opportunity to test for theoretically grounded micro-level drivers of objective competitive threat.

2.3 Environmental sources of competitive threat: the importance of studying recessions

In his seminal study, Blalock (1967, chap. 5) argued that the relative size of the minority group and the economic conditions of the environment are the two most crucial macro-level factors affecting ethnic majority's perceived threat through increasing economic competition. The size of minority groups matters because it reflects the number of potential competitors, while sore economic conditions increase the scarcity of material goods that are the object of competition (e.g. jobs). These two classical macro-level measures of competition have been tested in many subsequent studies using cross-national or cross-regional data (see, for example, Quillian, 1995; Coenders *et al.*, 2004; Semyonov *et al.*, 2004, 2006, 2008; Schneider, 2007; Gorodzeisky and Semyonov, 2009). Results have been mixed (see, for example, Semyonov *et al.*, 2004; Sides and Citrin, 2007).

As commented above, macro-level correlates of anti-immigrant sentiments are often estimated using variation in largely *constant* conditions, typically cross-national (or cross-regional) variation in GDP (or unemployment) levels and foreign-born shares. I investigate whether cross-national variation in both the *intensity* of global recession and the growth in foreign-born shares prior to 2004 is associated with the *change* in anti-immigrant sentiments observed between 2004 and 2010, two observation points that cover the first dip of global recession. Although I believe that this approach offers a clear methodological advantage over the use of static cross-sectional regression estimates, the nature of the data still invites caution in the interpretation of the findings: results should best be interpreted conservatively as descriptive.

3. Data and methods

I use data from the second (2004) and the fifth (2010) rounds of the ESS. These two rounds include a special 'repeat' module that focuses on *Family, Work and Well-Being* and which comprises an unusually rich set of information on respondents' jobs. The ESS is a Europe-wide survey designed following the highest methodological standards for cross-cultural research.[7] The analysis is restricted to native employed respondents (defined by

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6 My argument is therefore that whichever the required level of education, natives employed in occupations that are more intensive in manual dexterity (communicational intensity) will be more (less) exposed to labour-market competition. This implies, for instance, that a surgeon will be objectively more exposed to competition with immigrants than a psychologist, whereas a salesperson will be objectively less exposed than a machine operator.

7 The ESS has been extensively used in the study attitudes towards immigration (see, for example, Sides and Citrin 2007; Davidov *et al.*, 2008; Gorodzeisky and Semyonov, 2009) as well as in the study of immigrants' own attitudes (see e.g. Luttmer and Singhal, 2011; Polavieja, 2015).

citizenship) aged between 20 and 64.[8] The resulting analytical sample comprises over 35 000 individual pooled observations nested in 20 different European countries. For most countries in the dataset (but not all), 2004 is a pre-recession year, whilst 2010 is either a recession or a post-recession year.[9]

3.1 Methods

Several comparative studies have used standard multi-level (HLM) models to investigate the effect of contextual variables affecting attitudes towards immigration (see, e.g. Quillian, 1995; Scheepers *et al.*, 2002; Kunovich, 2004; Semyonov *et al.*, 2006, 2008). The use of HLM models is wide-spread in sociology, where they have become the standard approach for comparative research. Bryan and Jenkins (2015) show, however, that HLM models are likely to yield biased estimates for second-level co-variates when the number of second-level units is smaller than 25. In such cases, two-level regression approaches can provide more robust estimates (see also Gelman, 2005; Lewis and Linzer, 2005).[10] Because I only have 20 countries in my dataset (and only 19 with complete information on foreign-born shares), I use a two-level regression approach to test for environmental correlates of anti-immigrant sentiments. This approach comprises the following two steps:

In the first step, I estimate individual-level correlates of anti-immigrant sentiments (Y) by fitting the following four nested models:

$$Y_{ic} = \alpha + \beta_1 \text{schooling}_{ic} + \gamma \text{round}_{ic} + X_{ic}'\lambda + \varepsilon_{ic}, \tag{1}$$

$$Y_{ic} = \alpha + \beta_1 \text{schooling}_{ic} + \gamma \text{round}_{ic} + \beta_2 \text{SS}_{ic} \\ + \beta_3 \text{MC}_{ic} + \beta_4 \text{MCSC}_{ic} + X_{ic}'\lambda + \varepsilon_{ic}, \tag{2}$$

$$Y_{ic} = \alpha + \beta_1 \text{schooling}_{ic} + \gamma \text{round}_{ic} + \beta_2 \text{SS}_{ic} \\ + \beta_3 \text{MC}_{ic} + \beta_4 \text{MCSC}_{ic} + \delta_1 \text{financial distress}_{ic} + X_{ic}'\lambda + \varepsilon_{ic}, \tag{3}$$

$$Y_{ic} = \alpha + \beta_1 \text{schooling}_{ic} + \gamma \text{round}_{ic} + \beta_2 \text{SS}_{ic} \\ + \beta_3 \text{MC}_{ic} + \beta_4 \text{MCSC}_{ic} + \delta_1 \text{financial distress}_{ic} \\ + \delta_1 \text{evaluations of the economy}_{ic} + X_{ic}'\lambda + \varepsilon_{ic}, \tag{4}$$
$$i = \{1, ..N\}; c = \{1, ..C\}; \text{ round}\{0 = 2004; 1 = 2010\}; N \approx 35\,000; C = 20.$$

Model 1 is the base model, which includes years of education, a dummy indicating the survey year (round), and a set of individual controls for sociodemographic and attitudinal characteristics. Model 2 adds the three occupational sources of labour-market exposure considered in this study: SS, MC and MCSC. Finally, Models 3 and 4 add, respectively, self-reported indicators of household financial distress and respondents' evaluations of the

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8   This sample restriction allows me to estimate the impact of the three occupational dimensions linked to competition considered in this study, yet it precludes the study of the unemployed. Previous studies have shown that the unemployed have significantly higher anti-immigrant sentiments (Schneider, 2007; Ford and Goodwin, 2010; Lancee and Pardos-Prado, 2013).

9   By post-recession I mean a situation of positive GDP growth. Several countries in Europe that showed positive figures in 2010 suffered a posterior drop in GDP but this relapse (i.e. the second dip of recession) is not observed in the dataset.

10   Two-level regression models also offer advantages in terms of clarity of presentation, particularly when addressing research questions that imply fitting complex cross-level interactions, as it is the case in the present study (for further details, see Meuleman *et al.*, 2009).

national economy as a means to test for possible *socio-tropic* influences on anti-immigrant sentiments (see below).

Parameter γ for the survey round deserves particular attention in this framework: because I am pooling rounds 2 and 5 of the ESS together, this parameter captures country-level differences in the impact of time, measured as the net *change* in average anti-immigrant sentiments observed between 2004 (pre-recession) and 2010 (post-/in-recession). Note that if changes in the business cycle experienced in each country between 2004 and 2010 had any impact on natives' anti-immigrant sentiments, such an impact should be reflected in these first-step estimates. Obviously, changes over time could also respond to other unobserved variables or be due to intrinsic fluctuations and this is why macro-level results should be interpreted cautiously.

For economy of presentation, individual-level estimates (Models 1–4) are presented below using a single pooled model where the parameter indicating the survey round is interacted with country of residence (see Table 3). Yet changes in average anti-immigrant sentiments across rounds can be more accurately estimated by fitting 20 different individual ordinary least squares (OLS) regressions, one for each country in the dataset, for this allows the effects of other parameters to vary within each country. I use this latter strategy to compute the round-change estimates that will be used in the second step of the two-level regression (using the base specification expressed in equation 1)—I skip the presentation of these 20 different regressions for obvious space limitations.

The variation in the first-step estimates for the net change in anti-immigrant sentiments across rounds (γ_c) becomes the outcome variable in the second-step of the two-level regression, using countries as the unit of analysis. I regress these first-step estimates on two country-level variables: (i) the size of GDP contraction observed in each of the 20 countries between the two observation time points (2004 and 2010), which is a direct measure the *intensity* of recession in each country and (ii) national figures for the increase in foreign-born shares prior to 2004, which aims to capture differences in demographic pressures. Formally,

$$\gamma_c = \alpha + \beta_1(\text{GDP}_{2004} - \text{GDP}_{2010})_c + \beta_2(\text{Foreign born}_{2004} - \text{Foreign born}_{1995})_c + \varepsilon_c, \quad (5)$$

$$c = \{1, \ldots C\}; C = 20.$$

Data for GDP contraction are obtained from Eurostat (2015), while figures for the change in foreign-born shares are obtained from the Organisation for Economic Co-operation and Development (OECD) (2015) and correspond to the change experienced between 1995 and 2004, that is, up to the first observation window and prior to the outbreak of global recession. To account for differences in sampling error across first-stage estimators, I use feasible generalized least squares estimation, as proposed by Lewis and Linzer (2005).[11]

3.2 Measuring anti-immigrant sentiments

Anti-immigrant sentiments are measured using a composite index that combines six items. The first three items measure respondents' degree of support for governmental restrictions to immigrants of the same ethnicity as natives (Item 1), immigrants of different ethnicity (item 2) and immigrants from poor countries (item 3). These items are measured using a four-interval Likert scale ranging from 'allow many' to 'allow none'. The remaining three items capture, respectively, respondents' evaluations of the economic (Item 4), the cultural (Item

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11   To implement this estimation method I use the program developed by Lewis (2000) for Stata 12.

5) and the overall (Item 6) impact of immigration. These three items are measured using 11-point scales that range from 0 (most negative impact) to 10 (most positive). Responses to these six items are combined in one single index ranging from −10 to +10 (Cronbach's alpha = 0.89; average inter-item covariance: 4.08). I note that 98% of cases fall between values −5 and +5. Higher scores imply more anti-immigrant sentiments.

3.3 Measuring occupational predictors of labour market exposure

SS is measured by averaging self-reported job-learning time at the level of occupation using the ISCO-88 classification (three digits).[12] Job-learning time scores are based on individual responses to the following question: 'If someone with the right education and qualifications replaced you in your job, how long would it take for them to learn to do the job reasonably well?' Responses are recoded in months. Occupational averages of job-learning time constitute a direct and robust measure of the SS requirements of each of the 148 occupations in the dataset (see further Ortega and Polavieja (2012) for validity and reliability tests).

MC are measured using a similar procedure using the question: 'How easy/difficult is for your immediate boss to know how much effort you put into work?' Respondents are asked to place their assessments in an interval scale ranging from 0 (very easy) to 10 (very difficult). This question was only included in Round 5 of the ESS dataset. I compute monitoring cost values for all respondents in the full pooled dataset by averaging the scores of this scale at the occupational level (three digits). Given that occupational averages for MC are calculated using only half of the respondents of the pooled sample, measurement error will be inevitably higher for this variable than it is for SS (but see Section 4.4).

Because MCSC is not directly observable in the ESS dataset, it has been imputed from the US Occupational Network Online Dataset (O*NET), following Ortega and Polavieja (2012). The O*NET dataset provides extremely detailed information on the mix of knowledge, skills and abilities required, as well as the activities and tasks typically performed, in 449 different occupations.[13] Informed by exploratory factor analysis, Ortega and Polavieja (2012) constructed two measures: one capturing the degree of manual dexterity intensity required in each of these 449 occupations, and another capturing communicational intensity.[14] I have matched these manual dexterity and communicational intensity scores to the occupations of European respondents in the pooled ESS dataset averaged at the three-digit level (ISCO-88).[15] Manual and communicational intensity scores cannot be tested jointly because they are highly

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12   This is a somewhat different strategy from the one adopted in Ortega and Polavieja (2012), where individual-level assessments of job-learning time were used directly as a measure of specific human capital. Averaging at the occupational level is expected to reduce self-reporting bias while stressing the occupational dimension of skill specialization.

13   For more details see http://online.onetcenter.org/.

14   Manual dexterity intensity is computed by averaging the task-importance and observed ability scores of the following seven descriptors: visualization, arm-hand steadiness, manual dexterity, finger dexterity, control precision, wrist-finger speed and visual colour discrimination. Communicational intensity is computed by averaging the task-importance and the mean observed ability scores of the following six descriptors: oral comprehension, oral expression, written comprehension, written expression, speech recognition and speech clarity.

15   I wish to thank Jane Elliott and Vania Gerova from the Centre for Longitudinal Studies, Institute of Education, University of London, for making their occupational crosswalk publicly available (see http://www.cls.ioe.ac.uk/page.aspx?&sitesectionid=351&sitesectiontitle=0).

Table 1. Correlation matrix: individual and occupational dimensions linked to labour-market exposure

	Years of schooling	SS	MC	Manual/Comm. intensity
Years of schooling	1.0000			
SS	0.3709	1.0000		
MC	0.1184	0.1937	1.0000	
MCSC	−0.4024	−0.2926	−0.0426	1.0000

Source: Pooled ESS 2004–2010.

negatively correlated in the ESS data.[16] This high correlation justifies combining both scores into one single index. The MCSC index subtracts communicational intensity scores to manual dexterity scores. Hence occupations scoring high in the index are those with high manual/physical dexterity (low communicational) content, while occupations scoring low are those with high communicational (low manual) content. The index ranges from −10 to 10.[17]

One crucial question in the analysis of the occupational sources of labour-market exposure is the extent to which these three occupational dimensions are different from each other, as well as from formal education. Reassuringly, correlations between all three dimensions are moderate, which indicates that these are indeed different occupational sources of competition (see Table 1). Yet two of these occupational dimensions, SS and MCSC, show fairly high correlations with respondents' years of schooling (0.37 and −0.40, respectively). Below I show, however, that the estimated beta coefficients of the three occupational measures of labour-market competition remain statistically significant when regressions are fitted separately to two subsamples of similar size: one comprising individuals with more than 12 years of schooling and the other comprising individuals with less than 13.

3.4 Financial distress and subjective evaluations of the economy and: testing for socio-tropic attitudes

Financial distress is self-reported and measures respondents' difficulty to live on current household income.[18] Respondents' degree of satisfaction with the general situation of the economy in their respective countries is measured using a self-placement scale that ranges from 0 (maximum dissatisfaction) to 10 (maximum satisfaction). Respondents' views about the general shape of the national economy, net of individual-level exposure to labour-market competition and financial distress, can be interpreted as capturing *socio-tropic* attitudes for the average native European worker.

16 In the O*NET dataset the correlation is −0.54, while the correlation goes up to −0.63 at four-digit ISCO level in the ESS and reaches as much as −0.9 when occupations are aggregated at the three-digit level.

17 Models are robust to using alternative operationalizations, including using manual dexterity and communicational intensity scores separately (available on request).

18 Respondents reporting that it is 'difficult' or 'very difficult' to live on current household income are considered financially distressed. Those who claim to be 'living comfortably on', or 'coping with', current income are considered not distressed.

Table 2. Descriptive statistics for key variables

Variables	Obs	Mean or %	Std. Dev.	Min	Max
Index of anti-immigrant sentiments	33 917	−0.305	2.258	−10	10
Years of schooling	33 713	13.363	3.705	0	42
SS	33 917	9.174	4.160	0.025	29.83
MC	33 917	2.895	0.329	0.500	6.5
MCSC	33 917	−3.805	6.535	−10	10
Household financial distress					
Not distressed	26 936	79.56			
Distressed	5916	17.47			
Missing	1003	2.96			
Satisfaction with national economy	33 645	4.533	2.470	0	10
Social Trust	33 908	5.287	1.898	0	10
Left-right scale	33 917	5.133	1.959	0	10
Religiosity	33 686	4.187	2.898	0	10
Trait_Egalitarianism	32 457	4.916	1.006	1	6
Trait_Happiness	33 464	−0.016	1.469	−9.188	5.85
Has working experience abroad					
No	31 805	93.77			
Yes	2112	6.23			
Year (ESS Round)					
2004 (round 2)	17 098	50.41			
2010 (round 5)	16 819	49.59			

Source: ESS, Round 2 (2004) and Round 5 (2010) Pooled. Weighted.

3.5 Other control variables: a note on unobserved heterogeneity and self-selection bias

All individual-level models control for age, age-squared, sex, marital status, number of children and type of residence. They also control for a host of ideational predispositions including information on respondents' political ideology, religiosity and social trust, as well as information on two core values: altruism and egalitarianism. All these values and ideologies are aimed at capturing the possible effects of unobserved socialization experiences on respondents' own attitudes. I also include a more direct (although admittedly rough) estimate for socialization experiences which is expected to influence attitudes towards immigrants, namely whether native respondents have had any experience as international migrants themselves. Finally, I introduce controls for one personality trait possibly associated with the outcome variable, namely respondent propensity to happiness.[19] Individuals' propensity to happiness could permeate their attitudinal responses to experiences of labour-market competition, economic hardship and vulnerability (see Polavieja, 2013). Descriptive statistics for key variables are presented in Table 2.

19   An individual propensity to happiness is estimated as the residual from a model where self-placement in a 10-point happiness scale is regressed against age and its squared term, schooling, self-reported family financial strain, subjective well-being, life satisfaction, country and, crucially, observation year. The resulting happiness residual thus captures the individual propensity to happiness net of transient and contextual factors.

Despite the use of unusually stringent controls for unobserved heterogeneity, concerns about endogeneity remain. One specific concern is that natives' occupational choices are driven by their own attitudes towards immigration (i.e. that individuals who particularly dislike immigrants search more intensively for low-immigrant jobs, which are likely to be less exposed to competition). Peri and Sparber's (2009) analysis of task specialization in the USA suggests that this may at least be possible. Ortega and Polavieja (2012) specifically address this concern by means of an instrumental-variable approach using the second round of the ESS.[20] Ortega and Polavieja's findings suggest that self-selection might indeed have a biasing effect on standard OLS estimates for occupational coefficients but, crucially, they show that this is a downward bias. This means that self-selection could, if anything, induce type-II error in testing occupational correlates of anti-immigrant sentiments, thus conspiring *against* the predictions of RCT, not in favour.[21]

4. Findings

Table 3 presents the results of fitting a series of nested OLS regression models on the index of anti-immigrant sentiments. Although my focus is on economic predictors, I note that several findings reported in the table also have a substantive interest. First, I find that respondents who have lived abroad (for a period of at least 6 months in the last 10 years) show significantly lower scores in the anti-immigrant scale. Second, I find strong and highly significant coefficients for political conservatism and core egalitarian values, as well as a quantitatively weaker but still highly significant coefficient for religiosity. These findings are in line with so-called symbolic theories, which stress the crucial role that underlying predispositions, values and identities play in shaping natives' attitudes towards immigrants (see, for example, Sniderman *et al.*, 2004; Davidov *et al.*, 2008). Finally, I find that respondents' propensity to happiness is very strongly associated with anti-immigrant sentiments, which seems to suggest that personality traits could be an important source of omitted variable bias (see further Gallego and Pardos-Prado, 2014).

In line with all the previous literature, Table 3 also shows a negative and significant association of years of schooling with anti-immigrant sentiments. As discussed above, schooling measures human capital and hence labour-market power. Yet education can also affect anti-immigrant sentiments through the processes of political socialization. Although Table 3 includes stringent controls for human values, including social trust and egalitarianism, the net coefficient of education on anti-immigrant sentiments might still reflect unobserved attitudes to some (unmeasurable) extent.

4.1 Occupational determinants of competition, financial distress and anti-immigrant sentiments

Table 3 tests for the three occupational dimensions linked to exposure to labour-market competition considered in this study (see Models 2, 3 and 4). Note that all three dimensions are

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20   Specifically, Ortega and Polavieja (2012) use the regional availability of low-exposure jobs as an instrument for actual individual exposure in the current job, in the spirit of Dustmann and Preston (2001).

21   The possibility of downward bias can also be deduced logically: if natives with strong anti-immigrant sentiments shun the most exposed jobs in favour of the most protected ones, they will bring average anti-immigrant attitudes down in the former and up in the latter, thus weakening the correlation between occupational sources of labour-market exposure and attitudes towards immigration.

Table 3. Pooled OLS regressions on anti-immigrant sentiments, Europe 2004–2010

Variables	(1)	(2)	(3)	(4)	(5) Up to 12 years of schooling	(6) More than 12 years schooling	(7) Up to 12 years of schooling	(8) More than 12 years schooling
Years of schooling	-0.147***	-0.113***	-0.112***	-0.110***	-0.0512***	-0.0997***	-0.0486***	-0.0992***
SS		-0.0236***	-0.0225***	-0.0207***	-0.0213***	-0.0192***	-0.0206***	-0.0171***
MC		-0.109**	-0.106**	-0.107**	-0.105	-0.114*	-0.109	-0.116*
MCSC		0.0309***	0.0302***	0.0293***	0.0283***	0.0302***	0.0287***	0.0284***
Household financial distress			0.162***	0.0590	0.186***	0.191***	0.0712	0.102
Satisfaction national eco.				-0.137***			-0.159***	-0.112***
Round 2004–2010 REf. is Spain	0.521***	0.465***	0.459***	0.0907	0.607***	0.310**	0.229	-0.0134
Social Trust	-0.253***	-0.243***	-0.240***	-0.204***	-0.224***	-0.248***	-0.181***	-0.219***
Left-right scale	0.170***	0.173***	0.174***	0.184***	0.124***	0.208***	0.134***	0.217***
Religiosity	-0.0295***	-0.0295***	-0.0296***	-0.0235***	-0.0560***	-0.00983	-0.0436***	-0.00751
Trait_Egalitarianism	-0.250***	-0.248***	-0.249***	-0.262***	-0.211***	-0.273***	-0.225***	-0.284***
Trait_Happiness	-0.0917***	-0.0902***	-0.0915***	-0.0684***	-0.0759***	-0.103***	-0.0499***	-0.0841***
Has working experience abroad	-0.276***	-0.272***	-0.275***	-0.259***	-0.298**	-0.230***	-0.295**	-0.212**
Constant	2.322***	2.381***	2.321***	2.891***	1.614***	2.160***	2.236***	2.672***
Observations	31,547	31,547	31,547	31,547	14,156	17,391	14,156	17,391
R^2	0.248	0.257	0.257	0.270	0.176	0.235	0.195	0.244

Notes: *** $P < 0.01$, ** $P < 0.05$, * $P < 0.1$. Models control for age and its squared term, sex, marital status, N of children, location of respondents' residence and Country*Year interactions. Weighted.

Source: Calculated by the author from Pooled ESS 2004–2010.

significantly correlated with anti-immigrant sentiments and that all the signs run in the ex-pected direction: respondents employed in occupations with higher levels of SS and those em-ployed in occupations with high MC display on average more favourable attitudes towards immigrants, while respondents in occupations with high scores in MCSC display higher average anti-immigrant sentiments—and this net of education and a host of ideational con-trols. Moreover, Models 5 through 8 show that SS and MCSC retain their levels of statistical significance when they are tested in two separate subsamples of similar size: one comprising individuals with more than 12 years of schooling and the other comprising individuals with less than 13. MC retain only statistical significance amongst the highly educated sub-sample (Models 6 and 8), but it must be noted that the monitoring-cost coefficients estimated in the low-educated sub-sample (models 5 and 7) are very similar in size to the full sample estimate, which suggests that the observed drop in statistical significance is due to sample-size reduction and hence not interpretable in substantive terms. Occupational drivers of competi-tion are thus linked to anti-immigrant sentiments at both high and low levels of the schooling distribution.

Model 3 in Table 3 introduces household financial distress. Note that household financial distress is not only a function of respondents' own economic situation but crucially of that of other family members. Employed native European respondents experiencing financial distress at their homes score significantly higher in the index of anti-immigrant sentiments. Finding that both individual exposure to labour-market competition (as measured by the characteris-tics of respondent's occupations) and individual experiences of financial distress are statistic-ally associated with attitudes towards immigrants is consistent with what political scientists call 'egocentric' effects.

4.2 Change in anti-immigrant sentiments 2004–2010 and socio-tropic views
In all the models on in Table 3 the effects of time are estimated using the variable 'round' (in-teracted with country), as explained above. This variable captures the difference in net average attitudes observed between the two ESS rounds or observation years (2004 and 2010) for the typical native worker of each sampled country, net of all the variables in the model. For economy of presentation, Table 3 reports only the main effect of this variable, which corre-sponds to Spanish respondents.

According to my regression estimates, this net time coefficient shows an average increase in anti-immigrant sentiments (amongst Spanish respondents) of roughly half a point between 2004 and 2010. Although Spain does not stand alone in this pattern, I note several other European countries experienced no significant change or even a decrease in anti-immigrant sentiments in the same period (see Table 4).

Table 3 shows that this change over rounds in attitudes towards immigrants was very strongly correlated with people's perceptions of the general economic situation of their re-spective countries (i.e. by their 'socio-tropic' views about the economy). When such percep-tions are introduced in the regression, the main coefficient for survey year is drastically reduced in size and loses its statistical significance (see Model 4). This suggests that the change in net anti-immigrant sentiments observed between 2004 and 2010 could be indeed driven by recession effects as captured by people's evaluations of the national economy (at least in Spain). Model 4 also finds very strong correlation between socio-tropic views and

Table 4. Changes in GDP growth, foreign-born shares and net average difference in anti-immigrant sentiment between 2004 and 2010 by country

| Country | Size of GDP contraction[a] 2004–2010 | Increase in foreign-born shares[b] 1995–2004 | Anti-Immigrant Sentiments[c] | | |
			2004 value	Round change coef.	Sig.
Spain ES	3.4	9.1	−0.53	0.48	***
Ireland IE	4.9	8.7	−0.82	1.03	***
Greece GR	7.9	7.7	0.49	0.81	***
Portugal PT	0.2	2.2	0.29	−0.50	***
Belgium BE	1.1	2.0	−0.32	0.13	
Switzerland CH	−0.2	2.2	−1.14	−0.04	
Germany DE	−2.5	1.2	−0.13	−0.44	***
France FR	1.0	4.8	−0.13	0.13	
UK	0.9	2.0	0.03	0.26	**
Netherlands NL	0.5	1.6	−0.06	−0.29	***
Denmark DK	1.0	1.6	−0.19	−0.42	***
Norway NO	3.3	2.4	−0.24	−0.25	
Sweden SE	−1.9	1.6	−1.55	−0.45	***
Finland FI	0.4	1.12	−0.68	0.19	
Czech Republic CZ	2.0	0.6	0.31	0.45	***
Hungary HU	3.5	0.5	0.46	0.40	**
Poland PL	1.4	0	−0.97	−0.32	**
Estonia EE	4.0		0.75	−0.61	***
Slovenia SI	3.0	0	−0.36	−0.05	
Slovakia SK	0.9	3.9	−0.24	0.32	**

Notes: ***$P < 0.001$, **$P < 0.05$.

[a]GDP growth figures from Eurostat (2015). GDP contraction calculated as the rate of real GDP growth in 2004 less the rate of real GDP growth in 2010, where growth rates are measured as percentage change over the previous year.

[b]Increase in foreign-born shares in each country are calculated as the foreign-born shares in 2004 less the foreign-born shares in 1995 using data from the OECD (2015). OECD (2015) provides no information on the foreign-born shares for GR in either 1995 or 2004. The 1995 figure for GR has been calculated using data from OECD 2002. *Trends in International Migration: Continuous Reporting System on Migration*. Paris: OECD (Table 1.10 on p.40) combined with data from OECD 2015 (https://data.oecd.org/migration/foreign-born-population.htm). The 2004 figure for GR is from UN 2006. World Population Policies 2005, United Nations, Department of Economic and Social Affairs, March 2006. ISBN 978-92-1-151420-9. The 1995 figure for CZ is for 1998 (OECD, 2015); the 2004 figure for DE is for 2005 (OECD 2015); 1995 values for SI and SK imputed on the basis of the existing series (OECD 2015).

[c]Estimates for 2004 marginal values and change in round coefficients are based on 20 different country-specific as in Model 1 on Table 3—all other variables constant at their means.

Source: Calculated by the author from Pooled ESS 2004–2010, Eurostat Real GDP Growth Figures (Eurostat, 2015) and OECD migration inflow figures (OECD, 2015). Missing data complemented with information from OECD (2002) and United Nations (2006).

attitudes towards immigration and this net of individuals' exposure to labour-market competition and financial distress. This suggests that the attitudinal consequences of economic recession were not only confined to the most exposed and vulnerable segments of

society.[22] In order to test recession effects more *directly*, below I investigate whether objective macro-level variation in GDP contraction is statistically associated with country-level variation in the net change in anti-immigrant sentiments experienced between 2004 and 2010 in Europe.

4.3 Macro-level correlates of change in anti-immigrant sentiments between 2004 and 2010

Table 4 shows the estimated time-change coefficients and the 2004 values for anti-immigrant sentiments in all the countries in the dataset. First-step estimates for the effect of time come from 20 different regressions fitted separately to each country in the ESS dataset using the base model (equation 1), as explained above. The first thing to note is that there are very significant differences in the time effects found across different European societies. Between 2004 and 2010 net anti-immigrant sentiments increased significantly in *only* seven countries (Ireland, Greece, Spain, the Czech Republic, Hungary, Slovakia and UK); while they actually decreased significantly in other seven (Estonia, Portugal, Germany, the Netherlands, Denmark, Sweden and Poland). In the remaining countries (Belgium, France, Finland, Norway, Slovenia and Switzerland), net anti-immigrant sentiments showed no significant change between the two observation points. Can these country differences in the net change of anti-immigrant sentiments be linked to differences in the experience of recession and/or in the patterns of growth in foreign-born shares prior to recession, as hypothesized above?

There is a high degree of variation in the way different countries experienced the first dip of global recession in Europe. I approximate these experiences by comparing the rate of GDP growth across the two observation windows, 2004 and 2010, in each country, using official Eurostat figures (Eurostat, 2015). As shown in Table 4, Greece is the country that experienced by far the largest fall in GDP growth between 2004 and 2010, amounting to roughly eight percentage points. Ireland, Hungary, Spain, Norway, Slovenia and Estonia followed suit with GDP losses between three and five percentage points. The observed fall in GDP growth between the two observation years was much more moderate in the Czech Republic, Belgium, Poland, France, Denmark, and Slovakia (with losses roughly between one and two points) and very small in Finland, the Netherlands, and Portugal. In Germany and Sweden rates of GDP growth were actually higher in 2010 than they were in 2004.

Countries also differ markedly in the size of foreign-born increases experienced prior to 2004. According to OECD (2015) figures, between 1995 and 2004 foreign-born shares rose sharply in Spain, Ireland and Greece (with increases above 8 percentage points) and experienced a notable increase in France and Slovakia (with increases of 5 and 4 percentage-points, respectively). The increase of foreign-born shares was much more moderate in Belgium, the Netherlands, Portugal, UK, Switzerland, Denmark, Sweden and Norway (with increases of roughly 2 percentage-points). In the remaining countries, increases were negligible.
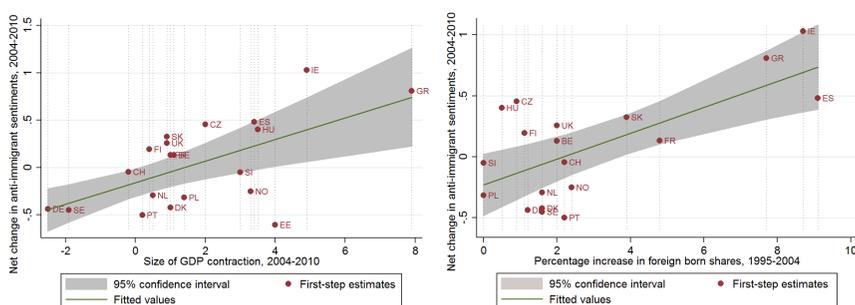
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22   Introducing respondents' evaluations of the national economy also dissolves the statistical association between financial distress and anti-immigrant sentiments. This is because workers experiencing household financial distress hold on average sourer evaluations of the national economy, while sour evaluations are positively correlated with anti-immigrant sentiments. The proportion of households experiencing financial distress increased significantly between 2004 and 2010 in many European countries, and so did negative evaluations of the national economy.

Table 5. Country-level regressions: GDP contraction and growth in pre-recession foreign-born shares as predictors of the net change in anti-immigrant sentiments in Europe.

Variables	(1)	(2)	(3)	(4)
GDP contraction (2004–2010)	0.114***	0.135***		0.0957***
	[0.0305]	[0.0230]		[0.0269]
Increase in Foreign-Born Shares (1995–2004)			0.106***	0.0588**
			[0.0263]	[0.0259]
Constant	−0.161**	−0.149**	−0.231*	−0.252**
	[0.0688]	[0.0680]	[0.120]	[0.0934]
Observations	20	19	19	19
R^2	0.358	0.531	0.442	0.622

Note: Standard errors are given in brackets. ***$P < 0.01$, **$P < 0.05$, *$P < 0.1$.

Source: Calculated by the author from Pooled ESS 2004–2010, Eurostat Real GDP Growth Figures (Eurostat, 2015) and OECD immigration figures (OECD, 2015).

Figure 1. GDP contraction, growth in pre-recession foreign-born shares and net change in anti-immigrant sentiments in Europe, 2004–2010.

Table 5 shows second-level regression estimates for GDP contraction and prior growth in foreign-born shares in Europe. Note that both macro-level estimates are significantly associated with net changes in anti-immigrant sentiments observed over the two ESS rounds. Because cross-sectional models are known to be plagued with endogeneity problems, these estimates should best be taken as descriptive. Yet it must be noted that what these descriptive estimates show is clearly consistent with the predictions of RCTs: Countries that combine large drops in GDP during the first phase of global recession with abrupt increases in foreign-born shares prior to recession (e.g. Greece, Ireland and Spain), also show the largest micro-level increases in anti-immigrant sentiments amongst typical native workers (Figure 1).

4.4 Robustness tests

Numerous tests have been carried out to check the robustness of the reported findings. First-step regression estimates for the three occupational dimensions of interest have been subjected to three different tests: First, I have checked for the robustness of the occupational effects to an alternative operationalization that uses individuals' self-reports on their jobs directly (rather than averaging at the level of occupations). Since information on MC is only available

in Round 5, this test implies using this latter round only. Secondly, I have checked that results are robust to fitting occupational-averaged dimensions on each round separately. Finally, I have introduced controls for self-reported psychological well-being, self-reported evaluations of work-intensity and job-satisfaction (using both individual responses and occupational averages). The rationale of this latter test is to control for (omitted) job/occupational characteristics possibly correlated with both the three occupational dimensions of interest and the outcome variable (under the assumption that undesirable job characteristics can permeate social attitudes through paths other than exposure to competition). Results for the three occupational dimensions considered in this study are fully robust to all these tests (available on request).

Second-step estimates have also been subjected to a number of robustness tests. First, I have checked that my findings are robust to using different time points and different measures of change in the calculation of both foreign-born shares and GDP contraction. I find significant results across a host of different measures. Second, I have tested for the possible statistical impact of introducing year-specific GDP rates (measured alternatively in 2000 and 2004) and figures for GDP per capita (measured in 2004), as well as introducing data for foreign-born stocks (measured alternatively in 1995 and 2004). None of these static variables are significant and, most importantly, their inclusion in the models cannot dissolve the statistical association between GDP contraction and changing foreign-born shares and the net change in anti-immigrant sentiments observed between 2004 and 2010. These latter tests suggest that one possible reason why previous studies have obtained mixed results regarding the impact of environmental conditions on anti-immigrant sentiments could have been their reliance on cross-sectional data (see also Meuleman *et al.*, 2009; Hopkins, 2010; Lancee and Pardos-Prado, 2013). Third, in order to test for possible omitted variable bias, I have checked that the estimates for GDP contraction and changing foreign-born shares are robust to the inclusion of several macro-level controls, including various indicators for the quality of democracy, social inequality and social expenditure. Given small sample size, these controls must be introduced one at a time but none of them alter the findings. Fourth, I have also sought to control for idiosyncratic sources of omitted variable bias possibly affecting a country's 'taste' for immigration by including country-averaged differences in anti-immigrant sentiments measured in 2004 (i.e. prior to recession). Country differences in anti-immigrant sentiments in 2004 do not have any impact on the size of the change in anti-immigrant sentiments observed between 2004 and 2010 nor do they affect the estimates for GDP contraction and foreign-born shares. Finally, and in order to test for the possibility that the reported findings were driven by particular cases, I have removed countries with the highest absolute change in step-1 estimates from the regression model (i.e. Greece, Ireland, Spain and Estonia). Results for both GDP contraction and changing foreign-born shares hold when any of these countries is excluded individually from the dataset. Moreover, results for GDP contraction hold when any combination of pairs between Ireland, Greece and Spain, which are the countries with the largest drop in GDP and the largest increase in anti-immigrant sentiments over the observed period, are removed from the second-stage regression.[23] All these tests, which are available on request, suggest that the reported estimates for macro-level environmental effects are also statistically robust.

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23   Results for GDP contraction even hold when Ireland, Greece and Spain are removed jointly from the model (βGDP contraction (2004–2010) = 0.10; t = 2.54; $P > |t|$ = 0.0023; R^2 = 0.30).

5. Discussion

Symbolic and realistic-conflict approaches disagree on the factors that most affect citizens' attitudes towards minorities (internalized values and identities vs. economic competition). Yet while symbolic theories have been typically tested with a host of individual-level measures, realistic competition theories (RCTs) have been tested either with fewer, rougher and mostly under-theorized micro-level indicators, or with rather distant and often static macro-level ones. As a result, I would argue, RCTs have not stood much of a fair chance in most of the existing empirical research in sociology, social psychology and political science. Rounds 2 and 5 of the ESS dataset allow to test for unusually rich measures of economic competition while controlling for a host of ideational predictors (values, beliefs and ideologies). By pooling these two rounds together, we can also estimate the change in anti-immigrant sentiments observed between 2004 and 2010, a period that covers the first dip of global economic recession. I believe that this study has made both a theoretical and an empirical contribution to the literature on attitudes towards immigration.

At the theoretical level, this study has connected RCTs on prejudicial attitudes to social stratification theory—which itself draws heavily on personnel and transaction costs economics—and labour economics. This connection, I have argued, help us better unearth the structural bases of labour-market competition, providing sociological research on anti-immigrant sentiments with sounder theoretical foundations. This new competition theory has then been subjected to an empirical multi-level test: at the individual level, I have investigated the impact of three occupational dimensions that are intrinsically linked to labour-market competition (i.e. skill specialization, monitoring costs and the manual/communicational skill content of occupations); at the macro level, I have tested whether country differences in the net change in individual anti-immigrant sentiments observed between 2004 and 2010 are statistically correlated with the intensity of GDP contraction during the same period as well as with previous change in foreign-born shares.

Consistent with the predictions of the theoretical model, I have found that skill specialization (SS), monitoring costs (MC) and manual/communicational skill content (MCSC) are significantly correlated with anti-immigrant sentiments in Europe in a direction that is consistent with a mechanism of labour-market competition. Results for SS and MCSC are in line with those reported in Ortega and Polavieja (2012), while the observed association between MC and anti-immigrant sentiments constitutes new evidence in the field. Future research should seek to test for the hypothesized underlying mechanism more directly for, despite the use of unusually stringent controls for omitted variable bias, the possibility that the observed associations may respond to a different logic than the one defended in this study cannot be fully ruled out.

Using two-step regression techniques, I have also regressed country differences in the net change in anti-immigrant sentiments experienced between 2004 and 2010 (i.e. before and after the first dip of the 2008 global recession) on country differences in GDP contraction and previous changes in foreign-born shares. Consonant with recent dynamic formulations of group-level threat theory (see, for example, Meuleman et al., 2009), my results show that net changes in anti-immigrant sentiments across European countries are significantly associated with macro-level variation in GDP contraction as well as with previous increases in foreign-born shares.

I note that, in some European economies, the observed increase in foreign-born shares prior to recession and the severity of GDP contraction could be endogenously co-determined by the

paths of economic growth undertaken during the boom years. In countries such as Ireland or Spain, in particular, low-credit fed housing bubbles led to an unprecedented increase in the demand for foreign workers. When these construction (and financial) bubbles finally burst the economies of these two countries virtually collapsed.[24] I speculate that housing bubbles could be particularly conducive to anti-immigrant sentiments because they increase demographic pressures and labour-market competition amongst the least protected segments of the labour market, while at the same time generating the conditions for big recession effects.

Changes in macro-level conditions also logically affect individual perceptions of the national economy. This is why introducing people's evaluations of the economy in pooled micro-level regressions absorbs the (previously significant) net correlation between survey year and anti-immigrant sentiments. Accounting for people's evaluations of their national economies in first-step models also absorbs the (previously significant) net correlation between household financial distress and anti-immigrants sentiments, a finding which is also consistent with 'recession' effects. At the same time, the net individual-level association between public perceptions of the national economy and attitudes towards immigrants strongly suggests that economic recession not only has *egocentric* effects (for recession increases the pool of people experiencing economic vulnerability and hardship) but can also have *socio-tropic* effects, that is, effects on native citizens who are not directly hit by economic recession. This latter finding is consistent with recent research on the impact of recession on political trust and satisfaction with democracy in Europe, which also provides evidence of sizeable *socio-tropic* effects (see Polavieja, 2013).

In summary, the results presented in this study suggest that anti-immigrant sentiments have indeed strong objective economic foundations. For many European workers competitive pressures are not (at least not only) an ideational construct but a real economic experience. For Europe as a whole, the rise of nationalistic, xenophobic and often racist parties across the board constitutes also a very real threat, as the results of the 2014 European elections demonstrated. Moreover, since the spring of 2015 Europe is seeing the largest flow of refugees since World War II. If European workers perceive refugees are no different from economic migrants, this crisis is likely to increase anti-immigrant sentiments even further, particularly amongst those European workers most exposed to labour-market competition.[25] I believe that a new realistic competition theory, one that is attuned to contemporary research and theorizing in both social stratification and labour economics, can help us better address the real challenges that lie ahead.

Acknowledgements

24 It must be noted, however, that the Spanish economy was most severely hit in the second dip of recession, which is not observed in the dataset.

25 Distinguishing between attitudes towards asylum seekers and labour immigrants can be potentially important for RCT as each of these groups is likely to have a different impact on the labour-market. Unfortunately the ESS rounds used in this study do not ask specifically about asylum seekers. This question will, however, be addressed in Round 7, which is currently in fieldwork.

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