

# The Threat Is Real: Labor-Market Competition, Recession and Anti-Immigrant Sentiments in Europe\*

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Sociological research on attitudes towards immigration has emphasized the subjective over the objective dimension of competitive threat. As a result, we still know little about the economic bases of native-immigrant competition. This paper investigates the impact of labor-market competition (LMC) on attitudes towards immigration in Europe by testing for both occupational and environmental sources of competitive threat. Drawing on recent developments in stratification research and labor economics, I distinguish between three different objective dimensions of the occupation that are expected to influence its degree of closure/exposure to competition: 1) skill specialization; 2) monitoring costs; and 3) manual dexterity intensity. Environmental effects are measured by estimating the time change in anti-immigrant sentiments before and after the first dip of the Great Recession, and by connecting this change to 1) household financial distress, 2) individual perceptions of the economy, 3) GDP contraction and 4) lagged migration inflows. Applying two-step regression techniques to a pool of the 2004/5 and the 2010/11 rounds of the European Social Survey, I find strong support for both occupational and environmental sources of competitive threat and conclude that anti-immigrant sentiments have clear economic foundations.

*Key Words: Attitudes towards Immigrants, Labor Market Competition, Skill Specialization, Monitoring Costs, Manual Dexterity Intensity; Financial Distress; Recession, Migration Inflows*

JEL Codes: F1, F22, J61, J31, R13

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## Introduction

A vast body of research in the social sciences have examined the determinants of natives' attitudes towards immigration (for a review see e.g. Gorodzeisky and Semyonov 2009; Mayda 2006; Pettigrew 1998; Sides and Citrin 2007). A standard approach in this still expanding literature has been to distinguish between 'rational' and 'symbolic' explanations of anti-immigrant sentiments.

Rational theories, also known as realistic conflict theories, argue that anti-immigrant sentiments have objective economic foundations as they are ultimately grounded on economic competition between migrants and natives (Bobo 1983; 1988 in Sides and Citrin 2007; Bonacich 1972; 1973; 1991 in Bobo 1999; Hardin 1995 in Sniderman Hagendoon and Prior 2004; Levine and Campbell 1972 in Bobo 1999). Although competition can take place over a wide range of valued economic goods, including access to welfare services and education, the most immediate source of competitive pressure for natives is their own position in the labor market. Natives with a higher degree of exposure to labor-market competition (LMC) 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; Quillian 1995; Ortega and Polavieja 2012).

Symbolic theories –also known as social identity theories- are often presented as a theoretical alternative to rational approaches at the individual level (Brown 1995; Capozza and Brown 2000; Huddy 2001 in Sniderman Hagendoon and Prior 2004; Kinder and Saunders 1996 in Bobo 1999; Figuereido and Elkins 2003). Symbolic theories stress the crucial role that underlying predispositions, beliefs, values and identities play in shaping natives' attitudes towards immigrants *independently* of their own economic interests. Ideational predispositions leading to anti-immigrant sentiments are thought to be acquired through early socialization processes and would include attitudes such as racism and xenophobia, political conservatism, ethnic nationalism, social trust, religiosity and authoritarianism (Ceenders, Gijsberts and Scheepers 2004; Davidov et al. 2008; O'rourke and Sinnot 2006; Hillman 2002; Schiff 2002).

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Most sociological research on the economic bases of prejudice draws on group-level theories of competitive threat that combine —and often confound— rational and ideational mechanisms. In a particularly influential study, Blumer (1958) argued that prejudice is triggered by a sense of “collective threat” that is sustained on the combination of ideational elements (i.e. feelings of superiority and ethnic/racial identity), property claims over scarce resources (both economic and symbolic) and perceived competition. Although objective competition over scarce resources plays an important role in this theory, it must be noted that Blumer emphasized the role of *subjective* perceptions of threat. This socio-psychological approach has had a very profound impact on the empirical study of attitudes towards ethnic minorities in the social sciences, where subjective measures of threat clearly predominate over objective indicators of competition. This has hindered the correct identification of the economic bases of prejudice, a problem that was already pointed out by Bobo (1983; 1988).<sup>1</sup>

In the vast majority of empirical studies, *objective* measures for competitive threat have been measured at the macro-level, following the influential work of Blalock (1967). While symbolic theories have been typically measured using a myriad of individual-level attitudes that are often *too close* to anti-immigrant sentiments to constitute valid independent predictors,<sup>2</sup> macro-level measures of competitive threat are typically *too far apart* from respondents’ personal economic experiences. This methodological imbalance might have led to hasty conclusions about the relative merits of economic versus symbolic approaches —particularly when both are tested in a horse-race fashion (see below).

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<sup>1</sup> Bobo (1983; 1988) argued that perceptions of collective threat, whilst grounded on collective identities, cannot be sustained on purely “symbolic” grounds but must always respond to a real clash of objective economic interests.

<sup>2</sup> Attitudinal predictors are often endogenous to anti-immigrant sentiments and this can lead to upwardly biased regression coefficients. Sniderman et al (2004) seek to “de-couple” ideational predispositions from anti-immigrant sentiments by building experimental design into attitudinal surveys.

After more than fifty years of empirical research on the determinants of prejudicial attitudes, the most immediate sources of economic competition influencing attitudes towards minorities remain under-studied as well as under-theorized. Objective estimates for realistic competition at the individual-level are scant in empirical research and have been restricted to measures of respondents' education, sometimes combined with indicators of employment status.<sup>3</sup> Yet education is actually a rather imperfect measure for objective competitive pressures, as I explain below, and its use raises serious validity concerns (see also Ortega and Polavieja 2012). I contend that in order to identify the most immediate sources of LMC at the micro-level it is essential to consider individuals' actual jobs and to focus on those job-specific dimensions that define the degree of closure/exposure to competitive market pressures. Contemporary developments in both stratification research and labor economics can offer important theoretical insights on the job-specific determinants of closure/exposure to LMC, opening up a new and promising line of research on the economic bases of prejudicial attitudes.

This study investigates the impact of labor-market competition on anti-immigrant sentiments in Europe by testing for unusually rich indicators for both job-specific and environmental sources of objective competitive threat—which I use in addition to respondents' levels of education. In so-doing, it provides a comprehensive multilevel test for the economic bases of anti-immigrant sentiments that is both theoretically-motivated and empirically thorough. I claim two main contributions:

First, I investigate the impact of several objective job-dimensions linked to the degree of closure/exposure to LMC on anti-immigrant sentiments. At the theoretical level, this involves connecting recent developments in stratification research, personnel and labor economics to the existing literature on attitudes towards ethnic minorities. I believe such connection can help us provide realistic conflict theories with testable micro-economic foundations. Specifically, I distinguish between three different objective dimensions of the job that are expected to influence its degree of closure/exposure to

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<sup>3</sup> Only occasionally, these two measures have been complemented with (typically crude) measures of respondents' class.

competition: 1) the extent to which jobs require specialized skill investments; 2) the costs of monitoring workers' productivity and 3) the degree of manual dexterity intensity required in the job. Skill specialization and monitoring costs generate economic conditions for employment *closure*, providing all types of job incumbents with a shield against competitive market pressures (Goldthorpe 2000, Chap. 6; Lazear 1995). In contrast, manual dexterity intensity is only relevant to native-immigrant competition: natives employed in occupations that have high manual-dexterity content are expected to be more exposed to competition with immigrants than those employed in occupations that are intense in communicational skills, where natives enjoy an obvious comparative advantage (Ortega and Polavieja 2012). Variation in all three job-specific dimensions can be found at all levels of formal education. Skill-specialization, monitoring costs and manual dexterity intensity should thus be conceived as independent determinants of LMC that are endogenous to respondents' occupations. Accounting for these sources of LMC constitutes a crucial contribution of this study.

A second contribution of this paper is the use of global economic recession as a means to estimate the causal impact of environmental economic pressures on attitudes towards ethnic minorities. Previous approaches have typically exploited cross-national (or cross-regional) variation in GDP *levels* as a means to estimate environmental effects. I contend that causal effects can be better estimated by exploiting cross-national variation in GDP contraction, for contraction taps directly on *change* in the economic environment—which is much more clearly linked to competitive pressures. Cross-national variation in the intensity of GDP contraction across European societies during the first dip of the post-2008 global financial crisis provides a unique source of identification of macro-level environmental effects, which can be thought of as a quasi-natural experiment (Gallie 2013).

To gauge the impact of macro-level recession effects on anti-immigrant sentiments in Europe, I follow a two-step regression approach. In the first step, I use individual-level data to estimate the *time change* in net average anti-immigrant sentiments observed between 2004/5 (a pre-recession time-point) and 2010/11 (a post-or-in-recession time-point) and explore how this time-change estimate responds to the introduction of individual-level perceptions of the national economy. Then, in a second step, I regress

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country-specific time change estimates on two objective macro-level variables: the size of GDP contraction experienced between 2004/5 and 2010/11 in each country; and information on migration inflows prior to recession. National figures for GDP contraction measure variation in the *intensity* of recession effects, while migration inflows capture a crucial dimension of environmental competition, namely, the demographic *size* of competing ethnic minorities. According to standard macro-level competition theory, the impact of recession on prejudicial attitudes should be greater the larger the size of competing groups (Blalock 1967).

To my knowledge, no other study in sociology has investigated the joint impact of occupational and environmental determinants of LMC on anti-immigrant sentiments using such a rich set of multi-level indicators. The closest paper to this study is Ortega and Polavieja (2012) in the field of migration economics. O&P investigate the impact of skill-based labor-market competition on natives' attitudes towards immigration by focusing on the protection derived from investments in job-specific human capital and specialization in communication-intensive vs. manual-intensive tasks. Due to data limitations, however, O&P do not investigate the impact of monitoring costs—a crucial occupational dimension with strong closure properties (see e.g. Goldthorpe 2000)—nor do they test for the impact of environmental pressures. The present study overcomes both of these limitations, while connecting recent contributions in migration, personnel and labor economics to the existing sociological literature on attitudes towards ethnic minorities.

## The Economic Roots of Anti-Immigrant Sentiments

Numerous empirical studies in the social sciences have set up a horse-race test between rational and ideational predictors of anti-immigrant sentiments (see e.g. Burns and Gimpel 2000; Sides and Citrin 2007; Dustman and Preston 2000; Sniderman, Hagendoorn and Prior 2004; Figueiredo and Elkins 2003). These studies tend to find that individual-level estimates for identities, values and predispositions are “stronger” predictors of anti-immigrant sentiments than those capturing economic competition. This has often been interpreted as evidence of the theoretical merits of symbolic approaches over realistic competition theories (see e.g. Sniderman et al 2004; Sides and

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Citrin 2007; Sears and Funk 1991 in Quillian 1995). This interpretation seems, however, wanting for two main reasons.

*First*, it is hardly surprising that attitudinal predictors yield higher correlations than objective ones when the outcome variable is itself an attitude. High correlations between related ideational constructs should actually raise concerns about endogeneity, a problem which has not received sufficient attention in the sociological literature to date (but see Sniderman et al. 2004). *Secondly*, and perhaps most importantly, empirical studies have typically used very poor measures of individuals' exposure to LMC. As pointed out above, in the vast majority of empirical studies, *objective* individual-level estimates for realistic competition boil down to measures of education, sometimes combined with employment status.

#### *Why education is a poor measure for LMC*

Education constitutes an imperfect measure of exposure to labor-market competition for (at least) the following three reasons. *First*, schooling levels mostly capture the *general* component of human capital, which by definition has limited *closure* properties, as it provides skills that are highly transferable across organizations, industries and occupations (Becker [1964]1993).<sup>4</sup> Theoretical models that use education as the only measure of exposure to LMC must consequently assume that immigrants are less educated than natives, which is certainly not always the case —not even on average—, whilst ignoring other crucial sources of exposure to competition operating *within* educational levels. *Secondly*, in contemporary labor markets skill miss-matches abound, so that individuals' educational levels do not always reflect their actual labor-market position (see e.g. Handel 2003). *Finally*, education might have effects on attitudes towards immigrants through channels other than LMC. More specifically, education is known to increase social trust, intellectual openness and tolerance; and it could also prompt social desirability in survey responses (Burns and Gimpel 2000; Côté and Erickson 2009; Hainmueller and Hiscox 2007, Kingston *et al.* 2003; Jackman and

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<sup>4</sup> Note that institutional barriers to the certification of foreign educational credentials can indeed reduce competition with migrants but constitutes of very different mechanisms of closure. General human capital *per se* offers only a limited shield.

Muha 1984). For all these reasons, education constitutes a rather imprecise and often problematic measure of LMC effects (see also Ortega and Polavieja 2012).

*Endogenous job 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 and monitoring costs (see e.g. Goldthorpe 2000; Polavieja 2003; 2012; Sorensen 2000). Skill-specialization captures the extent to which workers have to make post-schooling skill investments in order to learn to do the tasks required in their jobs well. Skill-specialization 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. Workers acquire specialized skills at their firms via formal training, informal instruction or learning-by-doing. At all events, skill-specialization investments generate costs for both workers and firms and constitute a crucial source of contractual hazard. A key property of skill specialization investments is that they protect workers from outside competition. Protection derives from employers' need to safeguarding their training investments, while promoting workers own investments in skill-specialization. The main instrument employers have to this end is the use of permanent/open-ended contracts with upward-sloping tenure-earnings profiles. This contractual design reduces firms' contractual hazard problems while providing workers with a shield against LMC (see e.g. Goldthorpe 2000; Lazear 1995; Williamson 1994; Sorensen 1994).

Monitoring costs also generate important contractual hazard problems for employers. In jobs where employees' productivity is very difficult to monitor employers have to find a way to induce 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 monitoring problems (Lazear 1995). By using future rents as an incentive device, deferred compensation schemes induce workers' sustained productivity. Note that productivity-enhancing schemes also

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imply the *closure* of the employment relation to outside competition, since without employment security deferred compensation would not provide credible incentives for workers (see also Goldthorpe 2000).

Skill specialization and monitoring costs are thus two crucial dimensions of the job that define opportunities for employment closure/exposure to LMC: For any given level of general human capital, individuals in jobs with high levels of skill specialization and high monitoring costs will be more protected against LMC from other workers, native and immigrant alike. In this sense, these two dimensions can be said to have *general* closure properties (i.e. they restrict LMC for all job incumbents).

Ortega and Polavieja (2012) argue that there is a further endogenous skill dimension that is specifically relevant to LMC between natives and immigrants, namely the degree of communicational vs. manual dexterity intensity required in the job. The argument is simple: Natives enjoy a comparative advantage vis-à-vis immigrants in performing tasks that require high communicational and culturally-specific skills, but this advantage vanishes entirely in occupations with high manual dexterity content. In the latter case, any outside job competitor will be equally able to perform the required tasks regardless of her language and/or cultural skills (see also Peri and Sparber 2009). It thus follows that the degree of manual dexterity intensity in a given occupation will be directly associated to the degree of exposure to native-immigrant competition —and this at all levels of general human capital and regardless of other job-specific dimensions. Although manual dexterity requirements tend to be negatively correlated with general human capital (i.e. manual occupations tend to require low levels of schooling), below I show that there is sufficient variation in dexterity requirements at all levels of formal schooling. This justifies the use of manual dexterity intensity as an independent skill-based dimension linked to LM exposure.<sup>5</sup>

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<sup>5</sup> This argument implies, for instance, that a native surgeon will be objectively more exposed to LMC with immigrants than a native psychologist because the former occupation requires higher levels of manual dexterity intensity, while the latter is more intensive in communication skills.

Figure 1 below shows the top-10 occupations for the four dimensions considered: job-specialization, monitoring costs, manual dexterity intensity and formal education according to European Social Survey data. In the next section I explain how these dimensions are measured in practice.

[Figure 1 about here]

*Environmental Sources of Competitive Threat: The Importance of Study 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. These two classical macro-level measures of competition have been tested in many subsequent studies using cross-national or cross-regional data (see e.g. Quillian 1995; Tienhaara 1974; Schissel, Wanner and Frideres 1989).

Most macro-level estimates of economic competition tend to suffer, however, from two important limitations: *First*, as commented-on above, macro-level indicators for economic conditions offer a rather distant and crude measure of natives' degree of individual exposure to competitive pressures. In most studies of macro-level effects, the channels connecting economic conditions to actual economic pressures at the individual level are miss-specified and it is typically assumed that all natives are equally affected by the economic environment. *Second*, macro-level estimates often draw on cross-national (or cross-regional) variation in largely *constant* economic conditions and this hinders the precise identification of environmental *effects*. In order to properly identify the causal impact of environmental factors, the analytical focus should thus shift from the study of cross-country variation in the *level* of economic development to the comparative study of *change* in macro-economic conditions: hence the importance of using variation in the impact of economic crises as a source of identification of environmental effects.

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## Data and Methodology

I investigate the impact of occupational and environmental sources of competitive threat on attitudes towards immigrants in Europe using data from the 2<sup>nd</sup> (2004/5) and the 5<sup>th</sup> (2010/11) rounds of the European Social Survey, 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 analysis is restricted to employed respondents aged between 20 and 64. The resulting analytical sample comprises over 35,000 individual pooled observations nested in 20 different European countries, namely: Belgium, the Czech Republic, Denmark, Estonia, Germany, Finland, France, Greece, Hungary, Ireland, the Netherlands, Norway, Poland, Portugal, Slovenia, Slovakia, Spain, Sweden, Switzerland and the United Kingdom. For most—but not all—countries in this pooled dataset, 2004/5 is a pre-recession year, whilst 2010/11 is either a recession or a post-recession year.<sup>6</sup> This provides a crucial source of identification of recession effects.

I use a two-step regression approach: in the first step, I test for individual-level predictors of anti-immigrant sentiments, including estimates for the three occupational determinants of LM exposure considered in this study (skill-specialization, monitoring costs and manual dexterity intensity), which are tested together with respondents’ years of schooling and self-reported indicators of household financial distress. Pooled regression also allows me to calculate country-level differences in the impact of time, measured as the change in net average anti-immigrant sentiments observed between 2004/5 and 2010/11. These time effects are estimated by fitting 20 different pooled regressions, one for each country in the dataset. If changes in the economic environment experienced in each country between 2004/10 and 2010/11 had any impact on the attitudes of their typical citizens, such impact should be captured by these first-step time estimates.

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<sup>6</sup> By post-recession I mean a situation of positive GDP growth. Several countries in Europe that showed positive figures in 2010/2011 suffered a posterior drop in GDP but this relapse (i.e. the second dip of recession) is not observed in the dataset.

In a second stage, variation in the first-step estimates for the net impact of time becomes the outcome variable, using countries as the unit of analysis ( $N=20$ ). I regress first-stage time change estimates on two macro-level variables: 1) the size of GDP contraction observed in each of the 20 countries between the two time points, which is a direct measure of the *intensity* of recession effects; and 2) national figures for pre-recession migration inflows, which capture differences in the size of demographic pressures. Data for GDP contraction is obtained from Eurostat (2012), whilst migration inflow figures are obtained from the OECD (2011) and correspond to the period 1995-2008. In order 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), using the program developed by Lewis (2000). Second-step regression allows me to estimate what is the joint impact of recession and demographic pressures on net average anti-immigrant sentiments, net of individual-level predictors, using a flexible and intuitive multilevel framework (see also Polavieja 2013).

#### *Measuring anti-immigrant sentiments*

Anti-immigrant sentiments are measured using a composite index that combines 6 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*). The remaining three items measure respectively the economic (*item 4*), the cultural (*item 5*) and the overall (*item 6*) impact of immigration. Responses to these 6 items are combined in one single interval scale ranging from -10 to +10 (Cronbach's alpha=0.89).

#### *Measuring occupational predictors of LM exposure*

Skill-specialization (JSS) is measured by averaging self-reported job-learning time at the level of occupation using the ISCO-88 classification (3 digits). 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. Note that this question, which is included in both rounds of the pooled dataset, clearly differentiates between general and specialized human capital. Occupational averages of job-learning time constitute a

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direct and robust measure of the skill specialization requirements of each of the 148 occupations in the dataset (see further Ortega and Polavieja 2012 for validity and reliability tests).

Monitoring costs (MCs) 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 MCs values for all respondents in the full pooled dataset by averaging the scores of this scale at the occupational level (3 digits). Given that occupational averages for monitoring costs 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 skill-specialization (but see robustness tests below).

The manual dexterity intensity (MDI) of respondents’ occupations, which is not directly observable in the ESS dataset, has been imputed from the US Occupational Network Online Dataset (O\*NET), following the method described in 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.<sup>7</sup> Informed by exploratory factor analysis, Ortega and Polavieja (2012) constructed a measure of manual dexterity intensity for each of these 449 occupations by averaging the task-importance and observed ability scores of the following 7 descriptors: visualization, arm-hand steadiness, manual dexterity, finger dexterity, control precision, wrist-finger speed and visual color discrimination. I have matched these 449 MDI scores to the occupations of European respondents in the pooled ESS dataset and then averaged scores at the 3-digit level (ISCO-88) using the occupational crosswalk provided by the Centre for Longitudinal Studies, Institute of Education, University of London.<sup>8</sup> Note that this procedure makes

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<sup>7</sup> For more details see <http://online.onetcenter.org/>.

<sup>8</sup> The author wishes to thank Jane Elliott and Vania Gerova (Centre for Longitudinal Studies, Institute of Education, University of London) for making their crosswalk publicly available (see: [http://www.cls.ioe.ac.uk/text.asp?section=00010001000\\_500160002](http://www.cls.ioe.ac.uk/text.asp?section=00010001000_500160002))

the assumption that occupations across US and European economies do not differ significantly in relation to MDI (for further details of the construction of MDI scores see Ortega and Polavieja 2012).<sup>9</sup> In order to facilitate comparability, I have rescaled the MDI index so that it ranges from 0 to 10, as in monitoring costs.

One crucial question in the analysis of the occupational sources of LM exposure is the extent to which these dimensions are different from each other, as well as from formal education. Reassuringly, correlations between all three occupational dimensions are low (the largest correlation between any pair of occupational dimensions is -0.26), which indicates that these are indeed different endogenous sources of LMC. Yet two of these occupational dimensions, JSS and MDI, show fairly high correlations with respondents' years of schooling (0.37 and -0.38 respectively). Robustness tests show, however, that the three occupational predictors of LMC retain their effects on anti-immigrant sentiments when they 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.

#### *Other explanatory and control variables*

First-step models introduce two further variables aimed at capturing economic pressures that are exogenous to respondents own jobs: financial distress and evaluations of the national economy. Financial distress is self-reported and refers to the household level. It measures respondents' difficulty to live on current household income.<sup>10</sup> 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).

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<sup>9</sup> Several other studies have made this comparability assumption by imposing the O\*NET task-content on occupational data for European countries (see e.g. Goos et al 2009; D'Amuri and Peri 2011; Ortega and Polavieja 2012, among others).

<sup>10</sup> 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.

One crucial question in the study of macro-level recession effects is whether the impact of recession is confined to those individuals who are *directly* affected by economic hardship and economic vulnerability (i.e. those directly hit by recession), or whether recession has also effects on natives who do not experience hardship directly. Borrowing from the economic voting literature, I term the latter possibility *sociotropic* effects of recession (see Polavieja 2013). Respondents' views about the general shape of the national economy, net of individual-level exposure to LMC and financial distress, can be interpreted as capturing *sociotropic* effects for the average worker.

All individual-level models include controls for 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 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.<sup>11</sup> Individuals' propensity to happiness could permeate their attitudinal responses to experiences of labor-market competition, economic hardship and vulnerability (see Polavieja 2013). Having such a rich set of values and traits as controls allows me to account for the expectations of ideational theories while netting out economic estimates from the influence of usually unobserved attitudinal heterogeneity.

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<sup>11</sup> 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.

## Findings

Table 1 below presents the results of fitting a series of nested OLS pooled regression models on the index of anti-immigrant sentiments. Although my focus is on economic predictors, I note that several findings reported in this table are consonant with symbolic theories. First, we observe a negative and significant effect of years of schooling on anti-immigrant sentiments. Schooling measures general human capital, which is a source of LM power. Yet education is also linked to anti-immigrant sentiments directly for it influences individual attitudes through processes of political socialization. Although my estimates cannot fully resolve the problem of identifying the causal paths linking schooling to attitudes towards ethnic minorities, the fact that models 3 and 4 include both occupational predictors linked to LMC and indicators of financial distress, is consistent with the interpretation of the net effect of schooling as reflecting at least to some extent processes of political socialization leading to greater levels of tolerance and respect for minorities (see Jackman and Muha 1984). Similarly consistent with processes of socialization is the finding that respondents who have lived abroad (for a period of at least six months in the last ten years) show significantly lower scores in the anti-immigrant scale. Experiencing emigration first-hand seems to reduce anti-immigrant sentiments among natives. Finally, we observe a strong positive effect of political conservatism, a strong negative effect of core egalitarian values and a weaker but strongly significant negative effect of religiosity on anti-immigrant sentiments. All these effects are clearly in line with symbolic theories. Having such a rich set of attitudinal controls only strengthens the importance of the findings regarding economic predictors, which I now turn to discuss in detail.<sup>12</sup>

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<sup>12</sup> Table 1 also suggests that personality traits can have a strong and significant effect on anti-immigrant sentiments. Respondents' propensity to happiness turns out to be a very strong predictor of anti-immigrant sentiments. This is an interesting finding. At the very least it suggests that controlling for personality traits in future research can help us reduce omitted variable bias.

*Occupational determinants of LMC, financial distress, and anti-immigrant sentiments*

Table 1 tests for the effect of the three occupational dimensions linked to exposure to LMC (see models 2, 3 and 4). Note that all three dimensions have significant effects on anti-immigrant sentiments and all the signs run in the expected direction: Respondents employed in occupations with higher levels of skill specialization and those employed in occupations with high monitoring costs display more favorable attitudes towards immigrants, while respondents in occupations with a high manual dexterity content display higher average anti-immigrant sentiments —and this at all levels of formal education and net of a host of ideational controls. In order to better gauge the magnitude of these three endogenous sources of exposure to LMC, let us compare their estimated effects on anti-immigrant sentiments to those of formal education.

Recall that skill-specialization requirements are measured as average learning time in months. Transforming this metric into years, we find that increasing required job-learning time by one extra year would have the same effect on attitudes towards immigrants as increasing formal schooling by two years and six months. Skill-specialization would thus have a much stronger net curbing impact on anti-immigrant sentiments than formal schooling. Both the monitoring cost index and the manual dexterity index range from 0 to 10. According to the estimates reported in Table 1, one unit increase in monitoring costs would have the same curbing impact on anti-immigrant sentiments as one extra year of schooling, while one unit increase in the manual dexterity scores would have a net effect equivalent to increasing education by six months. Endogenous sources of LM exposure do seem to have very significant, strong and robust effects on anti-immigrant sentiments. I note that there is no easy alternative interpretation to these findings outside the proposed theoretical framework (why should these three occupational characteristics affect workers' attitudes towards immigration if not through their impact on LMC?). The evidence presented in Table 1 thus provides strong support to LMC theory.

Model 3 in Table 1 tests for the effect of household financial distress on anti-immigrant sentiments. Note that household financial distress is not only a function of respondents' own economic situation but crucially of that of other family members.

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The proportion of households experiencing financial distress increased in Europe between 2004/5 and 2010/11 as a result of global economic recession (see Tahlin 2013). In accordance with the theoretical expectations, employed European respondents experiencing financial distress at their homes score significantly higher in the index of anti-immigrant sentiments. According to my estimates, financial distress increased anti-immigrant scores by one sixth of a point, which is roughly equivalent to the effect of increasing formal education by one year and six months. Finding that both individual experiences of financial distress and individual exposure to LMC (as measured by the characteristics of respondent's occupations) affect their attitudes towards immigrants constitutes clear evidence of 'egocentric' effects.

[Table 1 about here]

*Change in anti-immigrant sentiments 2004-2010*

In all the models on in Table 1 the effects of time are estimated using the variable 'year change 2004-2010' interacted with country. This variable captures the difference in net average attitudes observed between the two observation years for the typical worker of each sampled country, net of all the variables in the model, including occupational sources of LMC and financial distress. For economy of presentation, Table 1 only reports the main effect of this variable, which corresponds to Spanish respondents.

According to the regression estimates, this net time coefficient shows an average increase in anti-immigrant sentiments (amongst Spanish respondents) of roughly half a point between 2004/5 and 2010/11. Spain does not stand alone in this pattern, although several other countries experienced no significant change or even a decrease in anti-immigrant sentiments in the same period (see below)

Table 1 shows that this change over time in attitudes towards immigrants was very strongly affected by people's perceptions of the general economic situation of their respective countries (i.e. their *sociotropic* views about the economy). When such perceptions of the economy are introduced in the regression the main effect of survey year on anti-immigrant sentiments is completely explained away (see model 4). This suggests that the change in net anti-immigrant sentiments observed between 2004/5

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and 2010/11 could actually be driven by recession effects (at least in Spain). Note that introducing respondents' evaluations of the national economy also explains away the effect of financial distress on anti-immigrant sentiments.<sup>13</sup> The effect of national evaluations of the economy on both anti-immigrant sentiments and time-change estimates suggests that economic recession had *sociotropic* effects on attitudes toward immigrants —i.e. effects that were not confined to the most vulnerable segments of society. In order to capture the impact of recession effects *directly*, below I investigate whether macro-level variation in GDP contraction can explain country-level variation in net change in anti-immigrant sentiments between 2004/5 and 2010/11.

*Explaining country differences in the average change in anti-immigrant sentiments between 2004 and 2010*

Table 2 below shows the estimated time-change coefficients and the 2004/5 values for anti-immigrant sentiments in all the countries in the dataset. First-step estimates for the effect of time come from twenty different regressions fitted separately to each country in the ESS dataset. These regressions include all the variables present in the full model of Table 1 (model 4) with the exception of financial distress and evaluations of the country's economy —note that accounting for these two variables will lead to an under-estimation of recession effects since recession has a clear impact on both.

[Table 2 about here]

The first thing to note is that there are very significant differences in the time effects found across different European societies. Between 2004/5 and 2010/11 net anti-immigrant sentiments increased significantly in *only* seven countries (Ireland, Greece, Spain, the Czech Republic, Hungary, Slovakia and United Kingdom); while they actually

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<sup>13</sup> 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 2004/5 and 2010/11 in many European countries, and so did negative evaluations of the national economy.

decreased significantly in other six (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. Note that Ireland and Greece clearly stand out as the countries that experienced stronger net increases in anti-immigrant sentiments between 2004/5 and 2010/11, while Estonia and Portugal are the countries with the highest decrease. How can we explain these country differences in time-change coefficients? Following Blalock (1967: chap. 5), I test for two plausible macro-level factors influencing net changes in anti-immigrant sentiments: the actual size of the change in macro-economic conditions and the size of migration inflows prior to recession, which is a measure of demographic pressures. Table 2 provides information for these two variables by country.

It is important to note that there is a high degree of variation in the way different countries experienced the first dip of global recession in Europe (see Gallie 2013: Chapters 1 and 2). 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 2012). 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 follow suit with GDP losses between five and three 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 migration inflows experienced prior to recession. According to OECD (2011) figures, between 1995 and 2008 the immigration rate experienced a spectacular increase in both Spain and Ireland (with increases of 11 and 10 percentage points respectively); a notable increase in Greece and Slovenia (with increases of around 6 percentage points), and a substantial increase in Norway,

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Switzerland, United Kingdom and Belgium (with increases between 4 and 5 percentage points). In the remaining countries increases were negligible.

Can country differences in net changes in anti-immigrant sentiments between 2004/05 and 2010/11 be explained by different experiences of the global crisis and differences in demographic pressures? In order to answer this question, I next regress the first-step estimates for the effect of time on the typical worker in each of the twenty countries of the sample on the above-commented changes in GDP growth observed between 2004 and 2010. Note that the resulting estimates for changes in GDP growth will capture country-level economic crisis effects on attitudinal change between the two observation points *directly*. Information on immigration inflows is only available for 18 countries in the dataset. The joint effect of GDP contraction and immigration inflows can thus only be tested on a restricted country sample. Results are presented on Table 3.

[Table 3 about here]

Macro-level estimates yield significant recession effects on anti-immigrant sentiments. According to my estimates, a one-point reduction in GDP growth between the two observation points would increase net average anti-immigrant sentiments by roughly one-eighth of a point (one-ninth of a point in the full sample and one-seventh of a point in the restricted sample). Recall that the estimated coefficients for attitudinal change between 2004 and 2010 are net of individual-level predictors. In this sense, the GDP change coefficient should be interpreted as the effect of economic crisis on the attitudes of the typical worker in each country.

Model 3 adds immigration inflows. Consistent with Blalock's theory, I find that a one-point increase in immigration inflows between 1995 and 2008 would yield a net increase in anti-immigrant sentiments of roughly one-twentieth of a point between the two observation years (see also Figure 2). Model 3 is an additive model and hence assumes that the effect of each macro-level factor is constant across the values of the other. Yet the data structure can be more efficiently represented by one-single interacted parameter, which captures the multiplicative effect of recession and demographic pressures on the net change in anti-immigrant sentiments experienced between 2004/05 and 2010/11 (see Model 4). An interacted parameter captures nicely the

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expectation that competitive pressures will be higher in environments that combine economic contraction with sizeable ethnic minorities. This interacted effect is highly significant and can explain as much as fifty-six percent of the country variance in changing attitudes on its own.

In sum, Table 3 provides strong support for environmental pressures leading to change in anti-immigrant sentiments in Europe. Countries that experienced a larger drop in GDP growth during the first phase of global recession show higher micro-level increases in anti-immigrant sentiments amongst typical workers. This macro-level impact of recession on micro-level attitudes is even stronger in countries that had experienced larger increases in migration inflows in the previous years (e.g. Greece, Ireland and Spain).

## **Robustness tests**

Several 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 a number of tests: First, I have tested whether the effects of these three occupational dimensions on anti-immigrant sentiments hold both at high and low levels of formal education. Second, 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 monitoring costs is only available in Round 5, this test implies using this latter round only. Finally, I have checked that results are robust to fitting occupational-averaged dimensions on each round separately (tests not shown but available on request). The effects of the three occupational dimensions considered in this study are fully robust to all three tests.

Second-step estimates have also been subjected to a number of robustness tests. First, I have checked for possible effects of GDP levels (measured both in 2004/2005 and in 2009/10), as well as for the effect of levels of immigration (measured alternatively in 1995 and 2011) on first-step estimates of net change in anti-immigrant sentiments between 2004/05 and 2010/11. None of these variables are significant and, most

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importantly, their inclusion in the model does not alter the effects of GDP contraction and migration inflows (in either the additive or the multiplicative specifications). Secondly, I have checked that GDP and migration inflows estimates are robust to the inclusion of several macro-level controls, including various indicators for the quality of democracy, social inequality (GINI) and social expenditure. Given small sample size, these controls must be introduced one at a time but none of them alter my findings. 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 and immigration inflows hold when any of these countries is excluded individually from the dataset. Moreover, results for GDP contraction hold when both Ireland and Spain, the two countries with the largest increase in anti-immigrant sentiments over the observed period, are removed jointly from the second-stage regression. All these tests, which are available on request, suggest that the reported estimates for macro-level environmental effects are also statistically robust.

## Summary and Conclusions

Symbolic and rational approaches disagree on the factors that most affect citizens' attitudes toward minorities (internalized values vs. economic competition). Yet while symbolic theories have been typically tested with a host of individual-level measures, rational theories 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 have argued, rational competition theories have not stood much of a fair empirical chance in much of the existing research in sociology, social psychology and political science. Rounds 2 and 5 of the ESS dataset allow us to test for the effect of ideational predictors (values, beliefs and ideologies) together with unusually rich measures of economic competition. By pooling these two rounds together, we can also estimate the change in anti-immigrant sentiments observed between 2004/5 and 2010/11, a period that covers the first dip of global economic recession. I believe this study has made both a theoretical as well as an empirical contribution to the literature on attitudes toward immigration.

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At the theoretical level, this study has connected rational competition theories on prejudicial attitudes to recent developments in social stratification theory—which itself draws heavily on personnel and transaction costs economics— and labor economics. This connection, I have argued, help us better unearth the structural bases of labor-market competition, providing sociological research on anti-immigrant sentiments with (more) solid theoretical foundations. This new competition theory has then been subjected to a very exhaustive and stringent empirical multi-level test: At the individual level, I have investigated the impact of three occupational dimensions that are intrinsically linked to labor-market competition with immigrants (i.e. skill specialization, monitoring costs and manual dexterity intensity); at the macro level, I have exploited the first phase of the 2008 global recession as a key source of identification for recession effects.

Consistent with the predictions of the theoretical model, I have found that skill-specialization, monitoring costs and manual dexterity intensity are significantly correlated with anti-immigrant sentiments in Europe in a direction that is consistent with a mechanism of labor-market competition (LMC). Moreover, I have found that the estimated effects for these occupational dimensions are quite strong. Skill-specialization, in particular, has a much stronger impact on anti-immigrant sentiments than years of schooling. Skills-specialization is a powerful endogenous source of protection from LMC (Becker [1964]1993; Goldthorpe 2000; Lazear 1995). I note that none of these occupational dimensions should have any obvious effect on anti-immigrant sentiments (net of respondents' formal education) outside the hypothesized mechanism of LMC.

Using two-step regression techniques, I have regressed country differences in the net change in anti-immigrant sentiments experienced between 2004/5 and 2010/11 (i.e. before and after the first dip of the 2008 global recession) on country differences in GDP contraction and previous migration inflows. Consonant with the expectations of theories of group-level threat (Blalock 1967), the results show that net changes in anti-immigrant sentiments across European countries are significantly correlated with macro-level variation in GDP contraction as well as with the size of previous migration inflows. Such effects can be statistically represented as multiplicative effects.

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I note that, in some European economies, the size of previous migration inflows and the severity of GDP contraction during the first dip of recession 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 prior to recession. When these construction (and financial) bubbles finally burst the economies of these two countries virtually collapsed.<sup>14</sup> I speculate that housing bubbles could be particularly conducive to anti-immigrant sentiments because they increase demographic pressures and labor-market competition amongst the less protected segments of the labor market, while at the same time generating the conditions for big recession effects.

Changes in macro-level conditions also affect individual perceptions of the national economy. This is why introducing people's evaluations of the economy in pooled micro-level regressions explains first-step time-change coefficients away. Accounting for people's evaluations of their national economies in level-one models also absorbs the (previously significant) impact of household financial distress on anti-immigrants sentiments, a finding which is also consistent with "recession" effects. At the same time, the net individual-level effect of public perceptions of the national economy on attitudes towards immigrants strongly suggest that economic recession not only has *egocentric* effects (for recession increases the pool of people experiencing economic vulnerability and hardship) but can also have *sociotropic* 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 *sociotropic* effects using ESS data (see Polavieja 2013).

In sum, the results presented in this study provide strong support for rational competition theories both at the micro-level as well as at the macro level. On the basis of such results, I conclude that anti-immigrant sentiments have indeed strong objective economic foundations. For many European workers competitive threat is not (at least

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<sup>14</sup> 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.

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. I believe a new realistic competition theory, one that is connected to contemporary research and theorizing in both social stratification and labor economics, can help us better address the real challenges that lie ahead.

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## Tables and Figures

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**Figure 1:** The top 10 occupations according to average years of education, average skill specialization, average manual-dexterity intensity scores, and average monitoring costs

<b>Education (in years)</b>	<i>Mean</i>	<b>Skill specialization (job-learning time in months)</b>	<i>Mean</i>
Physicists, chemists & related professionals	20.8	Riggers & cable splicers	73
Medical Doctors	19.4	Photographic-products machine operators	42.6
Biologists, botanists, zoologists & related profess.	18.7	Farming & forestry advisers-technicians	39.6
Higher education teaching professionals	18.4	Tobacco preparers & tobacco-product makers	38.6
Judges	17.8	Aircraft engine mechanics & fitters	38.4
Veterinarians	17.6	Wood process. & paper-making plant operators	36.6
Lawyers	17.6	Physical, math. & engineering science professionals	34.5
Dentists	17.4	General managers of small enterprises	31.9
Psychologists	17.4	Upholsterers & related workers	27.6
Mathematicians & related professionals	17.1	Production & operations managers in primary sector	26.5
<b>Manual-Dexterity Intensity (0-10)</b>	<i>Score</i>	<b>Monitoring costs (0-10)</b>	<i>Mean</i>
Building & related electricians	9.71	Drivers & mobile plant operators	6.5
Jewelry & precision metal workers	9.66	Life-Science & health professionals	6
Metal wheel-grinders, polishers & tool sharpeners	9.38	Metal, machinery & related trades workers	5.5
Pelt dressers, tanners, fell mongers & shoemakers	9.29	Stationary plant & related operators	5.1
Musical instrument makers & tuners	9.26	Physical & engineering science associate profess.	5
Dentists	9.24	Skilled agriculture & fisheries workers	5
Aircraft engine mechanics & filters	9.23	Office clerks	4.8
Aircraft pilots & related associate professionals	9.18	Locomotive engine drivers & related workers	4.2
Assemblers	9.17	Teaching professionals	4
Miners, shot-firers, stone cutters & carvers	9.14	Technicians & associate professionals	4

Notes: Average years of education in occupation and average job-learning time in occupations calculated using ISCO-88 4-digit coding. Average manual dexterity intensity scores calculated using crosswalk from US 2000 Census-Occupations into ISCO-88 4-digit coding. Average monitoring costs calculated using ESS 2010 and ISCO-88 3-digit coding. Source: Ortega and Polavieja (2011) and ESS 2010.

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**Table 1.** Pooled OLS Regressions on Anti-Immigrant Sentiments, Europe 2004/05-2010/11

VARIABLES	(1)	(2)	(3)	(4)
Years of schooling	-0.147***	-0.115***	-0.114***	-0.111***
Skill Specialization <sub>o</sub>		-0.0257***	-0.0244***	-0.0228***
Monitoring Costs <sub>o</sub>		-0.115**	-0.112**	-0.114**
Manual Dexterity Intensity <sub>o</sub>		0.057***	0.060***	0.055***
Household financial distress			0.166***	0.0654
Satisfaction national eco.				-0.137***
Year change 2004-2010 <small>REF. is Spain</small>	0.547***	0.494***	0.487***	0.0914
Social Trust	-0.255***	-0.246***	-0.243***	-0.204***
Left-right scale	0.169***	0.172***	0.172***	0.184***
Religiosity	-0.0295***	-0.0292***	-0.0293***	-0.0232***
Trait_Egalitarianism	-0.253***	-0.250***	-0.252***	-0.262***
Trait_Happiness	-0.0891***	-0.0880***	-0.0894***	-0.0687***
Has working experience abroad	-0.283***	-0.279***	-0.281***	-0.259***
Constant	2.341***	2.206***	2.147***	2.703***
Observations	31,773	31,767	31,767	31,547
R-squared	0.248	0.256	0.257	0.270

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Note: 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.

**Table 2.** Changes in GDP Growth, Migration Inflows and Net Average Difference in Anti-Immigrant Sentiment between 2004 and 2010 by Country

<i>Country</i>	Size of GDP contraction <sup>a</sup> 2004-2010	Migration inflows 1995-2008	Anti-Immigrant Sentiments ( $\gamma_c$ )		
			2004 value <sup>b</sup>	Coef <sup>c</sup>	Sig.
Spain ES	3.4	11.1	-0.53	0.48	***
Ireland IE	4.9	9.8	-0.82	1.03	***
Greece GR	7.9	6.3 <sup>d</sup>	0.49	0.81	***
Portugal PT	0.2	0.9	0.29	-0.50	***
Belgium BE	1.1	3.3	-0.32	0.13	
Switzerland CH	-0.2	4.4	-1.14	-0.04	
Germany DE	-2.5	1.4	-0.13	-0.44	***
France FR	1.0	1.1	-0.13	0.13	
United Kingdom UK	0.9	3.9	0.03	0.26	**
Netherlands NL	0.5	1.8	-0.06	-0.29	***
Denmark DK	1.0	2.5	-0.19	-0.42	***
Norway NO	3.3	4.8	-0.24	-0.25	
Sweden SE	-1.9		-1.55	-0.45	***
Finland FI	0.4	3.3	-0.68	0.19	
Czech Republic CZ	2.0	2.0	0.31	0.45	***
Hungary HU	3.5	1.1	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	.	-0.36	-0.05	
Slovakia SK	0.9	6	-0.24	0.32	**

\*\*\*  $p < 0.001$ , \*\*  $p < 0.05$

Notes: <sup>a</sup> GDP growth figures from Eurostat (2012). GDP contraction calculated as the rate of real GDP growth in 2004 less the rate of real GDP growth in 2004, where growth rates are measured as percentage change over the previous year.

<sup>b</sup> Estimates for 2004 marginal values and change in year coefficients are based on 20 different country-specific as in Model 1 on Table 1a –all other variables constant at their means.

<sup>d</sup> The immigration rate in Greece is missing for 1995. This figure has been imputed on the basis of immigration rate in 1990 assuming the same growth rate in the period 1990-1995 as the rate observed for the period 1990-2000.

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Source: Calculated by the author from Pooled ESS 2004-2010, Eurostat Real GDP Growth Figures (Eurostat 2012) and OECD migration inflow figures (OECD 2011).

**Table 3.** Country-Level Regressions: The Effect of GDP contraction and Migration Inflows on the Net Change in Anti-Immigrant Sentiments

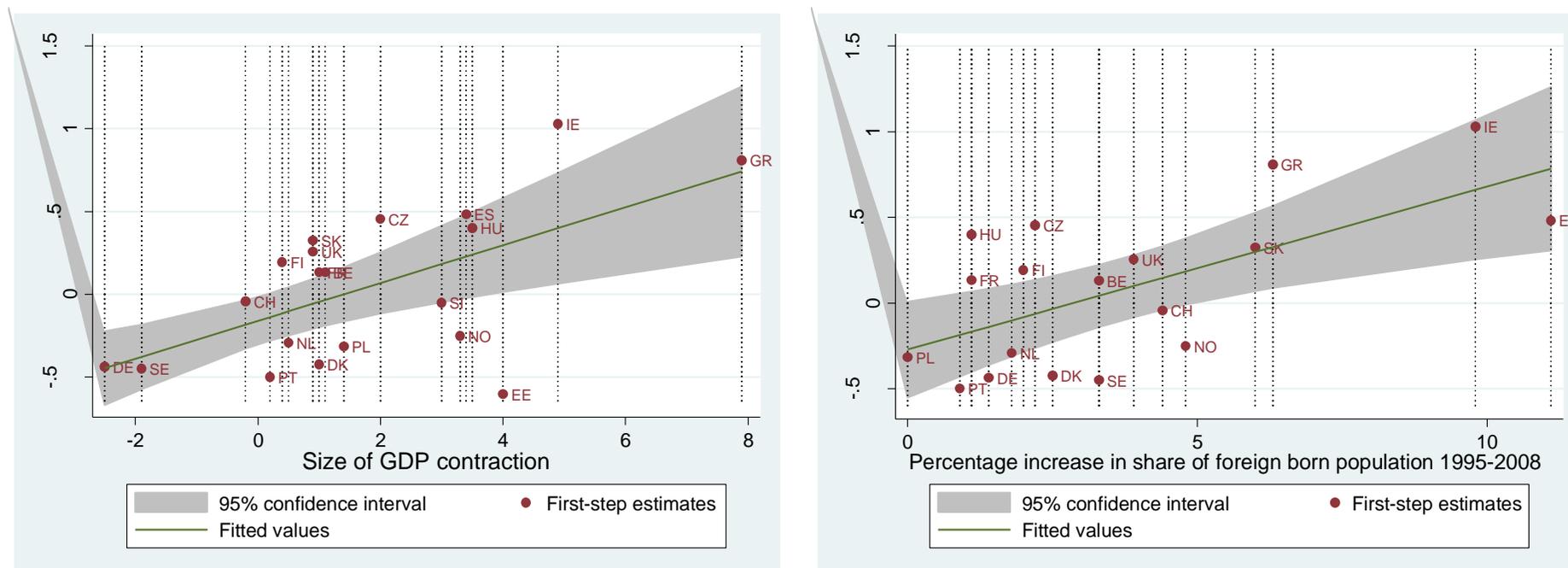
VARIABLES	(1)	(2)	(3)	(4)
GDP contraction	0.114*** [0.0305]	0.139*** [0.0240]	0.107*** [0.0214]	
Migration inflows (1995-2008)			0.0499** [0.0222]	
GDP contract. x Migration inflows				0.0198*** [0.00266]
Constant	-0.161** [0.0688]	-0.140* [0.0695]	-0.272** [0.101]	-0.109 [0.0841]
Observations	20	18	18	18
R-squared	0.358	0.557	0.636	0.559

Standard errors 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 2012) and OECD immigration figures (OECD 2011).

**\*\*\*Work in progress. Please do not cite or quote without the author's permission\*\*\***

**Figure 2:** The Effect of GDP contraction and Migration Inflows on Net Changes in Anti-Foreign Sentiments, 2004/05-2010/11



Source: Model 3 on Table 3 from ESS (2004;2010), Eurostat (2012) and OECD (2012)