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Identifying the Determinants of Attitudes towards Immigrants - A Structural Cross-Country Analysis

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Jan Brenner and Michael Fertig

Identifying the Determinants of Attitudes towards Immigrants

A Structural Cross-Country Analysis

No. 47

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Jan Brenner and Michael Fertig*

Identifying the Determinants of Attitudes towards Immigrants – A Structural Cross-Country Analysis

Abstract
Utilizing subjective data to infer on fundamental issues of individual opinion is associated with severe conceptual and methodological problems. This paper addresses these problems and investigates the attitudes towards immigrants within a cross-country framework. To this end, we utilize data from the first wave of the European Social Survey (ESS) in a structural latent variable model. The determinants of attitudes towards immigrants are estimated by employing different identification restrictions on the model. Our results suggest that educational attainment as well as parental education are the main driving forces behind attitudes formation. Average attitudes across countries further seem to increase with per capita GDP. All our findings are stable across countries and identification strategies.

JEL Classification: C31, F22, J15.

Keywords: Subjective Data, Identification, Minorities.

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1 Introduction

In recent years, the perception of immigrants as well as the driving forces behind them have received growing interest in the literature on the economics of migration. This development is mainly associated with the availability of social survey data with detailed background information on the respondents themselves which enables researchers to conduct multivariate analyses. More importantly, the perception of immigrants by the native population has also an important policy dimension. Almost all European countries are confronted with demographic change, an increasing demand for high-skilled labor and a growing need to prevent illegal (unskilled) immigration, though to varying degrees. Consequently, European countries are engaged in a competition for high-skilled migrants.

An important dimension in this competition, next to the economic prospects faced by immigrants, is the opportunity for integration into the indigenous society for both the migrants themselves and, perhaps more importantly, their offspring. These non-monetary aspects have arguably increased in importance, as the labor market for high-skilled workers has become more and more homogeneous internationally. Governments aiming at the formulation of a rational and foresighted immigration policy need to address this topic openly. At least, a successful migration policy must be able to signal reliably that the recipient society is offering to immigrants a *long-run* perspective in the country. For instance, the disappointing experience with the so-called *green card* regulation in Germany suggests that it is anything but guaranteed that high-skilled individuals are willing to enter the country if such a long-run perspective is missing.

The first step in any appropriate analysis of residents attitudes towards newcomers is a descriptive analysis of the extent of any resistance or prejudices. Unfortunately, even this presumably simple task is difficult to perform, since there is no metric gauge of attitudes. Firstly, often the phenomenon under study has no clear-cut definition. For instance, the underlying or latent attitude towards immigrants, i.e. the degree of respondents' xenophobia, is not defined in a generally accepted manner. Secondly, attitudes are neither directly observable nor measurable on an objective scale. The best one can hope is that respondents reveal their true latent attitude(s) in a set of related questions to the same topic.

This obstacle also precludes any straightforward analysis of the causal mechanisms behind these attitudes. Yet, for the successful formulation of migration policy, identifying the determinants of immigrants' perception by natives is a prerequisite for discovering opportunities for promising public integration initiatives. Yet, it is *a priori* not even clear, how latent attitudes affect respondents' answers

to specific questions. In other words, the driving force behind answers on questions regarding immigrants need not necessarily be xenophobic tendencies alone. Any other unobservable trait like misanthropy might confound the answering behavior. This constitutes a problem whenever there is no perfect congruence between these unobservable fundamental attitudes. Finally, it is also conceivable that different questions elicit respondents' true opinion(s) to a varying degree. This implies that the identification of the latent attitude requires the examination of *all* available questions in a coherent model linking attitudes, and their determinants, to interview responses.

This paper contributes to the literature by addressing these conceptual problems within a cross-country analysis. To this end, we utilize data from the first wave of the European Social Survey (*ESS*) in a structural latent variable model. The determinants of attitudes towards immigrants are estimated by employing different identification restrictions on the model, which are discussed in detail. Our results suggest that own educational attainment as well as parental education are the main driving forces behind attitudes formation. Higher education of both, the respondents and their parents, affect views on foreigners positively. Furthermore, differences in average attitudes across countries can to some extent be explained by per capita GDP differences, indicating a positive relationship between the two variables. All our findings are stable across the different identification strategies.

The rest of the paper is structured as follows. The next section provides a brief survey of the relevant literature. **Section 3** explains the structural model and its identification in detail and describes the data. Estimation results are presented in **Section 4** and **Section 5** offers some conclusions.

2 Literature Survey

In this section, we briefly survey the existing literature regarding attitudes towards immigration with a focus on *empirical* studies in economic migration research. A rather early contribution is Bauer, Loftstrom, and Zimmermann (2000) which uses the 1995 wave of the *International Social Survey Program* (*ISSP*) to analyze the relationship between immigration policy and attitudes towards minorities in a cross country comparison. The authors conclude that respondents from countries with a more skill-based immigration policy (e.g. Canada) tend to display more positive attitudes towards immigrants and other minorities than respondents from countries with other immigration policies.

Gang, Rivera-Batiz, and Yun (2002) use the 1988 and 1997 waves of the *Eu-*

robarometer to investigate whether increasing signs of xenophobia are caused by changing economic conditions over time. They conclude that respondents confronted with economic strain display a more negative attitude towards immigrants and that racial prejudices and high local concentration of foreigners are associated with a stronger anti-foreigner sentiment. More positive attitudes are exhibited by respondents with children and higher education, although the positive effect of an additional year of schooling is decreasing over time.

For the case of Germany, Fertig and Schmidt (2001) compare the actual welfare dependence of immigrants using the 1995 wave of the *Mikrozensus* with perceptions of this welfare dependence by Germans, utilizing the 1996 wave of the *ALLBUS*. Their results suggest that the level of education and the place of residence are the driving forces behind the extent of respondents' agreement with the claim that foreigners are a burden for the social security systems in Germany. Furthermore, respondents from regions with a below-average share of foreigners have a considerably higher probability to agree with this claim. However, the labor market status, specifically whether the respondent is unemployed or not, does not seem to exert any significant impact on the level of agreement.

Again using the *ALLBUS*, Fertig and Schmidt (2002) identify the attitude towards foreigners and Jews and their determinants from a set of 35 and 7 questions, respectively. The main idea behind their approach is that an unobservable general attitude towards minorities exists that drives the distribution to all related survey items. The central finding of this paper is that only the education level exhibits any significant impact on attitudes towards foreigners. The pattern looks similar regarding the attitude towards Jews, with the exception that women tend to display a slightly less negative attitude than men. Other potential explanatory variables, e.g. being unemployed or living in East Germany, turn out to be insignificant.

A recent study by Daniels and von der Ruhr (2005), using US data from the *National Identity Survey*, investigates the impact of religious affiliation on immigration-policy preferences. The authors' results suggest that more religious respondents exhibit more positive attitudes towards future migration, regardless of the religious group. Furthermore, compared to believers of other denominations, protestants seem to prefer less future immigration. Finally, their results confirm the prevalent relation between education and immigration preferences.

Dustmann and Preston (2001) analyze the effect of local concentration of ethnic minority groups on the attitudes of natives towards these groups using UK

data from the *British Social Attitudes Survey* (*BSAS*). Controlling for individual characteristics as well as local labor market conditions they find that higher concentrations of ethnic minorities tend to increase hostility of natives towards these minorities. Using the same data set, Dustmann and Preston (2004a) conduct a multi-factor analysis to examine the relationship between racist attitudes, welfare as well as labor market considerations and the opinions of natives towards future immigration (restrictions) for different immigrant groups. These factors are identified from four specific items of the questionnaire, respectively, and then related as explanatory variables to the opinions of natives about future immigration of distinct ethnic groups. Their results suggest that the driving force behind the opposition to future immigration is racism (especially in the case of ethnically different immigrants), whereas labor market or welfare considerations play a minor role in explaining the attitude formation.

Dustmann and Preston (2004b), employing the same identification strategy as described above, aim at identifying the effect of labor market competition, public burden, and efficiency considerations on the opinion of respondents to the question whether immigration is good or bad for the economy. The three factors are again identified by a small set of selected questions, in this case from the *ESS* collected in 22 European countries. The main source of anti-immigration sentiment seems to be fears about public burden induced by immigration, followed by efficiency considerations. Labor market competition does not appear to influence respondents' attitude. However, the authors argue that labor market considerations might be captured by the public burden variable since they are strongly correlated. The authors conclude that there are obviously more economic factors involved in forming attitudes on immigration issues than a simple labor market competition framework can capture.

Card, Dustmann, and Preston (2005) compare anti-immigration sentiments and their determinants across Europe (again using the *ESS*). The authors start by reporting that immigrants with the same ethnic background are slightly preferred to other foreigners and that people coming from richer countries are more welcome than people from poorer countries. Furthermore, their descriptive results suggest that higher educated and younger respondents are more positive in their attitude towards immigration (in each case holding the other variable constant). Moreover, Christians of all denominations seem to be more opposed to immigration than others, immigrants themselves hold slightly more positive views than natives and the occupational status of the interviewees does not seem to play a role when taking age differences and educational attainment into account. By comparing attitudes across the *ESS* countries, neither GDP per capita, nor the unemployment

rate, nor the share of foreign born individuals help explain observable differences in attitudes. Finally, based on the opinions regarding the effect of immigration, preferences on social homogeneity, and measures of the overall attitude to immigration, the authors conclude that there seems to be a strong underlying factor structure linking all these opinions.

One recent strand of the literature on attitudes towards immigration is characterized by the attempt to reconcile the individual opinions taken from survey data to the predictions of stylized economic models that postulate the wage effects of immigration to depend on the skill distributions of native and foreign workers (e.g. Mayda (2005), Scheve and Slaughter (2001), and O'Rourke and Sinnott (2003)). The major finding of this literature that low skilled or less educated individuals in developed countries have stronger anti-immigration sentiments is apparently related to the fact that most immigrants to these countries are low skilled as well. Thus, their presence increases the competition in this sector of the labor market, which in turn decreases the wages of low skilled natives and increases their risk of unemployment. The more positive attitude of the highly educated is explained by the relative decrease of skilled labor induced by low skilled immigration which should raise their wages.

This result coincides with the predictions of specific Heckscher-Ohlin Models and the Factor-Proportions Analysis Model (see e.g. Borjas, Freeman, and Katz 1996, Borjas 1999, or Scheve and Slaughter 2001). In particular, Mayda (2005) and O'Rourke and Sinnott (2003) use data from the *ISSP* and the *World Value Survey* in a multi-country analysis and find strong support for the hypotheses described above. In addition to these economic determinants, Mayda (2005) suggests that cultural and national-identity issues help explain attitudes towards immigration. O'Rourke and Sinnott (2003) further report a positive association between patriotism and chauvinism (constructed from 7 survey questions via principal components analysis) and negative attitudes towards immigration.

Scheve and Slaughter (2001) use US data from the *National Election Studies Survey* and also find support for the hypotheses delineated above. Additionally, the Area-Analysis Model, which predicts that natives in gateway communities have stronger sentiments towards immigrants compared to other regions due to the increased competition on their local labor market, is tested and rejected. Other significant correlates of attitudes are the affiliation with a political party and a measure of ideology. These variables indicate more positive attitudes if the respondent is rather a democrat than a republican, and rather liberal than conservative, respectively.

On the other hand, Hainmueller and Hiscox (2005) argue that the interpretation of the correlation between education and the attitudes towards immigration as a reaction to labor market concerns is misleading. They analyze data of 22 European countries using the *ESS* and find that the relationship between attitudes towards specific groups of immigrants and education as well as skills is stable, regardless of which combination of host country and immigrant group is taken into account. The authors therefore claim that the results simply reflect that more education genuinely reduces prejudices towards minorities and increases ethnic and racial tolerance rather than being determined by labor market considerations. Fertig and Schmidt (2002) explain that it will be impossible to distinguish this effect of education on attitudes from a mere effect of education on interview behavior with stable preferences. Abstracting from this complication, we proceed in this study to shed more light on the nexus attitudes - education - labor market conditions.

3 Empirical Framework

In our empirical application we utilize data from the first wave of the *ESS*, collected in 22 European Countries in 2002 and 2003, to estimate an adjusted version of the model developed by Fertig and Schmidt (2002). In this endeavor, we aim at identifying the determinants of an unobservable overall attitude towards immigrants from a large set of different questions, which are analyzed simultaneously in a structural equation model. In total, we choose 38 items from the immigration module of the *ESS*. In this choice, only such questions are considered whose answer scale allows a clear ordering from positive to negative attitudes towards immigrants. The central assumption of the analysis is that a *single* unobservable heterogeneity term exists that captures the underlying fundamental attitude of the respondents to foreigners and, thus, represents the central determinant of answers towards all immigration related questions[1]. Since these items might vary in the extent to which they carry information about this latent factor, the coefficient of it is allowed to vary across items.

Furthermore, in our model observable socio-economic factors are permitted to exhibit a *direct* impact on the answers to survey items. Hence, observable characteristics like age, which might reflect life experience, are allowed to impinge upon respondents' answers independently of their effect on the fundamental attitude. In the following subsection we introduce our structural model formally. Thereafter, the different identification strategies allowing to estimate the model parameters

[1]**Section 4.1** presents some empirical evidence supporting this assumption.

are presented, followed by the descriptive analysis of the available data.

3.1 The Structural Model

Our sample consists of $i = 1, \ldots, N$ individuals for whom we observe answers y_j to questions $j = 1, \ldots, J$[2]. These answers are ordered on an ordinal integer scale which varies from question to question between 4 and 9 categories (see Table A.1 for a description of these questions). This is taken into account when modelling the relationship between the observed answers, observable independent variables and the latent heterogeneity term.

Formally, the structural model is given by a set of equations explaining survey responses,

$$\begin{aligned} y_1^* &= \lambda_1 \eta + \beta_{1,1} X_1 + \cdots + \beta_{1,K} X_K + T' \delta_1 + \epsilon_1 \\ y_2^* &= \lambda_2 \eta + \beta_{2,1} X_1 + \cdots + \beta_{2,K} X_K + T' \delta_2 + \epsilon_2 \\ &\vdots \qquad\qquad\qquad\qquad \vdots \\ y_J^* &= \lambda_J \eta + \beta_{J,1} X_1 + \cdots + \beta_{J,K} X_K + T' \delta_J + \epsilon_J, \end{aligned} \tag{1}$$

and an equation explaining attitude formation,

$$\eta = \gamma_1 X_1 + \cdots + \gamma_K X_K + \theta_1 Z_1 + \cdots + \theta_L Z_L + \zeta. \tag{2}$$

The vector $y^* = [y_1^* \; y_2^* \ldots y_J^*]'$ represents the true but unobservable opinions on the respective items, η denotes the latent fundamental attitude towards foreigners, $X = [X_1 \; X_2 \ldots X_K]'$ is a set of observed socio-economic characteristics (and country dummies in the multi-country analysis), T is a vector of time dummies and $Z = [Z_1 \; Z_2 \ldots Z_L]'$ is a set of parental background variables. The vectors $\epsilon = [\epsilon_1 \; \epsilon_2 \ldots \epsilon_J]'$ and ζ denote the error terms for which we assume that $cov(\epsilon_j, \zeta) = 0 \;\; \forall \; j = 1, \ldots, J$.

Since the true opinions y_j^* are unobservable, we assume the following relationship between the observable answers y_j and y_j^*

$$y_j = \begin{cases} 1 & \text{if } y_j^* \leq \tau_{j,1} \\ 2 & \text{if } \tau_{j,1} < y_j^* \leq \tau_{j,2} \\ \vdots & \\ C_j & \text{if } \tau_{j,C_j-1} < y_j^* \end{cases} \tag{3}$$

[2]The subscript i is suppressed for the purpose of exposition.

where C_j denotes the number of answer possibilities to item j and the $\tau_{j,r}$'s are unknown threshold parameters ($\forall\ j = 1, \ldots, J,\ r = 1, \ldots, C_j - 1$).

Our approach deviates from the model in Fertig and Schmidt (2002) by the inclusion of groups of exogenous variables which either exclusively affect the answers directly (i.e. the time dummies) or exclusively through the latent factor (i.e. the parental background variables). Time dummies are included to capture effects on the answering behavior which might be caused by public discussions about immigration-related issues. There might be some variation on this over time, since the interviewing horizon of around two years is rather long. These influences are assumed to be of temporary nature and hence are not allowed to influence the underlying fundamental attitude. In contrast, the inclusion of parental background variables aims at controlling for parents' influence on the attitude formation of their children. Thus, their impact is limited to the underlying fundamental attitude η.

The parameters of interest are not the coefficients β and λ which capture the impact of observables X and the unobservable attitude η on survey responses, respectively. Due to the latent nature of opinions y^*, equation (1) is subject to an inevitable set of normalizing assumptions anyhow. Rather, we are concerned with the impact of policy-relevant variables in X and Z on the underlying attitude η, i.e. $\gamma = [\gamma_1\ \gamma_2 \ldots \gamma_K]'$ and $\theta = [\theta_1\ \theta_2 \ldots \theta_L]'$, respectively. In the next subsection two identification strategies are presented which enable us to estimate γ and θ.

3.2 Identification Strategies

Since the fundamental attitude η is unobservable, it is impossible to estimate equations (1) and (2) directly. However, by inserting (2) in (1) we receive a reduced form of the model, for which parameters can be estimated straightforwardly. The reduced form of our model is represented by equation (4)

$$\begin{aligned} y_1^* &= \pi_{1,1}X_1 + \cdots + \pi_{1,K}X_K + \pi_{1,K+1}Z_1 + \cdots + \pi_{1,K+L}Z_L + T'\delta_1 + \nu_1 \\ y_2^* &= \pi_{2,1}X_1 + \cdots + \pi_{2,K}X_K + \pi_{2,K+1}Z_1 + \cdots + \pi_{2,K+L}Z_L + T'\delta_2 + \nu_2 \\ &\vdots \qquad\qquad\qquad\qquad \vdots \\ y_J^* &= \pi_{J,1}X_1 + \cdots + \pi_{J,K}X_K + \pi_{J,K+1}Z_1 + \cdots + \pi_{J,K+L}Z_L + T'\delta_J + \nu_J, \end{aligned} \tag{4}$$

where $\forall\ j = 1, \ldots, J$

$$\pi_{j,s} = \begin{cases} \lambda_j\gamma_s + \beta_{j,s} & \forall\ s = 1, \ldots, K, \\ \lambda_j\theta_{s-K} & \forall\ s = K+1, \ldots, K+L \end{cases}$$

and

$$\nu_j = \epsilon_j + \lambda_j \zeta.$$

Furthermore, a distributional assumption for the vector of compound errors $\nu = [\nu_1 \ \nu_2 \ldots \nu_J]'$ is necessary. Both strategies presented below assume that each element of ν is standard normally distributed, which allows consistent estimation of the reduced form parameters by single-equation ordered probit.

Identification Strategy I

The first identification strategy is suggested by Fertig and Schmidt (2002). It allows for the full set of direct and indirect effects of observable socio-economic characteristics, i.e. no exclusion or zero-parameter restrictions are imposed. Nevertheless, to be able to identify γ from the reduced form parameters the following assumptions are invoked

$$\frac{1}{J}\sum_{j=1}^{J}\lambda_j = 1, \qquad \frac{1}{J}\sum_{j=1}^{J}\beta_{j,k} = 0 \qquad \forall\ k = 1, \ldots, K. \tag{5}$$

The first part of this assumption is merely a normalization, i.e. the average impact of the latent factor on the answer distribution is standardized to unity. Since η does not have a natural metric, this assumption has no qualitative impact on the results. Nevertheless, as a consequence of the normalization and the latent nature of η the estimated coefficients $\hat{\gamma}$ and $\hat{\theta}$ can only be interpreted in relative terms.

The latter assumption is more restrictive. It implies that on average the direct effect of each regressor on the answers is zero. That is, as far as an observable factor X_k impinges upon every question in the same manner, this effect is captured by the corresponding parameter γ_k and thus works through the latent factor η. With these assumptions the structural parameters can be calculated by

$$\frac{1}{J}\sum_{j=1}^{J}\pi_{j,k} = \gamma_k \frac{1}{J}\sum_{j=1}^{J}\lambda_j + \frac{1}{J}\sum_{j=1}^{J}\beta_{j,k} = \gamma_k \qquad \forall\ k = 1, \ldots, K. \tag{6}$$

In the case of θ, only the normalization assumption is necessary because parental background variables are assumed to exhibit no direct effects on observed answers.

Since the reduced form parameters are estimated from independent regressions and the estimated structural parameters $\hat{\gamma}$ and $\hat{\theta}$ are linear combinations of elements of $\hat{\pi}_j = [\hat{\pi}_{j,1} \ \hat{\pi}_{j,2} \ldots \hat{\pi}_{j,K+L}]'$ over all J questions, the cross-equation covariances of the parameters need to be accounted for when compute the asymptotic variances of $\hat{\gamma}$ and $\hat{\theta}$. In lieu of an analytical approach, this is done here by bootstrapping. More precisely, the variance of $\hat{\gamma}_k$ for all $k = 1, \ldots, K$ is estimated

by

$$\widehat{Var}(\hat{\gamma}_k) = \frac{1}{J^2}\left\{\sum_{j=1}^{J}\widehat{Var}(\hat{\pi}_{j,k}) + 2\left[\sum_{j=1}^{J-1}\sum_{l=j+1}^{J}\widehat{Cov}(\hat{\pi}_{j,k},\hat{\pi}_{l,k})\right]\right\}. \tag{7}$$

The variances of the elements of $\hat{\theta}$ are estimated accordingly.

Identification Strategy II
The second approach to identify the structural parameters is based on Muthén (1983, 1984). This strategy assumes that the direct effects of socio-economic characteristics are zero. In other words, observable characteristics impinge upon answers only indirectly via the latent fundamental attitude η. In consequence, the only variables exhibiting a direct impact on answers are the time dummies[3].

Technically, the applied estimation procedure of the structural parameters is divided into three steps (Muthén 1983, 1984). The first step involves estimating the reduced form parameters $\pi_{j,k}$ by single equation ordered probit. In the second step, the variance-covariance matrix of the y^* conditional on all observable variables and the latent factor is computed. Due to the normalization assumption inherent in the single equation ordered probit specifications of the first step of this procedure, the elements on the main diagonal are unity. This amounts to estimating the conditional correlation matrix given by

$$C[y^*|\eta, X, Z, T] = \lambda\psi\lambda' + \Sigma, \tag{8}$$

where the scalar $\psi = var(\zeta)$ and the $(J \times J)$ matrix $\Sigma = E(\epsilon\epsilon') = var(\epsilon)$. The $J \times (J-1)/2$ non-redundant off-diagonal elements are estimated consistently by bivariate ordered probit for each element conditional on the corresponding first stage parameters[4]. The asymptotic covariance matrix of all first and second step parameters is computed from a mean-value expansion of the scores, taking into account the different likelihoods used to obtain the point estimates.

To identify γ and θ, we impose the restriction that Σ is a diagonal matrix, i.e. after controlling for the unobservable heterogeneity term and all observable

[3]In principle, the approach suggested by Muthén (1983, 1984) allows explanatory variables to have both an indirect as well as a direct effect if each regressor is excluded from at least one of the equations (1) or (2). Since the precise choice of exclusion restrictions is rather arbitrary and the results are most likely affected by this choice, we assume the entire β-matrix to be zero.

[4]In addition to the estimates of π_j, this includes also the estimates of the threshold parameters τ_j for the considered items, say $j = r, t$. That is, the likelihood function is only maximized with respect to the correlation coefficient $\rho_{r,t}$.

regressors there is no more systematic correlation between the survey questions[5]. Furthermore, and similar to the first identification strategy, a normalization has to be imposed on λ. Here it is convenient to set one of the elements to unity[6] which again does not affect the results qualitatively.

In the third step of the procedure, the structural parameters are finally obtained by minimizing the following quadratic form:

$$F(\Theta) = [\hat{\omega} - \omega(\Theta)]' W^{-1} [\hat{\omega} - \omega(\Theta)], \tag{9}$$

where $\hat{\omega}$ denotes the estimated and stacked reduced form parameters ($\hat{\pi}$, $\hat{\tau}$ and $\hat{\rho}$) and Θ the entire set of structural parameters, i.e. γ, θ, τ, ψ and Σ[7]. Furthermore, $\omega(\Theta)$ denotes the true reduced form parameters in terms of the structural parameters[8], and W is a positive definite weighting matrix. A natural choice of W, which provides the most efficient estimates in this class of minimal distance estimators is the asymptotic covariance matrix of $(\hat{\omega} - \omega(\Theta))$ derived in the second stage of the procedure. Unfortunately, it is not guaranteed that the estimate of this matrix is positive semi-definite. In fact, most of the single country estimations in our analysis suffer from this problem. To maintain consistency and comparability of the results we therefore use an alternative weighting matrix which contains the estimated parameter variances on the main diagonal only and sets all covariance terms to zero[9].

Due to the structure of the last step of the procedure, Muthén (1983, 1984) calls his approach a weighted least squares estimator. We will therefore refer to it as WLS in what follows. The first identification strategy will be abbreviated by $F\&S$ since it was suggested in Fertig and Schmidt (2002).

3.3 Data and Descriptive Statistics

In our empirical application we use the first wave of the *European Social Survey* (*ESS*). The *ESS* is a recent data set administered in 22 European Countries, which provides rich information on several aspects of interest to social scientists. In the

[5]An exploratory factor analysis of the 38 survey questions supports the hypothesis of *one* underlying factor capturing the systematic correlation between these items (see also chapter 4.1).

[6]Specifically, we assume $\lambda_1 = 1$ in every specification. Alternatively, one could fix ψ, the variance of the latent factor, to a positive value.

[7]The structural and reduced-form threshold parameters τ coincide.

[8]A typical element of the stacked vector is e.g. $(\hat{\pi}_{1,1} - \pi_{1,1}(\Theta))$ with $\pi_{1,1}(\Theta) = \lambda_1\gamma_1 + \beta_{1,1}$.

[9]See as well Dustmann and Preston (2004a), who report similar problems and suggest an additional alternative weighting matrix.

first round, collected in 2002 and 2003, the rotating module is concerned with immigration issues covering attitudes, perceptions, policy preferences as well as the knowledge of respondents about immigration facts. From this module we chose 38 questions/items regarding attitudes towards foreigners. Table A.1 in the appendix contains the original wording of all considered questions/items.

For each item respondents are asked to express their opinions on scales with four to nine possible answer categories expressing varying degrees of agreement. All items allowing a clear transformation of answers into positive or negative attitudes are considered in our analysis. Survey items that do not meet this condition are excluded. Ignored items include questions on the level of information of respondents on a certain aspect of immigration, since answer categories do not allow any judgement of respondents' opinion on immigrants. Additionally, we discard one item since it is missing in the Italian and Belgian sample. Two further items are excluded due to too many missing values[10].

The sample is restricted to native respondents in each country, since we are interested in attitudes of natives towards immigrants only. Summary statistics of the responses to all 38 considered items are presented in table 1[11]. Scales are (re-)coded such that a low score corresponds to a negative and a high score to a positive attitude towards foreigners. Furthermore, the scales allowing 11 categories had to be trimmed[12], which was done by collapsing the two extreme categories at each end of the scale, respectively, resulting in nine categories in total. Obviously, the answering behavior varies drastically over these items. Considering for instance questions with 9 categories, the means range from 2.83 to 7.15. This indicates that different items carry information on respondents' attitudes to a varying degree. Thus, by focussing on just one or a subset of these items, valuable information might be lost[13].

Table 2 contains summary statistics of the explanatory variables. One main factor expected to explain differences in attitudes is the educational attainment of respondents. We expect highly educated individuals to exhibit a more balanced view of the world and a higher level of ethnical and racial tolerance than others.

[10]These questions are D15, D49 and D52.

[11]Throughout the paper all summary statistics and estimation results are weighted. Single country results use *dweight*, for multi-country data we follow the official ESS recommendation and multiply *dweight* with *pweight*. Yet, due to the large number of missing values (only 24,874 of 38,500 observations remain for our analysis) we adjusted *pweight* to the analyzed sample as described in the appendix.

[12]The software MPlus, which is used to estimate the WLS model, permits a maximum of 10 ordered categories.

[13]In fact, reduced-form results also exhibit considerable heterogeneity with respect to explanatory variables (see also **Section 4.2**).

Alternatively, the relationship between attitudes and educational attainment can be interpreted as concerns about the effects of immigration on the labor market. Less educated individuals might display a higher propensity to consider immigrants as a source of direct competition for jobs because they tend to be substitutes in the production process[14]. Highly educated individuals, on the other hand, are typically complements to low skilled immigrant labor and thus are more inclined to favor immigration. In any case, we include three dummy variables for the highest level of completed education covering no formal degree, secondary, and higher education, respectively, leaving primary education as the base group.

Since attitudes might change over the life course due to personal experience but also due to national and global developments, we include the age of respondents as an additional explanatory variable. To allow some flexibility we also include the squared age of respondents. However, since our data set is only a cross section, it is impossible to disentangle this attitude-age profile from a pure cohort effect (i.e. changing attitudes over generations). Further controls are gender, marital status and the area of residence (living in a village or city with town as the base group), where the latter might reflect the extent to which respondents are confronted with foreigners in their everyday life, since immigrants usually settle in towns and cities. The nature and direction of local concentration of foreigners on attitudes is a rather controversial topic in the existing literature (see e.g. Dustmann and Preston (2001) for an overview). Clearly, location choice might to some extent be driven by the preference for a multi-cultural environment and, thus, be endogenous for the phenomenon under study. However, we would argue that labor market considerations, i.e. especially the availability of jobs, dominate the decision on respondents' place of residence.

Moreover, respondents' employment status is considered in order to test the popular hypothesis that unemployed workers display a more negative perception of immigrants. Finally, we approximate the potential influence that parents have on the attitude formation of their children by including parental educational attainment[15], using the categories described above. Unfortunately, the information on parental education is missing for the Czech Republic. Therefore, we have to discard this sub-sample. Furthermore, we excluded Israel due to the results of an exploratory factor analysis (see **Section 5.1** for more details). Hence, 20 out of 22 countries remain in the sample. Table A.2 in the appendix displays the distri-

[14]In most European countries the majority of immigrants is rather low skilled.

[15]We also tested the effects of parents' employment status and the absence of parents when respondents were 14 years of age. Both variables, however, do not exhibit any significant impact on attitudes.

bution of the total number of 24,874 observations across countries[16].

4 Estimation Results

This section summarizes the empirical results. The first part contains the findings of an exploratory factor analysis which aims at providing empirical evidence for our central assumption of *one* underlying latent factor. In the second part, we briefly discuss the reduced form estimation results. The final part summarizes structural estimation results obtained by employing the two different identification strategies.

4.1 Exploratory Factor Analysis

In a first step, we conduct an exploratory factor analysis taking into account the categorical nature of the data[17] to provide some empirical evidence for our central assumption of *one* underlying latent factor. To this end, the polychoric correlation matrix of the 38 questions is estimated along with its eigenvalues. A descriptive tool which assesses the number of latent factors is the so called scree test (Cattell 1966). It plots the eigenvalues in descending order and connects them. The group of eigenvalues to the left of the point where the so called scree plot 'breaks sharply' (also referred to as the 'elbow' of the graph) is considered to coincide with the number of latent factors determining the analyzed correlation structure. Each of these factors (represented by an eigenvalue of the estimated correlation matrix) should explain a significant amount of the correlation between the analyzed items whereas the others should merely be noise. Obviously, this is by no means a rigorous test. However, it delivers at least some indication to support one of the central assumptions of our analysis.

Figure 1 depicts the scree plot of the multi-country sample which supports the dominant role of a single factor in explaining the correlation structure of the analyzed 38 questions. We observe a sharp drop in the eigenvalues after the first common factor. This picture remains stable for all single country samples[18]. The only exception in this context is Israel which shows a more complex correlation structure and is, thus, excluded from the sample of countries.

[16]Summary statistics for the single countries are available upon request from the authors.
[17]For a description of the method see Muthén (1998-2004).
[18]Results of the single country factor analyses are available upon request from the authors.

4.2 Reduced Form Results

Reduced form estimation results for the multi-country specification are summarized in table 3. For the purpose of a concise exposition, we abstain from reporting every single parameter and standard error for each equation. Instead, the sign and significance of the estimated reduced form coefficients[19] are depicted. A "+" ("-") denotes a statistically significant positive (negative) coefficient estimate (at the 95% significance level), corresponding to a more positive (negative) attitude towards immigrants. A "0" indicates a statistically insignificant estimate.

Even a cursory look at these results reveals considerable heterogeneity with respect to the relationship between observable characteristics and answers to different survey items. The most remarkable variation is visible for gender. Women tend to display more positive attitudes towards foreigners than men in 15 survey questions and a more negative perception in nine items. For 14 items we do not observe any significant differences between both sexes. Clearly, this is only a simple enumeration which takes the precision of the estimates only imperfectly into account. However, it indicates that any analysis which is restricted to a subset of available survey items might lead to ambiguous conclusions with respect to the impact of gender on attitudes towards immigrants.

Along the same lines, reduced-form results for respondents' labor market status suggest a more negative attitude of unemployed workers for 18 survey items and no difference between employed and unemployed individuals in 20 cases. Similarly, the impact of age on answers is negative for 14 questions and insignificant for 24 items. Furthermore, depending on the considered item, the age-profile is either convex, concave or linear. This heterogeneity carries over to other socio-economic characteristics as well as to the single country results[20] and indicates that the choice of a single question/item which is common in the existing literature (see **Section 2**), might lead to ambiguous results and fallacious conclusions.

The group of independent variables which delivers the most homogeneous results across items is educational attainment. Individuals with secondary and higher education almost unanimously exhibit more positive attitudes than individuals with a primary education only. Interestingly, even if we control for own education, parents' education strongly and consistently impinges upon observed answers. This suggests that parents leave visible marks in the attitude formation process of their offspring.

[19] All estimations include country and time dummies for which estimation results are not reported.

[20] These results are available upon request from the authors.

4.3 Structural Results

Multi-country analysis
We start with presenting the results from the multi-country model that imposes the restriction that all independent variables (apart from the country dummies) have the same effect across countries and that every question loads equally on the latent factor in all countries. The estimates of both identification strategies are presented in table 4.

The first obvious result is the robustness across identification strategies with respect to sign, relative magnitude and significance of the parameter estimates. Thereby, the significant point estimates of the WLS model are higher in absolute terms than the $F\&S$ parameters. Secondary and higher education are highly significant and have the expected positive impact on attitudes compared to primary schooling where the latter exhibits a relatively stronger impact than the former. Individuals who have no formal degree at all do not differ systematically in their attitudes from those who have finished primary school. The pattern of parental education completely coincides with that of respondents' own educational attainment, although the positive effect of parental education is somewhat lower relative to respondents' own education[21]. Furthermore, structural results suggest that age exhibits a linear negative effect on attitudes since the quadratic term is insignificant in both specifications. Respondents living in villages display a slightly more negative perception of immigrants and respondents from cities a more positive, both compared to town dwellers. Finally, gender does not seem to have any significant impact, whereas married and unemployed individuals reveal a slightly more negative attitude.

The country intercepts of the $F\&S$ (WLS) model range from 0.481 (0.646) for Sweden to -0.421 (-0.670) for Greece with Germany being the omitted base group. Given the magnitudes of the estimates for the control variables, these intervals appear to be rather large. However, as many as 12 countries lie within the considerably smaller interval from 0 (-0.1) to 0.2 (0.25), respectively. Again these results are very robust across identification strategies with 17 out of 20 positions coinciding with respect to the respective rank ordering from highest to smallest point estimate.

[21]To check whether the education and parental education variables suffer from multicollinearity, we estimated the model without the parental information as well. However, the coefficients of the education variables and their significance were virtually unchanged.

Clearly, it is tempting to interpret these intercepts as level differences in average attitudes towards immigrants across countries. Yet, whether one may offer this interpretation crucially depends on the assumption that answering behavior of survey participants is identical in all *ESS* countries. If, for instance, Swedish respondents expressed the same genuine opinion on an item in terms of a higher answer on the corresponding scale than participants in Greece, the large difference between both country intercepts would at least to some extent be driven by this scale effect. Furthermore, such an interpretation presumes that the wording of each item is understood identically across countries, i.e. in at least 15 different languages. Thus, the interpretation of country intercepts has to be conducted with care, keeping these considerations in mind.

To visualize the differences of average attitudes across countries, figure 2 displays the estimated coefficients together with their 95 % confidence interval[22]. This picture suggests that the Swedish population has the statistically significant most positive average attitude towards foreigners. On the other end of the distribution, Greece, Hungary, and Slovenia exhibit a significantly more negative perception of foreigners than all other countries. Attitudes in Germany, the omitted country on the horizontal zero-line, appear to be relatively negative, with 13 countries showing significantly more positive attitudes. Moreover, we find a broad range of countries whose differences in opinions are minimal and in the majority not significantly different from one another.

It is anything but easy to detect a clear pattern between attitudes and country-specific characteristics. Considering, for instance, the recent migration history since World War II, it is possible to divide the countries in our sample into two major groups[23]:

1. The traditional immigration countries: Austria, Belgium, Denmark, France, Germany, Luxembourg, Netherlands, Norway, Sweden, and Switzerland.

2. The new immigration countries: Greece, Ireland, Italy, Portugal, and Spain[24].

Countries from both these groups are well distributed over the complete ranking. Thus, no clear relationship between migration history and attitudes towards im-

[22]Since results for both identification strategies are very similar, figure 2 shows the $F\&S$ estimates only. See Table A.2 in the appendix for country abbreviations.

[23]For an overview of migration history, policy and assimilation of immigrants in several European countries see e.g. Zimmermann (2005) or Bauer, Haisken-DeNew, and Schmidt (2005).

[24]The remaining countries comprise of Finland, Great Britain and the three former communist countries, Hungary, Poland, and Slovenia, which experienced rather distinct migration histories, respectively, and cannot be subsumed under the above categories.

migrants emerges.

To further formalize this analysis, we regress the estimated coefficients on country-specific factors such as the share of foreigners in the population, the average annual growth rate of the foreign population, the labor market participation rate of foreigners, the relative skill composition of natives to immigrants, indicators of the two groups of migration history, and per capita GDP (in PPP), respectively. Only the last bivariate regression exhibits a significant slope coefficient (see table 5). The results using the $F\&S$ dummies are reported in columns (1) and (2), the results for WLS intercepts are in columns (3) and (4). The even columns discard Luxembourg, a clear outlier in terms of per capita GDP[25]. All results suggest a slightly positive relationship between attitudes and the wealth of a country, although the significance level drops when Luxembourg is omitted. In consequence, differences in attitudes across countries seem to be driven by unobservable country-specific factors rather than observable demographic or economic country characteristics.

Single-country analysis
To check the robustness of attitude determinants across countries, we also apply our model to single country data. Table 6 contains the results from 10 out of 20 single country estimations. We focus on high population countries such as Germany, Great Britain, France, Italy, and Spain as well as on countries in the upper and lower part of the intercepts distribution, i.e. Sweden, Ireland, Slovenia, Hungary and Greece[26]. Due to small samples for some of these countries, several adjustments were necessary. In the case of Great Britain we had to broaden the education base group by adding individuals without formal education. For the Irish sample it was necessary to drop the time dummies to achieve convergence in the first step ordered probit estimations. Finally, the German and Slovenian samples simply do not contain any individual that has no degree or whose parents have no formal training. Thus, these variables had to be dropped as well.

The central finding that carries over from the multi-country specifications is the robustness over identification strategies. With hardly any exception, sign,

[25]For a description of the utilized data see table A.2 in the appendix.

[26]The results for Luxembourg are not presented here due to several reasons. Since the country sample consists of only 451 observations we encountered rather severe convergence problems and had to omit the unemployment and no formal degree indicators from the analysis. Furthermore, we consider Luxembourg to be an extreme outlier, having a very small population, an immense share of foreigners living in the country and by far the highest GDP per capita of the selected countries. The results can be obtained together with those of the other 9 countries upon request from the authors.

magnitude, and significance of the point estimates coincide, country by country. Again, significant estimates are slightly larger in absolute value under WLS than under $F\&S$.

In general, across almost all countries, high education of respondents and parents exert the most positive and stable impacts on attitudes. Exceptions are Spain for the former and Italy and Hungary for the latter variable, where the respective estimates are insignificant. Secondary education is positively significant in about half of the countries (Hungary, Italy, Great Britain, Sweden and for WLS only in Germany and Greece). Having no degree has no impact on average attitudes with the exception of Ireland, where it exhibits negative coefficients. The two further parental background variables are virtually without effect. The only exception here is France with positive coefficients for secondary education.

A rather mixed picture is found with respect to gender. Women display a more positive attitude towards immigrants in Germany, Slovenia, and Sweden, more negative views in Hungary and Greece and on average no different attitudes than men in the other five countries. With the exception of Great Britain, where married respondents have on average a more negative attitude, marital status exhibits no effect on the latent factor. Unemployed individuals in Italy and Germany express a more negative attitude than others, whereas these coefficients are insignificant in all other countries. Individuals living in villages display no different views than town dwellers except for respondents in Greece and Slovenia. Interestingly, Greeks not only have more negative views in villages but also in cities. This is an exception as well, since living in cities is associated with more positive attitudes in Germany, France, Hungary as well as Sweden (WLS only) and is insignificant otherwise. Finally, respondents' age has a negative effect in Germany, Hungary ($F\&S$ only), France (WLS only) and is insignificant in the other countries. The age-attitude-profile again appears to be linear, since all coefficients of the squared term are statistically insignificant.

5 Conclusions

This paper presented a latent variable model to identify the determinants and level differences of attitudes towards immigrants across 20 European Countries using survey data from the first wave of the *European Social Survey*. Answers to 38 items were analyzed to identify the overall opinion of respondents on foreigners in a structural framework. Due to the latent nature of this attitude, we estimated a reduced form model and employed two different identification strategies to obtain

the structural parameters from these reduced form results.

Our results suggest that there are only minor systematic differences of attitudes across countries, in particular with respect to the immigration history and policy since World War II. Rather, we find that the relationship between socio-demographic characteristics and attitudes is qualitatively stable across countries, with only slight variations in magnitudes. Educational attainment plays the most important role in this context, where higher education exhibits a positive impact on attitudes (with the exception of Spain where education has no impact at all), regardless of the differing native and immigrant skill compositions across countries. This finding is in line with Hainmueller and Hiscox (2005) and is rather in favor of interpreting this relationship as a result of increasing ethnical and racial tolerance with education. If the educational impacts were reflections on changing individual labor market prospects induced by a changing skill mix due to immigration, as is argued by Mayda (2005), O'Rourke and Sinnott (2003), and Scheve and Slaughter (2001), we should observe decreasing attitudes-education-profiles in some of the considered countries. Furthermore we find that respondents with highly educated parents exhibit a more positive perception of foreigners independently of their own education. Thus, two distinct channels of education seem to be at work in the process of attitude formation: formal education at school as well as the parental influence.

Moreover, attitudes seem to be more negative for older individuals in some of the considered countries, whereas individuals living in cities tend to display more positive attitudes. Contrary to popular wisdom, the labor market status of respondents does not seem to play an important role. With the exception of Italy and Germany where unemployed workers show a more negative perception of immigrants than the rest of the population, we do not observe any significant relationship between labor market status and attitudes towards foreigners.

Other socio-demographic characteristics such as gender or marital status do not seem to play a systematic role across countries since point estimates are found to vary in sign as well as significance without any clear pattern. Finally, it is noteworthy that high parental education is the only explanatory variable exhibiting a significant impact in Spain, an otherwise obviously very homogeneous society in terms of attitudes towards immigrants.

From the perspective of economic policy, our results provide additional evidence for the important role of human capital in today's societies. Properly educating the young apparently does not only contribute to their individual economic prospects,

but also helps to foster a more differentiated and better informed view on migration issues. Against the background of the expected consequences of demographic change, such an improvement of the perception of immigration lies in the vital interest of all European societies competing for high-skilled migrants.

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Tables and Figures

Table 1 - Summary Statistics for Considered Items

Question	Mean	Std.Dev.	Categories	Question	Mean	Std.Dev.	categories
q1	2.79	0.78	4	q20	4.78	2.00	9
q2	2.57	0.81	4	q21	3.40	1.87	9
q3	2.68	0.85	4	q22	7.11	2.41	9
q4	2.64	0.80	4	q23	7.15	2.44	9
q5	2.60	0.84	4	q24	6.66	2.70	9
q6	2.56	0.81	4	q25	6.39	2.84	9
q7	3.83	2.39	9	q26	2.42	1.20	4
q8	4.69	2.63	9	q27	2.69	1.11	5
q9	3.30	2.44	9	q28	3.11	1.02	5
q10	6.31	2.69	9	q29	1.69	0.70	5
q11	7.34	2.34	9	q30	2.64	1.19	5
q12	3.43	2.39	9	q31	2.91	1.12	5
q13	2.83	2.19	9	q32	6.70	2.56	9
q14	2.86	1.18	5	q33	6.86	2.67	9
q15	3.62	1.03	5	q34	3.42	1.07	5
q16	1.89	1.06	5	q35	2.94	1.08	5
q17	2.65	1.24	5	q36	3.08	1.17	5
q18	5.03	2.09	9	q37	3.07	1.04	5
q19	5.69	2.23	9	q38	3.17	1.13	5

Number of Observations: 24,874.

Table 2 - Summary Statistics of the Independent Variables

Variable	Mean	Std. Dev.
Female	0.49	0.50
Age	44.42	17.27
City	0.28	0.45
Village	0.35	0.48
Married	0.58	0.49
Unemployed	0.06	0.23
Educational Attainment		
No Degree	0.03	0.16
Secondary Degree	0.31	0.46
Higher Degree	0.28	0.45
Parental Educational Attainment		
No Degree	0.11	0.31
Secondary Degree	0.24	0.42
Higher Degree	0.18	0.39

Number of Observations: 24,874.

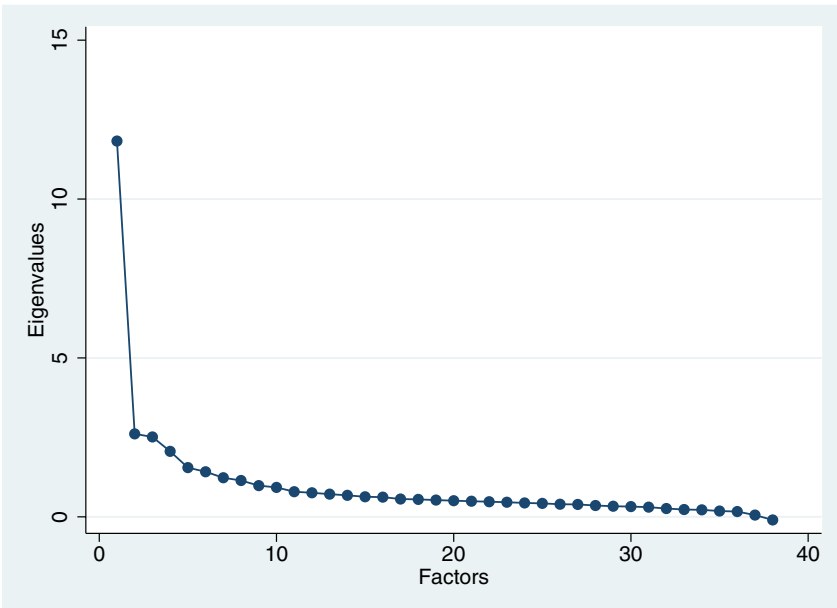

Figure 1 - Scree Plot of Multi-Country Specification, 24,874 Observations

Table 3 - Sign and Significance of Reduced-Form Parameters
Multi-Country Specification

	q1	q2	q3	q4	q5	q6	q7	q8	q9	q10	q11	q12	q13	q14	q15	q16	q17	q18	q19
Female	-	0	-	-	-	0	+	-	0	-	0	+	0	0	-	0	-	-	0
Age	-	-	0	-	0	-	0	0	0	0	-	-	0	-	-	-	-	0	0
Age Squared	0	0	0	0	0	0	-	-	0	-	0	0	0	0	+	0	0	0	-
City	+	+	+	+	+	+	0	+	0	+	0	0	0	+	+	0	+	+	+
Village	0	0	-	0	0	0	0	0	-	-	-	-	-	0	0	0	0	0	0
Married	0	0	0	0	0	0	0	0	0	-	0	0	-	0	0	0	0	0	-
Unemployed	-	-	-	-	0	-	0	0	0	0	-	0	0	0	0	0	0	0	-
Educational Attainment																			
No Degree	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Secondary Degree	+	+	+	+	+	+	0	+	+	+	+	0	+	+	0	0	+	+	+
Higher Degree	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Parental Educational Attainment																			
No Degree	-	0	0	0	0	0	+	0	0	0	0	0	0	0	+	0	0	0	0
Secondary Degree	+	+	+	+	+	+	0	0	0	+	+	0	0	+	0	+	+	+	+
Higher Degree	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

	q20	q21	q22	q23	q24	q25	q26	q27	q28	q29	q30	q31	q32	q33	q34	q35	q36	q37	q38
Female	0	+	0	+	+	+	0	+	+	+	+	0	+	+	+	+	0	0	+
Age	0	-	0	0	0	-	0	0	0	0	-	0	-	0	0	0	0	0	0
Age Squared	0	+	0	0	0	0	0	-	0	0	+	0	0	0	0	0	0	0	0
City	+	0	+	+	+	+	0	+	+	0	0	+	+	+	+	+	+	+	+
Village	-	0	0	0	0	-	-	0	-	0	0	0	0	0	0	-	+	-	-
Married	-	0	0	-	0	-	0	-	0	0	0	0	0	0	0	0	0	0	0
Unemploy	-	-	-	-	-	-	0	-	0	0	0	-	-	-	0	0	-	0	0
Educational Attainment																			
No Degree	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0
Secondary Degree	+	0	+	+	+	+	0	+	0	0	0	+	+	+	0	-	+	0	+
Higher Degree	+	+	+	+	+	+	+	+	+	0	0	+	+	+	+	+	+	+	+
Parental Educational Attainment																			
No Degree	0	0	0	0	0	0	0	0	0	0	+	0	0	0	0	0	0	0	+
Secondary Degree	0	0	+	+	+	+	+	+	+	-	0	+	0	0	0	0	0	+	+
Higher Degree	+	+	+	+	+	+	+	+	+	0	0	+	+	+	0	+	+	+	+

Notes: Number of Observations: 24,874. On a 95 % significance level: "+" ("-") denotes a statistically positive (negative), and "0" an insignificant impact.

Table 4 - Structural Parameters of the Multi Country Specifications

model	F&S	WLS
Austria	0.141	0.149
	(5.161)	(3.977)
Belgium	−0.048	−0.125
	(−1.597)	(−2.865)
Denmark	0.090	0.073
	(3.139)	(1.696)
Finland	0.118	0.092
	(3.883)	(2.056)
France	0.184	0.247
	(3.259)	(3.237)
Great Britain	0.014	−0.064
	(0.462)	(−1.401)
Greece	−0.421	−0.670
	(−17.366)	(−20.447)
Hungary	−0.275	−0.445
	(−8.530)	(−9.309)
Ireland	0.253	0.276
	(10.894)	(8.172)
Italy	0.177	0.203
	(6.882)	(5.626)
Luxembourg	0.310	0.385
	(8.230)	(8.247)
Netherlands	0.028	−0.020
	(1.037)	(−0.486)
Norway	0.077	0.042
	(2.826)	(0.980)
Poland	0.129	0.115
	(4.169)	(2.536)
Portugal	0.075	−0.040
	(2.021)	(−0.723)
Slovenia	−0.175	−0.301
	(−5.978)	(−6.553)
Spain	0.228	0.258
	(6.964)	(5.309)
Sweden	0.481	0.646
	(15.236)	(13.556)
Switzerland	0.177	0.200
	(5.987)	(4.324)
Female	0.009	0.001
	(0.848)	(0.074)
Age	−0.004	−0.006
	(−2.403)	(−2.315)
Age Squared	0.000	0.000
	(−0.886)	(−0.881)
City	0.070	0.100
	(4.996)	(5.094)
Village	−0.036	−0.045
	(−2.766)	(−2.345)
Married	−0.027	−0.038
	(−2.064)	(−2.113)
Unemployed	−0.094	−0.144
	(−3.250)	(−4.102)
Educational Attainment		
No Degree	−0.033	−0.039
	(−0.817)	(−0.821)
Secondary Degree	0.082	0.122
	(6.197)	(5.967)
Higher Degree	0.292	0.427
	(19.504)	(19.349)
Parental Educational Attainment		
No Degree	0.018	0.016
	(0.822)	(0.570)
Secondary Degree	0.073	0.110
	(4.728)	(4.738)
Higher Degree	0.198	0.292
	(10.871)	(11.484)

Notes: t-ratios in brackets. Number of Observations: 24,874.

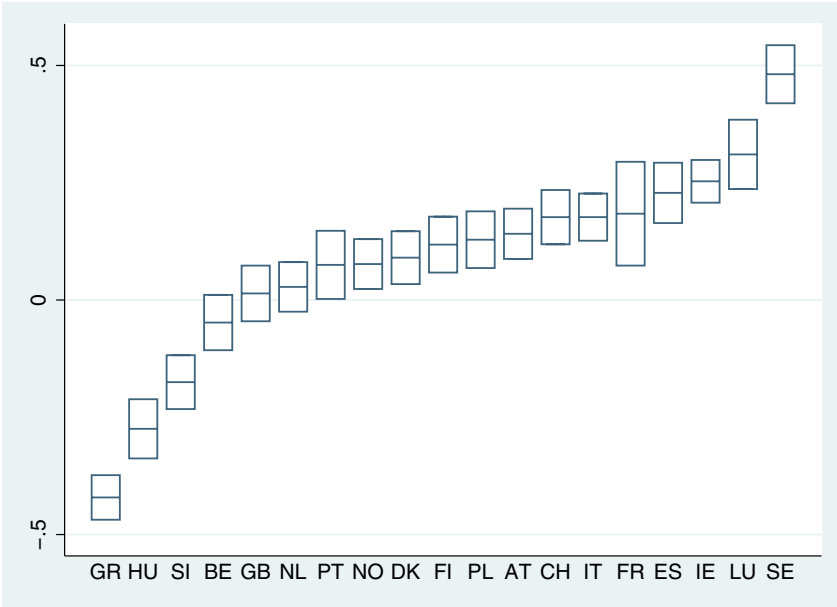

Figure 2 - Country Dummies and Confidence Intervals (F&S)

Table 5 - OLS-Results of Dummy Regressions (standard errors in brackets)

	(1)	(2)	(3)	(4)
GDP/10000	.099**	.115	.146**	.174*
	(.046)	(.067)	(.065)	(.095)
constant	−.189	−.228	−.345*	−.412
	(.130)	(.176)	(.186)	(.251)
Observations	20	19	20	19
Prob > F	0.044	0.102	0.038	0.084
R^2	0.21	0.15	0.22	0.17
adj. R^2	0.16	0.10	0.17	0.12

** significant at 5%, * significant at 10%

Table 6 - Structural Parameters of Selected Single Country Specifications
(t-ratios in brackets)

country	Slovenia		Germany		Spain		France		Hungary	
model	F&S	WLS	F&S	WLS	F&S	WLS	F&S	WLS	F&S	WLS
Female	0.070	0.094	0.074	0.101	−0.029	−0.062	0.026	0.020	−0.093	−0.090
	(2.168)	(1.998)	(2.877)	(3.052)	(−0.739)	(−0.999)	(0.675)	(0.395)	(−2.746)	(−2.416)
Age	−0.005	−0.007	−0.012	−0.017	0.007	0.010	−0.014	−0.019	−0.012	−0.012
	(−0.810)	(−0.814)	(−2.563)	(−2.866)	(0.914)	(0.905)	(−1.938)	(−2.336)	(−2.228)	(−1.893)
Age Squared	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.038)	(0.001)	(0.731)	(0.977)	(−1.496)	(−1.414)	(0.584)	(0.768)	(1.276)	(1.160)
City	−0.066	−0.094	0.149	0.193	0.019	0.061	0.139	0.188	0.214	0.205
	(−1.425)	(−1.299)	(5.059)	(4.953)	(0.339)	(0.729)	(2.733)	(2.892)	(4.391)	(3.981)
Village	−0.193	−0.278	0.007	0.005	−0.021	−0.023	−0.072	−0.099	0.028	0.007
	(−5.121)	(−4.506)	(0.246)	(0.135)	(−0.408)	(−0.299)	(−1.515)	(−1.524)	(0.691)	(0.149)
Married	−0.064	−0.107	−0.002	−0.001	−0.067	−0.091	−0.063	−0.079	−0.003	−0.014
	(−1.671)	(−1.861)	(−0.068)	(−0.017)	(−1.194)	(−1.188)	(−1.455)	(−1.419)	(−0.067)	(−0.313)
Unemployed	−0.026	−0.043	−0.291	−0.391	0.127	0.211	0.054	0.078	−0.028	0.002
	(−0.296)	(−0.366)	(−4.627)	(−5.610)	(1.373)	(1.650)	(0.489)	(0.578)	(−0.278)	(0.023)
Educational Attainment										
No Degree	-	-	-	-	−0.030	0.009	−0.033	−0.030	−0.200	−0.207
					(−0.406)	(0.091)	(−0.414)	(−0.302)	(−1.503)	(−1.832)
Secondary Degree	0.036	0.072	0.073	0.110	0.051	0.040	0.117	0.181	0.115	0.126
	(0.781)	(1.098)	(1.739)	(2.042)	(0.961)	(0.477)	(1.251)	(1.549)	(2.650)	(2.765)
Higher Degree	0.180	0.290	0.332	0.452	0.092	0.132	0.280	0.384	0.279	0.296
	(4.352)	(4.773)	(6.839)	(7.069)	(1.672)	(1.493)	(5.870)	(6.095)	(5.425)	(5.102)
Parental Educational Attainment										
No Degree	-	-	-	-	−0.062	−0.107	0.032	0.042	0.006	0.019
					(−1.361)	(−1.465)	(0.611)	(0.676)	(0.108)	(0.370)
Secondary Degree	0.065	0.095	0.075	0.097	0.118	0.190	0.190	0.257	0.021	0.038
	(1.712)	(1.653)	(1.687)	(1.825)	(1.533)	(1.546)	(2.613)	(2.174)	(0.408)	(0.661)
Higher Degree	0.214	0.316	0.206	0.278	0.246	0.421	0.177	0.243	0.026	0.057
	(4.905)	(4.756)	(4.077)	(4.554)	(3.023)	(3.095)	(3.119)	(3.242)	(0.455)	(0.926)
Number of observations	1,039		2,136		806		1,135		777	

Table 6 continued - Structural Parameters of Selected Single Country Specifications (t-ratios in brackets)

country	Ireland		Italy		Great Britain		Greece		Sweden	
model	F&S	WLS	F&S	WLS	F&S	WLS	F&S	WLS	F&S	WLS
Female	0.026	0.029	−0.008	−0.047	−0.015	−0.031	−0.066	−0.073	0.123	0.162
	(0.814)	(0.771)	(−0.223)	(−0.821)	(−0.479)	(−0.843)	(−2.550)	(−2.408)	(3.859)	(3.509)
Age	−0.003	−0.004	−0.001	−0.002	−0.005	−0.005	0.000	0.000	0.002	0.004
	(−0.498)	(−0.560)	(−0.083)	(−0.152)	(−0.998)	(−0.851)	(0.033)	(0.057)	(0.308)	(0.487)
Age Squared	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.264)	(0.286)	(−0.165)	(−0.123)	(−0.147)	(−0.218)	(−0.704)	(−0.577)	(−1.756)	(−1.822)
City	0.024	0.027	−0.079	−0.079	0.050	0.049	−0.084	−0.152	0.085	0.121
	(0.495)	(0.509)	(−1.506)	(−0.930)	(1.286)	(1.105)	(−2.203)	(−3.385)	(1.950)	(2.135)
Village	−0.060	−0.080	−0.080	−0.053	0.038	0.038	−0.080	−0.130	−0.017	−0.021
	(−1.397)	(−1.601)	(−1.884)	(−0.792)	(1.058)	(0.837)	(−1.988)	(−2.681)	(−0.419)	(−0.371)
Married	0.010	0.021	0.071	0.125	−0.093	−0.114	−0.036	−0.051	−0.014	−0.026
	(0.281)	(0.450)	(1.505)	(1.684)	(−2.644)	(−2.815)	(−1.133)	(−1.382)	(−0.358)	(−0.510)
Unemployed	−0.060	−0.058	−0.150	−0.263	0.026	0.052	−0.086	−0.144	−0.100	−0.150
	(−0.674)	(−0.642)	(−2.434)	(−2.583)	(0.274)	(0.543)	(−1.142)	(−1.608)	(−1.119)	(−1.296)
Educational Attainment										
No Degree	−0.232	−0.282	−0.066	−0.207	–	–	−0.037	−0.096	0.087	0.118
	(−2.389)	(−2.551)	(−0.266)	(−0.752)			(−0.885)	(−1.855)	(0.168)	(0.346)
Secondary Degree	0.058	0.079	0.095	0.155	0.152	0.184	0.065	0.096	0.171	0.255
	(1.489)	(1.633)	(2.247)	(2.393)	(2.867)	(2.936)	(1.943)	(2.233)	(3.831)	(3.949)
Higher Degree	0.276	0.337	0.236	0.366	0.363	0.454	0.202	0.269	0.346	0.517
	(7.133)	(6.845)	(3.277)	(3.195)	(9.574)	(9.915)	(5.281)	(6.153)	(8.411)	(8.700)
Parental Educational Attainment										
No Degree	−0.001	−0.030	−0.038	−0.070	−0.217	−0.135	−0.036	−0.056	0.238	0.308
	(−0.015)	(−0.412)	(−0.610)	(−0.753)	(−0.394)	(−0.355)	(−1.062)	(−1.399)	(1.409)	(1.790)
Secondary Degree	0.052	0.071	0.091	0.157	0.209	0.243	0.023	0.037	−0.033	−0.030
	(1.168)	(1.333)	(1.715)	(1.891)	(3.016)	(2.831)	(0.430)	(0.557)	(−0.501)	(−0.324)
Higher Degree	0.205	0.257	0.154	0.238	0.215	0.260	0.175	0.215	0.136	0.197
	(3.868)	(4.153)	(1.837)	(1.749)	(4.837)	(4.948)	(3.496)	(3.802)	(2.820)	(3.035)
Number of observations	1,168		787		1,605		1,609		1,344	

Appendix

Adjustment of the ESS population size weights

In our analysis of the *ESS* data we can only use 24,874 of 38,500 observations due to missing values. Since it cannot be expected that the data missing is proportional to the population size weights (*pweight*), these weights should be readjusted to the actually used sample. The following description of the construction of *pweight* is taken from the *ESS* homepage[27]:

The population size weight ... *"is used when examining data for two or more countries combined. This weight corrects for the fact that most countries taking part in the ESS had very similar sample sizes, no matter how large or small their population. Without weighting, any figures combining two or more country's data would be incorrect, over-representing smaller countries at the expense of larger ones. So the population size weight makes an adjustment to ensure that each country is represented in proportion to its population size."*

Due to this description, we assume that *pweight* is computed such that the following equation is satisfied:

$$pweight_i \times \frac{sample_i}{ESSsample} = \frac{pop_i}{ESSpop},$$

where $sample_i$ and pop_i denote the sample and population size of country i, respectively, and $ESSsample$ and $ESSpop$ are the added up sample and population of the *ESS* countries, respectively. Solving for $pweight_i$ yields

$$pweight_i = \frac{pop_i}{ESSpop} \times \frac{ESSsample}{sample_i},$$

that we adjust to the analyzed sample ($asample_i$) as follows,

$$aweight_i = pweight_i \times \frac{sample_i}{ESSsample} \times \frac{ESSasample}{asample_i} = \frac{pop_i}{ESSpop} \times \frac{ESSasample}{asample_i},$$

where $aweight_i$ denotes the adjusted population size weight of country i and $ESSasample$ the *ESS* sample left for the analysis after discarding observations with missing values.

[27] "Weighting European Social Survey Data", http://www.europeansocialsurvey.org/.

Table A.1 - Description of the 38 Questions from the European Social Survey

data code	ESS code	question
q1	D4	Now, using this card, to what extent do you think [country] should allow people of the same race or ethnic group as most [country] people to come and live here?
q2	D5	How about people of a different race or ethnic group from most [country] people?
q3	D6	Now, still using this card, to what extent do you think [country] should allow people from the richer countries in Europe to come and live here?
q4	D7	And how about people from the poorer countries in Europe?
q5	D8	To what extent do you think [country] should allow people from the richer countries outside Europe to come and live here?
q6	D9	How about people from the poorer countries outside Europe?
q7	D10	Firstly, how important should it be for them to. . . have good educational qualifications?
q8	D11	. . . have close family living here?
q9	D12	. . . be able to speak [country's official language(s)]?
q10	D13	. . . come from a Christian background?
q11	D14	. . . be white?
q12	D16	. . . have work skills that [country] needs?
q13	D17	. . . be committed to the way of life in [country]?
q14	D21	If people who have come to live and work here are unemployed for a long period, they should be made to leave
q15	D22	People who have come to live here should be given the same rights as everyone else
q16	D23	If people who have come to live here commit a serious crime, they should be made to leave
q17	D24	If people who have come to live here commit any crime, they should be made to leave
q18	D27	Would you say it is generally bad or good for [country]'s economy that people come to live here from other countries?
q19	D28	And, using this card, would you say that [country]'s cultural life is generally undermined or enriched by people coming to live here from other countries?
q20	D29	Is [country] made a worse or a better place to live by people coming to live here from other countries?
q21	D30	Are [country]'s crime problems made worse or better by people coming to live here from other countries?
q22	D34	Now thinking again of people who have come to live in [country] from another country who are of the same race or ethnic group as most [country] people, how much would you mind or not mind if . . . someone like this was appointed as your boss?
q23	D35	. . . someone like this married a close relative of yours?
q24	D36	And now thinking of people who have come to live in [country] from another country who are of a different race or ethnic group from most [country] people. How much would you mind or not mind if . . . someone like this was appointed as your boss?
q25	D37	. . . someone like this married a close relative of yours?
q26	D38	Suppose you were choosing where to live. Which of the three types of area on this card would you ideally wish to live in?
q27	D40	It is better for a country if. . . almost everyone shares the same customs and traditions
q28	D41	. . . there are a variety of different religions
q29	D42	. . . almost everyone is able to speak at least one common language
q30	D43	Communities of people who have come to live here should be allowed to educate their children in their own separate schools if they wish
q31	D44	If a country wants to reduce tensions it should stop immigration
q32	D45	How good or bad are each of these things for a country? A law against . . . racial or ethnic discrimination in the workplace
q33	D46	. . . promoting racial or ethnic hatred
q34	D50	While their applications for refugee status are being considered, people should be allowed to work in [country]
q35	D51	The government should be generous in judging people's applications for refugee status
q36	D53	While their cases are being considered,. . . applicants should be kept in detention centers
q37	D54	. . . the [country] government should give financial support to applicants
q38	D55	Refugees whose applications are granted should be entitled to bring in their close family members

Table A.2 - Sample Composition & National Income Data

Country	Abbreviations	Observations	per capita GDP[1),2)]
Austria	AT	1,183	30,000
Belgium	BE	1,206	29,000
Denmark	DK	971	31,200
Finland	FI	1,722	27,300
France	FR	1,135	27,500
Germany	GE	2,136	27,600
Great Britain	GB	1,605	27,700
Greece	GR	1,609	19,900
Hungary	HU	777	13,900
Ireland	IE	1,168	29,800
Italy	IT	787	26,800
Luxembourg	LU	451	55,100
Netherlands	NL	1,874	28,600
Norway	NO	1,814	37,700
Poland	PL	1,225	11,000
Portugal	PT	701	18,000
Slovenia	SI	1,039	18,300
Spain	ES	806	22,000
Sweden	SE	1,344	26,800
Switzerland	CH	1,321	32,800

1) GDP dollar estimates for 2003 (PPP)

2) Source: CIA - The World Factbook 2004