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ABSTRACT

The Perception of Foreigners and Jews in Germany – A Structural Analysis of a Large Opinion Survey*

The ultimate aim of opinion surveys is the provision of information on the distribution of preferences and perceptions at the individual level. Yet, eliciting this information from the data is typically difficult. This paper uses a structural model to explain the answers on a set of questions regarding the perception of foreigners and Jews by native Germans. In this model it is assumed that in addition to observable individual characteristics there exists an underlying unobserved attitude towards minorities which drives the distribution of answers by native respondents. This latent variable in turn is assumed to be influenced by a set of observable socio-economic characteristics of the individuals. In order to estimate this model it is necessary to impose strong identification restrictions. Estimation results show that education is the key correlate of the perception of foreigners and Jews in Germany.

JEL Classification: C31, F22, J15

Keywords: Attitudes, minorities, identification

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1 Introduction

To any student of German history it does not come as a surprise that the possible existence of xenophobic or antisemitic tendencies in the German society is a continuing topic of the public debate and a frequent subject of empirical analysis. Indeed, numerous articles in well-respected periodicals are regularly concerned with this issue. Typically, the statistical investigation documents considerable heterogeneity in attitudinal responses throughout the population. Most of these articles then relate these tendencies monocausally to a specific observable factor, like education or age, and provide detailed structural explanations for this suspected relationship despite the obvious conceptual limitations of such an approach.

A case in point is the debate regularly set off by an opinion survey conducted among young people in Germany on behalf of the company *Shell* (the so-called *Shell-Jugendstudie*, cf. Fischer et al. (2000)). In this study, the opinions expressed by young respondents are presented on a semi-aggregated level, differentiated one by one by sex, age groups, personal future expectations and other characteristics. Unfortunately, this presentation does not provide an attempt at explaining the observed patterns more deeply, although structural explanations are suggested: most importantly, the authors not only claim that serious xenophobic attitudes among young people in Germany persist, but even more speculatively that these attitudes are mainly the result of the dull economic prospects of the respondents. They propose, therefore, that an adequate counter-strategy must be a program aiming at the enhancement of the education and formal training possibilities of German youth.

Drawing such strong conclusions on the basis of such cursory evidence, however, must be problematic. The conceptual problems facing the empirical analysis of xenophobic tendencies are indeed substantial. The first problem arises from the definitional question of what has to be understood as a xenophobic or antisemitic attitude, and to what degree such attitudes are measurable. Since both concepts reflect fundamental issues of individual opinion neither is *directly* measurable. On a superficial level, one may define xenophobia and antisemitism as especially negative individual attitudes towards foreigners and Jews, respectively. Yet, it is not a question of relatively (compared to the population average) xenophobia which is typically at issue, but rather a statement about an absolute level of racism or xenophobia which is sought.

Since racist ideas are typically emotional, subjective, and frequently distorted interpretation of observable facts, a possible conceptualization of xenophobia and antisemitism could depart from a notion of mistaken perceptions. Such attitudes have certainly almost always nothing to do with the “true” characteristics of the relevant groups. They are rather the result of subjective perceptions of an individual which is projecting real or imaginary characteristics of some individuals onto a complete group of individuals. Therefore, a broad definition of xenophobia and antisemitism would qualify every individual which is willing to generalize negative individual-specific characteristics to a group of individuals to which he/she does not belong himself/herself as xenophobic or antisemitic.

In addition to providing such a general definition, we can characterize these concepts further. Specifically, both concepts are by their very nature *relative*, i.e. there is no scale to measure them *absolutely* (all attempts to do so in the literature are completely arbitrary). For instance, an individual may have a significantly more negative attitude towards a minority group than the *average* individual in a given society and may therefore be termed (relatively) xenophobic or antisemitic. However, the same individual living in an, on average, foreigner-friendly society will be easier regarded as xenophobic than the same individual being citizen of an, on average, less foreigner-friendly society.

Finally, *a priori* it is not clear if xenophobia and antisemitism are different concepts or if they are intimately related. ADORNO ET AL. (1950), for instance, argue that antisemitism is not an isolated phenomenon but rather part of a much broader ideological system. Nevertheless, this paper examines opinions towards foreigners and Jews separately in order to investigate if the determining factors of attitudes towards both minority groups are driven by different explanatory factors. This analysis will provide us with some indications that the determining factors of both are at least in part different.

For the purposes of scientific analysis of underlying preferences and perceptions, any opinion survey without detailed background information on the respondents themselves would be quite useless. Fortunately, in Germany there exists a dataset regularly collected by the *GESIS* (*Gesellschaft sozialwissenschaftlicher Struktureinrichtungen*), the so-called *ALLBUS* (*Allgemeine Bevölkerungsumfrage der Sozialwissenschaften*), which is comparable to the *General Social Survey* in the United States. This opinion and attitude survey is publicly available and conducted biennially with varying focuses on different topics (for more details see section 4). The 1996 wave contains a large set of questions[1] on the perception of immigrants, foreigners and other minorities as well as standard socio-economic characteristics. Several empirical studies investigate this 1996 wave information, albeit not in the direction taken by this contribution (for more details see section 2). In our own empirical application we utilize this dataset as well. Specifically, we aim at the identification and explanation of unobservable underlying factors driving those opinions towards minorities which are expressed by native respondents in the survey.

Conceptually, this paper contributes to the received literature by using a structural model to explain the answers on a set of questions regarding the perception of minorities by native Germans. In this model it is assumed that in addition to observable individual characteristics, there exists an underlying unobserved attitude towards minorities which drives the distribution of answers by native respondents. This latent variable in turn is assumed to be shaped by a set of observable socio-economic characteristics of the individuals. It is the direction and magnitude of these effects on the unobservable factor which are the primary objects of our interest. In order to estimate this model it is necessary to impose appropriate identification restrictions. The restrictions employed in our empirical application are discussed in detail below. The validity of these assumptions is decisive for the interpretation of the results. However, since these restrictions are non-testable they have to be assumed to hold *a priori*. Naturally, without such identification assumptions a well-structured analysis of the wealth of information provided by opinion surveys like the *ALLBUS* is impossible.

[1] Precisely, the *ALLBUS* records items in the form of direct standardized *questions* to which respondents are supposed to give an answer and in the form of *claims* for which respondents should state their degree of agreement/disagreement. For the sake of exposition we will unequivocally call them items or questions in what follows.

The paper is organized as follows. The next section provides a brief survey of the received literature on the perception of foreigners. In section 3 the utilized structural model, its reduced-form counterpart as well as the employed identification strategy are explained. Section 4 contains our empirical application for Germany and, finally, section 5 offers some conclusions.

2 Attitudes - Survey of Literature

The literature in sociology and (social-) psychology as well as historical research (e.g. Benz (1992 ff)) is the primary source of theoretical work on the determinants of xenophobic or antisemitic attitudes. Prominent (but mainly) theoretical approaches are the authoritarian (e.g. Adorno et al. (1950)), the ethnocentristic (e.g. Sumner (1906)) and the rational choice (e.g. Fishbein and Aijzen (1975)) approach. Empirical evidence for these approaches is rather slim, though. Most of the empirical studies present purely descriptive results, making it difficult to disentangle the various structural interpretations.

One early and rather prominent study on attitudes towards minorities is Adorno et al. (1950) conducted in the United States in the 1940's. This study aims at investigating the potential for anti-democratic or fascist influences in the US-american society during and directly after World War II and is motivated by the idea that individual attitudes are manifestations of the individual character structure. This character structure is assumed to be formed by influences emanating from the individual's environment. This environment has the most thorough impact the earlier in life the influence works. This means that the education of a child and his or her parental, economic as well as social, background is the most influential tool in building the character structure which in turn serves as the foundation of individual attitudes. Adorno et al. (1950) conducted more than 2,000 interviews and some clinical trials to provide support for their main hypotheses. One of the most interesting features of this study is the so-called F(ascism)-scale. This scale aims at measuring the individual fascist potential *indirectly*, i.e. by a set of questions addressing a variety of individual opinions which are *not* directly related to political attitudes towards democracy or fascism. The study tried to establish the individual fascist potential by investigating the individual degree of conventionalism, authoritarian aggression, superstition, cynicism etc. as indications for fascist tendencies.

For the case of United Kingdom Dustmann and Preston (2000a), using several waves of the *British Social Attitude Survey, (BSAS)* analyze the effect of local concentration of ethnic minority groups on the attitudes of native respondents towards these minorities controlling for individual characteristics of the respondents as well as for regional labor market conditions. Their results suggest that a higher concentration of ethnic minorities tends to increase hostitility of native respondents towards these groups. Dustmann and Preston (2000b), again using the *BSAS* data, analyze the relationship between racist attitudes, as well as labor market and welfare considerations with the opinions of native respondents towards future immigration (restrictions) for different immigrant groups. Thereby, they base their formal analysis on a multi-factor model. One key feature of their paper is the provision of a formal treatment of identification issues in such a framework.

Most importantly, the authors aim at explaining the determining factors of individuals' opinions towards future immigration (restrictions) for different potential immigrant groups. For this purpose they utilize a set of questions on the perception of foreigners by native respondents in the *BSAS*, regarding different aspects. They devide these questions into three categories: (i) questions related to race, (ii) questions related to the labor market impact of foreigners, and (iii) questions related to the impact of foreigners on the economy's welfare. In order to disentangle the influence of these three categories on the opinion of respondents, DUSTMANN AND PRESTON (2000B) invoke the identification assumptions that each of the three latent factors manifests itself in a set of four corresponding questions, respectively. The three factors, thus identified, then explain jointly the answers on a large set of attitudinal questions on future immigration. In this second step, the three factors compete for the leading explanatory role regarding these opinions.

Their results suggest that opposition to future immigration is primarily driven by racist attitudes whereas labor market or welfare considerations are less important determining factors. This relationship is particularly strong for future immigration of ethnically different immigrant groups, such as people from the West-Indies, whereas it is negligible for ethnically similar groups, such as from Australia or New Zealand. In sum, while the chosen identification strategy is powerful enough to extract sensible results on the effect of the latent factors, this strategy is necessarily restrictive. The present contribution takes a somewhat different perspective, since we concentrate on a single latent factor only, but are mainly interested in the question which forces underlie its formation rather than merely gauging its impact.

A contribution for the case of Germany is GANG AND RIVERA-BATIZ (1994). Using the *Eurobarometer* survey of 1988, the authors, among others, aim at examining the attitudes towards foreigners in Germany in relation to different labor market situations of native respondents. They conclude that students have the most positive attitude towards foreigners and retirees the most negative. Concerning employment status, negative attitudes by unemployed Germans are more prevalent if the analyzed questions explicitly address specific foreigner groups. BAUER, LOFSTROM AND ZIMMERMANN (2000) using the 1995 wave of the *International Social Survey Program* (*ISSP*) provide a cross country comparison with a special focus on the influence of immigration policy on attitudes towards minorities. Their main conclusion is that in countries with a more skill-based immigration policy (e.g. Canada) respondents tend to have a more positive attitude towards immigrants and other minorities than countries which pursue another immigration policy.

Finally, FERTIG AND SCHMIDT (2001) using the 1996 wave of the *ALLBUS* provide an analysis of the perception of the welfare dependence of immigrants by native Germans in an ordered probit framework and confront this perception with the actual welfare dependence of immigrants using the 1995 wave of the *Mikrozensus*. They conclude that the level of education of the respondents as well as their place of residence are the main driving forces behind the distribution of agreement with the (not really compatible with observable facts) claim that foreigners are a burden for the social security system in Germany. Furthermore, respondents living in regions with a below-average share of foreigners have a considerably higher probability to agree with this claim, whereas living in a region with a high share of foreigners has no statistically significant impact.

For the 1996 wave of the *ALLBUS* several empirical studies are collected in Alba et al. (2000). Examples are Bergmann and Erb (2000), Lüdemann (2000) and Schmidt and Heyder (2000). These papers analyze the attitudes of German respondents towards minorities in the *ALLBUS* 1996 embedded in the theoretical concepts of authoritarism, ethnocentrism and rational choice. They all share the empirical strategy of explaining some selected items recorded in the *ALLBUS* by using other opinions towards foreigners or Jews as explanatory factors, without taking into account the potential endogeneity or simultaneity arising from such an approach. Moreover, some of these studies also construct indices of antisemitism or xenophobia without taking into account the ordinal nature of the opinion scale. Similarly, some of these studies try to classify respondents as xenophobic or antisemitic by rather arbitrary classification rules, e.g. two or more negative answers to a given set of questions regarding Jews qualifies an individual as having an antisemitic attitude. In our own approach, described in detail in the next section, we explicitly aim at avoiding such conceptually problematic *ad hoc* decisions.

3 The Framework of Analysis

In our analysis on the attitudes towards minorities in Germany we aim at utilizing the wealth of information on attitudes expressed in the *ALLBUS* 1996 wave to generate a comprehensive picture of the perception of immigrants and foreigners in Germany. For this purpose, we develop a structural simultaneous equation model to explain the distribution of answers to each relevant item. The 1996 wave of the *ALLBUS* contains several items on the perception of different minority groups in Germany. From this menu we choose 35 questions concerning immigrants/foreigners and seven questions concerning Jews (see Appendix for a description of the relevant questions) covering a variety of aspects of daily life as well as fundamental issues of opinion. Only those items were left out of the analysis where a clear distinction between a positive and a negative attitude was not possible. Although all questions offered the possibility to withhold the answer, the response rate to all of them was very high, yielding a sample of 2,834 native respondents (1,844 in West and 990 in East Germany). From the 3,290 native individuals in the dataset, we deleted all observations with an incomplete record of all 42 utilized questions.

Central to our approach is the maintained assumption of the presence of an underlying, unobservable or latent, overall opinion towards minorities, which drives the distribution of answers by respondents and which we would like to extract from the observable data. Respondents' answers are, therefore, regarded as the manifestation of this latent opinion and this manifestation may vary from question to question since the degree with which a respondent's opinion is sifted out by a specific question may vary from one question to another. Moreover, we allow for a separate impact of exogenous socio-economic factors explaining the distribution of answers to each question beyond the influence of the overall factor. These socio-economic characteristics also comprise the determining factors of the underlying overall opinion. Their influence on the latent factor is the central object of our interest.

As already pointed out in the introduction, it is tempting to regard this underlying latent variable as xenophobia or antisemitism. However, this may be misleading due to two reasons. Firstly, it is an *assumption* that there exists only *one* latent variable driving the opinions of respondents. From a psychological point of view one may e.g. argue that there exist two (or even more) factors having an influence on respondents' perception of foreigners. Since the labelling of latent factor can proceed without any restriction whatsoever, one could call these two factors "xenophobia" and "misanthropy", for instance. Therefore, restricting the analysis to only one factor does not render the results invalid as long as the underlying factors all operate in the same direction, but it renders the name of the latent variable inappropriate. Secondly, comparable to the classical approaches like principal component, latent factor or latent class analysis, giving names to unobservable factors is a rather arbitrary endeavor. Our analysis as well as competing alternatives only allow to assess whether an assumed latent variable does have an influence on observed opinions. It does not, however, reveal the nature or the name of this influence.

Formally, in our application we model the opinions expressed by native respondents in the *ALLBUS* in a simultaneous equations framework containing one unobservable latent factor and several observables as explanatory variables. The next section, therefore, formalizes our structural model and derives its reduced-form counterpart. Then, we derive our identification strategy to disentangle the different determining factors of the latent attitude.

3.1 The Structural Model

Our dataset contains $i = 1, ..., N$ individuals (henceforth individual subscripts are suppressed for the purpose of exposition) for which we observe a set of J answers x_j ($j = 1, ..., J$) to questions on minorities in Germany. For all of them, there are three ordered answer categories, that is for each i we have $x_j \in \{0, 1, 2\}$. Moreover, for each individual we observe K socio-economic characteristics Z_k ($k = 1, ..., K$). Unobservable are for each individual i the latent variables x_j^* and Y^*. The variable x_j^* may take values on the entire real line and denotes the "true", but unobservable opinion on question j with large values representing strong agreement for each individual. The variable Y^* denotes the unobservable overall opinion towards minorities which is assumed to be driving the distribution of answers to each question for each individual.

These two latent variables differ in the fact that we have an observable counterpart x_j for x_j^* but no comparable variable for Y^*. This variable might only be revealed through the answers (that is through the x_j as well) in connection with a specific structural model. Finding this model is the key element of the discussion offered here. Therefore, we have the structural form

$$
\begin{aligned}
x_1^* &= \delta_0^1 + \delta_1^1 Y^* + \beta_1^1 z_1 + \beta_2^1 z_2 + \ldots + \beta_K^1 z_K + \epsilon^1 \\
x_2^* &= \delta_0^2 + \delta_1^2 Y^* + \beta_1^2 z_1 + \beta_2^2 z_2 + \ldots + \beta_K^2 z_K + \epsilon^2 \\
&\vdots \\
x_J^* &= \delta_0^J + \delta_1^J Y^* + \beta_1^J z_1 + \beta_2^J z_2 + \ldots + \beta_K^J z_K + \epsilon^J,
\end{aligned} \tag{1}
$$

where the mean-zero random disturbances $\epsilon^j \sim N(0, \sigma_j^2)$ $(j = 1, ..., J)$. The correlation structure between questions is block-diagonal across individuals, but left unspecified for any individual. For the latent variable Y^*, we assume that it can be explained partially by a set of observable socio-economic characteristics Z_k $(k = 1, ..., K)$. For each individual there is, in addition, a mean-zero random disturbance η in this equation, such that ϵ and η are orthogonal, i.e. $Cov(\epsilon^j, \eta) = 0$ $(\forall\ j = 1, ..., J)$. Therefore,

$$
Y^* = \gamma_1 z_1 + \gamma_2 z_2 + \ldots + \gamma_K z_K + \eta. \tag{2}
$$

Both equations are written in deviations form, i.e. $z_k := Z_k - \overline{Z}_k\ \forall\ k = 1, ..., K$. Thus, if we would observe all latent variables directly, then Y^* would be defined in a way that emphasized deviations from the typical individual in the population. Respondents with average characteristics $Z_k = \overline{Z}_k$ will, on average, display a latent factor Y^* equal to zero, with deviations driven exclusively by the random factor η. If an observable characteristic Z_k tends to increase the latent factor Y^*, that is $\gamma_k > 0$, then individuals displaying a high Z_k will also display a high Y^*. Perfect collinearity between Y^* and the Z_k $(k = 1, ..., K)$ is ruled out by the presence of the disturbance term η, though. In expression (1), the average "true" opinion x_j^* for a typical individual $(Z_K = \overline{Z}_k)$ is reflected by the respective constant term δ_0^j, as $E(\eta) = E(\epsilon^j) = 0$. For all individuals the "true" opinion x_j^* is influenced by their Z_k, but also by Y^*. The impact of Y^* is captured by a coefficient δ_1^j which may be positive or negative.

Clearly, since there is no observable counterpart for the latent variable Y^*, direct estimation of the structural model is impossible. However, it is possible to derive an estimable reduced-form model and to identify the parameters of the structural model by invoking suitable assumptions. These identification assumptions are discussed in the next section.

3.2 The Reduced Form

By substituting equation (2) into equation (1) one obtains the reduced-form equation system

$$
\begin{aligned}
x_1^* &= \theta_0^1 + \theta_1^1 z_1 + \theta_2^1 z_2 + \ldots + \theta_K^1 z_K + \nu_1 \\
x_2^* &= \theta_0^2 + \theta_1^2 z_1 + \theta_2^2 z_2 + \ldots + \theta_K^2 z_K + \nu_2 \\
&\vdots \\
x_J^* &= \theta_0^J + \theta_1^J z_1 + \theta_2^J z_2 + \ldots + \theta_K^J z_K + \nu_J,
\end{aligned} \tag{3}
$$

where

$$\theta_0 = \begin{pmatrix} \delta_0^1 \\ \delta_0^2 \\ \vdots \\ \delta_0^J \end{pmatrix}; \quad \theta_1 = \begin{pmatrix} \delta_1^1\gamma_1 + \beta_1^1 \\ \delta_1^2\gamma_1 + \beta_1^2 \\ \vdots \\ \delta_1^J\gamma_1 + \beta_1^J \end{pmatrix}; \quad \theta_2 = \begin{pmatrix} \delta_1^1\gamma_2 + \beta_2^1 \\ \delta_1^2\gamma_2 + \beta_2^2 \\ \vdots \\ \delta_1^J\gamma_2 + \beta_2^J \end{pmatrix}; \ldots;$$

$$\theta_K = \begin{pmatrix} \delta_1^1\gamma_K + \beta_K^1 \\ \delta_1^2\gamma_K + \beta_K^2 \\ \vdots \\ \delta_1^J\gamma_K + \beta_K^J \end{pmatrix}; \; \nu = \begin{pmatrix} \delta_1^1\eta + \epsilon^1 \\ \delta_1^2\eta + \epsilon^2 \\ \vdots \\ \delta_1^J\eta + \epsilon^J \end{pmatrix}.$$

This reduced-form equation system can be estimated by applying independent ordered probits to all J equations separately. This yields consistent, though inefficient estimates $\hat{\theta}_k$ for θ_k $(k = 1, .., K)$, since the information on the dependence of these equations contained in the error term ν is ignored by such a procedure.

Ordered probit analysis is a single-equation technique which assumes that there is an unobservable latent variable x^* which linearly depends on a set of exogenous variables denoted by z and an unobservable error term ν. One does not observe x^* directly but x, where x is defined as

$$\begin{array}{rclrcl} x & = & 0 \;\; if & & & x^* \leq 0, \\ x & = & 1 \;\; if & 0 & \leq & x^* \leq \mu_1, \\ x & = & 2 \;\; if & \mu_1 & \leq & x^* \leq \mu_2, \\ & \vdots & & & & \\ x & = & L \;\; if & \mu_{L-1} & \leq & x^*. \end{array} \tag{4}$$

The μ's are unknown parameters to be estimated and can be regarded as threshold values. The idea behind this model formulation is that there exists a certain intensity of opinion which is an unobservable latent variable for the analyst, but can be explained by a set of measurable factors and an unobservable error term. The only difference to the modelling idea behind (1) is that the latent factor Y^* has been purged from the right-hand side.

Moreover, it is assumed that this unobservable intensity of opinion is reflected by the observable categories, i.e. whenever a certain threshold value μ_j is exceeded one observes an individual in category $j + 1$. This means that respondents choose the category which represents most closely their true opinion on the question. In the example at hand, we have three categories, i.e. $L = 2$. We have coded all variables such that zero denotes a positive attitude, two denotes a negative attitude and one is the medium category. Finally, we assume that the error term is normally distributed, i.e. $\nu \sim N(0, 1)$ and all elements of ν are uncorrelated across respondents. This implies that η and ϵ are normally distributed as well, since ϵ was assumed to be normally distributed.

3.3 Identification of Structural Parameters

The parameters of interest are the γ_k ($k = 1, ..., K$), determining the impact of measurable socio-economic characteristics on the unobserved overall attitude towards minorities. However, these parameters are not identifiable from the estimated reduced form parameters without further restrictions. Unfortunately, the (Cowles-Commission-type) classical literature on simultaneous equation systems does not offer much guidance since exclusion restrictions are very arbitrary in the case at hand.

Naturally, all identification strategies depend on a set different assumptions which have to be assumed to hold *a priori*. Unfortunately, no possibility exists to discriminate empirically between the appropriateness of these different assumptions. They have to be judged upon economic reasoning alone. Thus, we have to concentrate on what we want to achieve. Our ultimate aim is to identify the impact of the measurable socio-economic characteristics on the unobserved component Y^* which itself drives the perception of foreigners and Jews by native Germans. Intuitively, the idea of our identification strategy in this particular case adheres to the following considerations.

In the structural model we assumed that there are two categories of explanatory factors at work to explain the distribution of answers on the questions in the *ALLBUS*. The first variable, the unobservable component Y^*, exhibits a direct influence via the parameter δ_1^j ($j = 1, ..., J$). The observable socio-economic variables Z_k ($k = 1, ..., K$), however, impinge upon the answers directly and indirectly. Their direct influence is captured by the parameters β_k^j whereas the indirect impact works through the parameters γ_k. In order to identify the latter parameters we assume that the direct impact of a specific socio-economic variable over *all* questions is on average zero.

This assumption retains the idea that the direct impact of a specific Z_k on respondents' answers varies from question to question, just as in the original model (1). Yet, to the extent that this influence of Z_k is the same on all questions, this influence is fully captured by the latent factor Y^*. In other words, the variable Z_k can not influence the tendency on all questions in the same fashion in any other way than by shifting Y^*.

Formally, we assume that

$$\frac{1}{J}\sum_{j=1}^{J} \beta_k^j = 0 \;\; \forall \; k = 1, .., K \tag{5}$$

which yields

$$\overline{\theta}_k = \frac{1}{J}\sum_{j=1}^{J} \theta_k^j = \frac{1}{J}\gamma_k \sum_{j=1}^{J} \delta_1^j \;\; \forall \; k = 1, .., K. \tag{6}$$

Furthermore, we need a way to disentangle the influence of Z_k on x_j^* via Y^* (that is, γ_k) from the influence of Y^* itself on the x_j (that is, the δ_1^j). Clearly, the same set of θ_k^j's can result from high γ_k's corresponding with low δ_1^j's and vice versa. If the x_j^* were metric variables, and thus the θ_k^j were directly interpretable we would be hesitant to impose any normalization. Here, however, we can proceed directly and assume that the direct impact of the unobserved component measured by δ_1^j over *all* questions averages one. Formally, we assume that

$$\frac{1}{J}\sum_{j=1}^{J}\delta_1^j = 1 \tag{7}$$

That is, if the latent factor is important for the answers, that is, for x_j^*, then this will be reflected in γ_k's which are large. In consequence, we finally have

$$\gamma_k = \overline{\theta}_k \;\; \forall \; k = 1,..,K. \tag{8}$$

Due to the latent nature of x_j^*, and to our normalization in (7), we can interpret the estimated γ_k only in relative terms, that is compare the impact of Z_k on Y^* relative to that of Z_l on Y^*. That is, since the level impact of Z_k operates exclusively through Y^*, the average reduced-form impact of Z_k captures its influence on Y^* via γ_k. More important Z_k will exert their influence through higher coefficients γ_k, on average.

This setup allows those structural equations with low variances in the disturbances to exert a more substantial influence on the estimate of γ_k. High disturbances in the structural-form equations lead to high variances in the corresponding reduced-form equations, i.e. to high $\sigma^2_{\nu_j}$. The normalization inherent in ordered probit analysis in turn leads to small reduced-form parameter estimates. Therefore, the estimated reduced-form coefficients of equations with low explanatory power receive a low weight in the calculation of the structural parameters γ_k.

Since these structural parameters are linear functions of the estimated reduced form parameters, their standard errors can be constructed straightforwardly from the covariances of the different reduced-form estimators. However, since we perform the estimation of these reduced-form parameters independently, we need a strategy to assess the cross-equation correlations of the parameter estimates. This is done by bootstrapping the variances and covariances of the different reduced-form coefficients over all questions. We then estimated the standard error of γ_k as the positive square root of the estimated variance of γ_k. Specifically, from equations (6) and (8) we have for each $k = 1, ..., K$

$$\widehat{Var}(\hat{\gamma}_k) = \widehat{Var}\left(\hat{\overline{\theta}}_k\right) \tag{9}$$

where

$$\widehat{Var}(\hat{\overline{\theta}}_k) = \widehat{Var}\left(\frac{1}{J}\sum_{j=1}^{J}\hat{\theta}_k^j\right) = \frac{1}{J^2}\widehat{Var}\left(\sum_{j=1}^{J}\hat{\theta}_k^j\right) \tag{10}$$

and

$$\widehat{Var}\left(\sum_{j=1}^{J}\hat{\theta}_k^j\right) = \sum_{j=1}^{J}\widehat{Var}(\hat{\theta}_k^j) + 2\cdot\left[\sum_{j=1}^{J}\sum_{l=1}^{J-1}\widehat{Cov}(\hat{\theta}_k^j,\hat{\theta}_k^l)\right]. \tag{11}$$

Collecting terms yields for the variance of the structural parameter γ_k

$$\widehat{Var}(\hat{\gamma}_k) = \frac{1}{J^2}\left\{\sum_{j=1}^{J}\widehat{Var}(\hat{\theta}_k^j) + 2\cdot\left[\sum_{j=1}^{J}\sum_{l=1}^{J-1}\widehat{Cov}(\hat{\theta}_k^j,\hat{\theta}_k^l)\right]\right\}. \tag{12}$$

Thus, the estimated variance of the structural parameter γ_k identified by our strategy is a linear function of the estimated variances of all reduced form parameters γ_k^j and the estimated cross-equation covariances.

4 Empirical Evidence

In this section we employ our approach to data available in the 1996 wave of the *ALLBUS*. The *ALLBUS* is a publicly available, biennially conducted opinion and attitude survey with varying focuses on different topics. The sample is drawn out of all individuals living in private households who, for the 1996 wave, have been born prior to January, 1st 1978. This wave, conducted between March and June 1996, contains questions on the perception of and attitudes towards immigrants, foreigners and Jews as well as standard socio-economic characteristics of the respondents. The majority of the respondents are native Germans but there is also a representative share of foreigners in the sample. Overall, native respondents perceive foreigners and Jews with a considerable degree of skepticism (for more details on the perception of foreigners see Fertig and Schmidt (2001)). Unfortunately, most of the items recorded in the *ALLBUS* do not differentiate between different minority groups. Only some of the questions explicitly address attitudes towards specific immigrant groups, like Turks, Italians, ethnic Germans, and asylum seekers. However, there is a set of questions which explicitly addresses the perception of Jews (for a description of these items cf. Appendix **Table A.1** and **Table A.2**).

Originally, for most of the items utilized in this paper there were seven categories of possible agreement/disagreement with the claims expressed on an ordered scale reaching from (1) “I do not agree at all” to (7) “I agree completely”. These seven possibilities were condensed into three categories: (1) and (2) into “no agreement”, (6) and (7) into “agreement” and the other three original categories into “medium” (this scale is denoted by Coding A). Only a small number of questions were originally coded on a three answer possibilities scale (see **Table A1**). For these questions we preserved the original scale. Furthermore, we checked the sensitivity of the results regarding the coding of the dependent variable by introducing a second scale denoted by Coding B. In this alternative we combined all agreement categories, i.e. (5), (6) and (7), into “agreement” and all disagreement categories, i.e. (1), (2) and (3), into “no agreement”. Therefore, only the original category (4) is now “medium”. These answer categories are the dependent variables in our estimation approach.

4.1 Background – Germany in 1996

It seems natural to suppose that answers to opinion surveys can not be regarded as independent from the overall situation in which the questions are asked. Political actions and campaigns, opinions expressed in the media or other developments within society probably have an influence on respondents answers. Unfortunately, large opinion surveys like the *ALLBUS* are not conducted with an identical setup several years in a row. However, we think it is illustrative for the interpretation of the results to have at least some knowledge on the historical background before which the questions were asked. Therefore, we will briefly sketch the situation in Germany in 1996 with a focus on the developments regarding minorities.

In 1996 the total population in Germany amounted to around 82 million people, of which approximately 7.5 million were non-citizens and around 70,000 were Jews. The biggest non-citizen groups were Turks with approximately 2 million members, followed by roughly 1.2 million people from former Yugoslavia and around 600,000 Italians (Federal Statistical Office (1997)). On the federal level Germany had been governed by a parliamentary coalition of the Christian Democratic Union (*CDU*), the Christian Social Union (*CSU*), and the Free Democratic Party (*FDP*) since 1982.

In the course of the year, political debates arose around high social welfare cost, the restriction of worker rights (especially sickness payments), excessive tax rates and the adequate fiscal policy to meet the Maastricht criteria for access to the European Monetary Union. The real GDP growth rate declined to 1.4 per cent compared to 1.8 per cent in 1995 and the unemployment rate climbed to around 11 per cent on the federal level. Unemployment figures for the eastern part of Germany were much higher, though. In 1996 the mark of 4 million people registered as unemployed had been exceeded for the first time since 1929.

The right to apply for asylum guaranteed by the German constitution (*Grundgesetz*) had been tightened in 1993 and applications had decreased dramatically since then. In 1996 there were 116,367 applications compared to 127,937 in 1995 and even 438,191 in the peak year 1992. The biggest group of applicants in that year came from former Yugoslavia, followed by Turkey. The number of ethnic Germans from eastern Europe (*Aussiedler*) decreased as well, to 177,751 people compared to 217,898 in 1995 and around 400,000 in the peak year 1990.

During 1996 a number of changes to foreigner-related laws passed the parliament. The most important reform was concerned with a quicker expulsion of foreigners who committed crimes, whereas the law regulating German citizenship, which originated from the year 1913, remained unchanged. Furthermore, the German government signed a refugee repatriation agreement with Yugoslavia (Serbia and Montenegro) and the repatriation of the Bosnian civil war refugees began. The German interior minister, Manfred Kanther, declared that the repatriation endeavors underscore the fact that Germany is not an immigration country.

The Federal Office for the Protection of the Constitution (*Bundesamt für Verfassungschutz*, BfV) reported 8,730 far-right offences (cf. BfV (1997)), of which more than 2,200 were against foreigners and more than 800 had an antisemitic background. Overall, registered offences increased compared to 1994 and 1995, whereas offences with an antisemitic background decreased compared to these years. The most severe incident was the arson attack in Lübeck on January, 18th against a house in which asylum seekers lived and ten lifes were lost. The perpetrators of this attack are still unknown.

In the public debate a series of violent crimes against German tourists and foreigners in Mecklenburg-Vorpommern during the summer months and the dispute on the role of Swiss banks in the second World War received lots of attention. The publication of the book *Ordinary Germans: Hitler's Willing Executioners* by Daniel J. Goldhagen in April 1996 set off a heavy debate on the role of the German population in the mass murder of European Jews. In a report to German embassies in the former Soviet Union, the federal office warned of unlimited immigration of Jews to Germany talking about some hundred thousand people planning to apply for immigration to Germany. The minister for economic co-operation and development, Carl-Dieter Spranger (CSU), claimed that

800,000 Jews were willing to emigrate and that this would cause the German pension system to collapse (cf. JPR (1997)).

4.2 Distribution of Attitudes and Descriptive Statistics

Means and standard deviations of the above described answer categories are reported in **Table 1**. The shares of answers falling into each category are reported in **Table A3** in the appendix. The presentation distinguishes between West and East Germany, to reflect apparent heterogeneity, but also since East Germany is oversampled in the 1996 wave of the *ALLBUS*.

A closer look at the descriptive statistics as well as the distribution of answers reveals that there is considerable variation in respondents' attitudes across the different questions. Questions *Q1* to *Q35* concern attitudes towards immigrants and foreigners, whereas questions *Q36* to *Q42* explicitly aim at the perception of Jews. If one does not presume that this variation is simply noise, but that there is at least some information contained in it, then it is inevitable to analyze the complete set of questions and not only some of them, e.g. the "classical prejudice" questions, like it is done in many other studies using this dataset. The means of the answers are close to the medium category but there is a statistically significant difference from it in almost all cases.

Coding A and Coding B denote the two constructed answer categories described in the preceding section. The questions *Q1* to *Q4* are the items for which the original answer categories were on a three-possibilities scale. Therefore, the mean and standard deviation of these questions remain unaffected by the change in coding. For the remaining questions *Q5* to *Q42* the alternative coding system *B* increases the standard deviations of the answers. However, the mean answers change in an upward as well as a downward direction. For 18 questions the means go up, for 19 they go down and for one question it stays constant.

Table 1: Descriptive Statistics of Attitudes towards Foreigners and Jews

Question	Coding A		Coding B	
	Mean	Std. Dev.	Mean	Std. Dev.
Q1	1.999	0.522	1.999	0.522
Q2	2.087	0.573	2.087	0.573
Q3	1.964	0.678	1.964	0.678
Q4	2.309	0.591	2.309	0.591
Q5	2.306	0.691	2.366	0.834
Q6	1.854	0.755	1.810	0.876
Q7	1.933	0.793	1.899	0.902
Q8	1.592	0.758	1.572	0.825
Q9	2.052	0.721	2.074	0.891
Q10	2.053	0.741	2.095	0.893
Q11	1.988	0.756	1.978	0.899
Q12	2.019	0.764	2.050	0.886
Q13	1.891	0.704	1.799	0.874
Q14	2.061	0.713	2.047	0.884
Q15	1.997	0.724	1.959	0.872
Q16	2.178	0.805	2.224	0.910
Q17	2.316	0.725	2.382	0.837
Q18	1.312	0.563	1.270	0.610
Q19	2.756	0.528	2.800	0.555
Q20	2.599	0.622	2.688	0.649
Q21	2.223	0.829	2.206	0.917
Q22	1.864	0.766	1.857	0.891
Q23	2.125	0.818	2.125	0.920
Q24	1.731	0.527	1.608	0.636
Q25	1.862	0.533	1.799	0.716
Q26	2.239	0.585	2.339	0.718
Q27	2.084	0.572	2.123	0.765
Q28	1.905	0.555	1.860	0.738
Q29	2.001	0.542	2.005	0.742
Q30	2.392	0.593	2.502	0.669
Q31	2.313	0.603	2.424	0.706
Q32	1.781	0.710	1.741	0.863
Q33	1.733	0.705	1.699	0.854
Q34	2.364	0.688	2.442	0.799
Q35	2.059	0.730	2.081	0.891
Q36	1.791	0.544	1.721	0.648
Q37	2.011	0.572	2.023	0.712
Q38	1.618	0.706	1.587	0.807
Q39	1.681	0.701	1.670	0.822
Q40	1.387	0.637	1.324	0.674
Q41	2.060	0.745	2.104	0.878
Q42	1.488	0.650	1.483	0.754

For a description of the questions see **Table A1** in the appendix.
Total number of Observations: 2834; 1844 in West Germany
and 990 in East Germany.

Table 2 reports descriptive statistics for the utilized explanatory variables for East and West German respondents. All variables are categorical[2], except the variable *Age*. The explanatory variable *Fears Loss of Employment* is a dummy variable taking the value of one if the individual reported to be afraid of losing his or her job and zero otherwise. **Table 2** reveals that slightly more than 11% of respondents in 1996 were indeed afraid of a job loss. However, this fear was considerably higher in the eastern part of Germany (nearly 18%) than in the western part (around 8%). This variable is the only explanatory variable in our analysis which reflects an opinion or personal expectation, all other variables are measured socio-economic characteristics. Its inclusion aims at capturing the unique situation of more than 4 million people registered as unemployed in 1996.

Table 2: Descriptive Statistics of Socio-Economic Variables

Explanatory	East		West	
Variable	Mean	Std. Dev.	Mean	Std. Dev.
Female	0.511	0.500	0.488	0.500
High Education	0.177	0.382	0.254	0.436
Medium Education	0.400	0.490	0.251	0.434
Academic	0.129	0.336	0.131	0.337
No Formal Training	0.079	0.270	0.155	0.362
Fears Loss of Employment	0.176	0.381	0.079	0.270
Not Employed	0.056	0.229	0.014	0.118
Married	0.667	0.472	0.623	0.485
Low Share of Foreigners	0.937	0.242	0.082	0.274
Age	47.39	16.48	45.490	16.73
Number of observations	990		1,844	

Table 2 shows that respondents residing in East Germany on average report an slightly higher education level (the share of respondents reporting a low education level is around 43% in East and around 50% in West Germany) and a considerably lower share of East Germans report to have no formal training. On the other hand, a substantially higher share of East Germans are not employed. Moreover, a very high share of East German respondents live in a region with a below-average foreigner share.

We introduced the variable *Low Share of Foreigners* as a measure of possible contacts to foreigners. There exists a question on contacts with foreigners in the *ALLBUS* and more than half of the respondents in the 1996 wave report to have them in either family, neighborhood, among friends or at work. However, the intensity of these contacts remains unclear. Therefore, we decided to use a measure of exposure to foreigners, i.e. the actual share of foreigners living in the region (*Landkreis*) of the respondent as a natural indicator for possible contacts to foreigners. We would presume that this indication reflects the possible information of the respondent concerning foreigners. This variable takes the value of one if the respondent lives in a region with less that 8% foreigner share (the nation-wide foreigner share) and zero otherwise.

We would expect that the contact with immigrants reduces xenophobic misperceptions and would, therefore, expect a more positive attitude towards foreigners for those

[2]For a description of the explanatory variables see **Table A4** in the appendix.

individuals not living in a region with a low foreigner share. However, this variable may be endogenous if foreigners decide to live in regions where natives have a more positive perception of them. Usually, the residential choice of individuals is determined by a complex set of factors, including family relations, friends, labor market opportunities and local amenities. It is possible that for foreigners the perception by natives may contribute to the local amenities of candidate locations of residence, but it seems to be only one element out of a set of several factors. Therefore, we would expect that the endogeneity of this variable is not severe. Specifically, new immigrants will probably display a low likelihood to move to rural East Germany for reasons of economic opportunity alone.

As already mentioned in section 2, there is a possibly severe endogeneity problem of many of the variables typically used as explanatory factors in empirical studies on attitudes towards minority groups. It seems quite natural to suspect that the perception of foreigners or Jews is not independent from individual opinions towards e.g. politics, religion or the role of the family. However, *a priori* the direction of causality is completely unclear. We would presume that opinions towards several aspects of society are indeed interrelated. The simultaneity of opinion forming, however, does prevent us from using expressed opinions towards e.g. politics as explanatory variables.

In addition to the possible endogeneity or simultaneity of opinions, the possibility of unobserved heterogeneity may bias estimation results as well. For instance, the unobservable ability to reflect about one's own way of living may be correlated with the expressed attitudes towards minorities but it may also be correlated with the decision on the level of education. The usual approach to handle problems like this one is to instrument the correlated variable. In the case at hand, however, we have good reason to abstain from such an approach. First, in the current context – all variables on the left-hand side are latent – any valid instrumental variable will have a difficult time unfolding its potential. Second, even in the absence of the conceptual problems characterizing the extraction of latent factors from categorical observables a valid instrument is difficult to find. Thus, we proceed under the maintained assumption of exogeneity of the right-hand side variables.

4.3 Reduced Form Results

As a first step we perform an independent ordered probit analysis for each of the 35 questions on the perception of foreigners and each of the seven questions on the perception of Jews, summarized in the last subsection and described in more detail in the appendix. For this purpose, we utilized the explanatory variables described in **Table 2** and **Table A4** with one exception. Since only a small fraction of respondents reported not to be employed we combined the variables *Not Employed* and *Fears Loss of Employment* together in the variable *Labor Market*. Therefore, this new variable takes the value of 1 if the individual reported either to be not employed *or* to be afraid of loosing her or his job, and zero otherwise.

Estimation results of the reduced-form parameters exhibit noticeably stable results. These results are summarized[3] in **Table 3** for the questions on the perception of foreign-

[3]A complete list of reduced form results is available by the authors upon request.

ers and in **Table 4** for the attitudes towards Jews. Since the estimated coefficients of an ordered probit model are not interpretable straightforwardly, because they do not concur with the marginal effects of the explanatory variables, we report only the direction of influence and its statistical significance. Since the coding of the dependent variables is *"0"* for a positive attitude and *"2"* for a negative attitude, a "+" denotes a statistically significant positive impact, i.e. a more *negative* attitude. Consequently, a "-" denotes a statistically significant negative impact, i.e. a more *positive* attitude.

On balance, East German respondents tend to display a slightly more negative attitude towards foreigners. Individuals with medium or even high education clearly tend to answer more favorably (our maintained hypothesis is that this reflects a genuine difference in preferences and perceptions, not a strategic way to answer to the questions), as do academics. On the other hand, respondents with no formal training tend to answer in a more negative fashion, as do, more moderately, those respondents who experience employment problems. Interestingly, a low foreigner share is often associated with a more negative attitude. No clear tendency emerges for the distinction between male and female respondents and for marital status, while there seems to be some, albeit minor, heterogeneity across different age groups.

Table 3: Reduced-Form Results on Intensity of Negative Attitude – Questions on Foreigners

Explanatory Variable	Dependent Variable; Coding A											
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
East Germany	+	0	+	+	0	+	0	0	+	-	+	+
Female	0	0	0	0	0	0	0	0	+	0	+	0
High Education	-	-	-	-	-	-	-	-	-	-	-	-
Medium Education	-	-	-	-	-	-	-	-	-	-	-	0
No Formal Training	0	+	+	+	0	+	0	+	0	0	+	0
Academic	0	0	-	-	0	0	-	-	-	-	0	0
Labor Market	0	0	0	+	0	+	0	0	0	0	+	0
Married	0	0	0	0	+	0	0	0	0	0	0	0
Low Foreigner Share	0	+	0	0	+	0	0	+	+	0	+	0
Age	+	+	0	+	+	0	0	+	0	0	0	0
Age Squared	-	0	0	-	0	0	0	0	0	0	+	0
Explanatory Variable	Dependent Variable; Coding B											
East Germany	+	0	+	+	0	+	0	+	+	-	+	+
Female	0	0	+	0	0	0	0	0	+	+	+	0
High Education	-	-	-	-	-	-	-	-	-	-	-	-
Medium Education	-	-	-	-	-	-	-	-	-	-	-	0
No Formal Training	0	+	+	+	+	+	+	+	0	0	0	0
Academic	0	0	-	-	0	-	-	-	0	-	0	0
Labor Market	0	0	0	+	0	0	0	0	0	+	+	0
Married	0	0	0	0	+	0	0	-	0	0	0	0
Low Foreigner Share	0	+	0	0	0	0	0	+	0	0	+	0
Age	+	+	0	+	0	0	0	+	0	0	0	0
Age Squared	-	0	0	-	0	0	0	0	0	0	0	0

On a 95% significance level: "+" denotes a statistically significant positive, "-" a statistically significant negative, and "0" a statistically insignificant impact.

The most important changes due to the alternative coding system for *Q5* to *Q12* are: The variable *Low Foreigner Share* becomes insignificant in *Q5* and *Q9*, the variable *Labor Market* becomes significantly positive in *Q10*, the variable *No Formal Training* becomes significantly positive in *Q5* and *Q7*, but insignificant in *Q11* and the variable *East Germany* becomes significantly positive in *Q8*.

Table 3 continued: Reduced Form Results on Intensity of Negative Attitude – Questions on Foreigners

Explanatory Variable	Dependent Variable; Coding A											
	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24
East Germany	0	0	0	0	0	-	+	0	0	0	-	+
Female	-	0	0	0	+	0	0	0	-	0	-	-
High Education	-	-	-	-	-	-	0	-	-	-	-	-
Medium Education	0	-	-	-	-	0	0	-	-	0	-	0
No Formal Training	-	0	0	+	0	0	0	0	0	0	0	+
Academic	0	-	-	0	0	0	-	-	-	0	-	0
Labor Market	+	+	0	0	+	0	0	0	+	0	0	+
Married	0	0	0	0	0	0	+	0	0	0	0	-
Low Foreigner Share	0	+	+	+	0	+	0	0	+	0	+	0
Age	0	0	-	0	0	0	0	0	0	0	0	0
Age Squared	0	0	+	+	0	0	0	0	0	+	0	0
Explanatory Variable	Dependent Variable; Coding B											
East Germany	0	0	0	0	-	-	0	0	0	0	-	+
Female	-	0	0	0	+	0	0	0	-	0	-	0
High Education	-	-	-	-	-	-	0	-	-	-	-	0
Medium Education	0	-	-	-	-	0	0	-	-	0	-	0
No Formal Training	0	0	0	0	0	0	0	0	0	0	0	+
Academic	-	-	-	0	0	0	0	-	-	0	-	0
Labor Market	+	0	0	0	+	0	0	0	+	0	0	0
Married	0	0	0	0	0	0	0	0	0	0	0	-
Low Foreigner Share	0	+	+	0	0	+	0	0	+	0	+	0
Age	0	0	-	0	0	0	0	0	0	0	0	0
Age Squared	0	0	+	+	0	0	0	0	0	+	0	0

On a 95% significance level: "+" denotes a statistically significant positive,
"-" a statistically significant negative, and "0" a statistically insignificant impact.

The most important changes due to the alternative coding system for *Q13* to *Q24* are: The variable *East Germany* becomes significantly negative in *Q17*, but insignificant in *Q19*. The variable *No Formal Training* becomes insignificant in *Q13* and *Q16*, whereas *Academic* becomes insignificant in *Q19*, but significantly negative in *Q13*. The variables *Labor Market* and *Low Foreigner Share* become insignificant in *Q14*/*Q24* and *Q16*, respectively. Please note that in the coding system *B* *no* explanatory variable has a statistically significant impact on the distribution of answers in *Q19*.

Table 3 continued: Reduced-Form Results on Intensity of Negative Attitude – Questions on Foreigners

Explanatory Variable	Dependent Variable; Coding A										
	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35
East Germany	+	+	+	+	+	0	+	0	+	-	-
Female	-	-	0	-	0	-	0	0	0	-	0
High Education	-	-	-	-	-	-	-	-	-	-	-
Medium Education	0	0	-	-	-	-	-	0	-	-	-
No Formal Training	0	+	+	+	+	0	+	+	0	0	0
Academic	-	0	0	0	-	0	0	0	0	0	0
Labor Market	0	0	0	+	0	0	+	0	0	0	0
Married	-	0	0	0	0	0	0	0	0	0	0
Low Foreigner Share	-	-	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
Explanatory Variable	**Dependent Variable; Coding B**										
East Germany	+	+	+	+	+	0	0	0	+	-	0
Female	-	-	0	-	-	-	0	0	0	-	0
High Education	-	-	-	-	-	-	-	-	-	-	-
Medium Education	0	0	-	-	0	0	0	-	-	0	-
No Formal Training	0	0	+	+	+	+	+	0	0	0	0
Academic	0	-	0	-	0	0	0	0	0	0	0
Labor Market	0	0	0	+	0	0	0	0	0	0	+
Married	-	0	0	0	0	0	0	0	0	0	0
Low Foreigner Share	-	-	0	0	0	0	0	0	0	0	0
Age	0	0	0	0	+	0	0	0	0	0	0
Age Squared	0	0	+	0	-	0	0	0	0	0	0

On a 95% significance level: "+" denotes a statistically significant positive,
"-" a statistically significant negative, and "0" a statistically insignificant impact.

The most important changes due to the alternative coding system for *Q25* to *Q35* are: The variables *East Germany*, *Medium Education* and *Low Foreigner Share* become insignificant in *Q31/Q35*, *Q29/Q30/Q31/Q34* and *Q28/Q35*, respectively. The variable *No Formal Training* becomes significantly positive in *Q30*, but insignificant in *Q26* and *Q32*. Finally, the variable *Academic* becomes significantly negative in *Q26* and *Q28*, but insignificant in *Q25* and *Q29*.

All in all, there is no dramatical change due to the coding system. For almost all questions, irrespective of the coding system of the dependent variables, respondents with a high or medium education display a statistically significant more positive attitude, whereas respondents with no formal training tend to have a statistically significant more negative attitude towards foreigners. Respondents with an academic background also tend to have a more positive attitude, whereas the evidence for the effect of the respondents' geographical residence as well as his or her age and gender is mixed. The effect of a low foreigner share in the region in which the respondent lives is also mixed, although it tends towards a more negative attitude. Finally, the influence of the labor market variable tends towards a more negative attitude as well, although this variable is often statistically insignificant.

Table 4: Reduced-Form Results on Intensity of Negative Attitude – Questions on Jews

Explanatory Variable	Dependent Variable; Coding A						
	Q36	Q37	Q38	Q39	Q40	Q41	Q42
East Germany	+	+	0	0	-	-	0
Female	-	-	0	-	-	-	0
High Education	-	-	-	-	-	-	-
Medium Education	-	-	-	-	-	-	-
No Formal Training	+	+	+	0	0	0	+
Academic	0	0	0	0	-	-	0
Labor Market	+	0	0	0	0	0	0
Married	0	0	0	0	0	0	0
Low Foreigner Share	0	0	0	0	0	0	0
Age	0	+	0	+	0	+	+
Age Squared	0	0	0	0	0	0	0
Explanatory Variable	Dependent Variable; Coding B						
East Germany	0	+	+	0	0	-	0
Female	0	-	-	0	-	-	0
High Education	-	-	-	-	0	-	-
Medium Education	-	-	-	-	0	-	-
No Formal Training	+	0	+	0	0	0	+
Academic	0	0	0	0	-	-	0
Labor Market	0	0	0	0	0	0	0
Married	0	0	0	0	0	0	0
Low Foreigner Share	0	0	0	0	0	0	0
Age	+	0	0	0	0	+	+
Age Squared	0	0	0	0	0	0	-

On a 95% significance level: "+" denotes a statistically significant positive, "-" a statistically significant negative, and "0" a statistically insignificant impact.

Table 4 reports the impact of the estimated reduced form coefficients on the seven questions on the the perception of Jews. For these questions the picture concerning the education and training variables remains unchanged. However, the share of foreigners as well as the labor market variable display no statistically significant effect. Females tend to have a more positive attitude towards Jews than do men, whereas the evidence for the impact of living in East Germany is completely mixed.

In both the analysis of the perception of foreigners and of Jews the reduced-form results are widely consistent, yet quite heterogenous. Therefore, no further interpretation is possible without imposing more structure on the results. Thus, in order to receive a more comprehensive picture on the determinants of the perception of foreigners and Jews we present the results of the structural parameters.

4.4 The Structural Parameters

The structural parameters γ_k $(k = 1, ..., K)$ are identified by our empirical strategy outlined in section 3.3, retaining a separation between the two principal sets of questions. Estimation results are presented in **Table 5a** for the foreigner-related questions and in **Table 5b** for the questions on the perception of Jews.

Table 5a: Structural Parameters – Questions on Foreigners

Explanatory Variable	Coding A		Coding B	
	coefficient	t-value	coefficient	t-value
East Germany	0.13507	1.00	0.11557	0.83
Female	-0.01771	0.39	-0.01677	0.36
High Education	-0.38493	5.10	-0.36638	4.70
Medium Education	-0.16436	2.92	-0.14984	2.56
No Formal Training	0.10983	1.55	0.09324	1.29
Academic	-0.16202	1.88	-0.15603	1.74
Labor Market	0.10126	1.50	0.09146	1.32
Married	0.02804	0.54	0.01782	0.33
Low Foreigner Share	0.06272	0.73	0.07088	0.80
Age	0.00529	0.62	0.00396	0.45
Age Squared	0.00004	0.00	0.00004	0.00

The estimated coefficients suggest that only the education categories exhibit a statistically significant impact on the distribution of agreement/disagreement by native respondents. Individuals with a high education degree have a significantly more positive attitude towards foreigners than people with a low education level. This variable exhibits the strongest impact on the answers of respondents. The labor market variable as well as our proximity measure to model possible contacts to foreigners do not display a statistically significant impact on the usual 95% significance level. These results are different from what one would conclude from an analysis of single or selected questions alone and they are independent of the coding of the answer categories.

Table 5b: Structural Parameters – Questions on Jews

Explanatory Variable	Coding A		Coding B	
	coefficient	t-value	coefficient	t-value
East Germany	-0.02700	0.30	-0.03432	0.40
Female	-0.11859	2.61	-0.11801	2.57
High Education	-0.42447	5.36	-0.37465	4.70
Medium Education	-0.18029	3.32	-0.15810	2.84
No Formal Training	0.10454	1.53	0.07339	1.02
Academic	-0.13720	1.54	-0.13925	1.49
Labor Market	0.06509	0.94	0.05571	0.82
Married	-0.04505	0.88	-0.03532	0.66
Low Foreigner Share	-0.06168	0.70	-0.06165	0.75
Age	0.01266	1.47	0.01357	1.57
Age Squared	-0.00007	0.81	-0.00009	1.05

This picture does not change very much if the attitudes towards Jews in Germany are concerned. In contrast to the results for the perception of foreigners the gender of respondents plays a decisive role in explaining the unobserved component of the perception of Jews. Women tend to have a statistically significant more positive attitude than men. Again the education of the respondents has the largest impact on their answers. All other explanatory variables are far away from being statistically significant.

Therefore, if the information contained in the distribution of answers to a variety of related opinion questions is utilized, the decisive factor driving the common unobserved component of the perception of foreigners and Jews is education. This has important implications for the design of possible interventions aiming at a more positive perception of minorities. Our results suggest that more education on average would change preferences and perceptions positively. However, in such an altered environment a higher average level of education would manifest itself again in the constants of each reduced-form equation, i.e. in the δ_0^j's. This means that for the part of the population with more education the average δ_0^j would decrease, retaining the original differential between the low and the high educated. Any other change in coefficients would require that the structure is altered altogether. Therefore, no change in structural coefficients arises from an increase in education, since we are only able to measure the effect of the latent variable relative to its own average.

5 Conclusions

This paper offered a comprehensive analysis of the opinions collected by the 1996 wave of a large German opinion survey, the *ALLBUS*. To this end, we developed a model explaining the answers of native respondents on a large set of questions in an interdependent framework. In this framework it is assumed that all questions utilized are able to "extract" the true, but unobservable overall perception of foreigners and that this unobservable overall perception can in turn be explained by a set of observable socio-economic characteristics. This analysis, therefore, assumes that all utilized questions are, in principle, able to "extract" the true opinion of respondents, although to varying degree. To achieve this aim, we have to forego all attempts to extract the level of xenophobia or antisemitism in a population of respondents, though. All attempts at such an analysis in a single-country study must fail.

In order to identify the structural parameters of the model we invoked a set of identification assumptions which are non-testable and which have to be assumed to hold true *a priori*. The estimation results for the structural coefficients derived on the basis of our identification assumptions suggest quite different conclusions on the explanatory power of observable socio-economic characteristics than what one would conclude from the (reduced form) analysis of a single question alone. Essentially, the only variable able to reliably explain the heterogeneity of the unobserved component of the perception of foreigners and Jews among native Germans to is the level of individual education. Popular suggestions for an explanation of negative attitudes towards minorities like the labor market situation of a respondent or his/her age turn out to be insignificant as soon as one is willing to analyze *all* relevant questions.

The implications of these results are twofold. Firstly, one may hypothesize that the reason for this finding is the incoherent opinion of respondents towards minorities. That is, it might be possible that individual respondents do not answer in a coherent way to *all* the questions in the *ALLBUS*. Secondly, if one is willing to put confidence in our framework of analysis and the identification assumptions invoked then one would conclude that misconceptions of minorities as well as a negative perception of such groups can be reduced by comprehensive education programs and initiatives.

Clearly, for the success of an immigration policy aiming at the attraction of high-skilled migrants from all over the world, it is important to employ measures that are able to enhance the perception of foreigners in Germany. Therefore, such education programs and initiatives could be helpful. However, the success of such activities is far from being guaranteed. To analyze whether and to what extent education is really able to resolve misperceptions and to reduce negative attitudes will be one of the key challenges of this line of research. A comprehensive scientific evaluation of this question as well as the effectiveness of other integration measures is one of the central issues of future research in this field.

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Table A1: Description of ALLBUS Questions on Attitudes Towards Minorities

Variable	Description
	Unlimited, limited or no immigration of
Q1	Ethnic Germans
Q2	Asylum seekers
Q3	Workers from EU-countries
Q4	Workers from Non-EU-countries
	Should foreigners in Germany
Q5	Assimilate more to the German way of life?
Q6	Be sent back if unemployment is high?
Q7	Prohibited from political activity in Germany?
Q8	Marry among themselves?
	Foreigners in Germany
Q9	Are a burden for the social security system.
Q10	Are a burden for the housing market.
Q11	Take jobs away.
Q12	Commit more crimes.
Q13	Do the awkward jobs Germans would not do.
Q14	Contribute to the variety of culture in Germany.
Q15	Contribute to the pension system.
	Important criterions for German citizenship should be
Q16	German descent.
Q17	Assimilation to the German way of life.
Q18	Membership in a Christian church.
Q19	Non-commitment of crimes.
Q20	Ability to earn one's own living.
Q21	Would you agree to the possibility to hold a double citizenship?
	Should foreigners in Germany
Q22	Receive the same amount of social security benefits?
Q23	Receive the right to vote on the local/municipal level?
	Would you appreciate living in the neighborhood of ...?
Q24	Italians
Q25	Ethnic Germans
Q26	Asylum seekers
Q27	Turks
	Would you appreciate it if a ... marries a member of your family?
Q28	Italian
Q29	Ethnic German
Q30	Asylum seeker
Q31	Turk
	Should ... receive the same rights as native Germans?
Q32	Italians
Q33	Ethnic Germans
Q34	Asylum seekers
Q35	Turks

Q1 to Q4 were originally coded on a three answer possibilities scale.
All other questions on a seven answer possibilities sale. See also text.

Table A2: Description of ALLBUS Questions on Attitudes Towards Jews

Variable	Description
Q36	Would you appreciate living in the neighborhood of a Jew?
Q37	Would you appreciate it if a Jew marries a member of your family?
Q38	Should Jews receive the same rights as native Germans?
Q39	Jews have too much influence in the world.
Q40	I feel ashamed of the atrocities Germans committed on Jews.
Q41	Jews exploit German history.
Q42	Jews are not completely innocent of their persecution.

Table A3: Distribution of Answers – West vs. East Germany

Question & Region		Coding A			Coding B		
		positive	medium	negative	positive	medium	negative
Q1	West	13.99%	74.89%	11.12%	13.99%	74.89%	11.12%
	East	12.93%	68.89%	18.18%	12.93%	68.89%	18.18%
Q2	West	12.91%	66.27%	20.82%	12.91%	66.27%	20.82%
	East	11.52%	66.77%	21.72%	11.52%	66.77%	21.72%
Q3	West	32.27%	55.80%	11.93%	32.27%	55.80%	11.93%
	East	10.91%	50.51%	38.59%	10.91%	50.51%	38.59%
Q4	West	8.19%	60.74%	31.07%	8.19%	60.74%	31.07%
	East	4.24%	45.76%	50.00%	4.24%	45.76%	50.00%
Q5	West	13.99%	44.14%	41.87%	24.19%	17.41%	58.41%
	East	11.82%	40.81%	47.37%	21.21%	16.46%	62.32%
Q6	West	42.84%	40.24%	16.92%	56.18%	19.36%	24.46%
	East	25.56%	42.32%	32.12%	37.47%	20.30%	42.22%
Q7	West	36.39%	36.33%	27.28%	48.16%	16.81%	35.03%
	East	32.42%	37.27%	30.30%	42.53%	19.29%	38.18%
Q8	West	62.47%	23.81%	13.72%	69.52%	12.15%	18.33%
	East	48.18%	29.70%	22.12%	55.35%	16.36%	28.28%
Q9	West	27.71%	48.54%	23.75%	41.87%	20.07%	38.07%
	East	15.76%	46.16%	38.08%	25.86%	20.10%	54.04%
Q10	West	23.21%	45.28%	31.51%	33.79%	19.36%	46.85%
	East	28.18%	44.04%	27.78%	38.79%	19.70%	41.52%
Q11	West	35.30%	45.07%	19.63%	48.70%	21.10%	30.21%
	East	17.78%	38.59%	43.64%	28.18%	15.35%	56.46%
Q12	West	32.86%	41.59%	25.54%	42.41%	20.93%	36.66%
	East	19.60%	41.62%	38.79%	26.57%	21.82%	51.62%
Q13	West	30.80%	51.74%	17.46%	50.98%	19.96%	29.07%
	East	30.91%	44.55%	24.55%	48.89%	18.79%	32.32%
Q14	West	24.13%	48.64%	27.22%	38.39%	21.58%	40.02%
	East	19.60%	48.99%	31.41%	33.84%	22.02%	44.14%
Q15	West	28.09%	50.65%	21.26%	42.84%	25.05%	32.10%
	East	23.03%	42.12%	34.85%	35.15%	21.52%	43.33%
Q16	West	26.74%	32.70%	40.56%	34.60%	12.04%	53.36%
	East	22.02%	30.71%	47.27%	29.19%	12.53%	58.28%
Q17	West	14.26%	37.58%	48.16%	21.53%	15.46%	63.02%
	East	17.68%	37.27%	45.05%	26.26%	15.25%	58.48%
Q18	West	70.17%	24.19%	5.64%	79.18%	10.74%	10.09%
	East	80.81%	15.05%	4.14%	86.67%	7.07%	6.26%
Q19	West	4.72%	17.30%	77.98%	7.54%	6.13%	86.33%
	East	4.65%	10.71%	84.65%	7.17%	3.33%	89.49%
Q20	West	7.75%	25.87%	66.38%	10.85%	10.57%	78.58%
	East	6.46%	24.85%	68.69%	9.39%	10.40%	80.20%
Q21	West	28.47%	26.84%	44.69%	37.80%	11.06%	51.14%
	East	20.61%	25.05%	54.34%	26.36%	13.03%	60.61%

Table A3 continued: Distribution of Answers – West vs. East Germany

Question & Region		Coding A			Coding B		
		positive	medium	negative	positive	medium	negative
Q22	West	38.39%	38.88%	22.72%	49.24%	17.57%	33.19%
	East	34.65%	40.51%	24.85%	45.25%	20.40%	34.34%
Q23	West	27.01%	32.70%	40.29%	35.41%	14.05%	50.54%
	East	29.80%	29.39%	40.81%	39.49%	13.33%	47.17%
Q24	West	37.64%	59.92%	2.44%	54.34%	39.80%	5.86%
	East	18.48%	74.44%	7.07%	34.75%	52.32%	12.93%
Q25	West	24.62%	67.73%	7.65%	41.38%	41.76%	16.87%
	East	17.27%	73.33%	9.39%	30.91%	50.20%	18.89%
Q26	West	9.44%	58.79%	31.78%	16.43%	35.20%	48.37%
	East	5.35%	62.53%	32.12%	11.11%	40.20%	48.69%
Q27	West	15.35%	67.35%	17.30%	28.63%	39.05%	32.32%
	East	7.27%	65.15%	27.58%	15.05%	41.62%	43.33%
Q28	West	25.98%	66.43%	7.59%	41.65%	42.35%	16.00%
	East	10.61%	71.72%	17.68%	23.13%	45.96%	30.91%
Q29	West	17.52%	69.63%	12.85%	31.02%	44.03%	24.95%
	East	9.19%	72.63%	18.18%	20.30%	46.77%	32.93%
Q30	West	6.78%	47.89%	45.34%	11.17%	28.36%	60.47%
	East	3.64%	52.32%	44.04%	7.37%	33.33%	59.29%
Q31	West	9.38%	53.74%	36.88%	15.62%	30.97%	53.42%
	East	3.74%	54.04%	42.22%	7.17%	34.55%	58.28%
Q32	West	41.00%	43.11%	15.89%	55.97%	17.46%	26.57%
	East	33.94%	48.08%	17.98%	49.09%	21.31%	29.60%
Q33	West	44.31%	41.49%	14.21%	58.62%	16.49%	24.89%
	East	36.97%	46.46%	16.57%	51.21%	20.91%	27.88%
Q34	West	10.95%	37.47%	51.57%	18.06%	15.78%	66.16%
	East	14.24%	42.93%	42.83%	22.32%	18.48%	59.19%
Q35	West	23.75%	46.64%	29.61%	36.44%	19.47%	44.09%
	East	24.04%	45.96%	30.00%	35.05%	20.91%	44.04%
Q36	West	29.61%	64.80%	5.59%	41.16%	48.81%	10.03%
	East	23.43%	68.28%	8.28%	34.44%	52.93%	12.63%
Q37	West	18.33%	66.11%	15.56%	27.01%	47.61%	25.38%
	East	11.11%	69.60%	19.29%	18.99%	52.42%	28.59%
Q38	West	50.76%	35.57%	13.67%	62.09%	17.25%	20.66%
	East	52.22%	35.76%	12.02%	60.91%	19.19%	19.90%
Q39	West	44.20%	39.64%	16.16%	54.12%	19.09%	26.79%
	East	48.08%	42.83%	9.09%	58.79%	25.96%	15.25%
Q40	West	66.21%	23.54%	10.25%	76.68%	9.49%	13.83%
	East	76.26%	18.69%	5.05%	84.55%	7.47%	7.98%
Q41	West	23.16%	41.59%	35.25%	31.62%	19.41%	48.97%
	East	28.28%	48.89%	22.83%	38.08%	26.46%	35.45%
Q42	West	59.11%	31.24%	9.65%	66.92%	15.78%	17.30%
	East	61.01%	32.32%	6.67%	68.89%	17.78%	13.33%

For a description of the questions see Table A1 in the appendix. Total number of Observations: 2,834; 1,844 in West-Germany and 990 in East-Germany.

Table A4: Description of Explanatory Variables

VARIABLE	DESCRIPTION
East Germany	1 if the respondent resides in East Germany; 0 otherwise
Female	1 if the respondent is female; 0 otherwise
High Education	1 if the respondent holds a high schooling degree (i.e. *Hochschul- or Fachhochschulreife*); 0 otherwise
Medium Education	1 if the respondent holds a medium schooling degree (i.e. *Mittlere Reife*); 0 otherwise
No formal Training	1 if the respondent reports no formal training; 0 otherwise
Academic	1 if the respondent reports an academic degree; 0 otherwise
Fears Loss of Employment	1 if the respondent reports to be afraid of loosing his or her job; 0 otherwise
Not Employed	1 if the respondent is not employed; 0 otherwise
Married	1 if the respondent is married; 0 otherwise
Low Share of Foreigners	1 if the respondent resides in a region with less than 8% foreigner share; 0 otherwise
Age	Age of respondent in years at time of the interview

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