

# **Ethnic Concentration and Right-Wing Voting Behavior in Germany**

Verena Dill

*Department of Economics, University of Trier, Germany*

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**Abstract:** Using data from the German Socio-Economic Panel (SOEP) and administrative data from 2005 to 2009, I investigate the question whether or not right-wing extremism of German residents is affected by the ethnic concentration of foreigners living in the same residential area. More specifically, I regress voting for a right-wing party (namely DVU, NPD or Republikaner) on the share of foreigners measured at county level. Controlling for a rich set of individual and residential variables, my results show a positive significant relationship between ethnic concentration and the probability of right-wing voting behavior in Germany, which is in line with findings in previous studies. However, due to potential endogeneity issues caused by self-selection of immigrants as well as Germans I additionally instrument the share of foreigners in a county with the share of foreigners in each federal state (following an approach of Dustmann/Preston 2001). In contrast to other studies that do not take these endogeneity issues into account, I find that the share of foreigners no longer significantly explains right-wing voting behavior. Nevertheless, the subsample for West Germany provides evidence for the interethnic contact theory, predicting a negative relationship between foreigners' share and right-wing voting.

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**Keywords:** Ethnic concentration, right-wing voting, group threat, interethnic contact.

**Address for correspondence:** Verena Dill, Universität Trier, Fachbereich IV, Lehrstuhl für Arbeitsmarktökonomik, Universitätsring 15, 54286 Trier, Germany, Email: dill@uni-trier.de.

## **1. Introduction**

Observing the tendencies of right-wing extremism in society has been always a serious concern, especially in Germany. Nowadays the public debate has reached a new point of intensity since in November 2011 it has been discovered that a number of eleven murders that were committed over the past ten years are linked to a right-wing extremist group. Due to these incidents and the associated investigations, politicians, as well as the public in Germany, started again to discuss the causes of right-wing extremism and the extent of hostile behavior by native Germans against foreigners.

One fact about the killings and right-wing extremism in general seems paradoxical at a first glance: We observe that in regions with a comparably low share of foreigners a fertile breeding ground exists for right-wing extremist behavior. One may then ask if it is the low share of foreigners that strengthens prejudices and leads to hostile behavior. Or do confounding factors dominate this relationship? And to what extent does self-selection play a role in determining the effect of foreigner share on hostile attitudes?

From a theoretical point, we can differentiate between two approaches that seek to explain hostile attitudes towards foreigners with respect to ethnic concentration: one is the group threat theory and the second is known as the interethnic contact theory. The group threat theory hypothesizes that individuals belonging to the majority group feel discarded as the relative number of minority group members increases and their perceived economic conditions deteriorate. A feeling of fear due to social and economic decline creates prejudice and hostile attitudes towards the minority group. Hence, a positive effect of ethnic concentration on hostile attitudes is expected (Sherif and Sherif 1953, Quillian 1995). In contrast to the group threat theory, the interethnic contact theory is based on the

idea that a higher relative number of minority group members can help to overcome prejudices because of a higher frequency of contacts between the minority and majority group. If interethnic contact theory explains hostile attitudes of native Germans correctly then we would observe that negative attitudes are more likely in areas with fewer foreigners (Rothbart and John 1993, Pettigrew 1986).

In this paper, I seek to gain new insights into the causes for hostile attitudes expressed as right-wing voting behavior in Germany. My paper offers two contributions. The first is methodological. Like previous studies, I find that cross-sectional analyses point out a positive relationship between the share of foreigners in a county and voting for a right-wing extremist party. But in comparison to many previous studies that investigate this question with German data, I additionally take endogeneity issues of the effect of foreigner share on right-wing voting behavior explicitly into account following an approach of Dustmann and Preston (2001). A second but minor contribution of this paper is to analyze socio-economic and locational variables that affect an individual's decision for voting for an extreme right-wing party in the recent years (from 2005 to 2009) using a large, representative data set.

The main results of the paper are as follows. Using data from the German Socio-Economic Panel (GSOEP), I find that simple probit estimates provide weak evidence for a positive relationship between ethnic concentration –measured as the share of foreigners at county level– and leaning towards an extreme right-wing party. Separate estimations for West and East Germany show positive but insignificant coefficients. In a second step, I instrument the share of foreigners at county level with the share of foreigners at federal state level to address a simultaneity bias that is based on self-sorting of Germans. If self-

sorting can be attributed to preferences for specific ethnic concentrations, the previous findings obtained by simple probit estimations would be biased downwards. The results of instrumental variable estimations show that the existence of a simultaneity bias cannot be rejected. Most interestingly for West Germany, estimates are now highly significant and point out that the relationship is negative: A higher ethnic concentration is related to a lower probability of leaning towards a right-wing party. In contrast to the simple probit estimation results, employing an instrumental variable approach provides support for the interethnic contact theory.

The rest of the paper is structured as follows. Section 2.1 gives an overview of the existing empirical literature on hostile attitudes of majority group members towards minorities. In section 2.2 the political system in Germany and its extreme right-wing parties will be introduced shortly. Section 2.3 explains the two econometric models used in this paper and its identification strategies. In Section 3 I present the data sets, give information on the control variables as well as some simple descriptive statistics. Results are discussed in Section 4. Section 5 sums up the main findings and concludes.

## **2. Background Discussion**

### 2.1 Related Literature

From a methodical point of view, the existing literature on the relationship between ethnic concentration and attitudes towards foreigners can be divided into two different strands: The first group of studies uses ethnic concentration on a narrow level (e. g. perceived share of foreigners in the neighborhood or at county level) and treats it as an exogenous variable to examine the determinants of negative attitudes towards or crime against foreigners. The

results of these studies are mixed and differ by country, data sets, and outcome variable used. Basically, the empirical evidence here is that ethnic concentration increases the probability of prejudice or hostile attitudes towards foreigners (Fossett and Kiecolt 1989, Glaser 1994, Taylor 1998, Gang et al. 2002).

For Germany previous research shows mixed results ranging from a significant positive effect of ethnic concentration on hostile attitudes to no effects. Lubbers and Scheepers (2001) investigate the reasons for extreme right-wing voting in Germany using an individual-based data set and show that ethnic concentration measured at federal state level explains this particular voting behavior positively. But this effect seems to be weak since it is only in one of their multi-level models significant. Another study that seeks to answer the question of how attitudes towards foreigners are formed by Fertig and Schmidt (2011) uses the ALLBUS 2006 which is a representative survey for Germany that covers a large set of questions regarding the perceptions of immigrants by Germans. They provide evidence that only education can explain the variation of perceptions of foreigners and Jews by native Germans. Still, a higher share of foreigners increases negative perceptions toward foreigners in some of their models significantly.

A different but closely-related approach is pursued by Krueger and Pischke (1997): Instead of analyzing attitudes or perceptions towards foreigners, they go one step further and try to reveal the factors that can explain right-wing motivated crime against foreigners in Germany. Among other results, they show that the relative number of foreigners does not influence the number of ethnic crimes in West Germany, but in the East they provide evidence for a positive effect on the number of crimes per resident. In the same vein of providing evidence on the causes of right-wing extremist crime, Falk and Zweimüller

(2005) use a data set from the German Federal Criminal Police Office (Bundeskriminalamt) and show that ethnic concentration at federal state level does not explain incidents of right-wing crime.

In contrast, Gang and Rivera-Batiz (1994) use data from the 1988 Eurobarometer and show that perceived high ethnic concentration of minorities in the neighborhood is related to more hostile attitudes of Germans. Finally, Weins (2011) aims at explaining the extent of prejudices by native Germans using the share of foreigners from 15 non-EU-states at county level. Her results suggest a hump-shaped relationship between ethnic concentration and prejudice against foreigners as long as no controls for interethnic contacts are included.

One of the main caveats of the studies mentioned here is that they do not take into account that the share of foreigners or the variables measuring face-to-face contact to foreigners might be endogenous. Individuals may choose the place where to live for a variety of reasons: Proximity to family and friends, distance to their work place, or employment prospects. Besides these one can think of the possibility that individuals base their decision on the share of foreigners in the neighborhood. Especially individuals who have hostile attitudes towards foreigners may prefer to live in neighborhoods with comparably less foreigners. In this case, the share of foreigners measured on a narrow level would not be exogenous with respect to one's attitudes to foreigners. Thus, one of the main assumptions, namely that the error term is not related to the explanatory variables would be violated, which leads to inconsistent and biased estimates of the effect of ethnic concentration on attitudes.

Based on this argumentation, the second strand of literature addresses the issue of

endogeneity explicitly. To my best knowledge the first study that exploits an instrumental variable approach to reduce a bias due to self-sorting is that of Dustmann and Preston (2001). Using several waves from the 1980s of the British Social Attitudes Survey, they investigate whether or not attitudes towards foreigners are driven by the ethnic concentration of a community. The crucial assumption Dustmann and Preston make use of is that self-sorting is likely to be limited to smaller areas. Natives may decide to live in a community with a low share of foreigners because they have prejudices against foreigners, but probably they will not adjust their location choices based on attitudes on a larger spatial area (e. g. federal states). That is why they presume that instrumenting county level ethnic concentration with federal state ethnic concentration should reduce a bias that is due to self-sorting of natives. The results of their analysis suggest that self-sorting is an issue that diminishes the estimated effects of ethnic concentration on attitudes using simple probit estimation and that they can provide evidence for a positive relationship between these two variables.

In the light of these findings several studies emerged that also use an instrumental variable approach to eliminate endogeneity issues. Bell et al. (2010) examine the relationship between the share of foreigners in a county and incidents of crime for Great Britain and find that property crime and the relative number of immigrants are positively related even if they model endogeneity. Again for Great Britain, Lennox (2011) analyzes the determinants of British National Party membership. He shows that nonwhite population density is negatively associated with BNP-recruitment. Because of the robustness of this finding he suggests that interethnic contact reduces prejudice and hence negative attitudes towards foreigners. In that sense, his study contradicts Dustmann and Preston (2001). But

“one should not necessarily expect consistency across studies using responses to different questions and data from different countries” (Dustmann and Preston 2001).

However, as far as Germany is concerned, the question to what extent ethnic concentration may explain right-wing voting behavior has not yet been investigated using an instrumental variable approach. This is the contribution of the present paper.

## 2.1 Extreme Right-Wing Parties in Germany

The political system in Germany is organized as a federal parliamentary republic. The federal legislative power is vested in the Bundestag (the parliament of Germany) and the Bundesrat (the representative body of the federal states of Germany). The Bundestag is directly elected by the German people every four years; the Bundesrat every five years. For the elections of 2009 for the Bundestag, the German citizens were able to choose from a range of 31 parties<sup>1</sup>.

Based on the party's platform and its programmatic points, it is possible to locate parties on a continuum. Its two poles range from extreme left-wing to extreme right-wing political attitudes. For instance, the German Communist Party (Deutsche Kommunistische Partei “DKP”) is located on the extreme left pole and parties like the German People's Union (Deutsche Volksunion “DVU”), the National Democratic Party of Germany (Nationaldemokratische Partei Deutschlands “NPD”) and the Republican Party (“Republikaner”) are known to hold an extreme right-wing political view. Table 1 shows the results of the state elections of 2008/2009. The extreme right-wing parties reached a minimum of votes in Schleswig-Holstein and Hamburg (0.9%) and a maximum of 6.1% in Mecklenburg-West Pomerania.

In this paper, hostile attitudes towards foreigners are measured as a binary variable that takes the value of one if a respondent states to lean toward DVU, Republikaner or NPD, and zero otherwise. All of the extreme right-wing parties are known for their ethnocentric, anti-constitutional and xenophobic party platforms that promote hostile attitudes towards foreigners (Rotte and Steininger 2008). Measuring hostile attitudes of natives as leaning towards extreme right-wing parties can be located as an intermediate expression of hostility against foreigners.<sup>2</sup>

### 2.3 Econometric Modeling

First, basic probit estimations fitting a maximum likelihood function will be performed to assess the relationship between ethnic concentration at county level and leaning towards an extreme right-wing party.

Let  $y_{1i}^*$  be the dependent variable that measures if a respondent  $i$  has hostile attitudes towards foreigners. Whether or not a person is hostile towards foreigners is affected by personal characteristics like education, income and age as well as by local features and economic conditions. Hence the latent model can be written as

$$y_{1i}^* = \beta y_{2i} + \mathbf{x}'_{2i} \boldsymbol{\gamma} + u_i \quad (1)$$

where  $y_{2i}$  is share of foreigners at the county level and  $\mathbf{x}_2$  is a  $1 \times k_2$  vector of exogenous variables.  $\beta$  and  $\boldsymbol{\gamma}$  are coefficient vectors of the latent model. The latent variable  $y_{1i}^*$  is unobserved. Rather, what can be observed is if a respondent  $i$  leans toward a right-wing extremist party (namely DVU, NPD or Republikaner). Consequently, the dependent variable takes the value 1 if a person leans toward a right-wing party and 0 otherwise:

$$y_{1i} = \begin{cases} 0 & y_{1i}^* < 0 \\ 1 & y_{1i}^* \geq 0 \end{cases} \quad (2)$$

The log likelihood function for the sample is given by

$$\ln L = \sum_{i=1}^N y_{1i} \ln \Phi(\beta y_{2i} + \mathbf{x}'_{2i} \gamma) + \sum_{i=1}^N (1 - y_{1i}) \ln(1 - \Phi(\beta y_{2i} + \mathbf{x}'_{2i} \gamma)) \quad (3)$$

As discussed before, potential endogeneity problems arise because individuals who lean toward a right-wing party may prefer to reside in spatial areas with a lower share of foreigners. If locational choices are partly driven by political attitudes, the variable that measures the share of foreigners at county level  $y_{2i}$  should not be treated as exogenous.

To overcome this bias I follow an approach suggested by Dustmann and Preston (2001). Note that the direction of the bias does not depend on the dominant hypothesis that explains hostile attitudes towards foreigners, even though group threat theory predicts a positive effect of ethnic concentration on right-wing voting whereas interethnic contact theory suggests a negative coefficient. To start with the group threat theory: If political attitudes influence location choices a negative correlation between  $y_{2i}$  and  $u_i$  will be the result. The reason for this is that individuals who lean towards right-wing parties will probably choose a spatial area with a lower share of foreigners in comparison to individuals with more positive attitudes. Thus, the share of foreigners measured at the county level is not exogenous with respect to hostile attitudes towards foreigners  $y_{1i}^*$ . In that case, estimating a simple probit model would yield inconsistent and downward biased estimates. In contrast, if interethnic contact theory is the appropriate explanation for right-wing voting behavior of Germans, individuals that live in spatial areas with a low share of immigrants lack contact with people from minorities. This lacking interethnic contact creates prejudice against foreigners and a higher probability of voting for a right-wing extremist party. In

comparison to individuals who were assigned randomly to areas they probably will have a higher probability of leaning towards a right-wing party. In this case, using share of foreigners on a narrow level as exogenous variable would bias the estimates also downward in absolute terms.

Instead of estimating simple probit models, unbiased estimates can be obtained using an instrumental variable approach (Amemiya 1978, Rivers and Vuong 1988). The reduced form equation for  $y_{2i}$  is then given by

$$y_{2i} = x_{1i}\Pi_1 + x'_{2i}\Pi_2 + \varepsilon_i \quad (4)$$

where  $y_{2i}$  is the endogenous variable,  $x_2$  is a  $1 \times k_2$  vector of exogenous variables,  $x_1$  is an instrument that affects  $y_{2i}$  but can be excluded from (1).  $x_1$  is assumed not to influence  $y_{2i}$  directly.  $\Pi_1$  and  $\Pi_2$  are matrices of reduced-form parameters and  $\varepsilon_i$  an unobservable random error term. By assumption, the error terms of the two equations (1) and (4) are normally distributed with mean zero and variance  $\Sigma$ :  $(u_i, \varepsilon_i) \sim N(0; \Sigma)$ . Since  $y_{2i}$  appears in the equation for  $y_{1i}^*$ , (1), but  $y_{1i}^*$  does not appear in the equation for  $y_{2i}$ , (4), it is a recursive model. The likelihood function is derived using the joint density  $f = (y_{1i}, y_{2i} | x_i)$  as  $f = (y_{1i} | y_{2i}, x_i) f = (y_{2i} | x_i)$ . When there is an endogenous regressor, the log likelihood for observation  $i$  is

$$\ln L_i = y_{1i} \ln \Phi(m_i) + (1 - y_{1i}) \ln \{1 - \Phi(m_i)\} + \ln \phi \left( \frac{y_{2i} - x_{1i}\Pi_1 - x'_{2i}\Pi_2}{\sigma} \right) - \ln \sigma \quad (5)$$

where

$$m_i = \frac{(\beta y_{2i} + x'_{2i}\gamma) + \rho(y_{2i} - x_{1i}\Pi_1 - x'_{2i}\Pi_2)/\sigma}{(1 - \rho^2)^{1/2}} \quad (6)$$

$\Phi(\cdot)$  and  $\phi(\cdot)$  are the standard normal distribution and density functions, respectively;  $\sigma$  is the standard deviation of  $\varepsilon_i$ ;  $\rho$  is the correlation coefficient between  $u_i$  and  $\varepsilon_i$ . If self-

sorting based on political attitudes drives locational choices,  $\rho$  can be either negative or positive. The sign depends on the theory that explains right-wing voting behavior. Interethnic theory would result in a positive  $\rho$ , whereas group threat theory leads to a negative  $\rho$ .

To test the robustness of my results and to account for time lags in attitudes formation I estimate all models using lagged independent variables in a third step of my analysis. Analogous to the forgoing steps, a simple probit model treating share of foreigners at county level as exogenous will be fitted first. The model can be written as

$$y_{1i}^* = \beta y_{2it-n} + \mathbf{x}'_{2i} \gamma + u_i \quad (7)$$

where  $y_{2it-n}$  is the share of foreigners at county level of the  $n$ -th previous year. In a second step, an instrumental variable estimation is used to model endogeneity of the key variable.

The reduced form is given by

$$y_{2it-n} = x_{1it-n} \Pi_1 + \mathbf{x}'_{2i} \Pi_2 + \varepsilon_i \quad (8)$$

with the corresponding log likelihood function for observation  $i$

$$\ln L_i = y_{1i} \ln \Phi(m_i) + (1 - y_{1i}) \ln \{1 - \Phi(m_i)\} + \ln \phi \left( \frac{y_{2it-n} - x_{1it-n} \Pi_1 - \mathbf{x}'_{2i} \Pi_2}{\sigma} \right) - \ln \sigma \quad (9)$$

where

$$m_i = \frac{(\beta y_{2it-n} + \mathbf{x}'_{2i} \gamma) + \rho (y_{2it-n} - x_{1it-n} \Pi_1 - \mathbf{x}'_{2i} \Pi_2) / \sigma}{(1 - \rho^2)^{1/2}} \quad (10)$$

Again, if a simultaneity bias due to self-sorting biases the estimates of the simple probit model then  $\rho$  will be found to be either negative or positive.

### 3. Data, Variables and Descriptive Statistics

#### 3.1 The German Socio-Economic Panel

The data that I use for investigating the question to what extent ethnic concentration may explain right-wing voting behavior of German natives are drawn from the German Socio-Economic Panel (GSOEP). The GSOEP is a large representative longitudinal survey of randomly selected private households in Germany. It contains a broad range of questions which are asked every year (socio-economic indicators like education, age, income) as well as questions that appear only at intervals. Every household member above the age of 17 participates in the survey. I use data from the waves 2005 until 2009. The respondents were asked to which political party they lean. A variety of parties were suggested in the questionnaire (SPD, CDU, CSU, FDP, Bündnis '90/Grüne, Die Linke, or DVU/Republikaner/NPD)<sup>3</sup>. Additionally, respondents were given the possibility for inserting another party. Based on this question I created a binary variable that takes the value one if a respondent chooses DVU, Republikaner or NPD to be the party he is leaning the most toward, otherwise the variable is zero.

Among other information, the GSOEP provides information about the federal state, the regional policy region, and the county of the household where the respondent is living in. I use this information to merge the socio-economic information provided by the GSOEP with a second data source. This data set is provided by the Statistical Office of Rhineland-Palatinate and contains information on the quantities of the native and foreign population on the level of official district codes (Kreiskennziffer "KKZ"). To generate the key explanatory variable (share of foreigners at county level) I merge the GSOEP data set with the administrative data based on the recoded KKZ.<sup>4</sup> Due to data privacy protection of the respondents, data at county level are only accessible via remote data processing ("soepremote")<sup>5</sup>. The share of foreigners at federal state level is based on the share at

county level and thus a simple aggregation.

The purpose of this paper is to investigate political right-wing attitudes of native Germans. Hence, the sample is restricted to respondents who have a German citizenship and do not have any migration background.<sup>6</sup>

### 3.2 Descriptive Statistics

Table 2 and 3 give an overview of the socio-economic characteristics of the respondents as well as descriptive statistics for the average share of foreigners at county level. The mean value for voting DVU, Republikaner or NPD is equal to 0.01183, meaning that 1.2% of the respondents stated that they lean to an extreme right-wing party. The average share of foreigners at county level is 8.5%. The county with the highest foreign population is “Offenbach am Main” (Hesse). In Offenbach am Main the share of foreigners equals 26.05%. The county with the lowest share of foreigners is the “Erzgebirgskreis” (Saxony, 1.02% foreigners).

To get a grip on the distribution of the dependent variable and the key explanatory variable, Fig. 1 (left hand side) shows the mean of voting for an extreme right-wing party averaged at county level (400 out of 403 counties could be used for the analysis which makes up to 81.37 observations for each county on average). The distribution of right-wing voting behavior does not show a clear pattern. Though there seems to be a region of higher right-wing voting in East Germany (especially Saxony), in the north (Lübeck-Schwerin-Neubrandenburg), in the middle (Erfurt-Weimar) as well as in the west (Darmstadt-Bonn) of Germany.

If one compares the distribution of right-wing voting to the share of foreigners at

county level (right hand side of Fig. 1), it is noticeable that in regions with a lower share of foreigners individuals lean slightly more to right-wing parties on average. This is especially striking for East Germany. For West Germany a pattern can hardly be identified. Based on this graphical presentation of the dependent and the key explanatory variable, a negative relationship between share of foreigners at county level and right-wing voting behavior could be assumed.

To examine this supposition econometrically I include several control variables in my estimations. Satisfaction with income is a subjective measure of the respondent's income on a scale ranging from 1 to 10. I use this categorical variable rather than a household income variable because I assume that negative attitudes towards foreigners are mainly driven by the perceived distributional income position and less by absolute income. The average satisfaction with one's income is 6.725.

Speaking of factors that might affect attitudes because of a feeling of economic deprivation, I have added the county level unemployment rate to separate the effects of the key explanatory variable from other locational economic factors. Since immigrants tend to be highly concentrated in growing areas with good possibilities to work, not controlling for these effects might lead to an overestimation of the share of foreigners variable. In the sample, Eichstaett (Bavaria) has the lowest unemployment rate (1.9%) and Uecker-Randow (Mecklenburg-West Pomerania) the highest (29.7%).

Previous literature finds that education and ability are quite influential in explaining attitudes towards minorities (Fertig and Schmidt 2011). To control for this, I use the person's highest educational level (coded in four categories) and parental highest educational attainments (coded as a dummy that equals one if mother or father have a

university degree). In my sample, roughly 11% have a low educational attainment, 50% an intermediate, 38% can be classified as highly educated, and 1% is still at school. Furthermore, 8% of the respondents have a mother with high education, 16% a highly educated father. Both, person's education and its parental education are expected to affect right-wing voting behavior negatively (Brenner 2007, Fertig and Schmidt 2011).

I also have generated dummy variables for the occupational status of the respondent. Different types of jobs might be affected differently by a high share of foreigners. For example, the influx of immigrants coming to Germany in the late 1960s consisted mostly of low skilled workers. Most of them were employed as semi-skilled or manual workers. Hence, Germans that also work in these occupations are likely to face a higher labor market competition. If labor market competition or a fear of unemployment influences right-wing voting behavior, I expect that individuals belonging to relevant occupational categories have a higher probability of voting for a right-wing party (Mayda 2006, Ortega and Polavieja 2012). The reason is that these parties mount regularly campaigns that stress arguments related to job protection issues for natives (Rotte and Steininger 2008, Falk and Zweimüller 2005). Since especially unemployed respondents (3% of the sample) may perceive their labor market status as a result of crowding out by foreigners, I hypothesize that they also have a higher probability of voting for a right-wing party compared to the other occupational categories.

Moreover, I control for one's religion: I include a dummy variable that takes the value of one if a person is a Christian and zero if he/she is undenominational. 71% of the sample is catholic or protestant. Being Christian is expected to affect right-wing voting behavior negatively. The Church in Germany is engaged in a whole variety of activities that

aim to help people in the rest of the world (e. g. “Bread for the world” – “Brot für die Welt” is one of the biggest programs initiated by the protestant church in Germany) and is involved in several projects that take a stand against right-wing extremism (e. g. “Church against right-wings extremism” – “Kirche gegen rechts”). That is why it can be concluded that a respondent that states to be Christian (catholic or protestant) has a lower probability of voting for a right-wing party.

Two thirds of the respondents in the sample are married, 17% are single, 8% are divorced, and 8% are widowed. Marital status is also part of the control variable set on individual level since married respondents regularly share their income. Sharing income between household members is a way to lower volatility and uncertainty of income over time. Thus attitudes of married respondents may not be influenced by economic threats as much as singles are. That is why married individuals are expected to report less hostile attitudes.

Among these variables, I include gender and the respondent’s age in the set of control variables. Age is included as a continuous variable as well as its squared term divided by 100. Age is suspected to influence one’s attitudes because “it maps the position of the individual in the economic cycle” especially with respect to employment (Dustmann and Preston 2001). That is why a humped-shaped relationship between age and voting for an extreme right-wing party can be expected. Besides this, being part of the German history during the years 1933 to 1945 is captured by this variable as well.

Table 4 shows the dummies used to control for different types of urbanization. The reasons for controlling for urbanization are twofold: First, in urban agglomerations many individuals live on a comparably small area. Being constantly exposed with many different

ways of everyday living, requires more tolerance towards different cultures compared to people living in sparsely populated areas (Fossett and Kiecolt 1989, Dustmann and Preston 2001). Second, at the same time, the share of foreigners is typically higher in urban areas. This point involves two contrary predictions. Regarding the interethnic contact theory, a higher share of foreigners affects the probability of interethnic contact positively and thus could help to overcome prejudice and negative attitudes. Instead, if the group threat theory were true in explaining attitudes towards foreigners, one would expect that a higher share of foreigners generates a feeling of exclusion and more negative attitudes towards foreigners. Hence, the effect of urbanization on right-wing voting behavior is not clearly predictable. To control for effects of urbanization on the dependent variable I include a set of 17 categories (table 4).

Specifications that use both East and West Germany include a dummy variable for East Germany. It is reasonable to control for East German location since respondents in East and West Germany made dramatically different historical experiences from 1945 to 1990 and are still found to have quite different cultural attitudes (Alesina and Fuchs-Schündeln 2007). All estimations use year dummies to capture changes in attitudes over time.

#### **4. Results**

This section presents the estimates of the simple probit model, the instrumental variable estimations, as well as estimations with a lagged independent variable. All models include a set of basic individual controls, the type of settlement, and year dummies.

#### 4.1 Basic Estimates

The first step of my analysis is the estimation of simple probit models. I am interested in the effect of ethnic concentration on individual attitudes towards foreigners. The dependent variable is measured as a binary variable that equals one if a person states to lean toward an extreme right-wing party (DVU, NPD or Republikaner) and zero otherwise. Ethnic concentration is the share of foreigners at county level. Table 5 reports the coefficients for a full sample of observations. The number of covariates is ascending from column (1) to (4). Respondents who are more satisfied with their income given the set of control variables are less likely to lean toward a right-wing extremist party. In all specifications, women report a lower probability of voting for a right-wing party. As expected, the relationship between age and right-wing attitudes is hump-shaped. Hence, the variables on age can be interpreted as capturing the life cycle of a person with special reference to employment prospects. In that sense, younger respondents show a lower probability of leaning towards right-wing parties. At a certain point in life this probability reaches a maximum but it declines as the person gets older. The marital status turns out to be insignificant in all specifications.

Another very typical hypothesis which has been investigated in the previous literature also holds true for this analysis: Column (2) shows that respondents with a low or intermediate educational attainment are significantly more likely to lean toward right-wing parties compared to respondents with a university degree.

Moreover, the results show that being unemployed is associated with a significant positive probability of voting for the right-wing compared to the majority of the variables reflecting labor market status. Only manual workers, farmers and officers do not differ significantly from unemployed persons (column (3)).

In column (4) variables capturing the religious view of a respondent as well as the education level of the respondent's parents are included. Christians appear to have little prejudice against foreigners which seems to support the above reasoning that the German churches engage effectively against right-wing extremism. The dummy variables on father's and mother's education show evidence that has been reported in other studies before (e. g. Siedler 2006): High parental education lowers the probability of leaning toward a right-wing party.

Besides these individual controls, two variables are included that describe locational features: First, the unemployment rate at county level is included in all regressions and turns out to be insignificant which is in line with the study of Krueger and Pischke (1997). Second, a dummy variable indicating observations from East Germany is highly significant and shows that even when controlling for an extensive set of variables, individuals residing in East Germany have a higher probability of leaning towards right-wing extremist parties. Together with findings from the existing empirical literature, these results obviously suggest separately estimated regression models for West and East Germany (table 6, subsamples (A) and (C)). Moreover, I created two more subsamples: The first excludes the city-states of West Germany (B) and the second excludes the city-state Berlin (D) of the East Germany subsample. Compared to the other 13 federal states, city-states cover only a comparably small, high populated agglomeration area and are excluded in order to create more homogenous subsamples. Estimation results for the four subsamples are reported in table 6. Not very surprising, using subsamples yields qualitatively very similar results for the covariates that determine right-wing voting behavior.

As already pointed out, the focus of this paper is the effect of ethnic concentration

on right-wing voting. Ethnic concentration is measured as the share of foreigners at county level. In the probit estimations, presented as a first step, it is treated as an exogenous regressor. The coefficient of the variable is significant and positive for the full sample of observations (table 5). A higher concentration of foreigners at county level slightly increases the probability of right-wing voting behavior. Including different sets of control variables does not change the effect of share of foreigners at the county level. Thus, related to the simple probit estimates it can be concluded that a positive effect of ethnic concentration on right-wing voting is pointing to support for the group threat theory, even though the significance of the coefficient is only at the 5-10% level.

The coefficients for the West and East German subsamples (A), (B) and (C) appear to be positive but are not significant anymore, except for East Germany excluding Berlin (table 6, subsample (D)). Interestingly, the sign of the coefficient for the share of foreigners at county level is reversed and highly significant. Its high magnitude is due to the fact that the share of foreigners in this subsample is very low (on average 0.024). The effects can be interpreted as support for the interethnic contact theory: A higher share of foreigners at county level is associated with a lower probability of leaning towards a right-wing party.

#### 4.2 Instrumental Variable Estimations

In a second step, an instrumental variable approach suggested by Dustmann and Preston (2001) is used to explicitly take into account that the share of foreigners measured at county level may be endogenous due to self-sorting.

To instrument the variable that measures ethnic concentration on a narrow level, I aggregated the share of foreigners at federal state level. Since individuals may exercise

their location choices on a smaller spatial area, it is assumed that self-sorting based on attitudes towards foreigners at federal state level seems unlikely. From a theoretical point of view, I expect that the correlation with the endogenous variable and the share of foreigners at federal state level should be substantial. In order to provide evidence on the plausibility of the instrument, table 7 reports the F statistic and the first-stage estimates of the excluded instrument. As suggested by Bound et al. (1995) an F statistic of 10 is the thumb-rule for a sufficient strong correlation with the endogenous explanatory variable. For both of the East German subsamples (C) and (D) as well as the West German subsample including city states (A), the F statistic is far below the threshold.<sup>7</sup> For this reason, instrumental variable estimates are only reported for the full sample and the West German subsample excluding city-states (B). Table 7 shows the result for the first-stage estimations in the first section: The instrument is highly correlated with the endogenous explanatory variable with an F statistic of roughly 10.

The next section of table 7 reports the results of the instrumental variable estimations. In contrast to an expected increase of precision of the estimates, the standard errors for the instrumental variable estimation become quite large for the full sample (column (1)). The effect of the share of foreigners on leaning towards a right-wing party is clearly insignificant. The correlation between the error terms on locational choice and leaning toward a right-wing party is also not significant. Thus, it can be concluded that self-sorting based on preferences for a specific ethnic concentration may not occur – at least for the full sample of observations.

However, as mentioned before, it seems reasonable to estimate regressions separately for the German regions. Table 7 (column (2)) shows the first-stage estimate for

West Germany excluding the city-states (subsample (B)). The F statistic indicates that the correlation between the instrument and the endogenous regressor is reasonably high. The instrumental variable estimation performed in the next step reveals a significantly negative relationship between the share of foreigners and right-wing voting behavior. The correlation between the error term on locational choice and right-wing voting is positive and significant which points to the fact that the simple probit estimates involve a simultaneity bias. The effect is robust with reference to the assumed distribution since two-stage-least-squares yield similar results. The estimation results suggest that interethnic contact is the source for right-wing voting behavior in West Germany. Hence, this result based on an instrumental variable approach is in contrast to studies that find a positive effect of ethnic concentration on hostile attitudes towards foreigners.

#### 4.3 Lagged Independent Variable Estimates

When considering perceptions and attitudes of individuals that partly are a reaction of their environment it makes sense to assume that the change of an environmental factor and the adjustment of attitudes take some time. As a possible reason, one can think of the media, the political debate, and other sources for perception forming, which usually pick up new topics with a time lag.

To overcome these time lags, I estimate all models using time-lagged independent variables. Results are reported in table 8 which is setup similarly to the previous table though in a more space saving form. As expected, the results are qualitatively very similar. For the full sample of observations (column (1)) ethnic concentration is positively related to right-wing voting at 10 percent significance level and thus provides weak evidence for the

group threat theory. But as one instruments the share of foreigners at county level with the share at federal state level, the effect disappears. This holds for all time lags considered.

Again, estimates for the West German subsample (B) are estimated and reported in the second column of table 8. The results for the simple probit estimates as well as for the instrumental variable estimations do not change concerning sign and significance of the coefficient: In all instrumental variable estimations, the share of foreigners is strongly negatively related to right-wing voting behavior. From this, it can be concluded that the effects found here are robust with regard to time lags in perception forming and provide evidence for the interethnic contact theory.

## **5. Summary and Conclusions**

In this paper, I investigate to what extent ethnic concentration influences hostile attitudes of German natives. Two theories can be applied to this question: On the one hand, group threat theory hypothesizes that a higher share of foreigners leads to a higher level of hostile attitudes. On the other hand, if interethnic theory predicts the relationship between ethnic concentration and hostile attitudes correctly, I expect that with an increasing share of foreigners the frequency of interethnic contacts will be higher and helps to overcome prejudice.

To address this question, I use data from the German Socio-Economic Panel (GSOEP). This is a large, representative survey for Germany that contains also a question about the political attitudes of the respondents. Precisely, I generated a binary variable that takes the value of one if a respondent states to lean toward a right-wing extremist party (DVU, NPD or Republikaner) and zero otherwise. The GSOEP consists also of information

on the locality the respondent lives in. Based on this regional information, I merge the data of the GSOEP with administrative data. The latter data set enables to measure the ethnic concentration for each county in Germany.

The empirical analysis is threefold: First, I estimate simple probit models to examine the relationship between ethnic concentration measured at county level and right-wing voting behavior. I find that ethnic concentration and right-wing voting behavior are positively associated. Though, the evidence is only weak. This finding provides some support for the group threat theory and is in line with parts of the empirical literature for Germany (Gang and Rivera-Batiz 1994, Lubbers and Scheepers 2001, Fertig and Schmidt 2011). Moreover, I estimate separate models for East and West Germany. For West Germany, the results turn out to be insignificant. In contrast, for East Germany the results show a negative and highly significant coefficient. This can be interpreted as supporting the interethnic theory. However, results based on simple probit models should be viewed with caution. The reason is that locational choices and political attitudes are likely to be interdependent. Thus, simple probit estimations may suffer from a simultaneity bias.

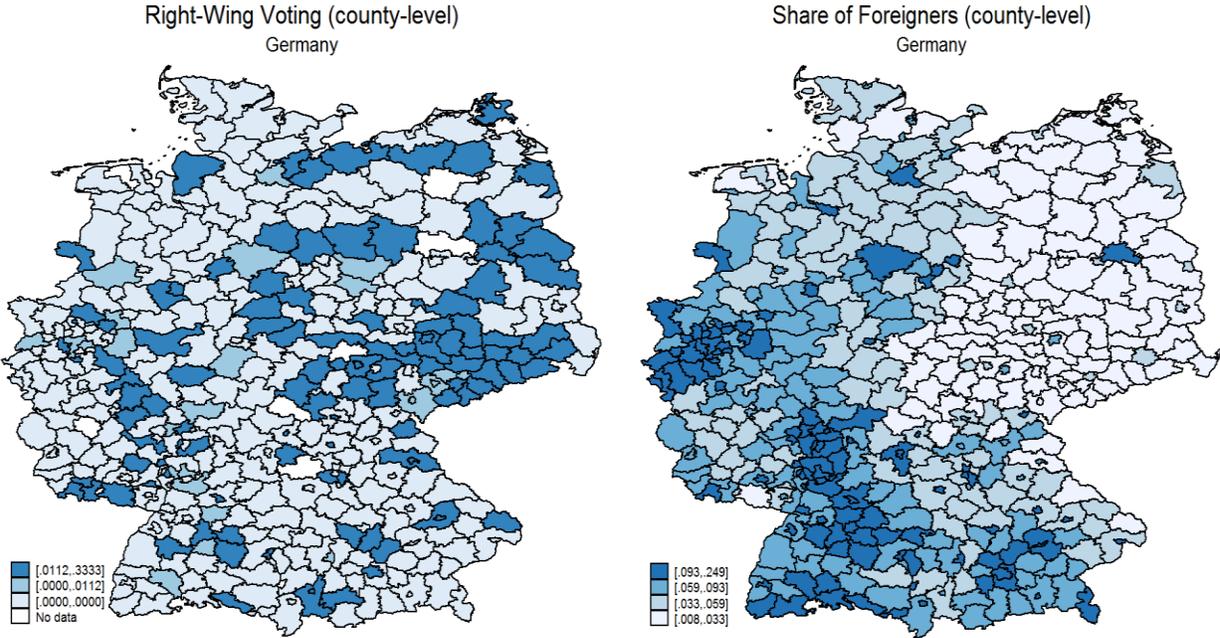
To overcome this bias, I follow an approach suggested by Dustmann and Preston (2001) and instrument the ethnic concentration at county level with an aggregated measure. The spatial level used to instrument ethnic concentration at county level is the ethnic concentration at federal state level. Using an instrumental variable procedure, I find that, for the full sample of observations, the positive effect of ethnic concentration on right-wing voting behavior disappears. For the West German subsample, I show that self-sorting based on political attitudes is important and that taking into account this endogeneity leads to a highly significant effect. The effect of ethnic concentration on foreigners is negative for this

subsample and thus provides evidence for the interethnic contact theory. For the East German subsample it was not possible to carry out instrumental variable estimations because of a weak correlation of the endogenous variable with the instrument.

In a third step of the analysis, I estimate all forgoing models using lags of ethnic concentrations because I assume that perception forming is deferred with respect to the change in environmental factors. The results found are qualitatively similar compared to those without lags.

In summary, my results show that endogeneity issues should be taken seriously when examining the relationship between ethnic concentration and right-wing voting behavior. With respect to the interethnic contact theory, for West Germany the results may suggest that policies which aim at reducing segregation and increasing interethnic contact should be undertaken. For East Germany, it would very interesting for future research to further exploit the sources of hostile attitudes toward foreigners.

**Figure 1: Share of Foreigners at County Level and Right-Wing Voting Behavior**



Source: GSOEP (waves 2005-2009) and data provided by the Statistical Office of Rhineland-Palatinate, own calculations.

**Table 1: Results of State Elections for Extreme Right-Wing Parties**

<b>Federal state</b>	<b>Total percent of voting for right-wing parties</b>	<b>Federal state</b>	<b>Total percent of voting for right-wing parties</b>
Baden-Wuerttemberg	2.1%	Lower Saxony	1.5%
Bavaria	2.6%	North Rhine-Westphalia	1.0%
Berlin	2.1%	Rhineland-Palatinate	1.9%
Brandenburg	2.8%	Saarland	1.2%
Bremen	1.6%	Saxony	5.8%
Hamburg	0.9%	Saxony-Anhalt	4.6%
Hesse	1.5%	Schleswig-Holstein	0.9%
Mecklenburg-West Pomerania	6.1%	Thuringia	4.7%

Note: Total percent of voting for right-wing parties is the sum of votes for NPD, DVU and Republikaner, respectively.  
Source: Ministry of the Interior of the federal states.

**Table 2: Variable Description**

<b>Variable</b>	<b>Description</b>
Right-wing voting	Dummy = 1 if respondent leans toward DVU, NPD or Republikaner.
Share of foreigners at county level	Share of foreigners in a county in year t.
Share of foreigners at county level <sub>t-n</sub>	Share of foreigners in a county with lag n.
Share of foreigners at federal state level	Share of foreigners in a federal state in year t.
Share of foreigners at federal state level <sub>t-n</sub>	Share of foreigners in a federal state with lag n.
Unemployment rate at county level	Unemployment rate at county level in percent
Satisfaction with income	Satisfaction with household income coded from 0 lowest to 10 highest.
Female	Dummy = 1 if respondent is a woman.
Age	Age in years of respondent.
Age <sup>2</sup> /100	Age in years of respondent squared and divided by 100.
Married	Dummy = 1 if respondent is married.
Divorced	Dummy = 1 if respondent is divorced.
Single	Dummy = 1 if respondent is single.
Widowed (reference category)	Dummy = 1 if respondent is widowed.
Low education	Dummy = 1 if respondent's highest educational attainment is secondary education first stage.
Intermediate education	Dummy = 1 if respondent's highest educational attainment is secondary education second stage or a completed apprenticeship training.
High education (reference category)	Dummy = 1 if respondent's highest educational attainment is first or second stage of tertiary education.
Still at school	Dummy = 1 if respondent is still at school.
Not working	Dummy = 1 if respondent is not working.
In formal education	Dummy = 1 if respondent is in formal education/training.
Unemployed (reference category)	Dummy = 1 if respondent is unemployed.
Retired	Dummy = 1 if respondent is retired.
Civilian servant	Dummy = 1 if respondent is a civilian servant.
In training	Dummy = 1 if respondent is a trainee/intern.
Manual worker	Dummy = 1 if respondent is a manual worker.
Farmer	Dummy = 1 if respondent is a self-employed farmer.
Freelancer	Dummy = 1 if respondent is a free-lance professional.
Self-employed	Dummy = 1 if respondent is a self-employed person.
White collar worker	Dummy = 1 if respondent is a white collar worker.
Officer	Dummy = 1 if respondent is an officer.
Christian	Dummy = 1 if respondent is protestant or catholic.
Undenominational or other religion (reference category)	Dummy = 1 if respondent is undenominational or has other religion.
East Germany	Dummy = 1 if respondent resides in East Germany.
Mother high education	Dummy = 1 if respondent's mother achieved first or second stage of tertiary education.
Father high education	Dummy = 1 if respondent's father achieved first or second stage of tertiary education.
Year dummies	Dummy variables for the years 2005 to 2009.

Source: GSOEP (waves 2005-2009) and data provided by the Statistical Office of Rhineland-Palatinate.

**Table 3: Summary Statistics – Full Sample (N=32,549)**

Variable	Mean	Minimum	Maximum	Std.-Dev.
Right-wing voting	0.01183	0	1	0.10811
Share of foreigners at county level	0.08551	0.01022	0.26045	0.05334
Share of foreigners at county level <sub>t-1</sub>	0.08593	0.01029	0.26196	0.05365
Share of foreigners at county level <sub>t-2</sub>	0.08635	0.01075	0.26283	0.05392
Share of foreigners at county level <sub>t-3</sub>	0.08669	0.01071	0.26283	0.05423
Share of foreigners at county level <sub>t-4</sub>	0.08694	0.01031	0.26283	0.05454
Share of foreigners at federal state level	0.08425	0.01790	0.14314	0.03583
Share of foreigners at federal state level <sub>t-1</sub>	0.08456	0.01798	0.14314	0.03596
Share of foreigners at federal state level <sub>t-2</sub>	0.08489	0.01889	0.14565	0.03607
Share of foreigners at federal state level <sub>t-3</sub>	0.08513	0.01889	0.14757	0.03626
Share of foreigners at federal state level <sub>t-4</sub>	0.08532	0.01810	0.15125	0.03658
Unemployment rate at county level	11.02	1.9	29.7	4.915
Satisfaction with income	6.725	0	10	2.190
Female	0.483	0	1	0.500
Age	53.771	17	99	16.659
Age <sup>2</sup> /100	31.689	2.89	98.01	17.772
Married	0.666	0	1	0.472
Divorced	0.082	0	1	0.274
Single	0.173	0	1	0.378
Widow	0.079	0	1	0.270
Low education	0.109	0	1	0.312
Intermediate education	0.499	0	1	0.500
High education	0.382	0	1	0.486
Still at school	0.010	0	1	0.098
Not working	0.057	0	1	0.232
In formal education	0.030	0	1	0.172
Unemployed	0.031	0	1	0.173
Retired	0.336	0	1	0.472
Civilian servant	0.002	0	1	0.046
In training	0.011	0	1	0.104
Manual worker	0.086	0	1	0.280
Farmer	0.003	0	1	0.056
Freelancer	0.031	0	1	0.172
Self-employed	0.047	0	1	0.211
White collar worker	0.300	0	1	0.458
Officer	0.066	0	1	0.249
East Germany	0.238	0	1	0.426
Christian	0.711	0	1	0.454
Udenominational or other religion	0.289	0	1	0.449
Mother high education	0.080	0	1	0.272
Father high education	0.163	0	1	0.369
Year 2005	0.189	0	1	0.392
Year 2006	0.228	0	1	0.420
Year 2007	0.211	0	1	0.408
Year 2008	0.194	0	1	0.396
Year 2009	0.177	0	1	0.382

Source: GSOEP (waves 2005-2009) and data provided by the Statistical Office of Rhineland-Palatinate.

**Table 4: Urbanization – Type of Settlement**

<b>Categories for type of settlement</b>
Agglomeration – high density counties, large and medium-sized regional centers
Agglomeration – high density counties, other communities
Agglomeration – high density counties, cities with more than 500.000 inhabitants
Agglomeration – high density counties, cities with less than 500.000 inhabitants
Agglomeration – concentrated counties, large and medium-sized regional centers
Agglomeration – concentrated counties, other communities
Agglomeration – rural counties, large and medium-sized regional centers
Agglomeration – rural counties, other communities
Urbanized areas – city centers
Urbanized areas – concentrated counties, large and medium-sized regional centers
Urbanized areas – concentrated counties, other communities
Urbanized areas – rural counties, large and medium-sized regional centers
Urbanized areas – rural counties, other communities
Rural areas – rural counties, large and medium-sized regional centers
Rural areas – rural counties, other communities
Rural areas – low density counties, large and medium-sized regional centers
Rural areas – low density counties, other communities

Source: GSOEP (waves 2005-2009) and information provided by the Federal Office of Building and Regional Planning, own calculations.

**Table 5: Probit Estimates – Full Sample (all Covariates)**

	(1)	(2)	(3)	(4)
Share of foreigners at county level	2.246* (1.355)	2.483* (1.388)	2.797** (1.419)	2.732* (1.454)
Satisfaction income	-0.147*** (0.018)	-0.137*** (0.019)	-0.126*** (0.020)	-0.126*** (0.020)
Female	-0.448*** (0.067)	-0.498*** (0.067)	-0.399*** (0.073)	-0.390*** (0.075)
Age	-0.053*** (0.018)	-0.038* (0.021)	-0.063*** (0.020)	-0.074*** (0.020)
Age <sup>2</sup> /100	0.028 (0.018)	0.013 (0.021)	0.038** (0.019)	0.047** (0.018)
Married	-0.128 (0.163)	-0.066 (0.164)	-0.036 (0.161)	-0.030 (0.161)
Divorced	-0.021 (0.170)	0.002 (0.171)	0.030 (0.171)	0.0121 (0.170)
Single	-0.272 (0.219)	-0.246 (0.222)	-0.203 (0.219)	-0.192 (0.220)
Unemployment rate	-0.005 (0.014)	-0.010 (0.014)	-0.011 (0.013)	-0.014 (0.014)
Low education	---	0.885*** (0.128)	0.744*** (0.136)	0.680*** (0.139)
Intermediate education	---	0.720*** (0.108)	0.592*** (0.117)	0.553*** (0.119)
Still at school	---	0.251 (0.242)	0.578** (0.249)	0.644** (0.263)
Not working	---	---	-0.406** (0.163)	-0.369** (0.167)
In formal education	---	---	-1.042*** (0.165)	-0.982*** (0.175)
Retired	---	---	-0.276* (0.156)	-0.265* (0.159)
Civilian Servant	---	---	-0.662* (0.354)	-0.59 (0.361)
In training	---	---	-0.289** (0.143)	-0.259* (0.146)
Manual Worker	---	---	0.143 (0.113)	0.138 (0.114)
Farmer	---	---	0.103 (0.339)	0.228 (0.359)
Freelancer	---	---	-0.778*** (0.279)	-0.705*** (0.307)
Self-employed	---	---	-0.401** (0.172)	-0.375** (0.177)
White collar worker	---	---	-0.399*** (0.128)	-0.385*** (0.131)
Officer	---	---	-0.358 (0.260)	-0.354 (0.266)
Father high education	---	---	---	-0.250* (0.134)
Mother high education	---	---	---	-0.600*** (0.170)
Christian	---	---	---	-0.302*** (0.112)
East Germany	0.521*** (0.143)	0.606*** (0.144)	0.611*** (0.144)	0.489*** (0.156)
Constant	0.503 (0.600)	-0.484 (0.652)	0.288 (0.612)	0.877 (0.643)
Observations	32,549	32,549	32,549	32,549

Note: All regressions include controls for type of settlement (17 categories) and years (2005-2009). Reference category of qualitative variables: widowed, high education, unemployed, father has intermediate/low education, mother has intermediate/low education, undenominational/other religion. The table shows the estimated coefficients. Huber-White standard errors clustered at county level are in parentheses. \*\*\* Statistically significant at the 1% level; \*\* at the 5% level; \* at the 10% level. Source: GSOEP (waves 2005-2009) and data provided by the Statistical Office of Rhineland-Palatinate, own calculations.

**Table 6: Probit Estimates – By Subsamples (all Covariates)**

	(1) West Germany incl. city-states (A)	(2) West Germany excl. city-states (B)	(3) East Germany incl. Berlin (C)	(4) East Germany excl. Berlin (D)
Share of foreigners at county level	2.603 (1.942)	1.793 (2.004)	3.212 (2.260)	-24.89*** (8.986)
Satisfaction income	-0.135*** -0.029	-0.137*** -0.029	-0.129*** -0.028	-0.156*** -0.022
Female	-0.255*** (0.096)	-0.264*** (0.097)	-0.629*** (0.141)	-0.798*** (0.126)
Age	-0.094*** (0.020)	-0.097*** (0.021)	-0.030 (0.040)	-0.060 (0.042)
Age <sup>2</sup> /100	0.070*** (0.018)	0.073*** (0.018)	-0.002 (0.042)	0.026 (0.044)
Married	0.083 (0.233)	0.093 (0.235)	-0.170 (0.249)	-0.012 (0.352)
Divorced	0.235 (0.176)	0.237 (0.178)	-0.342 (0.376)	-0.013 (0.429)
Single	0.079 (0.280)	0.087 (0.282)	-0.515 (0.319)	-0.391 (0.427)
Unemployment rate	-0.010 (0.020)	-0.010 (0.020)	-0.004 (0.024)	-0.007 (0.025)
Low education	0.626*** (0.188)	0.638*** (0.189)	0.857*** (0.204)	0.862*** (0.253)
Intermediate education	0.467*** (0.162)	0.471*** (0.164)	0.805*** (0.175)	0.853*** (0.217)
Still at school	0.278 (0.343)	0.136 (0.384)	1.571*** (0.448)	2.069*** (0.554)
Not working	-0.312 (0.211)	-0.308 (0.214)	-0.476 (0.312)	-0.295 (0.318)
In formal education	-0.799*** (0.231)	-0.820*** (0.244)	-1.070*** (0.263)	-1.412*** (0.375)
Retired	-0.220 (0.221)	-0.212 (0.230)	-0.181 (0.252)	-0.044 (0.320)
Civilian Servant	-0.256 (0.389)	-0.186 (0.391)	---	---
In training	-0.081 (0.197)	-0.108 (0.198)	-0.250 (0.214)	-0.237 (0.255)
Manual worker	0.229 (0.157)	0.232 (0.159)	0.133 (0.162)	0.294* (0.175)
Farmer	0.412 (0.398)	0.425 (0.402)	---	---
Freelancer	---	---	-0.415 (0.277)	---
Self-employed	-0.397 (0.283)	-0.395 (0.283)	-0.294 (0.234)	-0.364 (0.319)
White collar worker	-0.402** (0.176)	-0.397** (0.178)	-0.243 (0.177)	-0.078 (0.191)
Officer	-0.866** (0.372)	-0.880** (0.373)	0.240 (0.370)	0.581* (0.334)
Christian	-0.496*** (0.139)	-0.516*** (0.139)	-0.158 (0.123)	-0.214 (0.151)
Father high education	-0.282 (0.200)	-0.280 (0.202)	-0.324** (0.148)	-0.290 (0.180)
Mother high education	-0.645*** (0.250)	-0.652** (0.253)	-0.623** (0.232)	-0.659** (0.314)
Constant	0.730 (0.779)	0.858 (0.792)	0.374 (1.118)	1.442 (1.226)
Observations	24,815	23,877	7,734	6,489

Note: All regressions include controls for type of settlement (17 categories) and years (2005-2009). Reference category of qualitative variables: widowed, high education, unemployed, father has intermediate/low education, mother has intermediate/low education, undenominational/other religion. The table shows the estimated coefficients. Huber-White standard errors clustered at county level are in parentheses. \*\*\* Statistically significant at the 1% level; \*\* at the 5% level; \* at the 10% level. Source: GSOEP (waves 2005-2009) and data provided by the Statistical Office of Rhineland-Palatinate, own calculations.

**Table 7: First-stage and Instrumental Variable Estimates**

	(1) Full Sample	(2) West Germany excl. city-states (B)
<b>First-Stage</b>		
Share of foreigners at federal state level	0.387*** (0.124)	0.447*** (0.107)
F Statistic (excluded instrument)	9.81	17.37
<b>IV Probit</b>		
Share of foreigners at county level <sub>IV</sub>	-1.178 (4.972)	-17.13*** (5.972)
Log pseudolikelihood	71657.02	53152.56
rho	0.112 (0.137)	0.502** (0.149)
Education	Yes	Yes
Occupational Position	Yes	Yes
Christian	Yes	Yes
Parental education	Yes	Yes
Observations	32,549	23,877

Note: All regressions include a full set of controls, controls for type of settlement (17 categories), and years (2005-2009). See table 6 column (4) for a full list of covariates. The table shows the estimated coefficients. Huber-White standard errors clustered at county level are in parentheses. \*\*\* Statistically significant at the 1% level; \*\* at the 5% level; \* at the 10% level. Source: GSOEP (waves 2005-2009) and data provided by the Statistical Office of Rhineland-Palatinate, own calculations.

**Table 8: Lagged Independent Variable Estimates**

	(1) Full Sample	(2) West Germany excl. city-states (B)
<b>Probit t-1</b>		
Share of foreigners at county level <sub>t-1</sub>	2.747* (1.430)	1.873 (1.967)
Log pseudolikelihood	-1480.87	-793.26
<b>First-Stage t-1</b>		
Share of foreigners at federal state level <sub>t-1</sub>	0.379*** (0.126)	0.439*** (0.107)
F Statistic (excluded instrument)	9.12	16.77
<b>IV Probit t-1</b>		
Share of foreigners at county level <sub>t-1IV</sub>	-1.397 (5.128)	-17.25*** (6.014)
Log pseudolikelihood	71459.35	53047.06
rho	0.118 0.141	0.508** 0.149
<b>Probit t-2</b>		
Share of foreigners at county level <sub>t-2</sub>	2.716* (1.420)	1.866 (1.929)
Log pseudolikelihood	-1480.94	-793.27
<b>First-Stage t-2</b>		
Share of foreigners at federal state level <sub>t-2</sub>	0.369*** (0.128)	0.435*** (0.107)
F Statistic (excluded instrument)	8.35	16.45
<b>IV Probit t-2</b>		
Share of foreigners at county level <sub>t-2IV</sub>	-1.669 (5.363)	-17.43*** (5.997)
Log pseudolikelihood	71225.70	52923.768
rho	0.125 0.026	0.515** 0.150
<b>Probit t-3</b>		
Share of foreigners at county level <sub>t-3</sub>	2.672* (1.403)	1.836 (1.878)
Log pseudolikelihood	-1481.04	-793.29
<b>First-Stage t-3</b>		
Share of foreigners at federal state level <sub>t-3</sub>	0.365*** (0.129)	0.435*** (0.107)
F Statistic (excluded instrument)	7.87	16.61
<b>IV Probit t-3</b>		
Share of foreigners at county level <sub>t-3IV</sub>	-1.931 (5.537)	-17.43*** (5.935)
Log pseudolikelihood	70951.16	52778.67
rho	0.132 0.152	0.518** 0.149
Observations	32,549	23,877

Note: All regressions include a full set of controls, controls for type of settlement (17 categories) and years (2005-2009) See table 6 column (4) for a full list of covariates. The table shows the estimated coefficients. Huber-White standard errors clustered at county level are in parentheses. \*\*\* Statistically significant at the 1% level; \*\* at the 5% level; \* at the 10% level. Source: GSOEP (waves 2005-2009) and data provided by the Statistical Office of Rhineland-Palatinate, own calculations.

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## Endnotes

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<sup>1</sup> The list of parties that are nominated for the 2009 Bundestag election is published by the Federal Returning Officer of Germany.

<sup>2</sup> For example, Dustmann and Preston (2001) use prejudice against minorities and attitudes to certain issues (interethnic marriage, ethnic minority superiors at work, race discrimination legislation) as dependent variables, whereas Krueger and Pischke (1997) use right-wing motivated crime. Using the tendency to vote for an extreme right-wing party like this paper does, can be classified in between subtle measures and violent outbreaks of hostility. However, results based on a specific measure of hostility may not be applied to other measures of hostility (Dustmann et al. 2010).

<sup>3</sup> For an overview of the political parties with special reference to right-wing extremism in Germany, see Rotte and Steininger (2008) or Backer (2000).

<sup>4</sup> In the period from 2005 to 2009 several county property reforms were implemented across Germany enlarging the area of political counties. One of the main purposes of these reforms was to extend the territorial catchment area for institutions in order to increase efficiency.

<sup>5</sup> I am thankful to the staff of the DIW for their support in carrying out this analysis via “soepremote”.

<sup>6</sup> The GSOEP covers also a large sample of resettlers, sometimes referred to as “ethnic Germans”. They are German citizens whose families lived on former German territories before 1936 and came to Germany after World War II. Since this group of respondents experienced a different history, it was necessary to exclude them from the sample used for this analysis.

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<sup>7</sup> The reason for a low F statistic is probably a very uneven distribution of foreigners. This leads to a low correlation between the share of foreigners at county level and the share of foreigners at federal state level.