Who fears the refugee?

The determinants of German citizens' opinions on the existence of an immigration-crime link.

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Abstract

This article examines what determines the strength with which German citizens agree (or disagree) with the statement that immigration of refugees to Germany increases crime rates. This statement is conceived of as a negative stereotype citizens may hold about immigration, as the empirical support for the suggested causal relationship between immigration and increasing crime rates is weak. Blumer's contact and Allport's threat hypothesis are discussed as central theoretical frameworks that seek to explain how individuals may come to hold negative stereotypes against the members of an out-group. Empirical results of an ordered logit regression model fitted on a representative survey of German citizens conducted in May 2015 are strongly supportive of both the contact and the threat hypotheses. Individuals, who reported to be engaged with refugees in civic activities (i.e., in direct contact with them), are consistently more (less) likely to disagree (to agree) with the suggested immigration-crime link. Citizens, who are more strongly concerned about the potential negative economic and societal consequences of immigration, are also more likely to associate immigration with increasing crime rates. Believing that immigration enriches Germany culturally, in contrast, is negatively associated with the strength of agreement to the suggested immigration-crime link. Contextual factors, specifically variation in state level GDP per capita and unemployment rates, are found not to affect the strength of these effects.

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1 Introduction

Increasing rates of immigration to European countries over the last decade have increased public awareness of immigration as a political topic. Citizens are daily exposed to the topic in the media and political debates, as well as they may have experiences from direct interpersonal relations to refugees, asylum seekers and other immigrants to their countries. Debates about the potential positive or negative consequences of immigration with regards to the respective national economies, societies and cultures are a correlate of the raised attention this group of individuals receives. This debate tends to be highly politicized, and instances in which the arguments about the potential consequences of immigration that are put forward lack empirical support or are plagued by spurious rigor are abundant.

One particular reference point in these debates is the concern that further immigration will eventually increase crime rates. Drawing on a representative survey of German citizens conducted in May 2015, this article examines what determines why, and to what extent German citizens agree or disagree with the statement that immigration of refugees to Germany increases crime rates in Germany.

I argue that this statement can be interpreted as a negative stereotype citizens may hold about immigration, demonstrating in Section 2 that the the empirical support of a causal relationship between immigration and increasing crime rates is weak both across countries as well as regions or other subnational units of analysis. Due to the lack of empirical support, the question how individuals form such negative stereotypes is discussed in Section 3, drawing on Blumer's (1958) contact and Allport's (1979) threat theories as well as the existing empirical evidence that evaluates and extends them. I derive three hypothesis from these theoretical frameworks. After discussing data and measurement of the central concepts and control variables in Section 4, Section 5 reports the empirical results of an ordered logit regression model fitted on individuals strength of (dis)agreement with the statement that suggested the existence of an immigration-crime link. Section 6 concludes.

2 Review of the evidence on a relationship between immigration and crime

Does immigration cause crime rates to increase, as the public sentiment suggests? Though the academic debate on a putative relationship between immigration and crime is old (see, e.g., Abbott 1915; Hagan and Palloni 1999), this question has only recently received increased attention by social scientists (cf. Chandler and Tsai, 2001), particularly due to the identification problem of determining exogenous sources of variation in immigration rates that allow to isolate the effect of immigration on crime rates, independently from other factors that cause change in crime rates (cf. Buonanno et al., 2011). Here, I provide a brief overview of the findings different researchers have reported in recent years.

2.1 Evidence on whether immigration causes crime rates to rise

In case of the U.S., Butcher and Piehl (1998) find neither for the cross section, nor for the time-series of crime records of metropolitan areas an effect of immigration on local crime rates. Likewise, Reid et al. (2005) report that they find no support for the immigration-raises-crime hypothesis when assessing immigration to urban areas in 2000. Hagan and Palloni (1999) stress that many arguments that suggest a relationship between the surge of crime rates and a 'wave' of Hispanic immigrants into the U.S. regularly neglect the fact of an over-representation of young males with higher risks of criminal involvement and a higher vulnerability to restrictive treatment in the criminal justice system in this group of immigrants. He argues that macro level correlation between immigration and crime rates then is spurious, once it is controlled for demographic factors that affect individual's risk of committing crimes.

Although the evidence in the U.S. American case suggests that there exists no direct causal relationship between immigration and increasing crime rates, one might object that the specific interracial relations and the criminal justice system of the U.S. constitute a different socio-economic setting, and that in the European context the evidence may be different.

Bianchi, Buonanno and Pinotti (2012) exploit the increase in the immigrant population in Italy

in the 1990s (resulting from the collapse of the Soviet Union and the Balkan Wars) to assess the effect of immigration on crime rates. Though they find evidence for effects on robberies, the overall effect of immigration on crime rates is shown to be negligible. Employing a similar identification strategy, Bell, Machin and Fasani (2010) assess the immigration-crime link by drawing on exogenous variation in immigration rates to Great Britain. They find that a wave of asylum seekers immigrating in the late 1990s/early 2000s induced a significant but substantially small rise in property crimes,[1] but had no observable effect on violent crime. For a second wave of immigrants from European Union accession states, occurring after 2004, they find no such increases in either type of crime.

In one recent study of the German case, Piopiunik and Ruhose (2015) make use of the allocation of more than 3 million people with German ancestors to German regions after the collapse of the Soviet Union. These so-called *Aussiedler* were granted immediate citizenship under a special law in the aftermath of German unification, and the authors rely on the largely exogenously determined placement of these individuals across regions. They find that the inflow of ethnic German immigrants increased crime rates by an average 0.9 percentage points for each additional ethnic German per 1,000 inhabitants. The size of this effect is almost 13 times larger then that documented by Bell, Machin and Fasani (2010). It is, however, worth stressing that the population of immigrants they consider was largely consisting of low-educated people with worse labor market outcomes, and lower incomes than native Germans. Given that other studies have considered more heterogeneous immigrant populations, Piopiunik and Ruhose (2015) results likely overstate the average increase in crime rates. Specifically, the critique Hagan and Palloni (1999) put forward applies: The observed association may be confounded by the fact that ethnic German immigrants were disproportanely at risk to commit crimes due to their demographic and socio-economic characteristics. Moreover, the allocation process has largely been reliant on existing family ties in Germany—immigrants' locations were selected in accordance with their family preferences as far as possible. Though they build on an economic model of crime, Piopiunik and Ruhose (2015) do not consider the effect that

[1] A one-percentage point increase in asylum seekers as share of total population is predicted to increase crime rates by 0.7 percentage points. The authors, however, stress that asylum seekers constituted in the period under investigation only an average 0.1 percent of the local adult populations in English and Welsh counties (Bell, Machin and Fasani, 2010, p. 24). Doubling the share of asylum seekers in the population would thus result in an average increase of crime rates by 0.07 percentage points; a substantially minor increase in view of average property crime rates of about 2.7 percent.

international migration in family networks has on the return to migration (discussed as chain migration in both the migration networks and new economics of migration literature, see Massey et al. 1993). The immigration effect on crime they identify may thus be confounded by a network effect. Finally, the authors admit that, due to their special legal status, *Aussiedler* were not threatened by deportation, which may have reduced their expected costs of conviction (Piopiunik and Ruhose, 2015, p. 3).

The evidence in the European and particularly the German case thus suggests that the effect of immigration on crime rates is largely dependent on the actual composition of the population of immigrants, and that the substantive magnitude of the effect tends to be rather small, given the low share of immigrants in the total adult population of European countries.

2.2 Individual perceptions of an immigration-crime link

In view of the at best tentative and largely crime type- and case-depended evidence for the immigration-crime link at the macro level of analysis, the question arises how individuals may come to hold the belief that a future influx of refugees to Germany will cause crime rates to rise?

Unfortunately, there exist only very few contributions that explicitly address the question how perceptions of an immigration-crime link may arise at the individual level. For the U.S. American case, for instance, Higgins, Gabbidon and Martin (2010) assess the question of whether there exist racial differences in the opinion on a link between immigration and crime, finding that differences in race relations, gender, race/ethnicity, and immigrant status impact respondents opinion on the topic. And one study for the German case addresses only the reverse relationship: Whether individuals' concerns about an immigration induced rise in crime rates increases their anxiety over immigration (Fitzgerald, Curtis and Corliss, 2012).

Given the paucity of explicit investigations of how perceptions of an immigration-crime linkage vary at the individual level, I next turn to the contact and threat hypothesis of negative stereotype formation as two frameworks that theorize how citizens form their attitudes towards immigrants and immigration.

3 Negative stereotypes and attitudes toward immigration

I argue that in view of the at best mixed empirical evidence on an immigration-crime link, holding the believe that immigration causes an increase in crime rates can be conceived of as a negative stereotype. A *negative stereotype* is commonly defined as "an adverse or hostile attitude toward a group and its individual members that is unsupported by evidence" (Fussell, 2014). The question then is, when individuals are more likely to have the negative stereotype that immigrants will commit crime and thus immigration would lead to increased crime rates?

3.1 Theories of negative stereotyping

Stereotyping, the process of ascribing attributes to the members of a group in a simplifying and generalizing manner, is based on in-group/out-group thinking (Tajfel, 1978; Chandler and Tsai, 2001; Fussell, 2014). Specifically, the mechanisms that elevate stereotypes operate through inter-group comparison. Yet, there exist two different frameworks—the one drawing on Blumer's group threat theory (Blumer, 1958), the other on Allport's group contact theory (Allport, 1979)—that theorize this mechanism (both originally formulated in the context of stereotyping of an out-group defined along racial lines):

(1) The *threat hypothesis* posits that members of an in-group form stereotypes, if they perceive the members of the out-group as a threat.

(2) The *contact hypothesis* posits that negative stereotypes are the result of socialization processes, and thus can be reduced by positive contact between the members of the in- and the out-group.

Note that both hypotheses describe mechanisms that operate at different levels of analysis. Threat perceptions are the product of cognitive processes, and thus are observable at the individual level of analysis (though these processes may be triggered through processes of social interaction within or between groups). Contact, in contrast, occurs between individuals, and its effect on the formation or adjustment of stereotypes is thus qua definition reliant on social interactions between the members of different groups (though individual perceptions might affect who is regarded as a member of

the in-group, and who as a member of the out-group). Proposing two mechanisms that operate at different levels of analysis, the contact and threat hypothesis of negative out-group-stereotype formation are thus theoretically not mutually exclusive.

Stephan and White Stephan (2000), in fact, propose an integrated threat theory that incorporate both threat perceptions and negative stereotypes as central determinants of individuals attitudes towards out-groups.[2] Testing their theory in three experimental studies, Stephan et al. (2005) find that attitudes toward an immigrant group were most negative when it was perceived to pose both 'realistic' and 'symbolic' threats to the in-group, and that individuals, who were induced to have negative stereotypes, held significantly more negative attitudes toward the immigrant group compared to those treated to have non-negative stereotypes. Likewise, Leong (2008) reports evidence that decreased intergroup contact and increased threat predict less favorable perception of immigrants.

Since the focus of this article lies on the question what may cause citizens to hold the negative stereotype that immigration will cause increasing crime rates in their country, hereafter I consider citizens as the in-group, and potential immigrants, that is, the population of individuals that may immigrate to the country, as (perceived) out-group.

Note that while the definition of intergroup contact at the individual level is quite unambiguous (it occurs when members of two groups interact personally), a question arising with regard to the threat hypothesis is what kind of behavior or actions citizens may conceive of as threat by immigrants?

Many contributions in the political economy tradition have suggested that an out-group, which may be in distributional competition over economic resources and particularly labor-market positions (see Dustmann and Preston 2001; Gang, Rivera-Bati and Yun 2002) with members of the in-group, is likely perceived as threats by the latter. Though the broader argument that economic concerns lead individuals to view immigration as less favorable finds only mixed empirical support

[2] They discern four factors (Stephan and White Stephan, 2000): The first two are related to threat perceptions; specifically, threats to the very existence of the in-group ('realistic threats'), and threats to the in-groups values, beliefs and attitudes ('symbolic threats'), The third factor is referred to as intergroup anxiety, describing fears that intergroup competition reduces the status of ones own group and therefore ones own standing. The last one encompasses negative stereotypes, that is, negative expectations about the behavior of members of the out-group.

(cf. Malhotra, Margalit and Mo, 2013), particularly personal economic consideration are found to play a minor role (Hainmueller and Hopkins, 2014). Instead, it tend to be citizens' sociotropic concerns, that is, their concerns about the cultural, societal and economic impacts on the nation as a whole, which have been shown to exert a strong influence on the formation of negative stereotypes across several studies. Besides economic considerations, the view that immigration may affect the in-group culture negatively has been found to exert a strong influence on individuals' propensity to hold negative stereotype about immigrants (e.g. Hainmueller and Hiscox, 2007).

In the context of individuals' attitudes towards immigration, the threat hypothesis of negative out-group stereotypes then leads to expect that

> *Hypothesis 1 (Threat hypothesis)*: Citizens, who believe that further immigration will overburden the national economy and/or society at large, are more likely to agree that such immigration will lead to an increase in crime rates.

And the contact hypothesis predicts that

> *Hypothesis 2 (Contact hypothesis)*: Citizens, who have frequent personal face-to-face contact with immigrants, are less likely to hold the opinion that immigration will increase crime rates.

3.2 The social context of negative stereotype formation

Fussell (2014, p. 482f.) cites experimental and survey evidence that support both predictions. However, she also highlights that the working of both the threat and contact mechanisms is contingent on the socio-economic context of intergroup relations. With regards to immigration as perceived threat, one such contextual factor is economic.[3] Specifically, the labor-market competition argument within threat theory posits that immigrant populations, who are expected to be in competition over jobs with native workers (by replacing them or suppressing their wages), are particularly likely to be perceived as threatening by citizens, because they are expected to deteriorate native workers'

[3] Other contextual factors concern the magnitude of short-term increases in immigration rates, and the extent to which this influx is politicized (Hopkins, 2010); and news framing of the immigration-crime link (**?**Bauder, 2008). I will not asses the effect of these contextual covariates/mediators here, dueto a lack of an appropriate measure of local-level politicization of the immigration topic, and a measure of spatial variation in news framing.

labor market positions.[4] Similarly, but more generally, Burns and Gimpel (2000, p. 224) argue that anti-immigration sentiments tend to be at least partially shaped by prevailing economic conditions, in that economic hardship activates latent prejudices. It can therefore be expected that

> *Hypothesis 3 (Economic threat context hypothesis)*: Citizens, who believe that further immigration will overburden the national economy and/or society, are more likely to agree that such immigration will lead to an increase in crime rates, when they live in regions that are under economic strain (i.e., high levels of unemployment and low per capita income), compared to individuals that live in regions that are relatively better-off in economic terms.

With regards to the contact hypothesis, it has been reported that the effect of contact between group members on their negative stereotypes is affected by the social context of intergroup relations. Fussell (2014) notes that, though it has been found that the diversity of ones neighborhood reduces prejudices, neighborhood diversity tends to reinforce prejudices in metropolitan areas (Fussell 2014, p. 483 citing Fossett and Kiecolt, 1989; Quillian 1996; and Taylor 1998). She argues that "[the] key to explaining this apparent contradiction is whether the context facilitates face-to-face contact between in-groups and out-groups." (ibid.) Therefore the emphasis in Hypothesis 2 lies on that contact between immigrants and citizens will only mitigate negative stereotypes if the contact is personal and face-to-face.

4 Data, measurement, and empirical strategy

Having outlined the theoretical expectations in accordance with the contact and the threat hypotheses, the next section addresses data, measurement and the empirical strategy I employ to asses Hypotheses 1 through 4.

[4] Note that this formulation of the labor-market competition-threat hypothesis is based on the assumption of sociotropic concerns, in contrast to the original argument, which anticipates that individuals will oppose immigration of workers with similar skills to their own but support immigration of workers with different skill levels (e.g. Dustmann and Preston, 2001). I choose this reformulation, because the positional, ego-centric concern formulation has found only mixed empirical support (Hainmueller and Hiscox, 2007), whereas the sociotropic-concerns formulation, as discusses above, finds broader support (cf. Hainmueller and Hopkins, 2014).

4.1 Data and measurement

In order to test Hypotheses 1 through 3, I combine data from a representative survey study conducted in the Federal Republic of Germany in May 2015 on Germans' opinions upon the current situation of refugees in Germany and Europe (BPA, 2016), and contextual data obtained from various official data repositories. The in total 1,006 respondents of the survey were recruited using computer assisted telephone interviews based on a stratified sampling procedure, drawing on all 16 German states (*Bundesländer*, German NUTS-1-level). It is is therefore possible to merge contextual data at the regional level with the individual level survey data.

The extent to which individuals' hold the *negative stereotype* that immigration causes crime rates to increase, the dependent variable, is measured using an item asking respondents to report their agreement with the statement about refugees "Immigration of refugees causes crime rates in Germany to increase." (BPA, 2015, Q7-9) Respondents could express their opinion by reporting they either strongly agree, rather agree, rather disagree, or strongly disagree. 155 out of total 1,006 respondents expressed complete and 225 some agreement, 299 reported some and 183 complete disagreement, and 44 refused or did not know what to respond. The ordinal indicator is coded such that zero represents strong disagreement and three strong agreement, that is, agreement is increasing in the indicator's values.

In order to operationalize *intergroup contact at the individual level*, a binary indicator is generated from individuals' responses to the question whether they directly and voluntarily supported refugees in activities of civic engagement (e.g. by giving German language lessons or provide personal childcare) (BPA, 2015, Q10-11). Respondents could report whether they had previously engage in such direct, voluntary refugee support, and, if they had not, whether or not they could imagine to engage in such activities in the future. In order to measure contact with refugees, the potentially immigrating out-group population, only respondents who reported previous engagement were coded as in direct personal contact with refugees; all other non-missing respondents constitute the reference group.

Individual threat perceptions are measured using three items that capture sociotropic concerns with regards to immigration of refugees to Germany (BPA, 2015, Q7-9) The first item measures

to what extent a respondent is concerned that immigration of refugees to Germany overstress Germany's financial capabilities, expressed as complete or some (dis)agreement with the corresponding statement (i.e., "immigration of refugees to Germany overstress Germany's financial capabilities"). The second item queries respondents extent of agreement with the statement that immigration of refugees to Germany overstress the German population. The third item reports the extent of their agreement with the statement that immigration of refugees to Germany enriches German culturally, interpreted here as the opposite of sociotropic cultural concern. Opinions are in all cases measured as reported complete/some (dis)agreement with the respective statements. Strong disagreement is represented by the lowest value of the indicators and values are increasing in agreement, so that according to Hypothesis 2 positive signs are expected on the coefficients of the measures of concern about financial stress and population overburdening, and a negative sign on the coefficient of the measure of perceived cultural enrichment.

These three different aspects of concerns with regard to immigration of refugees arguably capture the economic, societal as well as the cultural dimension of perceived threats that are emphasized in the threat hypothesis of negative stereotype formation. All three questions arguably trigger an in-group/out-group thinking by framing the question as an effect the immigration of refugees, a non-German group, has on Germany at large.[5] Further, by referring to Germany at large (i.e., the German economy and/or society), sociotropic rather then personal concerns are queried.

As contextual, state level factors that may affect individual level threat perceptions, I include states' unemployment rates, averaged over the previous 12 month (May 2014 to April 2015, DeStatis 2016), and states' per capita gross domestic product (GDP) in 2014 (EUROSTAT, 2016*a*). I also include states' actual crime rates in 2014,[6] as believing immigration causes crime rates to increase may covary with actual crime rates.

At the individual level, studies of individuals' immigration attitudes have often reported dif-

[5] Unfortunately, the respondents were neither asked whether they are German citizens, nor whether and how strongly they identify with the German nation. To deal with the former issue, I include only respondents in the sample who reported that they are eligible to vote in Germany; exploiting the fact that non-citizens are not eligible to vote at the federal and state level in Germany.

[6] Specifically, I aggregate the number of recorded crimes over the four categories offenses against life, offenses against sexual self-determination, offenses involving brutality and crimes against personal freedom, total number of thefts (BKA, 2016) at the state level, and divide them by state total adult population in 2014 (EUROSTAT, 2016*b*).

ferences between the socio-economic and demographic variables age, gender, education level, and income class membership. I include these as control variables in all estimated models. Moreover, as consequence of Germany's historic legacy and prevailing regional economic inequality, systematic differences in various political and social attitudes between Eastern and Western German states are well documented. I therefore include a binary indicator that flags whether an individual lives in a state of the Eastern part of Germany.

Lastly, because economic threat perceptions may covary with individuals actual labor market position, I include an indicator variable that flags unemployed respondents; and because studies have documented that the extent to which individual's hold negative stereotypes about immigrants and/or immigration varies between metropolitan and non-metropolitan areas, I include a binary indicator that flags whether an individual reports to live in an urban area (a community with at least 100,000 inhabitants).

I include only respondents in the analysis, who were eligible to vote as of May 2014, in order to restrict the sample to German citizens. In combination with other sources of missingness, the total number of observations is therefore 725. Summary statistics of all variables included in the statistical analysis below are reported in Table 1 in the Appendix.

4.2 Empirical strategy

I fit an ordered logit regression model on the four outcome categories of the dependent variable strongly disagreement, some disagreement, some agreement, and strongly agreement with the suggested immigration-crime link, estimating the following model:

$$y_i = \begin{cases} 1 \Rightarrow \text{strongly disagree} & \text{if} \quad \tau_0 = -\infty \leq y_i^* < \tau_1 \\ 2 \Rightarrow \text{rather disagree} & \text{if} \quad \tau_1 \leq y_i^* < \tau_2 \\ 3 \Rightarrow \text{rather agree} & \text{if} \quad \tau_2 \leq y_i^* < \tau_3 \\ 4 \Rightarrow \text{strongly agree} & \text{if} \quad \tau_3 \leq y_i^* < \tau_4 = \infty \end{cases} \tag{1}$$

$$\text{with } y_i^* = \mathbf{x}_i \boldsymbol{\beta} + \varepsilon_i,$$

where vector $\mathbf{x}_i$ includes observation i's values on all explanatory and control variables (i.e., both individual level and state level indicators), $\boldsymbol{\beta}$ is the vector of coefficients, estimated using the maximum-likelihood estimator (MLE), and $\boldsymbol{\varepsilon} = \{\varepsilon_1, \varepsilon_2, \ldots, \varepsilon_n\}$ has a logistic distribution with mean 0 and variance equal to $\pi^2/3$.

The multilevel structure of the data (individuals nested in states) is disregarded. That is, all observations are completely pooled (cf. Gelman and Hill, 2007, Chapter 11). This choice is justified by two considerations. First, modeling random variation in the cutpoints between outcome categories at the state level gives an only very low intra-class correlation conditional on the model. That is, the similarity between individuals within states that is not explained by the predictors included in the model is negligible. Also, fitting a random intercept ordered logit multilevel model does not significantly improve the model fit compared to the complete-pooling ordered logit model (i.e., not modeling state-level random intercepts).[7]

Second, evaluating the model fit of two alternative ordered logit models, one constraining the distance between cutpoints to be symmetric (and equidistant), shows that the symmetry (and equidistance) assumption is not justified. Hence, fitting a linear probability model, using the ordinary least squares estimate, instead appears to be not appropriate.

Note that in order to test Hypothesis 3, cross-level interaction terms are included between the measures of respondents' concerns about the financial stress immigration of refugees may cause and the overburdening which it may lead to vis-á-vis the German population, respectively, (individual level) and states' unemployment rate and and GDP per capita level (state level). As outlined above, it can be expected that individuals (sociotropic) economic and societal threat perceptions influence their negative stereotype with regards to the suggested immigration-crime link stronger in states under 'economic strain,' operationalized here as (in the cross-section) relatively lower levels of GDP per capita and relatively higher unemployment rates. As Hypothesis 2 leads to expect negative sings on the coefficients of both individual level predictors, Hypothesis 3 suggest positive signs on the coefficients of their interaction terms with unemployment rate (the extent of perceived overburdening by immigration affects the probability of holding the negative stereotype

[7]Both these findings are quantified and documented in the R-code distributed with this paper.

stronger in states with relatively high unemployment, i.e., high economic strain), and negative sings on the coefficients of their interaction terms with state GDP per capita (the extent of perceived overburdening by immigration affects the probability of holding the negative stereotype less in states with relatively high GDP per capita, i.e., lower economic strain).

In addition, for ease of interpretation and convergence, all continuous variables (i.e., state unemployment rate, state GDP per capita, state crime rate, respondent income, and respondent age) are standardized at the cross-section, such that they have a mean of zero and a standard deviation of one.

The next section provides the results of the empirical analysis by reporting average predicted probabilities of the different response categories of the dependent variable for the different independent variables. Average predicted probabilities of the response categories are obtained, if not stated otherwise, by computing the predicted probability for each observation in the data—allowing each to take on its own values on all other predictors—at different levels of a given predictor k. These individual estimates are averaged across all observations to obtain a point estimate for the effect of k on the respective response categories.[8] Corresponding confidence bounds are obtained by replicating this procedure 1,000 times on independent random draws from the joint sampling distribution of the model parameters and calculating the 5th and 95th percentiles of the 1,000 estimates.

5 Empirical results

In this section, I focus on the evaluation of Hypothesis 1 through 3, and only briefly discuss results for the control variables. Figure 2 in the Appendix, however, reports a plot of the average changes in the predicted probabilities for discrete changes in the respective predictors, and subsection 8.1 of the Appendix explicates the computational procedure applied to obtain these effect estimates and corresponding confidence bounds.[9]

Lets begin with an evaluation of Hypothesis 1 that individuals who have personal and direct

[8] The observation-average point prediction is an estimate of the average effect of k on the dependent variable in the population from which this sample is drawn.

[9] All results discussed here can be reproduced with the R-code distributed with this paper.

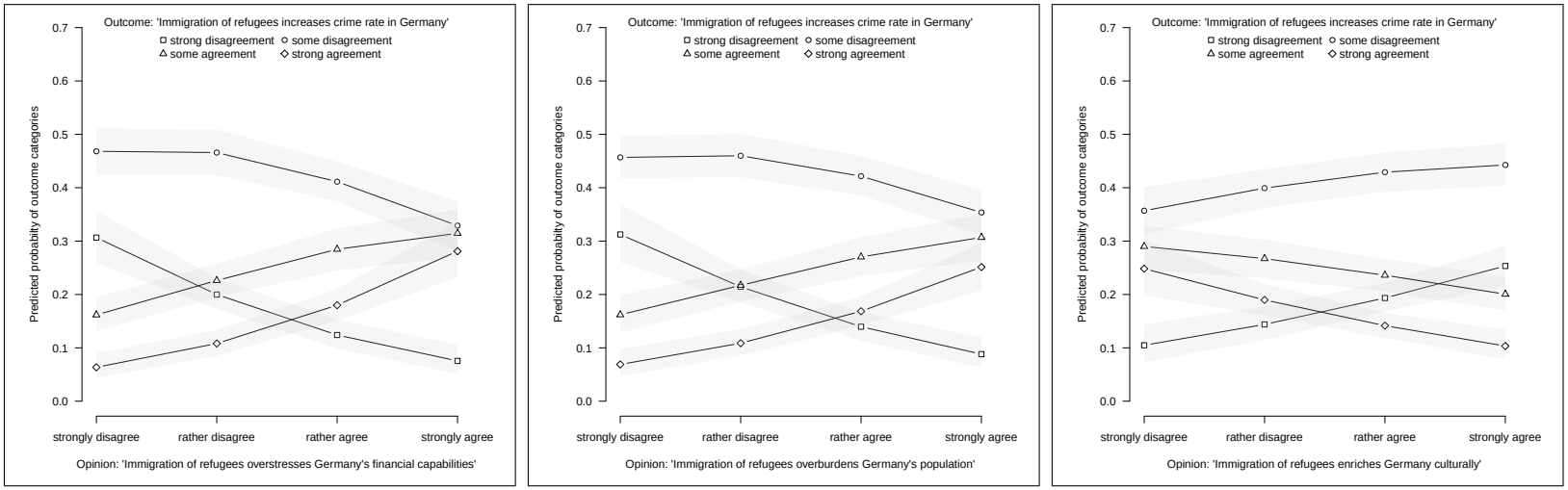
contact with refugees are less likely to agree to the suggested immigration-crime link statement. This hypothesis finds strong support by the fitted model. The probability that an individual strongly disagrees with the suggested immigration-crime link is predicted to amount to an average 25.4 percentage points (19.4, 32.1), when he or she has direct personal contact with refugees due to being engaged in voluntary civic activities with them; in contrast to an average predicted probability of only 18.7 percentage points (16.3 ,21.6), if he or she is not. Some disagreement is approximately equally likely for personal engagement absent or present, with an average predicted probability of 42 percentage points (38.0, 46.0) in case of contact, and of 40.7 percentage points (37.2, 44.1) if not Conversely, someone is more likely to agree to some extent, when he or she is not engaging with refugees in civic activities, then when he or she is. The average predicted probability of some agreement amount to 23.7 percentage points (20.6, 26.7) in the former, and 20.2 percentage points (16.3, 24.3) in the latter case. Similarly, strong agreement is more likely for those not engaged: 16.9 (14.4, 19.4) versus 12.3 (8.4, 17.0) percentage points. These average changes in predicted probabilities, that is, the difference between average predicted probabilities at both indicator levels, are statistically significant with 95% confidence, with the exception of the some disagreement answer category (see Figure 2 in the Appendix).

Note further that this effect is found to be independent from whether an individual lives in a metropolitan or non-metropolitan community. In fact, neither the interaction between living in a metropolitan community and direct, personal civic engagement with refugees, nor the metropolitan-indicator exert statistically significant effects on the probabilities of different outcome variables when changing the constituent terms of the interaction from zero to one.

With regard to Hypothesis 2, concerns about the economic/financial, societal or cultural stress immigration of refugees might exert on Germany, interpreted here as threat perceptions, are found to have a substantial effect on individuals responses (cf. Figure 1a below). Thus, the argument that these threat perceptions elevate negative stereotypes finds empirical support in the German cross-section of states in May 2015. Figure 1 illustrates the relationship between threat perceptions and agreement to the suggested immigration-crime link.

Both the probabilities to strongly or rather agree to the statement that immigration of refugees

FIGURE 1: The realionship between threat perceptions and the propensity to hold negative stereotypes.



(A) Immigration induces financial overstress. (B) Immigration is overburdening population. (C) Immigration is cultural enrichment.

Point predictions computed at different levels of agreement with statements (A) "Immigration of refugees overstress Germany's financial capabilities," (B) 'Immigration of refugees to Germany overstresses German population," and (C) "Immigration of refugees to Germany enriches Germany culturally." Shaded area represent 95% confidence bounds. Predictions averaged over individuals' actual values on other covariates and over 1,000 sets of simulated coefficient estimates (drawn from multivariate normal sampling distribution of parameters of ordered logit regression model).

causes crime rates to increase in Germany are monotonically increasing in the extent of agreement that such immigration will overstress Germany's financial capabilities. At strong agreement, the average predicted probability of strongly agreeing that a immigration-crime link exists amount to 28.1 percentage points (23.2, 33.6) in contrast to only 6.4 percentage points (4.4, 9.0) at strong disagreement. Correspondingly, the probability to disagree—strongly or somewhat—monotonically decreases with moving from strong disagreement to strong agreement to the statement that immigration overstresses Germany's financial capabilities. Individuals who strongly agree that immigration is to high a financial burden for Germany are about nearly equally likely to rather disagree, rather agree and strongly agree, whereas strong disagreement with the suggested immigration-crime link is least likely with an average 7.5 percentage points (5.1, 10.5).

An almost identical empirical relationship is identified between the strength of agreeing with the suggested immigration-crime link and the extent to which a respondent agrees with the statement that immigration of refugees to Germany overburdens the German population (cf. Figure 1b). I therefore omit a detailed discussion.

Conversely, the stronger the view is held (is rejected) that immigration of refugees enriches Germany culturally, the less (more) likely it becomes to believe that there exist a causal relationship between immigration of refugees and surging crime rates (cf. Figure 1c). It is, however, notable that some disagreement with the suggested immigration-crime rate is the most probable response at all levels of the independent variable; though it increases monotonically, being most likely with an average 44.2 percentage points (40.3, 48.2) at strong agreement with the cultural enrichment perspective.

It can therefore be concluded that the empirical support for a relationship between economic, societal and cultural sociotropic concerns and the strength of negative stereotypes hold about immigration is substantial. However, differences in the economic conditions of states do not affect the strength of this relationship. The cross-level interactions between economic and societal concerns (i.e., with regards to the financial burden and demographic stress of immigration, respectively), and states' GDP per capita and unemployment rates are all individually as well as jointly found to be statistically insignificant. The null-hypothesis that variation in respondents' economic context

does *not* affect the way in which economic and societal sociotropic concerns impact the strength of their negative stereotypes about immigration can therefore not be rejected in the limits of statistical confidence. Notably, German states are all more or less characterized by spatial variation in economic conditions themselves, some regions being more prosperous than others. A different nesting structure at a lower level of regional aggregation may lead to conclude differently. This is, however, only a further venue for research and cannot be evaluated from the evidence presented here.

Turning to the control variables, non of the included predictors is found to significantly affect the probabilities of different levels of (dis)agreement with the statement that suggests a relationship between immigration of refugees and increasing crime rates in Germany, with the exception of differences across gender: Men are in fact found to have a higher propensity compared to women to agree to the suggested immigration-crime link (an average difference of predicted probabilities of strong disagreement of -6.3 percentage points, and of 5.4 percentage points for strong agreement, see Figure 2 in the Appendix).

5.1 Fit statistics

Before turning to a concluding discussion of the findings presented above, a brief discussion of the models fit to the data is in order. The model presented here improves over a simple guess of respondents response—by prediction that everyone rather disagrees, the modal response—, reducing the proportion of falsely predicted responses (PRE) by 12.6 percentage points.[10] The PRE, however, does not take into account the uncertainty in cases where membership in a response category is predicted to be only slightly more likely for an observation compared to the other response categories (say, an ambiguous prediction). The expected percentage of correctly predicted (ePCP) responses is a fit statistic that takes this uncertainty into account, by rewarding 'good' (relatively unambiguous predictions), and penalizing 'bad' predictions. The ePCP of the fitted model amounts

[10] The fit statistic I refer to is the proportional reduction in error (PRE), defined as

$$PRE = \frac{PCP - PMC}{1 - PMC},$$

where PCP is the percentage of correctly predicted responses, and PMC is the percentage of correctly predicted responses by simply predicting the modal response category for each observation.

to 6.9 percentage points.

6 Discussion and conclusion

This article has examined what determines the strength with which German citizens agree (or disagree) with the statement that immigration of refugees to Germany increases crime rates in Germany. I have argued that agreement with this statement can be interpreted as negative stereotype citizens may hold about immigration, referring to existing evidence showing that the empirical support of a causal relationship between immigration and increasing crime rates is weak both at the subnational and national level. I then have discussed the existing theoretical literature on factors that affect the formation of stereotypes at the individual and intergroup level, and identified threat and contact theory as central tenets in this field of research.

The empirical results obtained from an ordered logit regression model that were presented are strongly supportive of both the contact and the threat hypothesis of negative stereotype strength. The former posits that negative stereotypes are the result of socialization processes, and thus can be reduced by positive-valenced contact between the members of the in- and an out-group (Blumer, 1958). I have shown that individuals who have reported to be directly and personally engaged with refugees in civic activities are consistently more (less) likely to disagree (to agree) with the suggested immigration-crime link.

It is, however, worth stressing that individuals, who engage in such civic activities with refugees, may share characteristics or aspects common to their social environment that confound the identified relationship. In addition, previously low or absent negative stereotypes may lead to such civic engagement, so that the direction of causality may, in fact, be reverse. I therefore make no causal claim here, but highlight only the strength of the association. Further panel analysis and/or experimental studies are in order to answer this question of causal direction.

The threat hypothesis, in turn, posits that members of an in-group form stereotypes, if they perceive the members of the out-group as a threat (Allport, 1979). Again referring to existing political science and social psychology contributions, I have argued that economic, societal and cultural sociotropic concerns with regards to immigration may reflect or elevate such threat perceptions.

I have shown that concern about an overstress of the Germany's financial capabilities induced by immigration is a strong predictor of the extent to which individuals (dis)agree with the suggested immigration-crime link(see Figure 1a). Similarly, citizens concern about an overburdening of the German population resulting from immigration of refugees is strongly correlated with the degree of (dis)agreement (see Figure 1b). Individuals agreement with the perspective that immigration of refugees to Germany enriches Germany culturally—interpreted here as the opposite of sociotropic cultural concern—, on the other hand, consistently reduces the strength with which they hold the negative stereotype that immigration increases crime rates (see Figure 1c).

Clearly, the items chosen here to operationalize the broad theoretic concept of threat perceptions are imperfect. However, the reported evidence at last documents that German citizens, who are more strongly concerned about the potential negative consequences of immigration, are also more likely to associate immigration with increasing crime rates—an expected consequence that lacks empirical support.

Since European societies are becoming culturally more heterogeneous due to continuing immigration, and as the fear of crime at the individual level has important implications for societal solidarity (cf. Hawdon et al., 2014), uncovering the roots of citizens' negative stereotypes against immigrants is a key contribution of social science research to bring froth culturally diverse *and* socially integrated societies. This article has sought to contribute to this task.

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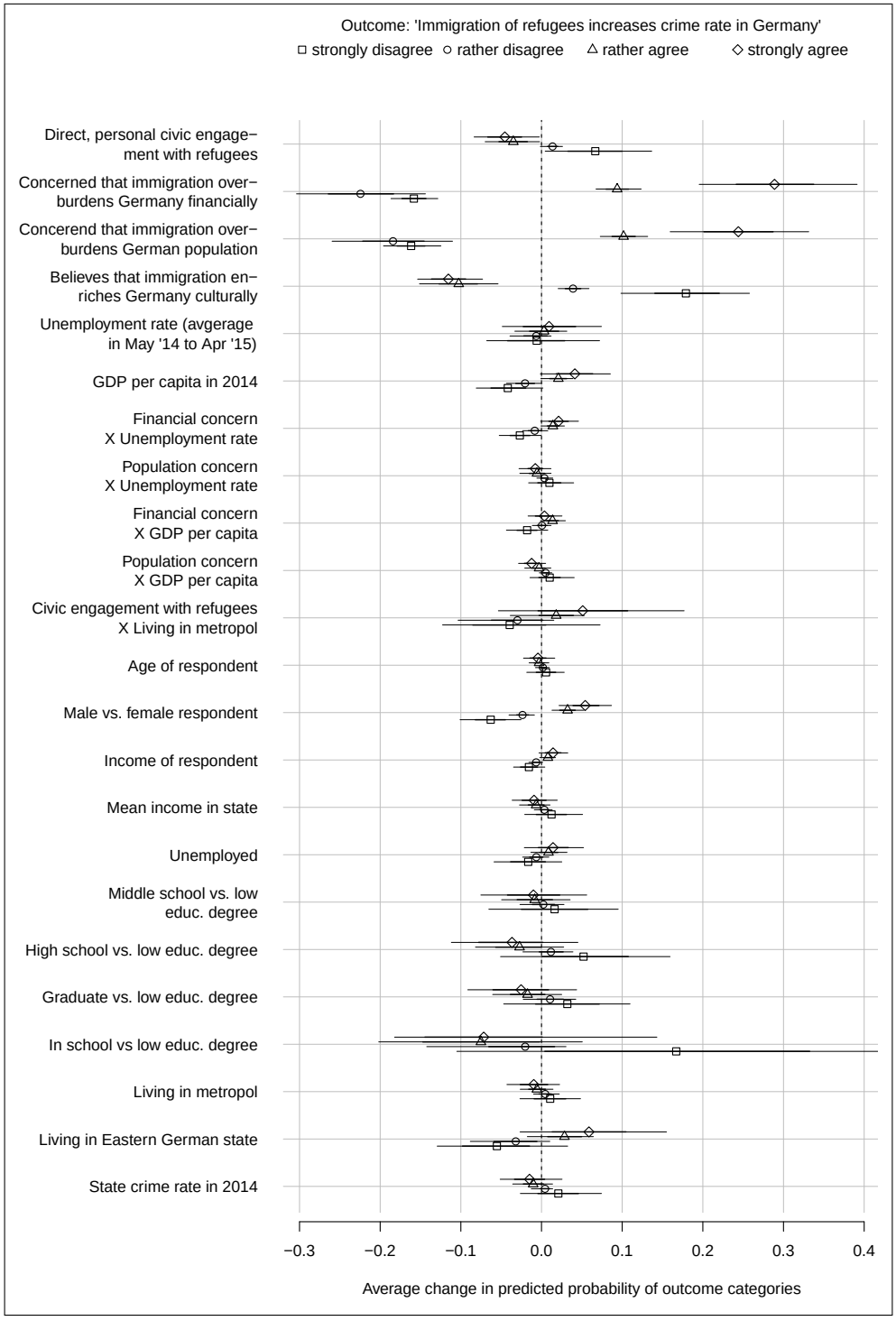
8 Appendix

TABLE 1: Summary statistics.

Statistic	N	Min	Max	Median	Mean	St. Dev.
Immigration of refugees increases crime rates: Strong disagreement	725	0	1	0	0.20	0.40
Immigration of refugees increases crime rates: Some disagreement	725	0	1	0	0.41	0.49
Immigration of refugees increases crime rates: Some agreement	725	0	1	0	0.23	0.42
Immigration of refugees increases crime rates: Strong agreement	725	0	1	0	0.16	0.37
Direct, personal civic engagement with refugees	725	0	1	0	0.11	0.32
Concerned that immigration overburdens Germany financially	725	0	3	1	1.40	1.04
Concerend that immigration overburdens German population	725	0	3	2	1.55	1.00
Believes that immigration enriches Germany culturally	725	0	3	2	1.80	0.92
Age of respondent	725	16	93	55	54.04	17.27
Male vs. female respondent	725	0	1	1	0.50	0.50
Income of respondent	725	1	10	6	5.85	2.44
Unemployed	725	0	1	0	0.45	0.50
Low educational degree	725	0	1	0	0.17	0.37
Middle educational degree	725	0	1	0	0.32	0.47
High school degree	725	0	1	0	0.11	0.32
Graduate degree	725	0	0	0	0.00	0.00
Still in school	725	0	1	0	0.01	0.07
Living in metropol (community >99,999 inhabitants)	725	0	1	1	0.65	0.48
Living in Eastern German state	725	0	1	0	0.21	0.41
Mean income in state	725	4.45	7.38	5.95	5.73	0.53
Unemployment rate (avgerage in May '14 to Apr '15)	725	3.70	10.90	6.64	6.76	2.30
GDP per capita in 2014	725	24,200	59,000	35,600	35,609.10	6,993.04
State crime rate in 2014	725	2.37	8.98	3.72	4.14	1.72

FIGURE 2: Average change in predicted probabilities of different levels of agreement with suggested immigration-crime link for discrete change in predictors.



Point predictions computed for discrete change from zero to one for continuous variables and binary indicators, which corresponds to a change by one standard deviation from the mean for continuous variables, and a comparison relative to the reference category for binary indicators. For ordinal variables (i.e., 'Concerned that immigration overburdens Germany financially,' 'Concerned ... overburdens German population,' and 'Believes ... enriches Germany culturally') changes computed at first and third quartile values. Thin lines represent 95%, thick lines 68% confidence intervals. Predictions averaged over individuals' actual values on other covariates and over 1,000 sets of simulated coefficient estimates (drawn from multivariate normal sampling distribution of parameters of ordered logit regression model).

8.1 Computation of average changes in the predicted probabilities of response categories for discrete changes in predictors.

The computational procedure applied to produce Figure 2 is the following:

(1) The change in the probability of each outcome category for a discrete change in a given predictor k from zero to 1 is computed for each observation in the data—allowing each to take on its own values on all other predictors—, and these individual estimates are averaged across all observations to obtain a point estimate for the effect of k on the outcome categories. The change from zero to one corresponds to a change by one standard deviation from the mean for continuous variables (e.g. age), and a comparison relative to the reference category for binary indicators (e.g., gender) and sets of categorical comparisons (e.g., low vs. middle educational level). The observation-average point prediction is an estimate of the average effect of k on the dependent variable in the population from which this sample is drawn.

(2) Corresponding confidence bounds then are obtained by replicating this procedure 1,000 times on independent random draws from the joint sampling distribution of the model parameters and calculating the 5th and 95th percentiles of the 1,000 estimates.

(3) Steps (1) and (2) are repeated for all predictors $k \in K$ in the model, changing k's, while leaving individuals' values on other covariates ($\sim k$) at their true values. Note that k may be a a constituent term of an interaction effect. In this case, the manipulation of an individual's value on the covariate k is propagated through the interaction term.