# Scared Straight?
# Threat and Assimilation of Refugees in Germany*

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**Abstract**

This paper examines the impact of local hostility on the assimilation of refugees. We leverage plausibly exogenous variation in refugees' allocation across German regions between 2013 and 2016, and combine representative survey data and administrative records with contemporaneous and historical measures of xenophobia and hostility. We find that local hostility heightens threat perceptions and increases the pace of refugees' cultural assimilation. However, refugees assigned to higher threat regions do not find a job more quickly, experience slower earnings growth, report lower trust in German institutions, and are less interested in applying for German citizenship. These results are consistent with the notion that local hostility can lead to *segmented assimilation*, where refugees assimilate culturally but do not integrate along economic or civic dimensions, due to discrimination and lack of cooperation by locals.

**Keywords:** Refugees, cultural change, assimilation, identity, nation building
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# 1 Introduction

For centuries, nation states have sought to unite individuals with heterogeneous cultures and norms to promote a common national identity and a shared feeling of belonging (Anderson, 1991; Bazzi et al., 2019; Blanc & Kubo, 2024). Successful nation building crucially depends on the inclusion of minority groups (Alesina & Reich, 2015; Acemoglu & Robinson, 2016; Rohner & Zhuravskaya, 2023). The unprecedented rise in refugee migration, triggered by both conflict and natural disasters (Becker & Ferrara, 2019; Mbaye et al., 2023), has made this task increasingly complex.

A large literature has analyzed the effectiveness of top-down government policies aimed at integrating immigrants and refugees (Fouka, 2023; Bahar et al., 2024a). However, we know less about another potentially important channel for the integration of minorities: the attitudes and the behavior of the local population. In this paper, we seek to fill this gap by studying the effect of local ethnocentrism and xenophobia, which we summarize with the umbrella term "threat," on the assimilation of refugees. We focus on three main dimensions of assimilation. First, cultural assimilation: the extent to which refugees adopt German norms and preferences. Second, economic assimilation: refugees' ability to access the German labor market and experience earnings growth. Third, civic assimilation: refugees' feeling of belonging, trust in German institutions, and intentions to apply for citizenship.

The effects of threat on assimilation are *ex-ante* ambiguous. On the one hand, refugees may adopt local norms, look for employment quickly, and get politically engaged to cope with local hostility and uncertainty (García, 2014; Fouka, 2019; Saavedra, 2021; Giuliano & Nunn, 2021). On the other hand, threat and discrimination may render assimilation overly costly (or, even impossible), reinforce refugees' "oppositional identities," and lead to backlash as well as to cultural, economic, and civic isolation (Bisin et al., 2011; Bisin & Tura, 2019; Abdelgadir & Fouka, 2020; Fouka, 2020).

Classical models view assimilation as a gradual but uniform process, where minorities either completely integrate or remain isolated in all dimensions (Gordon, 1964). Motivated by recent evidence that cultural assimilation needs not coincide with economic, political, and civic assimilation (Fouka et al., 2022; Zonszein, 2023),

we depart from this idea, and instead build on *segmented assimilation theory*. This theory posits that minorities can successfully integrate in some domains but not in others, and that assimilation trajectories depend on the returns in each domain and the degree of complementarity between them (Portes & Zhou, 1993).

Local hostility can reduce spillovers across assimilation domains, and make segmented assimilation more likely (Zhou, 1997). This is because, in low-threat environments, success in one domain often reinforces progress in others, leading to holistic integration. For example, participating in the same leisure activities as locals can simultaneously enhance social connections and improve job prospects. In high-threat environments, discrimination and lack of acceptance by locals may weaken cross-domain spillovers. As a result, refugees may concentrate on a single domain where progress is perceived to be easier to achieve or where returns are higher. Moreover, in high hostility areas, local residents may require higher levels of similarity to accept out-group members as part of the majority group, reducing the likelihood that cultural assimilation coincides with other forms of integration.

We bring these ideas to the data in the context of refugee migration to Germany between 2013 and 2016. Exploiting the quasi-random allocation of more than 1.5 million refugees across German NUTS-2 regions, we estimate a generalized difference-in-differences model that includes individual controls as well as region and time fixed effects. We measure threat using a principal component index at the NUTS-2 level that combines multiple variables—from right-wing protests and the vote share of anti-immigrant parties to natives' attitudes towards refugees to historical pogroms to attacks against mosques. To address potential concerns of selected migration of refugees after the initial assignment, we rely on an Intention to Treat (ITT) design that measures threat in the region of assignment rather than in that of residence.

We begin with cultural assimilation, measured as refugees' convergence in stated preferences and beliefs to those of German residents. The literature often considers cultural assimilation as a foundational step that, by improving communication, reducing social frictions, and increasing mutual trust, favors the process of integration across domains, including the economic and the civic ones (Lazear, 1999; Alba & Nee, 2003). For each refugee, we construct an index of cultural similarity to all non-refugee residents in Germany at baseline, combining two data sources. First, we ob-

tain refugees' cultural preferences from the IAB-BAMF-SOEP Survey of Refugees—a longitudinal and nationally representative survey that collects information on socio-demographic characteristics as well as values, habits, and preferences of around 8,000 refugees. Second, we measure the same set of variables for the more than 30,000 non-refugee residents in Germany interviewed in the German Socio-Economic Panel (SOEP).

To define the cultural similarity index, we follow the literature (Alesina et al., 2017; Rapoport et al., 2021; Bertrand & Kamenica, 2023) and calculate the Euclidean distance between survey responses of each refugee and those of all non-refugee respondents. We select the questions that capture cultural preferences and are available in both surveys: type and frequency of leisure activities, interest in politics, trust, locus of control, risk attitudes, positive and negative reciprocity, and views over fairness in the society. These traits are associated with political orientation, ideology, and social attitudes of SOEP respondents in our sample. They also correlate with individual behavior and preferences, such as tax evasion, preferences for redistribution, moral values, and propensity to participate in protests (Bergolo et al., 2020; Enke, 2020; Cantoni et al., 2022).

We find that, on average, refugees assimilate culturally as they spend more time in Germany. However, cultural convergence is faster for refugees assigned to regions with higher threat. According to our estimates, refugees assigned to a region at the 75th percentile of the threat distribution converge to German culture 54% faster than refugees assigned to a region at the 25th percentile. Our interpretation is that refugees exposed to higher levels of threat feel pressured to adopt German culture more quickly. Consistent with this idea, refugees assigned to higher threat regions report higher levels of fear and worries about xenophobia. Moreover, we show that refugees who face far-right demonstrations shortly after their arrival are closer to German culture, especially in regions with higher levels of threat, where protests are larger and more violent (Kanol & Knoesel, 2021). Finally, we document that refugees do not respond to historic antisemitism. Since most refugees in our sample come from majority-Muslim countries like Syria and Afghanistan, this suggests that they do not react to threat directed against other minority groups.

We perform several robustness checks. First, we examine the possibility that

threat is correlated with other variables that independently affect cultural assimilation. To this end, we interact time spent in Germany with a battery of regional controls, including proxies for social networks, labor market conditions, cultural features, amenities, public goods provision, and many socio-demographic controls. Second, we provide evidence that neither survey attrition nor social desirability are the main drivers of our findings. Third, we document that results are not driven either by *ex-ante selection* on the side of authorities or by *ex-post sorting* on the side of refugees, and that they are robust to: using alternative definitions of cultural similarity and threat; dropping potential outliers and single components of the cultural similarity or the threat index; accounting for spatial correlation in the error term; excluding individuals interviewed multiple times to address concerns of bias in difference-in-differences designs with heterogeneous treatment effects (De Chaisemartin & d'Haultfoeuille, 2020; Goodman-Bacon, 2021); and, instrumenting threat in the region of residence with that in the region of assignment.[1]

In the second part of the paper, we focus on two other, interconnected dimensions of assimilation: economic integration and civic engagement. First, we collect self-reported economic outcomes from the refugee survey and link respondents to administrative records obtained from the German Federal Employment Agency. We find that, over time, refugees are more likely to be employed and earn higher wages. However, in contrast with patterns of cultural assimilation, refugees do not find a job more quickly in higher threat regions. If anything, threat lowers the pace of their earnings growth. Our estimates indicate that refugees assigned to regions in the top quartile of the threat distribution would have to work 1.3 additional years to make up for the earnings loss, as compared to refugees assigned to regions in the bottom quartile.

Examining the drivers of the earnings gap, we find that refugees in higher threat regions search for jobs more actively, but do so relying on their close friends and family network. Segregated searches may lead to more precarious employment and lower quality jobs. We show that refugees in higher threat regions are more likely to be overqualified for their job and to hold jobs that offer fewer opportunities for skills development and earnings growth. Finally, leveraging detailed occupational codes

[1]Note that the ITT design would in any case address selected *ex-post* migration of refugees.

from administrative records, we find that in high-threat regions the earnings penalty persists relative to workers within the same local labor market and narrowly defined 5-digit occupation. Together, these results suggest that hostility, including formal and informal discrimination, slows down refugees' economic assimilation.

Second, we focus on refugees' feeling of belonging, trust in German institutions, and intentions to participate politically. We show that refugees in high threat areas are more likely to report being disadvantaged because of their origin and feel less supported from local authorities in various domains of life (e.g., job-seeking, approval of foreign degrees, search for educational institutions). Perceptions of unfair treatment, together with lack of economic progress, may hinder refugees' allegiance to the host country and slow down the process of political integration. Consistent with this view, refugees assigned to higher threat regions report lower trust in German institutions and are less likely to say that they intend to apply for German citizenship.

Our findings suggest that local hostility can lead to segmented assimilation, where refugees assimilate in some domains but not in others. Previous research has shown that segmented assimilation can enable minorities to integrate successfully while preserving their cultural identity (Zhou, 1997; Zonszein, 2023). However, when segmented assimilation is driven by threat and occurs only along the cultural domain, refugees may remain marginalized and be unable to thrive economically and socially. The lack of integration of refugees may also hinder the nation building process and erode social cohesion in receiving countries.

Our paper speaks to different strands of the literature. First, it relates to papers on assimilation and cultural transmission. Economists have analyzed immigration-induced changes in preferences of the local population (Boelmann et al., 2021; Bazzi et al., 2023a,b; Bursztyn et al., 2024), the influence of emigrants on the cultural dynamics of the origin community (Barsbai et al., 2017; Rapoport et al., 2021), the evolution of immigrants' preferences (Fernández & Fogli, 2009; Abramitzky et al., 2020), and the effects of forced migration on refugees' human capital investment (Bauer et al., 2013; Becker et al., 2020). Our analysis also speaks to the literature on the relationship between migration and the persistence of cultural norms across generations (Spolaore & Wacziarg, 2016; Desmet & Wacziarg, 2021; Giuliano & Nunn, 2021; Bisin et al., 2024).

We complement these works by focusing on refugees in the German context, leveraging rich survey data to measure preferences of both minority and majority group members. Our findings shed light on one specific determinant of cultural change (i.e., local threat) and on the malleability of preferences and attitudes in the short run. They also showcase the importance of jointly considering cultural, economic, and civic assimilation, as these processes may not occur at the same pace. Our results also complement previous work in sociology, mostly based on case studies from the US, on segmented assimilation theory (Portes & Zhou, 1993; Zhou, 1997).

Second, our paper is related to the literature on nation building. Several papers have studied the extent to which schooling and education can promote the development of national identity in diverse communities (Bandiera et al., 2019; Bazzi et al., 2020; Alesina et al., 2021; Blanc & Kubo, 2024). Others have analyzed the relevance of other forces—from sport (Depetris-Chauvin et al., 2020; Lowe, 2021) to wars (Alesina et al., 2020; Ronconi & Ramos-Toro, 2022) to participation in protests or exposure to political campaigns (Madestam & Yanagizawa-Drott, 2012; Assouad, 2020) to inter-group contact (Bazzi et al., 2019; Rao, 2019). Closest to our work, a number of recent papers have analyzed the effects of forced assimilation policies (Abdelgadir & Fouka, 2020; Fouka, 2020). We extend the existing literature by documenting that increased threat perceptions may lead to faster cultural convergence but not to successful economic, social, and political integration. Our findings suggest that pressure to conform culturally in hostile environments combined with lack of economic progress can reduce refugees' feeling of belonging in the host society and erode the social fabric necessary for nation building.

Finally, our paper is related to the literature on the economic integration of refugees in high-income countries (see Becker & Ferrara, 2019, and Brell et al., 2020, for recent reviews), and, in particular, on the causes and consequences of the post-2015 refugee inflow to Germany and Europe (Hangartner et al., 2019; Martén et al., 2019; Busch et al., 2020; Deole & Huang, 2020; Battisti et al., 2021; Gehrsitz & Ungerer, 2022; Hilbig & Riaz, 2022; Bahar et al., 2024b). Two papers are particularly close to ours. Bailey et al. (2022) use Facebook friendship data to show that local institutions influence social integration. We complement this work by focusing on local hostility and analyzing multiple domains of assimilation simultaneously. Aksoy

et al. (2023) find that favorable labor markets and open attitudes promote refugees' integration. We expand on their results by measuring immediate threat and hostility, using a different empirical strategy, and focusing on changes in assimilation rather than levels.

# 2 Background: Refugee Migration to Germany

Between 2015 and 2018 alone, a total of 1.6 million asylum applications were filed in Germany, amounting to over 40% of all applications in the European Union during this time (Eurostat, 2021). The surge in asylum applications followed the eruption of the civil war in Syria and the growing threat of the so-called Islamic State in Iraq. Starting in 2011, an increasing number of refugees fled to neighboring countries, moving westward to seek protection in Europe. The movement of hundreds of thousands of refugees from Syria and Iraq through Turkey and the *Balkan Route*, crossing Greece, Serbia, Croatia, or alternatively Hungary, rippled into an even larger and more diverse movement of people, including asylum seekers from Albania and Kosovo.

The number of asylum applications in Germany peaked in late 2015, following Angela Merkel's decision to admit refugees who were stranded in Hungary (Figure A.1).[2] The accommodation of hundreds of thousands of refugees within a few months proved to be a major challenge for Germany. The main tool for the distribution of refugees across States (*Bundesländer*) was the so-called *Königsteiner Schlüssel*, which allocated refugees according to a State's population[3]. States themselves could then distribute refugees within their districts, following independent but mostly population criteria, too. Focusing on 2016, Figure A.2 shows that the local presence of refugees is consistent with the distribution that would have arisen under the assignment through the *Königsteiner Schlüssel*.

The German government sought to allocate refugees depending on the local avail-

[2]The number of refugees to Germany steeply declined after 2016, and remained relatively low until 2020, but increased again since 2021. Additionally, Germany has received more than 1.1 million Ukrainian refugees since February 2022 (UNHCR, 2024).

[3]According to the official regulation, the distribution key is based one third on federal states' population and two thirds on tax revenues. However, tax revenues play hardly any role in practice. This is because what matters is the *absolute* total tax revenue (which depends primarily on total population), and because tax revenues are defined after applying the so-called "Länderfinanzausgleich" (i.e., financial equalization scheme between federal states).

ability of housing, trying not to separate family members. However, within a short period of time, the available accommodations were filled up, and local authorities had to rely on alternative solutions, such as vacant houses, empty hotels, old military barracks, schools, and improvised container colonies and tents (Baier & Siegert, 2018). Beyond the initial assignment to accommodations within states, refugees had the ability to self-relocate under certain circumstances. Those who were still in the asylum application process or who had already been rejected were not allowed to move within the first three months of stay in Germany. Many of the rejected asylum applicants receive a special status, by which they are not officially refugees but whose stay in the country is tolerated (*Duldung*). Until August 2016, accepted applicants as well as persons with *Duldung* and pending applications that passed the three month mark were allowed to move freely across Germany. However, during the summer of 2016, lawmakers passed the *Integration Act*, restricting the free movement across states even for individuals with approved status for further three years.

Asylum seekers whose application has not yet been processed as well as persons with tolerated status have access to the labor market after a waiting period of three months, except if they come from a so-called safe country of origin. The work permit is issued only for a specific job after review by the authorities. Instead, persons with approved asylum status can enter the labor market without any restriction.

# 3 Data and Measurement

**Individual-level data on refugees and non-refugees.** We use two main data sources to measure the preferences of local residents and the assimilation of refugees. Appendix C provides more details on all variables. First, we rely on the German Socio-Economic Panel (SOEP). The SOEP is a yearly, nationally representative longitudinal study that surveys 30,000 individuals, and includes information on demographics, socio-economic status, attitudes, and values of respondents. In our baseline analysis, we consider all residents in Germany other than refugees between 18 and 66, regardless of their nativity.[4]

[4]We use data version 36, including years 1984-2019 (SOEP, 2020). For more details on sampling, fieldwork, data structure, and content of the SOEP, we refer to Goebel et al. (2019). The age restriction is imposed to focus on working age population. Results are robust to omitting this restriction. Results are also unchanged when restricting

Second, we collect data from the IAB-BAMF-SOEP Survey of Refugees. This is a longitudinal, representative survey of refugees, asylum seekers, and their family members in Germany (Brücker et al., 2016). Since the refugee survey is designed to match the questions in the SOEP, the two surveys are highly comparable. The target population is composed of individuals arrived as asylum seekers in Germany between January 1, 2013, and December 31, 2016, irrespective of their current legal status. The total sample includes about 8,000 adult respondents, who were surveyed up to three times between 2016 and 2018 (Kühne et al., 2019). As for non-refugee respondents, we restrict attention to individuals between 18 and 66 and exclude those arrived before the onset of the refugee influx in 2013. The main questionnaire includes questions on migration, employment and education history, socioeconomic and demographic characteristics, measures of social and political integration, as well as values and attitudes.

To measure refugees' economic assimilation, we complement the survey data with linked administrative records from the German Federal Employment Agency on earnings, employment, types of job, and detailed occupation codes until December of 2021 (Keita & Trübswetter, 2020).[5] From the survey of refugees, we also obtain data to measure refugees' civic assimilation. We consider questions on refugees' perceptions of unfair treatment, support from local authorities in different domains of life (e.g., support in finding an apartment or dealing with legal issues), trust in German institutions, and intentions to apply for citizenship.

**Cultural traits.** To measure refugees' cultural convergence, we consider the eight overlapping questions in the refugee survey and in the SOEP that, in our view, are best positioned to capture culture, defined as both preferences (e.g., risk attitudes) and beliefs (e.g., views over the importance of effort vs luck for success).[6] These are: risk attitudes, negative and positive reciprocity, frequency of different types of leisure and cultural activities (sports, movies, restaurants, opera, etc.), interest in politics, locus of control, generalized trust, and views over fairness in society. Table C.1 reports

attention to German-born individuals to define economic and cultural variables.

[5]According to Antoni et al. (2023), 86% of all refugees gave their consent to data linkage and about 90% of all SOEP respondents who had consented could be linked.

[6]Building on the evolutionary anthropology literature, Nunn (2021) (p.42) defines culture "as the knowledge, technology, values, beliefs, and norms that can be transmitted across generations and between individuals."

all questions, together with the exact wording and the range of possible answers.[7]

In Table A.1, we present the correlation between each of the traits considered in our analysis and several proxies for political orientation, cultural and social attitudes, and preferences for redistribution and altruism of SOEP non-refugee respondents.[8] Panel A documents that, in most cases, there is a strong correlation between the cultural traits included in our analysis and political preferences of individuals interviewed in the SOEP, and that the patterns are consistent with the literature (Block & Block, 2006; Carney et al., 2008; Littvay et al., 2011). A similar picture emerges from Panels B and C, which consider cultural preferences (e.g., support for same-sex marriages, views towards gender roles, and religiosity) and altruism and preferences for redistribution, respectively. These results are again consistent with the literature (Falk et al., 2018).

**Cultural similarity.** To capture the various cultural dimensions in a parsimonious way, we construct an index of cultural proximity between each refugee and all non-refugee respondents in the SOEP. As noted in Broockman et al. (2017) and Bursztyn et al. (2017), combining different outcomes into a single index also reduces survey measurement error and limits the potential for biases due to multiple hypotheses testing. The most frequently used measure of cultural distance, at least within economics, is the Euclidean distance, which belongs to the group of geometric distances (Alesina et al., 2017; Rapoport et al., 2021; Bertrand & Kamenica, 2023).[9]

To calculate the cultural similarity index (CSI) between refugee $i$ and all natives $n$, we proceed as follows.[10] For each of the 8 questions $q$ in Table C.1, we calculate the Euclidean distance. That is, we take the square root of the averaged squared pairwise differences between a refugee and all natives $D_{iq}^{Eucl} = \sqrt{\frac{1}{N}\sum_{n=1}^{N}(x_{iq} - x_{nq})^2}$. Finally, we average over all questions, and invert this term to get the CSI. We display

[7] In Appendix B, we verify that results are robust to including additional survey questions (reported in Table C.2).

[8] See Table C.3 for the exact wording of each variable. In Table A.1, we adjust standard errors to account for multiple hypotheses testing.

[9] Intuitively, the Euclidean distance captures the shortest, unweighted distance between two points in the cultural space. We verify that results hold using other measures of cultural similarity, such as the absolute distance to the national average. The advantage of the Euclidean distance is that it takes into account the dispersion of preferences in the population by calculating the distance between a refugee and each non-refugee survey respondent, rather than calculating the distance to a generic mean.

[10] For simplicity, when describing the construction of the CSI, we use the term "natives" to indicate all non-refugee residents in Germany. This is over-simplifying, since the sample also includes non-native respondents, who make up about 15% of our sample. We show later that excluding foreign born individuals does not change our results.

the average CSI across regions in Figure A.3.

**Data on local threat.** We define local threat using different variables measured at the NUTS-2 region level (see also Table C.4).[11] First, we use information on attacks against mosques between 2001 and 2011 from Colussi et al. (2021) and the frequency of marches organized by the far-right political groups between 2005 and 2012 from Kanol & Knoesel (2021). Second, we measure locals' ethnocentrism by combining anti-immigrant and anti-diversity attitudes from ALLBUS (2021) and an inverse measure of openness—a sub-dimension of the Big-5 personality traits associated with ethnocentrism from the SOEP (McCrae, 1996; Butler, 2000). We also include political variables: the 2013 vote share of the far-right, anti-immigrant National Democratic Party (NPD) from the Federal Elections Office (Bundeswahlleiter, 2013). Finally, we collect historical data on pogroms and violence against Jews from Voigtländer & Voth (2012), and the 1933 vote share of the Nazi party from Falter & Hänisch (1990). We measure threat before the inflow of refugees to reduce concerns of endogeneity, since natives' hostility may respond to refugee migration.

**Threat index.** We define a parsimonious measure of local hostility—the treat index—by taking the first principal component of the variables described above. The threat index captures ethnocentric sentiments in the overall population and at the extremes. Using a first principal component allows us to isolate the features that explain the largest possible variation in the data while accounting for the potential correlation between xenophobia at the extreme and average levels of openness. *Ex-ante*, it is not obvious whether refugees respond more to strong but rare signals about xenophobic sentiment or whether regular interactions with the local population reveal more about the attitudes of the latter.

Table A.2 reports the correlation between the various components of the index. Table A.3 shows that the first principal component loads onto variables that capture radical anti-immigrant sentiments, such as the vote share for the (now banned) extreme right-wing party NPD, rallies of fascist groups, and the view that immigrants should marry people of their own nationality, emphasizing the notion of "ethnic purity" (McPherson et al., 2001). We plot the threat index across NUTS-2 regions in Figure A.4, both unconditional (left panel) and conditional on state fixed effects

[11] There are 38 NUTS-2 regions in Germany.

(right panel). The index and its components display significant regional variation, and the individual dimensions seem to be geographically correlated with each other. In line with the literature connecting a history of socialism with right-wing attitudes, threat is higher in Eastern Germany (Lange, 2021; Acemoglu et al., 2022).

**Descriptive statistics.** Table A.4 reports the summary statistics for the main variables and the characteristics of refugees (Panel A) and non-refugees (Panel B), for the full sample and separately for regions above and below the median value of threat (-0.63). On average, the cultural similarity between refugees and non-refugees is -1.91. Refugees in our sample have spent 29 months in Germany on average, and 18% of them are employed at the time of the interview. Almost 80% of refugees in our sample come from Syria, Afghanistan, and Iraq. As expected, refugees differ from non-refugee respondents in several ways. Only 38% of refugees are women. Refugees are also less educated and younger than non-refugees. There are no meaningful differences in either months spent in Germany or pre-entry characteristics between refugees assigned to high versus low threat regions—something that we also investigate more formally in Section 4.2 below.

Table A.5 reports the regional variables used in the main analysis. Higher threat regions are characterized by higher unemployment, lower population density, and a lower share of refugees. As explained below, we will account for the effect that these, and many other, variables might have on the assimilation trajectories of refugees assigned to regions with different levels of threat. The table also shows that there are no systematic differences in occupational task complexity or skill diversity—proxies for the general local economic structure.

# 4 Empirical Strategy

## 4.1 Estimating Equation

To study the effect of local threat on refugees' assimilation, we estimate:

$$\begin{aligned} Y_{irt} = \beta_1 \, \boldsymbol{MSA_{it}} \times \boldsymbol{Threat_r} + \, \gamma_t + \, \gamma_r + \\ \beta_2 MSA_{it} \times Z_r' + \beta_3 MSA_{it} + X_{it}' + Q_{it} + \epsilon_{irt} \end{aligned} \tag{1}$$

where $Y$ is the assimilation outcome of refugee $i$ assigned to NUTS-2 region $r$ interviewed in survey year $t$; $MSA$ refers to months since arrival of the refugee; and, $Threat$ is the threat index for region $r$ described in Section 3. The key regressor of interest is the interaction term between $MSA$ and threat. The coefficient $\beta_1$ captures the differential effect that each additional month has on the assimilation of a refugee when spent in a region with a different level of threat. Positive values of $\beta_1$ indicate that refugees assimilate faster in areas with higher threat.

In our preferred specification, we control for: *i*) NUTS-2 region fixed effects, $\gamma_r$, which absorb any NUTS-2-specific, time invariant characteristic, including the threat index; *ii*) survey year fixed effects, $\gamma_t$, which capture any time-varying shock common to all refugees in Germany; *iii*) individual characteristics (gender, age, age squared, country of origin, and marital status, dummy for children living in the household born before arrival, work experience, and education upon arrival), $X'_{it}$; *iv*) refugee specific time-varying dummy variables, $Q_{it}$, to account for compositional changes in the questionnaire and refugees' responses (or missing values);[12] and, *v*) the interaction between MSA and an array of local characteristics at baseline, described in detail below. We use the region of assignment—rather than the region of residence—as the location of treatment, thereby implementing an intention to treat (ITT) approach.[13] Standard errors are clustered at the person-level, but results are robust to alternative clustering structures and Conley (1999) adjusted standard errors (see Appendix B.6).

## 4.2 Threats to Identification

The key identifying assumption behind our empirical strategy is that the allocation of refugees across German regions did not change over time in a way that is correlated with: refugees' assimilation trajectories; and, threat in the region of assignment. This would be violated in the presence of *ex-ante* selection of refugees across regions. For instance, officials might become better able to match refugees to regions on the basis of their similarity to German culture in a way that is correlated with local threat.

[12] For each dimension of the cultural similarity index, we include a dummy variable equal to one if the respondent received a questionnaire that did not contain such dimension or if she refused to answer.

[13] We define the region of assignment based on the longest region of residence before the current, which is reported by refugees in their very first interview. In Appendix B, we estimate 2SLS regressions, using threat in the region of assignment as instrument for threat in the region of residence.

Alternatively, due to the rising number of asylum seekers, refugees arriving later might have been assigned to areas with more sluggish labor markets and with higher levels of hostility. To address this concern, in Appendix B.1, we document that the pre-entry characteristics of refugees, including baseline cultural similarity, assigned to different regions do not change over time. This holds both when considering the full sample and when considering regions with different characteristics, such as the unemployment rate and the urban population share (Table B.1) as well as the threat index (Table B.2). Moreover, in Appendix B.1, we verify that results are unchanged when interacting MSA with a large battery of refugee characteristics, such as age, gender, education, country of origin (Figure B.1). This lends additional support to our identifying assumption that allocation rules did not change over time in a way that depends on individual characteristics.

A second issue with identification is the possible *ex-post* sorting of refugees. By relying on the region of assignment (rather than the region of residence), the ITT approach deals with this issue. However, for completeness, in Appendix B.2, we document that there is no evidence of selected out-migration among refugees, either along cultural or along economic margins (Figure B.2). Also, and importantly, in Section 5.3 below, we find no evidence of survey attrition among refugees assigned to regions with higher levels of threat.

# 5 Threat and Cultural Assimilation

## 5.1 Main Results

We begin by examining the average effects of months since arrival on cultural similarity. In column 1 of Table 1, we estimate a specification that includes individual controls and fixed effects for survey-question composition, NUTS-2 region, and survey year. The positive and statistically significant coefficient on months since arrival (MSA) implies that refugees assimilate culturally as they spend time in Germany. To gauge the magnitude of our estimates, we ask when the average cultural similarity index (CSI) between a refugee and a non-refugee would equal that between two non-refugee German residents. We calculate the CSI between all non-refugee respondents

using the pairwise difference between them. This is, on average, -1.38: as expected, lower (in absolute value) than the distance between refugees and locals (-1.91). According to the coefficient in column 1, refugees close approximately 2.5% of this gap in one year.

In column 2, we add the interaction between the threat index and MSA.[14] The coefficient on MSA remains positive and precisely estimated. The coefficient on the interaction term is positive and statistically significant, suggesting that refugees assigned to regions with higher levels of threat exhibit faster cultural assimilation. A potential concern with these results is that threat might be correlated with other regional drivers of assimilation. In the remainder of Table 1, we tackle this possibility by interacting MSA with several controls.[15]

First, we consider proxies for social connectedness at the local level as well as the size and the characteristics of ethnic networks, which have been shown to influence the assimilation trajectory of new-comers (Edin et al., 2003; Eriksson, 2020; Battisti et al., 2021; Bailey et al., 2022). In column 3, we interact MSA with: population density; the refugee share; and, the population share from the same origin country.[16] Then, we turn to economic factors. In column 4, we consider variables that capture local labor market conditions and the economic integration of immigrants or refugees: the unemployment rate; the employment rate of individuals from the same origin region; and, measures of task diversity and skill complexity.[17] In column 5, we assess the role of the distinctiveness and the heterogeneity of regional culture. To proxy for cultural distinctiveness, we calculate the cultural similarity between natives of a NUTS-2 region and their counterparts in the rest of the country. To measure cultural homogeneity, we use the standard deviation of the cultural similarity index for all natives within a NUTS-2 region.

[14] Region fixed effects absorb the main coefficient on the threat index.

[15] All variables are measured at baseline, i.e., before the inflow of refugees in 2013. See Table C.5 for more details.

[16] To better capture the local influence of social networks, we measure these variables at the district, rather than at the regional, level.

[17] Since local labor markets span areas larger than the district, we measure these variables at the regional level. Task diversity is defined as in Dengler et al. (2014): we first assign the task structure from David & Dorn (2013) to each occupation; then, we average across occupations (over task) within each region, and construct a Herfindahl index. Skill complexity is constructed in a similar way: using 5-digit occupation codes (KldB2010—very similar to ISCO08), we calculate the skill requirement of each occupation. Defining four broad categories (helper; skilled worker; specialist; and, expert), we calculate the share of employees in each of them, relative to all employed individuals in the region. Finally, as before, we calculate a Herfindahl Index. See also Table C.5.

The coefficient on the interaction between MSA and threat remains positive, statistically significant, and similar in size to that in column 2. The effects of threat on cultural assimilation are not only robust but also quantitatively large. According to the coefficient in column 5, which we take as our preferred specification, the pace of cultural convergence of a refugee assigned to a region at the 75th percentile of the threat distribution is 54% higher than that of a refugee assigned to a region at the 25th percentile.[18]

## 5.2 Threat Perceptions

**Worries about xenophobia.** Our interpretation of results in Table 1 is that local hostility increases threat perceptions, inducing refugees to adopt German culture more quickly. In Figure 1, we present residualized bin-scatterplots corresponding to regressions that partial out survey year fixed effects, months since arrival, and individual characteristics. In the left panel, we consider fears about xenophobia (expressed on a 1 to 3 scale, with higher values reflecting more concerns); in the right panel, we focus on refugees' answer to the question of whether they feel welcome in Germany (on a 1 to 5 scale, with higher numbers referring to more inclusive feelings). Consistent with our hypothesis, refugees assigned to regions with a higher threat index are more likely to report concerns about xenophobia and to say that they feel less welcome in Germany.

**Exposure to far-right demonstrations upon arrival.** Next, we study whether exposure to episodes of hostility early on shapes refugees' cultural assimilation. Shortly after their arrival, refugees may feel more vulnerable, and returns to experience are likely to be higher when individuals seek to learn about a new environment. Far-right marches may thus act as signals about local hostility that induce refugees to update their threat perceptions. In Table 2, we estimate a version of equation (1) that omits the interaction between MSA and threat, and instead includes the number of far-right demonstrations occurring in the region of assignment in the first three (columns 1 to 3), six (columns 4 to 6), and nine (columns 7 to 9) months since a refugee's arrival.

[18]This number is obtained by multiplying the coefficient on the interaction in column 5 (0.136) by the inter-quartile range of the threat index (1.156), subtracting the coefficient on MSA (0.102), and then scaling this difference by the coefficient on MSA (0.102). Table A.6 presents coefficients on all variables included in column 5 of Table 1.

We hypothesize that far-right demonstrations are perceived as more threatening to refugees, and should thus lead to faster cultural convergence, in regions that are more hostile to begin with. This is for two reasons. First, right-wing demonstrations tend to be larger and more violent in high threat regions (Kanol & Knoesel, 2021). Second, wider public support for protest in regions with higher levels of threat may reveal locals' preferences early on and increase refugees' perception of threat. Table 2 shows that, holding constant the number of months spent in the country, cultural similarity is higher among refugees exposed to far-right marches early on—more so for those assigned to high threat regions.

**Exposure to historic antisemitism.** The threat index includes both historical and contemporaneous variables. Among the former, there are pogroms and violence against Jews as well as the 1933 vote share of the Nazi party, which have been shown to have long run effects on attitudes, and on antisemitism in particular (Voigtländer & Voth, 2012; Becker & Pascali, 2019; Cantoni et al., 2019). Refugees in our sample may not perceive antisemitism as an immediate threat, since more than 85% of them come from majority-Muslim countries (see also Table A.4). Guided by this intuition, in Table 3, we examine the effects of different threat dimensions. Based on the principal component analyses reported in Table A.3, we divide the 11 components of the index in three categories with eigenvalue greater than one: the first one loads on contemporary anti-immigrant sentiments; the second one reflects historical hostility against Jews; the third one proxies for contemporaneous openness among locals.

Both contemporaneous anti-immigrant sentiments (column 1) and lack of openness among locals in recent surveys (column 3) are strongly associated with refugees' faster cultural convergence. On the contrary, no such relationship appears for historical antisemitism (column 2). This holds also when including all three sub-components simultaneously (column 4). These patterns suggest that refugees respond more to threat more directly targeted against their own group. They also support the notion that the "deep roots" of modern xenophobia—which may be correlated with other characteristics—do not drive the assimilation of refugees.[19]

[19]For completeness, in Table A.7, we explore the impact of each threat component at the time. Consistent with results in Table 2, the frequency of right-wing marches has a strong effect on cultural convergence (column 6). Similarly, and in line with the patterns documented in Table 3, natives' attitudes are important determinants of the threat-induced cultural convergence of refugees.

## 5.3 Robustness

**Correlates of threat.** Despite the large set of controls included in our preferred specification, one may still wonder whether results are at least partly due to the influence of other forces correlated with local threat. To address this concern, we interact MSA with an additional battery of regional controls. We present results in Figure 2, reporting the baseline estimate (Table 1, column 5) as the first dot from the left to ease comparisons. Subsequent dots present coefficients obtained when interacting additional local characteristics with MSA.[20] These include the share of employees with a university degree, the share of the population 65+, the availability of childcare facilities, rental prices, and local tax capacity. Finally, we estimate a specification that adds the interaction between all the variables and survey year dummies. In Appendix B.7, we also implement the test suggested by Oster (2019), and conclude that omitted variables should be more than 1.36 times as important as the controls included in our most stringent model.

**Social desirability.** An alternative interpretation for our results is that they might be influenced by changes in social desirability or strategic mis-reporting, which may be correlated with threat. We provide evidence that this mechanism is unlikely to be the main driver of our findings. First, we consider an extreme form of strategic non-response: survey attrition. We exploit the fact that some refugees were interviewed multiple times, and create a dummy equal to one if a refugee present in one wave did not appear in the following one. In column 1 of Table A.8, we regress this indicator against MSA, partialling out the additional set of controls and fixed effects included in the baseline specification. As expected, the probability of attrition increases with time spent in Germany. In columns 2 and 3, we add the interaction between MSA and, respectively, the CSI and the threat index. In column 4, we include both interactions simultaneously. In all cases, the coefficient on the interaction term is close to zero and statistically insignificant, suggesting that there is no selective attrition of refugees over time. These patterns are unchanged when adding the triple interaction between MSA, threat, and cultural similarity (column 5). Since we expect attrition

[20] We follow the convention adopted thus far of measuring variables related to labor market conditions at the NUTS-2 level and variables related to public goods provision, demographic composition, and amenities at the district level. See Table C.5 for more details.

to be correlated with changes in strategic reporting behavior, these findings provide additional evidence against the idea that refugees' cultural assimilation is entirely explained by social desirability and mis-reporting.

Second, we exploit information on interviewers' assessment about the veracity of refugees' responses. In column 1 of Table A.9, we document that interviewers' concerns about how truthfully refugees respond to the survey do not increase more in high threat regions. In column 2, we compare the interviewer's assessed language skills with those self-reported by the refugee. We find no evidence that refugees overstate their language proficiency more in higher threat regions as they spend more time in Germany.

Finally, we turn to outcomes self-reported by refugees in the survey who can be compared to administrative records. For the subset of individuals who can be linked, we contrast their self-reported employment and earnings (columns 3 and 4) with those recorded in the official labor market statistics on the same day as the survey interview (columns 5 and 6). Reassuringly, we find no gap in reported versus actual outcomes.

**Additional robustness checks.** In Appendix B, we perform several additional robustness checks, which we briefly summarize here. First, we repeat the analysis measuring cultural assimilation with the Canberra index and with the absolute difference between refugees' preferences and the non-refugee mean (Table B.3). Second, we replicate results by constructing the CSI including additional questions, restricting attention to native-born respondents, and measuring preferences among non-refugee respondents in the latest survey wave (Tables B.4 and B.5). Third, we verify that single sub-components of non-refugee respondents' CSI do not change differentially in high-threat regions following refugee inflows (Table B.6), and that results are unchanged when: using different cut-offs for anti-immigrant attitudes or measuring threat at endline (Table B.7 and Table B.8); and, when dropping each CSI trait, threat component, and German region (Figures B.3, B.4, and B.5). Finally, we show that results are robust to: *i*) clustering standard errors at the NUTS-2 level or at the district level, and accounting for potential spatial correlation (Conley, 1999); *ii*) interacting year dummies with a dummy for Eastern Germany and with dummies for a refugee's country of origin; *iii*) controlling for refugee arrival year fixed effects and district fixed effects; *iv*) excluding individuals surveyed more than once to address

concerns of bias in difference-in-differences designs with heterogeneous treatment effects (De Chaisemartin & d'Haultfoeuille, 2020; Goodman-Bacon, 2021); *v*) dropping potential outliers; and, *vi*) instrumenting threat in the region of residence using that in the region of assignment (Tables B.9, B.10, and B.11).

# 6 Threat and Segmented Assimilation

## 6.1 Economic Integration

**Employment and earnings.** In Table 4, we study the relationship between threat and economic assimilation, reporting results from the preferred specification (Table 1, column 5). Panel A reports self-reported economic outcomes at the time of the survey.[21] We begin by focusing on employment, in column 1. The positive and statistically significant coefficient on MSA implies that refugees' employment rate increases by 9% every year. The coefficient on the interaction term between MSA and threat is instead close to zero and imprecisely estimated. This pattern stands in contrast with the positive effect reported in Table 1 for cultural similarity, and indicates that refugees assigned to higher threat regions assimilate faster culturally, but not economically. In Appendix B, we show that results for employment are robust to all the checks summarized in Section 5.3.[22]

In columns 2 to 4, the dependent variables are (different definitions of) monthly gross earnings reported by refugees. In column 2, we include in the sample both employed and unemployed refugees. In column 3, we restrict attention to refugees employed at the time of the survey. In column 4, we replicate column 3 using logs. In all cases, the point estimate on MSA is positive and statistically significant. The coefficient on the interaction term is instead negative, albeit not precisely estimated, suggesting that, if anything, threat reduces earnings growth for refugees.

In Panel B, we turn to rich administrative employment and earnings records for the subset of refugees who can be linked to the survey. These data allow us to follow refugees until December 2021. While the survey only provides a snapshot of refugees'

[21] As we show in Table A.9, there is no evidence of bias in economic survey responses.

[22] Panel B of Figure 2 verifies that, as for CSI, results for employment are unchanged when interacting MSA with additional regional variables.

labor market outcomes at the time of the interview, the administrative data allows us to trace the evolution of earnings and the occupational history of refugees in the medium run.[23] Column 1 confirms that refugees' employment increases with time spent in Germany, but that there is no differential pattern depending on the level of threat in the region of assignment.[24] Results on earnings from the administrative records are also qualitatively in line with those from the survey. However, they are more precisely estimated: the coefficient on the interaction term is statistically significant, either at the 5% (columns 2 and 3) or at the 10% (column 4) level. Assuming a lifetime employment duration of 30 years, our estimates in column 4 of Panel B imply that refugees assigned to the top quartile of the threat distribution would have to work 1.3 additional years to compensate for the earnings loss relative to refugees assigned to regions in the bottom quartile. We consider this a lower bound estimate, since differences in initial earnings disparities tend to grow over time (Altonji et al., 2016; Barsbai et al., 2023).

**Job search.** In Table 5, we examine in more detail how threat influences refugees' economic assimilation. In column 1, we focus on a question that asks non-employed individuals about their intention to obtain employment in the near future.[25] Our results indicate that, conditional on not holding a job at the time of the interview, refugees express a stronger desire to find a job over time, more so when assigned to higher threat regions. This is consistent with threat inducing refugees to feel a greater urgency to secure a job. However, threat might induce refugees to look for jobs through a more segregated network, which gives them access to fewer and lower quality jobs. Column 2 confirms this idea showing that refugees assigned to higher threat regions are more likely to search for jobs through friends and relatives, rather than through other channels (including German employment agencies, private job

[23] We cluster standard errors at the individual level, as in our baseline specification. However, Table B.9 documents that all coefficients are more precisely estimated when using Conley (1999) or bootstrapped standard errors. Following the literature (Card, 1999; Grigsby et al., 2021), we drop observations at the bottom and top percentile of the earnings distribution in the survey sample to reduce the influence of potential outliers. We do not trim the earnings distribution in the administrative records, because the official statistics are already censored at the social security contribution assessment ceiling. Since refugees' employment and earnings significantly lag those of natives (Brell et al., 2020), results are very similar when focusing on relative, rather than absolute convergence.

[24] When interpreting this result, it is important to note that the administrative data that we use (Employee History, BeH) only includes refugees who are either employed or unemployed but had been previously employed (Schmucker & vom Berge, 2023).

[25] See Table C.6 for the exact wording of this question and those considered up to column 6 of Table 5.

placements, or the internet).

**Job characteristics.** Another margin through which threat can slow down earnings growth is job quality. First, because of employers' discrimination, refugees may hold systematically lower-quality jobs. Second, by increasing the disutility from remaining unemployed (e.g., due to higher probability of harassment), threat may reduce the option value of waiting for a better match on the labor market, inducing refugees to accept jobs that pay lower wages. In columns 3 and 4, we use information on the skill content of the jobs held by refugees at the time of the survey and prior to migration. We define the dependent variable as a dummy equal to one if the refugee is, respectively, over- and under-qualified for the job held in Germany.[26] While coefficients on MSA indicate that the match between occupation at origin and at destination improves over time, those on the interaction term show that threat reduces (resp., increases) the probability that refugees are over- (resp., under-) qualified for their current job.

In column 5, we consider an additional proxy for the quality and the degree of security of the jobs held by refugees: whether an individual works in a "mini job." The latter represents a form of marginal employment, where monthly income cannot exceed 450 Euros.[27] While "mini jobs" offer tax and social security contribution exemptions to employees and are appealing for part-time workers, they have been criticized for their limited social benefits (such as lower future pensions and unemployment insurance) as well as for their potential to undermine full-time employment (Lietzmann et al., 2017). Since "mini jobs" can be viewed as a proxy for precarious employment, we interpret the positive coefficient on the interaction term as indicating that refugees in high threat regions are less likely to find stable and well-paying jobs. An alternative interpretation is that threat induces refugees to choose more flexible jobs. If this were the case, we would expect to observe similar patterns for the probability of holding a part-time job. However, in contrast with this idea, we find no evidence that threat reduces the hours worked by refugees (column 6).

[26] This coding is based on the 5th digit of the German classification of occupations, KldB-2010 (corresponding to ISCO-08), which classifies each occupation into 4 distinct skill requirements: (1) Unskilled ("Helfer"), Skilled ("Fachkraft", vocational training required), Specialist ("Spezialist", extended vocational training or Bachelor degree required), Expert ("Experte", Master degree required).

[27] "Mini jobs" offer several advantages to employers, such as simplified hiring processes and flat rates for social security and tax payments. After our sample period, the threshold increased to 520 Euros in October 2022 and 538 Euros in January 2024.

**Earnings penalty within occupation.** If threat is higher in regions where on-the-job discrimination is higher, refugees may suffer an earnings penalty also within occupations. To examine this possibility, we return to the administrative data that has detailed information on occupational codes. We compute monthly earnings of refugees relative to the median earnings of all full-time employees within the same NUTS-2 region and the same five-digit occupation.[28] Results, reported in columns 7 and 8, indicate that the earnings penalty persists even within occupations. According to our estimates, moving refugees from a region at the 25th to a region at the 75th percentile of the threat distribution slows down their monthly gross earnings growth by 4.3%, relative to non-refugee workers *within* the same NUTS-2 region and occupation.

## 6.2 Civic Engagement

Table 6 examines different margins of civic integration. In column 1, we first test whether threat increases refugees' perceptions of discrimination. We use a specific question in the survey of refugees that asks individuals whether they feel disadvantaged because of their origin.[29] The positive and statistically significant coefficient on the interaction term indicates that refugees assigned to regions with higher threat become more likely to feel discriminated, as they spend more time in Germany. In column 2, we examine the flip-side of the self-reported experience with discrimination, namely whether refugees feel supported by local institutions. The dependent variable is the mean over multiple dummy variables that equal one if respondents report not having received support from local authorities in various domains of their life since arrival (e.g., looking for an apartment, dealing with legal and bureaucratic issues, discussing one's financial situation). Results indicate that, over time, refugees assigned to regions with higher threat report that they received less support.[30]

Next, we turn to refugees' trust in institutions. In column 3, we combine in a

[28] Five-digit occupation codes allow us to distinguish between 1,300 occupation types (Paulus et al., 2008). In order to make the survey and administrative data more comparable, we report earnings and occupations for refugees in the month of the interview.

[29] See Table C.7 for more details on the variables considered in this section.

[30] In Table A.10, we consider each of the dimensions of support separately. Except for support in learning German and medical care, all coefficients on the interaction term are positive, albeit not always statistically significant.

single index four dimensions of trust in German institutions: public administration, the German government, the legal system, and the police. The negative and precisely estimated coefficient on the interaction term indicates that refugees assigned to higher threat regions become less likely to trust German institutions over time.[31] In column 4, following the literature (Fouka, 2020; Zonszein, 2023), we measure political integration with refugees' intentions to apply for German citizenship (on a 1 to 4 scale, with higher values referring to stronger intentions to apply).[32] In column 5, we define a dummy equal to one if refugees certainly intend to apply. In both cases, the coefficient on the interaction term is negative and statistically significant, indicating that refugees assigned to higher threat regions become, over time, less likely to say they intend to apply for German citizenship.

Taken together, results in Table 6 suggest that local hostility reduces refugees' feeling of belonging, trust in German institutions, and desire to be politically engaged. Combined with the evidence presented in Section 6.1, this indicates that local hostility leads to segmented assimilation, inducing refugees to assimilate culturally without becoming economically and politically more integrated.

## 6.3 Locals' Response

In this section, we examine how locals react to refugee inflows—and whether such reactions depend on the baseline level of threat. This analysis sheds additional light on the effects of local threat on nation building and social cohesion. Since we can no longer exploit variation in time spent by refugees in German regions with different levels of threat, the analysis here is admittedly less cleanly identified than that conducted above. Hence, results should be interpreted as suggestive evidence on locals' response to refugee inflows.

**Locals' attitudes towards refugees.** In Table 7, we consider locals' attitudes towards refugees, elicited in 2016 and 2018. The survey includes multiple questions on respondents' views on the impact of refugees on the economy, cultural life, and Germany as a place to live, as well as their assessment of whether refugees represent

[31] Table A.11 examines each of the four dimensions separately, and shows that the coefficient on the interaction term is always negative. It is statistically significant for public administration (column 1) and the legal system (column 3).

[32] We use intentions, rather than actual application, because refugees in our sample do not meet the criteria to apply for German citizenship (in particular, the requirement that individuals must spend at least 8 years in the country).

a risk or a chance for Germany in the short and the long run. We estimate regressions that include individual controls, region and year fixed effects as well as interactions between year dummies and regional baseline characteristics from our preferred specification.[33] The main regressors are the refugee share in the region of residence of the respondent at the end of the year before the interview and its interaction with local threat.

In columns 1 to 3, we focus on locals' assessment of the impact of refugees on the economy, cultural life, and Germany as a place to live. In columns 4 and 5, we turn to respondents' opinion on whether refugees represent a risk for the short and the long run, respectively. Higher values always refer to more positive views towards refugees. In all columns, the coefficient on the interaction term between the refugee share and the threat index is negative and statistically significant. That is, following the inflow of asylum seekers, individuals living in regions with higher threat view refugees more negatively. In light of our findings for refugees' cultural convergence, this pattern is striking: even though refugees converge faster in regions with higher threat, locals' attitudes become more negative following refugee inflows in these regions.

**Counter-mobilization.** Next, we explore whether an average shift towards anti-refugee attitudes masks isolated yet effective pro-refugee initiatives on the ground. For instance, it is possible that stronger hostility led some local residents and non-profit organizations to coordinate efforts to facilitate the cultural integration of refugees (Vüllers & Hellmeier, 2022). We investigate this possibility in Table A.12, leveraging newly collected data on pro-refugee activism at the regional level.[34]

First, we collected and geo-located over 182,000 German-language tweets and retweets using the hashtag #refugeeswelcome from January 2013 to December 2018, identifying them as primarily expressing pro-refugee views after manual and neural network sentiment analysis. In columns 1 to 4, the dependent variable is the number of pro-refugee Tweets, in levels and scaled using different denominators. We find no evidence that refugee inflows increase the number of pro-refugee tweets in higher threat regions. In fact, the coefficient on the interaction term is always negative, and in column 2 statistically significant.

[33]Individual controls are: gender, age, age squared, highest education (4 categories), and migration background (no, indirect, 5 years ago or less, 6-10 years, more than 10 years).

[34]See Appendix C.2 for more details on the data construction.

Second, we compiled a dataset of the 1,000 NGOs that provide services to refugees across German NUTS-2 regions from the website *Refugeeswelcomemap.de*. Since we do not have information on the creation date of the NGOs, we use this as a snapshot of pro-refugee activities as of 2017. In columns 5 and 6, we correlate the number of NGOs (in levels and per 100,000 residents) with the refugee share in the previous year interacted with the baseline level of threat.[35] Since these are cross-sectional regressions, results should be interpreted as merely suggestive. With this caveat in mind, we do not find any evidence that refugee inflows are associated with more pro-refugee NGOs in regions with higher threat. If anything, the coefficient on the interaction term is negative and when expressing the number of pro-refugee NGOs per 100,000 inhabitants (column 6) statistically significant.

# 7 Conclusion

In this paper, we study how local hostility influences refugees' assimilation, exploiting plausibly exogenous variation in their allocation across German regions between 2013 and 2016. We find that local hostility heightens threat perceptions and increases the cultural assimilation of refugees. Yet, threat-induced cultural assimilation does not coincide with other dimensions of assimilation. Refugees assigned to higher threat regions do not find a job more quickly, experience slower earnings growth, report lower trust in German institutions, and are less likely to state that they intend to apply for German citizenship.

Our findings indicate that local threat may lead to segmented assimilation, where refugees converge in some domains but not in others. Segmented assimilation is not necessarily problematic, and there are many examples of minority group members retaining their cultural distinctiveness while thriving economically and becoming politically integrated in the host country. However, when segmented assimilation under threat occurs culturally but not socially or economically, refugees may remain marginalized in critical aspects of life, with important negative consequences for their well-being. The lack of successful integration of refugees can also be detrimental to

[35] In these regressions, we no longer include region fixed effects (since these would absorb all the variation). Instead, we include the baseline refugee share, threat, and baseline regional controls used in our preferred specification.

the nation building process and to social cohesion in receiving countries.

As the number of forcibly displaced individuals continues to grow worldwide, our results raise many, important questions. Does threat-induced cultural assimilation persist in the long run? Can inter-group interactions foster greater acceptance of diversity among locals, thereby reducing the pressure on refugees to assimilate? What are the long run consequences of segmented assimilation under threat, both for refugees and for the process of nation building in receiving countries?

# References


Abdelgadir, A. & Fouka, V. (2020). Political Secularism and Muslim Integration in the West: Assessing the Effects of the French Headscarf Ban. *American Political Science Review*, 114(3), 707–723.

Abramitzky, R., Boustan, L., & Eriksson, K. (2020). Do Immigrants Assimilate More Slowly Today Than in the Past? *American Economic Review: Insights*, 2(1), 125–41.

Acemoglu, D., De Feo, G., De Luca, G., & Russo, G. (2022). War, Socialism, and the Rise of Fascism: an Empirical Exploration. *The Quarterly Journal of Economics*, 137(2), 1233–1296.

Acemoglu, D. & Robinson, J. A. (2016). Paths to Inclusive Political Institutions. *Economic History of Warfare and State Formation*, (pp. 3–50).

Aksoy, C. G., Poutvaara, P., & Schikora, F. (2023). First Time Around: Local Conditions and Multi-dimensional Integration of Refugees. *Journal of Urban Economics*, 137, 103588.

Alba, R. D. & Nee, V. (2003). *Remaking the American mainstream: Assimilation and contemporary immigration*. Harvard University Press.

Alesina, A., Giuliano, P., & Reich, B. (2021). Nation-Building and Education. *The Economic Journal*, 131(638), 2273–2303.

Alesina, A. & Reich, B. (2015). Nation-Building. Working Paper, Department of Economics, Harvard University.

Alesina, A., Reich, B., & Riboni, A. (2020). Nation-Building, Nationalism, and Wars. *Journal of Economic Growth*, 25(4), 381–430.

Alesina, A., Tabellini, G., & Trebbi, F. (2017). Is Europe an Optimal Political Area? *Brookings Papers on Economic Activity*, 48(1 (Spring)), 169–234.

ALLBUS (2021). German General Social Survey – Cumulation 1980-2018. *GESIS Data Archive*, Cologne. ZA5276 Data file Version 1.1.0, https://doi.org/10.4232/1.13774.

Altonji, J. G., Kahn, L. B., & Speer, J. D. (2016). Cashier or Consultant? Entry Labor Market Conditions, Field of Study, and Career Success. *Journal of Labor Economics*, 34(S1), S361–S401.

Anderson, B. R. O. (1991). *Imagined Communities: Reflections on the Origin and Spread of Nationalism*. Verso.

Antoni, M., Beckmannshagen, M., Grabka, M. M., Keita, S., & Trübswetter, P. (2023). Survey Data of SOEP-Core, IAB-SOEP Migration Sample, IAB-BAMF-SOEP Survey

of Refugees and SOEP Innovation Sample Linked to Administrative Data of the IAB (SOEP-CMI-ADIAB). Institute for Employment Research (IAB), FDZ-Datenreport 3-2023 EN.

Assouad, L. (2020). Charismatic Leaders and Nation Building. PSE Working Paper No. 2020-38.

Bahar, D., Brough, R. J., & Peri, G. (2024a). Forced Migration and Refugees: Policies for Successful Economic and Social Integration. NBER Working Paper 32266.

Bahar, D., Hauptmann, A., Özgüzel, C., & Rapoport, H. (2024b). Migration and Knowledge Diffusion: The Effect of Returning Refugees on Export Performance in the Former Yugoslavia. *The Review of Economics and Statistics*, 106(2), 287–304.

Baier, A. & Siegert, M. (2018). Die Wohnsituation Geflüchteter. *BAMF-Kurzanalyse*, 02|2018.

Bailey, M., Johnston, D. M., Koenen, M., Kuchler, T., Russel, D., & Stroebel, J. (2022). The Social Integration of International Migrants: Evidence from the Networks of Syrians in Germany. NBER Working Paper 29925.

Bandiera, O., Mohnen, M., Rasul, I., & Viarengo, M. (2019). Nation-Building Through Compulsory Schooling During the Age of Mass Migration. *The Economic Journal*, 129(617), 62–109.

Barsbai, T., Rapoport, H., Steinmayr, A., & Trebesch, C. (2017). The Effect of Labor Migration on the Diffusion of Democracy: Evidence from a Former Soviet Republic. *American Economic Journal: Applied Economics*, 9(3), 36–69.

Barsbai, T., Steinmayr, A., & Winter, C. (2023). Immigrating Into a Recession: Evidence from Family Migrants to the US. *Journal of Labor Economics*, Forthcoming.

Battisti, M., Peri, G., & Romiti, A. (2021). Dynamic Effects of Co-Ethnic Networks on Immigrants' Economic Success. *The Economic Journal*, 132(641), 58–88.

Bauer, T. K., Braun, S., & Kvasnicka, M. (2013). The Economic Integration of Forced Migrants: Evidence for Post-War Germany. *The Economic Journal*, 123(571), 998–1024.

Bazzi, S., Ferrara, A., Fiszbein, M., Pearson, T., & Testa, P. A. (2023a). The Other Great Migration: Southern Whites and the New Right. *The Quarterly Journal of Economics*, 138(3), 1577–1647.

Bazzi, S., Ferrara, A., Fiszbein, M., Pearson, T. P., & Testa, P. A. (2023b). The Confederate Diaspora. NBER Working Paper 31331.

Bazzi, S., Gaduh, A., Rothenberg, A. D., & Wong, M. (2019). Unity in Diversity? How

Intergroup Contact Can Foster Nation Building. *American Economic Review*, 109(11), 3978–4025.

Bazzi, S., Hilmy, M., & Marx, B. (2020). Religion, Education, and the State. NBER Working Paper 27073.

BBSR (2018). The Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR).

Becker, S. O. & Ferrara, A. (2019). Consequences of Forced Migration: A Survey of Recent Findings. *Labour Economics*, 59, 1–16.

Becker, S. O., Grosfeld, I., Grosjean, P., Voigtlander, N., & Zhuravskaya, E. (2020). Forced Migration and Human Capital: Evidence from Post-WWII Population Transfers. *American Economic Review*, 110(5), 1430–63.

Becker, S. O. & Pascali, L. (2019). Religion, Division of Labor, and Conflict: Anti-semitism in Germany Over 600 Years. *American Economic Review*, 109(5), 1764–1804.

Bergolo, M. L., Leites, M., Perez-Truglia, R., & Strehl, M. (2020). What Makes a Tax Evader? NBER Working Paper 28235.

Bertrand, M. & Kamenica, E. (2023). Coming Apart? Cultural Distances in the United States Over Time. *American Economic Journal: Applied Economics*, 15(4), 100–141.

Bisin, A., Patacchini, E., Verdier, T., & Zenou, Y. (2011). Formation and persistence of oppositional identities. *European Economic Review*, 55(8), 1046–1071.

Bisin, A., Rubin, J., Seror, A., & Verdier, T. (2024). Culture, Institutions and the Long Divergence. *Journal of Economic Growth*, 29(1), 1–40.

Bisin, A. & Tura, G. (2019). Marriage, Fertility, and Cultural Integration in Italy. NBER Working Paper 26303.

Blanc, G. & Kubo, M. (2024). French. Working Paper.

Block, J. & Block, J. H. (2006). Nursery School Personality and Political Orientation Two Decades Later. *Journal of Research in Personality*, 40(5), 734–749.

Boelmann, B., Raute, A., & Schonberg, U. (2021). Wind of Change? Cultural Determinants of Maternal Labor Supply. CEPR Discussion Paper No. DP16149.

Brell, C., Dustmann, C., & Preston, I. (2020). The Labor Market Integration of Refugee Migrants in High-Income Countries. *Journal of Economic Perspectives*, 34(1), 94–121.

Broockman, D. E., Kalla, J. L., & Sekhon, J. S. (2017). The Design of Field Experiments with Survey Outcomes: A Framework for Selecting More Efficient, Robust, and Ethical Designs. *Political Analysis*, 25(4), 435–464.

Brücker, H., Rother, N., & Schupp, J. (2016). *IAB-BAMF-SOEP-Befragung von Geflüchteten: Überblick und erste Ergebnisse*. Number 116. DIW Berlin: Politikberatung kompakt.

Bundesagentur für Arbeit (2015). German Classification of Occupations 2010. Statistik der Bundesagentur für Arbeit.

Bundesagentur für Arbeit (2020). Beschäftigtenstatistik, Sonderauswertung. Statistik der Bundesagentur für Arbeit.

Bundesanzeiger (2016). Bekanntmachung des Königsteiner Schlüssels für das Jahr 2016. BAnz AT 20.06.2016 B1.

Bundeswahlleiter (2013). Ergebnisse der Bundestagswahl 2013.

Bundeswahlleiter (2020). Ergebnisse der Bundestagswahl 2017.

Bursztyn, L., Chaney, T., Hassan, T. A., & Rao, A. (2024). The Immigrant Next Door. *American Economic Review*, 114(2), 348–384.

Bursztyn, L., Fujiwara, T., & Pallais, A. (2017). 'Acting Wife': Marriage Market Incentives and Labor Market Investments. *American Economic Review*, 107(11), 3288–3319.

Busch, C., Krueger, D., Ludwig, A., Popova, I., & Iftikhar, Z. (2020). Should Germany Have Built a New Wall? Macroeconomic Lessons from the 2015-18 Refugee Wave. *Journal of Monetary Economics*, 113, 28–55.

Butler, J. C. (2000). Personality and Emotional Correlates of Right-Wing Authoritarianism. *Social Behavior and Personality: an International Journal*, 28(1), 1–14.

Cantoni, D., Hagemeister, F., & Westcott, M. (2019). Persistence and Activation of Right-wing Political Ideology. MWB Discussion Paper No.143.

Cantoni, D., Heizlsperger, L.-J., Yang, D. Y., Yuchtman, N., & Zhang, Y. J. (2022). The Fundamental Determinants of Protest Participation: Evidence from Hong Kong's Anti-authoritarian Movement. *Journal of Public Economics*, 211, 104667.

Card, D. (1999). The Causal Effect of Education on Earnings. *Handbook of Labor Economics*, 3, 1801–1863.

Carney, D. R., Jost, J. T., Gosling, S. D., & Potter, J. (2008). The Secret Lives of Liberals and Conservatives: Personality Profiles, Interaction Styles, and the Things They Leave Behind. *Political Psychology*, 29(6), 807–840.

Clarke, D., Romano, J. P., & Wolf, M. (2020). The Romano–Wolf Multiple-Hypothesis Correction in Stata. *The Stata Journal*, 20(4), 812–843.

Colella, F., Lalive, R., Sakalli, S. O., & Thoenig, M. (2019). Inference with Arbitrary Clustering. IZA Discussion Papers(12584).

Colussi, T., Isphording, I. E., & Pestel, N. (2021). Minority Salience and Political Extremism. *American Economic Journal: Applied Economics*, (3), 237–71.

Conley, T. G. (1999). GMM Estimation with Cross Sectional Dependence. *Journal of Econometrics*, 92(1), 1–45.

David, H. & Dorn, D. (2013). The Growth of Low-Skill Service Jobs and the Polarization of the US Labor Market. *American Economic Review*, 103(5), 1553–97.

De Chaisemartin, C. & d'Haultfoeuille, X. (2020). Two-Way Fixed Effects Estimators with Heterogeneous Treatment Effects. *American Economic Review*, 110(9), 2964–96.

Dengler, K., Matthes, B., & Paulus, W. (2014). Occupational Tasks in the German Labour Market. *FDZ Methodenreport*.

Deole, S. S. & Huang, Y. (2020). How do New Immigration Flows Affect Existing Immigrants? Evidence from the Refugee Crisis in Germany. GLO Discussion Paper 579.

Depetris-Chauvin, E., Durante, R., & Campante, F. (2020). Building Nations Through Shared Experiences: Evidence from African Football. *American Economic Review*, 110(5), 1572–1602.

Desmet, K. & Wacziarg, R. (2021). The Cultural Divide. *The Economic Journal*, 131(637), 2058–2088.

Destatis (2021). Federal Statistical Office, Genesis-Online Database.

Devlin, J., Chang, M., Lee, K., & Toutanova, K. (2018). BERT: Pre-Training of Deep Bidirectional Transformers for Language Understanding. *CoRR*, abs/1810.04805.

DIW Berlin / SOEP (ed.) (2022). SOEP-Core v37 – PGEN: Person-Related Status and Generated Variables. SOEP Survey Papers, No. 1186.

Edin, P.-A., Fredriksson, P., & Åslund, O. (2003). Ethnic Enclaves and the Economic Success of Immigrants—Evidence from a Natural Experiment. *The Quarterly Journal of Economics*, 118(1), 329–357.

Enke, B. (2020). Moral Values and Voting. *Journal of Political Economy*, 128(10), 3679–3729.

Eriksson, K. (2020). Ethnic Enclaves and Immigrant Outcomes: Norwegian Immigrants During the Age of Mass Migration. *European Review of Economic History*, 24(3), 427–446.

Eurostat (2021). Asylum and First Time Asylum Applicants - Annual Aggregated Data (Rounded). Eurostat Data Browser.

Falk, A., Becker, A., Dohmen, T., Enke, B., Huffman, D., & Sunde, U. (2018). Global Evidence on Economic Preferences. *The Quarterly Journal of Economics*, 133(4), 1645–1692.

Falter, J. W. & Hänisch, D. (1990). Election and Social Data of the Districts and Municipalities of the German Empire from 1920 to 1933. GESIS Data Archive, Cologne. ZA8013 Data file Version 1.0.0, https://doi.org/10.4232/1.8013.

Fernández, R. & Fogli, A. (2009). Culture: An Empirical Investigation of Beliefs, Work, and Fertility. *American Economic Journal: Macroeconomics*, 1(1), 146–77.

Fouka, V. (2019). How do Immigrants Respond to Discrimination? The Case of Germans in the US During World War I. *American Political Science Review*, 113(2), 405–422.

Fouka, V. (2020). Backlash: The Unintended Effects of Language Prohibition in US Schools After World War I. *The Review of Economic Studies*, 87(1), 204–239.

Fouka, V. (2023). State Policy and Immigrant Integration. *Annual Review of Political Science*, 27.

Fouka, V., Mazumder, S., & Tabellini, M. (2022). From Immigrants to Americans: Race and Assimilation during the Great Migration. *The Review of Economic Studies*, 89(2), 811–842.

Fujiwara, T., Müller, K., & Schwarz, C. (2024). The Effect of Social Media on Elections: Evidence from the United States. *Journal of the European Economic Association*, 22(3), 1495–1539.

García, A. S. (2014). Hidden in Plain Sight: How Unauthorised Migrants Strategically assimilate in Restrictive Localities in California. *Journal of Ethnic and Migration Studies*, 40(12), 1895–1914.

Gehrsitz, M. & Ungerer, M. (2022). Jobs, Crime and Votes: A Short-Run Evaluation of the Refugee Crisis in Germany. *Economica*, 89(355), 592–626.

Giuliano, P. & Nunn, N. (2021). Understanding Cultural Persistence and Change. *The Review of Economic Studies*, 88(4), 1541–1581.

Goebel, J., Grabka, M. M., Liebig, S., Kroh, M., Richter, D., Schröder, C., & Schupp, J. (2019). The German Socio-Economic Panel (SOEP). *Jahrbücher für Nationalökonomie und Statistik*, 239(2), 345–360.

Goodman-Bacon, A. (2021). Difference-In-Differences with Variation in Treatment Timing. *Journal of Econometrics*, 225(2), 254–277.

Gordon, M. M. (1964). *Assimilation in American Life: The Role of Race, Religion, and National Origins*. Oxford University Press on Demand.

Grigsby, J., Hurst, E., & Yildirmaz, A. (2021). Aggregate Nominal Wage Adjustments: New Evidence from Administrative Payroll Data. *American Economic Review*, 111(2), 428–71.

Guhr, O., Schumann, A.-K., Bahrmann, F., & Böhme, H. J. (2020). Training a Broad-Coverage German Sentiment Classification Model for Dialog Systems. In *Proceedings of The 12th Language Resources and Evaluation Conference* (pp. 1627–1632).

Hangartner, D., Dinas, E., Marbach, M., Matakos, K., & Xefteris, D. (2019). Does Exposure to the Refugee Crisis Make Natives More Hostile? *American Political Science Review*, 113(2), 442–455.

Hatte, S., Madinier, E., & Zhuravskaya, E. (2021). Reading Twitter in the Newsroom: How Social Media Affects Traditional-Media Reporting of Conflicts. Available at SSRN 3845739.

Hilbig, H. & Riaz, S. (2022). Freedom of Movement Restrictions Inhibit the Social Integration of Refugees. *The Journal of Politics*, 84(4), 2288–2293.

INKAR (2021). INKAR – Indikatoren und Karten zur Raum- und Stadtentwicklung. The Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR), https://www.inkar.de/.

Kanol, E. & Knoesel, J. (2021). Right-Wing Extremist Mobilization in Germany. *WZB Berlin Social Science Center*, Version 1.0.0, 125–41.

Keita, S. & Trübswetter, P. (2020). IAB-BAMF-SOEP Survey of Refugees Linked to Administrative Data of the IAB. Institute for Employment Research (IAB), FDZ-Datenreport 15-2020 EN.

Kühne, S., Jacobsen, J., & Kroh, M. (2019). Sampling in Times of High Immigration: The Survey Process of the IAB-BAMF-SOEP Survey of Refugees. *Survey Methods: Insights from the Field*.

Lange, M. (2021). The Legacy of State Socialism on Attitudes Toward Immigration. *Journal of Comparative Economics*, 49(3), 733–750.

Lazear, E. P. (1999). Culture and Language. *Journal of Political Economy*, 107(S6), S95–S126.

Lietzmann, T., Schmelzer, P., & Wiemers, J. (2017). Marginal Employment for Welfare Recipients: Stepping Stone or Obstacle? *Labour*, 31(4), 394–414.

Littvay, L., Weith, P. T., & Dawes, C. T. (2011). Sense of Control and Voting: A Genetically-Driven Relationship. *Social Science Quarterly*, 92(5), 1236–1252.

Lowe, M. (2021). Types of Contact: A Field Experiment on Collaborative and Adversarial Caste Integration. *American Economic Review*, 111(6), 1807–1844.

Madestam, A. & Yanagizawa-Drott, D. H. (2012). Shaping the Nation: The Effect of Fourth of July on Political Preferences and Behavior in the United States. HKS Faculty Research Working Paper Series.

Martén, L., Hainmueller, J., & Hangartner, D. (2019). Ethnic Networks Can Foster the Economic Integration of Refugees. *Proceedings of the National Academy of Sciences*, 116(33), 16280–16285.

Mbaye, L. M. O. et al. (2023). Climate Change, Natural Disasters, and Migration. IZA World of Labor.

McCrae, R. R. (1996). Social Consequences of Experiential Openness. *Psychological Bulletin*, 120(3), 323.

McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a Feather: Homophily in Social Networks. *Annual Review of Sociology*, 27(1), 415–444.

Nunn, N. (2021). History as Evolution. In *The Handbook of Historical Economics* (pp. 41–91). Elsevier.

Oster, E. (2019). Unobservable Selection and Coefficient Stability: Theory and Evidence. *Journal of Business & Economic Statistics*, 37(2), 187–204.

Paulus, W., Hillenbrand, S., & Schweitzer, R. (2008). Klassifizierung der berufe 2010-exposè. *Nürnberg: IAB und BA*.

Portes, A. & Zhou, M. (1993). Segmented Assimilation and Its Variants. *Annals of the American Academy of Political and Social Science*, 530, 74–96.

Rao, G. (2019). Familiarity Does Not Breed Contempt: Generosity, Discrimination, and Diversity in Delhi Schools. *American Economic Review*, 109(3), 774–809.

Rapoport, H., Sardoschau, S., & Silve, A. (2021). Migration and Cultural Change. IZA Discussion Papers(14772).

Rohner, D. & Zhuravskaya, E. (2023). *Nation Building: Big Lessons from Successes and Failures*. CEPR Press, Paris & London.

Romano, J. P. & Wolf, M. (2016). Efficient Computation of Adjusted p-values for

Resampling-Based Stepdown Multiple Testing. *Statistics & Probability Letters*, 113, 38–40.

Ronconi, J. P. & Ramos-Toro, D. (2022). Nation Building Through Military Service. Unpublished Manuscript.

Saavedra, M. (2021). Kenji or Kenneth? Pearl Harbor and Japanese-American Assimilation. *Journal of Economic Behavior & Organization*, 185, 602–624.

Schmucker, A. & vom Berge, P. (2023). Sample of Integrated Labour Market Biographies Regional File (SIAB-R) 1075-2021.

Sharoff, S. (2006). Open-Source Corpora: Using the Net to Fish for Linguistic Data. *International Journal of Corpus Linguistics*, 11(4), 435–462.

SOEP (2020). Socio-Economic Panel (SOEP), Data for Years 1984-2019, Version 36. doi: 10.5684/soep.core.v36eu.

Spolaore, E. & Wacziarg, R. (2016). Ancestry, Language and Culture. In *The Palgrave Handbook of Economics and Language* (pp. 174–211). Springer.

UNHCR (2024). Ukraine Refugee Situation. UNHCR Operational Data Portal. Accessed on 11 April 2024.

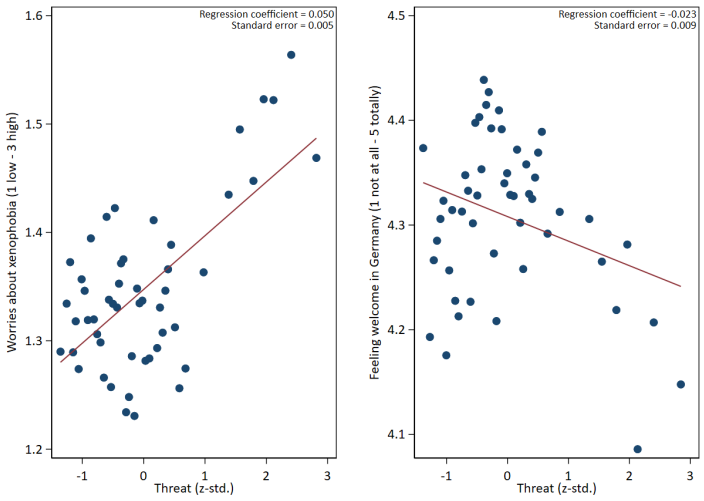
Voigtländer, N. & Voth, H.-J. (2012). Persecution Perpetuated: The Medieval Origins of Anti-Semitic Violence in Nazi Germany. *The Quarterly Journal of Economics*, 127(3), 1339–1392.

Vüllers, J. & Hellmeier, S. (2022). Does Counter-mobilization Contain Right-Wing Populist Movements? Evidence from Germany. *European Journal of Political Research*, 61(1), 21–45.

Zhou, M. (1997). Segmented Assimilation: Issues, Controversies, and Recent Research on the New Second Generation. *International Migration Review*, 31(4), 975–1008.

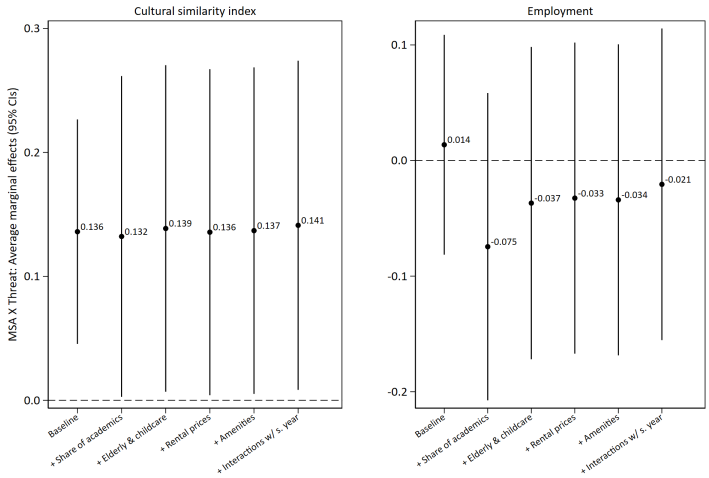
Zonszein, S. (2023). Taking Part Without Blending In: Legalization Policies and the Integration of Immigrants. Unpublished Manuscript.

## Figure 1. Actual and perceived threat




*Notes:* Binned scatterplot of the relationship between the threat index described in the main text and refugees' self-reported worry about xenophobia (left panel) and feeling welcome in Germany (right panel). Variables on the x- and y-axes represent residual changes, after partialling out months since arrival, survey year dummies, and individual controls (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status, and location of partner as well as work experience and education upon arrival).

## Figure 2. Robustness to including additional regional controls




*Notes:* The Figure plots the 95% confidence interval and point estimates of MSA × Threat from our baseline estimation, using cultural similarity index as the outcome in the left panel and self-reported employment in the right panel. We successively add regional controls interacted with MSA. The controls are described in more detail in Table C.5. The last estimate includes all controls interacted with MSA in addition to all controls interacted with survey year dummies.

Table 1. Threat and cultural assimilation

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | *Cultural similarity index (mean: -1.911)* | | | | |
| MSA | 0.112*** | 0.120*** | 0.113*** | 0.103** | 0.102** |
| | (0.040) | (0.040) | (0.040) | (0.041) | (0.040) |
| MSA × Threat | | 0.089*** | 0.098*** | 0.121*** | 0.136*** |
| | | (0.025) | (0.028) | (0.045) | (0.046) |
| Person-Year observations | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 |
| Person observations | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 |
| R2 adjusted | 0.374 | 0.375 | 0.375 | 0.376 | 0.376 |
| MSA × Regional controls | | | + Social network | + Labor market | + Local culture |
| Individual controls | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | | |
| Survey year | Yes | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes | Yes |

*Notes:* The sample consists of 6,690 refugees for a total of 12,333 refugee-year observations. The dependent variable is the cultural similarity index. MSA refers to months since arrival. Threat is the threat index described in the text, and is z-standardized. Positive coefficients indicate a reduction in distance to non-refugees. Coefficients and standard errors are multiplied by 100 for presentation. Column 2 adds the interaction of Threat with MSA. Columns 3 through 5 progressively add interaction terms of MSA and regional controls, all measured in December 2012. See Table C.5 for a detailed description of these regional variables. All regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). Additionally, all regressions include dummies for the composition of questions in the cultural similarity index. Table A.6 presents coefficients on all variables included in column 5. Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2. Far-right marches in first months of stay and cultural convergence

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| | 3 months | | | 6 months | | | 9 months | | |
| Threat: | All | High | Low | All | High | Low | All | High | Low |
| | *Cultural similarity index* | | | | | | | | |
| MSA | 0.125*** | 0.289*** | -0.013 | 0.129*** | 0.313*** | -0.031 | 0.131*** | 0.295*** | -0.013 |
| | (0.042) | (0.072) | (0.068) | (0.043) | (0.073) | (0.070) | (0.045) | (0.075) | (0.072) |
| Right-wing demonstrations | 0.904* | 1.075 | 0.728 | 0.542 | 1.171** | -0.209 | 0.634** | 0.970** | 0.111 |
| | (0.463) | (0.654) | (0.666) | (0.351) | (0.504) | (0.508) | (0.289) | (0.428) | (0.410) |
| R2 adjusted | 0.394 | 0.399 | 0.391 | 0.394 | 0.400 | 0.391 | 0.395 | 0.399 | 0.393 |
| Dep. var. mean | -1.911 | -1.918 | -1.904 | -1.911 | -1.918 | -1.904 | -1.909 | -1.914 | -1.903 |
| Mean # of demonstrations | 1.492 | 2.041 | 0.918 | 2.660 | 3.553 | 1.725 | 3.807 | 5.015 | 2.554 |
| SD # of demonstrations | 1.543 | 1.644 | 1.181 | 2.580 | 2.764 | 1.978 | 3.609 | 3.886 | 2.792 |
| Person-Year observations | 12,308 | 6,296 | 6,012 | 12,278 | 6,280 | 5,998 | 12,093 | 6,158 | 5,935 |
| Person observations | 6,680 | 3,390 | 3,290 | 6,672 | 3,387 | 3,285 | 6,594 | 3,334 | 3,260 |
| R2 adjusted | 0.376 | 0.389 | 0.365 | 0.376 | 0.390 | 0.365 | 0.377 | 0.389 | 0.366 |
| Dep. var. mean | -1.911 | -1.918 | -1.904 | -1.911 | -1.918 | -1.904 | -1.909 | -1.914 | -1.903 |
| MSA × Regional controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Individual controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | | | | | | |
| Survey year | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* The dependent variable is the cultural similarity index. Columns 1-3, 4-6, 7-9 gradually increase the number of months since the arrival of the refugee in which we count the number of right-wing extremist demonstrations experienced by the refugee in her/his assiged region. Furthermore, we split samples by median threat level for each time period of consideration. MSA refers to months since arrival. Positive coefficients indicate a reduction in distance to non-refugees. Right-wing demonstrations are defined as explained in Section 5.2. Coefficients and standard errors are multiplied by 100 for presentation. All regressions include the interaction of MSA with regional controls (social network, labor market, and local culture), all measured in December 2012. See Table C.5 for a detailed description of these regional variables. Additionally, all regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). All specifications control for the composition of questions included in the cultural similarity index. Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3. Threat components and cultural assimilation: Antisemitism and openness

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | *Cultural similarity index (mean: -1.911)* | | | |
| MSA | 0.102** | 0.099** | 0.099** | 0.101** |
| | (0.040) | (0.040) | (0.041) | (0.041) |
| MSA × Contemporary anti-immigrant sentiments (= Threat PC1) | 0.136*** | | | 0.130*** |
| | (0.046) | | | (0.046) |
| MSA × Historical antisemitism (= Threat PC2) | | 0.023 | | 0.012 |
| | | (0.031) | | (0.031) |
| MSA × Contemporary openness (= Threat PC3) | | | -0.054** | -0.053* |
| | | | (0.027) | (0.027) |
| Person-Year observations | 12,333 | 12,333 | 12,333 | 12,333 |
| Person observations | 6,690 | 6,690 | 6,690 | 6,690 |
| R2 adjusted | 0.376 | 0.375 | 0.376 | 0.376 |
| MSA × Regional controls | Yes | Yes | Yes | Yes |
| Individual controls | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | |
| Survey year | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes |

*Notes:* The sample consists of 6,690 refugees for a total of 12,333 refugee-year observations. The dependent variable is the cultural similarity index. MSA refers to months since arrival, which is interacted with (z-standardized) principal components with eigenvalues greater than 1 (see Table A.3): (i) contemporary anti-immigrant sentiments, (ii) historical antisemitism, and (iii) contemporary openness among locals. Positive coefficients indicate a reduction in distance to non-refugees. Coefficients and standard errors are multiplied by 100 for presentation. All regressions include the interaction of MSA with regional controls (social network, labor market, and local culture), all measured in December 2012. See Table C.5 for a detailed description of these regional variables. Additionally, all regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). In each specification, we control for the composition of questions included in the cultural similarity index. Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4. Threat and economic integration: Employment and earnings

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Employment | Earnings (non-employed=0) | Earnings (among employed) | log(earnings) |
| | *Panel A. Short-run economic outcomes (survey data)* | | | |
| MSA | 0.777*** | 983.0*** | 937.2*** | 0.963*** |
| | (0.041) | (70.313) | (208.3) | (0.231) |
| MSA × Threat | 0.014 | -110.0 | -346.5 | -0.474 |
| | (0.049) | (79.869) | (244.3) | (0.295) |
| Person-Year observations | 12,333 | 12,190 | 2,058 | 2,058 |
| Person observations | 6,690 | 6,664 | 1,546 | 1,546 |
| R2 adjusted | 0.165 | 0.152 | 0.124 | 0.109 |
| Dep. var. mean | 0.178 | 192.0 | 1,138 | 6.709 |
| | *Panel B. Medium-run economic outcomes (admin. data)* | | | |
| MSA | 0.007*** | 12.600*** | 10.930*** | 0.009*** |
| | (0.000) | (1.089) | (1.700) | (0.001) |
| MSA × Threat | -0.000 | -1.052** | -2.168** | -0.002* |
| | (0.000) | (0.521) | (0.945) | (0.001) |
| Person-Month observations | 254,620 | 254,620 | 90,119 | 90,119 |
| Person observations | 3,186 | 3,186 | 3,149 | 3,149 |
| R2 adjusted | 0.243 | 0.237 | 0.185 | 0.158 |
| Dep. var. mean | 0.354 | 507.4 | 1,434 | 6.928 |
| MSA × Regional controls | Yes | Yes | Yes | Yes |
| Individual controls | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | |
| (Survey) year | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes |

*Notes:* Panel A shows self-reported economic outcomes for refugees at the time of the interview. The sample in column 1 (2) consists of 6,690 (6,664) refugees for a total of 12,333 (12,190) refugee-year observations (for those that provide information on earnings). Subsequent columns 3, 4 restrict to employed refugees with information on self-reported earnings. Self-reported earnings are (1st to 99th percentile) trimmed. Panel B shows economic outcomes for 3,186 refugees that could be linked from the survey to the Integrated Employment Biographies (IEB), which are based on administrative records from the German Federal Employment Agency (see section 3), and were employed in administrative records at least once. They contribute 254,620 refugee-month observations and can be followed until December 2021 (the most recent date for which administrative data is available). The dependent variable is employment dummy in column 1, absolute gross monthly earnings in column 2 (setting earnings for non-employed to zero), absolute gross monthly earnings (among employed only) in column 3 and the log thereof in column 4. MSA refers to months since arrival. Threat is the threat index described in the text, and is z-standardized within each model. Coefficients and standard errors are multiplied by 100 for presentation. All regressions include the interaction of MSA with regional controls (social network, labor market, and local culture), all measured in December 2012. See Table C.5 for a detailed description of these regional variables. Additionally, all regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5. Threat and economic integration: Job search and occupational characteristics

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | Job aspirations | Job search friends & relatives | Over-qualified current job | Under-qualified current job | Precarious employment: mini jobs | Weekly working hours | Earnings within occupation | Log earnings within occupation |
| MSA | 0.317*** | 0.374*** | -0.328** | 0.207** | -0.531*** | 3.113 | 438.199 | 0.376 |
| | (0.084) | (0.046) | (0.147) | (0.103) | (0.102) | (4.875) | (335.501) | (0.304) |
| MSA × Threat | 0.218** | 0.100* | 0.334* | -0.408*** | 0.315** | 2.739 | -783.555* | -0.750* |
| | (0.099) | (0.058) | (0.194) | (0.123) | (0.134) | (7.684) | (469.669) | (0.401) |
| Person-Year observations | 10,044 | 9,747 | 1,509 | 1,509 | 2,201 | 1,278 | 1,366 | 1,364 |
| Person observations | 6,100 | 5,974 | 1,087 | 1,087 | 1,628 | 1,064 | 1,011 | 1,010 |
| R2 adjusted | 0.200 | 0.079 | 0.038 | 0.017 | 0.101 | 0.085 | 0.036 | 0.033 |
| Dep. var. mean | 3.624 | 0.195 | 0.463 | 0.089 | 0.313 | 32.684 | -355.4 | -0.309 |
| MSA × Regional controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Individual controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | | | | | |
| Survey year | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* Dependent variables are the economic outcomes of interest as specified in column headers (see Table C.6 for descriptions of utilized variables). In column 1, job aspirations refer to non-employed refugees' stated likelihood to take up employment in the future (on the scale from 1 (not at all) to 4 (very likely)). In column 2, dependent variable is a dummy equal to 1 (among non-employed) if refugees report to rely on friends and relatives for job search and 0 otherwise. In column 3 (4), the dependent variable is a dummy (among employed) indicating whether the skill requirement for the current job is below (above) the skill requirement for the last job in the origin country (based on comparison of 5-digit occupation codes, see table C.6). In column 5, the dependent variable is a dummy equal to 1 (among employed) if self-reported monthly gross earnings are equal or lower than 450 EUR (corresponding to the minor employment or "mini job" threshold during our sample period) and 0 if above the threshold. In column 6, the dependent variable is self-reported weekly working hours among employed (including extra hours). In column 7 (8), the dependent variable is the relative monthly (log) earnings of employed refugees from administrative records relative to all full-time employees in the assigned region in 2012 within the same 5-digit occupation. MSA refers to months since arrival. Threat is the threat index described in the text, and is z-standardized within each model. Coefficients and standard errors are multiplied by 100 for presentation. All regressions include the interaction of MSA with regional controls (social network, labor market, and local culture), all measured in December 2012. See Table C.5 for a detailed description of these regional controls. Additionally, all regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6. Threat and civic engagement: Discrimination, support from and trust in institutions, and citizenship

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Experienced discrimination (1 never - 3 often) | No support by authorities avg. 9 dimensions (0 - 1) | Trust in institutions avg. 4 dimensions (0 low - 10 high) | Intention to apply for citizenship (1 no - 4 certain) | Certainly apply (0 - 1) |
| MSA | 0.114* | -0.295*** | -0.855*** | -0.063 | -0.028 |
| | (0.062) | (0.027) | (0.314) | (0.055) | (0.041) |
| MSA × Threat | 0.199*** | 0.106** | -1.427** | -0.162* | -0.140** |
| | (0.074) | (0.046) | (0.571) | (0.083) | (0.058) |
| Person-Year observations | 12,011 | 5,912 | 2,988 | 8,155 | 8,155 |
| Person observations | 6,601 | 5,912 | 2,988 | 5,380 | 5,380 |
| R2 adjusted | 0.079 | 0.116 | 0.080 | 0.017 | 0.021 |
| Dep. var. mean | 1.428 | 0.549 | 8.832 | 3.834 | 0.866 |
| MSA × Regional controls | Yes | Yes | Yes | Yes | Yes |
| Individual controls | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | | |
| Survey year | Yes | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes | Yes |

*Notes:* Dependent variables are the outcomes of interest as specified in column headers (see Table C.7 for descriptions of utilized variables). In column 1, outcome is self-reported frequency of experiencing disadvantages due to respondent's origin. In column 2, 'no by authorities' refers to the share over 9 dimensions in which respondents state that they have not yet received support by authorities since their arrival. In column 3, 'trust in institutions' refers to the self-reported trust in German institutions, averaged across 4 types of institutions. In column 4, outcome is self-reported intention to apply for German citizenship. Outcome in column 5 is dummy for certainly intends to apply. MSA refers to months since arrival. Threat is the threat index described in the text, and is z-standardized within each model. Coefficients and standard errors are multiplied by 100 for presentation. All regressions include the interaction of MSA with regional controls (social network, labor market, and local culture), all measured in December 2012. See Table C.5 for a detailed description of these regional controls. Additionally, all regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

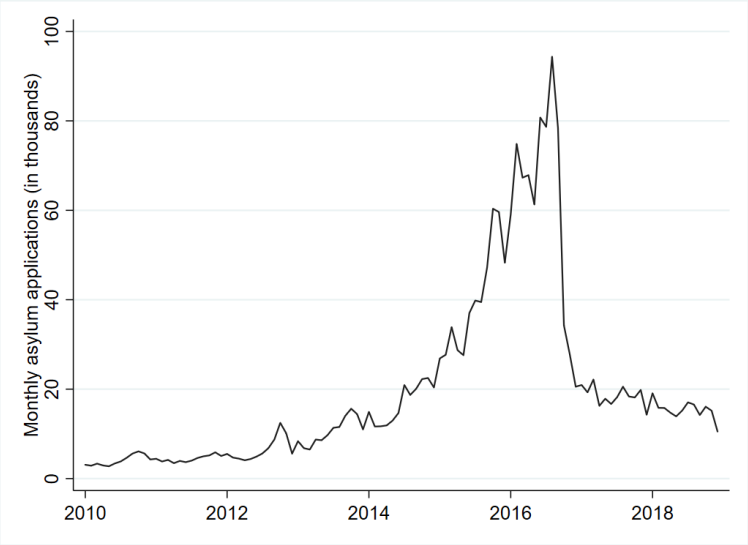
Table 7. Locals' Response: Threat, refugee inflow and attitudes towards refugees

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Impact of refugees on | | | Refugee risk or chance | |
| | Economy (1 bad - 11 good) | Cultural life (1 undermine - 11 enrich) | Germany as a place to live (1 worse - 11 better) | Short-run (1 risk - 11 chance) | Long-run (1 risk - 11 chance) |
| Refugee share | -18.533** | -19.553** | -10.720 | 10.657 | -8.747 |
| | (9.180) | (9.066) | (8.279) | (8.476) | (9.386) |
| Refugee share × Threat | -17.355*** | -12.349** | -21.297*** | -15.217*** | -13.322** |
| | (5.107) | (5.111) | (4.682) | (4.740) | (5.310) |
| Person-Year observations | 39,287 | 39,287 | 39,287 | 39,287 | 39,287 |
| Person observations | 25,009 | 25,009 | 25,009 | 25,009 | 25,009 |
| R2 adjusted | 0.092 | 0.105 | 0.088 | 0.038 | 0.112 |
| Dep. var. mean | 5.571 | 5.580 | 5.081 | 3.922 | 5.403 |
| Survey year × Regional controls | Yes | Yes | Yes | Yes | Yes |
| Individual controls | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | | |
| Survey year | Yes | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes | Yes |

*Notes:* The sample consists of 25,009 non-refugee SOEP survey respondents (39,287 person-year observations) for the years 2016 and 2018. The dependent variable is non-refugees' opinion about: i) the impact of refugees on: the economy, cultural life, and Germany as a place to live (columns 1 to 3); or, ii) refugees representing a risk in the short and in the long run (columns 4 and 5). Refugee share refers to the percent of refugees at the region-level measured on December 31 of the year prior to the interview. Threat is the threat index described in the text, and is z-standardized within each model. Positive coefficients indicate a more positive view of refugees by non-refugee respondents. Coefficients and standard errors are multiplied by 100 for presentation. All regressions include the interaction of survey year dummies with regional controls from the main regression specification (except the share of foreigners in the district population from the same origin region and the employment rate of foreigners with nationality corresponding to the respondent's birth country in the region), all measured in December 2012. See Table C.5 for a detailed description of these regional variables. Additionally, all regressions include dummies for missing control variables and individual characteristics (gender, age, age squared, highest education among 4 categories, and migration background: none, indirect, 5 years ago or less, 6-10 years, more than 10 years). Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

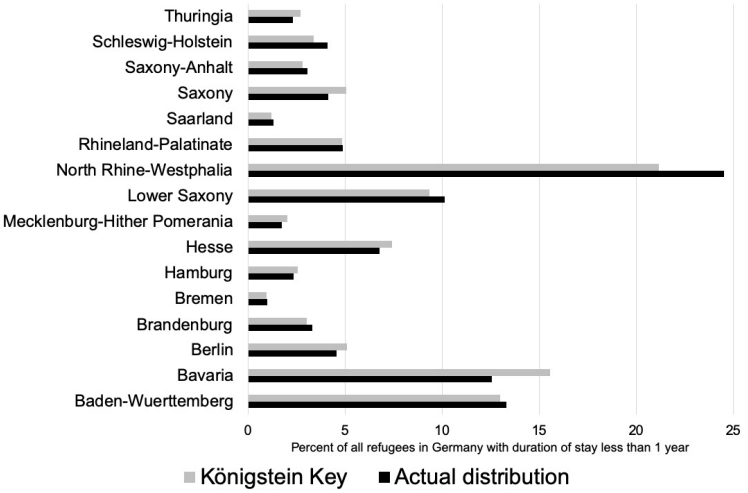
# Appendix A: Additional Figures and Tables

Figure A.1. Monthly asylum applications in Germany (in thousands)



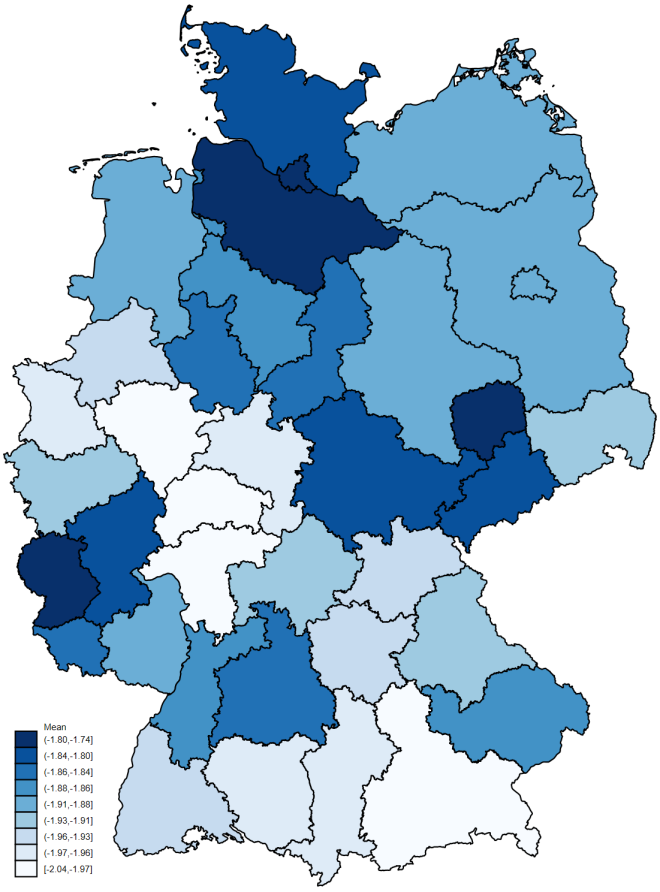

*Notes:* The graph plots the number of monthly asylum applications in Germany (first- and follow-up applications). Asylum applicants are adult individuals from outside the EU-28, who may have also applied for asylum in other EU countries. *Source:* Authors' calculation from Eurostat (2021).

Figure A.2. Assignment quotas vs actual allocation across German states



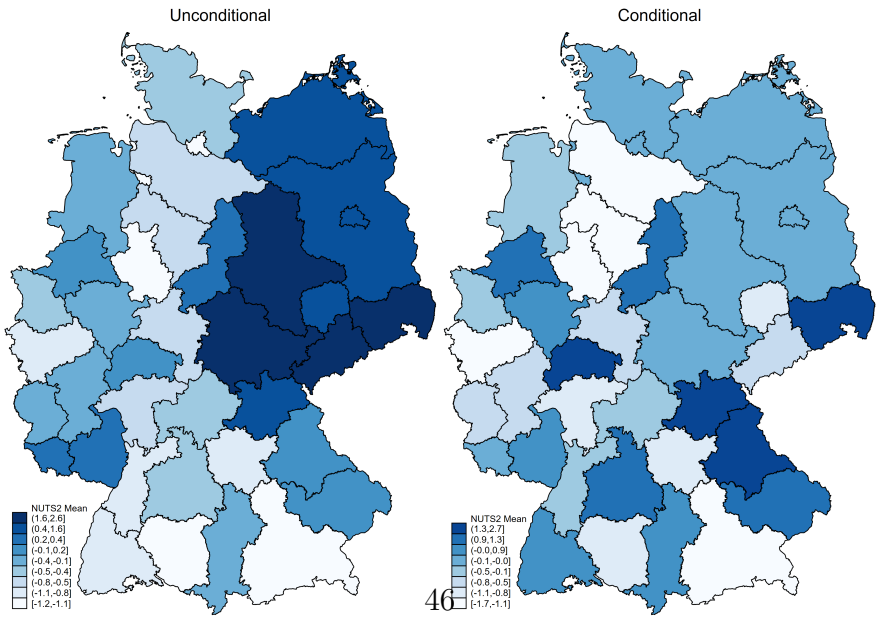

*Notes:*: The graph plots the assignment quotas (in gray bars) and the actual distribution of refugees with duration of stay less than one year (in black bars) for each German state in 2016. *Source:* Calculation of the authors from Destatis (2021, Tab-12531-0025) and Bundesanzeiger (2016).

Figure A.3. Cultural similarity between refugees and non-refugees in Germany




*Notes:* The map plots the cultural similarity index between refugees and non-refugees for each of the 38 NUTS-2 regions.

Figure A.4. Threat index across German NUTS-2 regions




*Notes:* The maps plot the unconditional (left) and conditional (right) z-standardized threat index described in the text for each of the 38 NUTS-2 regions. Conditional means partial out Federal State fixed effects.

Table A.1. Correlation between cultural traits and other beliefs

| | (1) Risk | (2) Negative reciprocity | (3) Positive reciprocity | (4) Leisure activities | (5) Politics | (6) Locus of control | (7) Trust | (8) Egoistic society |
|---|---|---|---|---|---|---|---|---|
| *Panel A: Political preferences and attitudes* | | | | | | | | |
| Satisfaction German democracy (0-10) | 0.006 | -0.138*** | 0.052*** | 0.221*** | 0.105*** | 0.228*** | 0.303*** | 0.253*** |
| mean: 5.612 | [0.772] | [0.009] | [0.009] | [0.009] | [0.009] | [0.009] | [0.009] | [0.009] |
| Voted in the last German parliamentary election | -0.022* | -0.089*** | 0.026* | 0.231*** | 0.375*** | 0.139*** | 0.185*** | 0.122*** |
| mean: 0.809 | [0.059] | [0.009] | [0.079] | [0.009] | [0.009] | [0.009] | [0.009] | [0.009] |
| Concern: The impact of climate change | -0.017*** | -0.064*** | 0.062*** | 0.079*** | 0.134*** | -0.013*** | 0.031*** | 0.022*** |
| mean: 1.144 | [0.009] | [0.009] | [0.009] | [0.009] | [0.009] | [0.009] | [0.009] | [0.009] |
| Concern: Immigration to Germany | -0.006 | 0.133*** | -0.004 | -0.181*** | -0.111*** | -0.176*** | -0.294*** | -0.198*** |
| mean: 0.986 | [0.178] | [0.009] | [0.336] | [0.009] | [0.009] | [0.009] | [0.009] | [0.009] |
| Political attitudes (0 left - 10 right) | 0.029*** | 0.101*** | -0.010 | -0.076*** | -0.041*** | -0.028*** | -0.133*** | -0.082*** |
| mean: 4.634 | [0.009] | [0.009] | [0.188] | [0.009] | [0.009] | [0.009] | [0.009] | [0.009] |
| *Panel B: Cultural preferences* | | | | | | | | |
| Good that gay marriage is recognized | 0.0201 | -0.092*** | 0.022* | 0.180*** | 0.084*** | 0.136*** | 0.186*** | 0.119*** |
| mean: 5.086 | [0.138] | [0.009] | [0.099] | [0.009] | [0.009] | [0.009] | [0.009] | [0.009] |
| Best if man and woman work the same | 0.009 | -0.017 | 0.042*** | -0.029*** | 0.007 | -0.026** | -0.025*** | -0.004 |
| mean: 5.375 | [0.772] | [0.168] | [0.009] | [0.009] | [0.564] | [0.029] | [0.009] | [0.762] |
| Children under 6 suffer if the mother works | 0.018 | 0.062*** | 0.025** | -0.128*** | -0.076*** | -0.125*** | -0.152*** | -0.100*** |
| mean: 3.441 | [0.178] | [0.009] | [0.049] | [0.009] | [0.009] | [0.009] | [0.009] | [0.009] |
| How often do you attend religious events | -0.048*** | -0.105*** | 0.010 | 0.146*** | 0.084*** | 0.037*** | 0.130*** | 0.103*** |
| mean: 1.657 | [0.009] | [0.009] | [0.247] | [0.009] | [0.009] | [0.009] | [0.009] | [0.009] |
| Not a member of any religious community | 0.059*** | 0.061*** | -0.028*** | -0.057*** | 0.032*** | 0.004 | -0.060*** | -0.059*** |
| mean: 0.359 | [0.009] | [0.009] | [0.009] | [0.009] | [0.009] | [0.802] | [0.009] | [0.009] |
| *Panel C: Preferences for redistribution and altruism* | | | | | | | | |
| Blood donations last 10 years | 0.050*** | 0.004 | 0.025* | 0.126*** | 0.023* | 0.073*** | 0.069*** | 0.043*** |
| mean: 0.174 | [0.009] | [0.851] | [0.079] | [0.009] | [0.089] | [0.009] | [0.009] | [0.009] |
| Amount given away if received 10,000 EUR gift | -0.031*** | -0.092*** | 0.070*** | 0.022*** | 0.063*** | 0.009 | 0.049*** | 0.057*** |
| mean: 1.406 | [0.009] | [0.009] | [0.009] | [0.009] | [0.009] | [0.584] | [0.009] | [0.009] |
| Fair that those who work harder earn more | 0.025** | 0.016 | 0.118*** | -0.052*** | 0.015 | 0.048*** | -0.077*** | -0.051*** |
| mean: 6.265 | [0.019] | [0.257] | [0.009] | [0.009] | [0.188] | [0.009] | [0.009] | [0.009] |
| Fair when income and wealth distributed equally | -0.011 | 0.043*** | -0.034** | -0.088*** | -0.101*** | -0.165*** | -0.043*** | -0.043*** |
| mean: 3.175 | [0.663] | [0.009] | [0.019] | [0.009] | [0.009] | [0.009] | [0.009] | [0.009] |
| Observations | 1,675,316 | 1,675,325 | 1,675,328 | 1,675,375 | 1,675,303 | 1,675,306 | 1,675,378 | 1,675,376 |
| Dep. var. mean | 4.79 | 2.81 | 5.85 | 2.18 | 2.27 | 4.64 | 2.39 | 1.49 |

*Notes:* The table reports Pearson correlation coefficients between the cultural trait reported at the top of each column and the corresponding preference reported in each row. The sample consists of non-refugee SOEP respondents, interviewed between 2010 and 2019 (see Table C.3 for exact wording and survey years of questions). The variable *"How much would you give away if received a gift 10,000 euros?"* was re-scaled to be in thousands of euros. Regression coefficients (not shown) both including individual controls (marital status, gender, employment status, education, age, household income, nativity and survey year fixed effects) and not including individual controls are very similar. All significance levels are adjusted for the multiple hypotheses testing using Romano-Wolf p-values (reported in square brackets). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.2. Correlation between threat components

| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vote for NSDAP in 1933 | (1) | 1.00 | | | | | | | | | | |
| Pogroms in the 1920s | (2) | 0.30 | 1.00 | | | | | | | | | |
| | | (0.00) | | | | | | | | | | |
| Vote for NPD in 2013 | (3) | 0.12 | 0.06 | 1.00 | | | | | | | | |
| | | (0.00) | (0.00) | | | | | | | | | |
| Mosque attacks | (4) | -0.25 | -0.01 | -0.32 | 1.00 | | | | | | | |
| | | (0.00) | (0.33) | (0.00) | | | | | | | | |
| Right-wing marches | (5) | 0.06 | 0.04 | 0.80 | -0.28 | 1.00 | | | | | | |
| | | (0.00) | (0.00) | (0.00) | (0.00) | | | | | | | |
| Agreement to attacks against immigrants | (6) | -0.06 | -0.14 | 0.51 | -0.09 | 0.36 | 1.00 | | | | | |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | | | | | | |
| Immigrant adaptation | (7) | 0.08 | 0.10 | 0.60 | -0.14 | 0.49 | 0.12 | 1.00 | | | | |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | | | | | |
| Labor market competition | (8) | 0.18 | 0.03 | 0.63 | -0.27 | 0.51 | 0.35 | 0.48 | 1.00 | | | |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | | | | |
| Prohibition of political activity | (9) | 0.30 | -0.05 | 0.43 | -0.14 | 0.31 | 0.22 | 0.48 | 0.54 | 1.00 | | |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | | | |
| Intermarriage | (10) | 0.01 | -0.12 | 0.65 | -0.19 | 0.53 | 0.49 | 0.63 | 0.61 | 0.62 | 1.00 | |
| | | (0.12) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | | |
| Big-5 Openness | (11) | -0.19 | -0.14 | -0.03 | -0.17 | 0.01 | 0.20 | -0.13 | -0.11 | -0.11 | -0.12 | 1.00 |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.56) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | |

*Notes:* The table presents the correlation between each pair of threat variables. The correspondence between the top numbers and variables is given by the numbers on the left. Variables are described in Table C.4. Significance levels are in parentheses.

Table A.3. Principal component analyses: Factor loadings

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Eigenvalue | Difference | Proportion | Cumulative |
| PC 1 | 4.167 | 2.580 | 0.379 | 0.379 |
| PC 2 | 1.587 | 0.380 | 0.144 | 0.523 |
| PC 3 | 1.207 | 0.257 | 0.110 | 0.633 |
| PC 4 | 0.950 | 0.156 | 0.086 | 0.719 |
| PC 5 | 0.794 | 0.104 | 0.072 | 0.791 |
| PC 6 | 0.690 | 0.196 | 0.063 | 0.854 |
| PC 7 | 0.494 | 0.063 | 0.045 | 0.899 |
| PC 8 | 0.431 | 0.096 | 0.039 | 0.938 |
| PC 9 | 0.335 | 0.127 | 0.031 | 0.969 |
| PC 10 | 0.209 | 0.072 | 0.019 | 0.988 |
| PC 11 | 0.136 | 0.000 | 0.012 | 1.000 |
| | PC 1 | PC 2 | PC 3 | PC 4 |
| Vote for NPD in 2013 | 0.434 | -0.060 | 0.092 | 0.254 |
| Vote for NSDAP in 1933 | 0.102 | 0.550 | 0.324 | -0.338 |
| Mosque attacks | -0.180 | -0.031 | -0.654 | 0.251 |
| Big-5 Openness | -0.040 | -0.471 | 0.508 | -0.029 |
| Pogroms in the 1920s | 0.008 | 0.507 | 0.223 | 0.592 |
| Right-wing marches | 0.376 | -0.080 | 0.129 | 0.353 |
| Agreement to attacks against immigrants | 0.256 | -0.396 | 0.069 | 0.076 |
| Immigrant adaptation | 0.355 | 0.126 | -0.206 | 0.148 |
| Labor market competition | 0.389 | 0.061 | -0.022 | -0.099 |
| Prohibition of political activity | 0.332 | 0.143 | -0.180 | -0.485 |
| Intermarriage | 0.416 | -0.103 | -0.232 | -0.100 |

*Notes:* The top panel indicates for each principal component: i) its eigenvalue (column 1); ii) the difference to the next principal component (column 2); and, iii) the proportion and cumulative proportion of the sum of eigenvalues represented by this principal component (columns 3 and 4). The bottom panel indicates the weight of each threat variable in the first four principal components. PC 1 corresponds to the threat index utilized for the main analyses.

# Table A.4. Summary statistics (Individual level)

| | All | | | | | Below median threat | | | | | Above median threat | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Std. dev. | Min | Max | N | Mean | Std. dev. | Min | Max | N | Mean | Std. dev. | Min | Max | N |
| | *Panel A. Refugees* | | | | | | | | | | | | | | |
| **Main variables** | | | | | | | | | | | | | | | |
| Cultural similarity index | -1.91 | 0.47 | -5.50 | -0.52 | 12,333 | -1.90 | 0.46 | -5.50 | -0.52 | 6,022 | -1.92 | 0.48 | -5.50 | -0.61 | 6,311 |
| Months since arrival to Germany | 29.0 | 13.1 | 0 | 72 | 12,333 | 29.4 | 13.1 | 0 | 72 | 6,022 | 28.5 | 13.1 | 0 | 72 | 6,311 |
| Employment | 0.18 | 0.38 | 0 | 1 | 12,333 | 0.19 | 0.39 | 0 | 1 | 6,022 | 0.17 | 0.38 | 0 | 1 | 6,311 |
| **Additional outcomes** | | | | | | | | | | | | | | | |
| Earnings | 1,138 | 773 | 65 | 3,700 | 2,058 | 1,164 | 789 | 65 | 3,700 | 1,052 | 1,110 | 756 | 65 | 3,600 | 1,006 |
| Job aspirations among non-employed (1 low - 4 high) | 3.62 | 0.73 | 1 | 4 | 10,044 | 3.61 | 0.74 | 1 | 4 | 4,858 | 3.64 | 0.73 | 1 | 4 | 5,186 |
| Job search via friends, relatives (among non-employed) | 0.19 | 0.40 | 0 | 1 | 9,747 | 0.19 | 0.39 | 0 | 1 | 4,714 | 0.20 | 0.40 | 0 | 1 | 5,033 |
| Overqualified for current job | 0.46 | 0.50 | 0 | 1 | 1,509 | 0.45 | 0.50 | 0 | 1 | 754 | 0.47 | 0.50 | 0 | 1 | 755 |
| Underqualified for current job | 0.089 | 0.28 | 0 | 1 | 1,509 | 0.10 | 0.30 | 0 | 1 | 754 | 0.074 | 0.26 | 0 | 1 | 755 |
| Mini job (self-reported monthly earnings $\leq$ 450 EUR) | 0.31 | 0.46 | 0 | 1 | 2,201 | 0.32 | 0.47 | 0 | 1 | 1,124 | 0.31 | 0.46 | 0 | 1 | 1,077 |
| Actual weekly working hours | 32.7 | 14.4 | 1 | 95 | 1,278 | 32.2 | 14.5 | 2 | 84 | 639 | 33.1 | 14.4 | 1 | 95 | 639 |
| Realism of interview (1 low - 4 high) | 3.60 | 0.58 | 1 | 4 | 12,333 | 3.59 | 0.58 | 1 | 4 | 6,022 | 3.60 | 0.58 | 1 | 4 | 6,311 |
| Self minus interviewer assessed level of speaking German | -0.12 | 1.07 | -4 | 4 | 12,325 | -0.14 | 1.03 | -4 | 3 | 6,020 | -0.098 | 1.10 | -4 | 4 | 6,305 |
| **Additional characteristics** | | | | | | | | | | | | | | | |
| Country of birth: | | | | | | | | | | | | | | | |
| Syria | 0.53 | 0.50 | 0 | 1 | 12,333 | 0.50 | 0.50 | 0 | 1 | 6,022 | 0.56 | 0.50 | 0 | 1 | 6,311 |
| Afghanistan | 0.12 | 0.32 | 0 | 1 | 12,333 | 0.13 | 0.33 | 0 | 1 | 6,022 | 0.11 | 0.32 | 0 | 1 | 6,311 |
| Iraq | 0.13 | 0.33 | 0 | 1 | 12,333 | 0.15 | 0.35 | 0 | 1 | 6,022 | 0.11 | 0.32 | 0 | 1 | 6,311 |
| Other | 0.22 | 0.41 | 0 | 1 | 12,333 | 0.22 | 0.42 | 0 | 1 | 6,022 | 0.21 | 0.41 | 0 | 1 | 6,311 |
| Gender: female | 0.38 | 0.49 | 0 | 1 | 12,333 | 0.39 | 0.49 | 0 | 1 | 6,022 | 0.38 | 0.48 | 0 | 1 | 6,311 |
| Age | 34.0 | 10.2 | 18 | 66 | 12,333 | 33.8 | 10.3 | 18 | 66 | 6,022 | 34.2 | 10.1 | 18 | 66 | 6,311 |
| School certificate: | | | | | | | | | | | | | | | |
| None | 0.44 | 0.50 | 0 | 1 | 12,278 | 0.47 | 0.50 | 0 | 1 | 5,994 | 0.42 | 0.49 | 0 | 1 | 6,284 |
| Compulsory school leaving certificate | 0.24 | 0.43 | 0 | 1 | 12,278 | 0.22 | 0.41 | 0 | 1 | 5,994 | 0.25 | 0.44 | 0 | 1 | 6,284 |
| Secondary school leaving certificate | 0.32 | 0.47 | 0 | 1 | 12,278 | 0.31 | 0.46 | 0 | 1 | 5,994 | 0.33 | 0.47 | 0 | 1 | 6,284 |
| **Civic engagement** | | | | | | | | | | | | | | | |
| Discrimination experience (1 never - 3 often) | 1.43 | 0.61 | 1 | 3 | 12,011 | 1.38 | 0.59 | 1 | 3 | 5,871 | 1.47 | 0.63 | 1 | 3 | 6,140 |
| No support from locals (mean over 9 dimensions) | 0.55 | 0.20 | 0 | 1 | 5,912 | 0.55 | 0.19 | 0 | 1 | 2,935 | 0.55 | 0.20 | 0 | 1 | 2,977 |
| Trust in institutions (mean over 4 dimensions, scaled from 0 low - 10 high) | 8.83 | 1.53 | 0 | 10 | 2,988 | 8.84 | 1.50 | 0 | 10 | 1,452 | 8.82 | 1.56 | 0 | 10 | 1,536 |
| Intention to apply for German citizenship (1 not at all - 4 for sure) | 3.83 | 0.47 | 1 | 4 | 8,155 | 3.84 | 0.46 | 1 | 4 | 4,072 | 3.82 | 0.49 | 1 | 4 | 4,083 |
| Certainly intends to apply, 1[> 3 ] | 0.87 | 0.34 | 0 | 1 | 8,155 | 0.87 | 0.33 | 0 | 1 | 4,072 | 0.86 | 0.35 | 0 | 1 | 4,083 |
| | *Panel B. Non-refugees* | | | | | | | | | | | | | | |
| Country of birth: | | | | | | | | | | | | | | | |
| Germany | 0.85 | 0.36 | 0 | 1 | 94,110 | 0.81 | 0.39 | 0 | 1 | 47,993 | 0.88 | 0.32 | 0 | 1 | 46,117 |
| Other | 0.15 | 0.36 | 0 | 1 | 94,110 | 0.19 | 0.39 | 0 | 1 | 47,993 | 0.12 | 0.32 | 0 | 1 | 46,117 |
| Gender: female | 0.55 | 0.50 | 0 | 1 | 94,129 | 0.55 | 0.50 | 0 | 1 | 48,003 | 0.55 | 0.50 | 0 | 1 | 46,126 |
| Age | 41.8 | 12.5 | 18 | 66 | 94,129 | 41.6 | 12.3 | 18 | 66 | 48,003 | 42.1 | 12.7 | 18 | 66 | 46,126 |
| School certificate: | | | | | | | | | | | | | | | |
| None | 0.11 | 0.32 | 0 | 1 | 92,085 | 0.14 | 0.34 | 0 | 1 | 46,911 | 0.089 | 0.29 | 0 | 1 | 45,174 |
| Compulsory school leaving certificate | 0.012 | 0.11 | 0 | 1 | 92,085 | 0.012 | 0.11 | 0 | 1 | 46,911 | 0.012 | 0.11 | 0 | 1 | 45,174 |
| Secondary school leaving certificate | 0.87 | 0.33 | 0 | 1 | 92,085 | 0.85 | 0.36 | 0 | 1 | 46,911 | 0.90 | 0.30 | 0 | 1 | 45,174 |
| Highest education (ISCED-2011): | | | | | | | | | | | | | | | |
| Lower secondary | 0.14 | 0.34 | 0 | 1 | 93,310 | 0.15 | 0.35 | 0 | 1 | 47,540 | 0.13 | 0.33 | 0 | 1 | 45,770 |
| Short cycle non-tertiary | 0.63 | 0.48 | 0 | 1 | 93,310 | 0.61 | 0.49 | 0 | 1 | 47,540 | 0.65 | 0.48 | 0 | 1 | 45,770 |
| Bachelors or higher | 0.23 | 0.42 | 0 | 1 | 93,310 | 0.25 | 0.43 | 0 | 1 | 47,540 | 0.22 | 0.42 | 0 | 1 | 45,770 |

*Notes:* The table reports summary statistics for refugees (resp. non-refugees) in Panel A (resp. Panel B) for the full sample, and separately by level of threat, relative to median.

# Table A.5. Summary statistics (district and regional variables)

| | All | | | | | Below median threat | | | | | Above median threat | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Std. dev. | Min | Max | N | Mean | Std. dev. | Min | Max | N | Mean | Std. dev. | Min | Max | N |
| | *Panel A. Threat components* | | | | | | | | | | | | | | |
| Pogroms against Jews in 1920s | 0.55 | 0.50 | 0 | 1 | 12,333 | 0.72 | 0.45 | 0 | 1 | 6,022 | 0.39 | 0.49 | 0 | 1 | 6,311 |
| Voting share of NSDAP in elections 1933 | 44.0 | 7.98 | 28.9 | 59.9 | 12,333 | 43.9 | 6.91 | 31.5 | 58.4 | 6,022 | 44.0 | 8.89 | 28.9 | 59.9 | 6,311 |
| Offenses against Muslim communities | 2.34 | 2.13 | 0 | 9 | 12,333 | 3.16 | 2.45 | 0 | 9 | 6,022 | 1.56 | 1.37 | 0 | 4 | 6,311 |
| Immigrant adaptation: Share agreeing foreigners should adapt way of life | 55.3 | 6.98 | 43.1 | 73.1 | 12,333 | 51.5 | 5.77 | 43.1 | 62.3 | 6,022 | 59.0 | 5.98 | 48.5 | 73.1 | 6,311 |
| Labor market competition: Share agreeing foreigners should return home if jobs are scarce | 9.01 | 4.68 | 1.01 | 20.9 | 12,333 | 5.91 | 2.47 | 1.01 | 10.9 | 6,022 | 12.0 | 4.36 | 3.33 | 20.9 | 6,311 |
| Endogamy: Share agreeing foreigners should marry people with same nationality | 6.71 | 3.26 | 1.39 | 17.3 | 12,333 | 4.36 | 1.59 | 1.39 | 6.86 | 6,022 | 8.94 | 2.84 | 4.85 | 17.3 | 6,311 |
| Political participation of immigrants: Share agreeing foreigners should be excluded | 11.2 | 4.41 | 3.33 | 20.7 | 12,333 | 8.29 | 1.95 | 4.11 | 11.7 | 6,022 | 14.0 | 4.28 | 3.33 | 20.7 | 6,311 |
| Understanding for attacks on asylum seekers' homes | 13.0 | 6.82 | 2.35 | 31.0 | 12,333 | 9.88 | 4.17 | 2.35 | 20.4 | 6,022 | 15.9 | 7.53 | 3.77 | 31.0 | 6,311 |
| Voting share of far-right party NPD in Federal eletions 2013 | 1.26 | 0.71 | 0.50 | 3.65 | 12,333 | 0.89 | 0.20 | 0.50 | 1.19 | 6,022 | 1.62 | 0.82 | 0.72 | 3.65 | 6,311 |
| Right-wing marches | 239 | 322 | 20.4 | 2,259 | 12,333 | 103 | 56.0 | 20.4 | 228 | 6,022 | 368 | 407 | 24.9 | 2,259 | 6,311 |
| Openness (Big-5 personality trait) | 4.59 | 0.16 | 4.26 | 4.95 | 12,333 | 4.60 | 0.14 | 4.39 | 4.90 | 6,022 | 4.58 | 0.18 | 4.26 | 4.95 | 6,311 |
| | *Panel B. District and NUTS-2-level variables* | | | | | | | | | | | | | | |
| **District-level variables** | | | | | | | | | | | | | | | |
| Population density | 960 | 1,114 | 37.9 | 4,468 | 12,333 | 1,075 | 1,098 | 40.1 | 4,468 | 6,022 | 851 | 1,118 | 37.9 | 3,785 | 6,311 |
| Share of refugees | 0.75 | 0.37 | 0.059 | 2.35 | 12,333 | 0.85 | 0.40 | 0.11 | 2.35 | 6,022 | 0.65 | 0.30 | 0.059 | 1.50 | 6,311 |
| Foreigners from origin-country | 0.084 | 0.13 | 0 | 3.77 | 12,333 | 0.10 | 0.16 | 0 | 3.77 | 6,022 | 0.066 | 0.088 | 0 | 2.69 | 6,311 |
| Share of population 65 and older | 20.7 | 2.27 | 15.2 | 28.8 | 12,333 | 20.1 | 1.88 | 15.4 | 26.1 | 6,022 | 21.2 | 2.48 | 15.2 | 28.8 | 6,311 |
| Places in child care facilities per pedagogically active person | 9.68 | 1.96 | 6.73 | 15.6 | 12,333 | 9.38 | 1.55 | 6.73 | 13.0 | 6,022 | 9.97 | 2.25 | 6.78 | 15.6 | 6,311 |
| Rent (EUR per sqm) | 3.73 | 1.56 | 1 | 10 | 12,333 | 4.36 | 1.84 | 1 | 10 | 6,022 | 3.14 | 0.90 | 1 | 6 | 6,311 |
| Tax capacity of municipalities (EUR per inhabitant) | 731 | 241 | 331 | 2,397 | 12,333 | 841 | 228 | 471 | 2,050 | 6,022 | 626 | 203 | 331 | 2,397 | 6,311 |
| **NUTS-2-level variables** | | | | | | | | | | | | | | | |
| Share of employees with academic degree | 12.1 | 3.53 | 6.27 | 19.2 | 12,333 | 13.1 | 3.50 | 7.77 | 18.7 | 6,022 | 11.3 | 3.34 | 6.27 | 19.2 | 6,311 |
| Unemployment rate | 7.40 | 2.62 | 3.77 | 13.6 | 12,333 | 6.22 | 1.95 | 3.77 | 11.4 | 6,022 | 8.52 | 2.68 | 3.86 | 13.6 | 6,311 |
| Task Herfindahl-Index | 0.22 | 0.0057 | 0.21 | 0.23 | 12,333 | 0.22 | 0.0054 | 0.21 | 0.23 | 6,022 | 0.22 | 0.0054 | 0.21 | 0.23 | 6,311 |
| Skill requirement Herfindahl-Index | 0.41 | 0.025 | 0.36 | 0.44 | 12,333 | 0.39 | 0.024 | 0.36 | 0.43 | 6,022 | 0.42 | 0.019 | 0.38 | 0.44 | 6,311 |
| Employment rate of foreigners from origin region | 21.5 | 7.06 | 3.59 | 44.6 | 12,053 | 24.6 | 6.60 | 11.8 | 40.7 | 5,882 | 18.6 | 6.20 | 3.59 | 44.6 | 6,171 |
| Local - national cultural distance | 0.32 | 0.14 | 0.12 | 1.10 | 12,333 | 0.31 | 0.081 | 0.19 | 0.48 | 6,022 | 0.33 | 0.18 | 0.12 | 1.10 | 6,311 |
| Local cultural dispersion | 1.08 | 0.028 | 1.04 | 1.15 | 12,333 | 1.08 | 0.028 | 1.04 | 1.15 | 6,022 | 1.09 | 0.027 | 1.05 | 1.15 | 6,311 |

*Notes:* The table reports summary statistics for the main district-level and regional-level (NUTS-2) variables used as controls (Panel B) or for the threat index (Panel A) in the analysis. Variables in Panel B are measured in December 2012. Summary statistics are provided for both the full sample, and separately by level of threat, relative to median.

Table A.6. All coefficients from main specification

| | (1) | (2) |
|---|---|---|
| | Cultural similarity | |
| | $\beta$ | SE |
| MSA | 0.102** | (0.040) |
| MSA × Threat | 0.136*** | (0.046) |
| Gender: female | -5.011*** | (0.853) |
| At least 1 child in hh (born before arrival of hh head) | 0.956 | (0.912) |
| missing | 4.007 | (2.486) |
| Age: | | |
| years | -0.291 | (0.247) |
| squared | 0.001 | (0.003) |
| Partner: | | |
| lives in household (ref: no partner) | -2.516** | (1.051) |
| lives elsewhere in Germany | -0.027 | (3.083) |
| not in Germany | -2.455 | (1.703) |
| missing on partnership | -3.911 | (2.784) |
| Years of work experience: | | |
| before immigration | 0.011 | (0.058) |
| missing | 2.799* | (1.628) |
| School certificate: | | |
| None | 9.281* | (5.241) |
| Secondary school leaving certificate | 7.955*** | (0.876) |
| Compulsory school leaving certificate | 4.920*** | (0.941) |
| Country of birth: | | |
| Afghanistan (ref: Syria) | 4.428*** | (1.224) |
| Iraq | 0.052 | (1.171) |
| Iran | 11.985*** | (2.305) |
| Africa | 5.123** | (2.021) |
| Western Balkans | 4.021* | (2.301) |
| Former USSR | 5.973** | (2.467) |
| Eritrea | 2.717 | (2.442) |
| Other | -1.353 | (3.104) |
| Survey year: | | |
| 2017 (ref: 2016) | -6.550 | (4.258) |
| 2018 | -0.582 | (2.566) |
| Refugee did not answer: | | |
| risk | 77.589*** | (1.652) |
| neg. recipr. | 6.665*** | (2.540) |
| pos. recipr. | -18.897*** | (2.629) |
| activities | -37.260*** | (4.001) |
| interest politics | -38.511*** | (8.223) |
| locus of control | -30.695*** | (1.424) |
| trust | -22.200*** | (3.959) |
| evaluation of society | -26.062*** | (1.845) |
| MSA × Population density | -0.020 | (0.041) |
| MSA × Refugee share | 0.016 | (0.039) |
| MSA × Population share from same origin country | 0.051* | (0.029) |
| MSA × Unemployment rate | -0.016 | (0.044) |
| MSA × Employment rate from same origin region | 0.032 | (0.037) |
| MSA × Task diversity | 0.117*** | (0.033) |
| MSA × Skill complexity | 0.091** | (0.037) |
| MSA × Local cultural distinctiveness | -0.044 | (0.027) |
| MSA × Local cultural dispersion | 0.013 | (0.028) |
| Constant | -105.679*** | (5.338) |
| Person-Year observations | 12,333 | |
| Person observations | 6,690 | |
| R2 adjusted | 0.376 | |
| Dep. var. mean | -1.911 | |

*Notes:* The table reports all regression coefficients from the model corresponding to column 5 in Table 1.

## Table A.7. Threat index: Component-wise

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Threat component of interest: | Baseline: All included | Pogroms in the 1920s | Vote for NSDAP in 1933 | Vote for NPD in 2013 | Mosque attack (2001-2011) | Right-wing marches (2005-2012) | Big-5 open | Agree to attacks immig. | Immigrant adaptation | Labor market competition | Prohibit political activity | Inter-marriage |
| | *Cultural similarity index (mean: -1.911)* | | | | | | | | | | | |
| MSA | 0.102** | 0.120** | 0.100** | 0.101** | 0.100** | 0.102** | 0.097** | 0.100** | 0.100** | 0.101** | 0.099** | 0.100** |
| | (0.040) | (0.050) | (0.040) | (0.040) | (0.040) | (0.040) | (0.040) | (0.040) | (0.041) | (0.040) | (0.041) | (0.040) |
| MSA × Threat component | 0.136*** | -0.037 | -0.003 | 0.068 | 0.012 | 0.081** | -0.078** | 0.021 | 0.031 | 0.119*** | 0.078** | 0.045 |
| | (0.046) | (0.056) | (0.030) | (0.044) | (0.027) | (0.037) | (0.031) | (0.032) | (0.034) | (0.035) | (0.031) | (0.041) |
| Person-Year observations | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 |
| Person observations | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 |
| R2 adjusted | 0.376 | 0.375 | 0.375 | 0.375 | 0.375 | 0.376 | 0.376 | 0.375 | 0.375 | 0.376 | 0.376 | 0.375 |
| MSA × Regional controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Individual controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | | | | | | | | | |
| Survey year | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* The sample consists of 6,690 refugees for a total of 12,333 refugee-year observations. The dependent variable is the cultural similarity index. MSA refers to months since arrival. "Threat component" is an individual component of the threat index described in the text, and is z-standardized within each model. A detailed description of threat components can be found in Table C.4. Positive coefficients indicate a reduction in distance to non-refugees. Coefficients and standard errors are multiplied by 100 for presentation. All regressions include the interaction of MSA with regional controls (social network, labor market, and local culture), all measured in December 2012. See Table C.5 for a detailed description of these regional variables. Additionally, all regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). All specifications control for the composition of questions included in the cultural similarity index. Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.8. Ruling out selective survey-attrition

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | *Probability of attrition (mean: 0.347)* | | | | |
| MSA | 0.050 | 0.165*** | 0.051 | 0.167*** | 0.169*** |
| | (0.055) | (0.058) | (0.055) | (0.058) | (0.058) |
| CSI | | 1.150 | | 1.114 | 1.176 |
| | | (1.288) | | (1.287) | (1.285) |
| MSA × CSI | | -0.006 | | -0.005 | -0.007 |
| | | (0.045) | | (0.045) | (0.044) |
| MSA × Threat | | | 0.068 | 0.082 | 0.081 |
| | | | (0.081) | (0.081) | (0.081) |
| CSI × Threat | | | | | -0.144 |
| | | | | | (1.300) |
| MSA × CSI × Threat | | | | | -0.016 |
| | | | | | (0.047) |
| Person-Year observations | 8,642 | 8,642 | 8,642 | 8,642 | 8,642 |
| Person observations | 6,330 | 6,330 | 6,330 | 6,330 | 6,330 |
| R2 adjusted | 0.056 | 0.059 | 0.056 | 0.059 | 0.059 |
| MSA × Regional controls | Yes | Yes | Yes | Yes | Yes |
| Individual controls | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | | |
| Survey year | Yes | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes | Yes |

*Notes:* The sample consists of 6,330 refugees for a total of 8,642 refugee-year observations. The dependent variable is a dummy equal to one if the refugee dropped out of the survey, i.e. (i) participated in 2016 but neither in 2017 nor 2018 or (ii) participated in 2017 but not in 2018. MSA refers to months since arrival. Threat is the threat index described in the text, and is z-standardized within each model. Coefficients and standard errors are multiplied by 100 for presentation. Column 2 presents the interactions of MSA with CSI, while columns 3 and 4 repeat the exercise with Threat, both separately and progressively, respectively. Column 5 presents a triple interaction of all previous variables. All regressions include the interaction of MSA with regional controls (social network, labor market, and local culture), all measured in December 2012. See Table C.5 for a detailed description of these regional variables. Additionally, all regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). All specifications including CSI (columns 2, 4, 5) control for the composition of questions included in the cultural similarity index. Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.9. Evidence against social desirability and selective mis-reporting

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | Realism of interview | Self vs. enumerator -assessed German skills | Employment | | Log earnings | |
| Source: | Survey | Survey | Survey | Admin. | Survey | Admin. |
| Sample: | Full | Full | Admin. | Admin. | Admin. | Admin. |
| MSA | 0.258*** | -0.730*** | 1.137*** | 1.063*** | 0.895*** | 1.062*** |
| | (0.056) | (0.100) | (0.067) | (0.068) | (0.258) | (0.300) |
| MSA × Threat | -0.079 | 0.133 | 0.010 | 0.109 | -0.817** | -0.773* |
| | (0.073) | (0.122) | (0.074) | (0.073) | (0.378) | (0.456) |
| Person-Year observations | 12,333 | 12,325 | 6,342 | 6,342 | 1,397 | 1,445 |
| Person observations | 6,690 | 6,689 | 3,186 | 3,186 | 1,053 | 1,074 |
| R2 adjusted | 0.093 | 0.057 | 0.163 | 0.158 | 0.110 | 0.107 |
| Dep. var. mean | 3.595 | -0.121 | 0.276 | 0.259 | 6.832 | 6.776 |
| MSA × Regional controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Individual controls | Yes | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | | | |
| Survey year | Yes | Yes | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* Dependent variables are realism of the refugee's provided survey responses assessed by the interviewer (scaled from 1 "very unrealistic" – 4 "very realistic"), and the difference between refugee's self-assessed and interviewer-assessed German speaking proficiency (resp. scaled from 1 "very bad" – 5 "very good") in columns 1-2. In columns 3, 4 (5, 6), dependent variables are both employment (log monthly earnings), measured for the same subsample of those refugees that could be linked to administrative records but from different sources: (i) self-reports in column 1 (3), (ii) administrative records measured on the exact same day as the survey interview. Self-reported earnings in column 5 are trimmed (1st to 99th percentile). MSA refers to months since arrival. Threat is the threat index described in the text, and is z-standardized within each model. Coefficients and standard errors are multiplied by 100 for presentation. All regressions include the interaction of MSA with regional controls (social network, labor market, and local culture), all measured in December 2012. See Table C.5 for a detailed description of these regional controls. Additionally, all regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). Standard errors, in parentheses, are clustered at the person-level.

Table A.10. Support to refugees: Disaggregation

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| Refugee received no support in: | Legal issues regarding asylum | Learning German | Job seeking | Search for educational institutions | Approval of foreign degrees | Search for apartment | Medical care | Financial situation, incl. accessing social benefits | Searching care facilities for child support |
| MSA | -0.385*** | -0.466*** | -0.605*** | -0.378*** | -0.195*** | -0.429*** | 0.028 | -0.022 | -0.184*** |
| | (0.063) | (0.064) | (0.053) | (0.057) | (0.043) | (0.065) | (0.054) | (0.054) | (0.053) |
| MSA × Threat | 0.001 | -0.032 | 0.209** | 0.253*** | 0.193*** | 0.050 | -0.068 | 0.092 | 0.058 |
| | (0.097) | (0.097) | (0.083) | (0.088) | (0.069) | (0.099) | (0.082) | (0.083) | (0.084) |
| Person-Year observations | 6,362 | 6,574 | 6,432 | 6,472 | 6,416 | 6,594 | 6,584 | 6,525 | 6,495 |
| Person observations | 6,362 | 6,574 | 6,432 | 6,472 | 6,416 | 6,594 | 6,584 | 6,525 | 6,495 |
| R2 adjusted | 0.040 | 0.073 | 0.073 | 0.087 | 0.092 | 0.087 | 0.067 | 0.063 | 0.458 |
| Dep. var. mean | 0.705 | 0.338 | 0.830 | 0.753 | 0.884 | 0.433 | 0.218 | 0.191 | 0.578 |
| MSA × Regional controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Individual controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | | | | | | |
| Survey year | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes |

*Notes:* Dependent variables are the single dimensions of support behind the index in col. 2 of Table 6 in which refugees did not receive support since their arrival in Germany (see Table C.7 for descriptions of utilized variables). MSA refers to months since arrival. Threat is the threat index described in the text, and is z-standardized within each model. Coefficients and standard errors are multiplied by 100 for presentation. All regressions include the interaction of MSA with regional controls (social network, labor market, and local culture), all measured in December 2012. See Table C.5 for a detailed description of these regional controls. Additionally, all regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.11. Refugees' trust in institutions: Disaggregation

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Refugee's trust in: | Public administration (0 low - 10 high) | German government (0 low - 10 high) | Legal system (0 low - 10 high) | Police (0 low - 10 high) |
| MSA | -0.875** | -0.843** | -0.783** | -0.729** |
| | (0.435) | (0.362) | (0.381) | (0.362) |
| MSA × Threat | -2.119*** | -1.041 | -1.286** | -0.538 |
| | (0.793) | (0.634) | (0.636) | (0.595) |
| Person-Year observations | 3,182 | 3,199 | 3,193 | 3,214 |
| Person observations | 3,182 | 3,199 | 3,193 | 3,214 |
| R2 adjusted | 0.061 | 0.063 | 0.058 | 0.052 |
| Dep. var. mean | 8.273 | 8.839 | 8.870 | 9.148 |
| MSA × Regional controls | Yes | Yes | Yes | Yes |
| Individual controls | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | |
| Survey year | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes |

*Notes:* Dependent variables are the single dimensions of institutional trust behind the index in col. 3 of Table 6 (see Table C.7 for descriptions of utilized variables). MSA refers to months since arrival. Threat is the threat index described in the text, and is z-standardized within each model. Coefficients and standard errors are multiplied by 100 for presentation. All regressions include the interaction of MSA with regional controls (social network, labor market, and local culture), all measured in December 2012. See Table C.5 for a detailed description of these regional controls. Additionally, all regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.12. Counter-mobilization of local residents: Twitter and NGO presence

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | All *#refugeeswelcome* tweets and retweets | | | | NGO-led initiatives | |
| | Number | Per 100,000 people | Per 100,000 total tweets & retweets | Per 100,000 users | Number | Per 100,000 people |
| Refugee share | 85.113 | 0.608 | 6.210 | 6,428 | -12.442 | 0.222 |
| | (237.6) | (7.540) | (8.522) | (19,980) | (12.897) | (0.384) |
| Refugee share × Threat | -55.356 | -6.295* | -4.432 | -8,901 | -6.109 | -0.882** |
| | (74.919) | (3.178) | (2.730) | (6,100) | (6.006) | (0.353) |
| NUTS-2-Year observations | 228 | 228 | 228 | 228 | | |
| NUTS-2 observations | 38 | 38 | 38 | 38 | 38 | 38 |
| R2 adjusted | 0.952 | 0.937 | 0.886 | 0.900 | 0.744 | 0.763 |
| Dep. var. mean | 674.5 | 28.813 | 31.062 | 69,525 | 14.974 | 0.679 |
| Regional controls | | | | | Yes | Yes |
| Year × Regional controls | Yes | Yes | Yes | Yes | No | No |
| **Fixed Effects** | | | | | | |
| Year | Yes | Yes | Yes | Yes | No | No |
| NUTS-2 | Yes | Yes | Yes | Yes | No | No |

*Notes:* The dependent variable is tweets and retweets containing the hashtag *#refugeeswelcome* (resp. NGO-led initiatives) for columns 1-4 (resp. columns 5-6). Tweets and retweets are available annually from 2013 until 2018. NGO-led initiatives are available once; according to *refugeeswelcomemap.de*, from which the information was collected, it relates to the year 2017 (see section C.2.3). Refugee share refers to the percent of refugees at the region-level measured on December 31 of the previous year. Threat is the threat index described in the text, and is z-standardized within each model. Positive coefficients indicate more tweets (NGO-led initiatives). Coefficients and standard errors are – unlike in most tables – not multiplied by 100 for presentation. Column 1 utilizes the total number of all tweets and retweets containing the hashtag *#refugeeswelcome*. Column 2 repeats this exercise for tweets and retweets counted per 100,000 people located in the NUTS-2 region. Column 3 switches to per 100,000 total tweets and retweets, and column 4 concludes by defining the outcome per 100,000 users, as a proxy for the number of distinct users. Column 5 utilizes the number of NGO-lead initiatives, while column 6 defines the same outcome per 100,000 people. The construction of these variables is detailed in Section C.2. Regional controls are the same as in the main regression specification (except the share of foreigners in the district population from the same origin region and the employment rate of foreigners with nationality corresponding to the respondent's birth country in the region), all measured in December 2012. See Table C.5 for a detailed description of these regional variables. Regressions are frequency-weighted with the total population number at the region (NUTS-2) level in the observation year. Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

# Supplementary Appendix, not for Publication

**Appendix B: Robustness Checks** **60**

B.1 Testing *Ex-ante* Selection . . . . . 60

B.2 Ruling Out *Ex-post* Sorting . . . . . 61

B.3 Alternative Measures of Cultural Similarity . . . . . 62

B.4 Addressing the Potential Endogeneity of Locals' Culture . . . . . 63

B.5 Robustness to Measurement of Threat . . . . . 64

B.6 Adjusting Standard Errors for Spatial Correlation . . . . . 66

B.7 Additional Robustness Checks . . . . . 67

**Appendix C: Data Appendix** **86**

C.1 Variables' Definition and Survey Questions . . . . . 86

C.2 Additional Datasets . . . . . 95

C.2.1 Contemporaneous Threat . . . . . 95

C.2.2 Twitter Data . . . . . 95

C.2.3 NGO Dataset . . . . . 97

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# Appendix B: Robustness Checks

## B.1 Testing *Ex-ante* Selection

In Table B.1, we examine whether there is evidence of *ex-ante* selection of refugees with different characteristics across different types of regions. We begin with three regional characteristics: unemployment rate below or above the sample median (Panel A), continuous unemployment rate (Panel B), and urban-rural status (Panel C).[36] Next, in Table B.2, we consider: the threat index above or below the sample median (Panel A); and, the continuous threat index (Panel B). In columns 1 to 4, refugees' individual characteristics are: a dummy equal to one for female respondents; age; years of work experience before migration; and, a dummy for reporting Syria as the origin country. To test whether the assignment probability based on pre-entry characteristics changed over time, we interact the latter with arrival year, using 2015 as the reference year. Given that refugee flows were very low prior to 2015, we combine arrival years 2013 and 2014 to obtain a meaningful number of observations per cell.[37] Reassuringly, there is no evidence that the allocation of refugees with different characteristics across regions changed over time.

In columns 5 to 10, we investigate the possibility of *ex-ante* cultural selection on the side of refugees. We consider cultural similarity to non-refugees in all of Germany in columns 5 to 7, and cultural similarity to non-refugees living in the same NUTS-2 region in columns 8 to 10. Since we cannot observe the preferences of refugees before their arrival, this exercise can be conducted only for recently arrived refugees, under the assumption that they had less time to converge to local culture. We experiment with different definitions of "recent refugees," considering those arrived less than 8, 10, or 12 months prior to the interview, respectively.[38] Since the survey only started in 2016, we cannot observe recent arrivals for years 2013 and 2014. We thus restrict attention to changes in the cultural composition of recent arrivals between

[36]Unemployment rate is measured in December 2012 (at the NUTS-2 region level). Urban status is measured in 2018, but the classification is virtually constant over time, since status changes only in the case of a foreseeable permanent under- or over-run of the thresholds used. To increase precision, we use district, rather than region, to define a location as urban or rural. To classify districts into urban or rural we use the same criteria adopted in BBSR (2018): the population share in large and medium-sized cities, the population density of the district region, and the population density of the district region without taking into account the large and medium-sized cities.

[37]Results are unchanged if we consider the two years separately.

[38]The exact threshold used to define recent refugees does not change any of our results.

2015 (omitted category) and 2016. Also in this case, we find no evidence that the cultural composition of refugees changed over time (and that this was correlated with the region of assignment).

Finally, we verify that allocation rules did not change in a way that is correlated with threat and refugees' assimilation. If the characteristics of refugees did not change over time, then interacting those pre-entry characteristics with MSA should not affect the size and precision of our coefficient of interest. In Figure B.1, we report the baseline coefficient and corresponding 95% confidence intervals as the first dot, presenting CSI in the left panel and employment in the right panel. We begin by adding MSA interacted with a dummy variable for the gender of the refugee. Then, we include additional characteristics: whether at least one child born before arrival in Germany lives in the household, age of the respondent, whether a refugee lives together with their partner, work experience and education level upon arrival, and country of birth. In all cases, coefficients remain virtually unchanged, suggesting that *ex-ante* selection of refugees does not drive our results.

## B.2 Ruling Out *Ex-post* Sorting

One may be worried that, despite the initial allocation, refugees might have moved from regions where they had a low cultural match to those with a better fit—and that the degree of cultural fit was correlated with local threat. As explained in the main text, we implement an ITT strategy, using the region of assignment (rather than that of residence) to measure both threat and refugees' outcomes. This deals with the potential concern of refugees' *ex-post* sorting. It is also important to remember that, in our sample, more than 75% of refugees did not move, due to informal barriers to mobility, which became formal with the 2016 Integration Act. This further reduces concerns about refugees' migration.

However, to more directly inspect the potential for *ex-post* sorting, in Figure B.2, we examine the cultural and economic assimilation of refugees who moved from the region of assignment. We estimate different individual (refugee) level regressions that have as outcomes: the CSI (first dot from the top), each of its eight components, and employment (last dot). In the top panel, we consider cultural assimilation relative to

all non-refugees in Germany; in the bottom panel, we allow the sorting of refugees to be region-specific, and compute the cultural assimilation relative to non-refugees in the NUTS-2 region of residence (which is equivalent to the region of assignment for stayers and the region of current residence for movers).

We plot the coefficient on a dummy equal to one if the refugee moved from the region of assignment, partialling out the same set of fixed effects and controls as in our preferred specification (Table 1, column 5). The top panel confirms that movers do not systematically differ from refugees who stayed in the region of assignment. The bottom panel confirms that refugees do not select NUTS-2 regions that are culturally more similar to them. This is reassuring for our empirical analysis, and indicates that our results are unlikely to be driven by the selective relocation of refugees across regions.

## B.3 Alternative Measures of Cultural Similarity

As an additional robustness exercise, we replicate our main estimation table (Table 1 in the main text), using different statistical measures to define cultural similarity. In Panel A of Table B.3, we replace the Euclidean cultural similarity index with the Canberra index—another entropy measure of the Minkowski family, which standardizes each sub-component of the index by the maximum distance observed in the data. This measure captures whether cultural convergence comes from the combination of questions rather than a specific subset of questions.[39] Reassuringly, the coefficient on the interaction term remains positive and statistically significant.

In Panel B, we simplify our measure of cultural similarity. We consider the absolute difference between the average response of non-refugees and the refugee. In contrast to the Euclidean and Canberra index, this measure does not account for heterogeneity of preferences within the local population, but measures similarity to a simpler "average culture." Also in this case, the coefficient on the interaction term remains positive and statistically significant. Moreover, the magnitude of the coefficient

[39] Formally, the Canberra index can be written as $D_{Ca} = \sum_{i=1}^{d} \frac{|P_i - Q_i|}{P_i + Q_i}$, with $P_i$ and $Q_i$ representing two probability density functions. Relative to the Euclidean distance, the Canberra distance lowers the weight of potential outliers. In other words, if refugees converge to non-refugees only along one cultural dimension, this would be captured in the Euclidean index, but would be discounted in the Canberra index.

is remarkably similar to that of the Euclidean distance.[40]

In addition, we document that results are not driven by the exact set of questions considered to define cultural preferences. As described in Section 3, the baseline CSI includes questions that are available for both refugees and non-refugees, and adhere to a strict definition of culture in the form of stated beliefs and preferences. By relaxing the definition of "culture," we can use the full set of overlapping variables (see Table C.2 for the list of additional questions), and expand the cultural similarity index to 12 dimensions, including feelings of social inclusion, self-attitudes, and worries. Results are reported in Table B.4 (Panel A), where we document that coefficients become slightly smaller in size, but more precisely estimated.

Next, we verify that results are robust to restricting attention to native-born respondents when defining the baseline local culture. Since 15% of respondents in the SOEP are not born in Germany (Table A.4), one may be worried that cultural convergence may be over-stated, if immigrants and refugees have more similar preferences than refugees and the average native-born local. Reassuringly, results are unchanged when the CSI is constructed restricting the sample of non-refugees to those born in Germany (Table B.4, Panel B). Finally, we address the concern that results might be driven by a single component of the CSI. In Figure B.3, we omit one component of the CSI at a time. Reassuringly, results are always very close to those from our baseline specification, reported in the first dot from the left to ease comparisons.

## B.4 Addressing the Potential Endogeneity of Locals' Culture

It is possible that refugee inflows led to broader changes in non-refugees' ideology. Since in our main analysis we fixed local culture at baseline, one may be worried that our results over-state convergence if refugee inflows triggered changes in local preferences, more so in regions with higher levels of threat. We tackle this concern in different ways.

First, we replicate the analysis conducted in Table 1 by constructing the CSI using non-refugees' preferences measured at endline, rather than baseline. Specifically, we use the latest available survey year for non-refugees for each of the questions included

[40]Note that the magnitude of coefficients in Panel A cannot be directly compared to that of coefficients in the baseline specification (or, those in Panel B).

in the index. Results are reported in Panel B of Table B.5, which also presents those from the preferred specification to ease comparisons in Panel A. Reassuringly, coefficients on both MSA and the interaction between MSA and threat are close to—if anything larger than—those obtained when measuring CSI at baseline. This indicates that fixing non-refugees' preferences before the inflow of refugees does not lead us to over-state refugees' cultural convergence.

Second, we directly inspect the relationship between locals' preferences and refugee inflows for each of the eight cultural traits used to construct the CSI. This analysis mirrors that conducted for refugees, with two differences. First, the sample of respondents is now composed of non-refugee residents in the same NUTS-2 region (locals). Second, instead of MSA, the main regressor is the refugee share in the region of residence of the respondent at the end of the year before the survey was conducted. All regressions control for NUTS-2 region fixed effects, for individual characteristics, and for interactions between region/district baseline variables from our main specification and year dummies. We adjust confidence intervals for multiple hypotheses testing.

Panel A of Table B.6 reports results obtained when only including the refugee share in the region. Coefficients are never statistically significant, and no clear pattern emerges. Panel B augments this specification by interacting the refugee share with the threat index. Again, once confidence intervals are adjusted for multiple hypothesis testing, only the coefficients on risk preferences of the interaction with threat are statistically significant at conventional levels. Remember, however, that results hold when excluding risk preferences (Figure B.3).

Taken together, results in Tables B.5 and B.6 suggest that refugees' inflows did not significantly alter locals' preferences, and that our results are unlikely to be over- or understated due to endogenous changes in local culture.

## B.5 Robustness to Measurement of Threat

In this section, we conduct three exercises to probe the robustness of results to the definition of threat. First, we replicate the baseline specification omitting each component of the threat index, and computing the principal component using the remaining 10 dimensions. Results are reported in Figure B.4. In all cases, the interaction

term remains positive, statistically significant, and close to that from the baseline specification (reported in the first dot from the left).[41]

Second, in Table B.7, we show that results are not sensitive to changing the cut-offs for the ALLBUS survey questions used in our threat index (see Table C.4 for the exact survey question, their scale, and choice of cut-offs). Specifically, we document that results are unchanged when moving the cut-offs by one towards more anti-immigrant attitudes (column 2) and more immigrant-friendly attitudes (column 3).

Second, we address the concern that our results may be biased by the fact that refugee inflows changed local threat differentially across regions. In the preferred specification, we fix threat at baseline (i.e., prior to 2013) to rule out the possibility that our key regressor of interest may be influenced by the inflow of refugees. Yet, one may be worried that this choice leads to under- or over-estimation of the impact of local hostility on assimilation.[42] Hence, we construct the threat index replacing its baseline components with endline ones.

Third, in Table B.8, we replicate our baseline results, presenting the relationship between cultural assimilation and each component of threat measured at endline in columns 1 to 9; the index is reported in column 10.[43] The vote share of the Alternative for Germany (AfD) or the NPD increases refugees' cultural assimilation over time (columns 1 and 2). The coefficients are similar in size but only the vote share for the AfD is precisely estimated. Note that the decomposition of the baseline threat index (presented in Table A.7) did not include the AfD vote share, since the party only adopted an anti-refugee policy stance in 2015. Similar to the pattern observed in Table A.7 for the baseline counterparts, lower locals' openness (column 3) and higher participation in far-right demonstrations (column 4) are associated with stronger cultural convergence among refugees over time. Likewise, most crime categories have a statistically significant and quantitatively meaningful impact on refugees' cultural convergence (columns 5 to 9).[44] In column 10, we report results

[41] See Table C.4 for a detailed description of each component included in the threat index.

[42] If threat increased (more) in high threat regions, this would lead to downward bias in our estimates. However, one may be worried that regions with relatively low values of threat before 2013 "caught up", experiencing a stronger increase in locals' hostility. If this were to be the case, our results might be upward biased.

[43] See Appendix C.2.1 for a detailed description of contemporaneous threat. The correlation between our main baseline threat index and the first principal component of contemporaneous threat is 0.82.

[44] These results mirror those reported in columns 8 to 12 of Table A.7 for the baseline index. The coefficient on physical assault and murder is positive but noisily estimated (note that these events are relatively rare).

for the first principal component of the variables considered in columns 1 to 9, and document that they are in line with those from the baseline specification (Table 1, column 5).

## B.6 Adjusting Standard Errors for Spatial Correlation

As explained in the main text, we cluster standard errors at the person level. However, in Tables B.9 and B.10, we verify that our estimates remain statistically significant when adjusting standard errors for potential spatial correlation in the error term. First, in columns 2 and 3, we cluster standard errors at the NUTS-2 and district level, respectively. The coefficient on the main effect of MSA always remains statistically significant. Turning to the interaction term, if anything the estimates become more precise in Table B.9. In Table B.10, the coefficient becomes statistically significant at the 10% level in Panel A and in column 2 of Panel C (earnings).

Next, in column 4, we bootstrap standard errors with 1,000 replications to mitigate the concern that the estimated parameter might vary due to sampling variability in the actual data. Our coefficient of interest for cultural assimilation remains significant at the 1% level.

In columns 5 to 8, we adjust standard errors using the Conley (1999) procedure, which we implement using the code by Colella et al. (2019), applying different geographic lags. We focus on spatial correlation at the sub-NUTS-2 level, specifically at the district level. In columns 5 and 6, we use as distance parameter: the median distance between centroids of adjacent districts in Germany (33.15 km); and, twice this distance (66.3 km).[45] In column 7, we allow for correlation across adjacent districts. In column 8, we extend this to neighbors of neighbors. Reassuringly, while standard errors become somewhat larger than in the baseline specification (column 1), the point estimate on the interaction between threat and MSA in Panel A of Table B.10 is always statistically significant. Results are unchanged in Table B.9.

[45] This guarantees that neighboring districts are considered correlated, but also handles cases where districts are separated by a small district.

## B.7 Additional Robustness Checks

Table B.11 reports an additional set of robustness checks. To ease comparisons, in column 1, we report results from our baseline specification for cultural and economic assimilation in Panels A and B, respectively. In column 2, we interact survey year dummies with a dummy for regions belonging to East Germany.[46] Since substantial cultural and political differences between former Eastern and Western Germany—including support for right-wing parties, attitudes towards immigration, and preferences for redistribution (Lange, 2021)—still persist today, it is important to verify that such differences do not drive our results. The interaction between the East Germany and the year dummies makes sure that differential responses to the refugee influx of 2015 are accounted for.

In columns 3 and 4, we consider the possibility that refugees from different regions of origin were differentially assigned across German areas and had a differential propensity to assimilate to local culture. To do so, we interact year dummies with, respectively, origin country dummies and the distance (in km) from the closest border of the refugees' origin countries to the centroid of the NUTS-2-region of assignment.[47] In column 5, we check that results are robust to including dummies for year of arrival (in addition to all other controls). In column 6, we include fixed effects at a lower level of aggregation than our treatment, i.e., district fixed effects instead of NUTS-2 fixed effects. Next, in column 7, we replicate the analysis by trimming the sample and by dropping individuals with cultural similarity at the top (resp. bottom) 1st (resp. 99th) percentile, respectively. Column 8 excludes the two regions with the highest level of threat. In Figure B.5, we show more systematically that no single region is driving our results. Specifically, we replicate the analysis for cultural assimilation by dropping each NUTS-2 region at the time. Reassuringly, results are always in line with those from the full sample (reported in the first dot from the left).

In column 9, we address recent concerns on difference-in-differences (DD) settings with staggered treatment adoption. In particular, it is possible that, in two-way fixed effects estimate of DD, already treated units are used as controls, and this

[46] East Germany includes former GDR states Brandenburg, Mecklenburg-Western Pomerania, Saxony, Saxony-Anhalt, Thuringia, and Berlin. The data does not allow to distinguish East and West Berlin.

[47] We consider distance from country of origin and German NUTS-2-region because this variable may influence the probability of assignment of a refugee to a given local area.

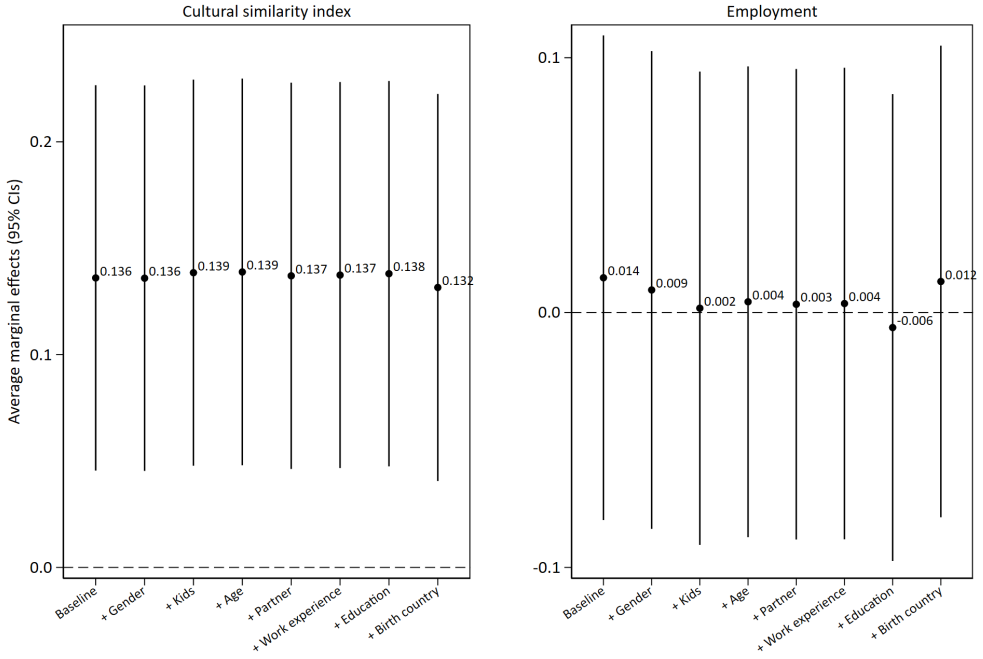
might introduce bias in the presence of heterogeneous effects across groups experiencing treatment at different points in time (De Chaisemartin & d'Haultfoeuille, 2020; Goodman-Bacon, 2021).[48] To address this issue, we restrict the sample to individuals who were surveyed only once. Reassuringly, results remain unchanged. In column 10, we present 2SLS estimates, using the region of assignment as an instrument for the region of residence. Results are again unchanged.[49]

Finally, we examine the extent to which omitted variables could drive our results. The stability of the coefficient of interest when control variables are introduced does not necessarily guarantee the model's immunity to omitted variable bias (Oster, 2019). Incorporating control variables operates under the presumption that observable selections can shed light on unobservable ones. To address this issue, we adopt the approach proposed by Oster (2019) for evaluating the impact of omitted variables on our findings. We calculate the magnitude of omitted variable influence that would fully undo the observed effect, as compared to the influence of included control variables. Oster (2019) suggests setting $\delta = 1$ as the threshold, where a $\delta = 1$ indicates that omitted variables must be equally significant as the set of controls to not be able to reject the null. This analysis mandates defining Rmax, the R-squared of a hypothetical model with all pertinent variables, which Oster (2019) advises to set at 1.3 times the R-squared of our current model with controls. As shown in the bottom row of Panel A of Table B.11, we find a $\delta = 1.36$ for our baseline specification. This implies that hidden variables would have to be at least as large as the explanatory power of the included controls and fixed effects to invalidate our estimated effect. The fact that the value we find is above the critical threshold of 1 lends confidence to the reliability of our main findings against omitted variable concerns.

[48] More generally, two-way fixed effects estimates can be viewed as a weighted sum of the average treatment effects (ATE) in each group and period, with weights that may be negative.

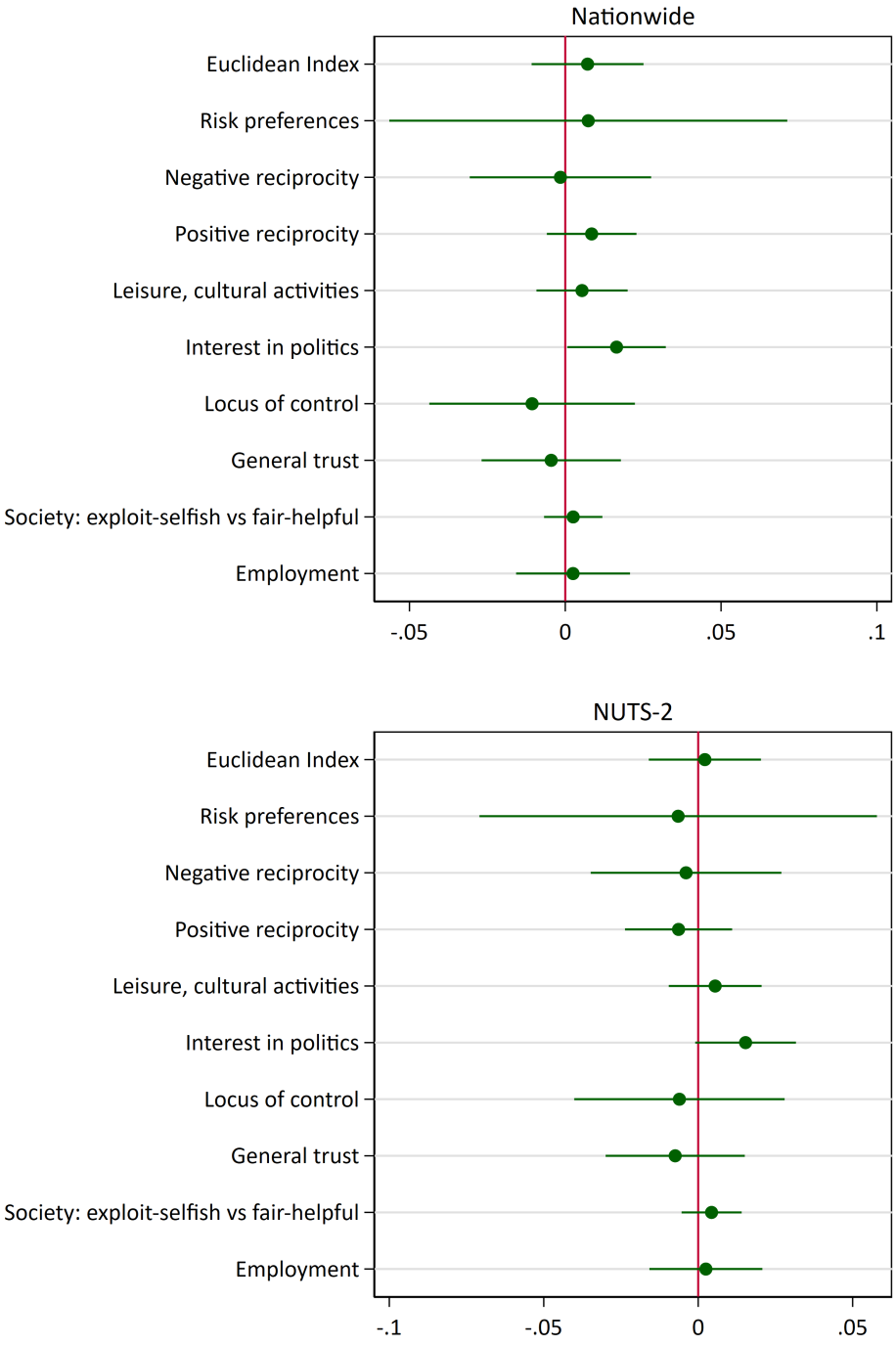
[49] At the bottom of the table, we report the Cragg-Donald Wald and the Kleibergen-Paap Wald F-statistics. Both statistics are well above conventional levels, indicating that the first stage is strong. Note that the F-statistics in Panel A differ from those in Panel B, because we include question composition dummies (both in the first and in the second stage) when the outcome is the CSI (Panel A).

Figure B.1. Interacting MSA with refugee characteristics



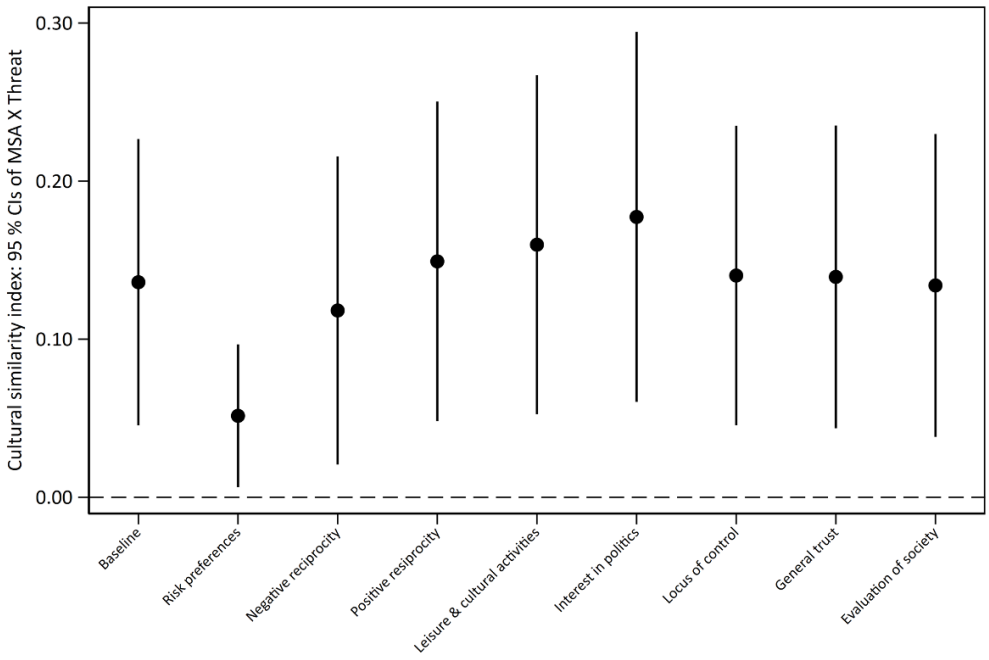

*Notes:* The figure plots the point estimate and 95% confidence interval of MSA × Threat in the main specification, using cultural similarity index (self-reported employment) as the outcome in the left (right) panel, while gradually adding interactions of MSA with the individual refugee characteristics as described on the X-axes (corresponding to the individual control variables included in the main specification).

Figure B.2. Convergence of movers (by question)



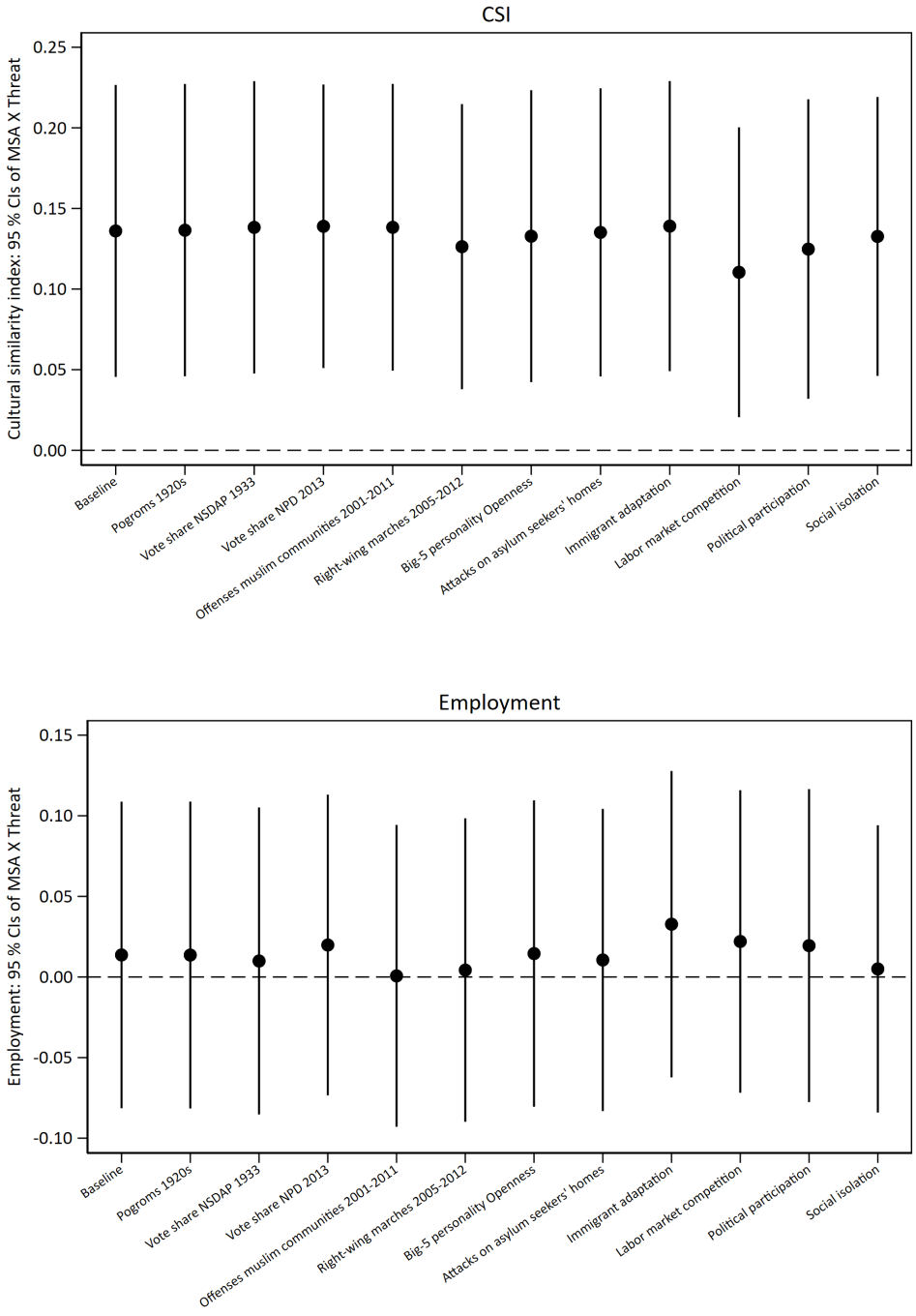

*Notes:* The graph plots the coefficient (with corresponding 95% confidence intervals) of a dummy variable for *movers* (refugees living out of the region of assignment at the time of the interview) in a regression with dependent variable: i) the cultural similarity index (first line); ii) the single components of the cultural similarity index; and, iii) self-reported employment relative to locals (last line). The underlying regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival), survey year and NUTS-2 region fixed effects as well as the interaction of MSA with regional controls (social network, labor market, and local culture), all measured in December 2012. See Table C.5 for a detailed description of these regional variables. The interaction MSA × Threat is not included. The regressions for the first line include controls for dummies for the composition of questions included in the cultural similarity index. Standard errors are clustered at the person-level.

Figure B.3. Dropping single components from CSI



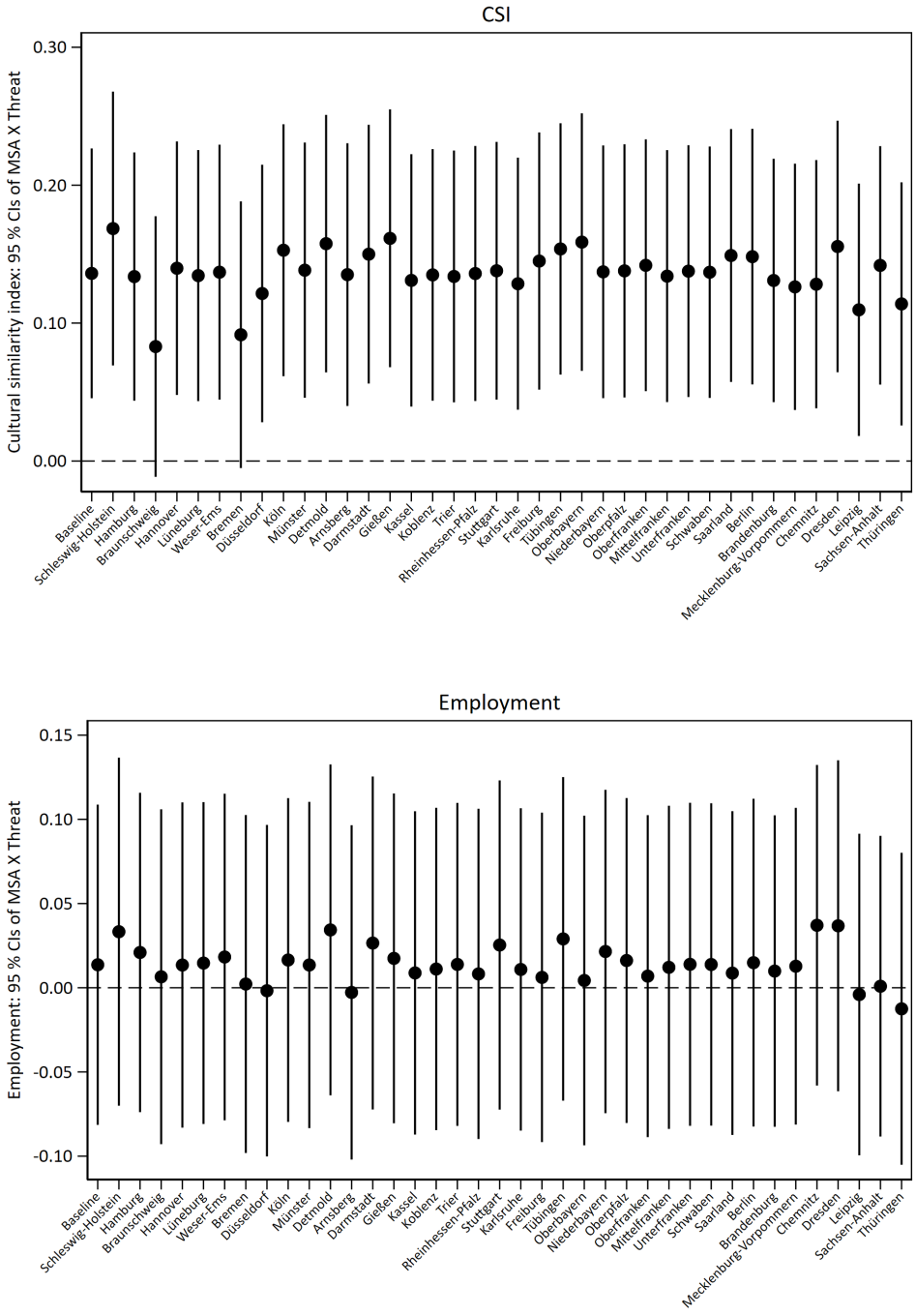

*Notes:* The figure plots the point estimate and 95% confidence interval of MSA × Threat in the main specification, using cultural similarity index as the outcome while omitting single components (as described in Table C.1) used to construct the cultural similarity index.

Figure B.4. Dropping single components from threat index




*Notes:* The figure plots the point estimate and 95% confidence interval of MSA × Threat in the main specification, using cultural similarity index (self-reported employment) as the outcome in the upper (lower) panel, while omitting single components (as described in Table C.4) used to construct the threat index.

Figure B.5. Dropping single regions




*Notes:* The figure plots the point estimate and 95% confidence interval of MSA × Threat in the main specification, using cultural similarity index (self-reported employment) as the outcome in the upper (lower) panel, while omitting refugees from single regions (as depicted in Figures A.3 & A.4).

Table B.1. Probability of assignment to region type by pre-entry characteristic

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CSI | | | Regional CSI | | |
| Characteristic: | Gender | Age | Work exp. | Origin Syria | 8 months | 10 months | 12 months | 8 months | 10 months | 12 months |
| | *Panel A. Unemployment rate above (=1) vs. below (=0) median (baseline)* | | | | | | | | | |
| Variable | -3.968** | 0.097 | -0.244** | 2.823 | -7.108 | -2.500 | 1.742 | -9.972 | -3.309 | 1.463 |
| | (1.616) | (0.102) | (0.113) | (2.106) | (6.655) | (2.944) | (1.885) | (6.181) | (2.945) | (1.894) |
| Arrival year: 2013, 2014 | -4.060** | -8.723* | -4.003* | -1.746 | | | | | | |
| | (2.050) | (5.121) | (2.273) | (2.476) | | | | | | |
| Arrival year: 2013, 2014 × variable | 0.558 | 0.145 | 0.091 | -2.997 | | | | | | |
| | (2.507) | (0.144) | (0.159) | (3.703) | | | | | | |
| 2016 × variable | 2.362 | 0.116 | 0.153 | -3.196 | 9.335 | 0.622 | -2.657 | 11.251 | 1.188 | -2.824 |
| | (3.129) | (0.172) | (0.194) | (4.392) | (7.895) | (4.853) | (3.636) | (7.724) | (4.941) | (3.697) |
| R2 adjusted | 0.010 | 0.010 | 0.010 | 0.005 | 0.015 | 0.050 | 0.038 | 0.020 | 0.051 | 0.038 |
| Dep. var. mean | 0.485 | 0.485 | 0.483 | 0.485 | 0.500 | 0.484 | 0.475 | 0.500 | 0.484 | 0.475 |
| | *Panel B. Unemployment rate in percent (baseline)* | | | | | | | | | |
| Variable | -14.025* | 0.780 | -0.615 | 0.844 | -85.410** | -34.105** | -9.063 | -104.0*** | -41.945** | -15.961 |
| | (8.276) | (0.529) | (0.603) | (10.731) | (38.809) | (17.241) | (10.784) | (37.005) | (17.531) | (10.816) |
| Arrival year: 2013, 2014 | -24.070** | -22.299 | -22.622* | -20.817 | | | | | | |
| | (10.656) | (25.547) | (11.960) | (13.033) | | | | | | |
| Arrival year: 2013, 2014 × variable | -1.880 | -0.066 | -0.196 | -0.091 | | | | | | |
| | (12.714) | (0.726) | (0.856) | (19.360) | | | | | | |
| 2016 × variable | 13.155 | 1.011 | 0.808 | 1.345 | 65.085 | 3.785 | -6.541 | 74.824 | 9.771 | -4.096 |
| | (15.838) | (0.856) | (0.978) | (22.299) | (46.543) | (25.297) | (19.378) | (45.665) | (25.727) | (19.628) |
| R2 adjusted | 0.011 | 0.011 | 0.009 | 0.006 | 0.076 | 0.065 | 0.031 | 0.092 | 0.070 | 0.032 |
| Dep. var. mean | 7.394 | 7.394 | 7.365 | 7.394 | 8.087 | 7.734 | 7.728 | 8.087 | 7.734 | 7.728 |

Table B.1. Continued

| | *Panel C. Urban (=1) vs. rural (=0), district-level* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | 3.003** | 0.107 | -0.007 | -2.073 | 6.286 | 1.410 | -0.480 | 6.269 | 1.545 | 0.085 |
| | (1.520) | (0.090) | (0.102) | (1.901) | (5.198) | (2.691) | (1.788) | (5.117) | (2.665) | (1.775) |
| Arrival year: 2013, 2014 | 0.486 | -1.514 | 0.540 | 0.680 | | | | | | |
| | (1.870) | (4.771) | (2.046) | (2.237) | | | | | | |
| Arrival year: 2013, 2014 × variable | 0.501 | 0.064 | -0.012 | 0.092 | | | | | | |
| | (2.307) | (0.134) | (0.146) | (3.347) | | | | | | |
| 2016 × variable | -2.741 | -0.151 | 0.112 | -0.574 | -3.478 | 0.567 | 2.559 | -4.013 | -0.297 | 1.420 |
| | (3.019) | (0.152) | (0.181) | (4.014) | (6.196) | (4.210) | (3.238) | (6.258) | (4.262) | (3.262) |
| R2 adjusted | 0.005 | 0.005 | 0.006 | 0.001 | -0.038 | 0.014 | 0.011 | -0.038 | 0.014 | 0.011 |
| Dep. var. mean | 0.692 | 0.692 | 0.691 | 0.692 | 0.693 | 0.674 | 0.659 | 0.693 | 0.674 | 0.659 |
| Person observations | 6,521 | 6,521 | 6,110 | 6,521 | 202 | 607 | 1,292 | 202 | 607 | 1,292 |
| Household observations | 4,367 | 4,367 | 4,133 | 4,367 | 174 | 500 | 1,021 | 174 | 500 | 1,021 |
| N 2015 | | | | | 61 | 371 | 943 | 61 | 371 | 943 |
| All individual controls, except outcome and mediator | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Composition | No | No | No | No | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* "Baseline" as depicted in the Panel titles refers to December 2012. The sample consists of the earliest survey year observation of refugees from our main regression that arrived in Germany between 2013 and 2016. Columns 5 to 7 (resp. 8 to 10) restrict the sample to refugees that arrived less than 8, 10, and 12 months before the interview, using the national-level cultural similarity index (resp. at region-level). Arrival year 2015 is omitted, which is the year with the highest influx of refugees. The dependent variable is a regional-level (NUTS-2) characteristic of the location of assignment of the refugee, measured in December 2012, except for Panel C, which is on district-level. Dependent variables are: i) whether the region of assignment is above or below the median unemployment rate (Panel A); and, ii) the unemployment rate of the assigned region (Panel B); and, iii) whether the district of assignment is an urban district (Panel C, based on BBSR 2018) classification of district types based on density and distribution of population within the district. Median values are measured within each sample and interaction terms are adjusted for multiple hypotheses testing by controlling the familywise error rate (FWER) using the Romano-Wolf procedure (Clarke et al., 2020; Romano & Wolf, 2016). Coefficients and standard errors are multiplied by 100 for presentation. All regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). Neither survey year and NUTS-2 fixed effects nor MSA and regional variables are controlled for. Columns from 5 to 10 always control for the composition of questions included in the cultural similarity index. Standard errors, in parentheses, are clustered at the household-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.2. Probability of assignment to region type by pre-entry characteristic: Threat

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CSI | | | Regional CSI | | |
| Characteristic: | Gender | Age | Work exp. | Origin Syria | 8 months | 10 months | 12 months | 8 months | 10 months | 12 months |
| | *Panel A. Threat index above (=1) vs. below (=0) median* | | | | | | | | | |
| Variable | -1.525 | 0.101 | -0.136 | 5.097** | -19.967*** | -11.164*** | -5.056*** | -17.753** | -9.254*** | -4.020** |
| | (1.626) | (0.101) | (0.112) | (2.077) | (6.968) | (2.706) | (1.860) | (7.008) | (2.768) | (1.875) |
| Arrival year: 2013, 2014 | -2.803 | 1.347 | -2.876 | -2.624 | | | | | | |
| | (2.035) | (5.084) | (2.237) | (2.436) | | | | | | |
| Arrival year: 2013, 2014 × variable | -3.748 | -0.166 | -0.154 | -2.412 | | | | | | |
| | (2.550) | (0.143) | (0.157) | (3.660) | | | | | | |
| 2016 × variable | 0.092 | 0.086 | 0.001 | 2.824 | 15.557 | 1.955 | -2.554 | 15.619 | 4.334 | -0.988 |
| | (3.167) | (0.171) | (0.193) | (4.405) | (8.772) | (4.367) | (3.343) | (8.834) | (4.554) | (3.472) |
| R2 adjusted | 0.009 | 0.009 | 0.009 | 0.005 | 0.080 | 0.073 | 0.038 | 0.070 | 0.060 | 0.034 |
| Dep. var. mean | 0.507 | 0.507 | 0.509 | 0.507 | 0.485 | 0.491 | 0.483 | 0.485 | 0.491 | 0.483 |
| | *Panel B. Continuous threat measure* | | | | | | | | | |
| Variable | -1.845 | -0.061 | -0.055 | 6.173 | -40.515*** | -14.581*** | -4.160 | -35.435*** | -11.202** | -2.751 |
| | (3.334) | (0.197) | (0.226) | (4.191) | (11.517) | (5.505) | (3.647) | (11.243) | (5.284) | (3.603) |
| Arrival year: 2013, 2014 | -4.503 | -4.385 | -7.664* | -6.564 | | | | | | |
| | (4.006) | (10.076) | (4.262) | (4.920) | | | | | | |
| Arrival year: 2013, 2014 × variable | -10.353 | -0.120 | 0.014 | -0.946 | | | | | | |
| | (4.944) | (0.286) | (0.319) | (7.119) | | | | | | |
| 2016 × variable | 3.047 | 0.240 | 0.076 | 7.466 | 28.114 | 2.923 | -5.970 | 28.541 | 6.563 | -2.620 |
| | (6.186) | (0.309) | (0.357) | (8.456) | (14.599) | (8.708) | (6.788) | (14.605) | (8.688) | (6.867) |
| R2 adjusted | 0.015 | 0.015 | 0.015 | 0.006 | 0.075 | 0.073 | 0.034 | 0.061 | 0.066 | 0.032 |
| Dep. var. mean | -0.000 | -0.000 | -0.004 | -0.000 | -0.000 | -0.000 | 0.000 | -0.000 | -0.000 | 0.000 |
| Person observations | 6,521 | 6,521 | 6,110 | 6,521 | 202 | 607 | 1,292 | 202 | 607 | 1,292 |
| Household observations | 4,367 | 4,367 | 4,133 | 4,367 | 174 | 500 | 1,021 | 174 | 500 | 1,021 |
| N 2015 | | | | | 61 | 371 | 943 | 61 | 371 | 943 |
| All individual controls, except outcome and mediator | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Composition | No | No | No | No | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* The sample consists of the earliest survey year observation of refugees from our main regression that arrived in Germany between 2013 and 2016. Columns 5 to 7 (resp. 8 to 10) restrict the sample to refugees that arrived less than 8, 10, and 12 months before the interview, using the national-level cultural similarity index (resp. at region-level). Arrival year 2015 is omitted, which is the year with the highest influx of refugees. The dependent variable is the threat index of the location of assignment of the refugee (dichotomized at the median in Panel A and continuous in Panel B). Interaction terms are adjusted for multiple hypotheses testing by controlling the familywise error rate (FWER) using the Romano-Wolf procedure (Clarke et al., 2020; Romano & Wolf, 2016). Coefficients and standard errors are multiplied by 100 for presentation. All regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). Neither survey year and NUTS-2 fixed effects nor MSA and regional variables are controlled for. Columns from 5 to 10 always control for the composition of questions included in the cultural similarity index. Standard errors, in parentheses, are clustered at the household-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.3. Local threat and cultural convergence: Alternative index

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | *Panel A. Canberra index (mean: -0.353)* | | | | |
| MSA | 0.029*** | 0.030*** | 0.029*** | 0.028*** | 0.028*** |
| | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) |
| MSA × Threat | | 0.010*** | 0.011*** | 0.012* | 0.015** |
| | | (0.004) | (0.004) | (0.007) | (0.007) |
| R2 adjusted | 0.239 | 0.240 | 0.240 | 0.241 | 0.241 |
| | *Panel B. Abs. dev. from non-refugee mean (mean: -1.413)* | | | | |
| MSA | 0.158*** | 0.168*** | 0.160*** | 0.146** | 0.146** |
| | (0.057) | (0.057) | (0.057) | (0.057) | (0.057) |
| MSA × Threat | | 0.116*** | 0.127*** | 0.155** | 0.178*** |
| | | (0.036) | (0.039) | (0.064) | (0.066) |
| R2 adjusted | 0.176 | 0.177 | 0.178 | 0.178 | 0.179 |
| Person-Year observations | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 |
| Person observations | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 |
| MSA × Regional controls | | | + Social network | + Labor market | + Local culture |
| Individual controls | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | | |
| Survey year | Yes | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes | Yes |

*Notes:* The sample consists of 6,690 refugees for a total of 12,333 refugee-year observations. The dependent variable is the Canberra cultural similarity index (resp. the absolute deviation from the non-refugee cultural mean) in Panel A (resp. Panel B). MSA refers to months since arrival. Threat is the threat index described in the text, and is z-standardized within each model. Positive coefficients indicate a reduction in distance to locals. Coefficients and standard errors are multiplied by 100 for presentation. Column 2 adds the interaction of Threat with MSA. Columns 3 through 5 progressively add interaction terms of MSA and regional controls, all measured in December 2012. See Table C.5 for a detailed description of these regional variables. All regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). Additionally, all regressions include dummies for the composition of questions in the cultural similarity index. Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.4. Local threat and cultural convergence: Alternative definitions

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | *Panel A. Cultural similarity index, 12-components (mean: -1.745)* | | | | |
| MSA | 0.102*** | 0.108*** | 0.106*** | 0.101*** | 0.100*** |
| | (0.030) | (0.030) | (0.030) | (0.030) | (0.030) |
| MSA × Threat | | 0.072*** | 0.075*** | 0.093*** | 0.088*** |
| | | (0.019) | (0.021) | (0.033) | (0.034) |
| Person-Year observations | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 |
| Person observations | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 |
| R2 adjusted | 0.253 | 0.254 | 0.254 | 0.254 | 0.254 |
| | *Panel B. Cultural similarity index, native-born only (mean: -1.905)* | | | | |
| MSA | 0.121*** | 0.129*** | 0.122*** | 0.111*** | 0.110*** |
| | (0.041) | (0.041) | (0.041) | (0.041) | (0.041) |
| MSA × Threat | | 0.090*** | 0.098*** | 0.121*** | 0.136*** |
| | | (0.026) | (0.028) | (0.046) | (0.047) |
| Person-Year observations | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 |
| Person observations | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 |
| R2 adjusted | 0.366 | 0.366 | 0.367 | 0.367 | 0.367 |
| MSA × Regional controls | | | + Social network | + Labor market | + Local culture |
| Individual controls | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | | |
| Survey year | Yes | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes | Yes |

*Notes:* The sample consists of 6,690 refugees for a total of 12,333 refugee-year observations. The dependent variable is the 12-component cultural similarity index (resp. the cultural similarity index to native-born Germans only) in Panel A (resp. Panel B). See Table C.2 for the set of additional questions included in the 12-component cultural similarity index. MSA refers to months since arrival. Threat is the threat index described in the text, and is z-standardized within each model. Positive coefficients indicate a reduction in distance to locals. Coefficients and standard errors are multiplied by 100 for presentation. Column 2 adds the interaction of Threat with MSA. Columns 3 through 5 progressively add interaction terms of MSA and regional controls, all measured in December 2012. See Table C.5 for a detailed description of these regional variables. All regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). Additionally, all regressions include dummies for the composition of questions in the cultural similarity index. Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.5. Cultural convergence: Measuring non-refugees' preferences at endline

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Cultural similarity index | | | | |
| | *Panel A. Non-refugee culture measured at baseline (mean: -1.912)* | | | | |
| MSA | 0.112*** | 0.120*** | 0.113*** | 0.103** | 0.102** |
| | (0.040) | (0.040) | (0.040) | (0.041) | (0.040) |
| MSA × Threat | | 0.089*** | 0.098*** | 0.121*** | 0.136*** |
| | | (0.025) | (0.028) | (0.045) | (0.046) |
| Person-Year observations | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 |
| Person observations | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 |
| R2 adjusted | 0.374 | 0.375 | 0.375 | 0.376 | 0.376 |
| | *Panel B. Non-refugee culture measured at endline (mean: -1.899)* | | | | |
| MSA | 0.127*** | 0.135*** | 0.128*** | 0.118*** | 0.117*** |
| | (0.038) | (0.038) | (0.038) | (0.038) | (0.038) |
| MSA × Threat | | 0.088*** | 0.097*** | 0.102** | 0.116*** |
| | | (0.024) | (0.026) | (0.042) | (0.043) |
| Person-Year observations | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 |
| Person observations | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 |
| R2 adjusted | 0.391 | 0.392 | 0.393 | 0.393 | 0.393 |
| MSA × Regional controls | | | + Social network | + Labor market | + Local culture |
| Individual controls | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | | |
| Survey year | Yes | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes | Yes |

*Notes:* The sample consists of 6,690 refugees for a total of 12,333 refugee-year observations. The dependent variable is the cultural similarity index, where local culture is measured at baseline in Panel A (identical to the main specification), and at endline in Panel B. MSA refers to months since arrival. Threat is the threat index described in the text, and is z-standardized within each model. Positive coefficients indicate a reduction in distance to locals. Coefficients and standard errors are multiplied by 100 for presentation. All regressions include dummies for missing control variables, for the composition of questions included in the cultural similarity index, and individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). Columns 3 through 5 progressively add interaction terms of MSA and regional controls, all measured in December 2012. See Table C.5 for a detailed description of these regional variables. Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.6. Refugee inflows and changes in local culture

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| CSI component: | Risk preference | Negative reciprocity | Positive reciprocity | Leisure, Cultural activity | Politics interest | Locus of control | Trust | Egoistic-altr. society |
| | *Panel A. Refugee share only* | | | | | | | |
| Refugee share | 2.517 | -24.400 | 23.444 | -5.419 | -0.495 | -31.321 | -3.690 | -7.574 |
| | (1.560) | (15.038) | (16.712) | (3.015) | (1.319) | (15.351) | (3.782) | (4.197) |
| Person-Year observations | 205,833 | 36,197 | 36,229 | 40,437 | 198,992 | 34,894 | 40,980 | 39,832 |
| Person observations | 48,860 | 28,950 | 28,954 | 30,453 | 48,378 | 27,964 | 29,521 | 28,944 |
| R2 overall | 0.021 | 0.002 | 0.000 | 0.003 | 0.000 | 0.004 | 0.001 | 0.000 |
| R2 between | 0.031 | 0.001 | 0.000 | 0.006 | 0.000 | 0.004 | 0.000 | 0.000 |
| R2 within | 0.017 | 0.053 | 0.010 | 0.016 | 0.006 | 0.010 | 0.010 | 0.010 |
| | *Panel B. Refugee share and interaction with threat* | | | | | | | |
| Refugee share | -4.493 | 2.637 | 8.045 | -7.161 | -0.927 | -47.183 | -6.613 | -4.700 |
| | (1.938) | (19.995) | (22.220) | (3.978) | (1.629) | (20.405) | (5.049) | (5.611) |
| Refugee share × Threat | -4.218*** | 16.856 | -9.618 | -0.944 | -0.264 | -9.907 | -1.469 | 1.442 |
| | (0.692) | (8.218) | (9.146) | (1.406) | (0.586) | (8.396) | (1.681) | (1.869) |
| Person-Year observations | 205,833 | 36,197 | 36,229 | 40,437 | 198,992 | 34,894 | 40,980 | 39,832 |
| Person observations | 48,860 | 28,950 | 28,954 | 30,453 | 48,378 | 27,964 | 29,521 | 28,944 |
| R2 overall | 0.021 | 0.002 | 0.000 | 0.003 | 0.000 | 0.004 | 0.001 | 0.000 |
| R2 between | 0.031 | 0.001 | 0.000 | 0.006 | 0.000 | 0.004 | 0.000 | 0.000 |
| R2 within | 0.017 | 0.053 | 0.010 | 0.016 | 0.006 | 0.011 | 0.011 | 0.010 |
| Survey year × Regional controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Individual controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | | | | | |
| Survey year | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* The table shows estimation results of individual-level panel regressions with person fixed-effects. The sample consists of non-refugee SOEP survey responses (exclusion of the SOEP refugee subsamples M3, M4, M5) between survey years 2010 and 2019. The dependent variables are the dimensions of the cultural similarity index detailed in Table C.1, and are z-standardized within each model. Refugee share refers to the percent of refugees at the region-level measured on December 31 of the year prior to the interview. Threat is the threat index described in the text, and is z-standardized within each model. Coefficients and standard errors are multiplied by 100 for presentation. All regressions include the interaction of survey year dummies with the regional controls from the main regression specification (except the share of foreigners in the district population from the same origin region and the employment rate of foreigners with nationality corresponding to the respondent's birth country in the region), all measured in December 2012. See Table C.5 for a detailed description of these regional variables. Additionally, all regressions include dummies for missing control variables and individual characteristics (gender, age, age squared, highest education among 4 categories, and migration background: none, indirect, 5 years ago or less, 6-10 years, more than 10 years). Significance levels are adjusted for multiple hypotheses testing by controlling the familywise error rate (FWER) using the Romano-Wolf procedure (Clarke et al., 2020; Romano & Wolf, 2016). Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.7. Robustness to alternative thresholds in threat index

| | (1) | (2) | (3) |
|---|---|---|---|
| | *Panel A. Cultural similarity index (mean: -1.911)* | | |
| MSA | 0.102** | 0.102** | 0.102** |
| | (0.040) | (0.040) | (0.040) |
| MSA × Main threat | 0.136*** | | |
| | (0.046) | | |
| MSA × Robustness threat: more anti-immigrant | | 0.148*** | |
| | | (0.051) | |
| MSA × Robustness threat: more pro-immigrant | | | 0.132*** |
| | | | (0.044) |
| Person-Year observations | 12,333 | 12,333 | 12,333 |
| Person observations | 6,690 | 6,690 | 6,690 |
| R2 adjusted | 0.376 | 0.376 | 0.376 |
| | *Panel B. Employment (mean: 0.178)* | | |
| MSA | 0.777*** | 0.777*** | 0.777*** |
| | (0.041) | (0.041) | (0.041) |
| MSA × Main threat | 0.014 | | |
| | (0.049) | | |
| MSA × Robustness threat: more anti-immigrant | | 0.033 | |
| | | (0.052) | |
| MSA × Robustness threat: more pro-immigrant | | | 0.004 |
| | | | (0.047) |
| Person-Year observations | 12,333 | 12,333 | 12,333 |
| Person observations | 6,690 | 6,690 | 6,690 |
| R2 adjusted | 0.165 | 0.165 | 0.165 |
| Survey year × Regional controls | Yes | Yes | Yes |
| Individual controls | Yes | Yes | Yes |
| **Fixed Effects** | | | |
| Survey year | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes |

*Notes:* The sample consists of 6,690 refugees for a total of 12,333 refugee-year observations. The dependent variable is the cultural similarity index (resp. self-reported employment) in Panel A (resp. Panel B). "Robustness threat" refers to applying different cut-offs in the components of the threat index from the German General Social Survey (ALLBUS) (see Table C.4 for the utilized threat components). "More anti-immigrant" denotes the thresholds (i) $\geq$ 0 on the 5-point -2 to +2 scale (can understand attacks on asylum-seekers' homes); (ii) agreement of 7 on the 1 to 7 scale for the remaining statements. "More pro-immigrant" denotes the thresholds (i) $\geq$ -1 on the 5-point -2 to +2 scale (can understand attacks on asylum-seekers' homes); (ii) agreement of $\geq$ 5 on the 1 to 7 scale for the remaining statements (rather than $\geq$ 0 for understanding attacks on asylum-seekers' homes and agreement of $\geq$ 6 for the remaining statements as in the main threat index). MSA refers to months since arrival. Threat is the threat index described in the text, and is z-standardized within each model. Positive coefficients indicate a reduction in distance to locals. Coefficients and standard errors are multiplied by 100 for presentation. All regressions include the interaction of MSA with regional controls (social network, labor market, and local culture), all measured in December 2012. See Table C.5 for a detailed description of these regional variables. Additionally, all regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). Additionally, regressions in Panel A include dummies for the composition of questions in the cultural similarity index. Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

## Table B.8. Main results: Measuring threat at endline

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Right-wing crimes against refugees (2015-2018) | | | | | |
| Threat component of interest: | AfD voting share 2017 | NPD voting share 2017 | Openness 2017 | Right-wing extr. demos, 2015-2018 | Physical assault and murder | Incitement to commit crimes | Arson, damage to property, theft | Threat or insult | Other | PC 1 |
| | *Cultural similarity index (mean: -1.912)* | | | | | | | | | |
| MSA | 0.101** | 0.101** | 0.098** | 0.100** | 0.102** | 0.101** | 0.102** | 0.104** | 0.099** | 0.103** |
| | (0.040) | (0.040) | (0.041) | (0.040) | (0.040) | (0.040) | (0.040) | (0.040) | (0.040) | (0.040) |
| MSA × Threat component (at endline) | 0.062* | 0.043 | -0.087*** | 0.075** | 0.065 | 0.120*** | 0.119*** | 0.095** | 0.104*** | 0.142*** |
| | (0.035) | (0.039) | (0.031) | (0.032) | (0.043) | (0.030) | (0.036) | (0.042) | (0.032) | (0.040) |
| Person-Year observations | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 |
| Person observations | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 |
| R2 adjusted | 0.375 | 0.375 | 0.376 | 0.376 | 0.375 | 0.376 | 0.376 | 0.376 | 0.376 | 0.376 |
| MSA × Regional controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Individual controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | | | | | | | |
| Survey year | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* The sample consists of 6,690 refugees for a total of 12,333 refugee-year observations. The dependent variable is the cultural similarity index. MSA refers to months since arrival. Threat is the threat index measured at endline described in Appendix C.2.1, and is z-standardized within each estimated model. Positive coefficients indicate a reduction in distance to locals. Coefficients and standard errors are multiplied by 100 for presentation. All regressions include the interaction of MSA with regional controls (social network, labor market, and local culture), all measured in December 2012. See Table C.5 for a detailed description of these regional variables. Additionally, all regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). All specifications include dummies for the composition of questions in the cultural similarity index. Column 1 through 4 include various threat components measured at endline, and are AfD voting share in 2017, NPD voting share in 2017, Big-5 Openness measured in 2017, and the number of right-wing extremist demonstrations between 2015 and 2018. Column 5 through 9 present different categories of right-wing crimes against refugees between 2015-2018 which are: i) physical assault and murder (column 5); incitement of the people or to commit crimes; including the use of swastikas (column 6); arson, damage to property, theft committed against refugees (column 7); threats or insults (column 8); and, other actions that would be considered as a right-wing crime against refugees. (column 9). Lastly, the first principal component of threat at endline is used (column 10). Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.9. Employment results: Alternative standard errors (admin. data)

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | | Cluster | | | Conley standard errors | | | |
| | Baseline | NUTS-2 | District | Bootstrap with 1,000 replications | Spatial: distance 33.15 km | Spatial: distance 66.30 km | Network: direct neighbor | Network: neighbor of neighbor |
| | *Panel A. Employment (mean: 0.354)* | | | | | | | |
| MSA | 0.007*** | 0.007*** | 0.007*** | 0.007*** | 0.007*** | 0.007*** | 0.007*** | 0.007*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| MSA × Threat | -0.000 | -0.000 | -0.000 | -0.000** | -0.000 | -0.000 | -0.000 | -0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Person-Month observations | 254,620 | 254,620 | 254,620 | 254,620 | 254,620 | 254,620 | 254,620 | 254,620 |
| Person observations | 3,186 | 3,186 | 3,186 | 3,186 | 3,186 | 3,186 | 3,186 | 3,186 |
| R2 centered | 0.243 | 0.243 | 0.243 | 0.243 | 0.243 | 0.243 | 0.243 | 0.243 |
| | *Panel B. Monthly gross earnings (non employed = 0) (mean: 507.4)* | | | | | | | |
| MSA | 12.600*** | 12.600*** | 12.600*** | 12.600*** | 12.600*** | 12.600*** | 12.600*** | 12.600*** |
| | (1.089) | (0.841) | (1.073) | (0.187) | (0.688) | (0.691) | (0.691) | (0.689) |
| MSA × Threat | -1.052** | -1.052** | -1.052** | -1.052*** | -1.052** | -1.052** | -1.052** | -1.052** |
| | (0.521) | (0.446) | (0.503) | (0.116) | (0.417) | (0.417) | (0.418) | (0.419) |
| Person-Month observations | 254,620 | 254,620 | 254,620 | 254,620 | 254,620 | 254,620 | 254,620 | 254,620 |
| Person observations | 3,186 | 3,186 | 3,186 | 3,186 | 3,186 | 3,186 | 3,186 | 3,186 |
| R2 centered | 0.237 | 0.237 | 0.237 | 0.237 | 0.237 | 0.237 | 0.237 | 0.237 |
| | *Panel C. Monthly gross earnings (among employed) (mean: 1,434)* | | | | | | | |
| MSA | 10.930*** | 10.930*** | 10.930*** | 10.930*** | 10.930*** | 10.930*** | 10.930*** | 10.930*** |
| | (1.700) | (1.574) | (1.614) | (0.302) | (1.123) | (1.125) | (1.131) | (1.132) |
| MSA × Threat | -2.168** | -2.168*** | -2.168*** | -2.168*** | -2.168** | -2.168** | -2.168** | -2.168** |
| | (0.945) | (0.752) | (0.833) | (0.266) | (0.924) | (0.915) | (0.933) | (0.929) |
| Person-Month observations | 90,119 | 90,119 | 90,119 | 90,119 | 90,119 | 90,119 | 90,119 | 90,119 |
| Person observations | 3,149 | 3,149 | 3,149 | 3,149 | 3,149 | 3,149 | 3,149 | 3,149 |
| R2 centered | 0.186 | 0.186 | 0.186 | 0.186 | 0.186 | 0.186 | 0.186 | 0.186 |
| | *Panel D. Log monthly gross earnings (among employed) (mean: 6.928)* | | | | | | | |
| MSA | 0.009*** | 0.009*** | 0.009*** | 0.009*** | 0.009*** | 0.009*** | 0.009*** | 0.009*** |
| | (0.001) | (0.001) | (0.001) | (0.000) | (0.001) | (0.001) | (0.001) | (0.001) |
| MSA × Threat | -0.002* | -0.002* | -0.002** | -0.002*** | -0.002* | -0.002* | -0.002* | -0.002* |
| | (0.001) | (0.001) | (0.001) | (0.000) | (0.001) | (0.001) | (0.001) | (0.001) |
| Person-Month observations | 90,119 | 90,119 | 90,119 | 90,119 | 90,119 | 90,119 | 90,119 | 90,119 |
| Person observations | 3,149 | 3,149 | 3,149 | 3,149 | 3,149 | 3,149 | 3,149 | 3,149 |
| R2 centered | 0.158 | 0.158 | 0.158 | 0.158 | 0.158 | 0.158 | 0.158 | 0.158 |
| MSA × Regional controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Individual controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | | | | | |
| Year | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* The sample consists of 3,186 (3,149) refugees for a total of 254,620 (90,119) refugee-month observations in Panels A, B (C, D). The dependent variable is an employment dummy in Panel A, monthly gross earnings (setting earnings of non-employed to zero) in Panel B, monthly gross earnings (among employed) in Panel C, and log monthly gross earnings in Panel D. MSA refers to months since arrival. Threat is the threat index described in the text, and is z-standardized within each model. Coefficients and standard errors are multiplied by 100 for presentation. All regressions include the interaction of MSA with regional controls (social network, labor market, and local culture), all measured in December 2012. See Table C.5 for a detailed description of these regional variables. Additionally, all regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). Standard errors, in parentheses, are: i) clustered at the person-level (column 1); ii) clustered at the region-level (column 2); (iii) clustered at the district-level (column 3); iv) bootstrapped with 1,000 replications (column 4), (v) Conley standard errors allowing correlation between districts whose borders are less than 33.15 km (resp. 66.30 km) away (column 5, resp. column 6); and vi) Conley standard errors allowing correlation with neighboring districts (resp. neighboring districts and neighbors of neighbors) in column 7 (resp. column 8). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.10. Threat and assimilation: Alternative standard errors (survey data)

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | | Cluster | | | Conley standard errors | | | |
| | Baseline | NUTS-2 | District | Bootstrap with 1,000 replications | Spatial: distance 33.15 km | Spatial: distance 66.30 km | Network: direct neighbor | Network: neighbor of neighbor |
| | *Panel A. Cultural similarity index (mean: -1.911)* | | | | | | | |
| MSA | 0.102** | 0.102* | 0.102** | 0.102*** | 0.102** | 0.102** | 0.102** | 0.102** |
| | (0.040) | (0.051) | (0.049) | (0.038) | (0.046) | (0.045) | (0.048) | (0.046) |
| MSA × Threat | 0.136*** | 0.136* | 0.136* | 0.136*** | 0.136** | 0.136** | 0.136** | 0.136** |
| | (0.046) | (0.080) | (0.076) | (0.045) | (0.066) | (0.057) | (0.066) | (0.068) |
| Person-Year observations | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 |
| Person observations | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 |
| R2 centered | 0.380 | 0.380 | 0.380 | 0.380 | 0.380 | 0.380 | 0.380 | 0.380 |
| | *Panel B. Refugees' employment (survey) (mean: 0.178)* | | | | | | | |
| MSA | 0.777*** | 0.777*** | 0.777*** | 0.777*** | 0.777*** | 0.777*** | 0.777*** | 0.777*** |
| | (0.041) | (0.046) | (0.042) | (0.036) | (0.045) | (0.045) | (0.044) | (0.046) |
| MSA × Threat | 0.014 | 0.014 | 0.014 | 0.014 | 0.014 | 0.014 | 0.014 | 0.014 |
| | (0.049) | (0.056) | (0.053) | (0.046) | (0.055) | (0.049) | (0.051) | (0.053) |
| Person-Year observations | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 |
| Person observations | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 |
| R2 centered | 0.171 | 0.171 | 0.171 | 0.171 | 0.171 | 0.171 | 0.171 | 0.171 |
| | *Panel C. Refugees' log earnings (survey, trimmed) (mean: 6.709)* | | | | | | | |
| MSA | 0.925*** | 0.925*** | 0.925*** | 0.925*** | 0.925*** | 0.925*** | 0.925*** | 0.925*** |
| | (0.229) | (0.162) | (0.216) | (0.209) | (0.191) | (0.202) | (0.215) | (0.205) |
| MSA × Threat | -0.500 | -0.500* | -0.500 | -0.500 | -0.500* | -0.500* | -0.500 | -0.500* |
| | (0.312) | (0.262) | (0.316) | (0.308) | (0.258) | (0.269) | (0.327) | (0.280) |
| Person-Year observations | 2,058 | 2,058 | 2,058 | 2,058 | 2,058 | 2,058 | 2,058 | 2,058 |
| Person observations | 1,546 | 1,546 | 1,546 | 1,546 | 1,546 | 1,546 | 1,546 | 1,546 |
| R2 centered | 0.142 | 0.142 | 0.142 | 0.142 | 0.142 | 0.142 | 0.142 | 0.142 |
| MSA × Regional controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Individual controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | | | | | |
| Survey year | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* The sample consists of 6,690 (1,546) refugees for a total of 12,333 (2,058) refugee-year observations in Panels A, B (Panel C). The dependent variable is the cultural similarity index in Panel A, refugees' self-reported employment in Panel B, and refugees' self-reported log earnings (1st to 99th percentile trimmed) in Panel C. MSA refers to months since arrival. Threat is the threat index described in the text, and is z-standardized within each model. Positive coefficients in Panel A indicate a reduction in distance to locals. Coefficients and standard errors are multiplied by 100 for presentation. All regressions include the interaction of MSA with regional controls (social network, labor market, and local culture), all measured in December 2012. See Table C.5 for a detailed description of these regional variables. Additionally, all regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). Panel A includes dummies for the composition of questions in the cultural similarity index. Standard errors, in parentheses, are: i) clustered at the person-level (column 1); ii) clustered at the region-level (column 2); (iii) clustered at the district-level (column 3); iv) bootstrapped with 1,000 replications (column 4), (v) Conley standard errors allowing correlation between districts whose borders are less than 33.15 km (resp. 66.30 km) away (column 5, resp. column 6); and vi) Conley standard errors allowing correlation with neighboring districts (resp. neighboring districts and neighbors of neighbors) in column 7 (resp. column 8). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.11. Threat and assimilation: Additional robustness checks

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Robustness check: | Baseline | East Germany × survey year | Origin country group × survey year | Origin country distance × survey year | Arrival year fixed effects | District fixed effects | Exclude outliers (1-99 pctile) | Exclude threat outliers | Include only 1st person observation | 2SLS |
| | *Panel A. Cultural similarity index (mean: -1.911)* | | | | | | | | | |
| MSA | 0.102** | 0.103** | 0.109*** | 0.105*** | -0.033 | 0.110*** | 0.075* | 0.100** | 0.076 | 0.116*** |
| | (0.040) | (0.041) | (0.041) | (0.041) | (0.104) | (0.041) | (0.038) | (0.041) | (0.049) | (0.041) |
| MSA × Threat | 0.136*** | 0.135*** | 0.129*** | 0.135*** | 0.138*** | 0.143*** | 0.108** | 0.163*** | 0.156** | 0.174*** |
| | (0.046) | (0.049) | (0.046) | (0.046) | (0.046) | (0.047) | (0.045) | (0.044) | (0.077) | (0.059) |
| Person-Year observations | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,086 | 11,901 | 6,664 | 12,333 |
| Person observations | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,643 | 6,484 | 6,664 | 6,690 |
| R2 adjusted | 0.376 | 0.376 | 0.377 | 0.376 | 0.376 | 0.394 | 0.337 | 0.375 | 0.241 | 0.372 |
| Dep. var. mean | -1.911 | -1.911 | -1.911 | -1.911 | -1.911 | -1.911 | -1.908 | -1.912 | -2.027 | -1.911 |
| Cragg-Donald Wald F-stat | | | | | | | | | | 298.0 |
| Kleibergen-Paap Wald rk F-stat | | | | | | | | | | 401.7 |
| Oster (2019), delta s.t. $\beta$( MSA × Threat) = 0 | 1.36 | 1.20 | 1.24 | 1.35 | 1.39 | 1.36 | 0.78 | 1.91 | -1.02 | |
| | *Panel B. Employment (mean: 0.178)* | | | | | | | | | |
| MSA | 0.777*** | 0.778*** | 0.776*** | 0.779*** | 0.872*** | 0.778*** | 0.786*** | 0.770*** | 0.659*** | 0.778*** |
| | (0.041) | (0.041) | (0.041) | (0.041) | (0.100) | (0.042) | (0.041) | (0.042) | (0.049) | (0.041) |
| MSA × Threat | 0.014 | 0.016 | 0.013 | 0.013 | 0.008 | 0.011 | 0.007 | 0.022 | 0.083 | 0.017 |
| | (0.049) | (0.051) | (0.049) | (0.048) | (0.048) | (0.050) | (0.049) | (0.047) | (0.077) | (0.062) |
| Person-Year observations | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,333 | 12,086 | 11,901 | 6,664 | 12,333 |
| Person observations | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,690 | 6,643 | 6,484 | 6,664 | 6,690 |
| R2 adjusted | 0.165 | 0.165 | 0.166 | 0.165 | 0.166 | 0.182 | 0.167 | 0.165 | 0.094 | 0.165 |
| Dep. var. mean | -0.507 | -0.507 | -0.507 | -0.507 | -0.507 | -0.507 | -0.507 | -0.505 | -0.577 | -0.507 |
| Cragg-Donald Wald F-stat | | | | | | | | | | 297.2 |
| Kleibergen-Paap Wald rk F-stat | | | | | | | | | | 400.9 |
| Oster (2019), delta s.t. $\beta$( MSA × Threat) = 0 | -0.05 | -0.06 | -0.05 | -0.05 | -0.03 | -0.04 | -0.03 | -0.13 | -0.40 | |
| MSA × Regional controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Individual controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | | | | | | | | | | |
| Survey year | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| NUTS-2 | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes |
| District | No | No | No | No | No | Yes | No | No | No | No |

*Notes:* The sample consists of 6,690 refugees for a total of 12,333 refugee-year observations. The dependent variable is the cultural similarity index (resp. refugees' self-reported employment) in Panel A (resp. Panel B). MSA refers to months since arrival. Threat is the threat index described in the text, and is z-standardized within each model. Positive coefficients in Panel A indicate a reduction in distance to locals. Coefficients and standard errors are multiplied by 100 for presentation. All regressions include the interaction of MSA with regional controls (social network, labor market, and local culture), all measured in December 2012. See Table C.5 for a detailed description of these regional variables. Additionally, all regressions include dummies for missing control variables, individual characteristics (gender, age, age squared, kids born before arrival in Germany living in the household, country of origin, marital status and location of partner as well as work experience and education upon arrival). Panel A includes dummies for the composition of questions in the cultural similarity index. Column 1 presents the baseline regression (column 5 of Table 1). Columns 2, 3, and 4 add interactions between year dummies and, respectively: East Germany; origin country groups (Syria, Afghanistan, Iraq, Iran, Africa, Western Balkans, former USSR, Eritrea, and other) and the distance between the origin country and centroid of the region of assignment. Column 5 includes arrival year fixed-effects. Column 6 includes district fixed-effects. Column 7 excludes observations where the cultural similarity index is above (resp., below) the 99th (resp., 1st) percentile. Column 8 excludes the 2 regions (out of 38) with the highest threat. Column 9 reports results using refugees who were interviewed only once and, for those who were interviewed multiple times, considers only the first date of interview. Column 10 estimates 2SLS regressions, instrumenting threat in the region of residence using threat measured in the region of assignment. Column 10 additionally reports the Cragg-Donald Wald F-statistic for the overall strength of instruments and the Kleibergen-Paap Wald rk F-statistic for the joint significance of instruments used in the specification. For all specifications, we report the $\delta$ based on Oster (2019), setting Rmax, the R-squared of a hypothetical model with all pertinent variables, to 1.3 times the R-squared of the current model with controls. Standard errors, in parentheses, are clustered at the person-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

# Appendix C: Data Appendix

## C.1 Variables' Definition and Survey Questions

Table C.1. Survey questions used for baseline cultural similarity index

| Outcome variables | | | Survey year | |
|---|---|---|---|---|
| Category | Question | Scale | Refugees | Locals |
| Risk | In general, are you someone who is ready to take risks or do you try to avoid risks? | 0 - 10 | 2016-18 | 2012 |
| Positive reciprocity | If someone does me a favor, I am willing to reciprocate it | 1 - 7 | 2016-18 (Bio) | 2010 |
| | I make a particular effort to help someone who has previously helped me. | 1 - 7 | 2016-18 (Bio) | 2010 |
| | I am prepared to incur costs myself to help someone who has previously helped me. | 1 - 7 | 2016-18 (Bio) | 2010 |
| Negative reciprocity | If someone does me a serious wrong, I will get my own back at any price at the next opportunity. | 1 - 7 | 2016-18 (Bio) | 2010 |
| | If somebody puts me in a difficult position, I will do the same to them. | 1 - 7 | 2016-18 (Bio) | 2010 |
| | If someone insults me, I will insult them. | 1 - 7 | 2016-18 (Bio) | 2010 |
| Leisure activities | How often do you go to eat or drink in a cafe, restaurant or bar? | 1 - 5 | 2017-18 | 2013 |
| | Artistic and musical activities (painting, music, photography, theater, dance) | 1 - 5 | 2017-18 | 2013 |
| | Taking part in sports | 1 - 5 | 2017-18 | 2013 |
| | Going to sporting events | 1 - 5 | 2017-18 | 2013 |
| | Going to the cinema, pop concerts, dance events, clubs | 1 - 5 | 2017-18 | 2013 |
| | Going to cultural events such as opera, classical concerts, theater, exhibitions | 1 - 5 | 2017-18 | 2013 |
| Politics | Once spoken in general terms: How interested are you in politics | 1 - 4 | 2016-18 | 2012 |
| Locus of control | How my life goes depends on me | 1 - 7 | 2016 | 2010 |
| | Compared to other people, I have not achieved what I deserve | 1 - 7 | 2016 | 2010 |
| | What a person achieves in life is above all a question of fate or luck | 1 - 7 | 2016 | 2010 |
| | If a person is socially or politically active, he/she can have an effect on social conditions | 1 - 7 | 2016 | 2010 |
| | I frequently have the experience that other people have a controlling influence over my life | 1 - 7 | 2016 | 2010 |
| | One has to work hard in order to succeed | 1 - 7 | 2016 | 2010 |
| | If I run up against difficulties in life, I often doubt my own abilities | 1 - 7 | 2016 | 2010 |
| | The opportunities that I have in life are determined by the social conditions | 1 - 7 | 2016 | 2010 |
| | Inborn abilities are more important than any efforts one can make | 1 - 7 | 2016 | 2010 |
| | I have little control over the things that happen in my life | 1 - 7 | 2016 | 2010 |
| Trust | People can generally be trusted | 1 - 4 | 2018 | 2013 |
| | Nowadays you can't rely on anyone | 1 - 4 | 2018 | 2013 |
| | If you are dealing with strangers, it is better to be careful before trusting them | 1 - 4 | 2018 | 2013 |
| Egoistic society | Do you believe that most people would use you if they had the chance or that they would try to be fair to you? | 1 - 2 | 2018 | 2013 |
| | Would you say that people usually try to be helpful or that they only pursue their own interests? | 1 - 2 | 2018 | 2013 |

*Notes:* The table lists the survey questions used to construct the main cultural similarity index, their classification in categories, the range of possible answers, and the years they have been asked to refugees and locals. Scales include: Risk, 0 - 10 with 0 risk averse - 10 fully prepared to take risks, Negative reciprocity, positive reciprocity and locus of control 1 - 7 with 1 Absolutely does not apply - 7 Fully applies, leisure activities 1 - 5 with 1 Never - 5 Daily, Politics 1-4 with 1 not at all - 4 very strong, Trust 1 -4 with 1 Not at all - 4 fully agree, egoistic society fairness 1-2 with 1 exploit - 2 fair, and egoistic society helpful with 1 own interest - 2 helpful.

Table C.2. Additional questions included in the 12-component index

| Outcome variables | | | Survey year | |
|---|---|---|---|---|
| Category | Question | Scale | Refugees | Locals |
| Satisfaction | How satisfied are you currently with your life in general? | 0 - 10 | 2016-18 | 2012 |
| | How satisfied are you with your current health? | 0 - 10 | 2016-18 | 2012 |
| | How satisfied are you in general with your current living arrangements? | 0 - 10 | 2016-18 | 2012 |
| Worries | Are you worried about your own economic situation? | 1 - 3 | 2016-18 | 2012 |
| | Are you worried about your health? | 1 - 3 | 2016-18 | 2012 |
| Social inclusion | How often do you miss the company of other people? | 1 - 5 | 2016-18 (Bio) | 2013 |
| | How often do you feel left out? | 1 - 5 | 2016-18 (Bio) | 2013 |
| | How often do you feel socially isolated? | 1 - 5 | 2016-18 (Bio) | 2013 |
| Self attitude | I have a positive attitude towards myself | 1 - 7 | 2016-18 (Bio) | 2010 |

*Notes:* The lists the survey questions used, in addition to variables in Table C.1, to construct the 12-component cultural similarity index, their classification in categories, the range of possible answers, and the years they have been asked to refugees and locals. Scales include: Satisfaction 0 - 10 with 0 Completely dissatisfied - 10 Completely satisfied, Worries 1-3 with 1 No, no worry - 3 Yes, big worry, Social inclusion 1-5 with 1 Never - 5 Very often, and Self attitude 1-7 with 1 Absolutely does not apply - 7 Fully applies.

Table C.3. Questions used for correlation with components of cultural similarity index

| Outcome variables | | | |
|---|---|---|---|
| Category | Question | Scale | Survey year |
| | *Panel A: Political preferences and attitudes* | | |
| Satisfaction German democracy | How satisfied are you with democracy as it exists in Germany? | 0 - 10 | 2010, 2016 |
| Voted in last German parliamentary election | Did you vote in the last German parliamentary election on September 27, 2009? | 0 - 1 | 2010 |
| Concern: The impact of climate change | What is your attitude towards the following areas; are you concerned about them? - The impacts of climate change | 0 - 3 | 2009, 2010, 2012-2019 |
| Concern: Immigration to Germany | What is your attitude towards the following areas; are you concerned about them? - Immigration to Germany | 0 - 3 | 2009, 2010, 2012-2019 |
| Political attitudes | In politics people often talk about "left" and "right" when it comes to characterize different political attitudes. If you think about your own political views: Where would you place yours? | 0 - 10 | 2009, 2014, 2019 |
| | *Panel B: Cultural preferences* | | |
| Good that gay marriage is recognized | I will read you a series of statements. To what degree do you personally agree with each statement? - I think it is good that marriages between two women or two men are legally recognized. | 1 - 7 | 2018 |
| Best if man and woman work the same | I will read you a series of statements. To what degree do you personally agree with each statement? -It's best if the man and the woman work the same amount so they can share the responsibility for taking care of the family and household equally. | 1 - 7 | 2018 |
| Children under 6 suffer if the mother work | I will read you a series of statements. To what degree do you personally agree with each statement? - Children below the age of 6 suffer if their mother works. | 1 - 7 | 2018 |
| How often do you attend religious events | Which of the following activities do you take part in during your free time? Please check off how often you do each activity: at least once a week, at least once a month, less often, never. - Attending church, religious events | 1 - 5 | 2013, 2017-2019 |
| Not a member of any religious community | Are you a member of a church or religious community? - No, I do not belong to any religious community | 0 - 1 | 2013, 2015-2019 |
| | *Panel C: Preferences for redistribution and altruism* | | |
| Blood donations last 10 years | Did you donated blood at least once in the last year? | 0 - 1 | 2010 |
| Amount given away if received 10,000 € gift | Imagine that you unexpectedly received a gift of 10,000 euros. How much would you save, how much would you give away,and how much would you spend? (You can either split up the money into the categories below or use the entire sum for one purpose; expressed in thousands) | 0 - 10 | 2010, 2017 |
| Fair that those who work harder earn more | People have different ideas about what makes a society just. What's your opinion about the following statements? - A society is just when people who work hard earn more than others | 1 - 7 | 2019 |
| Fair when income and wealth distributed equally | People have different ideas about what makes a society just. What's your opinion about the following statements? - A society just when the income and wealth in society are equally distributed among all people. | 1 - 7 | 2019 |

*Notes:* The table lists the survey questions used in each row of Table A.1.

Table C.4. Threat index: Description and data sources

| Threat component | Description | Source |
|---|---|---|
| Voting share of NSDAP in elections 1933 | Absolute number of votes for the National Socialist German Workers' Party (NSDAP) over the absolute number of valid votes in the 1933 parliamentary elections; mapped from the level of historical administrative district boundaries to today's NUTS-2 regions. | Falter & Hänisch (1990) |
| Pogroms against Jews in 1920s | Reported pogroms in Germany in the 1920s are aggregated from the level of towns to NUTS-2 regions (based on provided longitude and latitude). According to Voigtländer & Voth (2012), Appendix (p.1): "We define a pogrom as a violent outrage against the Jewish population, involving physical violence against and/or the killings of people. Therefore, political agitation through *Brandreden* (incendiary speeches), attacks on Jewish shows, or the desecration of cemeteries are not coded as pogroms. Only when physical violence against at least one Jewish inhabitant is mentioned in *Alicke* does this variable take the value of unity." | Voigtländer & Voth (2012) |
| Voting share of far-right party NPD in Federal elections 2013 | Results are provided online for download by the Bundeswahlleiter (Federal Returning Officer), which is responsible for supervising the proper organization and conduct of Federal elections in Germany. In the German election system, voters cast two votes: first votes are directly given to local representatives; second votes are decisive for the representation of parties in the parliament. The vote shares of the far-right National Democratic Party of Germany (NPD) are calculated as the share of second votes out of all valid votes. | Bundeswahlleiter (2013) |
| Offenses against Muslim communities | insults, threats, attacks against mosques and disturbance of religious practice (2001-2011). Answer of the Federal government to a parliamentry query of the party *Die Linke* (far-left party). Data shared by Colussi et al. (2021). Original source: Federal parliamentary printed matter 17/9523 (2012). For the construction of our index, we cumulate the number of violent attacks. | Colussi et al. (2021) |
| Right-wing marches | This is a dataset on right-wing extremist demonstrations that took place in Germany between 2005 and 2020. The authors used the German federal government's answers to brief parliamentary questions (*Kleine Anfragen*) tabled by the opposition left-wing party *Die Linke* to create this dataset. The dataset consists of more than 3,000 observations and includes information on the location, date, number of participants, organizing actors, and the mottos of the right-wing extremist demonstrations. For the construction of our index, we limit the time frame to pre-2013 and calculate the cumulated number of participants in right-wing extremist demonstration per 100,000 inhabitants as of 2012. | Kanol & Knoesel (2021) |
| Understanding for attacks on asylum seekers' homes | Question from ALLBUS (2021) survey 2008. Share of respondents answering 0 or higher to the following question: "I can understand that people carry out attacks on homes for asylum seekers (-2 Do not agree at all - +2 Completely agree)." | German General Social Survey (ALLBUS, 2021) |
| Immigrant adaptation | ALLBUS (2021) survey 2010, 2012 (pooled): Foreigners living in Germany should adapt their way of life a little more closely to the German way of life. (1 completely disagree - 7 completely agree). We calculate the share of respondents responding 6 or higher. | German General Social Survey (ALLBUS, 2021) |
| Labor market competition | Question from ALLBUS (2021) survey 2010, 2012 (pooled). Share of respondents answering 6 or higher to the following question: "When jobs get scarce, the foreigners living in Germany should be sent home again (1 completely disagree - 7 completely agree)." | German General Social Survey (ALLBUS, 2021) |
| Political participation of immigrants | Question from ALLBUS (2021) survey 2010, 2012 (pooled). Share of respondents answering 6 or higher to the following question: "Foreigners living in Germany should be prohibited from taking part in any kind of political activity in Germany (1 completely disagree - 7 completely agree)." | German General Social Survey (ALLBUS, 2021) |
| Endogamy | Question from ALLBUS (2021) survey 2010, 2012 (pooled). Share of respondents answering 6 or higher to the following question: "Foreigners living in Germany should choose to marry people of their own nationality (1 completely disagree - 7 completely agree)." | German General Social Survey (ALLBUS, 2021) |
| "Openness" (Big-5 personality trait) | Average of the Big-5 personality traits dimension "Openness" at the local population in the NUTS-2 region in the SOEP survey year 2013. In SOEP, each of the Big-5 personality traits is generated from three survey questions (Gerlitz, Schupp 2005). We calculate "Openness" as the average over the agreement to the following items (each scaled from 1 does not apply at all - 7 absolutely): (1) I have a vivid fantasy, imagination, (2) I am original, bring in new ideas, (3) I value artistic, aesthetic experiences. | Own calculations based on SOEP (2020) |

*Notes:* The table lists the name, description, and source of each threat component used to compute the threat index.

Table C.5. Description of regional controls

| Category | Variable | Definition | Level | Source |
|---|---|---|---|---|
| Social network | Population density | Number of residents per square kilometer at baseline (Dec-31-2012). | District | German Federal Statistical Office (Destatis, 2021) |
| | Refugee Share | Percentage of refugees in all residents at baseline (Dec-31-2012. This includes persons who are in Germany on the basis of international law, humanitarian or political reasons and are recorded in the Central Register of Foreigners with the corresponding residence status: (i) Persons with undecided asylum application; (ii) persons with recognized protection status, (iii) persons with rejected protection status who are tolerated ("Duldung") or staying in Germany as persons obliged to leave the country after their asylum application has been rejected. | District | German Federal Statistical Office (Destatis, 2021) |
| | Network size | Share of individuals holding the refugee's birth country nationality at baseline (Dec-31-2012), relative to the total region population. | NUTS-2 | German Federal Statistical Office (Destatis, 2021) |
| | Network employment | Employment rate of immigrants holding a nationality corresponding to the refugee's region of birth at baseline (December 2012). We use the region instead of the country of origin due to small samples in the data. Origin regions include: MENA, Afghanistan, sub-Saharan Africa, West Balkans, and former USSR. | NUTS-2 | Federal Employment Agency (Bundesagentur für Arbeit, 2020) |
| Labor market | Unemployment rate | The unemployment rate is the ratio of unemployed job-seekers to the civilian labor force, multiplied with 100. We take the value at baseline (December 2012) | NUTS-2 | Federal Employment Agency (Bundesagentur für Arbeit, 2020) |
| | Task diversity | We take the distribution of 3-digit occupations in the region at baseline (December-2012). Then, based on Dengler et al. (2014), we first assign the task structure from David & Dorn (2013) to each 3-digit occupation; then, we average across occupations (over task) within each region, and construct a Herfindahl index. | NUTS-2 | Federal Employment Agency (Bundesagentur für Arbeit, 2020) |
| | Skill complexity | Using 5-digit occupation codes (KldB2010 – very similar to ISCO08 (Bundesagentur für Arbeit, 2015)), we calculate the skill requirement of each occupation. Defining four broad categories (helper; skilled worker; specialist; and expert), we calculate the share among all employees across NUTS-2 regions at baseline (December 2012) in each of them. Finally, as before, we calculate a Herfindahl Index. | NUTS-2 | Federal Employment Agency (Bundesagentur für Arbeit, 2020) |
| Local culture | Local cultural distinctiveness | Euclidean distance between the vector of the averages of cultural dimensions over locals and the averages over all Germany. | NUTS-2 | German Socio-Economic Panel (SOEP) |
| | Local cultural dispersion | On the local individual, we calculate the mean over all 8 cultural variables of the distance to locals, then take the standard deviation over the region. | NUTS-2 | German Socio-Economic Panel (SOEP) |

Table C.5. Description of regional controls (continued)

| | | | | |
|---|---|---|---|---|
| | Share of academics | Share of employees with academic degree among all employees (subject to social security contributions) in the NUTS-2 region level at baseline (2012). The data is based on the statistics of the Federal Employment Agency and provided for download by INKAR (2021). | NUTS-2 | Federal Employment Agency (Bundesagentur für Arbeit, 2020) |
| | Elderly and childcare | For the elderly, we define it as the percentage of the population 65 or older and the latter, childcare, as the mean places (capacity) of childcare facilities divided by the number of full-time positions for pedagogical staff in the district at baseline (2012). The data is provided for download by INKAR (2021). | District | German Federal Statistical Office (Destatis, 2021), Statistics on children and persons working in federal and federal state daycare facilities |
| | Rental prices | Rental prices are defined as rent per square meters in the district at baseline (2012). Rent refers to the base rental cost of a property excluding any utility costs or service charges, such as heating, water, and other additional expenses. The data is provided for download by INKAR (2021). | District | Housing and real estate market monitoring of the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) |
| | Amenities | We proxy amenities by the tax capacity of the district (in Euros per inhabitant) at baseline (2012), which measures the financial resources of all municipalities in the district. The data is provided for download by INKAR (2021). | District | Real tax comparison of the federal government and the federal states |

*Notes:* The table lists the definition and sources of regional variables used in the analyses.

## Table C.6. Description of labor market variables

| Variable | Definition | Question (if any) | Answer | Years |
|---|---|---|---|---|
| Job aspirations (among non-employed) | Constructed directly from the refugee's answer (only asked to those who are not employed at the time of the survey). | Do you intend to obtain employment in the future? | [1] No, definitely not<br>[2] Probably not<br>[3] Probably<br>[4] Definitely | 2016-2018 |
| Job search via friends, relatives (among non-employed) | Constructed directly from the refugee's answer (only asked to those who are not employed at the time of the survey) We define a dummy equal to 1 if the refugee answers 5 (Family members, friends, acquaintances) | Which of the following options have you used so far to find a job? | [1] Employment Agency, job centre, working group (ARGE), social welfare office<br>[2] Private job placement<br>[3] Job advert in the newspaper<br>[4] Job advertisement in the Internet, social network (e.g. Facebook, Twitter, Xing)<br>[5] Family members, friends, acquaintances<br>[6] None of these | 2016-2018 |
| Qualification match in current job (among employed) | Based on comparison of skill requirement (4 categories based on last digit of 5-digit occupation code) in last job in origin country and current job (both self-reported and translated into occupation code (KldB-2010)<br>Underqualified = 1[current > origin country]<br>Overqualified = 1[current < origin country] | What was the last job you had in your country of origin? Please state the exact job title, e.g. not "commercial clerk" but: "forwarding agent", not "laborer" but: "machine fitter"<br><br>What is your current occupation? Please state the exact job title, e.g. not "commercial clerk" but: "forwarding agent", not "laborer" but: "machine fitter" | [1] Helper<br>[2] Skilled worker<br>[3] Specialist<br>[4] Expert | 2016-2018 |
| Mini job | Based on self-reported monthly gross earnings in current occupation. Missing values have been imputed by SOEP (DIW Berlin / SOEP (ed.), 2022). Mini job = 1[gross earnings $\leq$ 450 Euros] | What were your gross earnings, including overtime paid, in the past month? | Gross earnings in Euros | 2016-2018 |
| Weekly working hours | Constructed directly from the refugee's answer (only asked to those who are employed at the time of the survey) | What is the average of your actual working hours per week including any overtime? | Working hours per week | 2017-2018 |
| Relative earnings (w/in occupation) | Relative monthly earnings of employed refugees (inferred from administrative records at the day of the survey) relative to monthly earnings of all full-time employees in the assigned region within the same 5-digit occupation at baseline (Bundesagentur für Arbeit, 2020). | Refugee's gross monthly earnings - gross median monthly earnings of all employees in 2012 (w/in the same region & 5-digit occupation | | 2016-2018 |

*Notes:* The table lists the definition of labor market variables used in Table 5.

Table C.7. Description of civic engagement variables

| Variable | Definition | Question (if any) | Answer | Years |
|---|---|---|---|---|
| Experienced discrimination | Constructed directly from the refugee's answer. | How often have you personally experienced being disadvantaged in Germany because of your origin? | [1] Never<br>[2] Seldom<br>[3] Frequently | 2016-2018 (all) |
| No support by authorities | We recode the 9 dimensions of self-reported support received by refugees since their arrival separately into 9 variables, 0 indicating received help and 1 indicating no received help. Then, we take the row mean over the 9 dummy variables, which yields the share across 9 dimensions in which refugees have received help. | If you are new to a country, it is sometimes difficult to manage in different situations. The following questions are about whether, since your arrival in Germany, you have received help from authorities in various areas. - Have you received legal advice on refugee and asylum issues? - Have you received help to learn the German language? - Have you received help to look for employment? - Have you received help to look for schools, higher education institutions/universities, training places or further education/training courses? - Have you received help to get your educational qualifications or vocational training qualifications recognised here? - Have you received help to look for accommodation? - Have you received help to look for health care? - Have you received help to secure your financial situation? This includes help in gaining access to state payments? - Have you received help to look for childcare, school places, educational/training places for your child/children? | Each question may be answered with 1 of the following:<br>[1] Yes, I received help<br>[2] No, I needed help but did not receive any<br>[3] No, I did not need any help | 2016-2018 (only first time respondents) |
| Trust in institutions | We take the row mean over trust in 4 types of institutions. | How much do you personally trust each of the institutions in Germany? - How much do you trust the public administration? - How much do you personally trust the German government? - How much do you personally trust the legal system? - How much do you personally trust the police? | Please indicate your answer using the scale provided. 0 means 'no trust at all', while 10 means 'complete trust'. You can use the ratings in between to tailor your response. | 2018 (only repeated respondents) |
| Intends to apply for German citizenship | Constructed directly from the refugee's answer. | Do you intend to apply for German citizenship? | [1] Definitely not<br>[2] Probably not<br>[3] Yes, probably<br>[4] Yes, definitely | 2017-2018 (all) |
| Certainly apply | Recoding of intention to apply for German citizenship into a dummy variable coded as 1 if refugee answers 4 "Yes, definitely" and 0 otherwise. | | | 2017-2018 (all) |

*Notes:* The table lists the definition of political integration variables used in Table 6.

## C.2 Additional Datasets

### C.2.1 Contemporaneous Threat

As described in Appendix B.5, we replicate results using a threat index measured at endline, rather than at baseline. To the extent possible, we take the same variables used in the construction of the baseline index (measured at a different point in time). We select nine variables and then take their first principal component. First, we consider the vote share of the Alternative for Germany (AfD) and the NPD during the 2017 Federal elections, measured at the NUTS-2 regional level.[50] Second, we take the Big-5 personality trait dimension "Openness" averaged across SOEP respondents in each NUTS-2 region in survey year 2017. Third, we rely on data from Kanol & Knoesel (2021) to calculate the cumulated number of participants in far-right demonstrations at the NUTS-2 level between 2015 and 2018, per 100,000 inhabitants as of 2015. Finally, we use data on right-wing crimes against refugees committed between 2015 and 2018 at the NUTS-2 level, collected from the Federal government to parliamentary queries of the party *Die Linke*. We classify anti-refugee crimes into five categories: *i*) physical assault and murder; *ii*) incitement to commit crimes or use of swastikas; *iii*) arson, damage to property, and theft; *iv*) threat or insult; and, *v*) any other crime.[51] Based on the described variables, we compute the first principal component to construct an aggregate measure of contemporaneous threat. Each component and the index are then used in Appendix B.5 (Table B.8).

### C.2.2 Twitter Data

To measure the possible pro-refugee attitudes prevailing among locals, we rely on Twitter data. We scrape the universe of German-language tweets and retweets containing the hashtag *#refugeeswelcome* (the most common pro-refugee hashtag on

[50] Similarly to vote shares as part of our main threat index, we use the second votes, which are pivotal for the representation of parties in the German Parliament. The data comes from the *Bundeswahlleiter*, the Federal Returning Officer (Bundeswahlleiter, 2020).

[51] We thank Julia Bredtmann (RWI, Leibniz Institute for Economic Research) for kindly sharing the data on anti-refugee crimes with us. As many as 8,767 right-wing crimes against refugees were reported between 2015 and 2018. Their distribution was as follows: 21% physical assault or murder; 40% incitement to commit crimes of use of swastikas; 19% arson, damage to property, and theft; 17% threat or insult; 3% any other crime.

Twitter in Germany) posted between January 2013 and December 2018.[52] Following the existing literature (Fujiwara et al., 2024; Hatte et al., 2021), we use the location indicated by users in their profile (when available) to map tweets to NUTS-2 regions. More precisely, we compare the location to a large dataset of existing locations provided by the website Openstreetmap.org to obtain the coordinates of the location.[53] We then exclude tweets: 1) whose users do not provide a valid location (e.g., "Narnia"); 2) that map to a location outside Germany; and, 3) that map to an area larger than a NUTS-2 region. We then assign each tweet to a NUTS-2 region. We end up with 182,000 geo-localized tweets, or 47% of the universe of 387,000 tweets.

Tweets containing the hashtag *#refugeeswelcome* could express both pro- and anti-refugees views. To address this concern, we proceed in two steps. First, we manually classify a random sample of 1,000 tweets, and verify that only 7% of the tweets express anti-refugee views. Then, we use the sentiment classification neural network from Guhr et al. (2020) to classify tweets between positive, neutral, and negative sentiments.[54] We find that the manual and the neural network classifications of negative and positive tweets perfectly overlap in the sample of 1,000 tweets. This is true despite the fact that the neural network classification cannot distinguish between a pro- and an anti-refugee sentiment such as "it is completely unacceptable that we don't accept more refugees" and "it is completely unacceptable that we accept so many refugees". We are thus confident that classification based on the hashtag #refugeeswelcome already provides a selection of tweets that are overall positive.

Since scraping was conducted in September 2021, our data set may differ from the one that would have been obtained by scraping the tweets during the period of interest. This can be for at least two reasons. First, we are only able to obtain tweets from users with active accounts, implying that we cannot measure tweets of users who deleted their account. Second, users may have changed their location between the time they tweeted about refugees and the time we scraped the data. In this case, we would locate the tweet at the new location of the user.[55]

[52]The data were downloaded from `https://developer.twitter.com/en/products/twitter-api/academic-research`.

[53]This step was performed using the geocoding engine `https://nominatim.org/`.

[54]The classification algorithm is based on a German-language version of the BERT architecture (Devlin et al., 2018), and its training data contains a sample of tweets.

[55]Similarly, users may have changed their profile or their stated (previously accurate) location to an invalid location.

In order to account for local Twitter penetration, we additionally collect a measure of Twitter usage for each NUTS-2 region in each year from 2013 to 2018. We sample 2 million tweets by selecting 20,000 random instants during this period and by collecting 100 tweets and retweets in German at each instant.[56] We locate tweets using the geographic information provided by the users. This gives us an estimate of the rate of tweets posted at each instant from each region (expressed as tweets per second), which is then aggregated at the region-year level. To proxy for the number of Twitter users in a NUTS-2 region, we instead rely on the number of users observed in the sample of tweets we collected at random instants.

In Table A.12, we use these data to define the number of tweets and retweets containing the hashtag *#refugeeswelcome* in a NUTS-2 region in each year: *i*) in levels; *ii*) scaled by 100,000 residents. In addition, we define the number of tweets and retweets containing the hashtag *#refugeeswelcome* in a NUTS-2 region in each year both as a share of all tweets and scaled by the number of users. Regression results in Table A.12 are frequency-weighted with the total population number at the region (NUTS-2) level in the observation year.

### C.2.3 NGO Dataset

To the best of our knowledge, no exhaustive dataset with information about the presence of NGOs across German NUTS-2 regions over time exists. We use the website *Refugeeswelcomemap.de* to collect the (time-invariant) number of NGOs in a region.[57] Importantly, the NGOs listed there include only organizations that offer assistance services to refugees. Since postal codes determine the relevant NUTS code, we scrape the website and use geo-coordinates of NGOs to allocate the latter across German NUTS-2 regions. Using this approach, we compiled a list of 1,000 NGOs located in Germany, which offered a variety of services (or, initiatives).

For each NGO, we could retrieve the following information: geographic location, contact information, and a two-level classification system for the type of services offered. The first level of such classification has four categories, which broadly group

[56] Since the Twitter API does not allow to search directly for all tweets in German, we search for tweets containing the 100 most frequent words in German, as listed by Sharoff (2006) on the website `http://corpus.leeds.ac.uk/frqc/`.

[57] The exact link used is: `http://refugeeswelcomemap.de/deutschland/`. The data was last accessed in September 2021.

assistance services of the NGO into: *i*) Bureau/agency, public institution; *ii*) organizations for refugee aid or integration; *iii*) topic; and, *iv*) other. Each category is further divided in more detailed groups, in a second layer of classification. We do not cut the data across categories since, especially for initiatives in the second layer, definitions are often too specific to be considered separately. Instead, we count the number of initiatives (or, services) offered by each NGO. Our dataset includes a total of 4,356 initiatives (or, 4.3 initiatives per NGO).

According to the website, the list of initiatives refers to the year 2017. We thus take it as an approximate snapshot of the presence and activity of pro-refugee NGOs in a NUTS-2 region as of 2017. The dataset does not include the date of establishment, and we acknowledge that the list we were able to obtain is probably non-exhaustive. We define as dependent variable the number of NGO-led initiatives, and the number of NGO-led initiatives per 100,000 residents in a NUTS-2 region and use this in Table A.12 to complement our main analysis.