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Information, perceived education level, and attitudes toward refugees: Evidence from a randomized survey experiment*

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Abstract

From 2014 onwards, Europe has witnessed an unprecedented influx of refugees. While natives' attitudes toward refugees are decisive for the political feasibility of asylum policies, little is known about how these attitudes are shaped by refugees' characteristics. We conducted a survey experiment with almost 5,000 university students in Germany in which we randomly shifted the perception of refugees' education level through information provision. Consistent with economic theories, we find that the perceived education level significantly affects respondents' concerns regarding labor market competition, but these concerns do not translate into general attitudes toward refugees. Further analyses show that respondents with and without immigration background exhibit reverse reactions to the information treatments. The overall null effects are due to economic considerations being relatively unimportant for respondent's attitude formation process.

Keywords: refugees, human capital, education, survey experiment, labor market

JEL classification: H12, H53, I38, D83, D72, P16

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1. Introduction

Since 2014, Europe has been facing an unprecedented influx of refugees.¹ In 2015 alone, more than 1.5 million individuals applied for asylum in Europe, with Germany registering the highest total number among European countries of some 440,000 applications (Eurostat, 2016).² These refugee movements are exceptional not only in terms of magnitude, but also in terms of the refugees' origin countries: Since Syria, Afghanistan, and Iraq constitute the main source countries, current refugees are perceived as culturally more distinct than those who sought asylum during previous refugee crises such as the 1990 crisis after the Balkan wars (see Dustmann et al., 2016A). Against this background, European politicians now face the challenge to implement and enforce policies which, on the one hand, honor international commitments such as the 1951 Geneva Convention for Refugees or the Dublin Convention.³ On the other hand, it is vital that policies toward refugees are supported by domestic voters in order to foster the political feasibility of these reforms and to preserve national solidarity and social cohesion. The fact that public support for anti-immigration parties increased markedly in several European countries since the beginning of the refugee crisis, suggests that voters' skepticism toward refugees and asylum policies have not been fully appreciated by policy makers.⁴ Despite the apparent importance of public attitudes toward refugees, little is known about the determinants of these attitudes and how responsive they are to specific characteristics of refugees.

We study the causal effect of refugees' perceived education level on natives' attitudes toward them. The education that refugees bring with them is decisive since it determines the refugees' prospects of labor market- and social integration and thus defines the policies required to foster integration. At the same time, the assessment of refugees' actual education level has proven very difficult and is subject to a high degree of uncertainty (see Section 2). To answer the research question at hand, one requires (i) measures for natives' attitudes toward refugees (preferably at the individual level) and (ii) an exogenous shifter of the perceived education level of refugees. To meet these requirements, we implemented a randomized online survey experiment with almost 5,000 students at

¹ Throughout the paper, we use the term "refugee" as a collective term for all persons who seek refuge in Germany or other destination countries, independent of their legal status. We thereby follow the public political discourse in Germany. For instance, the migration flows from 2014 onwards are generally referred to as "Flüchtlingskrise" (refugee crisis) by politicians, the media, and the general public.

² The Federal Ministry of Internal Affairs registered a total of more than 1.1 million refugees entering Germany in 2015 (see Bundesministerium des Inneren, 2016).

³ The Geneva Convention broadly defines the rights of refugees and the obligations of hosting countries. The Dublin Convention came into force in 1997/98 and established the principle that the EU member state through which an asylum seeker first enters the EU is responsible for processing the asylum claim (see Dustmann et al., 2016).

⁴ Examples for electoral outcomes which have largely been attributed to voters' rising anti-immigration sentiments in the course of the refugee crisis include the "Brexit" referendum in the United Kingdom to exit the European Union (see Bansak et al., 2016) and the success of the "Alternative für Deutschland" (AfD), a right-wing populist party in Germany. The AfD won significant vote shares in several state elections, including the election in Mecklenburg-West Pomerania in which it outperformed chancellor Merkel's "Christlich Demokratische Union" (CDU) in Merkel's own home state (21 percent versus 19 percent). Furthermore, a historic share of 47 percent of the electorate voted for Norbert Hofer, the candidate of the far-right "Freiheitliche Partei Oesterreich" (FPÖ), in the Austrian presidential elections in 2016.

four German universities. To exogenously shift the perception of the education level of refugees, we randomly assigned respondents to one of three experimental groups. The control group reported their attitudes toward refugees without any information on the education level of refugees. Before answering the same questions, respondents in the *High Skilled* treatment were informed about a study which finds that refugees are rather well-educated since 43% of refugees from Syria have attended a university (see UNHCR, 2015). In the *Low Skilled* treatment, we induced the opposite perception by informing participants about another study which shows that refugees tend to be poorly educated because 65% of school children in Syria do not reach a basic level of academic competencies (see Woessmann, 2016).

We find that these information treatments strongly shift respondents' perceptions of the education level of refugees in the expected way. These significant perception shifts translate into respondents' labor market concerns. Compared to the control group, respondents in the *High Skilled* (*Low Skilled*) treatment are more (less) likely to state that refugees will increase labor market competition. These results are in line with the labor market competition model (see, for instance, Scheve and Slaughter, 2001; Mayda, 2006) which predicts that natives are more concerned about immigrants with similar skill level since they expect that immigrants will increase the labor market competition for them. This is consistent with our findings since our survey respondents, university students, certainly belong to the group of high-skilled natives. These pronounced effects on respondents' economic concerns do not translate, however, into shifts in general attitudes toward refugees: The information treatments have no significant effects on (i) preferences for how many refugees should be admitted to Germany in the future, (ii) perceptions that Germany admitted too many refugees in the previous year, (iii) preferences for allowing refugees to stay permanently in Germany, and (iv) satisfaction with the government's asylum- and refugee policy. These null effects stand in strong contrast to the positive correlations between perceived education level and general attitudes toward refugees in the control group. Our experimental results indicate that these correlations do not reflect the causal impact of perceived education level on attitudes and hence caution for a careful interpretation of non-experimental results.

Our relatively large sample size permits an extensive analysis of heterogeneous treatment effects across sociodemographic subgroups. Among natives, the *High Skilled* treatment yields more optimistic views on whether refugees will integrate successfully into the German society and whether refugees are beneficial for Germany (compared to the control group). These treatment effects are absent among respondents with migration background. Furthermore, among respondents with migration background, the *Low Skilled* treatment has negative effects on attitudes toward refugees. Thus, the overall null effects hide counteracting treatment effects for respondents with and without migration background. Furthermore, we document effect heterogeneities with respect to family background, political orientation, contact to refugees, and expected future earnings.

The overall null results of the information treatments on general attitudes toward refugees are consistent with the existing literature which suggests that non-economic concerns are more important

for attitude formation toward immigrants than economic concerns (see, for instance, Hainmueller and Hiscox, 2010; Dustman and Preston, 2007; Card, Dustmann and Preston, 2012). In order to explore the role of information on refugees' education level for forming attitudes, we also asked our respondents how important several aspects are for their attitude formation toward refugees. Two clear results emerge: First, information about refugees' education level only affects respondents' economic concerns, but not their humanitarian considerations or other aspects. Second, economic aspects are the least important ones for respondents' attitude formation, whereas humanitarian aspects are most important. The results on attitude formation therefore reveal why increased economic concerns do not translate into more critical general attitudes toward refugees.

Our paper contributes to several strands of research. Within the extensive literature on attitudes toward immigration (see, for instance, Dustmann et al., 2016; Steinmayr, 2016; Facchini and Mayda, 2008, O'Rourke and Sinnott, 2006), a growing number of studies employ survey experiments to investigate the causal determinants of these attitudes. For example, in large-scale surveys, Grigorieff et al. (2016) show that randomly provided information about immigration, such as the share of immigrants in the population and immigrants' unemployment or incarceration rates, yield more favorable attitudes toward immigrants, but does not affect policy preferences. In a similar vein, Hainmueller and Hiscox (2010) study experimentally how concerns about labor market competition and about the fiscal burden on public services shape attitudes toward high- and low-skilled migration. In contrast to the theoretical predictions of a labor market competition model and a fiscal burden model, they find that both high-skilled and low-skilled natives prefer high-skilled immigrants and both groups equally dislike low-skilled immigrants. Since these studies do not explicitly investigate attitudes toward refugees but migrants more generally⁵, it is not clear to what extent their findings are transferrable to the refugee situation in Europe. We are aware of only one experimental study which refers to the current refugee crisis: Bansak et al. (2016) conducted a survey experiment among 18,000 eligible voters in 15 European countries in which respondents evaluated different profiles of refugees. The specific characteristics of refugees have been varied experimentally across nine broad domains. The authors find that refugees with higher employability, more consistent asylum testimonies and vulnerability, and those who are Christian rather than Muslim are more likely to be accepted. We complement these important findings by investigating the impact of refugees' perceived education level, a characteristic not studied by Bansak et al. (2016).

From a methodological viewpoint, our paper is related to the growing literature which studies the effects of informing survey respondents on their attitudes and preferences in different areas. For instance, Cruces et al. (2013) investigate the effects of alleviating biased perceptions regarding one's relative position in the income distribution through information provision on preferences for redistribution. Focusing on a different policy area, Elias et al. (2015) study how preferences for markets for human organs are shaped by providing information about the current organ shortage and

⁵ Note that these surveys were conducted before the massive refugee movements from 2014 onwards.

about academic studies on different strategies to alleviate the shortage. Further papers which investigate the causal effects of information provision in surveys include Kuziemko et al. (2015) on preferences for redistribution, Lergertporer et al. (2016) on preferences for public spending, and Bursztyn (2016) on the effects of information on local government spending on the public's ratings of their local government.

The rest of this paper is structured as follows. In the next section, we discuss the importance of refugees' education level for labor market integration and labor market policies as well as difficulties of assessing the education level of refugees obtained in their home countries. In Section 3, we describe our opinion survey and the experimental design. Section 4 presents and discusses our results and Section 5 concludes.

2. Economic theories on the attitudes of natives and the education level of refugees

The successful integration of refugees into society critically depends on their integration into the labor market. Besides preserving national solidarity and social cohesion, successful labor market integration is also desirable from an economic viewpoint: Refugees who are integrated into the labor market are self-sufficient and thus not dependent on government aid. Furthermore, many small- and medium-sized companies in Germany hope that the shortage of skilled labor will be mitigated by the influx of refugees.⁶⁷ The ability of policy makers to implement policies necessary for successful integration depends on at least two factors: first, the attitudes of natives toward refugees and second, the availability of accurate information regarding the skill level of refugees.

Economic theories on natives' attitudes toward immigrants

The increasing popularity of anti-immigration parties in several European countries in light of the European refugee crisis, including the AfD in Germany, reflects the fact that critical immigration sentiments are on the rise. Thus, voters' attitudes toward immigration might be a key political obstacle to the implementation of integration policies. Economic models on attitudes toward immigration underline the importance of migrants' education level and natives' perceptions thereof. In particular, Hainmüller and Hiscox (2010) discuss two competing theories on how the skill level of immigrants affects attitudes toward them: According to the *labor market competition model*, natives are most opposed to immigrants with similar skill level as their own, because they expect that immigrants will then be direct competitors on the labor market (see, for instance, Scheve and Slaughter 2001; Mayda 2006). For our sample of university students - who represent the upper tail of the skill distribution in

⁶ The shortage of skilled labor has been growing since 2005 and is predominately due to Germany's changing demographic situation (Brückner et al 2013).

⁷ In September 2015, Dieter Zetsche, Chairman of Daimler, claimed that refugees could help to achieve a new German economic miracle, comparing refugees to guestworkers who came to Germany during the 1950s and 1960s (Die Zeit, August 18 2016, <http://www.zeit.de/thema/fachkraeftemangel> [accessed February 1, 2017])

Germany⁸ - this theory implies that they are more skeptical about refugees if they consider them well-educated. In contrast, the *fiscal burden model* predicts that high-income natives are more opposed to low-skilled immigration because low-skilled immigrants impose net burdens on public finance whereas high-skilled immigrants are net contributors. The present study provides a direct test of these competing theories in the context of the European refugee crisis. Moreover, these economic channels may not be the only ones through which the educational attainment of refugees affects natives' attitudes (Bauer, Lofstrom, and Zimmerman 2000; Dustmann and Preston 2007; Fetzer 2000). For instance, it may well be that natives are more favorable toward highly educated refugees because they expect that highly educated individuals can be integrated into society more easily or that they are less criminal (Lochner and Moretti, 2004). In this paper, we experimentally test the relevance of these alternative explanations.

The education level of refugees in Germany

Whether a society can reap the gains from successful labor market integration of refugees critically depends on the skill level they bring with them.⁹ A major challenge in this context is that information on refugees' characteristics, including their education level, is surrounded by a large degree of uncertainty. The mere amount of incoming refugees throughout 2015 and 2016 created an enormous administrative challenge in registering the individuals, let alone documenting their educational attainment. Problems arise due to missing verifiable credentials such as graduation certificates, but also because of a lack of comparability between degrees from the refugees' source countries and German education institutions (Woessmann, 2016, Brücker, 2016). As a consequence, different studies which aimed at qualifying the education level or skills of refugees yielded inconsistent and seemingly contradicting conclusions. One of the first assessments of refugees' education level – which received considerable media attention – is UNHCR's interview study on Syrian refugees (UNHCR, 2015). The study draws a positive picture of refugees' education level since it finds that 43% of adult Syrian refugees report to have some university education and another 43% state to have completed secondary education (UNHCR, 2015). These data were collected by UNHCR border protection teams who conducted interviews with a non-random sample of Syrian asylum

⁸ Only 16% of the population held a university degree in Germany in 2015 (Destatis 2016): and 29.6 of 25-35 year olds hold a tertiary education certification in 2015, including degrees from universities of applied sciences (OECD, 2016). University students are thus at the top of the skill distribution. With Germany's extensive dual vocational education system, the share of population with a university degree is lower compared to the OECD average, although it has been steadily raising over the past decade (OECD, 2016).

⁹ From a legal perspective, granting prosecuted individuals temporary refugee status is a humanitarian act which is independent from economic considerations or the person's education level (see Dustmann et al., 2016). At the same time, it is crucial that policy makers take all measures necessary for integrating these individuals into the labor market (and hence, into society) because the majority of individuals who entered Europe during the refugee crisis are unlikely to return to their countries of origin in the foreseeable future (see Woessmann, 2016).

seekers in various locations in Greece.¹⁰ Since the majority of the interviewees (50%) intended to request asylum in Germany, the study has been interpreted as a rough proxy for the education level of asylum seekers in Germany (Radetzky and Stoewe, 2016).¹¹

In contrast to that the UNHCR study, Woessmann (2016) reaches more pessimistic conclusions regarding the education level of refugees: Comparing multiple data sources of the education level of refugees in Germany, Woessmann (2016) contends that only around 10% of asylum seekers have a university degree, while two thirds do not have any professional qualification. Moreover, using data from Syrian 8th-graders who participated in the Trends in International Mathematics and Science Study (TIMSS) in 2011 (i.e., from the last student achievement assessment before the Syrian civil war started), the author finds that 65% fail to achieve the most basic proficiency level in mathematics and science as defined by the OCED. Comparing these outcomes with German school children of the same age, the difference in skill levels between Syrian and German children amounts to what students typically learn during 4 to 5 years of schooling.¹²

We use the contradicting findings from these two studies, which were both widely cited in the German media, for designing two information treatments to shift the respondents' perception of refugees' skill level. In particular, the fact that these studies reach contradicting conclusions allows us to design symmetric information treatments, one that shifts perceived education level of refugees upwards and one that shifts them downwards (see Section 3.2).¹³

3. Survey design, information treatment, and estimation model

3.1 The opinion survey

General framework

To implement the survey experiment, we ran an online survey with 4,831 students from four large German universities.¹⁴ We were granted access to the universities' mailing lists and invited students to participate in a "short opinion survey on refugees" via email. The email informed students that the survey would take about 5 minutes, that participants would have the chance to win Amazon gift

¹⁰ The asylum seekers arrived in Greece between April and September 2015. The authors of the study cautiously note that the interviews were voluntary and interviewees were not required to verify the statements with credentials.

¹¹ See Buber-Ennser et al. (2016) for a similar interview study with asylum seekers in Austria.

¹² Note that the TIMSS results should be viewed as an approximation of the actual skill level of refugees who entered Germany: Syria is the most relevant, but not the only source country of refugees. Furthermore, little is known regarding the extent to which Syrian refugees who arrive in Germany represent a selected subgroup with respect to their skill level.

¹³ A study conducted by the German Socio-Economic Panel in cooperation Institute for Employment Research (IAB) of the German Federal Employment Agency (BA), and the Research Centre on Migration, Integration, and Asylum of the Federal Office for Migration and Refugees (BAMF-FZ) provides more recent evidence on refugees' education level. This study finds that 32% of asylum seekers aged 18 years and older report to have a high school degree and 13% hold a university degree. 19% report to have no formal or only primary schooling. Note that these results became available in late 2016, well after our survey has been conducted.

¹⁴ The Technical University of Dresden, the University of Munich, the University of Konstanz, and the Technical University of Chemnitz participated in our study. We include university fixed effects in all analyses.

vouchers and that the survey would be anonymous.¹⁵ The survey was computerized using Qualtrics software (Qualtrics, Provo, UT) and the field time was from June to August 2016. The timing of the survey is key: While most previous studies investigate attitudes toward immigration before the current refugee crisis, our survey was fielded just after the unprecedented refugee influx from 2015 slacked off. At this time, the focus of the public debate shifted from the mere number of refugees to questions on how to integrate them. Naturally, the education level of refugees is central in the integration debate.

As is typical for experiments in economics, our study relies on a self-selected sample of university students. While we do not claim representativeness of students in Germany, our sample matches characteristics of the general student population at the four universities fairly well: XXX In the context of this paper, university students are a highly relevant focus group: They represent the future high-skilled, high-income work force for which economic theories on attitudes toward immigration (i.e., the *labor market model* and the *fiscal burden model*) have clear, yet contradicting, predictions (see Section 2). Our experiment provides a clean test to discriminate between these two competing theories. Furthermore, students constitute an important part of the electorate, since their voter turnout is traditionally higher than that of other groups in the society (e.g. Schäfer et al 2013).

Survey questions

We designed three survey screens to investigate the effect of refugees' perceived education level on attitudes toward them.¹⁶ In the following, we describe the content of each screen in detail.

Screen 1:

On the first screen, we used the following four questions to measure general attitudes toward refugees:

1. *“Compared to the current situation, should Germany admit more refugees, less refugees, or the same number in the future?”*

Answer categories: much more, somewhat more, the same amount, somewhat less, much less

2. *“What do you think about the number of refugees which Germany admitted last year?”*

Answer categories: far too many, somewhat too many, about the right amount, somewhat too few, far too few

3. *“Do you favor or oppose that refugees are allowed to stay in Germany permanently?”*

Answer categories: strongly favor, somewhat favor, neither favor nor oppose, somewhat oppose, strongly oppose

¹⁵ We were able to guarantee anonymity and simultaneously offer the chance to win an Amazon gift voucher (which was delivered through email) because survey answers were saved in a different file than email addresses. This fact was known to all respondents at the start of the survey. It was technically not possible for respondents to participate more than once with the same computer.

¹⁶ Respondents did not have the option to go back in the survey to revise earlier answers. See Appendix Figures B-1 to B-12 for screenshots of the online survey.

4. “How satisfied are you with the government’s asylum- and refugee policy?”

Answer categories: very satisfied, somewhat satisfied, neither satisfied nor unsatisfied, somewhat unsatisfied, very unsatisfied

The answers to these questions provide us measures for general attitudes toward refugees. Following the wording of the general public discourse in Germany, we always refer to “refugees”, even though only a subset of those individuals entering Germany in the wake of the refugee crisis qualify for refugee status according to the Geneva Convention (see Dustmann et al., 2016). We eschewed this fine distinction for the benefit of comprehensibility of the survey questions.

Screen 2:

The second screen contained specific statements on refugees which presumably (i) are responsive to refugees’ perceived education level and (ii) affect general attitudes toward refugees. Respondents were asked to articulate their agreement with the different statements on a five-point scale (completely agree, somewhat agree, neither agree nor disagree, somewhat disagree, completely disagree). To verify that our information treatments indeed shifted respondents’ perception of refugees’ education level in the intended directions, we included the following statement: “*On average, the refugees are well educated*”. The *labor market competition model* and the *fiscal burden model* propose different channels through which refugees’ perceived education level affects attitudes of high-skilled natives. To assess the relevance of the *labor market competition model*, the first set of statements focuses on aspects concerning refugees’ labor market integration:

- “*The refugees will increase competition on the labor market for me personally.*”
- “*In general, the refugees will increase competition on the labor market.*”
- “*Germany will succeed in integrating the refugees into the labor market.*”
- “*Lack of language skills of the refugees are an obstacle for their labor market integration.*”

The second set of statements concerns further economic, mostly fiscal, aspects which allow us to test the *fiscal burden model*:

- “*The refugees will bring more revenues than costs for the government.*”
- “*Due to the government spending for refugees, I will have to forgo government benefits in the future.*”
- “*Due to the government spending for refugees, I will have to pay more taxes in the future.*”
- “*Overall, the refugees are good for the German economy.*”

While these statements were designed to capture the channels of the *labor market competition model* and the *fiscal burden model*, there are other potential channels through which refugees’ perceived education level might affect attitudes. Therefore, we included a number of statements that capture non-economic dimensions of the current discussion on integrating refugees:

- “*The refugees are a cultural enrichment for Germany.*”
- “*Germany will succeed in integrating the refugees into society.*”
- “*Generally speaking, the refugees are beneficial for Germany.*”

- *“The crime rate will rise due to refugees’ criminal behavior.”*

Screen 3:

On the third screen, we directly asked how important the following aspects are for the respondent’s opinion formation process toward refugees: *“Humanitarian aspects”*, *“Economic aspects”*, *“Refugees’ willingness to integrate”*, *“Religion/culture of refugees”*, *“Refugees’ criminal behavior”* and *“Personal experience with refugees”*.¹⁷ Respondents were asked to rate each of these aspects on a five-point scale: very important, somewhat important, neither important nor unimportant, somewhat unimportant, very unimportant. We posed these questions for two purposes: First, they allow us to investigate what aspects of attitude formation are affected through providing information on refugees’ education level. Second, the importance assigned to the primed aspects, relative to the importance of aspects which have not been primed, allows us to uncover the channels through which perceived education level affect general attitudes toward refugees.

At the end of the survey, we elicited a set of demographic characteristics, including information about respondents’ university studies, migration and family background, and expected future earnings. This background information allows extensive subgroup analyses.

3.2 The Survey Experiment

Figure C1 depicts our experimental design. To establish a causal link between natives’ perceived education level of refugees and the former attitudes toward the latter, we randomly assigned respondents to one of three experimental groups (control group, treatment *High Skilled*, and treatment *Low Skilled*) which differed in terms of the information provided at the top of *Screen 1* and *Screen 2*.

Members of the control group received the following information when answering both screens:

“With this survey, we would like to learn about your opinion on refugees. Please think of the current refugee situation in Germany when answering the survey.”

Note that this information does not contain any reference to refugees’ education level.

Individuals in treatment *High Skilled* were presented the following information:

“With this survey, we would like to learn about your opinion on refugees. Please think of the current refugee situation in Germany when answering the survey.

*In this context, a study has found that the education level of refugees is rather high since 43% of the refugees from Syria have attended a University.”*¹⁸

This figure is based on a study by the UN Refugee Agency (UNHCR) which conducted 1,245 interviews with Syrian refugees in Greece between April and September 2015. Most refugees stated that their country of intended destination was Germany (see UNHCR, 2015).

¹⁷ On each of these three screens, the order of questions was randomized in order to avoid primacy effects.

¹⁸ The information of both treatments was presented at the top of *Screen 1* and *Screen 2*. We opted for showing the information also on the second screen in order to avoid recall biases.

Respondents assigned to the *Low Skilled* treatment received the following information:

“With this survey, we would like to learn about your opinion on refugees. Please think of the current refugee situation in Germany when answering the survey.

In this context, a study has found that the education level of refugees is rather low because 65% of the school students in Syria do not reach the basic level of academic competencies.”

This figure comes from Woessmann (2016) and was calculated from the 2011 wave of TIMSS (Trends in International Mathematics and Science Study), in which Syrian 8th graders participated.

Both studies were published in quick succession: UNHCR (2015) was published in September 2015 and Woessmann (2016) in January 2016. Despite the fact that these studies do not provide direct evidence on the educational attainment of refugees in Germany, both studies played a prominent role in the German public discourse.

We take advantage of the high degree of uncertainty that surrounded the education level of refugees and use the information provided in these two studies as exogenous shifters of respondents’ perceived education level of refugees. The fact that these two studies reach contradicting findings on refugees’ education level allows us to implement symmetric treatments (i.e. one positive and one negative exogenous shifter of refugees’ perceived education level) without deceiving our respondents. Our method to randomly inform survey respondents about research findings is similar to Elias et al.’s (2015) survey experiment on public preferences for creating a market for organs. One potential shortcoming of our information treatment is that it only refers to Syrian refugees and remains silent about refugees from other countries. This restriction was necessary due to a lack of education information for other source countries. Note, however, that Syria is the major source country in the current refugee crisis: In 2015, refugees from Syria made up 35.9% of all asylum applications in Germany (BAMPF 2015). In section 4.1, we show that our information treatments indeed shifted the perceived education level of refugees in the intended directions.

3.3 Econometric Model

To evaluate the impacts of our information treatments, we estimate different versions of the following regression model:

$$y_i = \alpha_0 + \alpha_1 HighSkilled_i + \alpha_2 Low Skilled_i + \delta'X_i + \varepsilon_i \quad (1)$$

where y_i is the outcome of interest for individual i , $High Skilled_i$ and $Low Skilled_i$ are indicators for whether individual i was assigned to the respective treatment, X_i is a vector of control variables,

and ε_i is the error term. In this specification, the average treatment effects of information provision on the outcomes are given by the parameters α_1 and α_2 .

To investigate heterogeneous treatment effects across subgroups, we extend the basic regression model as follows:

$$y_i = \alpha_0 + \alpha_1 HighSkilled_i + \alpha_2 LowSkilled_i + \alpha_3 Subgroup_i + \alpha_4 HighSkilled_i \times Subgroup_i + \alpha_5 Low Skilled_i \times Subgroup_i + \delta'X_i + \varepsilon_i \quad (2)$$

where $Subgroup_i$ equals 1 if respondent i is member of the respective subgroup, and 0 otherwise. In this specification, the treatment effects for those who are not part of the subgroup are given by α_1 and α_2 , while α_4 and α_5 measure the additional effects of the information treatments on subgroup members. We mainly present reduced-form regressions, with the implied first stage being the shift in the perceived education level of refugees. We additionally report IV results where we instrument the perceived education level of refugees with the two treatment indicators.

3.4 Balancing test

Table 1 compares respondents' observable characteristics between the control group and the two treatment groups to test whether the randomization in our information experiment successfully balanced respondents' characteristics across experimental groups. We find small, but statistically significant differences (at the 5% level) in six out of 42 pairwise comparisons. In our regression analysis, we control for a rich set of background characteristics, including the variables which are unbalanced in Table 1.

Since the number of respondents in the *High Skilled* (-3.8%) and *Low Skilled* (-2.3%) treatments are slightly lower than in the control group, some non-random attrition might be a potential concern. In this context, non-random attrition would occur if the information provided in the treatments would increase our respondents' probability of not completing the survey. Such non-random attrition would be a threat to the internal validity of our estimates because, if present, differences in answering behavior could be attributed to selection rather than the information provided. We tested for non-random attrition by comparing the relative shares of respondents who completed the survey across treatments (see first row of Table 1). The fact that treatment status cannot predict attrition makes us confident that our estimates are internally valid and that the lower number of observations in the information treatments is due to pure chance.

4. Results

4.1 Descriptive evidence

Table 2 presents raw correlations between our respondents' perceived education level of refugees and their attitudes toward them.¹⁹ In general, variables of the pairwise correlations are coded from 1 to 5 with higher numbers indicating more favorable attitudes toward refugees. Exceptions are beliefs about language barriers being an obstacle for refugees' labor market integration, the need to pay more taxes and forgo government benefits as well as concerns about increasing crime rates. In these cases, higher numbers indicate less favorable attitudes. We restrict this analysis to the control group since these responses are uncontaminated by the information treatments. The table shows that the perceived education level is strongly positively correlated with attitudes toward refugees. This is not only true for general attitudes, but also for two out of four labor market aspects and all further economic and non-economic aspects. The only exceptions are increased concerns about labor market competition, which are uncorrelated with refugees' perceived education level. Of course, these correlations do not necessarily reflect causal effects of the perceived education level as the correlations might be subject to reverse causation or mediated through omitted third factors. Respondents with higher perceptions of refugees' education level consider humanitarian aspects and personal experience with refugees as more important for their attitude formation toward refugees than other aspects such as economic aspects or refugees' criminal behavior. To circumvent these potential endogeneity issues, the next section presents experimental results in which the perceived education level of refugees has been shifted exogenously.

In Appendix Tables A-1 and A-2, we investigate the predictive power of respondents' socio-economic characteristics on their general attitudes toward refugees and their perceived education level, respectively.²⁰ Appendix Table A-1 shows that males, those born outside of Germany and older respondents are less supportive of allowing refugees to stay permanently. Older respondents are also less satisfied with the governments' asylum and refugee policy. On the other hand, respondents who spoke with refugees are more benevolent, and individuals who receive need-based student aid (a rough indicator for a relatively poor family background) are more in favor of letting refugees stay permanently. Interestingly, these characteristics also predict refugees' perceived education level (Appendix Table A-2): Males, older respondents, and those born abroad are less likely to think that refugees' education level is relatively high, while individuals who spoke with refugees and recipients of need-based student aid are more optimistic. In the subgroup analysis in Section 4.3, we investigate the extent to which our information treatments affect attitudes toward refugees in the socio-demographic subgroups.

¹⁹ See Appendix Figures A-1 to A-3 for histograms of answers to all substantial survey questions.

²⁰ We employ OLS models throughout the paper. Note, however, that (Ordered) Probit specifications yield qualitatively identical results.

4.2 The effects of information provision on general and specific attitudes toward refugees

Table 3 reports OLS estimates based on Equation (1). In columns 1 and 2 (columns 3 and 4), the dependent variable equals 1 if the respondent “somewhat agrees” or “completely agrees” (“somewhat disagrees” or “completely disagrees”) to the statement “*On average, the refugees are well educated*” from Screen 2, and equals 0 otherwise. In columns 5 and 6, the dependent variable is ordinal with higher numbers indicating more agreement to the statement. The table shows that the two information treatments shifted the perceptions of refugees’ education level in the intended directions: The *High Skilled* treatment increased the share of respondents who agree with the statement that refugees are well educated by 14 percentage points. Since this share is only 18% in the control group, this is a huge effect. Similarly, the *Low Skilled* treatment significantly decreased the share of respondents with positive views on refugees’ education level by 5 percentage points.

One potential problem with this type of information experiment is that the provided information might trigger experimenter demand effects or priming effects instead of genuine belief updating. To investigate this issue, Appendix Table A-3 estimates heterogeneous treatment effects by respondents’ baseline beliefs using regression models based on Equation (2).²¹ The results show that treatment *Low Skilled* decreased refugees’ perceived education level among those who initially believed that they were relatively highly educated, but not among those who held more pessimistic beliefs. In contrast, treatment *High Skilled* increased perceived education level among respondents with low initial beliefs, but also reinforced optimistic beliefs. In sum, this analysis shows patterns which are hardly consistent with the notion that our treatment effects are driven by experimenter demand effects or other unintended effects. Thus, the strong exogenous shifts in refugees’ perceived education level induced by our information treatments allow us to estimate the causal effects of perceived education level of refugees on attitudes toward them.

Table 4 presents the reduced-form effects of the information treatments on respondents’ approvals of specific statements on labor market, fiscal and non-economic aspects about refugees. Consistent with the *labor market competition model*, exogenously increasing refugees’ perceived education level in treatment *High Skilled* increases concerns that the refugees increase competition on the labor market, both for the respondent personally (column 2 in Panel A) and in general (column 3 in Panel A). In contrast, the predictions of the *fiscal burden model* do not find empirical support: While the finding that treatment *Low Skilled* (weakly significantly) increases concerns that respondents will have to pay more taxes to finance government spending for refugees in the future is consistent with the theory, the fact that treatment *High Skilled* has the same (weakly significant) effect is not (column 4 in Panel B). Apart from labor market concerns, the information treatments do not have any effects on

²¹ To verify that the information provision indeed affects the perceived education level, it was necessary to elicit the perceived education level *after* the providing the information. We abstained from belief elicitation before providing the information to avoid behavioral anomalies such as backfire effects where individuals respond defiantly to belief corrections by reinforcing their initial beliefs (Nyhan and Reifler, 2010).

other specific attitudes toward refugees. The IV estimates, in which refugees' perceived education level is instrumented with the experimental information treatments, corroborate these findings (Appendix Table A-4): Respondents whose education perceptions have been shifted upward are more concerned about refugee-induced labor market competition. At the same time, a higher perceived education level does not affect the other opinion aspects among the group of compliers. These results show that the strong correlations between refugees' perceived education level and specific attitudes toward them, presented in Table 2, do not reflect causal effects.

Next, we investigate whether the exogenous shifts in the labor market competition concerns translate into changes in the general attitudes toward refugees. Interestingly, the information treatments have no impact on any of these general attitudes (Table 5).²² In line with existing evidence on attitudes toward immigration (see Hainmueller and Hiscox, 2010; Dustman and Preston 2007), it seems that economic considerations play only a minor role in the process of forming attitudes toward refugees. We investigate the aspects that drive opinion formation in Section 4.4.

4.3 Effect heterogeneities of information treatment

While the previous analyses are informative about the overall information effects, we now investigate effect heterogeneities with respect to the socio-demographic characteristics of our respondents.

We find that information provision induces fundamentally different reactions among native students and students with migration background: native respondents show a positive reaction to treatment *High Skilled* by being more optimistic about the refugees' chances to integrate successfully into the German society and that refugees are beneficial for Germany (Table 7). In contrast, these treatment effects are absent among respondents with migration background (i.e. those who were born abroad or whose parent(s) were born abroad).²³ Furthermore, the *Low Skilled* treatment makes students with migration background less likely to think that the refugees are good for the German economy or for Germany as a whole. These results resemble the known finding that individuals with migration background are more skeptical toward new immigrants than natives. Additionally, the results suggest that respondents with migration background are also less responsive to information provision. In sum, the overall null results mask interesting differential treatment effects across respondents with and without migration background.

Appendix Table A-6 presents effect heterogeneities with respect to respondents' socioeconomic background. The upper panel of the table shows that treatment *High Skilled* has positive effects on respondents with lower education background, i.e., respondents whose parents did not earn a university degree: they are more optimistic that refugees will integrate into society and are less likely to think that the number of refugees admitted to Germany in 2015 was too high. Respondents who

²² Note that the information treatment does also not affect general attitudes toward refugees among respondents whose perceived education level has been shifted; see IV estimates in Appendix Table A-5.

²³ Due to privacy concerns, we did not elicit the exact country of origin.

receive need-based student aid do not react to the *Low Skilled* treatment whereas the treatment makes those from higher social backgrounds less likely to think that refugees will induce more fiscal revenues than costs. Furthermore, respondents who did not speak with refugees yet are less likely to think that refugees will increase their labor market competition when assigned to treatment *Low Skilled* (column 2 in lower panel). Consistent with the fiscal burden model, treatment *High Skilled* induces the belief that refugees will bring more fiscal revenues than costs among respondents who are more optimistic about their future earnings (column 3 in lower panel). Finally, respondents whose field of study is studied by more conservative students are more likely to think that refugees increase labor market competition when confronted with information from treatment *High Skilled* (column 7). Appendix Table A-7 shows that students in more conservative faculties have in general more skeptical opinions about refugees, particularly with respect to fiscal and non-economic aspects.

4.4 Aspects of opinion attitude formation

To investigate the correspondence between refugees' perceived education level and general attitudes toward refugees more closely, we elicited the importance that respondents assign to different aspects for their attitude formation toward refugees (*Screen 3*). Table 6 presents regressions based on Equation (1) in which the dependent variables are dummies which are coded 1 if a respondent considers the respective aspects ("*Refugees' willingness to integrate*", "*Humanitarian aspects*", "*Personal experience with refugees*", "*Refugees' criminal behavior*", "*Religion/culture of refugees*", and "*Economic aspects*") important (unimportant) for his/her attitude formation process.²⁴

The table depicts two important findings: First, treatment *High Skilled* only increases the importance assigned to economic aspects, but not the importance of any other aspect. The treatment *Low Skilled* goes in the same direction (although statistically insignificant), which is consistent with a priming effect of mentioning refugees' education level.. This result speaks to an open question in the literature on attitudes toward migration, to what degree respondents associate the education level of refugees, or migrants more generally, with economic aspects rather than social or cultural considerations, as Hainmueller and Hiscox (2010) point out. It could be that respondents make connections about civic behavior, societal attitudes, or criminal behavior when faced with varying education level of migrants, as it is left up to the respondents to make the expected implicit connection between skill level and economic aspects. We can explicitly show that informing about educational attainment primarily triggers respondents' economic concerns.

The second key finding of Table 6 concerns the relative importance of economic aspects for attitude formation toward refugees. The control means present the share of respondents in the control group who consider the various aspects important (unimportant). While the refugees' willingness to integrate and humanitarian aspects are important to most respondents (88% and 86%, respectively, consider these aspects somewhat important or very important). The religion/culture of refugees

²⁴ Appendix table A-8 shows correlation coefficients between all opinion aspects.

(important for 46% of respondents) and economic aspects (important for 42%) are the least important aspects, and personal experience with refugees (70%) and criminal behavior (54%) take intermediate positions. Importantly, economic aspects are least important for attitude formation toward refugees: only a minority of 39% consider them important. This is in line with the fact that economic aspects are much weaker related to general attitudes and specific attitudes toward refugees than other opinion aspects such as humanitarian considerations (see Appendix Tables A-9 and A-10). These findings are consistent with Bansak et al. (2016) who find that humanitarian concerns play a major role in whether natives are willing to accept refugees. Furthermore, our aspect “willingness to integrate” matches the finding of Bansak et al. that language skills play an important role. However, while they find that employability and religion play major roles in shaping the attitudes toward refugees for natives, we find that religious and economic aspects are less important in the opinion formation about refugees.

In sum, these results suggest that refugees’ perceived education level in fact triggers economic concerns, but these concerns do not translate into general attitudes toward refugees as they are rather unimportant in the attitude formation process. This explains the overall null effect of our information treatment on general attitudes toward refugees.

5. Conclusion

We conducted a randomized online survey among almost 5,000 German university students to study the impact of refugees’ perceived education level on natives’ attitudes toward them. Survey respondents were randomly assigned to one of three experimental groups: While the control group answered a short survey about attitudes toward refugees without any further information, individuals in treatment *High Skilled* (*Low Skilled*) were informed about a recent study which finds that refugees are rather well (poorly) educated. We show that these information treatments strongly shifted respondents’ perception of refugees’ education level in the intended directions and that these strong shifts are due to a genuine belief updating process among respondents rather than experimenter demand effects or priming. We also find that the information treatments significantly affected respondents’ economic concerns regarding refugee immigration: Individuals in the *High Skilled* treatment are more concerned that refugees might increase labor market competition than respondents in the control group. However, these economic concerns do not translate into more skeptical general attitudes toward refugees. These overall null effects mask important effect heterogeneities across sociodemographic subgroups. Most interestingly, we find that among natives, treatment *High Skilled* yields more optimistic views on whether refugees will integrate successfully into the German society and whether refugees are beneficial for Germany. We find no such treatment effect among respondents with migration background. In turn, the *Low Skilled* treatment worsens the attitudes toward refugees only among respondents with migration background. Furthermore, we document effect heterogeneities with respect to family background, political orientation, contact to refugees and expected earnings. This is in line with regressions using only respondents of the control group, which show that

respondents with migration background are more skeptical toward refugee migration, and also with existing studies finding that former immigrants are most opposed to new immigration.

The overall null effect on general attitudes toward refugees is consistent with previous studies which find that non-economic aspects are more important for shaping attitudes toward immigrants than economic aspects (Bauer, Lofstrom, and Zimmerman 2000; Dustmann and Preston 2007; Fetzer 2000). We further explore this issue in our post-experimental questionnaire which elicited the importance which respondents assign to different aspects for their attitude-formation process toward refugees. The results show that informing about refugees' education level increases respondents' stated importance of economic considerations for shaping their attitudes toward refugees (in contrast to all other aspects such as humanitarian aspects). At the same time, economic aspects are least important for shaping respondents' attitudes toward refugees, even in the treatment groups in which we exogenously shifted the importance upwards. Taken together, the facts that informing about refugees' education level increases labor market concerns and that such economic concerns are relatively unimportant for respondents' attitude formation process, explains the overall null effects of our information treatments on attitudes toward refugees.

Our findings have several important policy implications. First, our study informs policy makers that our respondents, who are part of a large and politically very active group and also the future high income earners, are generally very positively dispositioned toward refugees. They are aware that hosting refugees is a humanitarian act, as indicated by the fact that humanitarian considerations are central to the attitude formation. Moreover, our results point to the fact that information provision about education level of refugees shifts labor market considerations of our respondents. This points to the need for accurate and publicly available information about the level of education among refugees; both in order to craft appropriate policies, but also in order to truthfully shape the public's attitudes toward refugees with respect to labor market considerations. As our results show, shifts in labor market considerations, do not translate into changes in general attitudes toward refugees, as they are not central aspects of the opinion formation.

While survey experiments are certainly subject to some artificiality, we consider this method well-suited for addressing the research questions at hand for at least two reasons. First, in order to study the causal effects of the perceived education level of refugees on natives' attitudes toward them with naturally occurring data, one requires detailed measures for attitudes toward refugees as well as a truly exogenous shifter of perceived education level. We are not aware of any data source which fulfills these two requirements. Second, Blinder and Krueger (2004) argue that public opinion surveys are important for the political process as politicians devote tremendous resources to assess public opinions through surveys. Particularly, in the light of the current refugee crisis, much of the public and political discourse has focused on natives' stated attitudes toward refugees and asylum policies. We consider the investigation of university students' attitudes toward refugees particularly important for at least two reasons: first, they are the future high-skilled high-income earners in Germany, for which

economic theories on attitudes toward immigration have clear predictions. Second, university students are important for the political process because they are more engaged in the political process than most other groups in society. Nevertheless, the present study does not investigate how lower-skilled parts of the electorate react to information on refugees' education level. This is an important open question for future research.

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Figures and Tables

Table 1: Comparison of socio-demographic characteristics across treatments

	Control group	High skilled	Low skilled
	Mean	Difference to control group	
Dresden	0.815 (0.010)	-0.003 (0.014)	0.001 (0.014)
Munich	0.079 (0.007)	0.008 (0.010)	0.001 (0.009)
Konstanz	0.086 (0.007)	-0.007 (0.010)	-0.008 (0.010)
Chemnitz	0.020 (0.003)	0.002 (0.005)	0.007 (0.005)
Male	0.537 (0.012)	-0.021 (0.018)	0.031* (0.017)
Age	24.280 (0.089)	0.120 (0.128)	0.066 (0.129)
Bachelor	0.296 (0.011)	0.015 (0.016)	-0.012 (0.016)
Master	0.199 (0.010)	0.016 (0.014)	0.024* (0.014)
Diploma	0.276 (0.011)	-0.022 (0.015)	-0.009 (0.016)
PhD	0.092 (0.007)	0.004 (0.010)	0.001 (0.010)
Other study level	0.137 (0.008)	-0.013 (0.012)	-0.004 (0.012)
Semester	5.629 (0.077)	-0.100 (0.111)	0.017 (0.111)
Born abroad	0.073 (0.006)	0.023** (0.010)	0.004 (0.009)
Both parents born in Germany	0.859 (0.009)	-0.018 (0.013)	-0.012 (0.012)
One parent born abroad	0.061 (0.006)	-0.006 (0.008)	0.007 (0.009)
Both parents born abroad	0.081 (0.007)	0.024** (0.010)	0.005 (0.010)
No parent has university degree	0.374 (0.012)	-0.046*** (0.017)	-0.033** (0.017)
Need-based student aid	0.420 (0.012)	-0.037** (0.017)	-0.036** (0.017)
Fraction w/ lower income	54.917 (0.395)	-0.914 (0.573)	-0.329 (0.571)
Not encountered refugees	0.141 (0.009)	-0.003 (0.012)	0.015 (0.012)
Survey completed	1.00	0.00	0.00
Respondents	1,668	1,604	1,629

Notes: The first column reports means of the control group. The next two columns display the difference in means between the control group and the respective treatment group. Significance levels of “Difference” stem from linear regressions of the background variables on the respective treatment dummies. Standard errors reported in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2: Correlations between perceived education level of refugees and attitudes toward refugees

General attitudes toward refugees	
(1) Germany should admit more refugees in future	0.524***
(2) Number of refugees Germany admitted last year	0.506***
(3) Refugees should be allowed to stay in Germany permanently	0.571***
(4) Satisfied with government's asylum and refugee policy	0.292***
Labor market aspects	
(1) Refugees will increase labor market competition for me personally	-0.0126
(2) Refugees will increase labor market competition in general	-0.0419
(3) Refugees will succeed in integrating into the labor market	0.567***
(4) Lack of language skills is obstacle for refugees' labor market integration	-0.187***
Further economic aspects	
(1) Refugees will bring more revenues than costs for government	0.494***
(2) Due to government spending for refugees, I will have to pay more taxes in future	-0.418***
(3) Due to government spending for refugees, I will have to forgo government benefit	-0.380***
(4) Refugees are good for the German economy	0.518***
Non-economic aspects	
(1) Refugees are a cultural enrichment for Germany	0.549***
(2) Refugees will succeed in integrating into society	0.569***
(3) Generally speaking, refugees are beneficial for Germany	0.559***
(4) Crime rate in Germany will rise due to refugees' criminal behavior	-0.499***
Aspects of opinion formation	
(1) Opinion formation: Humanitarian aspects	0.369***
(2) Opinion formation: Economic aspects	-0.170***
(3) Opinion formation: Refugees' criminal behavior	-0.398***
(4) Opinion formation: Religion/culture of refugees	-0.225***
(5) Opinion formation: Refugees' willingness to integrate	-0.155***
(6) Opinion formation: Personal experience with refugees	0.103***

Notes: Correlations between perceived education level and responses to other survey questions reported. Correlations only based on control group. For description of variables and answer categories, see Section 3.1. Perceived education level has five categories, ranging from 1 (completely disagree) to 5 (completely agree). Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Effect of information treatment on perceived education level of refugees

	Agree		Disagree		Five-point scale	
	(1)	(2)	(3)	(4)	(5)	(6)
High skilled information	0.144*** (0.015)	0.140*** (0.015)	-0.100*** (0.017)	-0.104*** (0.016)	0.307*** (0.035)	0.310*** (0.034)
Low skilled information	-0.051*** (0.013)	-0.047*** (0.012)	0.078*** (0.017)	0.069*** (0.017)	-0.142*** (0.033)	-0.123*** (0.032)
Covariates	No	Yes	No	Yes	No	Yes
Control mean	0.18	0.18	0.39	0.39	2.67	2.67
Observations	4,831	4,831	4,831	4,831	4,831	4,831
Adj. R2	0.04	0.07	0.02	0.06	0.04	0.09

Notes: Dependent variable: Refugees are well educated on average: Columns (1)-(2): integer values from 1 to 5 (1="completely disagree", 2="somewhat disagree", 3="neither agree nor disagree", 4="somewhat agree", 5="completely agree"); Columns (3)-(4): dummy variables (1="completely agree" or "somewhat agree", 0 else); Columns (5)-(6): dummy variables (1="completely disagree" or "somewhat disagree", 0 else). *Covariates* include all socio-demographic characteristics (see Table 1) and 10 binary faculty indicators. Robust standard errors reported in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table 4: Effect of information treatment on specific attitudes toward refugees

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Labor market aspects								
	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree
	Competition for me		Competition in general		Refugees integrate successfully		Language skills obstacle	
High skilled information	0.012 (0.008)	-0.026** (0.013)	0.032** (0.016)	-0.020 (0.018)	0.022 (0.017)	-0.012 (0.016)	-0.004 (0.011)	-0.003 (0.008)
Low skilled information	-0.006 (0.007)	0.030** (0.012)	-0.007 (0.015)	0.020 (0.018)	0.007 (0.017)	-0.006 (0.016)	-0.000 (0.010)	0.000 (0.008)
Control mean	0.04	0.86	0.26	0.46	0.45	0.30	0.90	0.05
Observations	4,843	4,843	4,840	4,840	4,844	4,844	4,850	4,850
Panel B: Further economic aspects								
	More revenues than costs		Pay more taxes		Less government benefits		Good for economy	
High skilled information	-0.003 (0.016)	-0.027 (0.017)	0.017 (0.015)	-0.033* (0.018)	0.010 (0.011)	-0.016 (0.015)	0.026 (0.017)	-0.008 (0.014)
Low skilled information	-0.024 (0.016)	-0.002 (0.017)	0.018 (0.015)	-0.029* (0.017)	0.004 (0.011)	-0.008 (0.015)	0.000 (0.017)	0.000 (0.014)
Control mean	0.30	0.39	0.24	0.53	0.11	0.74	0.53	0.21
Observations	4,834	4,834	4,843	4,843	4,844	4,844	4,841	4,841
Panel C: Non-economic aspects								
	Cultural enrichment		Integrate into society		Beneficial for Germany		Increase crime	
High skilled information	-0.001 (0.016)	0.005 (0.014)	0.011 (0.017)	-0.004 (0.016)	0.023 (0.017)	-0.002 (0.014)	0.008 (0.016)	-0.016 (0.017)
Low skilled information	0.003 (0.016)	-0.005 (0.014)	-0.004 (0.017)	-0.009 (0.016)	0.005 (0.017)	0.002 (0.014)	-0.009 (0.016)	-0.003 (0.017)
Control mean	0.65	0.20	0.44	0.31	0.51	0.22	0.30	0.52
Observations	4,846	4,846	4,843	4,843	4,841	4,841	4,846	4,846

Notes: Dependent variable: Columns (1), (3), (5), and (7): dummy variables (1="completely agree" or "somewhat agree", 0 else); Columns (2), (4), (6), and (8): dummy variables (1="completely disagree" or "somewhat disagree", 0 else). All regressions include the same covariates as in Table 3. For a definition of the 12 outcomes, see Section 3.1. Robust standard errors reported in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table 5: Effect of information treatment on general attitudes toward refugees

Dependent variable:	Admit more refugees in future		#Refugees admitted last year		Allowed to stay permanently		Satisfied w/ asylum policy	
	More	Less	Too few	Too many	Favor	Oppose	Satisfied	Unsatisfied
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
High skilled information	-0.023 (0.016)	-0.010 (0.017)	0.000 (0.014)	0.013 (0.017)	-0.007 (0.016)	0.018 (0.014)	0.005 (0.014)	-0.025 (0.017)
Low skilled information	-0.022 (0.016)	0.005 (0.017)	-0.000 (0.014)	0.008 (0.017)	-0.003 (0.016)	-0.007 (0.014)	-0.002 (0.014)	-0.018 (0.017)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	0.31	0.44	0.22	0.44	0.65	0.20	0.21	0.61
Observations	4,823	4,823	4,828	4,828	4,851	4,851	4,850	4,850
Adj. R2	0.04	0.03	0.03	0.03	0.05	0.05	0.01	0.01

Notes: Dependent variable: Columns (1), (3), (5), and (7): dummy variables that equal 1 for the two most positive answer categories, 0 otherwise; Columns (2), (4), (6), and (8): dummy variables that equal 1 for the two most negative answer categories, 0 otherwise; all outcomes are measured on a five-point scale. Survey questions are (in the order of the dependent variables): Cols. 1+2: "Compared to the current situation, should Germany admit more refugees, less refugees or the same number in the future?" Cols. 3+4: "What do you think about the number of refugees which Germany admitted last year?" Cols. 5+6: "Do you favor or oppose that refugees are allowed to stay in Germany permanently?" Cols. 7+8: "How satisfied are you with the government's asylum- and refugee policy?" All regressions include the same covariates as in Table 3. Robust standard errors reported in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table 6: Effect of information treatment on aspects of opinion formation

	Refugees' willingness to integrate		Humanitarian aspects		Personal experience with refugees	
	Important (1)	Unimportant (2)	Important (3)	Unimportant (4)	Important (5)	Unimportant (6)
High skilled information	0.011 (0.011)	-0.002 (0.007)	-0.011 (0.012)	0.003 (0.008)	0.008 (0.015)	-0.003 (0.011)
Low skilled information	0.010 (0.011)	0.003 (0.007)	-0.003 (0.012)	-0.000 (0.008)	0.001 (0.015)	-0.005 (0.011)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	0.88	0.04	0.86	0.06	0.70	0.12
Observations	4,808	4,808	4,807	4,807	4,809	4,809
Adj. R2	0.02	0.01	0.03	0.02	0.11	0.06
	Refugees' criminal behavior		Religion/culture of refugees		Economic aspects	
	Important (1)	Unimportant (2)	Important (3)	Unimportant (4)	Important (5)	Unimportant (6)
High skilled information	-0.001 (0.017)	-0.017 (0.015)	0.028 (0.018)	-0.024 (0.017)	0.032* (0.017)	-0.062*** (0.017)
Low skilled information	-0.013 (0.017)	0.001 (0.015)	0.000 (0.017)	0.002 (0.017)	0.015 (0.017)	-0.024 (0.017)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	0.54	0.26	0.45	0.37	0.39	0.37
Observations	4,807	4,807	4,808	4,808	4,805	4,805
Adj. R2	0.03	0.02	0.01	0.01	0.02	0.02

Notes: Dependent variable: importance of various aspects for respondents' opinion formation process toward refugees: "Humanitarian aspects", "Economic aspects", "The refugees' willingness to integrate", "Religion/culture of the refugees", "Refugees' criminal behavior" and "Personal experience with refugees". Respondents rated each of these aspects on a five-point scale: very important, somewhat important, neither important nor unimportant, somewhat unimportant, very unimportant. *Important* equals 1 for "very important" or "somewhat important"; 0 otherwise; *unimportant* equals 1 for "very unimportant" or "somewhat unimportant"; 0 otherwise. For list of covariates, see notes of Table 3. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

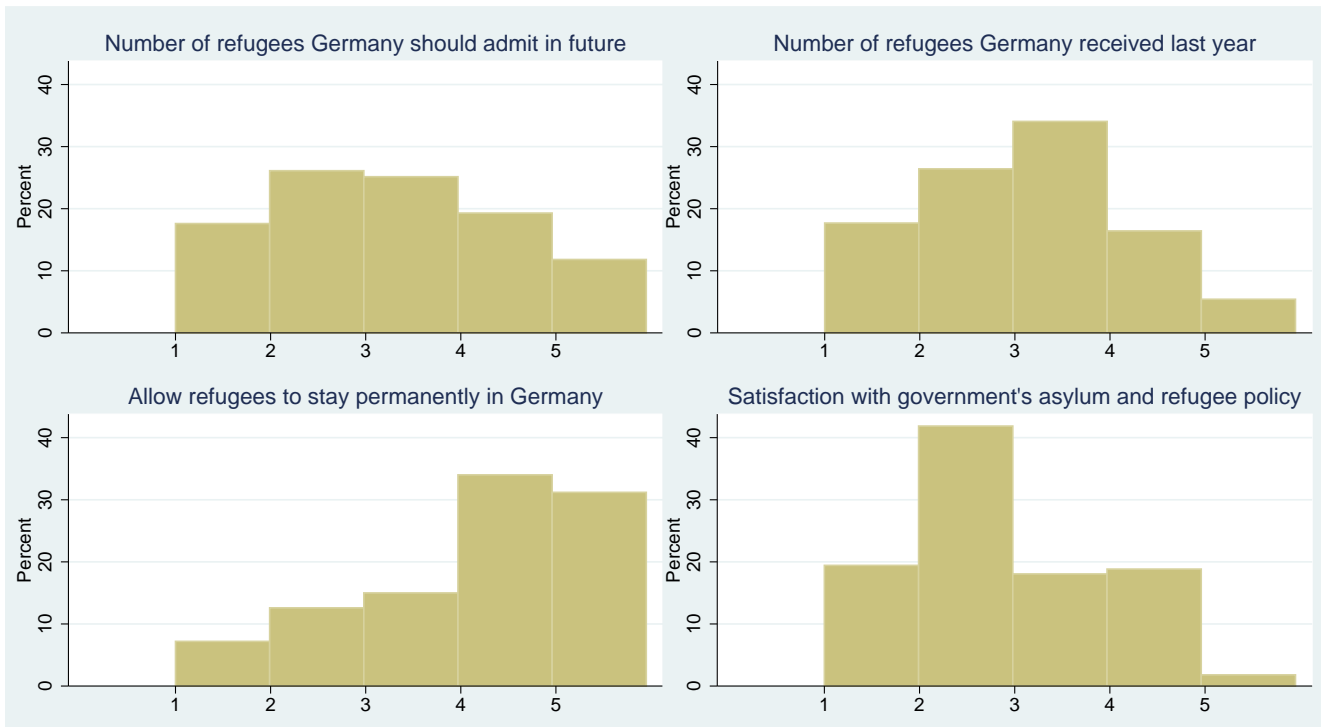
Table 7: Heterogeneity of treatment effects by respondents' migration status

	Admit more refugees in future			Good for economy		Refugees integrate successfully		
	More (1)	Less (2)	More (3)	Less (4)	Agree (5)	Disagree (6)	Agree (7)	Disagree (8)
High skilled information	-0.016 (0.017)	-0.017 (0.018)	-0.017 (0.018)	-0.021 (0.019)	0.033* (0.018)	-0.016 (0.015)	0.039** (0.019)	-0.029* (0.017)
× born abroad	-0.094* (0.054)	0.071 (0.063)			-0.087 (0.063)	0.097 (0.059)		
× parent(s) born abroad			-0.045 (0.044)	0.063 (0.049)			-0.104** (0.047)	0.110** (0.047)
Low skilled information	-0.008 (0.017)	-0.002 (0.018)	-0.008 (0.017)	-0.000 (0.019)	0.010 (0.018)	-0.008 (0.015)	0.020 (0.019)	-0.016 (0.017)
× born abroad	-0.171*** (0.053)	0.097 (0.066)			-0.130** (0.065)	0.142** (0.062)		
× parent(s) born abroad			-0.085** (0.043)	0.036 (0.049)			-0.083* (0.047)	0.082* (0.046)
Observations	4,779	4,779	4,779	4,779	4,797	4,797	4,800	4,800
Adj. R2	0.04	0.03	0.04	0.03	0.03	0.04	0.04	0.04
	Beneficial for Germany							
	Disagree (2)		Agree (3)		Disagree (4)		Agree (5)	
							Disagree (6)	
High skilled information	0.033* (0.018)	-0.007 (0.015)	0.042** (0.019)	-0.012 (0.015)	-0.010 (0.017)	-0.004 (0.019)		
× born abroad	-0.109* (0.062)	0.048 (0.061)						
× parent(s) born abroad			-0.115** (0.049)	0.058 (0.045)	0.119** (0.047)	-0.073 (0.049)		
Low skilled information	0.019 (0.018)	-0.005 (0.015)	0.019 (0.019)	-0.007 (0.015)	-0.019 (0.017)	0.004 (0.019)		
× born abroad	-0.178*** (0.064)	0.113* (0.064)						
× parent(s) born abroad			-0.093* (0.048)	0.069 (0.045)	0.086* (0.046)	-0.059 (0.049)		
Observations	4,797	4,797	4,797	4,797	4,802	4,802	4,802	4,802
Adj. R2	0.03	0.05	0.03	0.05	0.04	0.03	0.03	0.03

Notes: Dependent variable: Columns (1), (3), (5), and (7): dummy variables that equal 1 for the two most positive answer categories, 0 otherwise; Columns (2), (4), (6), and (8): dummy variables that equal 1 for the two most negative answer categories, 0 otherwise; all outcomes are measured on a five-point scale. Survey questions are (in the order of the dependent variables): Cols. 1+2: "Compared to the current situation, should Germany admit more refugees, less refugees or the same number in the future?" Cols. 3+4: "What do you think about the number of refugees which Germany admitted last year?" Cols. 5+6: "Do you favor or oppose that refugees are allowed to stay in Germany permanently?" Cols. 7+8: "How satisfied are you with the government's asylum- and refugee policy?" All regressions include the same covariates as in Table 3. Robust standard errors reported in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

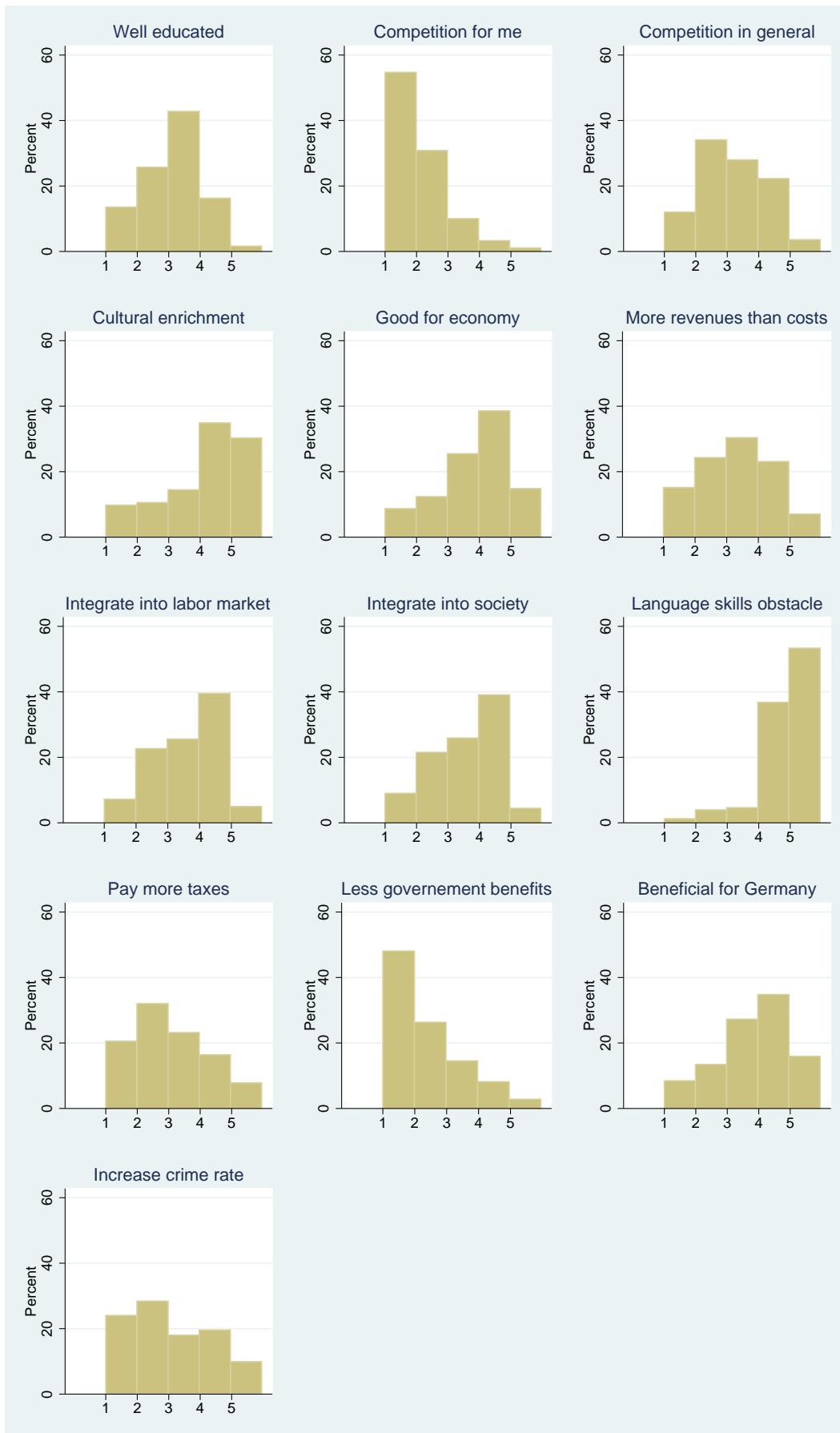
Appendix

Figure A-1: General attitudes toward refugees



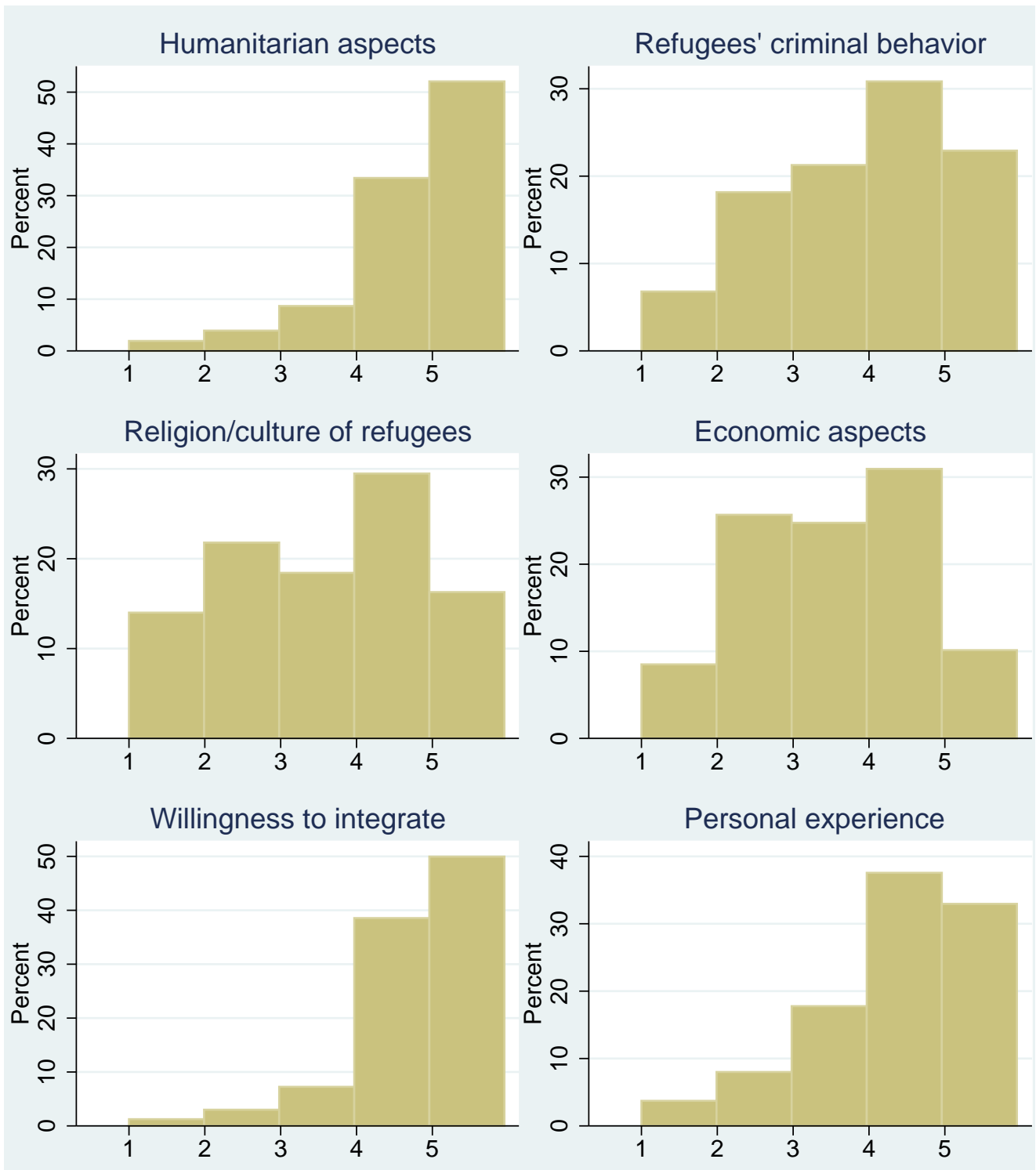
Note: Figures are based on control group only. Survey questions: "Compared to the current situation, should Germany admit more refugees, less refugees or the same number in the future?" "What do you think about the number of refugees which Germany admitted last year?" "Do you favor or oppose that refugees are allowed to stay in Germany permanently?" "How satisfied are you with the government's asylum- and refugee policy?" For answer categories, see Section 3.1.

Figure A-2: Specific attitudes toward refugees



Note: Figures are based on control group only. Respondents were asked to articulate their agreement with the different statements on a five-point scale: 1=completely disagree; 2=somewhat disagree, 3=neither agree nor disagree, 4=somewhat agree, 5=completely agree. For detailed survey questions, see Section 3.1

Figure A-3: Aspects of opinion formation



Note: Figures based on all respondents. Respondents were asked how important the following aspects are for their opinion formation process toward refugees: "Humanitarian aspects", "Economic aspects", "The refugees' willingness to integrate", "Religion/culture of the refugees", "Refugees' criminal behavior" and "Personal experience with refugees". Respondents were asked to rate each of these aspects on a five-point scale: 1=very unimportant, 2=somewhat important, 3=neither important nor unimportant, 4=somewhat important, 5=very unimportant.

Table A-1: General attitudes toward refugees: Impact of covariates

	Admit more refugees in future	Too few refugees last year	Allow permanent stay	Satisfied with refugee policy
	(1)	(2)	(3)	(4)
Male	-0.026 (0.025)	-0.010 (0.022)	-0.080*** (0.024)	0.024 (0.021)
Age	0.003 (0.004)	0.004 (0.003)	-0.012*** (0.004)	-0.007** (0.003)
Born abroad	0.002 (0.057)	0.027 (0.051)	-0.174*** (0.063)	0.086* (0.051)
At least 1 parent born abroad	-0.046 (0.043)	-0.054 (0.037)	-0.025 (0.045)	-0.049 (0.036)
At least 1 parent w/ university degree	0.025 (0.025)	0.038* (0.022)	0.029 (0.025)	-0.018 (0.022)
Spoken to refugees	0.199*** (0.032)	0.158*** (0.028)	0.125*** (0.036)	0.029 (0.030)
Seen refugees	0.061* (0.032)	0.040 (0.028)	-0.012 (0.038)	0.057* (0.031)
Need-based student aid	0.002 (0.024)	0.009 (0.022)	0.074*** (0.025)	-0.015 (0.021)
Field of study and degree indicators	Yes	Yes	Yes	Yes
University indicators	Yes	Yes	Yes	Yes
Observations	1,636	1,641	1,645	1,645
Adj. R2	0.04	0.02	0.06	0.01

Notes: Dependent variable: dummy variables equal 1 for two (out of five) answer categories that reflect most positive attitudes toward refugees; 0 otherwise. Survey questions: Col. (1): "Compared to the current situation, should Germany admit more refugees, less refugees or the same number in the future?" Col. (2): "What do you think about the number of refugees which Germany admitted last year?" Col. (3): "Do you favor or oppose that refugees are allowed to stay in Germany permanently?" Col. (4): "How satisfied are you with the government's asylum and refugee policy?" Robust standard errors reported in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A-2: Refugees' perceived education level: Impact of covariates

	Agree (1)	Disagree (2)	Five-point scale (3)
Male	-0.097*** (0.012)	0.147*** (0.014)	-0.346*** (0.029)
Age	-0.007*** (0.002)	0.008*** (0.002)	-0.020*** (0.004)
Born abroad	0.002 (0.027)	0.098*** (0.035)	-0.174** (0.071)
At least one parent born abroad	-0.036* (0.020)	0.030 (0.027)	-0.083* (0.050)
At least one parent w/ university degree	0.014 (0.013)	0.013 (0.015)	-0.016 (0.030)
Spoken to refugees	0.074*** (0.016)	-0.013 (0.020)	0.083** (0.038)
Seen refugees	0.013 (0.017)	0.030 (0.022)	-0.065 (0.040)
Need-based student aid	0.021* (0.012)	-0.057*** (0.015)	0.115*** (0.029)
Treatment indicators	Yes	Yes	Yes
Field of study and degree indicators	Yes	Yes	Yes
University indicators	Yes	Yes	Yes
Observations	4,831	4,831	4,831
Adj. R2	0.07	0.06	0.09

Notes: Dependent variable: Refugees are well educated on average: Column (1): integer values from 1 to 5 (1="completely disagree", 2="somewhat disagree", 3="neither agree nor disagree", 4="somewhat agree", 5="completely agree"); Columns (2): dummy variable (1="completely agree" or "somewhat agree", 0 else); Columns (3): dummy variables (1="completely disagree" or "somewhat disagree", 0 else). Robust standard errors reported in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table A-3: Effect of information treatment on perceived education level of refugees by baseline belief

Outcome: high perceived education level	Agree (dummy)	Disagree (dummy)
	(1)	(2)
High skilled information	0.117*** (0.017)	-0.149*** (0.025)
× high baseline education belief	0.054* (0.029)	0.075** (0.030)
Low skilled information	0.007 (0.013)	0.024 (0.024)
× high baseline education belief	-0.105*** (0.024)	0.078** (0.032)
High baseline education belief	0.181*** (0.018)	-0.414*** (0.023)
Controls	Yes	Yes
Respondents	4,829	4,829
Adj. R2	0.11	0.18

Notes: Dependent variable: XXXXX. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table A-4: Impact of perceived education level on attitudes toward refugees (IV estimates)

	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree
Panel A: Labor market aspects								
Perceived education level	0.043** (0.018)	-0.127*** (0.030)	0.092** (0.037)	-0.092** (0.041)	0.031 (0.039)	-0.014 (0.036)	-0.016 (0.025)	-0.001 (0.018)
Instrument F statistic	162.9	162.9	164.2	164.2	163.2	163.2	163.4	163.4
Respondents	4,829	4,829	4,825	4,825	4,830	4,830	4,830	4,830
Panel B: Further economic aspects								
Perceived education level	0.048 (0.036)	-0.059 (0.037)	-0.002 (0.036)	-0.005 (0.041)	0.012 (0.027)	-0.019 (0.036)	0.059 (0.038)	-0.020 (0.032)
Instrument F statistic	163.4	163.4	163.2	163.2	163.4	163.4	162.9	162.9
Respondents	4,823	4,823	4,830	4,830	4,830	4,830	4,829	4,829
Panel C: Non-economic aspects								
Perceived education level	-0.008 (0.039)	0.023 (0.034)	0.034 (0.039)	0.009 (0.037)	0.044 (0.039)	-0.013 (0.033)	0.038 (0.038)	-0.031 (0.041)
Instrument F statistic	163.0	163.0	163.2	163.2	163.4	163.4	163.4	163.4
Respondents	4,829	4,829	4,830	4,830	4,828	4,828	4,831	4,831

Notes: Dependent variable: Columns (1), (3), (5), and (7): dummy variables (1="completely agree" or "somewhat agree", 0 else); Columns (2), (4), (6), and (8): dummy variables (1="completely disagree" or "somewhat disagree", 0 else). All regressions include the same covariates as in Table 3. For a definition of the 12 outcomes, see Section 3.1. Robust standard errors reported in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table A-5: Impact of perceived education level on general attitudes toward refugees (IV estimates)

Dependent variable:	Admit more refugees in future		#Refugees admitted last year		Allowed to stay permanently		Satisfied w/ asylum policy	
	More	Less	Too few	Too many	Favor	Oppose	Satisfied	Unsatisfied
Perceived education level	-0.000 (0.036)	-0.037 (0.039)	0.003 (0.033)	0.010 (0.040)	-0.005 (0.038)	0.055 (0.035)	0.017 (0.033)	-0.016 (0.040)
Instrument F statistic	163.3	163.3	162.2	162.2	163.8	163.8	163.4	163.4
Respondents	4,805	4,805	4,810	4,810	4,829	4,829	4,827	4,827

Notes: Dependent variable: Columns (1), (3), (5), and (7): dummy variables that equal 1 for the two most positive answer categories, 0 otherwise; Columns (2), (4), (6), and (8): dummy variables that equal 1 for the two most negative answer categories, 0 otherwise; all outcomes are measured on a five-point scale. Survey questions are (in the order of the dependent variables): Cols. 1+2: "Compared to the current situation, should Germany admit more refugees, less refugees or the same number in the future?" Cols. 3+4: "What do you think about the number of refugees which Germany admitted last year?" Cols. 5+6: "Do you favor or oppose that refugees are allowed to stay in Germany permanently?" Cols. 7+8: "How satisfied are you with the government's asylum- and refugee policy?" All regressions include the same covariates as in Table 3. Robust standard errors reported in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table A-6: Heterogeneity of treatment effects by respondents' socioeconomic background and political attitudes

	#Refugees admitted last year		Integrate into society		More revenues than costs		Integrate into labor market	
	More (1)	Less (2)	Agree (3)	Disagree (4)	Agree (5)	Disagree (6)	Agree (7)	Disagree (8)
High skilled information	0.057** (0.024)	-0.013 (0.029)	0.062** (0.030)	-0.027 (0.027)	-0.003 (0.021)	-0.029 (0.022)	0.049** (0.022)	-0.044** (0.021)
× parent(s) have university degree	-0.083*** (0.030)	0.037 (0.037)	-0.075** (0.037)	0.033 (0.033)				
× need-based student aid					0.004 (0.033)	0.001 (0.035)	-0.063* (0.036)	0.078** (0.032)
Low skilled information	0.013 (0.023)	-0.010 (0.029)	0.054* (0.029)	-0.025 (0.026)	-0.050** (0.021)	0.011 (0.022)	-0.004 (0.022)	-0.008 (0.021)
× parent(s) have university degree	-0.017 (0.030)	0.027 (0.036)	-0.089** (0.036)	0.026 (0.033)				
× need-based student aid					0.067** (0.033)	-0.030 (0.035)	0.031 (0.035)	0.007 (0.032)
Observations	4,784	4,784	4,799	4,799	4,790	4,790	4,800	4,800
Adj. R2	0.03	0.03	0.03	0.03	0.02	0.02	0.04	0.04
	Competition for me		More revenues than costs		Less government benefits		Competition in general	
	Agree (1)	Disagree (2)	Agree (3)	Disagree (4)	Agree (5)	Disagree (6)	Agree (7)	Disagree (8)
High skilled information	0.007 (0.011)	-0.008 (0.019)	-0.018 (0.018)	-0.031 (0.019)	0.016 (0.013)	-0.012 (0.017)	0.004 (0.021)	-0.011 (0.023)
× spoken to refugees	0.010 (0.015)	-0.031 (0.026)						
× high expected earnings			0.063** (0.030)	0.009 (0.031)	-0.024 (0.021)	0.001 (0.028)		
× right-wing students							0.065** (0.032)	-0.013 (0.036)
Low skilled information	-0.014 (0.010)	0.055*** (0.017)	-0.035** (0.018)	0.011 (0.019)	0.016 (0.012)	-0.019 (0.017)	-0.010 (0.021)	0.022 (0.024)
× spoken to refugees	0.014 (0.014)	-0.047** (0.023)						
× high expected earnings			0.045 (0.029)	-0.046 (0.030)	-0.042** (0.020)	0.048* (0.026)		
× right-wing students							0.003 (0.031)	0.003 (0.035)
Observations	4,799	4,799	4,790	4,790	4,800	4,800	4,796	4,796
Adj. R2	0.01	0.03	0.02	0.02	0.02	0.04	0.01	0.01

Notes: Dependent variable: Columns (1), (3), (5), and (7): dummy variables that equal 1 for the two most positive answer categories, 0 otherwise; Columns (2), (4), (6), and (8): dummy variables that equal 1 for the two most negative answer categories, 0 otherwise; all outcomes are measured on a five-point scale. Survey questions are (in the order of the dependent variables): Cols. 1+2: "Compared to the current situation, should Germany admit more refugees, less refugees or the same number in the future?" Cols. 3+4: "What do you think about the number of refugees which Germany admitted last year?" Cols. 5+6: "Do you favor or oppose that refugees are allowed to stay in Germany permanently?" Cols. 7+8: "How satisfied are you with the government's asylum- and refugee policy?" All regressions include the same covariates as in Table 3. Robust standard errors reported in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table A-7: Relationship between political attitude and attitudes toward refugees

	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree
Panel A: Labor market aspects								
Share right-wing students	-0.009 (0.023)	0.018 (0.036)	0.010 (0.049)	-0.028 (0.053)	-0.057 (0.052)	0.085* (0.047)	-0.013 (0.031)	0.019 (0.024)
Treatment indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	0.04	0.86	0.26	0.46	0.45	0.30	0.90	0.05
Observations	4,799	4,799	4,796	4,796	4,800	4,800	4,805	4,805
Panel B: Further economic aspects								
Share right-wing students	-0.105** (0.047)	0.137*** (0.052)	0.094** (0.047)	-0.061 (0.053)	0.071** (0.036)	-0.098** (0.046)	-0.060 (0.052)	0.053 (0.042)
Treatment indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	0.30	0.39	0.24	0.53	0.11	0.74	0.53	0.21
Observations	4,790	4,790	4,799	4,799	4,800	4,800	4,797	4,797
Panel C: Non-economic aspects								
Share right-wing students	-0.151*** (0.050)	0.069* (0.041)	-0.014 (0.052)	0.001 (0.048)	-0.104** (0.052)	0.067 (0.042)	0.080* (0.048)	-0.094* (0.052)
Treatment indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	0.65	0.20	0.44	0.31	0.51	0.22	0.30	0.52
Observations	4,801	4,801	4,799	4,799	4,797	4,797	4,802	4,802

Notes: Dependent variable: Columns (1), (3), (5), and (7): dummy variables (1="completely agree" or "somewhat agree", 0 else); Columns (2), (4), (6), and (8): dummy variables (1="completely disagree" or "somewhat disagree", 0 else). All regressions include the same covariates as in Table 3. For a definition of the 12 outcomes, see Section 3.1. Robust standard errors reported in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table A-8: Correlations between opinion aspects

	Humanitarian aspects	Economic aspects	Refugees' criminal behavior	Religion/culture of refugees	Refugees' willingness to integrate
Humanitarian aspects	1				
Economic aspects	-0.150***	1			
Refugees' criminal behavior	-0.252***	0.311***	1		
Religion/culture of refugees	-0.126***	0.228***	0.245***	1	
Refugees' willingness to integrate	0.00819	0.262***	0.407***	0.205***	1
Personal experience with refugees	0.184***	-0.00687	0.0288	0.118***	0.155***

Notes: Correlations between perceived education level and responses to other survey questions reported. Correlations only based on control group. For description of variables and answer categories, see Section 3.1. Perceived education level has five categories, ranging from 1 (completely disagree) to 5 (completely agree). Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A-9: Relationship between opinion formation aspects and general attitudes toward refugees

Dependent variable:	Admit more refugees in future		#Refugees admitted last year		Allowed to stay permanently		Satisfied w/ asylum policy	
	More (1)	Less (2)	Too few (3)	Too many (4)	Favor (5)	Oppose (6)	Satisfied (7)	Unsatisfied (8)
Humanitarian aspects	0.094*** (0.011)	-0.142*** (0.013)	0.080*** (0.009)	-0.145*** (0.013)	0.154*** (0.012)	-0.137*** (0.011)	0.034*** (0.012)	-0.058*** (0.013)
Economic aspects	-0.030*** (0.009)	0.026*** (0.010)	-0.026*** (0.009)	0.019* (0.010)	-0.007 (0.009)	0.001 (0.008)	-0.001 (0.010)	-0.018* (0.011)
Refugees' criminal behavior	-0.092*** (0.010)	0.127*** (0.010)	-0.053*** (0.009)	0.123*** (0.010)	-0.108*** (0.009)	0.084*** (0.008)	-0.029*** (0.010)	0.041*** (0.012)
Religion/culture of refugees	-0.026*** (0.008)	0.038*** (0.008)	-0.006 (0.007)	0.041*** (0.008)	-0.051*** (0.008)	0.050*** (0.007)	-0.017** (0.008)	0.038*** (0.010)
Refugees' willingness to integrate	-0.105*** (0.014)	0.069*** (0.014)	-0.105*** (0.014)	0.048*** (0.014)	-0.001 (0.013)	-0.010 (0.011)	0.012 (0.014)	-0.024 (0.016)
Personal experience with refugees	0.036*** (0.010)	-0.035*** (0.011)	0.029*** (0.009)	-0.019* (0.011)	0.012 (0.010)	-0.000 (0.009)	-0.014 (0.011)	0.016 (0.012)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	0.31	0.44	0.22	0.44	0.65	0.20	0.21	0.61
Observations	1,634	1,634	1,639	1,639	1,643	1,643	1,643	1,643
Adj. R2	0.27	0.32	0.19	0.29	0.31	0.31	0.03	0.05

Notes: Dependent variable: Columns (1), (3), (5), and (7): dummy variables that equal 1 for the two most positive answer categories, 0 otherwise; Columns (2), (4), (6), and (8): dummy variables that equal 1 for the two most negative answer categories, 0 otherwise; all outcomes are measured on a five-point scale. Survey questions are (in the order of the dependent variables): Cols. 1+2: "Compared to the current situation, should Germany admit more refugees, less refugees or the same number in the future?" Cols. 3+4: "What do you think about the number of refugees which Germany admitted last year?" Cols. 5+6: "Do you favor or oppose that refugees are allowed to stay in Germany permanently?" Cols. 7+8: "How satisfied are you with the government's asylum- and refugee policy?" All regressions include the same covariates as in Table 3. Robust standard errors reported in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table A-10: Relationship between opinion formation aspects and specific attitudes toward refugees

Panel A: Labor market aspects	Agree		Disagree		Agree		Disagree		Agree		Disagree					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)				
Humanitarian aspects	-0.011 (0.007)	0.022** (0.011)	-0.024* (0.014)	0.023 (0.014)	0.112*** (0.012)	-0.112*** (0.013)	0.018** (0.008)	-0.012* (0.007)	0.112*** (0.012)	-0.112*** (0.013)	0.018** (0.008)	-0.012* (0.007)				
Economic aspects	0.009* (0.005)	-0.024*** (0.008)	0.046*** (0.010)	-0.037*** (0.012)	0.012 (0.010)	0.008 (0.009)	0.016** (0.007)	-0.018*** (0.006)	0.012 (0.010)	0.008 (0.009)	0.016** (0.007)	-0.018*** (0.006)				
Refugees' criminal behavior	0.010** (0.005)	-0.017*** (0.008)	0.018* (0.011)	-0.004 (0.012)	-0.118*** (0.011)	0.104*** (0.010)	-0.004 (0.008)	0.002 (0.006)	-0.118*** (0.011)	0.104*** (0.010)	-0.004 (0.008)	0.002 (0.006)				
Religion/culture of refugees	-0.004 (0.004)	0.004 (0.007)	-0.014* (0.009)	0.001 (0.010)	-0.019** (0.009)	0.044*** (0.008)	0.006 (0.006)	-0.007 (0.005)	-0.019** (0.009)	0.044*** (0.008)	0.006 (0.006)	-0.007 (0.005)				
Refugees' willingness to integrate	0.008 (0.007)	0.004 (0.012)	0.005 (0.015)	-0.006 (0.017)	-0.020 (0.015)	0.004 (0.013)	0.047*** (0.012)	-0.013 (0.009)	-0.020 (0.015)	0.004 (0.013)	0.047*** (0.012)	-0.013 (0.009)				
Personal experience with refugees	-0.010* (0.005)	0.009 (0.009)	-0.010 (0.012)	0.005 (0.013)	0.026** (0.012)	-0.010 (0.011)	0.000 (0.007)	0.003 (0.006)	0.026** (0.012)	-0.010 (0.011)	0.000 (0.007)	0.003 (0.006)				
Observations	1,640	1,640	1,639	1,639	1,641	1,641	1,642	1,642	1,641	1,641	1,642	1,642				
Panel B: Further economic aspects	More revenues than costs				Pay more taxes				Less government benefits				Good for economy			
Humanitarian aspects	0.077*** (0.012)	-0.104*** (0.013)	-0.100*** (0.013)	0.112*** (0.013)	-0.063*** (0.011)	0.098*** (0.013)	0.103*** (0.013)	-0.104*** (0.012)	-0.063*** (0.011)	0.098*** (0.013)	0.103*** (0.013)	-0.104*** (0.012)				
Economic aspects	0.025** (0.010)	0.014 (0.010)	0.027*** (0.009)	-0.027** (0.011)	0.023*** (0.007)	-0.032*** (0.009)	0.039*** (0.011)	0.015* (0.009)	0.023*** (0.007)	-0.032*** (0.009)	0.039*** (0.011)	0.015* (0.009)				
Refugees' criminal behavior	-0.085*** (0.010)	0.126*** (0.010)	0.071** (0.009)	-0.074*** (0.011)	0.047*** (0.007)	-0.080*** (0.009)	-0.131*** (0.011)	0.075*** (0.009)	0.047*** (0.007)	-0.080*** (0.009)	-0.131*** (0.011)	0.075*** (0.009)				
Religion/culture of refugees	-0.025*** (0.009)	0.029*** (0.009)	0.036*** (0.008)	-0.039*** (0.009)	0.017*** (0.006)	-0.028*** (0.008)	-0.045*** (0.009)	0.041*** (0.007)	0.017*** (0.006)	-0.028*** (0.008)	-0.045*** (0.009)	0.041*** (0.007)				
Refugees' willingness to integrate	-0.022 (0.015)	0.011 (0.014)	-0.010 (0.014)	-0.013 (0.016)	-0.014 (0.011)	0.022 (0.014)	0.002 (0.015)	-0.003 (0.012)	-0.014 (0.011)	0.022 (0.014)	0.002 (0.015)	-0.003 (0.012)				
Personal experience with refugees	0.013 (0.012)	-0.028** (0.011)	-0.023** (0.010)	0.009 (0.012)	-0.014* (0.008)	0.004 (0.010)	0.030** (0.012)	-0.018* (0.010)	-0.014* (0.008)	0.004 (0.010)	0.030** (0.012)	-0.018* (0.010)				
Observations	1,639	1,639	1,641	1,641	1,640	1,640	1,641	1,641	1,640	1,640	1,641	1,641				
Panel C: Non-economic aspects	Cultural enrichment				Integrate into society				Beneficial for Germany				Increase crime			
Humanitarian aspects	0.130*** (0.013)	-0.132*** (0.012)	0.113*** (0.012)	-0.146*** (0.012)	0.127*** (0.013)	-0.141*** (0.012)	0.098*** (0.012)	0.083*** (0.013)	0.130*** (0.012)	-0.132*** (0.012)	0.113*** (0.012)	-0.146*** (0.012)				
Economic aspects	-0.011 (0.010)	0.003 (0.009)	-0.004 (0.010)	0.007 (0.009)	0.011 (0.010)	-0.001 (0.009)	0.021** (0.009)	-0.026*** (0.010)	0.003 (0.010)	0.009 (0.009)	0.021** (0.009)	-0.026*** (0.010)				
Refugees' criminal behavior	-0.116*** (0.010)	0.081*** (0.008)	-0.094*** (0.011)	0.098*** (0.010)	-0.130*** (0.010)	0.092*** (0.009)	0.140*** (0.009)	-0.156*** (0.010)	-0.094*** (0.011)	0.098*** (0.010)	0.140*** (0.009)	-0.156*** (0.010)				
Religion/culture of refugees	-0.043*** (0.008)	0.054*** (0.007)	-0.033*** (0.009)	0.052*** (0.008)	-0.032*** (0.009)	0.040*** (0.007)	0.036*** (0.008)	-0.044*** (0.009)	-0.033*** (0.009)	0.052*** (0.008)	0.036*** (0.008)	-0.044*** (0.009)				
Refugees' willingness to integrate	-0.004 (0.013)	-0.017 (0.011)	-0.042*** (0.014)	0.026** (0.012)	-0.026** (0.014)	-0.003 (0.012)	-0.013 (0.012)	0.007 (0.014)	-0.042*** (0.014)	-0.026** (0.012)	-0.013 (0.012)	0.007 (0.014)				
Personal experience with refugees	0.041*** (0.011)	-0.018** (0.009)	0.051*** (0.012)	-0.026** (0.010)	0.034*** (0.012)	-0.024** (0.009)	-0.025** (0.010)	0.019* (0.011)	0.051*** (0.012)	-0.024** (0.009)	-0.025** (0.010)	0.019* (0.011)				
Observations	1,641	1,641	1,640	1,640	1,640	1,640	1,641	1,641	1,640	1,640	1,641	1,641				

Notes: Dependent variable: Columns (1), (3), (5), and (7): dummy variables (1="completely agree" or "somewhat agree", 0 else); Columns (2), (4), (6), and (8): dummy variables (1="completely disagree" or "somewhat disagree", 0 else). All regressions include the same covariates as in Table 3. For a definition of the 12 outcomes, see Section 3.1. Robust standard errors reported in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Appendix B1 Survey Screenshots

Figure B1: Screenshot of Survey – Introductory Screen

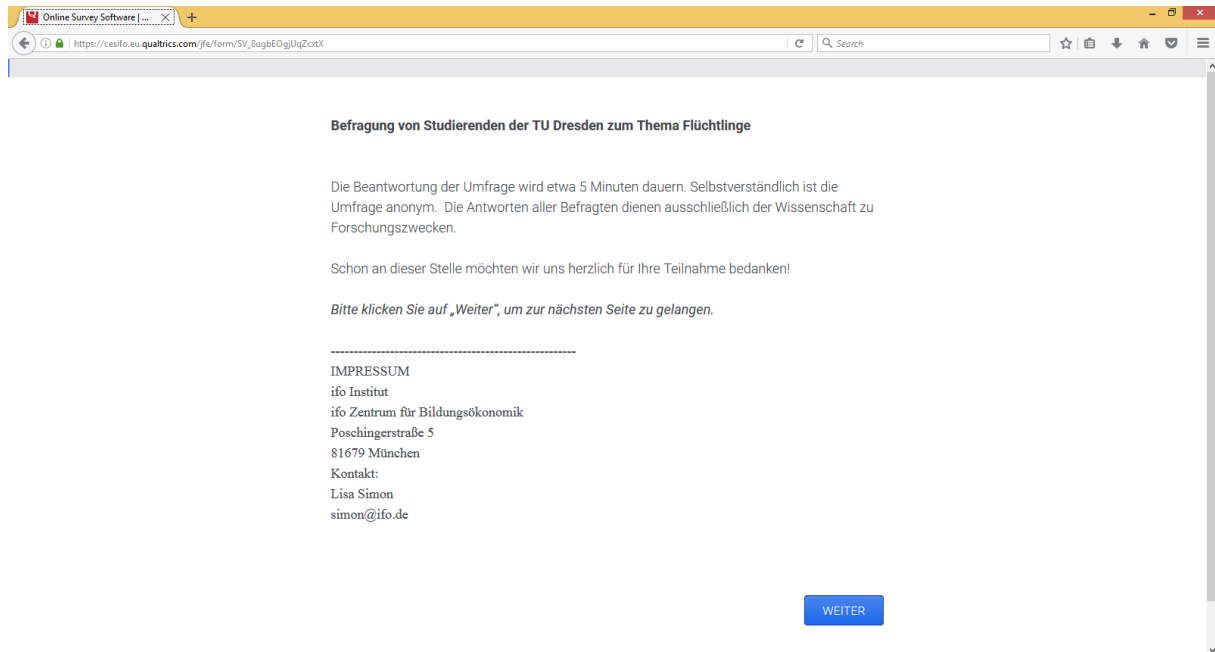


Figure B2: Screenshot of Survey – Screen 1 Question 1

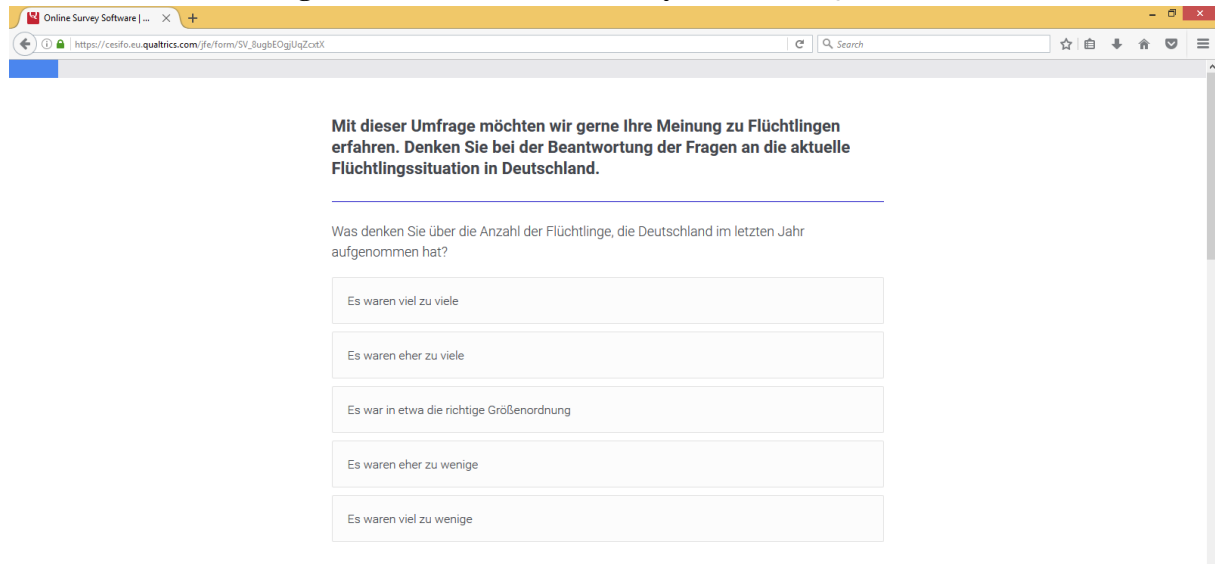


Figure B3: Screenshot of Survey – Screen 1 Question 2

Online Survey Software | ... x +

https://cesifo.eu.qualtrics.com/jfe/form/SV_8ugbEOgUqZcxtX

Es waren eher zu wenige

Es waren viel zu wenige

Soll Deutschland in Zukunft mehr Flüchtlinge, weniger Flüchtlinge oder genauso viele Flüchtlinge wie derzeit aufnehmen?

Viel mehr

Etwas mehr

Genau so viele wie derzeit

Etwas weniger

Viel weniger

Sind Sie dafür oder dagegen, dass Flüchtlinge dauerhaft in Deutschland bleiben dürfen?

Ich bin sehr dafür

Figure B4: Screenshot of Survey – Screen 1 Question 3

Online Survey Software | ... x +

https://cesifo.eu.qualtrics.com/jfe/form/SV_8ugbEOgUqZcxtX

Etwas weniger

Viel weniger

Sind Sie dafür oder dagegen, dass Flüchtlinge dauerhaft in Deutschland bleiben dürfen?

Ich bin sehr dafür

Ich bin eher dafür

Ich bin weder dafür noch dagegen

Ich bin eher dagegen

Ich bin sehr dagegen

Wie zufrieden sind Sie mit der Asyl- und Flüchtlingspolitik der Bundesregierung?

Ich bin sehr zufrieden

Figure B5: Screenshot of Survey – Screen 1 Question 4

Online Survey Software | ... x +

https://cesifo.eu.qualtrics.com/jfe/form/SV_8ugbEOgUqZcoX

Ich bin sehr dagegen

Wie zufrieden sind Sie mit der Asyl- und Flüchtlingspolitik der Bundesregierung?

Ich bin sehr zufrieden

Ich bin eher zufrieden

Ich bin weder zufrieden noch unzufrieden

Ich bin eher unzufrieden

Ich bin sehr unzufrieden

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Figure B6: Screenshot of Survey – Screen 2 Questions 5-17

Online Survey Software | ... x +

https://cesifo.eu.qualtrics.com/jfe/form/SV_8ugbEOgUqZcoX

Inwiefern stimmen Sie folgenden Aussagen zu?

	Ich stimme überhaupt nicht zu	Ich stimme eher nicht zu	Weder noch	Ich stimme eher zu	Ich stimme voll zu
Die Flüchtlinge bringen dem Staat mehr Einnahmen (z.B. Lohnsteuern) als sie Ausgaben verursachen (z.B. Kosten für Integrationsmaßnahmen).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Die Flüchtlinge werden für mich persönlich die Konkurrenz am Arbeitsmarkt erhöhen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Die Flüchtlinge sind insgesamt gut für Deutschland.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aufgrund der staatlichen Ausgaben für Flüchtlinge werde ich in Zukunft auf staatliche Leistungen verzichten müssen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aufgrund der staatlichen Ausgaben für Flüchtlinge werde ich in Zukunft mehr Steuern zahlen müssen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Die Flüchtlinge werden sich erfolgreich in den Arbeitsmarkt integrieren.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Die Flüchtlinge sind insgesamt gut für die deutsche Wirtschaft.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Die Flüchtlinge werden sich erfolgreich in die Gesellschaft integrieren.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fehlende Sprachkenntnisse von Flüchtlingen stellen eine Hürde für deren Integration in den Arbeitsmarkt dar.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Die Kriminalitätsrate in Deutschland wird durch Straftaten von Flüchtlingen steigen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Die Flüchtlinge sind im Durchschnitt eher gut gebildet.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Die Flüchtlinge werden insgesamt die Konkurrenz am Arbeitsmarkt erhöhen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Die Flüchtlinge sind eine kulturelle Bereicherung für Deutschland.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure B7: Screenshot of Survey – Screen 3 Questions 18-23

Wie wichtig sind die folgenden Aspekte für Ihre Meinungsbildung beim Thema Flüchtlinge?

	Gar nicht wichtig	Eher nicht wichtig	Weder noch	Eher wichtig	Sehr wichtig
Wirtschaftliche Aspekte	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Religion/Kultur der Flüchtlinge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kriminelles Verhalten von Flüchtlingen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Persönliche Erfahrungen mit Flüchtlingen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Integrationsbereitschaft der Flüchtlinge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Humanitäre Aspekte	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Figure B8: Screenshot of Survey – Screen 4 Questions 24-26

Zum Abschluss noch ein paar Fragen zu Ihrer Person.

Ich bin ...

männlich weiblich

Wie alt sind Sie?

An welcher Universität studieren Sie?

TU Dresden

andere Universität

studiere nicht

Figure B9: Screenshot of Survey – Screen 4 Questions 27-28

Online Survey Software | ... x +

https://cesifo.eu.qualtrics.com/jfe/form/SV_8ugbEOgUqZcIX

In welchem Studium befinden Sie sich derzeit?

Bachelorstudium

Masterstudium

Diplomstudium

Promotion

ein anderes, und zwar

An welcher Fakultät studieren Sie im Hauptfach?

Fakultät

Figure B10: Screenshot of Survey – Screen 4 Questions 29-31

Online Survey Software | ... x +

https://cesifo.eu.qualtrics.com/jfe/form/SV_8ugbEOgUqZcIX

In welchem Semester Ihres derzeitigen Studiums befinden Sie sich?

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. oder höheres

Sind Sie in Deutschland geboren?

Ja

Nein

Sind Ihre Eltern in Deutschland geboren?

Ja, beide

Nein, ein Elternteil ist nicht in Deutschland geboren

Nein, beide Elternteile sind nicht in Deutschland geboren

Figure B11: Screenshot of Survey – Screen 4 Questions 32-34

Denken Sie nun bitte an Ihr Einkommen, das Sie nach dem Studium bei Ihrem ersten Job erwarten. Was schätzen Sie, welcher Anteil aller Erwerbstätigen in Deutschland wird dann ein **niedrigeres** Einkommen erzielen als Sie?

0 10 20 30 40 50 60 70 80 90 100

Prozent

Haben Sie schon Flüchtlinge persönlich kennengelernt, zum Beispiel in der Nachbarschaft, in einem Verein oder in einer Unterkunft?

Ja, auch schon mit Flüchtlingen gesprochen

Ja, schon begegnet

Nein

Wenn Sie noch Anmerkungen zur Befragung haben, nutzen Sie bitte dieses Textfeld.

Figure B12: Screenshot of Survey –Finishing Screen- Thank you and link to raffle

Vielen Dank! Ihre Antworten wurden erfasst.

Wenn Sie an der Verlosung der fünf Amazon-Gutscheine im Wert von jeweils 50 Euro teilnehmen möchten, klicken Sie bitte auf folgenden Link, um Ihre E-Mail-Adresse anzugeben:

https://cesifo.qualtrics.com/SE/?SID=SV_eznHx6KBi7OTe73

HINWEIS ZUM DATENSCHUTZ:

Wenn Sie an der Verlosung teilnehmen und dazu eine E-Mail-Adresse angeben, wird diese gänzlich unabhängig von den Befragungsdaten gespeichert. Damit wird sichergestellt, dass Ihre Antworten nicht Ihrer E-Mail-Adresse zugeordnet werden können.

Figure C1: Experimental Survey Design

| | | Treatments | | |
|----------|-----------------------|--|--------------------------|-------------------------|
| | | Control group | High Skilled | Low Skilled |
| Screen 1 | Information Treatment | | High Skilled Information | Low Skilled Information |
| | Questions 1-4 | General attitudes towards refugees | | |
| Screen 2 | Information Treatment | | High Skilled Information | Low Skilled Information |
| | Questions 5-17 | Specific statements on refugees: education levels, labor market aspects, fiscal aspects, other (cultural, crime) | | |
| Screen 3 | Questions 18-23 | Aspects of opinion formation | | |
| Screen 4 | Questions 24-34 | Respondents background Survey | | |