

Jobs, Crime and Votes: A Short-run Evaluation of the Refugee Crisis in Germany

By MARKUS GEHRITZ* and MARTIN UNGERER†

*University of Strathclyde and IZA †ZEW - Leibniz-Centre for European Economic Research

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Millions of refugees made their way to Europe between 2014 and 2015, with over one million arriving in Germany alone. Yet little is known about the impact of this inflow on labour markets, crime and voting behaviour. This paper uses administrative data on asylum seeker allocation and provides an evaluation of the short-run consequences of the refugee inflow. Our identification strategy exploits the fact that a scramble for accommodation determined the assignment of asylum seekers to German counties, resulting in exogenous variation in the number of asylum seekers per county within and across states. Our estimates suggest that those migrants have not displaced native workers but have themselves struggled to find gainful employment. We find moderate increases in crime, and our analysis further indicates that while at the macro level increased migration was accompanied by increased support for anti-immigrant parties, exposure to asylum seekers at the micro level had a small negative effect.

INTRODUCTION

Immigration has become one of the more contentious issues in the public discourse on policies related to labour markets, crime, trade and the political economy. The debate has intensified in light of the recent inflow of refugees to Europe. The main goal of this paper is to use the sharp and unexpected rise in the number of asylum seekers coming to Germany in 2014/15 as a natural experiment in order to evaluate its short-run effect on unemployment, crime and voting behaviour. In this, we build on numerous studies that have investigated the impact of migration and immigration, often with a focus on labour market outcomes. Arguably, a consensus has not been reached (Borjas 2014; Card and Peri 2016). For example, Card (2001) and Dustmann *et al.* (2013) find very small or insignificant effects of immigrant inflows on natives' wages and employment prospects. In the same vein, Angrist and Kugler (2003) show either small or insignificant effects for migration to the European Union (EU). In a more recent study, Foged and Peri (2016) show that in Denmark, migration had positive effects on native unskilled wages and employment. Borjas (2003) and Aydemir and Borjas (2007), on the other hand, show substantial negative effects of immigration on natives' labour market outcomes. These conflicting findings can be explained by differences in the model assumptions, in particular the degree to which natives and immigrants are substitutes (Borjas *et al.* 2012; Card 2012). Moreover, the frequently applied spatial correlations approach, which divides data into cells based on geography and skill levels, is prone to endogeneity issues not least because immigrants are likely to sort differentially into regions that offer them the best employment prospects. As a result, a range of natural experiments, such as the Mariel boatlift (Card 1990; Borjas 2017), the relocation of Algerian repatriates to France (Hunt 1992), spatial dispersal policies (Edin *et al.* 2003; Gould *et al.* 2004; Damm 2009), or border openings after the fall of the Berlin wall (Dustmann *et al.* 2017), have been exploited to get a better sense of the effect of immigration on labour market outcomes. In a recent survey, Becker and Ferrara (2019) summarize these and other findings on forced migration.

In the context of the effect of immigration on crime, there has been slightly less research, studies by Butcher and Piehl (1998) for the USA, Bell *et al.* (2013) for the UK, and Bianchi

et al. (2012) for Italy being notable exceptions. These studies have found no effects of immigration on violent crime, and, at best, moderate effects on property crimes. However, Piopiunik and Ruhose (2017) find a positive association between crime and immigration in their longitudinal analysis of Germany, the country that we study in this paper.

Finally, voting behaviour and attitudes towards immigrants are an interesting research frontier. Mayda (2006) shows that individual skills are strong predictors of attitudes towards immigration. Dustmann and Preston (2007) study immigration and attitudes in the case of the UK. They find that welfare concerns are more important compared to labour market concerns, while cultural concerns are relevant only if migrants come from ethnically different regions. Related to that, Card (2012) develops his concept of compositional amenities and shows that concerns about the social effects of immigration often outweigh concerns about its economic effects. Combining the cultural and economic perspective, Tabellini (2020) concludes that migration from Europe to the USA in the early 20th century was hugely beneficial to natives in terms of economic welfare, but was resented in cultural terms. With respect to refugee migration, Dustmann *et al.* (2018) document increased voting for the far right as a result of increased migration in all except the most urban areas of Denmark. Steinmayr (2021) uses an approach similar to ours in his study of recent refugee inflows to Austria, and shows a negative relationship between the number of migrants and support for right-wing parties. He finds support for the contact hypothesis, which predicts that increased social contacts between migrants and natives decrease opposition to migration. This stands in contrast to work on earlier migration to Austria by Halla *et al.* (2017), who find increased voting for the far right in areas with higher migrant inflows. Their findings are driven mainly by worries about adverse labour market effects and neighbourhood quality. In the case of Greek islands, Hangartner *et al.* (2019) show that even temporary contact between refugees and natives led to more hostility against refugees and other minorities. This is a finding that cannot be explained by standard contact or group threat theory. Hence the overall effect of migration on electoral outcomes seems to be *ex ante* unclear and is highly context-dependent.

Our study serves two purposes. First, we contribute to the literature by exploiting a natural experiment that was created by the allocation mechanisms in Germany during the refugee crisis in 2014/15. We show that within states, asylum seekers were allocated to counties based on reasons unrelated to trends in local labour market conditions or crime rates. In particular, we provide evidence that neither incomes nor the demographic composition differ substantially between counties hosting large and small refugee populations, respectively. Housing vacancies are also not significant determinants of asylum seeker allocations, although it remains conceivable that the availability of estates that can house a large number of asylum seeker all in one place—e.g. abandoned barracks—is a predictor. More importantly, counties that experience small asylum seeker inflows and those with large inflows appear to follow identical time trends in terms of unemployment, crime and voting patterns. This allows us to obtain credibly causal effects on less stringent identification assumptions.

Second, our study provides a first evaluation of the short-run consequences of the refugee crisis in Germany, an event that features prominently in the public discourse. Using a difference-in-differences framework with continuous treatment, we find no evidence for displacement of native workers by refugees. However, our findings suggest difficulties in integrating asylum seekers into the German labour markets. These difficulties are likely to worsen as more and more migrants become eligible to enter the labour market legally. Our findings are consistent with earlier studies for Germany, such as Pischke and Velling (1997) and D'Amuri *et al.* (2010). With respect to wages, our findings are also in line with Glitz (2012), who exploits the exogenous inflow of ethnic Germans from the Soviet Union. However, in contrast to this study, we do not find a displacement effect. His research design

is probably the most similar to ours, although substantial differences remain, not least because the inflows in the 1990s were smaller on a per-year basis, migrants' skill and demographic profiles were different, and the time horizon that Glitz (2012) was able to evaluate was longer. Our study also suggests that—with the obvious exception of violations to right-of-residence and asylum laws—there is little evidence of a sharp increase in crime rates. With that being said, we do find a positive and statistically significant relationship between migrant inflows and crime rates; in particular, counties with bigger reception centres have seen increases in drug offences and violent crime, and a rise in the number of non-German suspects, although this finding may be driven partly by higher police alertness in these counties. Finally, the potentially positive macro relationship between the support for anti-immigrant parties and increased asylum seeker numbers is not reflected at the micro level. In fact, a local-level analysis of election records of municipalities in North Rhine-Westphalia suggests that relatively higher asylum seeker inflows might slightly depress support for the main anti-immigrant party. Our results are therefore in line with recent findings by Steinmayr (2021) for Austria.

The remainder of this paper is structured as follows. In Section I, we provide background information on the refugee crisis and how the German institutional setting dealt with the inflow of hundreds of thousands of refugee migrants in 2014 and 2015. Section II introduces our data, in particular the newly collected administrative records that document the distribution of refugees across counties. Section III describes the empirical setup and the assumptions on which our identification strategy is built. We present our results in Section IV, and discuss them in Section V, where we also provide additional robustness checks. We conclude in Section VI.

I. BACKGROUND

Synopsis of the refugee crisis

In 2011, the year the Syrian civil war erupted, only 50,000 asylum applications were filed in Germany (BAMF 2016). From 2014 on, more and more people embarked on their journey towards Europe. Most of them took the so-called 'Eastern Mediterranean Route', crossing the Mediterranean, often on makeshift boats, from Turkey into Greece. From there they travelled onwards through countries of former Yugoslavia towards Western Europe. In theory, asylum applications in the EU are governed by the Dublin Regulation, which shifts the responsibility of administering an asylum request to the first EU member state where a migrant sets foot. In practice, few refugees had any intention of staying in Greece (or Hungary), but tried to travel on to, among other countries, Austria, Germany or Sweden, as these countries promised better living conditions, more generous welfare benefits, and better job perspectives. By late summer 2015, amid images of refugees being stuck in trains and camps in Hungary, the German government in essence abandoned the Dublin Regulation and allowed all refugees who had passed through other EU countries to file for asylum in Germany.¹

At this point, the inflow changed from a steady increase to a large jump in daily arrival rates, with thousands of new refugees seeking asylum at the German border every day. Figure 1 attests to this immigration shock. In 2015 alone, 1,091,894 refugees were registered at the German border (BMI 2016). The inflows were curtailed only in early 2016 when, among other things, a deal was forged between the EU and Turkey, in which Turkey committed to crack down on people smugglers in return for €6 billion in aid earmarked for humanitarian support of refugees who have fled to Turkey. The deal effectively closed the Eastern Mediterranean Route, causing an immediate drop in refugee numbers arriving

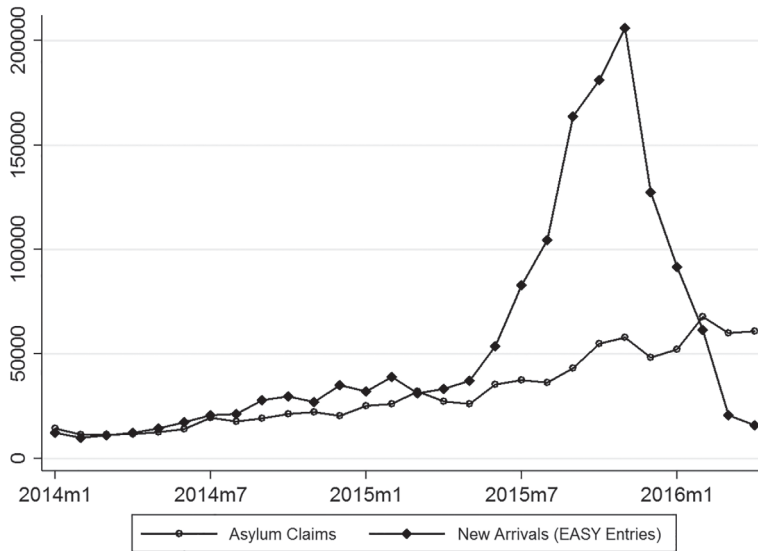


FIGURE 1. Refugee arrivals and asylum claims filed. *Notes:* This graph plots the number of asylum applications that were filed and the number of new arrivals to Germany as they were entered into the federal registration system, EASY, between January 2014 and April 2016. The total for 2015 is 1,091,984 EASY entries; for 2014 it is 238,676. Source: Federal Ministry of the Interior and Federal Office for Migration and Refugees.

in Germany. For example, Figure 1 shows that in April 2016, only 15,941 refugees were registered in Germany.

The aforementioned number of 1,091,894 refugees coming to Germany in 2015 insinuates that at the federal level, exact data on the number of arrivals exist. Unfortunately, this is only partly true. While every refugee who is picked up by the German border police undergoes a quick check, the actual registration takes place in separate reception centres. Between quick check and registration, numerous ways exist to unilaterally exit the asylum procedure. For example, little is known about the number of refugees who continued their journeys to other countries and left with asylum claims pending. To the best of our knowledge, we are the first to collect detailed data on the allocation of registered asylum seekers to German counties, by obtaining administrative data from states and counties. Our data, unfortunately, include no information on asylum seeker characteristics. To this end, the best information to date comes from asylum statistics of the Federal Office for Migration and Refugees (BAMF). However, these BAMF data are based only on asylum claims that have been processed fully. For example, in 2015 when about 1.1 million migrants entered the country, only 476,649 asylum applications were processed, which included a backlog from 2014 (BAMF 2016). Based on this information, about 69.2% of applicants were male, about 31% were younger than 18 years old, and only 6.6% were older than 45. About 35.9% of asylum seekers were from Syria. About 20% were from Albania and Kosovo, and only about 0.1% of applications from citizens of these two countries were approved. In fact, both countries were officially declared ‘safe countries of origin’ in 2015, thus speeding up asylum procedures substantially and reducing the inflow from these countries. For example, Albania accounted for only 2% of processed asylum applications in April 2016.

The German authorities had a top-to-bottom system in place to deal with refugee inflows. Newly arrived refugees were supposed to be received by the federal police at their points of entry, often at train stations close to the Austrian border.² After a quick check by the

federal police, most asylum seekers were placed in short-term facilities for a couple of days, before being transferred to a federal state with free capacities.³ These allocations were to follow a quota, the so called ‘Koenigssteiner Schluessel’. This quota is determined by a state’s tax revenues and population, thus ensuring that the costs related to housing and processing asylum claims are evenly distributed. Each state runs reception centres (so-called ‘Erstaufnahmeeinrichtungen’, EAEs). EAEs tend to have large-scale housing facilities. Only there is more detailed information gathered from the prospective asylum claimants and entered into the EASY system. Applicants are obliged to stay in their assigned reception centre for a period of up to six months during the processing of their application. Violations of these residential obligations lower the chances of being granted asylum. After this period, or—more often—if the BAMF decides that the application cannot be processed in a timely manner, asylum seekers are redistributed within the same state to subordinate counties (‘Landkreise’).⁴ Due to efficiency gains and a lack of available space, county authorities tend to provide communal accommodation rather than allowing asylum seekers to seek individual apartments.

Refugee inflows and identification

An ideal natural experiment would feature an entirely random allocation of asylum seekers to counties, with some counties receiving large inflows and other counties receiving small inflows regardless of their characteristics. The actual quasi-experiment provided by the refugee crisis at the very least resembles this ideal case and creates exogenous variation due to housing shortages and the sheer necessity to relocate asylum seekers from the German border: asylum seekers were usually transported from border regions in Bavaria to other states by trains and buses on a daily basis. Deviations from the actual distribution quotas—both the state quotas and within-state plans—were inevitable and arose mainly from housing capacity shortages and inseparable groups. Due to the overwhelming volume of inflows, state authorities usually simply allocated migrants to counties that had some kind of accommodation facilities to spare, for example because they happened to be home to recently abandoned military barracks, or sports halls that could be transformed into collective accommodation, or recently closed hotels. The availability of suitable housing might not be entirely independently distributed across counties, but as we will show in Section III, the resulting inflows were by and large uncorrelated with economic and social county characteristics. Moreover, allocation decisions were made by state authorities, and within states, counties are subject to very similar crime fighting strategies (policing is primarily the responsibility of the states) and reasonably similar labour market conditions.

Several pull and push factors incentivize asylum seekers to stay in their designated county. First, asylum seekers are provided with goods and social services at their accommodation or nearby reception centres. Second, refugees are legally obliged to reside in their assigned accommodation until a decision has been made on their asylum claim. Violations against this ‘residence obligation’ negatively affect the probability of having one’s asylum claim approved. The average processing time for asylum applications is about half a year and is highly dependent on an asylum seeker’s country of origin and the types of documents that they can provide.⁵ However, an asylum procedure is not usually initiated immediately on arrival. Instead, an initial interview appointment has to be scheduled, which usually involves waiting times of several months. In other words, asylum seekers are tied to a county for substantial time. In the meantime, they are legally prohibited from working, and only once an application is fully approved can they enter the labour market freely. Ultimately, the scramble to somehow place asylum seekers in what was often makeshift housing resulted in large differences in the number of refugees hosted by counties that in other dimensions

followed strikingly similar time trends. It is this source of exogenous variation that we exploit in this study.

II. DATA

For our analysis, we combine several data sources, the most important of which are administrative records by the 16 German states on the allocation of asylum seekers to 401 subordinate counties. These records are usually maintained by the states' internal affairs ministries, or in some instances by a state-run agency that supervises the allocation of asylum seekers to the counties. While the German freedom of information act ('Informationsfreiheitsgesetz') applies only to federal agencies, most states have similar laws in place, and the competent authorities in all 16 states provided records on the assignment of refugees to counties in the years 2014 and 2015. By and large, all states abided to the same reporting standards, making those data comparable across states.⁶

The term 'refugee' is often used to describe a person who had to leave his or her home country due to persecution, discrimination, war or other imminent reasons, and is now seeking shelter in a safe country. In the German legal context, all those who seek shelter in Germany need to apply for asylum and have to be granted the legal status of 'recognized refugee' or 'under subsidiary protection'. Once refugees have entered Germany and have been registered in the system, they become 'asylum seekers' even though they might have to wait until they can file a request for asylum and hope for a positive decision. The data that we collected are on the group of individuals who are registered, are waiting to file an asylum claim, or are waiting for a decision. Asylum seekers may well affect crime rates and voting behaviour of natives, but they are not legally allowed to work until their asylum claim is positively decided. Acceptance rates vary greatly between nationalities. Hence only some of the initial asylum seekers will be able to affect labour market statistics.

While our main analysis is based on the aforementioned administrative data, we complement it with data on registered migrants from the federal registry of foreigners (Ausländerzentralregister, AZR). The AZR carries information on the number of foreigners by country of origin and legal status such that we are able to assess the number of positively decided asylum decisions for selected nationalities. However, the AZR potentially suffers from measurement error and time lags when legal statuses changes. In addition, asylum seekers have to register themselves with authorities in order to be counted in the AZR, or when they move. Because this leads to under-reporting, we treat results based on these data with some caution and regard them primarily as robustness checks.

Aside from coordinating the transfer of asylum seekers to counties and communities, states also run the above mentioned large-scale reception centres (EAEs). We obtained detailed information on the locations and capacities of these EAEs directly from the competent authorities of 8 states. Four other states pointed us to their websites, where the information could be retrieved. For the three city states —Berlin, Hamburg and Bremen— that are equally state and county, there is no clear distinction between state-run EAEs and county/city-run accommodation.

Table 1 shows the number of asylum seekers that were allocated to the counties by the states according to our data in 2014/15. It is notable that these numbers are more or less in line with the shares of asylum seekers that were supposed to be received by states by virtue of the federal quota. For example, Germany's most populous state, North Rhine-Westphalia (NRW), was due to receive 21.21% of asylum seekers entering the country, according to the federal key. In our data, about 24.4% of asylum seekers were allocated to NRW counties. Note that the allocated percentage does not necessarily have to be identical to the federal

TABLE 1
ASYLUM SEEKER ALLOCATIONS TO STATES' SUBORDINATE COUNTIES AND EAE CAPACITIES

	Federal quota	County allocations		EAE capacities
		Total	Percent	
Baden-Wuerttemberg	12.8%	105,680	11.5%	26,400
Bavaria	15.5%	106,763	11.6%	22,377
Berlin	5.1%	67,228	7.3%	n/a
Brandenburg	3.1%	30,930	3.4%	5,092
Bremen	1.0%	12,507	1.4%	n/a
Hamburg	2.5%	28,937	3.1%	n/a
Hesse	7.4%	57,575	6.3%	22,047
Mecklenburg Western Pomerania	2.0%	22,614	2.5%	989
Lower Saxony	9.3%	84,475	9.2%	5,028
North Rhine-Westphalia (NRW)	21.2%	224,589	24.4%	16,245
Rhineland Palatinate	4.8%	34,999	3.8%	10,622
Saarland	1.2%	12,192	1.3%	1,300
Saxony	5.1%	41,423	4.5%	16,845
Saxony-Anhalt	2.8%	27,736	3.0%	6,259
Schleswig-Holstein	3.4%	36,500	4.0%	15,667
Thuringia	2.7%	24,657	2.7%	6,951
Total	100.0%	918,805	100.0%	148,414

Notes

Table relates the federal quota ('Koenigssteiner Schlüssel') of migrants who are supposed to be allocated to the states to the number of asylum seekers forwarded by states to their subordinate counties, and the capacities that exist to house asylum seekers in state-run reception centres (EAEs). Berlin, Bremen and Hamburg are city states and have no subordinate counties, hence no distinction between asylum seekers that are housed by counties and those in state-run facilities is possible. In the data, the EAE capacities are coded as zero for all three city states.

quota since some of the federally allocated asylum seekers might be housed in state-run EAEs rather than allocated to the counties. This is especially true for Bavaria, through which most refugees who took the Balkan route entered the country; similarly, Baden-Wuerttemberg and Hesse have large (state-administered) EAE capacities and correspondingly somewhat lower county allocations.

As mentioned in Section I, federal data on the number of registered asylum seekers are scarce and often incomplete.⁷ In light of this, our data are arguably the best estimates of county allocations of asylum seekers to date, and probably draw a more accurate picture of asylum seeker allocations than the federal database could. Despite issues with federal data in general and the EASY system in particular, it is comforting that the data provided by the states are roughly consistent with the federal allocation key.

Based on the administrative records provided by the states, we calculate the number of allocated asylum seekers per 100,000 inhabitants for each county. Figure 2(a) illustrates that there is quite a bit of variation across counties, even within states. In addition, stars indicate the presence of an EAE in a county. In some instances, counties in which a particularly large state-run EAE has been set up were allocated fewer migrants to accommodate. Other than that, there is no obvious discernible pattern in the allocation of asylum seekers within states, although some states certainly achieve a more even allocation across counties than others. Yet a fair amount of variation remains (the average asylum seeker allocation is 1,103 per 100,000 inhabitants, with standard deviation 494). Such variation is vital for our study, which exploits county differences in asylum seeker allocations to isolate the effect of additional asylum seeker inflows on labour market, crime and election outcomes.

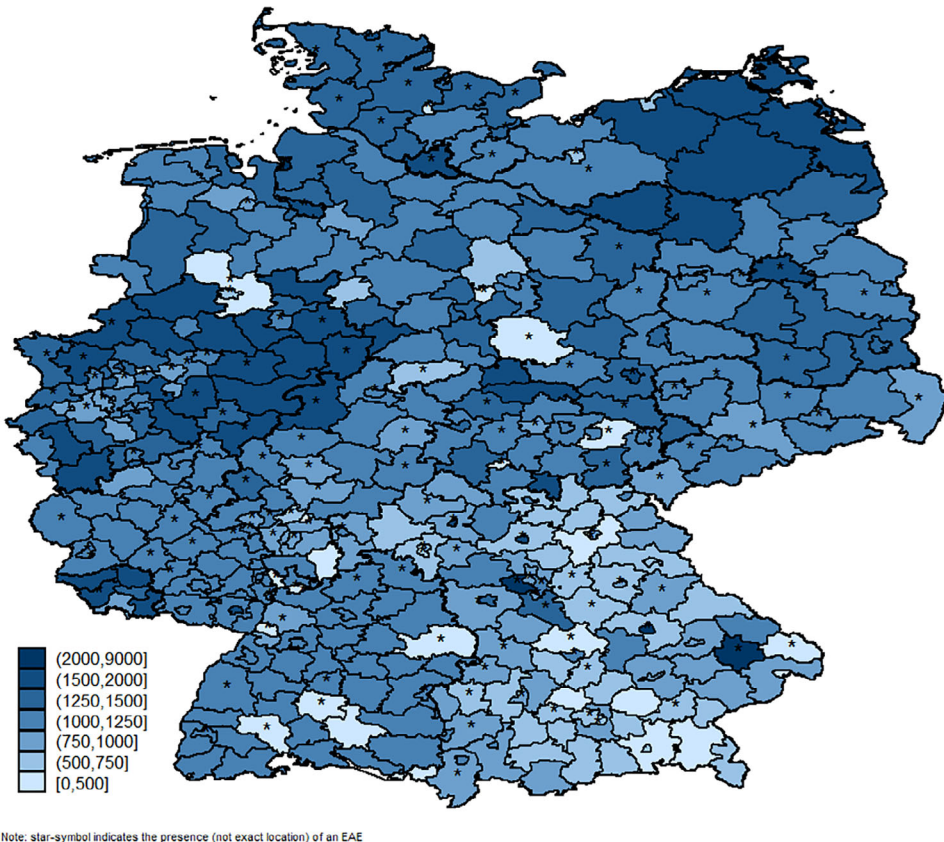


FIGURE 2(a). Influx of asylum seekers. *Notes:* Map shows all 401 German counties (402 prior to November 2016) and the influx of asylum seekers into these counties, per 100,000 inhabitants. A star indicates the presence (not exact location) of a reception centre (EAE). Source: State Ministries of the Interior or similar concerned state-level authorities.

Unemployment data are provided by the Federal Labour Office on a quarterly basis from Q1/2005 to Q4/2017. Figure 3 plots the unemployment rates separately for the general population and for non-German workers. A few things stand out. First, unemployment rates for non-Germans are substantially higher than for the ‘native’ population. The non-German unemployment rate also warrants a closer look as newly arrived job seekers might be better substitutes for existing foreign workers, thus exacerbating an existing lack of integration into the labour market for this particular group. Indeed, there is a notable increase in non-German unemployment in the first quarter of 2016. However, at first glance, this increase seems only slightly more pronounced in counties with high asylum seeker inflows than in those with low inflows. Second, no such up-tick is obvious for overall unemployment. This is a first indication that overall unemployment has not been much affected by asylum seeker inflows. Figure 2(b) supports this notion by plotting changes in unemployment rates between the first quarter of 2013 and the first quarter of 2016 for all counties. A comparison with Figure 2(a) indicates that changes in unemployment are for the most part uncorrelated with migrant inflows. The Federal Labour Office also provided county-level aggregates on median wages and employment numbers that are used for robustness checks.

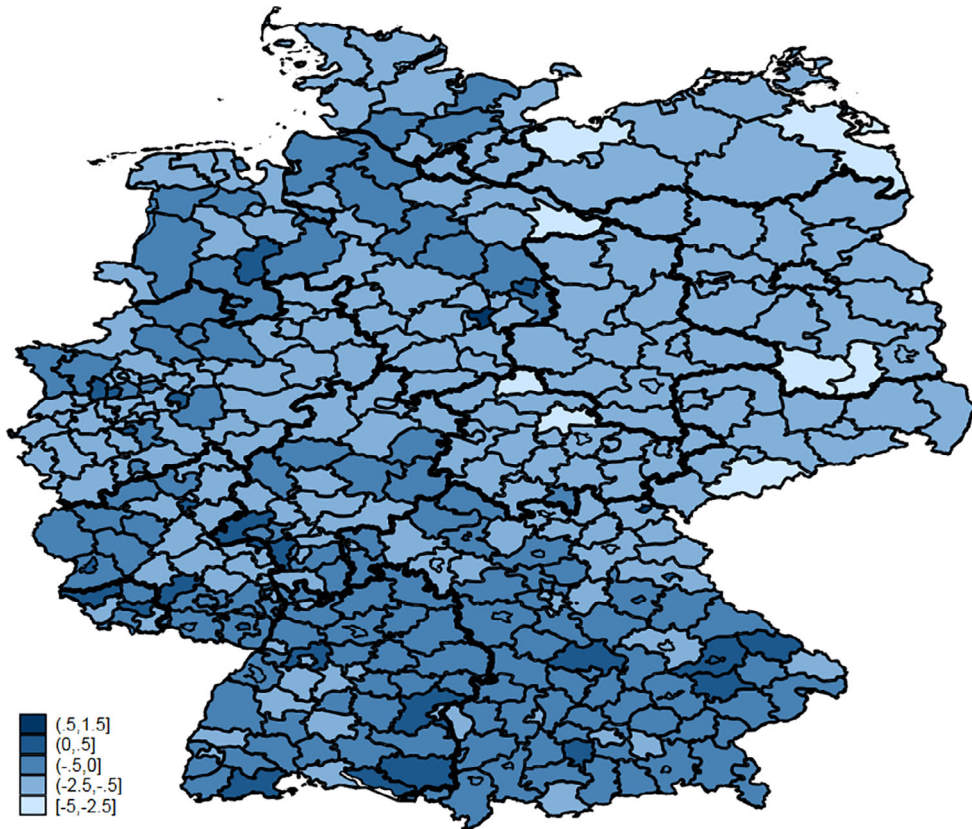


FIGURE 2(b). Change in unemployment rate. *Notes:* Map shows all 401 German counties (402 prior to November 2016) and changes in the unemployment rate between 2013 and 2016/17. Source: State Ministries of the Interior or similar concerned state-level authorities.

We also obtained data on criminal activity and criminal suspects. These data are released by the Federal Criminal Police Office on an annual basis. Figure 4(a) plots trends in reported crimes separately for high- and low-migration counties. It should be noted that not all cases are solved, and that minor infractions and petty crimes are not recorded. The graph reveals a large increase in the number of criminal offences per 100,000 inhabitants in 2014 and 2015, when the refugee crisis was in full swing. At first glance, this might suggest that the refugee crisis was accompanied by a ‘crime epidemic’. However, much of this increase can be explained by an increase in violations related to asylum and right-of-residence laws. By definition, any refugee who enters Germany on the land route will be in violation of the Dublin Regulation, although in practice few of these violations were actually recorded. What is more, asylum seekers whose applications were rejected and who remain in the country illegally will inflate these numbers. Once we adjust the time series by discarding these types of offences, the up-tick in crime disappears; in fact, the crime rate seems to have not budged at all.⁸

The refugee crisis has also had profound impacts on the political landscape in Germany. Therefore we collected data on election outcomes for the federal vote in 2013 and 2017, and vote polls, with a particular focus on anti-immigrant parties. Interestingly, a new such party formed in 2013, the ‘Alternative fuer Deutschland’ (AfD). At the time, its main platform

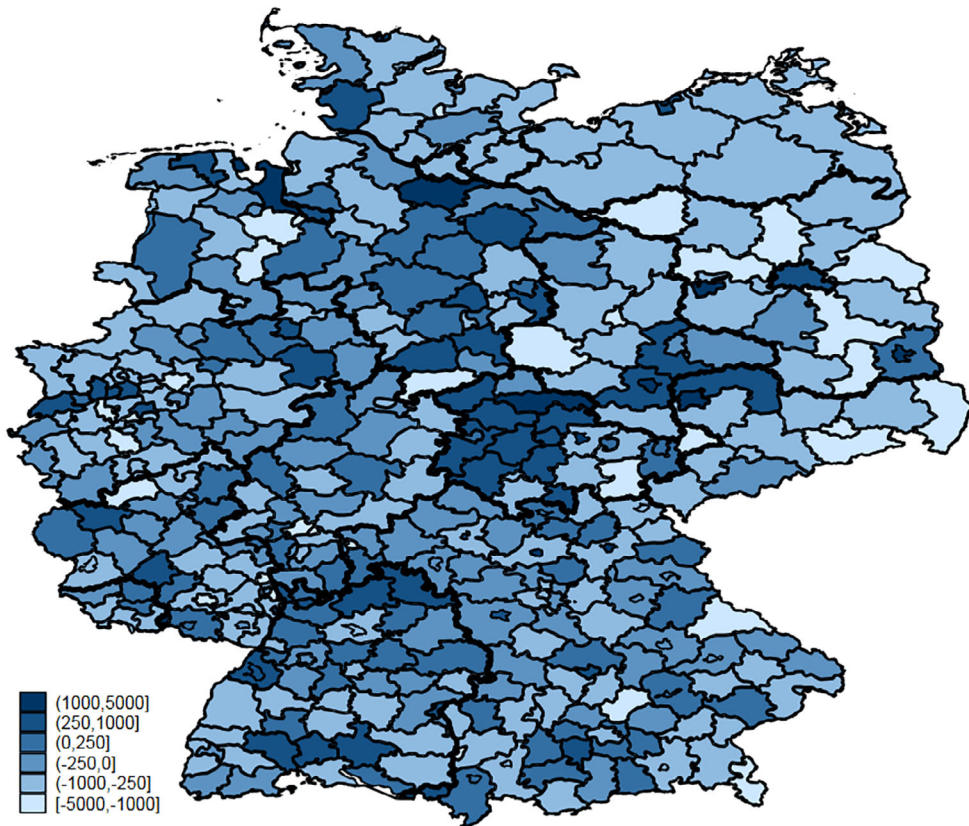


FIGURE 2(c). Change in number of crimes. *Notes:* Map shows all 401 German counties (402 prior to November 2016) and changes in the number of crimes between 2013 and 2016/17, per 100,000 inhabitants. Source: State Ministries of the Interior or similar concerned state-level authorities.

was opposition to the euro and the eurozone bailouts. Figure 5 shows bi-weekly AfD Party polls. The first dashed vertical line indicates the 2013 federal election in which the AfD Party received 4.7% of votes, thus failing to clear the constitutional 5% threshold to receive any seats in the federal parliament. Over time, the AfD Party's focus turned from euro-scepticism towards immigration. The second dashed vertical line is placed at 5 September 2015. On this day, the German chancellery allowed the entry, by train, of hundreds of refugees who had been detained and were stuck in Hungary. This event is widely seen as the beginning of the refugee crisis, with migrant inflows intensifying in the following weeks and months. It also seems to have been associated with an increase in approval for the AfD Party, which ever since has consolidated its position. In the 2017 election, it captured about 13% of seats in the federal parliament. We evaluate whether the electoral success of the AfD Party has increased differentially in counties that experienced large asylum seeker inflows relative to the party's performance in the 2013 federal election. As the AfD Party's anti-immigration stance was not nearly as pronounced in 2013, we also run separate specifications in which we group election outcomes for right-wing parties in general while excluding AfD Party vote shares in 2013 from the pool.⁹ Moreover, we were able to obtain municipality-level data on assigned asylum seekers and electoral outcomes for Germany's most popular state, North Rhine-Westphalia. We use these data to analyse exposure to asylum seekers in a more narrow grid.

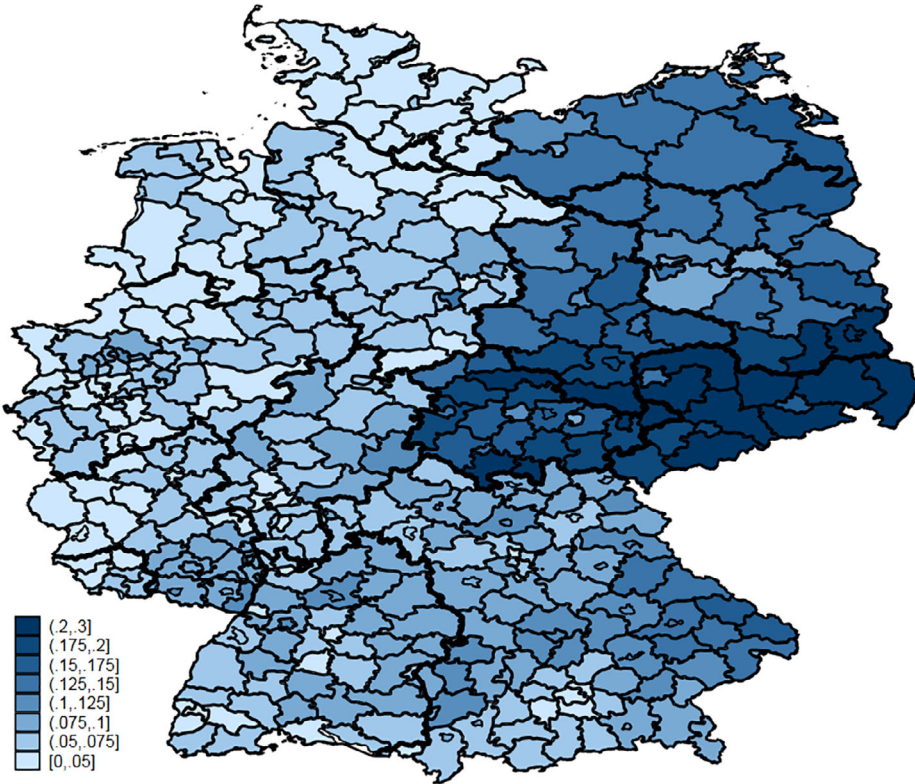


FIGURE 2(d). Change in AfD vote share. *Notes:* Map shows all 401 German counties (402 prior to November 2016) and changes in the AfD vote share between 2013 and 2016/17. Source: State Ministries of the Interior or similar concerned state-level authorities.

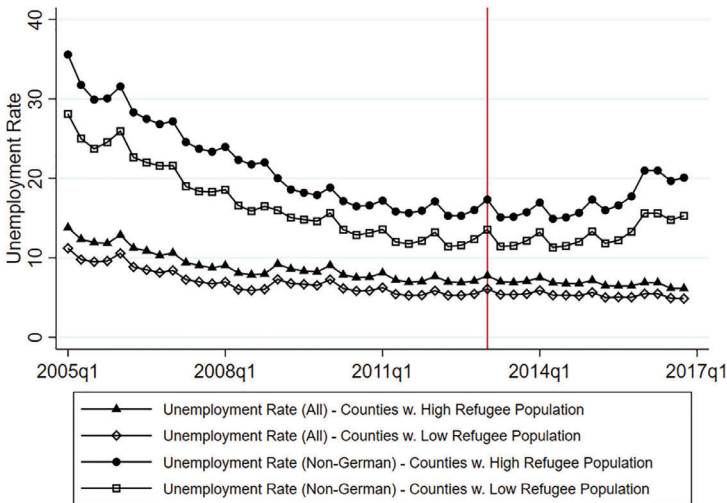


FIGURE 3. Unemployment rates over time. *Notes:* This figure shows quarterly unemployment rates (Q1/2005 to Q4/2016) separately by low- and high-migration counties. High-migration counties were allocated more than 1,260 asylum seekers (per 100,000) or host a reception centre (EAE) with at least 200 beds. The bottom two lines show the general unemployment rate; the top two lines show unemployment among the non-German population. Source: Federal Employment Agency.

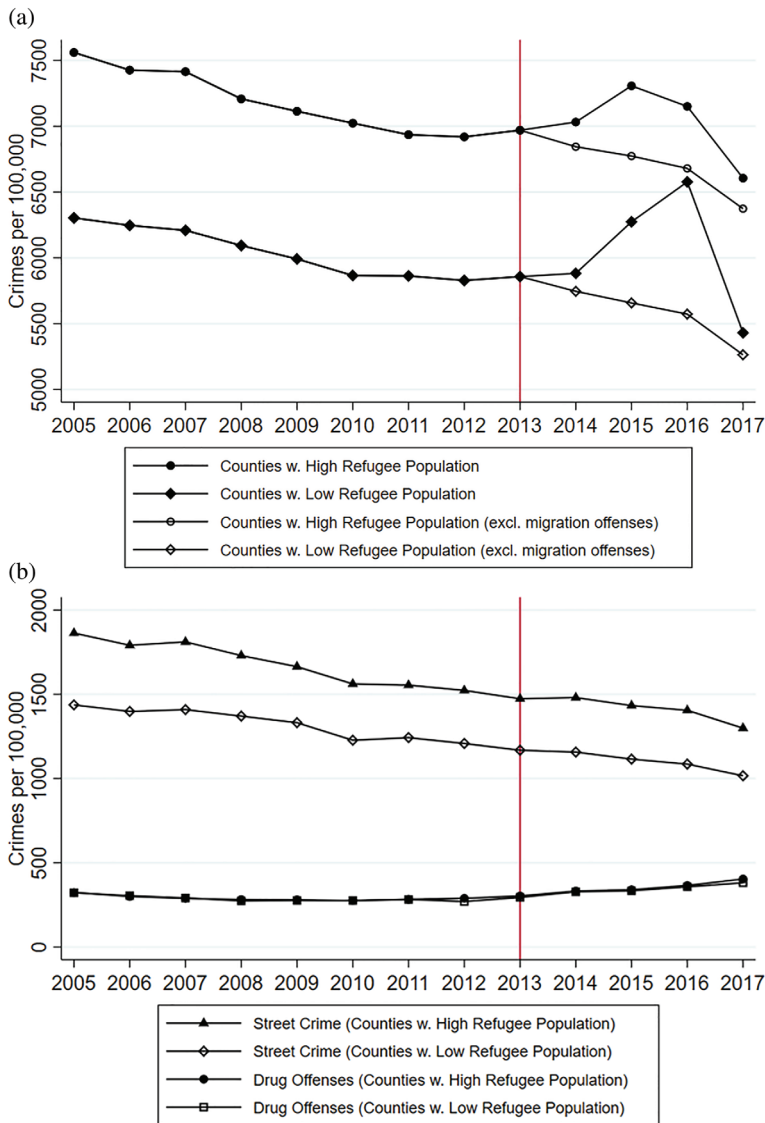


FIGURE 4. Crime rates over time. *Notes:* This figure shows annual crime rates (2005–17) separately by low- and high-migration counties. High-migration counties were allocated more than 1260 asylum seekers (per 100,000) or host a reception centre (EAE) with at least 200 beds. In (b), the top two lines illustrate the number of street crimes (per 100,000); the bottom two lines show the number of drug-related crimes (per 100,000). Source: Federal Criminal Police Office (BKA).

Finally, the Federal and States Statistical Offices’ regional statistics database provides us with a variety of county characteristics. Each county’s per capita GDP (in €), age structure, the share of the population that is male/female and German/non-German, respectively, and the share of the population receiving housing benefits, were sampled. We will use these characteristics to explore to what extent the allocation of asylum seekers to counties constitutes an exogenous shock. Table 2 indicates that high- and low-migration counties differ only marginally along observable dimensions. For example, the youth coefficient—the

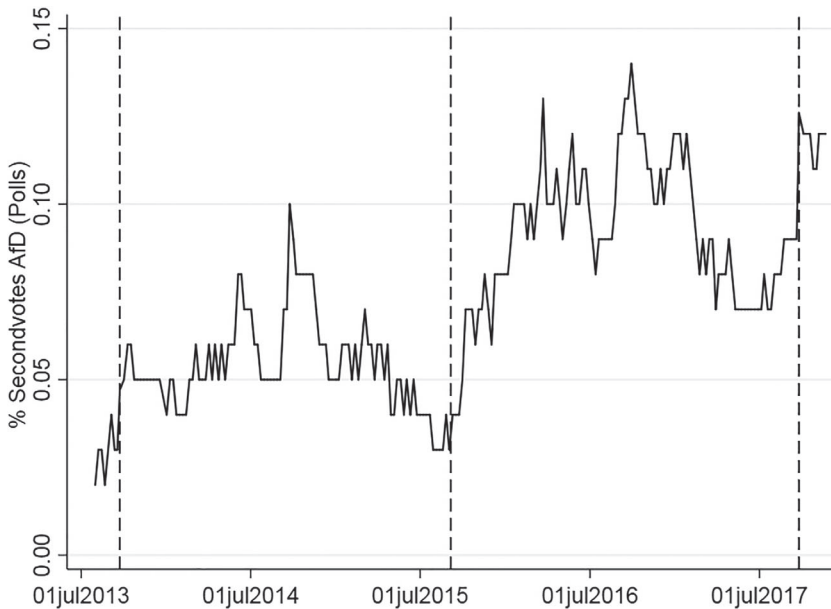


FIGURE 5. National AfD Party polls. *Notes:* These are national polls and election results for the AfD Party over time. The left-hand vertical line is placed at the date of the 2013 federal election (22 September 2013), and the value at this point reflects the actual percentage of votes cast for the AfD Party. The right-hand vertical line is placed at the date of the 2017 federal election (24 September 2017). All other measures of AfD popularity are based on polls conducted by the polling institute Forsa, and are based on surveys of about 1000 participants. The middle vertical line is placed at 5 September 2015, which is widely seen as the beginning of the refugee crisis. Source: Forsa.

ratio of people under 20 years old relative to the number of people between 20 and 64 — is very similar across high- and low-migration counties. There is a small difference in per capita GDP, which is slightly higher in counties that experienced large migrant inflows. This should not be surprising since the federal allocation quota arranges for larger contingents to be allocated to economically stronger states. We will see in Section III that once state specific characteristics are accounted for, these differences by and large disappear.

III. METHODOLOGY

All five data sources—administrative state records on asylum seeker allocations and EAE capacities, unemployment rates as provided by the Federal Labour Office, the Federal Criminal Police Office’s crime data, official federal election outcomes, and county covariates—are subsequently matched with one another at the county level. For each outcome, we have at least one observation per county prior to the refugee crisis in 2013, one observation pertaining to 2016, and one observation for 2017 (except for election results, as the federal election took place only in 2017, so we have no observation for 2016). As the number of asylum seekers assigned to a certain county depends potentially on the share of asylum seekers already present, we include data for the 2014 asylum seeker distribution. That is, we pool the 2014 and 2015 figures, in order to create a comprehensive measure of asylum seeker inflows.¹⁰ We then estimate a first-differences model of the form

$$(1) \quad \Delta y_{ct} = \alpha + \beta_1 ref_c + \beta_2 EAE_c + \theta \Delta X_{ct} + \eta_{ct},$$

TABLE 2
SUMMARY STATISTICS: TABLE OF MEANS

	2013 (Pre-treatment)			2016/17 (Post-treatment)		
	All (1)	High migration (2)	Low migration (3)	All (4)	High migration (5)	Low migration (6)
<i>Inflow measures</i>						
Refugees per 100,000	0	0	0	1103	1226	980.2
EAE capacity per 100,000	0	0	0	220.1	433.4	6.802
Registered (total) per 100,000	0.001	0.001	0.001	395.0	442.4	347.5
<i>Outcomes</i>						
Unemployment rate (total)	6.261	7.058	5.464	5.506	6.145	4.868
Youth unemployment rate	5.198	5.887	4.509	5.035	5.663	4.407
Unemployment rate non-German	13.95	15.75	12.15	17.69	20.09	15.29
Unemployment German	4.858	5.556	4.161	2.245	2.622	1.869
All employed	36,663	37,425	35,900	37,493	38,271	36,715
Employed non-German	2671	2435	2906	3023	2773	3274
Employed refugees	63.77	69.06	58.49	401.5	384.4	418.6
Marginally employed refugees	24.88	28.48	21.28	77.97	89.03	66.96
Crimes per 100,000	6417	6977	5857	6863	7154	6573
Crimes per 100,000 (excluding migration offences)	6417	6977	5857	6127	6682	5573
German suspects per 100,000	2127	2226	2029	1886	1973	1798
Non-German suspects per 100,000	624.8	641.2	608.4	727.1	750.6	703.6
Percentage AfD Party	4.704	4.702	4.705	13.38	13.53	13.23
Percentage anti-immigrant	6.469	6.501	6.437	13.97	14.15	13.79
<i>County characteristics</i>						
GDP per capita	32,783	33,066	32,500	34,661	34,880	34,442
Youth coefficient	30.11	29.57	30.64	30.30	29.88	30.73
Share male	0.490	0.490	0.491	0.494	0.493	0.494
Share non-German	0.0710	0.0673	0.0747	0.0891	0.0863	0.0919
Population	200,308	233,860	166,755	201,984	235,838	168,129
Share housing benefit recipients	0.00743	0.00845	0.00640	0.00518	0.00591	0.00445
Observations	402	201	201	402	201	201

Notes

Column (1) shows the means in outcomes as of 2013, prior to the refugee crisis. Columns (2) and (3) display the means for the same outcomes for counties that were to experience a large inflow of migrants, and counties that were to experience a small inflow of migrations. High-migration counties are counties with asylum seeker inflows of at least 1260 people per 100,000 in population or that opened a reception centre with at least 200 beds. Low-migration counties are counties that meet neither condition. Columns (4)–(6) display outcomes of interest in the post-treatment period: that is, the fourth quarter of 2016 for employment outcomes, the 2016 annual aggregate for crime outcomes, and the 2017 federal election outcomes. Information on county characteristics is as of 31 December 2012 and 2015, respectively.

where y_{ct} is a measure of our three outcomes of interest—unemployment rates, crime rates and election outcomes—in county c at time t . Our coefficients of interest are β_1 and β_2 . Coefficient β_1 yields the effect of the number of asylum seekers who were allocated to a county between 1 January 2014 and 31 December 2015, ref_c ; in other words, this is the effect of asylum seekers who are housed permanently in either county/city-run or privately owned accommodations, which are usually smaller scale, geared towards small groups, families or

sometimes even individual accommodation. Coefficient β_2 , on the other hand, yields the effect of state-run EAE capacities in county c . While run by the individual federal states, EAEs are likely to affect outcomes in the counties in which they were set up by the respective state. EAEs also tend to be large installations that often house several hundred asylum seekers, usually in group quarters and on a temporary basis. During the refugee crisis, EAEs tended to run at full capacity. The two treatment coefficients thus measure the effect of two distinct types of asylum seeker presence on changes in unemployment, crime and votes cast for anti-immigrant parties. For instance, EAEs tend to concentrate asylum seekers in a single location, which, among other things, makes asylum seeker presence more salient.

Our empirical setup is best described as a ‘fuzzy difference-in-differences’ design (De Chaisemartin and d’Haultfoeuille 2018) and differs from a classic difference-in-differences setup in two ways. First, all units of observations receive the treatment (i.e. inflows of migrants), but the intensity of this treatment differs across counties. Second, we observe outcomes at only two points in time: once in the pre-treatment period, and once in the post-treatment period. That is, unemployment rates are evaluated in the fourth quarter of 2013 and the fourth quarter of 2016, and we then proceed to comparing the fourth quarter of 2013 with the fourth quarter of 2017; we evaluate changes in annual crime rates between 2013 and 2016 as well as between 2013 and 2017; we analyse changes in the AfD Party vote shares between the federal elections in September 2013 and September 2017. Note that with just two observations per county, equation (1) is equivalent to a standard difference-in-differences setup of the following form:

$$(2) \quad y_{ct} = \delta_c + \gamma D_{2016} + \beta_1 D_{2016} \times ref_c + \beta_2 D_{2016} \times EAE_c + \theta X_{ct} + \eta_{ct},$$

where δ_c denotes a full set of county dummies, and D_{2016} is an indicator for the post-treatment period.

Our identification strategy requires that counties that differ in their asylum seeker allocations are following similar time trends in the residuals (‘common time trend assumption’). In order to investigate whether this identifying assumption is met, we split our sample into high and low refugee population counties. High refugee population counties are defined as counties that host an EAE with a capacity of at least 200 beds or have been allocated more than 1260 asylum seeker per 100,000 inhabitants to its county/city-run accommodations (which puts them roughly into the 25th percentile in terms of this measure). This achieves a 50 : 50 split into high and low refugee population counties.

Figure 3 shows that unemployment *levels* tend to be slightly higher in counties that receive a large migrant influx. But more importantly, there is no difference in unemployment *trends* in the pre-treatment period. Both low and high refugee population counties experience the same seasonality patterns and have experienced the same decline in unemployment throughout the 2000s and 2010s.

The number of committed crimes also follows very similar pre-crisis time trends in low and high refugee population counties. This also holds true when we look at different categories of crime. For example, the number of street crimes declined to the same extent during the pre-treatment period in counties that were to experience large and small migrant inflows in 2014/15 (see Figure 4(b)). Likewise, the number of drug-related offences appears to have remained flat in both types of counties.

One major challenge to the validity of our estimates of the relationship between asylum seeker inflows on the one hand, and unemployment, crime and voting behaviour changes on the other hand, is that high- and low-migration counties might differ along dimensions that predict differential asylum seeker allocations. For example, if asylum seekers were primarily

TABLE 3
POTENTIAL DETERMINANTS OF ASYLUM SEEKER INFLOWS

	Mean	Regression						
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	32.782 (14.176)	0.0045 (0.0053)						0.0108 (0.0070)
Youth coefficient	30.12 (3.663)		-0.0349 (9.0416)					15.6450 (13.6358)
Share male	49.04 (0.668)			-0.3462 (0.4929)				-0.5644 (0.4688)
Share German	92.9 (4.615)				0.1564** (0.0766)			0.3886*** (0.0960)
Share housing benefits	7.43 (3.551)					0.0832 (0.1148)		0.0134 (0.0953)
Share of empty housing ^a	4.079 (2.170)						0.0944 (0.1014)	0.0852 (0.1640)
Observations		402	402	402	402	402	402	402
R-squared		0.1371	0.1227	0.1248	0.1349	0.1241	0.1235	0.1920
State fixed effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes

^a Housing vacancies are the number of empty living spaces per 1000 inhabitants as of the 2011 Census.

Each numbered column is a separate county-level regression of the number of asylum seekers (per 100,000) allocated to a county on county characteristics (as of the end of 2013). All estimates are adjusted for state fixed effects; each county receives the same weight. GDP per capita is measured in €1000; the youth coefficient is the total number of people younger than 20 years old divided by the number of people who are between 20 and 64; the shares male and German are the percentages of the county population that are male and German citizens, respectively; the share of housing benefit recipients is per 1000. Heteroscedasticity robust standard errors are shown in parentheses.

***, **, * indicate significance at the 1%, 5%, 10% level, respectively.

allocated to counties in economic decline, then our model would pick up spurious, positive correlation between unemployment and asylum seeker inflows. In an ideal empirical setup, on the other hand, asylum seekers would be assigned to counties randomly, thus creating differential exogenous shocks.

The institutional setup in Germany provided for neither a negatively selective nor random assignment of asylum seekers to counties. After all, allocation quotas require economically stronger states to absorb larger inflows. But within states, there is substantial heterogeneity across counties. Table 3 shows that after controlling for state fixed effects, only one of our observable county characteristics is an individually significant predictor of the number of asylum seekers allocated to a county. Interestingly, the number of empty housing units (per thousand) — a country characteristic that was pulled from the 2011 Census—is *not* a statistically or economically significant predictor of asylum seeker inflows. Overall, within-state asylum seeker inflows into a county are mostly uncorrelated with observable county characteristics.

It should be stressed that our empirical setup does not even require asylum seeker allocations to be random. Equation (1) will yield an unbiased estimate of the differential effect of migrant inflows as long as the residuals in low and high refugee population counties are subject to the same time trends. Figures 3 and 4 support this common time trend assumption. Still, the fact that few of our observable characteristics are significant predictors of asylum seeker inflows experienced by the counties lends additional support to this identifying assumption.

While housing vacancies are no significant predictors of asylum seeker allocations, anecdotal evidence suggests that the presence of a single large property that allows for the accommodation of many asylum seekers in one facility — e.g. former army ('Bundeswehr') barracks — might be a strong predictor of asylum seeker inflows. Unfortunately, there seems to exist no conclusive list of abandoned barracks, so we cannot entirely dismiss the notion that the presence of such a property leads to non-random allocations of asylum seekers across counties.¹¹ Even if having hosted a military base in, say, the 1980s was associated with larger asylum seeker inflows today, this would threaten the validity of our estimates only if barracks had been closed selectively and closures had differential effects on our outcomes of interest. This seems unlikely, as with the end of the cold war, barracks all over the country became obsolete and were closed indiscriminately.

IV. RESULTS

Refugees and the labour market

From a theoretical point of view, potential effects of refugee migration on the German labour market are *ex ante* not clear. Therefore we briefly discuss potential effects and their directions in order to compare them with our empirical findings at a later stage. In the most restrictive case, a closed economy with no international capital flows, a production function using capital and labour, and only one type of labour, migration reduces the capital to labour ratio. Hence refugee migration would mechanically lower wages in the short run. If we introduce different types of labour to such a model, then the effect depends on the degree of substitutability between native and migrant workers, and their respective skills. If newcomers and existing workers complement each other, then we would expect a rise in wages. If, however, they are substitutes, then wages will decrease.

In an economy with perfectly inelastic labour supply, refugee migration will not affect native employment. However, if we assume elastic supply and demand, then native employment moves in the same direction as wages. Finally, relaxing the assumption of a closed economy to an open one, with compensating international flows of factors of production and goods, leads to wage effects that can exist only in disequilibrium. However, complete international factor price equalization (FPE) requires strong assumptions that are hardly met in reality. Therefore the assumption of FPE within a country is a more likely scenario. Full domestic FPE will lead to an overall wage effect of migration, but no relative effect between regions. The impact of immigration would not be observable, as native workers will move. For the case of the German labour market, perfect FPE is an unlikely scenario, as fairly generous unemployment benefits, among other things, might be a disincentive to movement, at least in the short run.¹²

Our regression analysis estimates the *differential* effect of refugee migrant inflows, that is, whether counties with high migration inflows experience larger changes in labour market outcomes, crime and voter turnout. Our descriptive statistics in Table 2 suggest that this is hardly the case, at least for labour market outcomes. In both low and high refugee population counties, unemployment actually decreased slightly.

The results in Table 4 confirm this. The effect of additional asylum seekers on overall unemployment is statistically insignificant and small in 2016 as well as 2017.¹³ As asylum seekers are allowed to work only after a positive asylum decision, the effect of increased refugee migration on labour market statistics is potentially skewed by heterogeneous acceptance rates and relocation activities. Hence, as a sensitivity analysis, we also use data from the AZR, which allow us to analyse the effect of migrants inflows by their legal status. We find that our main results hold up.¹⁴

TABLE 4
REGRESSION RESULTS: INFLOWS OF ASYLUM SEEKERS AND CHANGE IN UNEMPLOYMENT

	Overall		Youth		German		Non-German	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel A: 2016</i>								
Mean unemployment rate	6.26		5.19		4.85		13.95	
(SD)	(2.94)		(2.74)		(2.90)		(5.80)	
Refugees	-0.00009	-0.00002	0.00003	0.00001	-0.00028	-0.00016	0.00125***	0.00132***
	(0.00015)	(0.00008)	(0.00012)	(0.00012)	(0.00021)	(0.00012)	(0.00027)	(0.00027)
EAE capacity	-0.00011	-0.00005	-0.00004	-0.00013	-0.00005	0.00008	-0.00085**	-0.00066*
	(0.00009)	(0.00008)	(0.00014)	(0.00015)	(0.00012)	(0.00009)	(0.00040)	(0.00039)
Observations	401	401	401	401	401	401	401	401
R-squared	0.00892	0.52475	0.00048	0.05000	0.02415	0.60103	0.05587	0.07615
Covariates	No	Yes	No	Yes	No	Yes	No	Yes
<i>Panel B: 2017</i>								
Refugees	-0.00018	-0.00004	-0.00009	-0.00013	-0.00041	-0.00020	0.00067***	0.00087***
	(0.00020)	(0.00011)	(0.00014)	(0.00012)	(0.00025)	(0.00013)	(0.00020)	(0.00021)
EAE capacity	-0.00015	-0.00005	0.00003	-0.00007	-0.00015	0.00002	-0.00077*	-0.00054
	(0.00012)	(0.00008)	(0.00015)	(0.00015)	(0.00014)	(0.00010)	(0.00041)	(0.00038)
Observations	401	401	401	401	401	401	401	401
R-squared	0.01633	0.59431	0.00187	0.05856	0.03475	0.66160	0.03352	0.09274
Covariates	No	Yes	No	Yes	No	Yes	No	Yes

Notes

Each column reports coefficients and standard errors from a county-level OLS regression as shown in equation (1). The outcome variables are the unemployment rate for all workers (columns (1) and (2)), workers aged 15–25 (columns (3) and (4)), and workers who are (not) German citizens (columns (5)–(8)). The two main explanatory variables are the number of asylum seekers allocated to a county during the 2014/15 refugee crisis, and the number of reception centre (EAE) beds in the county (both per 100,000). Covariates are all county-specific and include per capita GDP (in €), the youth coefficient, and the shares of the population that are male, foreign and receiving housing benefits, respectively. Heteroscedasticity robust standard errors are shown in parentheses.

***, **, * indicate significance at the 1%, 5%, 10% level, respectively.

For the unemployment rate of youths aged 15–25 (see columns (3) and (4) of Table 4), a differential effect of increased asylum seeker allocation is also not apparent. The vast majority of working-age migrants are between 16 and 25 years old, and they will often look for apprenticeships or entry-level positions, which may put them into competition with young native workers (BAMF 2016). Even so, our estimates suggest that there is little in the way of a displacement effect or increased unemployment in this labour market segment.

Another group of potential substitutes are non-German workers and pre-crisis immigrants, many of whom may possess similar skill sets. And indeed, larger inflows of asylum seekers are associated with increases in the unemployment rate for workers who are not German citizens. Column (8) of Table 4 suggests that a one standard deviation increase in migrant inflows is associated with a 0.7 percentage point increase in the unemployment rate for non-Germans. Given the 2013 average unemployment rate, which was 13.95% for this group, this estimate translates into about a 4.7% increase. The effect prevails in 2017 with a somewhat smaller magnitude.

There are two plausible explanations for this striking increase in non-German unemployment. First, asylum seekers may have displaced some non-German workers and pushed them into unemployment. This may very well have happened through the shadow economy as asylum seekers can only legally enter the workforce once their asylum claim has been approved.¹⁵ A second explanation is that recently arrived refugees themselves start to show up in the unemployment statistics. Such a mechanical effect would indicate the struggle of the German labour market to absorb immediately this influx of additional job seekers. There is some evidence supporting this causal chain. At the county level, no information on the unemployment rate by country of origin is available; yet such information is compiled at the

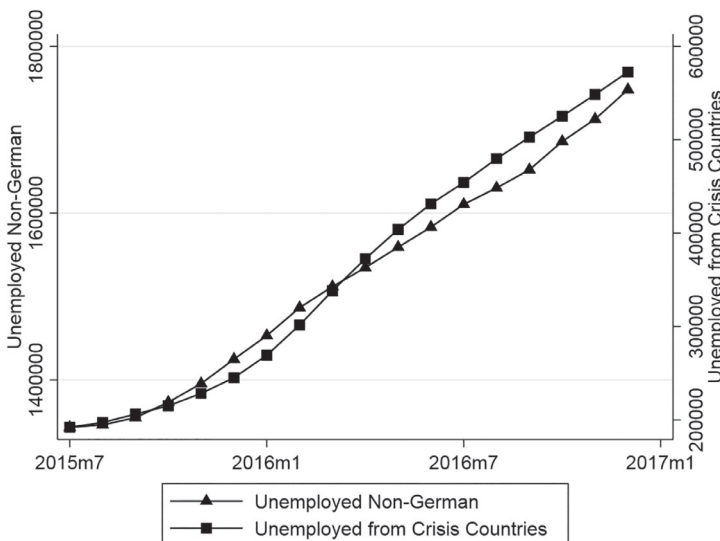


FIGURE 6. Number of non-German unemployed and unemployed from crisis countries. *Notes:* This graph plots the number of non-German citizens who have registered for unemployment benefits with the Federal Employment Agency (left-hand-side y-axis). It also plots the number of citizens from the eight most common counties of origin for refugees (Syria, Iraq, Afghanistan, Iran, Pakistan, Nigeria, Eritrea and Somalia) on the right-hand-side y-axis. Note that the data underlying this graph are based on a different definition of unemployment than the data in the previous graphs and tables. The data here include workers who are taking part in active labour market policy programmes, such as re-qualification and other government programmes. Source: Federal Employment Agency.

federal level. Figure 6 plots these data. On the left-hand y-axis, we measure the overall number of non-German job seekers. Between the third quarter of 2015 — which is also the time when substantial numbers of refugees should have started to receive work permits — and the end 2016, about 400,000 additional non-German job seekers registered with the Federal Employment Agency. During the same time period, the number of job seekers from the eight main crisis countries (Syria, Iraq, Afghanistan, Iran, Pakistan, Nigeria, Eritrea and Somalia) increased by roughly the same number, indicating that the absolute increase in non-German unemployment is driven mostly by recent refugees seeking work. Note that the data underlying Figure 6 use a different definition of unemployment and include workers who are part of government-sponsored programmes, for example to enhance their skills. The county-level data underlying Table 4, on the other hand, would not count as unemployed job seekers who are taking part in active labour market policy programmes.

The simultaneous increase in non-German unemployment and unemployment of citizens from the main crisis countries is striking. It indicates that our regression estimate does not reflect displacement effects. Instead, our result might best be interpreted as evidence for initial difficulties of migrant workers quickly integrating into the German labour market. These difficulties appear to be quite substantial, yet not unexpected. For example, in all of 2015 only 137,136 people were granted asylum and thus received a work permit (the 2014 total was 31,025). In early 2016, processing speed picked up, and 92,577 asylum claims were approved in the first three months of 2016 alone. The magnitude of the increase in unemployment indicates that many of those who obtained a work permit by way of an approved asylum claim struggled to find employment immediately. This problem appears to be particularly grave considering that not everybody who was granted asylum intends to become part of the labour force. For example, the BAMF estimates that about two-thirds of Syrian women are neither in employment nor looking for work (Worbs and Bund 2016). Similarly, many minors who were granted asylum are more likely to attend school than show up in the unemployment statistics. Hence the labour marked increase in non-native unemployment, which parallels the increase in the number of immigrants who were granted asylum (and thus became eligible to work), indicates substantial difficulties of the German labour market to absorb this labour supply shock, at least in the short run. Not surprisingly, these difficulties tend to be more pronounced in counties that received larger refugee inflows.

We can also benchmark our result against a scenario in which none of the recognized asylum seekers find employment. Aggregate figures from BAMF suggest that in such an extreme scenario, the 548,679 positive asylum decisions in 2015 and 2016 would have increased the pool of the unemployed such that the average unemployment rate for non-Germans would have increased from 13.95% in 2013 to 18.22% in 2016.¹⁶ The absolute unemployment numbers, in fact, suggest an increase to just 17.69%. This suggests that many recognized refugees were still looking for work by the end of 2016. Considering that previous evidence on labour market integration of migrants and refugees shows that it can take up to 14 years for refugees to catch up with working migrants' labour force participation (Brücker *et al.* 2015), this is not too surprising.

As a plausibility check, we also collected and analysed county-level employment figures from the Federal Labour Office in order to shed additional light on labour market effects. Employment data have the advantage that they allow for subgroup analyses—in particular, the separate evaluation of non-German employment figures by recent refugees and previous immigrants. Table 5 shows the results where the number of full-time employees (per 100,000) is the dependent variable. The results are broadly consistent with our main analysis of 2016: overall and native employment are unaffected by refugee inflows. We see a small but statistically significant increase in non-German employment, but this increase is not

TABLE 5
REGRESSION RESULTS: INFLOWS OF ASYLUM SEEKERS AND CHANGE IN EMPLOYMENT

	Overall		German		Non-German		Non-German w/o Refugee		Refugee	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Panel A: 2016</i>										
Average employment (SD)	36,666 (12,133.07)	0.2357 (0.1753)	33,979 (11,068.01)	0.1212 (0.1432)	2,670 (1,951.09)	0.1144*** (0.0423)	2,606 (1,900.26)	0.1002* (0.0583)	0.0070*** (0.0029)	0.0077*** (0.0025)
Refugees		0.2357 (0.1753)	0.0880 (0.1625)	0.1212 (0.1432)	0.1154** (0.0518)	0.1144*** (0.0423)	0.1002* (0.0583)	0.0931* (0.0502)	0.0070*** (0.0029)	0.0077*** (0.0025)
EAE capacity	-0.2000 (0.1542)	-0.1244 (0.1141)	-0.1603 (0.1319)	-0.0929 (0.0980)	-0.0392 (0.0321)	-0.0312 (0.0291)	-0.0822 (0.0715)	-0.0743 (0.0575)	-0.0035* (0.0018)	-0.0023 (0.0017)
Observations	401	401	401	401	401	401	401	401	401	401
R-squared	0.0076	0.1317	0.0041	0.1025	0.0377	0.2102	0.0116	0.2304	0.0411	0.1852
Covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
<i>Panel B: 2017</i>										
Refugees	-0.0314 (0.1928)	0.0739 (0.1272)	-0.1006 (0.1824)	0.0084 (0.1206)	0.0693*** (0.0186)	0.0655*** (0.0209)	0.0433 (0.0531)	0.0504 (0.0736)	0.0179*** (0.0037)	0.0121*** (0.0045)
EAE capacity	-0.2271 (0.1564)	-0.1131 (0.1089)	-0.2130 (0.1446)	-0.0995 (0.0993)	-0.0141 (0.0193)	-0.0138 (0.0187)	-0.0680 (0.0694)	-0.0557 (0.0628)	0.0073 (0.0051)	0.0016 (0.0048)
Observations	401	401	401	401	401	401	401	401	401	401
R-squared	0.0054	0.1610	0.0070	0.1661	0.0196	0.0688	0.0053	0.1868	0.0408	0.2096
Covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
<i>Panel C: 2017 AZR data</i>										
Registered migrants	-0.1578* (0.0889)	-0.0300 (0.0458)	-0.1631* (0.0885)	-0.0427 (0.0476)	0.0055 (0.0046)	0.0128 (0.0078)	-0.0360 (0.0239)	-0.0121 (0.0169)	0.0110*** (0.0032)	0.0068*** (0.0020)
Observations	401	401	401	401	401	401	401	401	401	401
R-squared	0.0299	0.1600	0.0383	0.1668	0.0014	0.0577	0.0130	0.1833	0.1515	0.2380
Covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Notes

Each column reports coefficients and standard errors from a county-level OLS regression as shown in equation (1). The outcome variables are the total number of full-time employed per 100,000 population (columns (1) and (2)), Germans (columns (3) and (4)), non-Germans (columns (5) and (6)), non-Germans without asylum seekers (columns (7) and (8)), and asylum seekers (columns (9) and (10)). The two main explanatory variables are the number of asylum seekers allocated to a county during the 2014/15 refugee crisis, and the number of reception centre (EAE) beds in the county (both per 100,000). Covariates are all county-specific and include per capita GDP (in €), the youth coefficient, and the shares of the population that are male, foreign and receiving housing benefits, respectively. Heteroscedasticity robust standard errors are shown in parentheses. ***, **, * indicate significance at the 1%, 5%, 10% level, respectively.

driven mainly by increased employment of asylum seekers. Together, these effects confirm the findings of a lack of a displacement effect on native workers and problems with integrating recent migrants into the labour market.

Note that the point estimates for our measure of EAE capacity in Table 4 are mostly negative and at times statistically significant for non-German unemployment. Differential results for refugee allocation and reception centres are not necessarily a contradiction. While refugees allocated to counties will at some point enter the labour market, this is unlikely for those staying in an EAE. An explanation for the negative effect on unemployment might be that EAEs created jobs (e.g. in security services) that are filled by non-Germans. However, note that the coefficient size is small, suggesting that an extra 200 beds of capacity are associated with a decrease in unemployment of between 0.11 (column (8) in panel B) and 0.17 (column (7) in panel A) percentage points. Small or zero effects also make intuitive sense as many reception centre residents will still be waiting for their asylum claim to be processed and thus are typically unable to enter the labour market legally.

As a final piece of analysis of the labour market effect of increased refugee migration, we analyse the development of median wages of full-time earners eligible for social security. This analysis is particularly useful as wages might show a more immediate response to an increase in labour supply, even if such an increase was concentrated in the informal sector. Table 6 suggests that there is no significant effect of increased refugee migration on overall median wages in either 2016 or 2017. Columns (7) and (8) of panel B suggest a small negative effect on median wages of foreigners. While statistically significant at the 10% level, this result is not economically significant. For instance, a one standard deviation increase in the inflow of migrants would be associated with a drop in monthly wages of just €5.

All labour market analyses—of unemployment rates, absolute unemployment numbers of immigrants from crisis countries, employment data, and wage data—point towards recent migrants slowly entering the labour market without displacement or strong wage effects. One potential explanation for this finding is that wages are fairly sticky and labour market adjustment happens primarily via (un)employment. Such a mechanism is supported by Glitz (2012), who finds that migration of native Germans from Russia in the 1990s and 2000s displaced other workers, but had no effect on wages.

Refugees and crime

Table 7 shows the effects of asylum seeker inflows on changes in crime rates between 2013 and 2016, and between 2013 and 2017, respectively. Panel A looks at the aggregate crime rate (per 100,000) and is adjusted for the natural increase in offences related to immigration and asylum laws. Even after immigration offences are excluded from the crime statistics, the number of asylum seekers allocated to a county is significantly and positively associated with increases in crime (see columns (1) and (2) of panel A). A one standard deviation increase in migrant inflow is associated with about 123 additional crimes per 100,000. Given a mean of 6417 crimes per 100,000, this translates into roughly a 1.9% increase.¹⁷ This result and all of the following results for crime hold up regardless of whether we look at changes between 2013 and 2016, or between 2013 and 2017.

Since 2013, the official crime statistics distinguish between German and non-German crime suspects. While asylum seekers make up only a fraction of the non-German population, increases in the number of crime cases with non-German main suspects would support the hypothesis of immigration-induced increases in crime. We indeed find a positive association between larger migrant inflows and the number of non-German suspects. Columns (5) and (6) of Table 7 suggest that a one standard deviation increase in asylum seeker allocations increases

TABLE 6
REGRESSION RESULTS: INFLOWS OF ASYLUM SEEKERS AND CHANGE IN MEDIAN MONTHLY WAGES

	Overall		Youth		German		Non-German		No degree	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Panel A: 2016</i>										
Mean	2820.87		2073.27		2422.66		2861.87		2357.25	
(SD)	(441.69)		(221.58)		(355.78)		(466.87)		(317.76)	
Refugees	0.0037	0.0043	-0.0108**	-0.0075	-0.0081	-0.0074	0.0008	0.0007	0.0016	0.0079
	(0.0067)	(0.0063)	(0.0044)	(0.0047)	(0.0104)	(0.0089)	(0.0116)	(0.0117)	(0.0115)	(0.0115)
EAE capacity	0.0025	0.0034	0.0006	0.0019	-0.0013	0.0002	-0.0132	-0.0165	0.0058	0.0032
	(0.0041)	(0.0042)	(0.0056)	(0.0058)	(0.0056)	(0.0053)	(0.0149)	(0.0146)	(0.0118)	(0.0126)
Observations	401	401	346	346	401	401	275	275	331	331
R-squared	0.0028	0.0829	0.0090	0.0748	0.0080	0.1163	0.0021	0.0262	0.0008	0.1440
Covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
<i>Panel B: 2017</i>										
Refugees	0.0053	0.0047	-0.0048	0.0013	-0.0093	-0.0102	-0.0233*	-0.0224*	-0.0020	0.0016
	(0.0082)	(0.0068)	(0.0052)	(0.0060)	(0.0130)	(0.0096)	(0.0131)	(0.0134)	(0.0117)	(0.0109)
EAE capacity	0.0033	0.0016	0.0047	0.0030	-0.0024	-0.0046	-0.0119	-0.0140	0.0058	0.0004
	(0.0046)	(0.0044)	(0.0067)	(0.0068)	(0.0065)	(0.0056)	(0.0166)	(0.0161)	(0.0139)	(0.0144)
Observations	401	401	351	351	401	401	275	275	331	331
R-squared	0.0035	0.1305	0.0020	0.0764	0.0070	0.1401	0.0098	0.0322	0.0006	0.1681
Covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Notes

The number of observations varies as there are missing data points for certain subpopulations due to limited sample size and data protection regulation. Each column reports coefficients and standard errors from a county-level OLS regression as shown in equation (1). The outcome variables are the median monthly wages for full-time employed for all workers (columns (1) and (2)), workers aged 15–25 (columns (3) and (4)), workers who are (not) German citizens (columns (5)–(8)), and workers without a college or vocational degree (columns (9) and (10)). The two main explanatory variables are the number of asylum seekers allocated to a county during the 2014/15 refugee crisis, and the number of reception centre (EAE) beds in the county (both per 100,000). Covariates are all county-specific and include per capita GDP (in €), the youth coefficient, and the shares of the population that are male, foreign and receiving housing benefits, respectively. Heteroscedasticity robust standard errors are shown in parentheses. ***, **, * indicate significance at the 1%, 5%, 10% level, respectively.

TABLE 7
REGRESSION RESULTS: INFLOWS OF ASYLUM SEEKERS AND CHANGE IN CRIME

	$\Delta(2016-2013)$ All cases	$\Delta(2017-2013)$	$\Delta(2016-2013)$ German suspects	$\Delta(2017-2013)$	$\Delta(2016-2013)$ Non-German suspects	$\Delta(2017-2013)$
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: All crimes</i>						
Mean	6417.26		2126.14		625.13	
Refugees	0.2490*** (0.0735)	0.2495*** (0.0841)	0.0430*** (0.0149)	0.0434*** (0.0152)	0.1470*** (0.0422)	0.1543*** (0.0430)
EAE capacity	-0.1414 (0.1363)	0.0046 (0.1585)	-0.0004 (0.0158)	0.0014 (0.0188)	-0.1099 (0.0907)	-0.0897 (0.0945)
<i>Panel B: Violent crimes</i>						
Mean	197.05		155.84		44.57	
Refugees	0.0073* (0.0041)	0.0084** (0.0038)	0.0016 (0.0027)	0.0034 (0.0029)	0.0019 (0.0020)	0.0045* (0.0023)
EAE capacity	0.0060 (0.0041)	0.0063 (0.0050)	0.0011 (0.0041)	0.0026 (0.0037)	0.0094*** (0.0019)	0.0100*** (0.0031)
<i>Panel C: Street crime</i>						
Mean	1321.48		194.92		46.29	
Refugees	0.0342* (0.0198)	0.0314 (0.0238)	0.0014 (0.0054)	0.0002 (0.0044)	0.0021 (0.0023)	0.0024 (0.0025)
EAE capacity	-0.0089 (0.0335)	0.0105 (0.0304)	0.0001 (0.0045)	-0.0027 (0.0042)	0.0054** (0.0022)	0.0115** (0.0050)
<i>Panel D: Drug offences</i>						
Mean	298.68		219.71		43.41	
Refugees	-0.0061 (0.0104)	-0.0018 (0.0122)	-0.0081* (0.0045)	0.0043 (0.0072)	0.0041 (0.0063)	-0.0009 (0.0057)
EAE capacity	0.0378*** (0.0098)	0.0636*** (0.0191)	0.0095** (0.0048)	0.0316*** (0.0122)	0.0186*** (0.0066)	0.0172** (0.0073)
Observations	401	401	401	401	401	401
R-squared	0.0716	0.0808	0.2000	0.2195	0.0720	0.0715

Notes

Each column reports coefficients and standard errors from a county-level OLS regression as shown in equation (1). In panel A, the outcome variables are the number of crimes per population of 100,000, the number of cases with German suspect(s) (per 100,000), and the number of cases with Non-German citizen(s) as suspect(s) (per 100,000). Offences against immigration laws (e.g. unauthorized entry of German territory) are ignored. In panel B, the outcome variables are the number of violent crimes, with the same distinction between German and non-German suspects in columns (3)–(6). In panels C and D, the outcome variables are the number of street crimes and drug offences, respectively. The two main explanatory variables are the number of asylum seekers allocated to a county during the 2014/15 refugee crisis, and the number of reception centre (EAE) beds in the county (both per 100,000). All specifications have county-specific controls for per capita GDP (in €), the youth coefficient, and the shares of the population that are male, foreign and receiving housing benefits, respectively. R-squared statistics refer to estimates in panel A. Heteroscedasticity robust standard errors are shown in parentheses.

***, **, * indicate significance at the 1%, 5%, 10% level, respectively.

the number of cases involving a non-German suspect by about 74 (the mean is 625). This is a substantial increase, and all results are robust to the inclusion of covariates. In addition, we observe a statistically significant but economically insignificant increase in crimes with a German suspect (see columns (3) and (4)).

We also evaluate violent crimes, property crimes and drug offences separately. The most important offences subsumed into the official definition of ‘violent crime’ are homicides, rape,

robbery and aggravated assault. Our results indicate a positive relationship between instances of violent crime and the number of allocated asylum seekers. In particular, the presence of a large EAE appears to be statistically significantly associated with an increase in violent crime where non-Germans are suspects. 200 extra beds per 100,000 inhabitants, which is roughly the average county capacity of an EAE, is associated with an increase of 2 (per 100,000) such cases of violent crime. Columns (5) and (6) of Table 7 suggest that this corresponds to about a 4.5% increase. It is not quite clear who the victims of this increase in violent crime are; county-level data on the nationalities of victims of violent crime are, unfortunately, not available. Aggregate national data suggest that it is very frequently non-Germans who are at the receiving end. The number of non-German victims has increased from 41,316 in 2013 to 66,541 in 2016, whereas the number of Germans who became a victim of a violent crime has slightly decreased over the same time period.

Official crime statistics do not list separately a ‘property crime’ category that includes all such crimes. Instead, county totals of ‘street crimes’ are reported. These are all crimes that take place in the public sphere (e.g. public roads and spaces). The category is dominated by property crimes, such as property damage and theft, especially theft from motor vehicles. However, this crime category also contains a few violent crimes, for example, aggravated assault in public. Nonetheless, using the street crime aggregate should be a good proxy for property crime. Column (2) of panel C in Table 7 indicates that a one standard deviation increase in migrant allocation is weakly associated with an extra 17 street crime offences (mean 1321), and we again find that the presence of an EAE is statistically significantly associated with an increase in non-German suspects. According to column (5) of panel C in Table 7, an extra 200 beds is associated with about one extra non-native suspect.

The largest effects are visible for drug offences. Here again, we find evidence that EAEs could be ‘hotspots’ for crime. 200 additional EAE beds per 100,000 inhabitants is associated with an extra 7.56–12.7 drug offences per county, roughly a 2.5–4.2% increase. Asylum seeker inflows into permanent accommodation, on the other hand, are not associated with changes in drug offences. A plausible explanation for this pattern is that close confinement to EAE group quarters of a population that is skewed towards young men might aid and abet drug and street crimes. Interestingly, our analysis of suspects in cases involving a drug offence suggests that the presence of a reception centre is associated with statistically significant increases in the numbers of both German and non-German suspects. Column (4) of Table 7 suggests that an increase of 200 reception centre beds increases the number of German suspects by about 6 (the 2013 mean is 219.81), and column (6) suggests a corresponding increase in the number of non-German suspects by 3.4 (2013 mean 43.35). Of course, we have no way of knowing how many of the non-German suspects are recent asylum seekers.¹⁸

Overall, our results suggest that the presence of asylum seekers is associated with moderate increases in crime. For violent, property and drug crimes, we find that non-German suspects are often concentrated in counties that have large reception centres. It should be noted that our results are in line with previous findings in the literature. For example, in their study of immigration and crime in Germany, Piopiunik and Ruhose (2017) find that the in-migration of 100 additional (ethnic German) immigrants (per 100,000) was associated with a 0.9% increase in crime. Our results suggest that 100 additional asylum seekers is associated with about a 0.4% increase in total crime, which is close to the effect that Bell *et al.* (2013) found for England.

Nonetheless, we cannot rule out that some of our results might be driven by authorities devoting more resources to policing areas with larger asylum seeker presence. In other words, a plausible explanation for our findings could also be that the police specifically focused activity on these areas, which boosts crime reporting. This would make the notion that crime

is concentrated in reception centres a self-fulfilling prophecy. Either way, our analysis of official statistics and our relatively small standard errors all but rule out the presence of a 'crime epidemic', especially for violent crime, which is arguably the biggest concern.

Refugees and voting behaviour

Increased refugee migration went along with observed increases in electoral polls and vote shares for anti-immigrant parties. The federal elections in Germany were timed such that the refugee crisis fell right in the middle of the federal parliament's legislative period, allowing us to study the effect of migration on electoral outcomes. That is, we have data on election outcomes in 2013 and 2017 and can thus analyse the differential effect of the number of assigned asylum seekers on election outcomes.

We focus on right-wing parties in general and the AfD Party in particular, as this is the most prominent example of migration opposition in Germany. The AfD Party was founded only in 2013, and national polls show a more or less flat development of the party's national approval ratings until the beginning of the refugee crisis. From there on, there is compelling macro evidence suggesting a connection between increased refugee migration and support for the AfD Party (see Figure 5).

However, the effect on voting behaviour of direct (micro) exposure to asylum seekers on a more local level is *ex ante* not clear. Earlier studies find mostly a positive relation between migration and support for extremist parties (Golder 2003; Otto and Steinhardt 2014; Halla *et al.* 2017; Dustmann *et al.* 2018). The recent study of Austria by Steinmayr (2021), on the other hand, provides compelling evidence that direct contact with immigrants dampens the prospects of far-right parties, supporting the contact hypothesis (Allport *et al.* 1954). In order to better distinguish between the two channels of micro and macro exposure, we run two analyses. First, we deploy our standard research design where we link county-level inflows and EAE capacities with changes in electoral outcomes. More precisely, we look at support for right-wing parties overall, the AfD Party's vote share, election turnout, and the performance of the incumbent party at the federal level. Figure 2(d) suggests a striking East–West divergence, so we analyse separately East and West Germany, and also do a rural–urban split. Second, we conduct a local-level analysis. For Germany's most populous state, North Rhine-Westphalia (NRW), we were able to obtain municipality-level data on asylum seeker allocations. This more refined geographic breakdown allows us to better assess the importance of direct interactions with asylum seekers.

One potential complication is that the AfD Party was originally founded in order to oppose the euro and the eurozone bailouts, and only over time shifted its political focus towards migration issues. We therefore not only evaluate changes in the AfD Party vote share, but look at the percentage of votes allotted to anti-immigrant parties in general, where we show separately specifications in which we do and do not consider the AfD Party 'anti-immigrant' in 2013, and adjust the vote shares accordingly.

Table 8 shows that neither refugee inflows nor EAE capacities have a statistically significant impact on the AfD Party's vote share, the electoral success of right-wing parties in general, or election turnout. Of course, this is not to say that the refugee crisis has not helped the AfD Party in achieving electoral success. Figure 5 suggests strongly that the party's gains in approval are driven by concerns about immigration. However, these gains were not concentrated in counties that saw larger inflows.

Counties might, however, be too big of a geographic unit to assess the micro-exposure of residents to asylum seekers. We thus run an analysis using the municipality-level data from NRW. Panel B of Table 8 suggests that right-wing parties and the AfD Party in particular have

TABLE 8
REGRESSION RESULTS: INFLOWS OF ASYLUM SEEKERS AND VOTING BEHAVIOUR

	AfD vote share		Right-wing vote share		Right-wing vote share (adj.)		Election turnout		Incumbent vote share	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Panel A: County Level</i>										
Refugees	0.000 (0.000)	-0.001 (0.001)	0.000 (0.000)	-0.001 (0.000)	0.000 (0.000)	-0.001 (0.000)	-0.001 (0.001)	-0.001 (0.001)	0.000 (0.000)	0.000 (0.000)
EAE capacity	0.000 (0.000)	-0.001* (0.000)	0.000 (0.000)	-0.001* (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Observations	401	401	401	401	401	401	401	401	401	401
R-squared	0.002	0.535	0.002	0.526	0.002	0.567	0.028	0.094	0.006	0.110
Covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
<i>Panel B: Municipality level NRW</i>										
Refugees	-0.0004*** (0.0001)	-0.0002 (0.0001)	-0.0003** (0.0001)	-0.0001 (0.0001)	-0.0006*** (0.0002)	-0.0003 (0.0002)	0.0001 (0.0001)	0.0001 (0.0001)	0.0007*** (0.0002)	0.0005* (0.0002)
EAE capacity	-0.0002*** (0.0001)	-0.0004*** (0.0001)	-0.0002** (0.0001)	-0.0003*** (0.0001)	-0.0003*** (0.0001)	-0.0004*** (0.0001)	-0.0000 (0.0001)	-0.0000 (0.0001)	0.0003* (0.0002)	0.0005*** (0.0002)
Observations	396	396	396	396	396	396	396	396	396	396
R-squared	0.0205	0.1114	0.0124	0.1002	0.0352	0.1757	0.0079	0.0257	0.0312	0.1194
Covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Notes

Each column reports coefficients and standard errors from a county-level OLS regression as shown in equation (1). That is, the difference between the corresponding outcome in the 2017 and 2013 federal election is regressed on our two main explanatory variables (and changes in covariates). The two main explanatory variables are the number of asylum seekers allocated to a county during the 2014/15 refugee crisis, and the number of reception centre (EAE) beds in the county (both per 100,000). Panel A represents results at the county level for all of Germany, while panel B assesses results for North Rhine-Westphalia (NRW) at the municipality level. Covariates are all county-specific and include per capita GDP (in €), the youth coefficient, and the shares of the population that are male, foreign and receiving housing benefits, respectively. Heteroscedasticity robust standard errors are shown in parentheses.

***, **, * indicate significance at the 1%, 5%, 10% level, respectively.

indeed fared comparatively less well in municipalities with larger inflows than in those with smaller inflows. While general inflow of asylum seekers is significant only at the 10% level, the presence and size of an EAE decreases support for the AfD significantly. Column (1) of Table 8 suggests that a one standard deviation increase in the number of asylum seekers reduces the AfD Party's vote share by about 0.2 percentage points. Considering that the AfD Party received about 9.4% of votes in NRW, this is a small but not negligible effect. The results are similar if the aggregate vote share of all anti-immigrant parties is considered (see columns (3)–(6)). At the same time, the incumbent party on the state level, in this case the Social Democrats and the Green Party, received larger vote shares in municipalities with a larger presence of asylum seekers. One potential concern could be that large reception centres are located endogenously by the state authority along the preferences of the state government. However, a regression of EAE-presence on vote shares of the Social Democrats and Green Party yields insignificant results, suggesting that this channel is unlikely.

Our results stand in contrast to work using earlier episodes of refugee migration (Dustmann *et al.* 2018; Halla *et al.* 2017; Tabellini 2020). As the time frames of these studies differ substantially, this does not necessarily imply a contradiction. Moreover, our results are broadly in line with the study by Steinmayr (2021), who found that Austrian districts with large asylum seeker presence were less likely to vote for anti-immigration parties, although our estimated effects are much smaller.¹⁹ Steinmayr (2021) uses the presence of large facilities suitable for housing larger refugee numbers as an instrument for the allocation of asylum seekers.²⁰ While Hangartner *et al.* (2019) find adverse effects of temporary refugee presence on Greek islands, our results on reception centres do not support these findings. In fact, effects are either zero or even negative at the municipality level, pointing to — if anything — a drop in support for anti-migration parties. In summary: while there exists evidence on a macro-level connection between electoral success of anti-immigrant parties and increased refugee migration, local exposure to asylum seekers is associated — if at all — with a small drop in the electoral success of these parties.

V. DISCUSSION AND SENSITIVITY

This study provides a first evaluation of the refugee inflow to Germany in 2014/15. It is necessarily an analysis of short-run effects. As such, there is no guarantee that trends that we have uncovered in this study will hold in the long run. Even over the course of conducting this study, new events in Germany and abroad have occurred that might shape debates and policies. Nonetheless, our analysis of short-term effects provides interesting insights that might contribute to an evidence-based debate on the economic and social effects of large migrant inflows in general, and the consequences of the recent wave of asylum seekers in particular. In a nutshell, our analysis suggests: recognized refugees are unlikely to have displaced natives in the labour market; crime increased moderately with larger asylum seeker inflows; and differential exposure to asylum seekers is — if at all — negatively correlated with support for anti-immigration parties.

The identifying assumption under which these results are most credible is that trends in employment, crime and voting behaviour would have been the same in high and low refugee population counties in the absence of asylum seeker inflows. We have provided evidence that suggests that this is a fair assumption to make. Placebo tests provide another piece of evidence for the validity of our identification strategy. For that purpose, we move the time window of analysis into a time period that was unaffected by the refugee crisis. Specifically, we re-estimate equation (1) for the years 2011 and 2013 (rather than 2013 and 2016/17), and attribute the asylum seeker inflows that actually took place in 2014/15 to the year 2013.²¹

TABLE 9
 PLACEBO REGRESSIONS: INFLOWS OF ASYLUM SEEKERS AND CHANGES IN OUTCOMES

	Unemployment				Crime		
	General (1)	Youth (2)	Non-German (3)	German (4)	All crimes (5)	Street crimes (6)	Drug offences (7)
Refugees	-0.0000 (0.0001)	0.0001 (0.0001)	0.0001 (0.0003)	-0.0000 (0.0001)	-0.2944*** (0.0809)	-0.0694** (0.0291)	-0.0149 (0.0116)
EAE capacity	-0.0001 (0.0001)	-0.0001 (0.0001)	0.0001 (0.0002)	-0.0001 (0.0001)	0.1384* (0.0794)	-0.0109 (0.0293)	0.0104 (0.0102)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	402	402	402	402	402	402	402
R-squared	0.2267	0.0852	0.0425	0.2158	0.1119	0.0517	0.0224

Notes

Each column reports coefficients and standard errors from a county-level OLS regression as shown in equation (1), but based on data from 2013 and 2011, respectively. Asylum seeker inflows and reception centre (EAE) capacities were set to 2014/15 aggregates (both per 100,000). The outcome variables are the general unemployment rate, the unemployment rate for 15–25-year-olds, the unemployment rate for workers who are (not) German citizens, the number of crimes, the number of street crimes, and the number of drug offences (the last three per 100,000 population). Covariates are all county-specific and include per capita GDP (in €), the youth coefficient, and the shares of the population that are male, foreign and receiving housing benefits, respectively. Heteroscedasticity robust standard errors are shown in parentheses.

***, **, * indicate significance at the 1%, 5%, 10% level, respectively.

Our results for this analysis are displayed in Table 9. We cannot detect any effect of our placebo asylum seeker inflows on the overall unemployment rate, youth unemployment, or unemployment of (non-)Germans. This is comforting for two reasons. First, it lends additional credibility to our finding that the employment prospects of natives were unaffected. Second, our finding that larger inflows of asylum seekers are associated with an increase in non-German unemployment does not appear to be driven by the fact that counties with large inflows were on a different unemployment trajectory prior to the start of the refugee crisis. Our placebo results for crime are somewhat less convincing. It appears as if counties that were to absorb larger migrant inflows had been on a slight downward trajectory in terms of overall crime as well as street crime.²² As a result, our findings for crime in general and street crime in particular should be taken with a grain of salt and may be best thought of as lower bound effects. By and large, our placebo tests lend additional credibility to our results for unemployment and indicate that we might slightly underestimate the effect of refugee inflows on crime, although the amount of bias is small.

As an additional robustness check, we re-run all our analyses by including our ref_c and EAE_c -indicators separately rather than jointly. The first two rows of Table A1 of the Online Appendix show that our results are not sensitive to this change in specification. For example, the point estimates for non-German unemployment are very similar to the results reported in Table 4. Our results for crime, shown in Table A2 of the Online Appendix, are also robust to this specification change.

Results from analyses that use the stock of asylum seekers within a certain county as per the Ausländerzentralregister (AZR) as main explanatory variable are also broadly in line with our main findings, in that we fail to detect any major effects on unemployment or crime (see panel C of Tables A3 and A2 of the Online Appendix, respectively). Table A4 of the Online Appendix shows that our results for voting outcomes hold when our main measures of asylum seeker inflows are included separately, or when we use our alternative AZR measure. However, as mentioned earlier, the AZR data are likely to be much less reliable than our

main administrative data. For instance, the AZR data come with a time lag in registration.²³ Hence asylum seekers might not (yet) show up in the dataset to the same extent as they are present in the administrative asylum seeker inflow and distribution data that we use in our main specification. Moreover, incentives to register in a timely manner are correlated with employment and social perspectives. Finally, heterogeneity in acceptance rates of asylum claims and the resulting legal status might play a role. So all results based on the AZR measure should be taken with some caution and serve merely as a crude robustness check.

From a policy point of view, our findings are a mixed bag. On the one hand, there is no indication for a displacement of native or foreign workers by recognized refugees. This is a key argument against calls for restrictive migration policies motivated by concerns about job losses or wage cuts for native workers. On the other hand, accepted asylum applicants potentially will need a long time to enter successfully the German labour market, given the sharp increase in foreign unemployment. Brücker *et al.* (2014) show that this might result in large unemployment effects. Our results lend some support to calls for additional labour market flexibility (Bofinger *et al.* 2015). Another reason for the slow integration of recognized refugees into the labour market might be skill mismatches. Woessmann (2015) estimates that about two-thirds of recent arrivals have ‘not been sufficiently educated to participate in a modern society’. This rather awe-inspiring assessment suggests that Figure 6 shows by no means the end of the story; that is, increases in non-German unemployment are likely to persist if more and more workers whose skills are not in demand enter the labour force. At the very least, our results suggest that the unemployment rates of crisis country nationals should be tracked closely, data on the qualifications of migrants need to be collected, and — especially if the aforementioned estimates about the skill-level distribution turn out to be correct — training and re-qualification efforts will have to be stepped up.

There is also little indication for large increases in crime, at least within the time period that is covered by our data. At the national level, crime rates have remained largely flat, although we observe that counties that saw larger inflows have seen (in relative terms) increases in crime, and that drug offences are particularly prevalent in counties that host reception centres. In Tables A6 and A7 of the Online Appendix, we re-run our main analysis separately for all crime types that were recorded consistently over time. Some but not all of these are subsumed in our main outcomes. For example, murder is part of the violent crime category. This breakdown into subcategories does not reveal large increases in any crime category, bar robberies. It also slightly mitigates concerns that increased police presence in high-migration areas might be driving our results. If that were the case, then one would expect an across-the-board increase in recorded crime. Two other types of crimes that have received substantial public interest could, unfortunately, not be evaluated fully in this study.

First, anecdotal evidence suggests that crimes against asylum seekers, and arson attacks against accommodation facilities in particular, are on the rise. Crime statistics do not report separately arson attacks specifically aimed at asylum seeker accommodations. The number of arson cases in Germany actually declined between 2013 and 2016 from 20,009 to 19,123 reported incidents.²⁴ We ran a cross-sectional analysis and did not find evidence that arsons are more frequent in counties that received a larger inflow of migrants or host a reception centre (see column (15) of Table A6 of the Online Appendix).

Second, the 2015/16 New Year’s Eve events in Cologne, during which many women were assaulted by men of Arab or North African appearance, have led to a widespread perception that sex crimes committed by refugees have become a major issue. Unfortunately, we can shed little light on this debate. County-level data of these types of offences have also only recently been collected, so again we can conduct a cross-sectional analysis merely for 2016 and 2017, respectively. Column (14) of Table A6 of the Online Appendix demonstrates that

such an analysis fails to find any statistically significant association between the number of asylum seekers that were allocated to a county and the number of sex crimes in said county for 2016. On the other hand, 2017 saw a general rise in the number of reported sex crimes, and our cross-sectional analysis suggests that counties with larger asylum seeker inflows reported slightly higher levels of sex crimes (see Table A7 of the Online Appendix).

VI. CONCLUSION

In this paper, we analyse the effects of a large unanticipated shock, namely the inflow of more than a million refugees to Germany in 2014/15. We make three related contributions.

First, this is the first study to evaluate the labour market effects of a key event that has shaped public discourse throughout the world. We show that a significant labour supply shock of low-skilled prime-age workers has not had a displacement effect on native workers or earlier immigrants, nor is there any evidence for negative wage effects. At the same time, accepted asylum seekers themselves continue to struggle to find employment. This paper is, of course, an analysis of short-term effects. Our findings thus suggest that at an early stage in the post-inflow period, policymakers need to devote substantial resources to labour market integration of migrants.

Second, with respect to crime rates, we find moderate increases in criminal activity, although obviously continued monitoring of the situation is warranted. In particular, the release of quarterly or even monthly (rather than annual) crime data might help in this respect. Moreover, we want to neither discount nor emphasize the degree to which attempted and actual terrorist attacks have been affected by asylum seeker inflows and have placed a strain on police and counter-terrorism resources. But given the data available for non-terrorism related crime, and given the time period for which said data were available, there is little evidence for a massive increase in crime in the immediate aftermath of asylum seeker inflows. Having said that, the increase of drug crimes in areas with larger reception centres holds implications for policymakers.

Third, while the rise of the anti-immigration AfD Party is undeniable, we find that micro-exposure to an increased number of asylum seekers has not driven it, and if anything might actually decrease support for far-right parties.

Another contribution of this paper is the collection of unique county-level data on asylum seeker inflows. The data underlying our analysis accompany this paper and should be tremendously useful to other researchers. For instance, the data collected for our study will also be helpful in learning more about immigrant sorting as eventually recognized refugees are no longer required to reside in the counties to which they were initially allocated. Finally, our study deploys a research design that is based on a credible natural experiment. As such, it advances the literature on labour market impacts of immigration, sheds additional light on the link between immigration and crime, and provides insights on the effect of immigration on voting behaviour. Of course, the natural experiment created by asylum seeker inflows to Germany differs markedly from other natural experiments, in terms of the sheer size of the inflow, the skill composition of the immigrants, and the fact that much of the migration may be transient in nature.

Since the subjects of this study are at times divisive issues, we want to stress that our results should be interpreted as short-term effects. But the short-term effects identified in this paper have shown some persistence: the native unemployment rate continued to drop in 2017, while the absolute number of non-German job seekers continued to increase. A recent report by the Federal Ministry of the Interior shows that aggregate crime rates have continued to be largely flat or dropping since 2017 (PKS 2018). While *prima facie* our results offer

useful indications for long-term effects, they are certainly not the last word on this important issue. Given the contentiousness of the debate, we encourage more research on this topic. The natural experiment presented by the asylum seeker inflows provides a useful setting to evaluate their effects and design evidence-based policies. We hope that this paper serves as a starting point for future analyses of what is likely to remain a major economic and social issue for years to come.

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NOTES

1. The Dublin rules were partly reinstated in November 2015.
2. Even in this first step, not all refugees could be processed; the BAMF estimates that up to 290,000 persons have not been registered at all.
3. The standard procedure provides that new arrivals are transferred to the closest reception centre, where their personal information is entered into EASY, a federal database. The EASY system subsequently allocates new arrivals to one of Germany's 16 states for further processing of their asylum claims.
4. Each state has the authority to distribute asylum seekers to subordinate counties according to its own legislation ('Rechtsverordnungen'). Usually, asylum seekers were supposed to be allocated to counties commensurate with their population. But all states include a clause in their legislation that allows for deviations under extraordinary circumstances. Section II will show that invoking these clauses and deviating from the scheduled distribution schemes quickly became the norm rather than the exception.
5. According to the federal police, only about 20–30% of refugees entering the country were in possession of a passport (GdP 2015). In general, Syrian asylum seekers, whose applications have a high probability of being approved, and asylum seekers from the Balkans, whose application have little chance of being approved, are processed with priority.
6. For Bavaria, we received only cumulative data on a yearly basis for 2014 and 2015. Thereby we were able to extract the exact number of assigned asylum seekers in 2015. For 2014, however, we made the assumption that allocation in the previous years had been conducted according to the official scheme, and subtracted these from the cumulative numbers. On the one hand, an even distribution prior to 2014 seems reasonable given the significantly smaller numbers of asylum seekers. On the other hand, we made sure that our findings are not sensitive to these assumptions and ran our analysis using only 2015 data and excluding Bavaria. Neither changed the direction of results.
7. The EASY system has also been widely criticized for containing duplicates and asylum seekers who continued their journey to other countries.
8. It should be noted that we could adjust the time series for only 2014–17 since transgressions of asylum and right-of-residence laws were not reported on a per-county basis prior to 2014. However, these transgressions were reported at a national level, and in 2013 they accounted for just 1.85% of all offences, so the amount of (downward) bias that is induced by this adjustment should be negligible.
9. We group together NPD, Republikaner, proDeutschland, DIERECHTE (and AfD Party) in 2013 and AfD, NPD, DM and DIERECHTE in 2017.
10. As a robustness check, we also treated the 2015 and 2014 inflows separately, and evaluated how changes in inflows between these two years are associated with changes in outcomes.
11. There is a detailed list of several hundred abandoned Bundeswehr properties on Wikipedia. According to this list, virtually all West German counties are home to a former army, navy or air force base. However, the Bundeswehr could not confirm the accuracy or completeness of said list. Nor is there any information on which facilities are suitable for accommodation.
12. See Glitz (2012) for a similar discussion in light of post-Soviet migration of ethnic Germans.
13. We re-estimated the results using Q1/2014 and Q4/2012 as pre-treatment periods, and found that the coefficients are almost identical.
14. See Section V and Table A3 of the Online Appendix.
15. There is an alternative route for asylum seekers to obtain a work permit. However, this route is subject to a complex approval process which among other things involves a priority check of whether there is no other job seeker from an EU country who is potentially being displaced.

16. This is obviously a hypothetical scenario that, among other things, assumes that the number of employed non-Germans who are not asylum seekers stays constant.
17. We also used a log-level specification as a sensitivity check, the results of which are consistent with our findings and are available from the authors on request.
18. In contrast to the unemployment data, publicly available federal crime statistics do not report suspects' nationality.
19. Of course, both the party platforms and the setup of the asylum seeker allocation mechanism are different in Austria.
20. While it would be desirable to adopt a similar identification strategy in our study, this turned out to be not feasible. Detailed data on large facilities are, unfortunately, not available, and aggregate housing vacancies are a very weak predictor of asylum seeker allocations in Germany, thus violating one of the main identifying assumptions (Bound *et al.* 1995) in an instrumental variables approach.
21. Obviously, we cannot conduct this exercise for our voting behaviour outcome as the AfD Party was founded only in February 2013.
22. A placebo analysis separately for German and non-German suspects is unfortunately not feasible; on the county level, this distinction was made for the first time in 2013. We also cannot analyse our violent crime category in this way as it was not recorded at the county level in 2011.
23. According to the Federal Statistical Office (2018), there have been 481,400 retroactive AZR entries in 2016 alone. That means that there were almost half a million instances in which a person who registered in 2016 had been present (but not registered) in Germany in one of the previous years. This is the case for 26% of the register entries in 2016 (21% for 2017).
24. This includes not just actual arson attacks but also the criminal act of creating fire hazards.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article:

- Table A1 Inflows of Asylum Seekers and Change in Unemployment
—Separate Migrant Measures
- Table A2 Inflows of Asylum Seekers and Change in Crime
—Different and Separate Migrant Measures
- Table A3 Inflows of Asylum Seekers and Change in Unemployment
—Different Migrant Measures
- Table A4 Asylum Seeker Inflow and Voting Behavior
—Different and Separate Migrant Measures
- Table A5 Asylum Seeker Inflow and Voting Behavior in NRW
—Different and Separate Migrant Measures
- Table A6 Inflows of Asylum Seekers and Change in Crime between 2013 and 2016:
Other Crime Categories
- Table A7 Inflows of Asylum Seekers and Change in Crime between 2013 and 2017:
Other Crime Categories