Science Advances

AAAS

advances.sciencemag.org/cgi/content/full/2/8/e1600432/DC1

Supplementary Materials for

When lives are put on hold: Lengthy asylum processes decrease employment among refugees

Jens Hainmueller, Dominik Hangartner, Duncan Lawrence

Published 5 August 2016, *Sci. Adv.* **2**, e1600432 (2016)
DOI: 10.1126/sciadv.1600432

This PDF file includes:

- table S8. Longer asylum wait times lower subsequent employment for various subgroups of refugees stratified by gender, origin continent, age at arrival, and assigned language region.
- table S9. Longer asylum wait times lower subsequent employment for various subgroups of refugees stratified by war duration of the origin country and the origin infant mortality.
- table S10. Because of batch processing, an applicant's own wait time is primarily driven by the average wait time for other refugees who arrive on the same day from the same origin.
- table S11. Employment while waiting does not determine the wait time for the asylum decision.
- References (*36*–*41*)

Supplementary Materials

Supplementary Materials and Methods

Data and Swiss Asylum Process

The asylum process in Switzerland is roughly similar to that of EU member states who share asylum rules specified in the Dublin Regulations. Persons who are not immediately sent back under the Dublin Regulations typically obtain the status of asylum seekers and temporarily stay in the country while they wait for a decision on their asylum claim. In the Swiss permit classification this is known as an N permit (asylum seekers). For the population that is the focus of this study, the asylum limbo ends if an asylum seeker is granted the status of subsidiary protection that protects them from deportation and grants them temporary legal residency in the host country. In the UNHCR definition this status is included under the term refugee. The UNHCR defines refugees as individuals recognized under the 1951 Convention relating to the Status of Refugees and its 1967 Protocol, individuals recognized under the 1969 Organization of African Unity (OAU) Convention Governing the Specific Aspects of Refugee Problems in Africa, those recognized in accordance with the UNHCR Statute, individuals granted complementary forms of protection, and those enjoying subsidiary protection (*36*).

In the Swiss permit classification this subsidiary status is known as an F permit (temporarily accepted foreigners). There also exists a B permit for refugees accepted under the 1951 Convention, but since no employment information is reported for this group we cannot include it in our sample. Our sample is based on the ZEMIS data collected by the Swiss Federal Statistical Office from the processing records of the State Secretariat for Migration (SEM). Our use of the data is governed by a data use agreement we signed with the Swiss Federal Statistical Office and given the nature of the administrative data no informed consent is required. The data can be obtained from the Swiss Federal Statistical Office, Espace de l'Europe 10, 2010 Neuchatel, Switzerland.

Our sample includes all individuals who applied for asylum and received an N permit upon arrival in Switzerland between 1994 and 2004, were between 16 and 60 years of age upon arrival, and subsequently were granted an F permit and subsidiary protection within five years of arrival (n=17,360). Note that the sample is restricted to asylum seekers who are granted subsidiary protection within the first five years of arrival because after the five-year period asylum seekers have an opportunity to apply for a residency permit based on a hardship exemption and this could induce selection bias into our estimates. This restriction also implies that we cannot determine the effect of wait times longer than five years. Note that we also cleaned the data to exclude a small number of cases with errors in the data entry (e.g. varying birthday for the same person, etc.) and cases where the applicants left and then returned to Switzerland while their claim was still pending because the wait time is not similarly defined in such cases. Table S1 shows descriptive statistics for our estimation sample data.

Attrition

One concern with the data might be that attrition could have an impact on our estimates of the effect of asylum wait times. Selective attrition could impact the results in two directions. If the more employable or more motivated applicants have a higher risk of dropping out during the asylum process (e.g. because they migrate elsewhere) then the group of applicants in our estimation sample who receive subsidiary protection status after a long wait time might contain

fewer of such employable or more motivated individuals than the group of applicants in our sample who receive subsidiary after a short waiting period. This would mean that our estimates overstate the negative impact of wait times on employment. If instead the more employable or more motivated have a lower risk of dropping out of the asylum process (e.g. because they are more likely to persevere) then the applicants in our sample who receive subsidiary protection status after a long wait time might contain more of such employable or more motivated individuals and this would mean that our estimates understate the negative impact of wait times on employment.

Note that this concern about an attrition bias is greatly alleviated by the fact that our effect estimates are generally unchanged when we control for one, two, or even three years of previous employment (Table 1). If attrition would indeed lead to systematical differences in the employability or motivation of the group of applicants with short and long wait times, then we would expect the coefficient on wait times to change considerably once we control for previous employment since previous employment should be highly correlated with an applicant's employability or motivation. The fact that the wait time effect remains unchanged despite controlling for previous employment clearly suggests that once we employ our identification strategy and control for the arrival and origin fixed effects and covariates, applicants with shorter or longer wait times are similar in terms of employability or motivation.

To further investigate the issue of a potential attrition bias we conducted an additional test to examine whether applicants who drop out of the sample–either because they are rejected (45.8%), leave before a decision is made (23.7%), or are still waiting after five years for a decision (30.5%)–are more employable than those who remain in the sample. To test for attrition bias we compared the average employment at the end of the year of arrival between those who (eventually) drop out and those who enter the estimation sample. This test suggests that those who enter the sample are 0.34 percentage points more likely to be employed than those who drop out of the sample. This difference is small in economic terms and despite the large sample size also not statistically significant at conventional levels ($P \approx 0.071$). If anything, the fact that those who enter the sample might be slightly more employable suggests that our effect estimates perhaps slightly understate the negative effect of wait times on employment.

External Validity

How does Switzerland compare to other European countries in terms of its refugee and asylum seeker populations?

First, we compare Switzerland with 18 major immigrant-receiving countries in Europe using data from the United Nations Human Rights Commission. Figure S1 shows that Switzerland ranks among the top five European countries in terms of the overall number of asylum applicants as well as the stock of refugees and asylum applicants relative to the size of the native population. Despite its small size, Switzerland serves as an important destination for migrants seeking asylum in Europe.

Second, we examine the composition of Switzerland's refugee and asylum seeker populations focusing specifically on country of origin. Figures S2 and S3 show the percentage of refugees and asylum seekers from the 10 countries of origin with the largest population/number of applicants

across 19 European countries. Although there is considerable variation across European countries in terms of composition of the refugee and asylum seeking population based on country of origin, Switzerland is home to many of the major refugee and asylum seeking populations found throughout Europe. Therefore findings from the Swiss context related to the impact of asylum wait times can provide important insight for other countries facing similar challenges to refugee integration.

Lastly, we examine how labor market restrictions in Switzerland compare to other European countries in table S2. Switzerland's mandatory waiting period before asylum seekers can take a job (3-6 months) falls in the middle of the range (1 day - 12 months) of the countries we examined and other restrictions (e.g., requiring employers to request to employ an asylum-seeker) are similar to those of many other European countries.

Cost-Benefit Analysis

Here we present a marginal cost-benefit analysis that quantifies the direct expected economic benefits of marginally lowering the average wait period by 10% (66 days) by comparing the changes in public expenditures and tax revenues that accumulate if refugees are employed versus when they are not employed in a given year. We focus on a small marginal change in waiting periods because such a small change is unlikely to trigger significant general equilibrium effects through changes in the number and or types of applicants or the quality of the application decisions. Taking into account such general equilibrium effects would require imposing a lot of strong and subjective assumptions about how wait times affect refugee flows that cannot be substantiated given the lack of detailed data on refugee flows and wait times in all potential destination countries. It would also require detailed data on how wait times affect the quality of the decisions, which is not measurable with existing data. We focus only on the direct benefits in terms of public expenditures and tax revenues because these are of first order importance and directly attributable to wait times, while other potential factors, such as the psychological benefits of employment and or broader societal externalities of better refugee integration, are difficult to quantify and there exist no standard metrics. If anything, ignoring these additional benefits means that our calculation provides a lower bound for the potential savings.

To capture the expected changes in public expenditures and tax revenues we follow the framework provided by (*37*) where public expenditures generated by non-employed refugees include the payments for social welfare benefits, health insurance premiums, as well as additional assistance payments that occur in some cantons for refugees with children. The public revenues generated by employed refugees include the income taxes; the special refugee tax assessed by the federal authorities for refugees, and regular employer tax contributions.

(*37*) estimate that the average difference between expenditures and revenues per employed versus non-employed refugee amount to about 35,000 Swiss Francs per year (this is based on an average over three model households that correspond to typical refugee profiles and over four typical refugee locations (Zurich, Genf, Basel, and Lausanne)). For example, a typical refugee in Geneva receives about 450 Swiss Francs per month in social welfare, and is assumed to contribute 161 Swiss Francs in income taxes (based on a gross yearly income of 36,000 Swiss Francs). The numbers for Zurich are 960 Swiss Francs and 149 Swiss Francs respectively due to different rules regarding the social welfare of temporarily protected refugees.

To estimate the aggregate net benefit from a 10% (66 days) shorter average wait period we assume that the decrease could be achieved in a cost neutral manner by increasing administrative efficiency and multiply the average difference in net annual revenues with the estimated decrease in the number of non-employed refugees in our sample. This works out to a net benefit of about 5,160,000 Swiss Francs ($5.6 million) in a single year alone.

Supplementary Results

Identification Check

In table S3 we present the result from a check of the identification strategy where we regress the applicant's wait time on the average wait time of refugees who arrive on the same day and from the same origin (i.e. the applicant's own wait time is omitted from the computation of the average). The results show that almost all of the variation in an applicant's individual wait time is driven by the average wait time of all the other applicants who arrive on the same day from the same origin. We find that as the average wait time for the other refugees' increases by one year, the applicant's own wait time increases by between .95-.94 years. This supports the claim that applicants are processed in batches depending on origin and arrival dates and that individual applicants can do little to speed up their own wait times.

Placebo Check

In table S4 we present the result from a placebo check where we regress the wait time on employment in up to three years prior to the asylum decision. We find that all the coefficients on prior employment are precisely estimated zeros, which demonstrates that the employment record of a refugee indeed has no bearing on how long they have to wait for a decision.

Robustness Checks

- First, we check that our results are robust to adding a variety of other control functions. In particular, we replicate the benchmark regression model, but also add the full set of origin by week of arrival, origin by gender, or canton by week of arrival fixed effects to further restrict the identification to within variation in these narrower groups. The results are displayed in table S5 and show that the effect estimates remain very similar when we add these additional fixed effects. This also holds true when we add controls for one, two, or three years of lagged employment respectively.
- Second, we check whether the results are sensitive to excluding the assigned canton from the set of control variables. In table S6 we replicate the main results table while omitting the canton fixed effects from all models. The results are very similar to the ones including the canton fixed effects, which is consistent with the canton being randomly assigned at entry.
- Third, we check whether the results are sensitive to the fact that some refugees appeal their asylum decision. We created a dummy variable that is coded as one for refugees who appealed and zero for those who did not appeal. In table S7 we replicate the benchmark model and add this appeal dummy and also interact it with the waiting period. The results

show that the interaction term is a precisely estimated zero which implies that the effects of waiting longer are almost identical for appellants and non-appellants. For example, in Model 1 for the sample of all refugees the effect of an additional year of wait time is 4.94 percentage points ($P < .0001$) for non-appellants and 4.66 percentage points for appellants ($P < .0001$). This holds regardless of whether we look at all refugees or control for up to three years of prior employment. Taken together these estimates suggest that the results are insensitive to the issue of appeals.

- Fourth, we check whether the results vary depending on the cantonal rules for labour market access for refugees. As indicated in the main text, the cantons have different rules about labour market access for refugees. One of the key differences is the length of the mandatory waiting period before refugees can access the labour market. Most cantons require a three month waiting period while a small group of cantons require a six month waiting period (Zurich, Appenzell Ausserrhoden, Appenzell Innerrhoden, and Glarus). To capture this difference in access we code a binary indicator for labour market restrictions coded as 0 for cantons with the three-month mandatory waiting period and 1 for the cantons with a 6 month mandatory waiting period. In table S8 we replicate the main results and also add the interaction term to the model to see if the effect of the wait times for the asylum decision varies depending on the cantonal labour market restrictions. We find that the effects of the wait times are very similar as the interaction terms are small and insignificant across all models. While this test speaks to the robustness of the findings about the effects of the wait times, it should be said that this is not a convincing test for the effect of the labour market restrictions on employment. Identifying the causal effect of labour market restrictions would require an exogenous change in the labour market restrictions in order to make sure that the labour market restrictions are not endogenous to the local labour market conditions.

- Fifth, we estimate a panel model where we regress the indicator that marks whether a refugee was employed at the end of a given year on an indicator that captures whether the refugee has received a positive decision and gained subsidiary protection status, the interaction of that indicator with the length of the waiting period, and a full set of year, canton, and refugee fixed effects. Note that this specification does not identify our central quantity of the interest, which is the effect of the length of the waiting period on subsequent employment. Instead, this panel model identifies a related quantity of interest, which is the effect of getting subsidiary protection status on employment and how that effect varies with the length of the waiting period. Note that because this model includes refugee fixed effects it controls for all time-invariant unobserved characteristics (such as ability, etc.) as well as all observed time-invariant characteristics (such as gender, etc.), which get differenced out. Since a refugee's wait time is a time-invariant characteristic we also cannot include the main effect for the length of the waiting period variable in the fixed effect regression (it gets absorbed in the refugee fixed effects), but we can include the interaction between the length of the waiting period and the subsidiary protection dummy (which switches from 0 to 1 over time) and the coefficient on that interaction term identifies how the effect of getting subsidiary protection status on employment varies with the length of the waiting period.

  Table S9 displays the results. According to Model 1, which is based on the full sample, getting subsidiary protection status immediately upon arrival increases the probability of employment by about 10 percentage points, which corresponds to a 50% increase compared to the average employment rate. Most importantly, the coefficient on the interaction term shows that this positive effect of getting subsidiary protection status on employment is reduced by about 3 percentage points for each additional year of waiting

for the decision. This interactive effect has a large magnitude as it corresponds to about a 33% drop compared to the effect of getting subsidiary protection status immediately upon arrival and implies that the entire positive effect of getting subsidiary protection status is wiped out after about 3.3 years of waiting. In Model 2 we check the linearity on the interaction and instead of the linear measure of wait times we use four indicator variables that we code based on equal sized bins for short, medium, long, and very long wait times and interact those indicator variables with the subsidiary protection status indicator. We find that the interaction effect is indeed almost exactly linear: the employment boost from getting subsidiary protection within a short waiting period is reduced by 2.2, 6.1 and 9 percentage points for medium, long, and very long wait times, respectively. Models 3 & 4 show that these results are very similar when we restrict the sample to only those refugees for which we have the full five years of data in the panel. Taken together these results, even though they estimate a somewhat different quantity of interest, are highly consistent with the main results for the effect of the length of the wait time on employment shown in Table 1 in the main text.

Subgroup Analysis

Table S10 presents the regression table for the subgroup analysis presented in Fig. 3 in the main text. The negative effect of the wait times is very similar across subsamples of refugees stratified by gender, origin continent, age at entry, and assigned language region.

Figure S4 and table S11 present additional subgroup analysis where we stratify the sample of refugees based on how long their origin country had been in war and the level of infant mortality in their origin country. The negative effect of the wait times is again very similar across all these subsamples.

To measure the war duration, we compute for each origin the total number of days that the country had been in war between 1984-2004 including both inter- and intra-state wars as captured by the Correlates of War data version 4.0 [6] (accessed January 1, 2016). For the infant mortality data we take the annual average over the 1984-2004 period as measured by the World Bank's World Development Indicator (WDI) database (*38*) (accessed January 1, 2016).

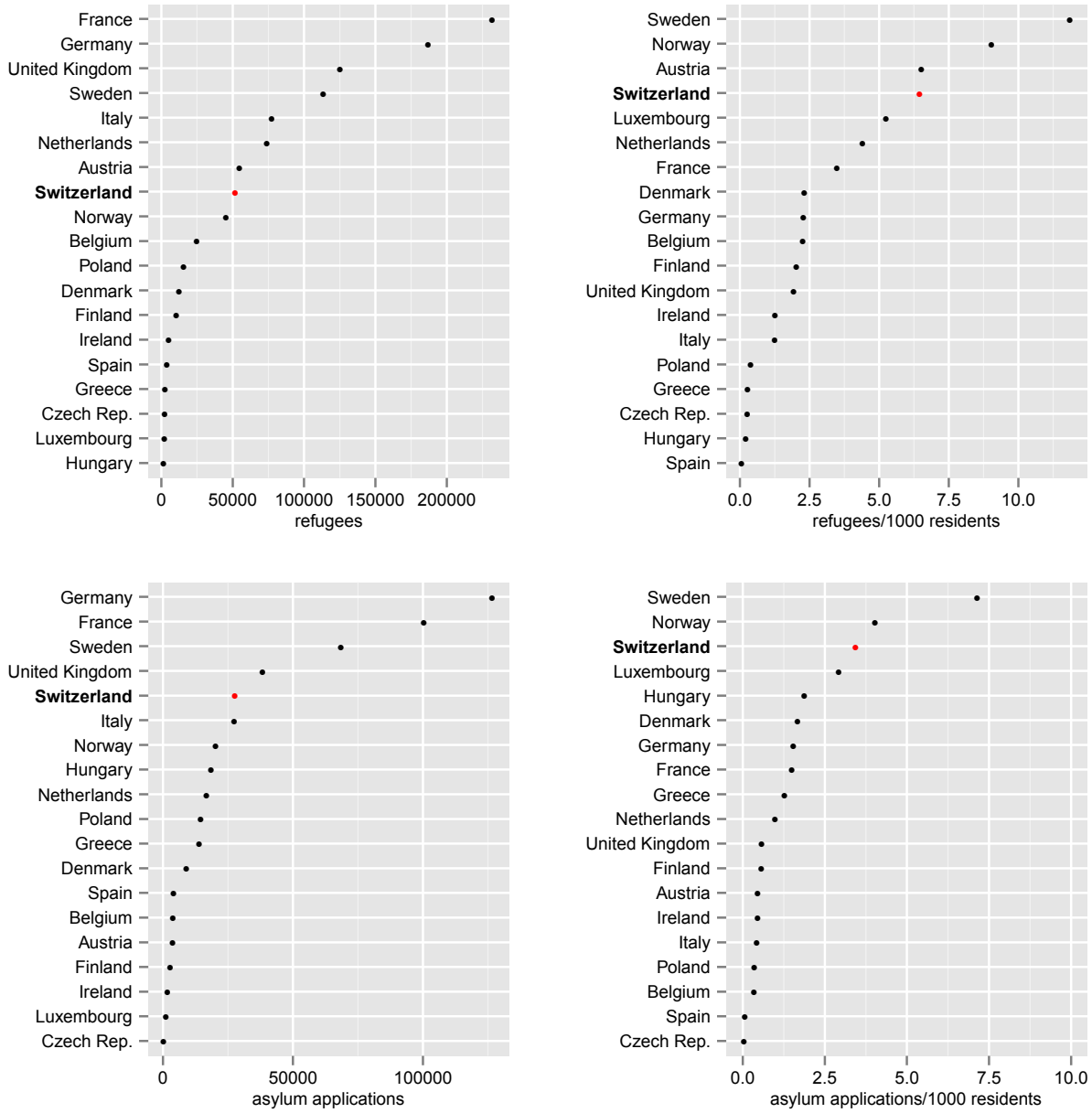

fig. S1. Refugees and asylum seekers in European countries. Shows the total stock of refugees and number of asylum applicants in 2013 for 19 European states. Author computations based on data provided in (*39*).

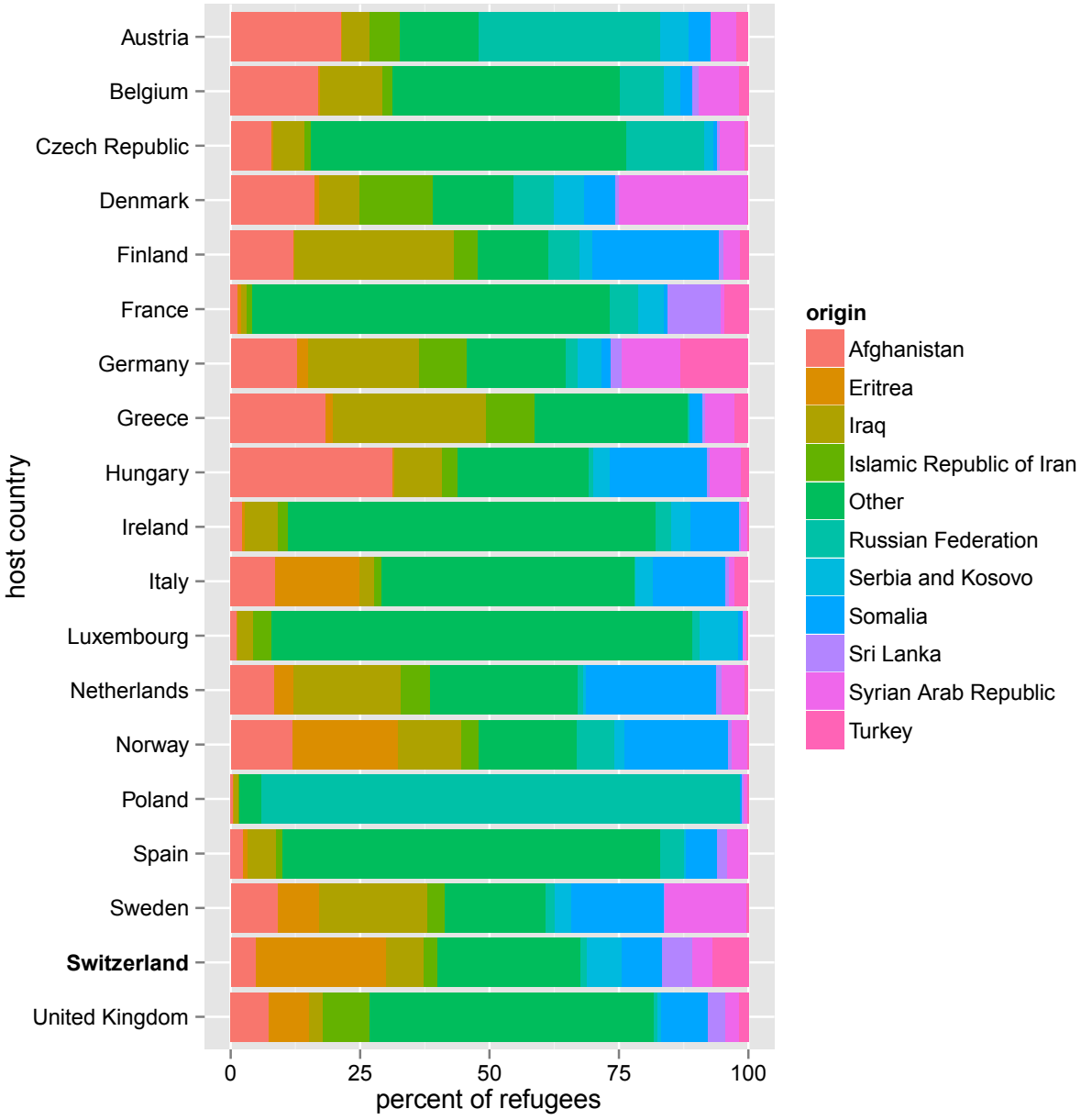

fig. S2. Composition of refugee population in European countries. For each host country shows the percent of refugees from the principal countries of origin most common across 19 European states in 2013. Author computations based on data provided in (*40*).

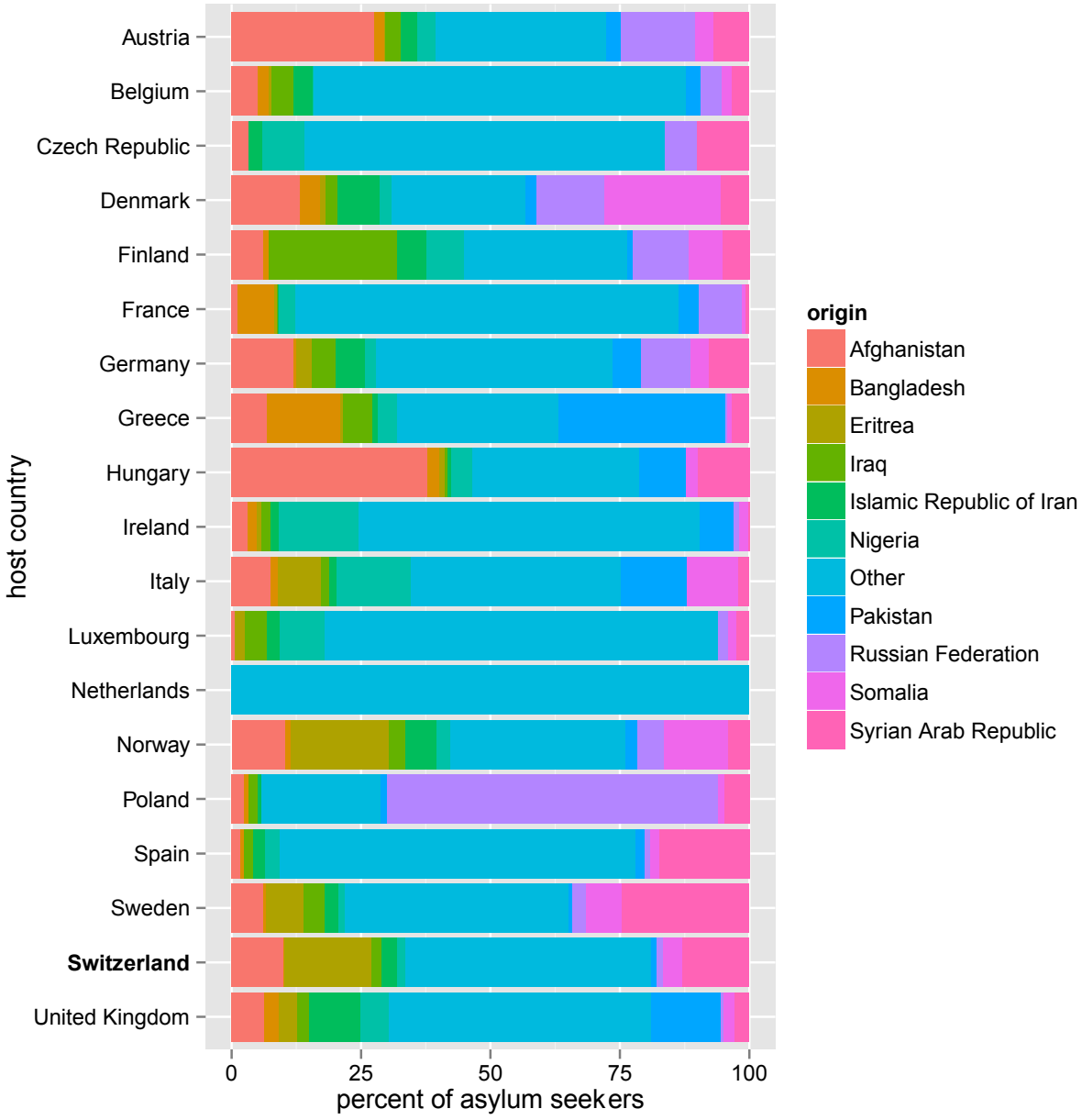

fig. S3. Composition of asylum seeker population in European countries. For each host country shows the percent of asylum seekers from the principal countries of origin most common across 19 European states in 2013. Author computations based on data provided in (*40*).

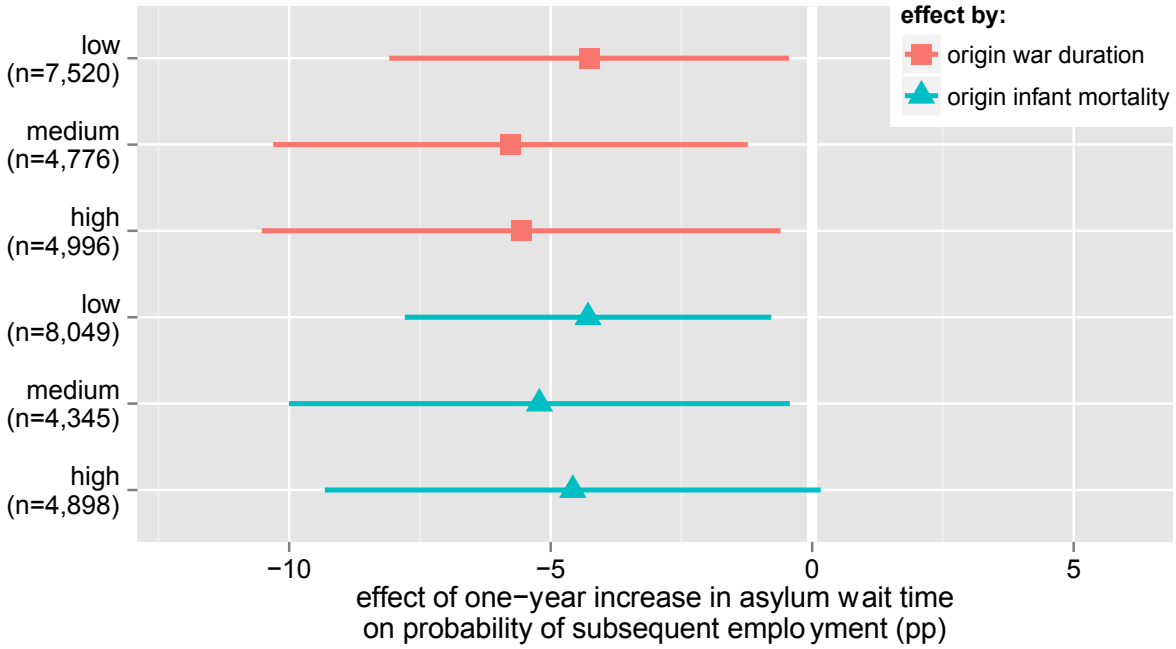

fig. S4. Longer asylum wait times decrease the probability of subsequent employment for various subgroups of refugees stratified by war duration and the level of infant mortality from origin country. Shows point estimates and 95% confidence intervals for the effect of a one-year increase in the asylum wait time. Estimates are based on OLS regressions with robust standard errors. Regressions include fixed effects for gender, age, week of entry, origin, religion, ethnicity, canton, and quarter of residency.

table S1. Asylum seeker labor market access. Author summary based on data provided in (*41*).

Country	Access allowed?	Time until labor
Austria	Yes	3 months
Belgium	Yes	6 months
France	Yes	12 months
Germany	Yes	3 months
Italy	Yes	6 months
Netherlands	Yes	6 months
Poland	Yes	6 months
Sweden	Yes	1 day
Switzerland	Yes	3-6 months
United Kingdom	Yes	12 months

table S2. Summary statistics.

Variable	Obs	Mean	Std. Dev.
employed (t)	17,405	.21	.41
wait time (years)	17,360	1.82	1.31
age at entry	17,405	28.78	9.15
year of entry	17,405	1998.77	3.02
female	17,405	.54	.5
origin: europe	17,337	.35	.48
origin: africa	17,337	.32	.47
origin: asia	17,337	.33	.47
quarters of residence	17,405	9.8	5.26
employed (t-1)	13,877	.14	.34
employed (t-2)	9,108	.13	.34
employed (t-3)	5,437	.1	.3

table S3. Longer asylum wait times lower subsequent employment for refugees (controlling for up to 3 years of previous employment and additional fixed effects). Regression coefficients with robust standard errors in parentheses. Outcome is measured as 100 for employed and 0 for not employed so that effects are in percentage points. All regressions include gender, age, and fixed effects for week of entry, origin, quarter of residency, religion, ethnicity, and canton. Models 1-3 refer to all refugees. Models 4-6, 7-9, and 10-12 are restricted to refugees for which 1, 2, or 3 years are observed prior to the asylum decision respectively. Models 1, 4, 7, and 10 also include fixed effects for each origin x canton combination. Models 2, 5, 8, and 11 also include fixed effects for each origin x gender combination. Models 3, 6, 10, and 12 also include fixed effects for each canton x week of entry combination.

model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
outcome:	employed (t)											
sample mean:	21.17			24.38			28.35			31.71		
wait time (years)	-4.81	-5.09	-3.87	-4.73	-4.89	-3.61	-5.69	-6.25	-4.29	-9.71	-9.85	-7.94
	(1.54)	(1.64)	(1.53)	(1.49)	(1.65)	(1.60)	(1.79)	(2.29)	(2.13)	(2.25)	(2.86)	(3.41)
employed (t-1)				47.89	47.99	45.49	46.31	45.57	44.99	44.44	44.35	41.27
				(1.70)	(2.60)	(1.64)	(1.92)	(3.21)	(2.02)	(2.38)	(4.48)	(2.76)
employed (t-2)							10.82	11.46	8.43	12.21	12.50	10.03
							(1.85)	(2.13)	(2.37)	(2.22)	(2.34)	(3.02)
employed (t-3)										2.13	2.78	1.36
										(2.58)	(1.91)	(3.43)
n	17,360			13,877			9,108			5,437		
employed **Δ (%)**	-22.73	-24.04	-18.26	-19.42	-20.04	-14.80	-20.09	-22.04	-15.15	-30.63	-31.06	-25.05
	(7.29)	(7.72)	(7.23)	(6.09)	(6.75)	(6.56)	(6.33)	(8.07)	(7.52)	(7.10)	(9.02)	(10.76)
additional fixed effects:												
origin x canton (# 729)	x			x			x			x		
origin x gender (# 169)		x			x			x			x	
canton x entry week (# 6,574)			x			x			x			x

table S4. Results are robust to excluding the assigned canton as a control variable.
Regression coefficients with robust standard errors in parentheses. Outcome is measured as 100 for employed and 0 for not employed so that effects are in percentage points. All regressions include fixed effects for gender, age, quarter of residency, religion, and ethnicity. Models 1, 3 & 4, 6 & 7, and 9 & 10 also include fixed effects for origin and week of entry. Models 2, 5, 8, and 11 also include fixed effects for each origin x week of entry combination. Models 1 & 2 refer to all refugees. Models 3-5, 6-8, and 9-11 are restricted to refugees for which 1, 2, or 3 years are observed prior to the asylum decision respectively.

model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
outcome:	employed (t)										
sample mean:	21.17		24.38			28.35			31.71		
wait time (years)	-4.84	-3.33	-4.70	-4.67	-3.50	-5.96	-6.08	-5.16	-8.54	-9.21	-7.05
	(1.19)	(1.46)	(1.29)	(1.14)	(1.47)	(1.74)	(1.51)	(1.94)	(2.47)	(2.14)	(3.13)
employed (t-1)				49.78	50.38		46.74	48.51		44.90	45.64
				(1.31)	(1.52)		(1.52)	(1.85)		(1.94)	(2.54)
employed (t-2)							11.85	7.57		12.81	9.10
							(1.79)	(2.15)		(2.21)	(2.74)
employed (t-3)										3.04	2.56
										(2.52)	(3.29)
n	17,360		13,877			9,108			5,437		
employed **Δ (%)**	-22.86 (5.64)	-15.73 (6.88)	-19.27 (5.28)	-19.17 (4.68)	-14.34 (6.01)	-21.02 (6.15)	-21.46 (5.31)	-18.20 (6.85)	-26.93 (7.78)	-29.06 (6.75)	-22.23 (9.86)
additional fixed effects:											
origin (# 96)	x		x	x		x	x		x	x	
entry week (# 572)	x		x	x		x	x		x	x	
origin x entry week (# 5,054)		x			x			x			x

table S5. Effects of longer asylum wait times on subsequent employment are similar for appellants and nonappellants (controlling for up to 3 years of previous employment). Regression coefficients with robust standard errors in parentheses. Outcome is measured as 100 for employed and 0 for not employed so that effects are in percentage points. All regressions include gender, age, and fixed effects for week of entry, origin, quarter of residency, religion, ethnicity, and canton. Model 1 refers to all refugees. Models 2 & 3, 4 & 5, and 6 & 7 are restricted to refugees for which 1, 2, or 3 years are observed prior to the asylum decision respectively.

model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
outcome:	employed (t)						
sample mean:	21.17	24.38		28.35		31.71	
wait time (years)	-4.94	-4.78	-4.81	-5.64	-5.76	-9.96	-10.27
	(1.20)	(1.29)	(1.16)	(1.83)	(1.59)	(2.90)	(2.53)
wait time x appealed	0.28	0.43	0.10	-0.40	-0.73	1.08	1.11
	(0.84)	(0.85)	(0.78)	(1.21)	(1.06)	(2.43)	(2.11)
appealed	-1.80	-2.24	-1.33	0.43	1.20	-5.03	-5.93
	(2.17)	(2.22)	(2.12)	(3.52)	(3.17)	(8.32)	(7.28)
employed (t-1)			48.27		45.87		44.60
			(1.33)		(1.54)		(1.94)
employed (t-2)					11.49		12.59
					(1.80)		(2.23)
employed (t-3)							2.86
							(2.53)
n	17,360	13,877		9,108		5,437	
employed Δ (%)	-23.32	-19.62	-19.74	-19.91	-20.32	-31.42	-32.40
	(5.67)	(5.31)	(4.76)	(6.46)	(5.62)	(9.16)	(7.98)

table S6. Effects of longer asylum wait times on subsequent employment are similar in cantons with 3 or 6 months of mandatory restrictions on labor market access (controlling for up to 3 years of previous employment). Regression coefficients with robust standard errors in parentheses. Outcome is measured as 100 for employed and 0 for not employed so that effects are in percentage points. All regressions include fixed effects for gender, age, and fixed effects for week of entry, origin, quarter of residency, religion, ethnicity, and canton. Models 1, 3, 5, and 7 also include fixed effects for origin and week of entry. Models 2, 4, 6, and 8 also include fixed effects for each origin x week of entry combination. Models 1 & 2 refer to all refugees. Models 3 & 4, 5 & 6, and 7 & 8 are restricted to refugees for which 1, 2, or 3 years are observed prior to the asylum decision respectively.

model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
outcome:	employed (t)							
sample mean:	21.17		24.38		28.35		31.71	
wait time (years)	-4.97	-3.46	-4.71	-3.50	-6.29	-5.06	-9.94	-7.20
	(1.17)	(1.46)	(1.13)	(1.47)	(1.52)	(1.96)	(2.15)	(3.15)
wait time x labour market restrictions	0.21	0.21	-0.51	-0.84	0.86	0.16	0.63	0.81
	(0.57)	(0.70)	(0.61)	(0.75)	(0.75)	(0.94)	(0.94)	(1.24)
employed (t-1)			48.30	48.77	45.86	47.39	44.55	45.30
			(1.34)	(1.54)	(1.54)	(1.87)	(1.95)	(2.54)
employed (t-2)					11.43	6.80	12.60	8.60
					(1.80)	(2.15)	(2.23)	(2.76)
employed (t-3)							2.74	2.14
							(2.54)	(3.36)
n	17,360	17,360	13,877	13,877	9,108	9,108	5,437	5,437
employed **Δ (%)**	-23.53	-16.39	-19.35	-14.37	-22.24	-17.87	-31.37	-22.72
	(5.55)	(6.88)	(4.63)	(6.05)	(5.35)	(6.92)	(6.79)	(9.94)
additional fixed effects:								
origin (# 96)	x		x		x		x	
entry week (# 572)	x		x		x		x	
origin x entry week (# 5,054)		x		x		x		x

table S7. Longer asylum wait times lower the positive effect of getting subsidiary protection status on employment (controlling in panel regression for person, year, and canton fixed effects). Regression coefficients with robust standard errors (clustered by person) in parentheses. Outcome is measured as 100 for employed and 0 for not employed so that effects are in percentage points. All regressions include fixed effects for person, year, and canton. Models 1 & 2 focus on the sample of all refugees with subsidiary protection. Models 3 & 4 focus on the sample of all refugees with subsidiary protection with five years of data upon arrival.

model:	(1)	(2)	(3)	(4)
outcome:	employed (t)			
sample mean:	20.44		21.69	
protection status (1/0)	10.20	8.20	9.48	8.35
	(0.69)	(0.79)	(0.85)	(1.03)
protection status x wait time (years)	-3.14		-3.12	
	(0.27)		(0.31)	
protection status x medium wait time (1/0)		-2.15		-3.43
		(0.94)		(1.19)
protection status x long wait time (1/0)		-6.06		-7.15
		(0.96)		(1.17)
protection status x very long wait time (1/0)		-9.06		-9.82
		(1.01)		(1.20)
n	74,403	74,403	58,525	58,525
persons	17,360	17,360	11,705	11,705
person fixed effects	x	x	x	x
year fixed effects	x	x	x	x
canton fixed effects	x	x	x	x

table S8. Longer asylum wait times lower subsequent employment for various subgroups of refugees stratified by gender, origin continent, age at arrival, and assigned language region. Regression coefficients with robust standard errors in parentheses. Outcome is measured as 100 for employed and 0 for not employed so that effects are in percentage points. Refugee samples are: males (model 1), females (2), European origin country (3), African origin country (4), Asian origin country (5), below median age of entry 27 years (6), above median age of entry (7), assigned to wait in German speaking canton (8), and assigned to wait in French speaking canton (9). All regressions include gender, age, and fixed effects for week of entry, origin, quarter of residency, religion, ethnicity, and canton.

model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
outcome:	employed (t)								
sample:	male	female	european	african	asian	young	old	german	french
sample mean:	28.62	14.85	15.77	17.47	30.37	24.08	18.56	22.19	20.55
wait time (years)	-7.17	-3.19	-7.15	-6.36	-1.36	-5.67	-4.06	-5.70	-4.75
	(1.86)	(1.39)	(2.16)	(2.33)	(2.05)	(1.83)	(1.57)	(1.49)	(2.01)
n	7,966	9,394	5,978	5,530	5,749	8,220	9,140	9,607	7,213
employed **Δ (%)**	-25.05	-21.47	-45.34	-36.38	-4.49	-23.55	-21.86	-25.69	-23.10
	(6.52)	(9.38)	(13.69)	(13.33)	(6.74)	(7.58)	(8.49)	(6.73)	(9.76)

table S9. Longer asylum wait times lower subsequent employment for various subgroups of refugees stratified by the war duration of the origin country and the origin infant mortality. Regression coefficients with robust standard errors in parentheses. Outcome is measured as 100 for employed and 0 for not employed so that effects are in percentage points. Refugee samples are: number of years that origin country was in war: low (model 1), medium (2), and high (3); origin country level of infant mortality: low (4), medium (5), and high (6). All regressions include gender, age, and fixed effects for week of entry, origin, quarter of residency, religion, ethnicity, and canton.

model:	(1)	(2)	(3)	(4)	(5)	(6)
outcome:	employed (t)					
sample:	origin war duration			origin infant mortality		
	low	medium	high	low	medium	high
sample mean:	22.38	22.26	18.29	18.30	31.62	16.60
wait time (years)	-4.27	-5.77	-5.57	-4.29	-5.22	-4.58
	(1.95)	(2.31)	(2.53)	(1.79)	(2.44)	(2.42)
n	7,520	4,776	4,996	8,049	4,345	4,898
employed **Δ (%)**	-19.07	-25.91	-30.42	-23.43	-16.50	-27.59
	(8.71)	(10.40)	(13.84)	(9.76)	(7.73)	(14.57)

table S10. Because of batch processing, an applicant's own wait time is primarily driven by the average wait time for other refugees who arrive on the same day from the same origin. Regression coefficients with robust standard errors in parentheses. Outcome is measured in number of days divided by 365. Average wait time is computed as the average wait time for refugees who arrive on the same day as the applicant from same origin (omitting the applicant). Regressions with covariates include gender, age, and fixed effects for week of entry, origin, religion, ethnicity, and canton.

model	(1)	(2)
outcome:	wait times (years)	
sample mean:	1.84	
average wait time (years)	0.97	0.94
	(0.00)	(0.00)
n	17,138	
covariates		x

table S11. Employment while waiting does not determine the wait time for the asylum decision. Regression coefficients with robust standard errors in parentheses. Outcome is measured in number of days divided by 365. All regressions include gender, age, and fixed effects for week of entry, origin, quarter of residency, religion, ethnicity, and canton. Model 1, 2, and 3 refer to the samples of all refugees for which 1, 2, or 3 years are observed prior to the asylum decision respectively.

model:	(1)	(2)	(3)
outcome:	wait time (years)		
sample mean:	2.19	2.87	3.45
employed (t-1)	0.003	-0.001	-0.006
	(0.009)	(0.011)	(0.013)
employed (t-2)		0.011	0.009
		(0.012)	(0.014)
employed (t-3)			0.021
			(0.017)
n	13,877	9,108	5,437