

# Online Appendix

The Impact of Host Language Proficiency on Migrants' Employment Outcomes  
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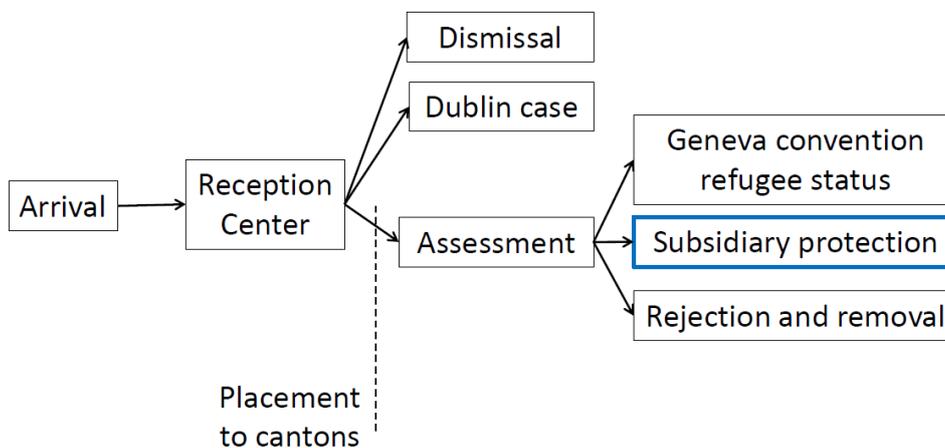
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# A Additional Materials

## A.1 Asylum Procedure

Appendix Figure A.1 illustrates the key features of the Swiss asylum process during the study period (the process was restructured in 2019). After arrival, asylum seekers contact the local police or an immigration office to file their asylum claim. The asylum seekers are then assigned to one of the five national reception centers where they live during the first weeks of the asylum process. This assignment is primarily based on the reception centers' capacity constraints but also considers the distance between the location where asylum seekers reported their asylum claims and the reception centers. After arriving at a reception center, individuals are assigned to a canton within 90 days and transferred to a particular municipality in the canton.<sup>1</sup> The within-canton assignment to municipalities is in the competence of the cantons and thus differs across cantons. The State Secretariat for Migration (SEM) examines each applicant's asylum request in order to verify and assess the reasons they are seeking refuge. During this procedure, applicants are entitled to reside in Switzerland and hold a temporary residence permit (permit N).

**Figure A.1: Asylum Procedure in Switzerland**



*Note:* This graph provides an overview of the asylum process in Switzerland. Refugees who are granted subsidiary protection (blue rectangle) hold permit F.

If the SEM approves a refugee's asylum claim, she will receive a residence permit (permit B)

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1. The central allocation mechanism is specified in the Swiss Asylum Act #27/1-3.

and is allowed to freely choose where to live and work within Switzerland.<sup>2</sup> If the applicant's claim for asylum is rejected but removal is deemed inadmissible (because it violates international law), unreasonable (if it endangers the individual), or impossible (due to technical reasons such as lack of flights to the origin country), she will obtain subsidiary protection and a temporary residence permit that is subject to annual renewal (permit F). About 45% of the total refugee population in Switzerland holds permit F during the study period and their share is particularly large for refugees from African countries.<sup>3</sup> Refugees who hold a permit F are the focus of this study because they are required to reside and work in the canton to which they were initially assigned.<sup>4</sup> I do not include refugees with permit B in the sample because they are free to choose their location and can thus self-select into a favorable language region. This requirement is an important institutional feature of my identification strategy because previous research has documented that language proficiency not only affects the choice of the destination country but also the location choice within a country (Jaeger 2000; Bauer, Epstein, and Gang 2005).

A dedicated and centralized placement unit of the SEM assigns asylum seekers and refugees to cantons. During the study period, these decisions were made manually, solely based on the information available in the Central Migration Information (ZEMIS) system. There is no personal interaction between the assignment officers and the asylum seeker. By law, asylum seekers and refugees are allocated to cantons in proportion to the canton's population size (Asylum Decree 1, #22/1). These cantonal allocation quotas that have been in place since 1999 are depicted as dashed lines in Online Appendix Figure A.2. Since July 1998, there is also a requirement to achieve a balanced distribution of asylum seekers' nationalities across cantons. Except for clearly defined cases such as family reunifications, severe health issues, and unaccompanied minors, asylum seekers are, in principle, exogenously allocated to cantons. SEM's placement decisions are binding and rarely overturned, except in very specific circumstances (see Appendix A.3 for more details).

Below, I explore some of the consequences of this assignment process. The solid lines in Online Appendix Figure A.2 depict the observed share of asylum seekers assigned to a specific canton. These shares are very close to the cantonal allocation quotas for most cantons and years. Thus, the placement

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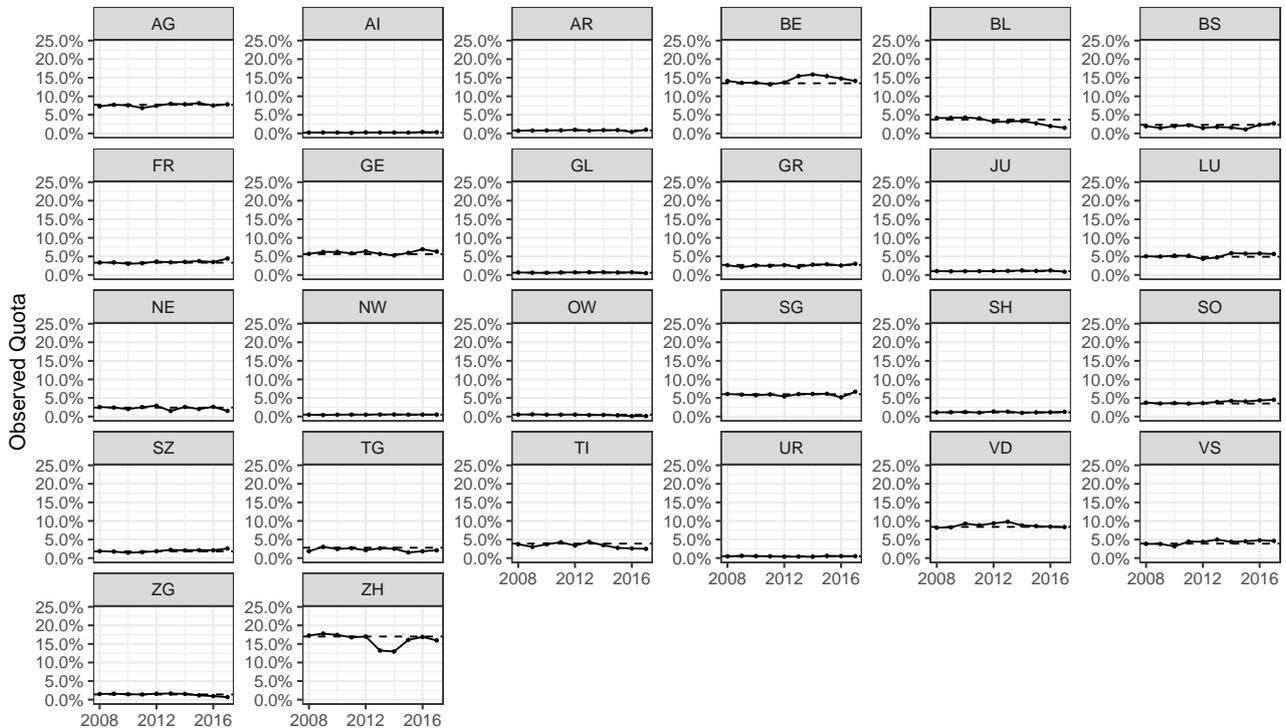
2. Ten years after the granting of protection, cantons can provide refugees with a residence permit C that is not subject to any time restrictions or conditions (Swiss Asylum Act #74/3).

3. For example, male Eritrean refugees of military conscription age typically receive permit F.

4. For all refugees who eventually obtained permit F, I also include their first years as asylum seekers (permit N) in my analyses as asylum seekers cannot choose their residence location.

policy leads to a geographical distribution of asylum seekers that reflects the cantonal population size and is fairly stable over the study period.

**Figure A.2: Observed Asylum Seeker Quotas in Swiss Cantons**



*Note:* The solid lines in this figure show the observed empirical quota of asylum seekers assigned to a specific canton defined as the share of asylum seekers who are placed in a canton, as a percentage of the total number of asylum seekers arrived per year. The dashed horizontal lines indicate the official cantonal quota of asylum seekers according to the Asylum Decree 1, #21/1 (enacted on January 1, 2008). The quotas have been constant since 1999.

Federal employment restrictions allow refugees in the study sample to start work three months after their arrival (Asylum Act, #43/1-1bis).<sup>5</sup> Online Appendix Table A.1 provides a complete list of all refugee statuses and their implications for labor market access and freedom of movement as well as details on cantonal employment regulations.

5. Before 2007, cantons had significant discretion to issue additional employment regulations. This means that cantons could in principle restrict work permits during economic downturns.

**Table A.1: Overview of Asylum Seeker and Refugee Statuses in Switzerland**

<b>Legal status</b>	Asylum seeker	Provisionally admitted <i>refugee</i>	Provisionally admitted <i>foreigner</i>	Recognized refugee	Recognized refugee
<b>Residence permit</b>	N	F	F	B	C
<b>Labor market access</b>	Yes, for the entire study period and all cantons, asylum seekers are allowed to work after three months (Swiss Asylum Act #43/1-1bis).	Yes, irrespective of the labor market and general economic conditions, but a new position has to be approved by the competent cantonal authorities which is a formality.	Yes, irrespective of the labor market and general economic conditions, but a new position has to be approved by the competent cantonal authorities which is a formality.	Yes	Yes
<b>Change of residence canton</b>	No, exceptions are only granted if one of the following reasons applies: (1.) the principle of family unity is violated, (2.) there is a serious threat to the well-being of the asylum seeker (request has to be approved by both cantons and the SEM), (3.) both cantons approve of the request “voluntarily”	Since a ruling by the Swiss Federal Administrative Court in February 2012: Yes, if approved by both cantons. Before: Generally no (handled as other residence permit F holders)	No, exceptions are only granted if one of the following reasons applies: (1.) the principle of family unity is violated, (2.) there is a serious threat to the well-being of the asylum seeker (request has to be approved by both cantons and the SEM), (3.) both cantons approve of the request “voluntarily”	Yes if approved by both competent cantons and conditional of not being unemployed and no other grounds for revocation (e.g., fraudulently obtained asylum or refugee status, a refugee has violated or represents a threat to Switzerland’s security) in terms of Swiss Asylum Act #63 (Foreign Nationals Act #37/2).	Yes, conditional that there are no grounds for revocation in terms of Swiss Asylum Act #63 (Foreign Nationals Act #37/3).

## A.2 Placement Decisions

My empirical identification leverages the placement of asylum seekers to cantons. I explore the exogeneity of the cantonal assignment for the sample of African refugees with subsidiary protection (residence permit F), who are required to reside in their assigned canton. The data reveals that 52.7% of French-speaking refugees live in the Romandie, while only 30.5% of English-speaking refugees do so. This imbalance raises important concerns about the exogeneity of the cantonal assignment. For example, if a French-speaking refugee can influence the SEM to assign her to the Romandie, we might expect this particularly resourceful refugee to have better labor market prospects independent of her language proficiency.

I have two strategies to take the above-documented imbalance across language regions into account. First, I leverage information on cantonal-specific and language region-specific placement preferences and remove individuals with such a preference from the sample. Second, I explore whether conditioning on the reception center removes the association between the language of a refugee, the assigned language region, and observed covariates. I present these two strategies in more detail below.

The first strategy leverages the fact that the ZEMIS dataset contains information on whether the caseworker in the reception center instructed the allocation officer to place the refugee in a particular canton. These instructions can take two different forms: the caseworker either directly codes a variable called “preferred canton” or uses an open text field to inform the placement officer about particular constraints that should be taken into account when placing the refugee. I have access to this open text field and use natural language processing tools to code the regular expressions in the open text field. I coded the mention of any canton and exclude cases in which the refugee was indeed placed in one of the cantons mentioned in the “preferred canton” variable or the open text field.

The second strategy uses the ZEMIS data to explore the imbalance and test for systematic differences between refugees assigned to the Romandie and the German-speaking cantons. I start by estimating the impact of being a French-speaking refugee on two outcome variables. The first variable captures whether a refugee was housed in a reception center in the Romandie (before being assigned to a canton by the SEM) and the second outcome measures whether the SEM assigned the refugee to a canton in the Romandie. Table A.2 presents the results of six regressions. In columns (1) to (3), I regress an indicator variable for being hosted in a reception center (RC) in the Romandie on an indicator variable that captures whether the refugee is French-speaking. Column (1) reports the raw

differences and documents that English-speaking refugees have a 26.7% likelihood of being in a reception center in the Romandie, while French-speaking refugees have a corresponding likelihood of 74.4%. This 47.7 percentage points higher likelihood for French speakers slightly decreases to 28.6 percentage points in column (2), where I control for sociodemographic covariates. It further decreases to 25.9 percentage points when I additionally control for the length of stay. These estimates imply that French-speaking refugees are more likely to self-select into a reception center in the Romandie before they are assigned to a canton (and thus to a language region) by the SEM. How does this imbalance in the location of the reception center translate into the assignment to language regions? In column (4) of Table A.2, I regress an indicator variable whether a refugee was assigned to the Romandie on the same French-speaking indicator as in columns (1) to (3), a dummy for being in a reception center in the Romandie, and an interaction between these variables. In column (5), I introduce sociodemographic controls, and in column (6) I additionally control for the length of stay. All three columns document that it is primarily the reception center that determines the assignment to language regions. A refugee who is placed in a reception center in the Romandie has a roughly 60 percentage points higher likelihood to be assigned to a canton in the Romandie. In contrast, the dummy for French-speaking refugees and its interaction with the reception center variable is close to zero and not statistically significant.

These results suggest that the placement officers regularly take the location of the reception center into account, particularly when the asylum process is still ongoing at the time of transfer to the canton. Interviews with the placement officers revealed that the language region of the reception center determines the language of the asylum process, in which all official documents are written. In order to simplify the asylum process after the transfer, the SEM often places these ongoing cases in a canton within the same language region. This suggests that French-speaking refugees might be able self-select into reception centers in the Romandie and thereby increase placement chances in the French language region. Even if they are not aware of this policy, they might be more likely to cross into Switzerland in the Romandie and therefore have a higher chance of being assigned to a reception center in the Romandie, and later to a canton in the same language region.

**Table A.2: Selection of Refugees into the Romandie**

Dependent variable	RC in Romandie			Assigned to Romandie		
	(1)	(2)	(3)	(4)	(5)	(6)
French-speaking Refugee	0.477 (0.029)	0.286 (0.040)	0.259 (0.040)	-0.080 (0.049)	-0.030 (0.056)	-0.010 (0.056)
RC in Romandie				0.598 (0.012)	0.628 (0.013)	0.638 (0.013)
French-speaking $\times$ RC in Romandie				0.027 (0.057)	-0.037 (0.060)	-0.044 (0.060)
Constant	0.267 (0.006)	0.233 (0.260)	0.071 (0.259)	0.145 (0.006)	0.299 (0.234)	0.407 (0.234)
Sociodemographic Covariates		✓	✓		✓	✓
Length of Stay			✓			✓
Individuals			5,043			
R-squared	0.050	0.201	0.211	0.336	0.379	0.384

*Note:* The table shows the selection of refugees into the Romandie, the French-speaking part of Switzerland. The sample includes only individuals with reception center (RC) information who do not state a cantonal placement preference (2008–2017). Columns (1) to (3) present the results of a regression with the indicator variable “Reception center in the Romandie” as the dependent variable. This variable is 1 if a refugee was in a reception center in the Romandie and 0 otherwise. Columns (4) to (6) report the results with the indicator variable “Assigned to Romandie” as the dependent variable which is 1 if an individual was assigned to the Romandie and 0 otherwise. Sociodemographic variables include age, family size, gender, and marital status at the time of arrival, entry year, ethnicity fixed effects, and religion fixed effects. The variable “Length of Stay” is the number of days since arrival in Switzerland.

I also explore whether the assignment leads to a balanced distribution of refugees across language regions. This is not a prerequisite for the identification of the language proficiency effect because I can adjust for all variables in the ZEMIS database that are observed by the placement officers when they assign refugees to cantons. I report estimates from estimating equation (3) with five sociodemographic characteristics as outcome variables, all measured at the time of arrival. I first present the raw difference with only  $French_i$ ,  $Romandie_i$ , and  $Language\ Proficiency_i$  as independent variables in the odd columns of Table A.3. I later add the fixed effects for the reception center, the origin country, the assigned canton, and the year of arrival in the even columns. The findings suggest that age, married, and Christian faith are balanced. In contrast, male refugees and refugees with a smaller family size are more likely to be assigned to the French-speaking region if they speak French. Because of this imbalance, I control for sociodemographic covariates (measured at the time of arrival) in all specifications that go beyond the simple difference-in-difference estimates, e.g. in columns (2) to (4) of Table 2.

**Table A.3: Balance of Sociodemographic Covariates**

Outcome	Age		Male		Married		Family size		Christian	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Language Proficiency	-1.901 (0.912)	0.300 (1.074)	0.311 (0.074)	0.249 (0.094)	-0.027 (0.051)	-0.030 (0.050)	-0.372 (0.154)	-0.346 (0.158)	-0.030 (0.078)	0.024 (0.065)
Individuals	5,043									
R-squared	0.019	0.130	0.013	0.158	0.002	0.046	0.003	0.050	0.003	0.541
Reception Center FE		✓		✓		✓		✓		✓
Origin FE		✓		✓		✓		✓		✓
Canton FE		✓		✓		✓		✓		✓
Year of Arrival FE		✓		✓		✓		✓		✓

*Note:* This table reports the results of ten regressions when estimating equation (3) with five sociodemographic characteristics as outcome variables, all measured at the time of arrival: age, male, married, family size, and an indicator that captures whether an individual is classified as Christian. I report two-way clustered standard errors (by canton and by year) in parentheses to account for within-individual serial correlation in outcomes. All estimations use the sample from 2008 to 2017 and exclude refugees who state a cantonal placement preference. The table reports covariate balance before individuals are assigned to a canton. The observations are on 5,043 refugees.

### **A.3 Appeals against placement decisions**

Appeals against the SEM's cantonal placement decisions must be filed to the Swiss Federal Administrative Court. Successful appeals mostly fall into one of two categories: The first category includes cases of family reunification with nuclear family members, defined as the refugee's spouse, registered partner, and minor children. In special cases, for example, if the refugee is dependent on another close family member (e.g., aunt, uncle, sister, brother), this definition of the nuclear family can be extended. The second category includes situations in which both cantons affected by the relocation agree to the move (since 2012, see Asylum Act, #27/3.) Because asylum seekers have a relatively high risk of becoming dependent on welfare, this second category of cantonal relocations almost never occurs.

I have surveyed all 130 appeals against the SEM's cantonal assignment decisions during the study period 2008-2017. The findings suggest that the federal court has been very restrictive in interpreting the rules and allows relocations only for reasons of family reunification. Among the 130 appeals, 115 (88.5%) were rejected. Among the 15 successful appeals, only five are from refugees who are potentially in the sample and for all of them, family reunification was the reason for a change in the assigned canton. The court rejected one of the 130 surveyed appeals explicitly on grounds that the appellant put forward economic arguments and argued that therefore "the relevant preconditions for [a re-assignment of the canton] are clearly not met." Other notable examples of declined appeals include a physically ill woman who lost her adult son during their trip to Switzerland and a woman with a serious mental illness who has a brother living in a different canton, see Federal Court Decisions D-3470/2009 and E-6330/2010 in Online Appendix Figure A.3.<sup>6</sup>

Asylum seekers remain in their initially allocated canton if they file a new application or re-enter Switzerland after their first application is rejected. These rules mainly apply to asylum seekers who are sent back to a country that has adopted the Dublin Regulation and re-entered Switzerland to file a new application, and to asylum seekers who appeal a negative SEM decision. The Dublin Regulation is a regulation of the European Union (EU) and was adopted by Switzerland in 2008. It tries to ensure that only one Dublin member state examines an asylum seeker's asylum application. This country is usually the state where the asylum seeker first entered the EU or Switzerland.

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6. The full set of surveyed decisions are available upon request.

### Figure A.3: Federal Court Decisions on Request to Change Residence Canton (E-3470\_2009 and E-6330\_2010)

#### Judgement of 22 June 2009

Single judge Thomas Wespi  
with the consent of judge Maurice Brodard;  
clerk Regula Frey.

A. \_\_\_\_\_, born B. \_\_\_\_\_, Somalia  
alias C. \_\_\_\_\_, born B. \_\_\_\_\_, Somalia  
represented by lic. iur. Anita Biedermann, Bündner advice  
center for asylum seekers, D. \_\_\_\_\_,  
appellant,

Issues of the case:

The appellant requested asylum in E. \_\_\_\_\_ on 4 October 2008. According to her own statements, she left the country together with her son of full age F. \_\_\_\_\_, born G. \_\_\_\_\_ (N. \_\_\_\_\_). After her arrival in Switzerland they had lost sight of each other (cf. A 1/12, p.9). The son requested asylum in H. \_\_\_\_\_ on 2 October 2008. [...] Following the FOM's allocation decision of 21 October 2008, the appellant was allocated to canton I. \_\_\_\_\_. On the same day, the son was allocated to canton J. \_\_\_\_\_. [...] On 23 March 2009, the appellant submitted a request for a change to canton J. \_\_\_\_\_, to be able to live with her son. [...]

The Federal Administrative Court takes into consideration:

[...] According to Art. 22 para. 2 Asylum Order 1, the FOM only authorizes a change of canton with the consent of both cantons, for those with a right to family unity or in cases of grave danger. The concept of family unity as covered by Art. 27 para. 3 AsylA is informed by the general notion of family applied in asylum law, according to which following Art. 1 lit. e Asylum Order 1 primarily spouses and minor children – in other words: the nuclear family – are considered to be family members, whereby registered partners and people who live in lasting, quasi-marital relationships are considered equal to spouses. [...] The appellant and her barely K. son do not form a nuclear family in accordance with Art. 1 lit. e Asylum Order 1. [...] In view of the above, [the court] states that the allocation of the appellant to the canton does not violate the principle of family unity within the meaning of Art. 27 para. 3 AsylA, that the FOM was right to dismiss the request for a change of canton and that accordingly, the appeal is to be rejected. [...] The appeal is rejected.

#### Judgement of 1 February 2011

Judge Kurt Gysi (chair),  
judge Walter Lang, judge François Badoud,  
clerk Christoph Berger.

A. \_\_\_\_\_, born \_\_\_\_\_,  
Syria,  
represented by Dr. iur. Thomas Hiestand,  
appellant,  
against

Issues of the case:

The appellant requested asylum in Switzerland on 20 July 2010 and was questioned in the FOM reception and procedure center in Kreuzlingen on 5 August 2010. By letter of her brother to the FOM on 19 August 2010, the appellant requested that she is allocated to the canton (...) on the grounds that her brother lives in (...) and geographical proximity would allow him to take better care of her, because she has mental problems and is in a state of great confusion.

The Federal Administrative Court takes into consideration:

Though the appellant's wish to live with her brother is understandable, a legal entitlement to be allocated to a specific canton cannot be derived from the relevant Art. 27 para. 3 AsylA. The appellant and her brother or his family do not form a nuclear family in accordance with Art. 1 lit. e Asylum Order 1. Furthermore, the appellant cannot appeal to the extended notion of family as laid out in Art. 51 para. 2 AsylA i.c.w. Art. 38 Asylum Order 1. An extraordinarily specific relationship of dependence of the appellant to her brother in the intensity requested by the jurisdiction is not given based on the case file. [...] The appeal is rejected.

## A.4 Validation of Language Coding for Refugees

To further explore the accuracy of my language coding for refugees in the study sample, I compare my measure with two alternative language classifications. First, for a subset of observations, I have information on the language used during the official asylum assessment. Among those refugees who spoke either German or French, my language classification is accurate for all available observations. Second, I examine information on language use from the 2000 population census.<sup>7</sup> For the target sample, I calculate the share of individuals who report speaking French at home. I find that 78.7% of those classified as French speakers actually speak French at home, while 71.0% of those classified as English-speaking do not speak French at home. Note that this measure ignores the possibility that some refugees might speak French in the workplace but another language at home. In this case, my estimates of the benefits of language proficiency arguably provide a lower bound because I classify some individuals who speak French as English-speaking.

## A.5 Validation of Language Coding for Swiss Cantons

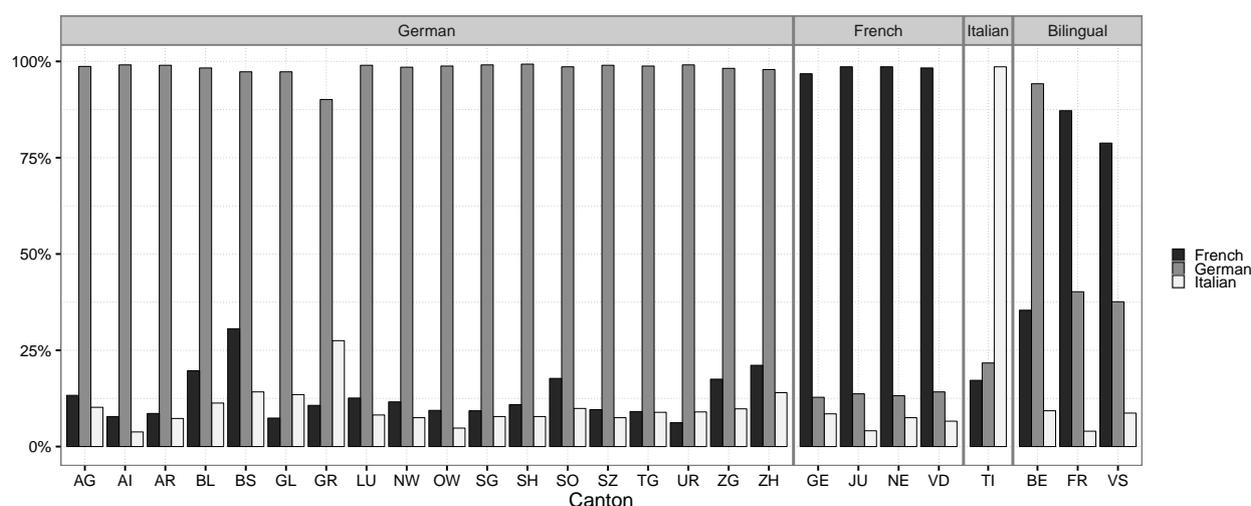
Data on the language used in the workplace across Swiss cantons lends support to my language classification (see Appendix Figure A.4). On average, more than 97% of individuals regularly use German in the workplace in German-speaking cantons, with the exception of Graubunden, where the percentage is 90%.<sup>8</sup> Similarly, 97% of workers in French-speaking cantons regularly speak French at work. Language use is more diverse in the bilingual cantons that I exclude from the estimation sample: 94% speak German in Bern, and only 35% regularly speak French; in Fribourg and Valais, 87% and 79% speak French, respectively, and only 40% and 38% regularly use German. The use of French in German-speaking cantons varies considerably. While 31% of workers in Basel-City, which is close to both France and Germany, speak French at work, only 6% do so in Uri, which is in the heart of German-speaking Switzerland.

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7. For data protection reasons, I am not allowed to link the individual ZEMIS data to the population census.

8. I classify Graubunden as German-speaking even though German, Italian, and Romansh are all official cantonal languages. However, German is by far the dominant language and almost the entire Graubunden population speaks German as at least a second language, according to the 2000 census. The estimates of the language proficiency effect are not sensitive to removing Graubunden from the study sample.

**Figure A.4: Language Usage in the Workplace**



*Note:* The figure shows the language used in the workplace based on data from the 2000 census. The panel “German” includes all cantons with German as the exclusive official language, the panel “French” all cantons with French as the exclusive official language, the panel “Italian” includes the Italian-speaking canton Ticino, and the panel “Bilingual” includes all cantons with both French and German as official languages. The respondents answered the following question: “What language do you regularly speak in school or at work?”. The figures are based on employed individuals and exclude students. The German-speaking cantons are Aargau (AG), Appenzell Innerrhoden (AI), Appenzell Ausserrhoden (AR), Basel-Land (BL), Basel-Stadt (BS), Glarus (GL), Graubünden (GR), Lucerne (LU), Neuenburg (NE), Nidwalden (NW), Obwalden (OW), Schaffhausen (SH), Schwyz (SZ), Solothurn (SO), St. Gallen (SG), Thurgau (TG), Uri (UR), Zug (ZG), and Zurich (ZH). The French-speaking cantons are Geneva (GE), Jura (JU), Neuchâtel (NE), and Vaud (VD). The Italian-speaking canton is Ticino (TI). The three bilingual cantons are Bern (BE), Fribourg (FR), and Valais (VS). Source: SFS 2005.

## A.6 Additional Results

**Heterogeneous effects** — Previous research has documented that the returns on local language proficiency may be heterogeneous. To explore heterogeneous effects, columns (1) and (2) of Table A.4 split the sample at the median into young and old refugees. I find that the effect of language proficiency is somewhat larger for older individuals. This finding is consistent with the notion that learning a foreign language is easier for younger people, which decreases the effect of language proficiency at arrival. In addition, I explore the impact of language proficiency for men and women separately. The entries in columns (3) and (4) of Table A.4 document that the benefits of language proficiency are slightly larger for men than for women.

**Language effect for asylum seekers** — My main sample of refugees is comprised of individuals with residence permit F who are legally allowed to stay in Switzerland until a return to their home country is possible. The vast majority of these refugees stay in Switzerland for good. A different immigrant group with similar characteristics who are also granted access to the labor market are asylum seekers. There are theoretical arguments for both higher and lower returns on language proficiency for asylum seekers

compared to refugees. On the one hand, employers will be reluctant to hire and invest in the skills of individuals with uncertain prospects of staying in the country. On the other hand, early integration into the local labor market may be a good investment into the skills of asylum seekers, which pays off in the future. To explore the effect of language proficiency for this group, I report the results of estimating the main specification in equation (3) for all asylum seekers with residence permit N. The results in column (5) of Table A.4 show that the point estimates are substantially smaller than in the main refugee sample but still positive and significant. Overall, these results suggest that language proficiency also increases employment among individuals with a higher degree of uncertainty regarding their future residence permit—but to a smaller extent than for refugees with a more permanent residence permit F.

**Language effect in bilingual cantons**— The exogenous assignment of refugees to cantons in different language regions allows me to identify the effect of language proficiency. So far, I have excluded refugees who were assigned to bilingual cantons because they have at least some discretion to move to a French- or German-speaking municipality within the assigned canton. An interesting question is whether the effect of language proficiency differs in the three bilingual cantons with both German- and French-speaking municipalities compared to the main sample, which excludes bilingual cantons. We might expect larger estimates for language proficiency if refugees in French-speaking municipalities of bilingual cantons are positively selected. When testing this conjecture, we need to keep two caveats in mind. First, the process guiding the intra-cantonal assignment of refugees in the three bilingual cantons is fairly opaque. Second, French-speaking refugees may live in the German-speaking part of a canton but work in the French-speaking part as most of these bilingual cantons are fairly small and commuting times between the French- and German-speaking parts are at most 60 minutes. This would decrease the estimate of the language proficiency effect. My analysis uses data from the Swiss Federal Statistical Office to code the language used by the majority of residents in a municipality, following Eugster et al. (2017).<sup>9</sup> I then build an interaction between the indicator for a French-speaking municipality and the indicator for a French-speaking refugee, similar to the interaction between the French-speaking Romandie and a French-speaking refugee in equation (3) of the main analysis. Column (6) of Online Appendix Table A.4 shows that the return to language proficiency estimated from intra-cantonal variation in local language use in bilingual cantons is close to zero. What explains this result? Interestingly, I find only low levels of intra-cantonal mobility across language borders

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9. Following this coding rule for majority language, the bilingual city Biel/Bienne is coded as German-speaking and the bilingual city Freiburg/Fribourg is coded as French-speaking.

for the refugee sample after initial resettlement. While 62.9% of French-speaking refugees live in a French-speaking municipality in their first two years, the share of English-speaking refugees is 37.2%. Over the following years, I find that these shares remain almost identical. In the fifth year, the share is 63.4% for French speakers and 36.6% for English speakers. One likely reason for these low levels of within-canton migration is that housing is often only provided in the municipality to which the canton initially assigned refugees, rendering moves very costly. Together, this suggests that the absence of returns on local language proficiency in bilingual cantons might be due to a combination of geographic proximity—which allows French-speaking refugees to live in a German-speaking municipality, yet work in a French-speaking one—and financial restrictions that prohibit intra-cantonal mobility.

**Effect on Length of First Employment** — The main estimates show that refugees with local language proficiency have a higher probability of getting a job. In addition, language proficiency might also increase the match quality between employers and employees. One proxy for match quality is the length of employment (in days). In the empirical analysis, I focus on the first employment spell of a refugee because later employment spells might be influenced by the match quality of the first job. Such spillovers could happen via references from former employers, which are an integral part of job applications in Switzerland. Column (7) of Table A.4 documents that the length of the first employment increases by around 137 days for refugees with local language proficiency. This result is consistent with the idea that language proficiency also increases match quality.

**Effect on Language Requirement** — Another question is whether language proficiency allows individuals to get jobs that require better language skills. To shed light on this, I use ZEMIS information on occupation to code jobs with high language requirements, e.g., jobs in education, health, and communications, and jobs with low language requirements, e.g., jobs in the cleaning, construction, and chemical industry. I exclude observations for which ZEMIS only reports “Other Jobs” in the occupation field from this analysis. Column (8) of Table A.4 shows the results of a regression of the high/low language requirement indicator on the language proficiency indicator. The results suggest that language proficiency increases refugees’ chances to gain employment in jobs with higher language requirements but I lack the power to detect a statistically significant effect.

**Table A.4: Additional Results**

Outcome	Employment (0/1)						Length of First	Language
	Young	Old	Men	Women	Asylum Seekers	Bilingual Cantons	Employment	Requirement
Group	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Language Proficiency	0.083 (0.036)	0.131 (0.062)	0.077 (0.047)	0.047 (0.047)	0.016 (0.002)	0.005 (0.070)	137.369 (102.082)	0.374 (0.298)
Reception Center FE	✓	✓	✓	✓	✓	✓	✓	✓
Origin FE	✓	✓	✓	✓	✓	✓	✓	✓
Canton FE	✓	✓	✓	✓	✓	✓	✓	✓
Year of Arrival FE	✓	✓	✓	✓	✓	✓	✓	✓
Sociodemographic Covariates	✓	✓	✓	✓	✓	✓	✓	✓
Religion and Ethnicity FE	✓	✓	✓	✓	✓	✓	✓	✓
Length of Stay	✓	✓	✓	✓	✓	✓	✓	✓
Observations	13,140	2,446	10,304	5,282	111,514	5,136	1,263	953
R-squared	0.164	0.156	0.178	0.095	0.085	0.149	0.281	0.268

*Note:* This table reports coefficients from eight regressions estimating equation (3) with two-way clustered standard errors (by canton and by year) in parentheses to account for within-individual serial correlation in outcomes. The dependent variable is a binary indicator of whether an individual was employed in a given year. In all regressions, I include an intercept and control for the baseline variables “Romandie” and “French”. Columns (1) to (6) report the regression using the employment indicator as the dependent variable, column (7) uses the length of the first employment (in days) as the dependent variable, column (8) uses an indicator for high language requirement as the dependent variable. The sample includes only individuals with reception center information who do not state a cantonal placement preference (2008–2017). Sociodemographic covariates include age, family size, gender, and marital status at the time of arrival. The variable “Length of Stay” is the number of days since a refugee arrived in Switzerland. The subsamples “Old” and “Young” are built based on a split of the age variable at the median of French-speaking refugees in the Romandie (34 years). The subsample “Asylum Seekers” includes only individuals with residence permit N. The subsample “Bilingual Cantons” includes only individuals who were assigned to the three bilingual cantons Bern, Fribourg, and Valais. The number of observations in column (8) is smaller than in column (7) because some employed individuals have the classification “Other Jobs” which does not allow me to classify the language requirement of their profession.

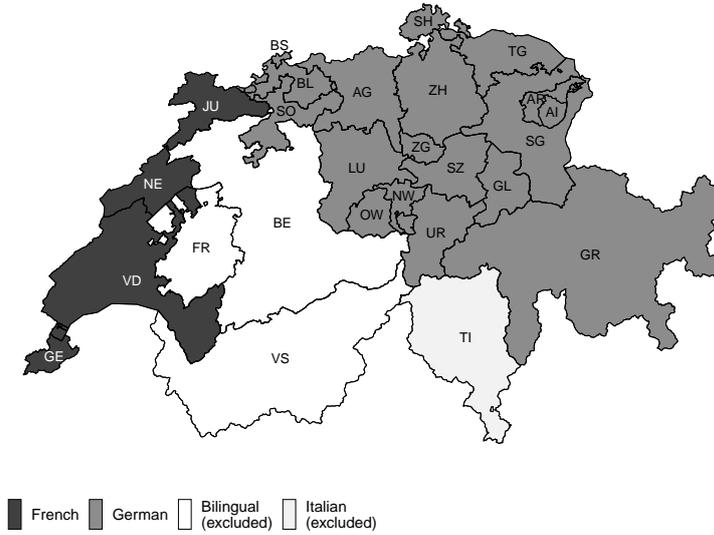
## B Additional Tables and Figures

Figure B.1: Coding of Language Variable



*Note:* The figure shows the coding scheme of the language variable that indicates whether an individual is classified as French-speaking in the main analysis. I recode all individuals as French-speaking who come from countries that were either a colony under a French-speaking colonial power or list French as an official language: Algeria, Benin, Burkina Faso, Burundi, Central African Republic, Chad, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Gabon, Guinea, Ivory Coast, Madagascar, Mali, Mauritania, Morocco, Niger, Republic of Congo, Senegal, Togo, Tunisia, and Western Sahara. Similarly, I recode all individuals as English-speaking if they come from a country that was either part of the British Empire or list English as an official language: Botswana, Egypt, Eritrea, Ethiopia, Gambia, Ghana, Guinea Bissau, Kenya, Lesotho, Liberia, Malawi, Namibia, Nigeria, Sierra Leone, Somalia, Somaliland, South Africa, South Sudan, Sudan, Swaziland, Uganda, United Republic of Tanzania, Zambia, and Zimbabwe. I exclude all individuals from the estimation sample who come from countries that have both French and English as official languages, namely Cameroon, Mauritius, Rwanda, and Seychelles. I also exclude individuals from countries classified as neither English-speaking nor French-speaking, namely Angola, Libya, and Mozambique.

**Figure B.2: Language Regions in Switzerland**



*Note:* The map depicts the language regions in Switzerland. There are four cantons with French as the exclusive official language (*Amtssprache/langue officielle*): Geneva (GE), Jura (JU), Neuchatel (NE), and Vaud (VD). In 18 Swiss cantons, German is the exclusive official language. These cantons are Aargau (AG), Appenzell Innerrhoden (AI), Appenzell Ausserrhoden (AR), Basel-Land (BL), Basel-Stadt (BS), Glarus (GL), Graubünden (GR), Lucerne (LU), Neuenburg (NE), Nidwalden (NW), Obwalden (OW), Uri (UR), Zug (ZG), and Zurich (ZH). In the cantons of Bern (BE), Fribourg (FR), and Valais (VS), both German and French are official languages. The only canton with Italian as the exclusive official language is Ticino (TI). Graubünden has Italian-speaking and Romansh-speaking minorities and German, Italian, and Romansh are all official languages. I classify Graubünden as German-speaking because German is the dominant language and almost all citizens in Graubünden speak German (see Figure A.4 in the Appendix).

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