Discussion Paper No. 18-040

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Martin Lange and Friedhelm Pfeiffer

ZEW
Zentrum für Europäische Wirtschaftsforschung GmbH
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Martin Lange* and Friedhelm Pfeiffer**

* Centre for European Economic Research (ZEW)

** Centre for European Economic Research (ZEW) & University of Mannheim

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Abstract: This study analyses the selection of recently arrived asylum seekers from Middle Eastern and African countries in Germany. The findings suggest that, on average, asylum seekers have 22 percent more years of schooling—the indicator used for human capital—when compared to same-aged persons from their country of origin. In addition, it is shown that asylum seekers in the sample often accumulated rather low or relatively high levels of schooling compared to same-aged persons in their countries of origin. This phenomenon is even more pronounced for parental education. It is demonstrated that the indicators of individual and parental human capital influence short-run integration outcomes in Germany, while work experience in the home country does not. The paper discusses potential economic explanations for the findings on immigrant selection and integration outcomes.

Keywords: immigrant selection, asylum seekers, human capital, family background, integration

JEL-Classification: F22, J15, J24.

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1. Introduction

Recent immigration of refugees from primarily Middle Eastern and African countries to Europe renewed concerns about the economic and social costs of humanitarian immigration. Evidence from previous refugee migration indicates that integration in the host economy and society often requires many years—although the overall impact on host countries seems to depend on a number of specific factors, and the evidence is far from being conclusive.[1] One factor determining social costs and benefits is the selection of immigrants. The term 'selection' refers to a non-random group of persons emigrating from their home country. Do only the better educated or most able individuals flee from political terror and human rights abuse to distant countries, in order to find a better life? Or is the recent cohort of refugees that arrived in Germany unaffected by this type of selectivity often found for labour market migrants[2] and other refugees[3]?

This study uses survey and administrative data from a sample of recently arrived male asylum seekers[4] from Middle Eastern and African countries in Germany to shed light on this question. We analyse the selection of asylum seekers by assessing their relative position—and in addition, the position of their parents—in the distribution of human capital from the country of origin. By comparing individual years of schooling—as an indicator of human capital—to age-gender specific country of origin averages (taken from Barro and Lee, 2013), we seek to deduce whether asylum seekers are, on average, a positively or negatively selected group of the home country's population. In addition, we analyse the relevance of parental education to the selection of asylum seekers—which is potentially particularly important for young emigrants. Parental education may indicate wealth and the degree of social ties, among other factors, and thus broaden the understanding of international migration and integration outcomes (Abramitzky et al., 2012; Borjas, 1993; Dustmann et al., 2012, among others).

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[1] Cortes (2004) and Evans and Fitzgerald (2017), among others, find that refugees, after initial dependence on welfare, eventually become net fiscal contributors in the US, often surpassing assimilation outcomes of labour migrants. For Sweden, Hansen and Loftstrom (2003) and Lundborg (2013) find that refugees assimilate out of welfare at a faster rate than labour migrants, but do not reach the levels of the native population. Borjas and Monras (2017) argue that refugee flows may have significant distributional consequences adversely affecting the labour market opportunities of directly competing natives in the receiving countries. For a summary of the current debate on the economics of humanitarian migration, see also Fuest (2016) and Dustmann et al. (2017).

[2] According to Chiswick (1999, P. 181) the "standard proposition in the migration literature is that migrants tend to be favorable self-selected for labor market success".

[3] Buber-Enser et al. (2016) show that refugees from the Middle-East to Austria have been positively selected in terms of human capital. Kondylis (2010) argues that the displaced Bosnian immigrants have been positively selected in terms of labour market outcomes. These findings also appear to be in line with studies of the Holocaust refugees escaping Europe (see Blum and Rei, 2018; among others).

[4] The term `asylum seeker' officially refers to a person who has applied for asylum, but has not yet received a decision on the application. We refer to the surveyed individuals in our study as asylum seekers because most of them belong to the group of asylum seekers as officially defined. See section 2 for the data and sample description.

Our contribution to the literature on the selection of asylum seekers is twofold. First, our study provides new evidence on the selection of international migrants by focusing on a group of recent young male humanitarian migrants, who spent months and a considerable amount of money to reach a safe country (see also Brücker et al., 2016; Buber-Ennser et al., 2016; Lange et al., 2017). We add a new perspective to the ongoing debate about the selection of refugees and their integration. Until now, studies which look at self-selection of this group are rare. Data at the individual level in the home countries of asylum seekers is restricted, as humanitarian emigration is often the result of conflict or turmoil in the home country, where institutions providing data become deadlocked. In addition, economic considerations might not be the main driver of refugee emigration (among others, see Hatton, 2016; Chin and Cortes, 2015; or Docquier et al., 2017), which should reduce self-selection based on economic reasoning. However, there still seems to be a limited understanding on how these factors determine migration when it is not directed to neighbouring countries, rather, to countries far away.

Our second contribution is the inclusion of the parental background in the study of selection in refugee migration for those coming to Germany. The education of fathers and mothers contains complementary information on the socioeconomic background of asylum seekers and their socialisation. Parents likely play a role in migration decisions, particularly when refugees are relatively young, inexperienced, or have no savings. Parental background may also exert influences on integration in the host country. On the one hand, refugees who have better educated parents might have stronger ties to their home country, and therefore stronger motives for returning more promptly. In such cases their incentive to invest in host country specific skills may be lower. On the other hand, better educated parents could push their children to invest in integration within the host countries.

Our analysis shows that asylum seekers are, on average, positively selected with respect to our indicator of human capital; confirming Chiswick's (1999) hypothesis of a general positive selection of migrants, and the literature investigating earlier refugee waves (cited in Footnote 3). However, going beyond the average, we show that our indicators of human capital vary substantially among asylum seekers. There is a considerable proportion of positively, but also negatively selected asylum seekers. We analyse Borjas' (1987) theory for the selection of international migrants to find an explanation for this polarization. According to Borjas (1987), immigrants to destination countries with higher income inequality relative to their home country are positively selected, because they expect to profit from a higher income dispersion. Immigrants to destination countries with lower income inequality are negatively selected, because they aim to insure themselves against low incomes in the wage distribution. Preliminary findings indicate mixed evidence for this explanation. While Borjas' (1987) predictions do not explain the polarization pattern observed in individuals' education, it seems to be

consistent with the observed pattern of parental years of schooling. Depending on the indicator of human capital used, results differ.

Finally, we estimate the relevance of schooling acquired in the country of origin for short-term integration outcomes in Germany. Chiswick and Miller (2003) and Chiswick et al. (2005), among others, show that pre-immigration schooling, work experience and skills are significant positive factors for earnings in the host country. Hartog and Zorlu (2009), however, present evidence that higher education of asylum seekers in their home countries does not translate into returns in the Dutch labour market (see also Sanromá et al., 2015; Fortin et al. 2016). We provide an empirical analysis of this question using data on host country language proficiency and employment. Results suggest that asylum seekers with more years of schooling perform better on a German language test, and in finding employment. For every additional year of home country schooling the number of words increases by 0.7 words, and the probability of being employed by 1.1 percent. The effect of parental education on language acquisition is negative, though it does not influence the probability of finding employment. This finding gives some initial indication that on the sample used parental education negatively influences host-country specific investments.

For a third measure of human capital—work experience in the country of origin—we find no statistically significant effect on integration outcomes. Thus individual years of schooling in the home country and parental background seem to be relevant for integration outcomes in Germany, but not work experience in the home country.

The study continues as follows. The next section introduces the data on newly arrived young male asylum seekers, and presents descriptive statistics on the indicators of human capital. In section three, we analyse how asylum seekers are selected in terms of individual and parental education, and discuss the relevance of socioeconomic explanations to better understand these findings. We then investigate the relevance of asylum seekers' schooling and their parents' educational background for integration outcomes in Germany in section four, and conclude in section five.

2. Survey data on newly-arrived asylum seekers

Europe, and in particular Germany, saw a substantial increase in applications for asylum from 2014 to 2016. In 2015 alone, 890,000 persons, predominantly from Middle Eastern and African countries, immigrated to Germany in order to seek asylum (BMI, 2016). In this study we employ survey data from asylum seekers who were a part of this large influx to Germany in recent years. We utilize the "Real-World Laboratory Survey among Asylum Seekers", which contains information on asylum seekers living

in two group accommodations close to the city of Heidelberg in Southern Germany.[5] The data set contains items related to the socioeconomic status of the surveyed asylum seekers, both before and after they left their home countries, as well as information on short-term integration indicators such as German language proficiency and labour market participation. We rely utmost on the self-assessment of the interviewees' and their parents' educational attainment. We retrieve years of schooling from the response to the following question: "How many years did you go to school? (If applicable, including university)", for the asylum seeker as well as for the father and the mother.[6] An important advantage in using years of schooling is that it is available for most of the countries in the world (see Barro and Lee, 2013, among others). To the best of our knowledge, our analysis is currently the only study which utilizes microdata on years of schooling of recent asylum seekers and their parents to explore selection patterns and refugee outcomes in the host country.

We restrict the sample on two dimensions. First, we omit asylum seekers from European sending countries, due to an exceptionally low probability of recognition as a refugee. Secondly, we do not consider female asylum seekers due to the very small sample size (8 respondents), and their arguably different migration decisions and educational attainment in the sending country. In addition, we disregard observations with missing information on own or parental years of schooling.[7] The remaining sample contains 203 non-European male survey respondents (see Table A1 in the appendix for a summary of the sample selection procedure).

Our sample covers several source countries in the Middle East and Africa. Almost 43 percent of the asylum seekers in our sample originate from Afghanistan, 20.7 percent from Syria, and 18.2 percent from Iraq, which is in line with Buber-Ennser et al. (2016). Gambians constitute the largest group of African asylum seekers in our sample (10.3 percent). The remaining 7.8 percent stem from other

[5] The survey was conducted in cooperation with the administration of these group accommodations and the local foreigner's administration offices in August/September 2016. Participation in the survey was voluntary, and addressed all persons living in the accommodations. The computer-assisted interviews were performed at the group accommodations by professional native speaking interviewers. The aim was to cover the most frequently spoken languages such as Arabic, Dari/Farsi, Tigrinya, Pashtu, English and German. The survey was complemented with information on asylum seekers' time in Germany and their asylum status from the local foreigner's administration office. For details on the survey, see also Deger et al. (2017).

[6] There is no further information on the curriculum, the length of a school day or year, nor any other quality dimension of schooling. Employing years of schooling as an indicator of human capital has advantages and disadvantages. Human capital summarizes competencies such as memory capacity, information processing speed, general problem-solving abilities, as well as self-regulatory skills, such as motivation, delay of gratification or persistence. These dimensions are numerous and often complex to measure. Schooling should be related at least to some of these dimensions and it is seen as an important investment in human capital.

[7] Alternatively, based on a random regression imputation, missing years of schooling for fathers and mothers was replaced with their predictions and a random component drawn from a normal distribution with the standard deviation equal to the variance of the residual of the imputation regression (see Little and Rubin, 2002). Results are quantitatively and qualitatively equivalent and therefore not discussed in the paper. They are available upon request from the corresponding author.

Middle Eastern or African countries.[8] Although the distribution of sending countries is not fully representative of the latest influx of asylum seekers in Germany, our sample covers the main countries of origin. According to BAMF (2017), the top three countries of origin of asylum applicants in 2016 are Syria (36.9 percent), followed by Afghanistan (17.6 percent), and Iraq (13.3 percent). The imperfect representativeness in the proportions of the countries of origin is due to the nature of the survey, which comprises all inhabitants of two group accommodations instead of sampling asylum seekers at several accommodations across all German states.

Table 1 presents descriptive statistics on the characteristics of asylum seekers in our sample. The first column shows means, the second column presents standard deviations. The average age of the sample is 24.9 years, with the youngest persons of age 18, which was the legal requirement to participate in the survey. In comparison to a representative survey among asylum applicants in Germany by Brücker et al. (2016), the average age of our sample is 6.2 years lower. Our sample focuses in particular on the important share of recently arrived young male asylum seekers. According to BAMF (2017), 47 percent of the asylum seekers who applied for asylum in 2016 were in the age group 18-34, and more than 70 percent of them were male. In our sample of male asylum seekers, 91 percent are in this age group. At the time the survey was conducted, surveyed asylum seekers had lived in Germany for 10.6 months on average, indicating that they predominantly arrived at the end of 2015 when asylum seeker immigration to Germany reached its current peak.

Table 1: Asylum seeker characteristics

	Mean	Standard Deviation
Age in years	24.9	6.50
Time in Germany in months	10.6[a]	3.00
Years of Schooling (S)	8.9	5.04
Years of Schooling Father (S^F)	5.9	5.91
Years of Schooling Mother (S^M)	3.8	5.22
Parental Years of Schooling (S^P)	6.4	5.96
Work in home country (yes: 1; no: 0)	0.73	0.45
Work Experience (in years)	5.5[b]	6.05
Number of Words in Test	15.5[c]	8.64
Work in Germany [1 yes; 0 no]	0.09	0.28
N	203	

[a] N=201; [b] N=198; [c] N=195. Source: `Real-world Laboratory Survey among Asylum Seekers'.

In terms of human capital, asylum seekers spent, on average, 8.9 years in education; a very similar figure to our pilot study based on 81 asylum seekers (Lange et al., 2017), and to the representative study of asylum seekers in Germany by Brücker et al. (2016). Other studies using information on the highest educational degree obtained or school attended report similar values on the educational

[8] These are Iran, Algeria, Niger, Turkey, Pakistan and Tajikistan. See table A2 in the appendix.

attainment of asylum seekers who recently migrated to Europe (see Buber-Ennser et al., 2016 for Austria, and Rich, 2016 for Germany). Despite the mean of almost 9 years of schooling, we observe a substantial share of asylum seekers without any years of schooling in our sample (14 percent). This is a common finding for developing countries (Hertz et al., 2007) and is also in line with other recent studies. Brücker et al. (2016) and Rich (2016) report the share of asylum seekers without any schooling at 9 and 7 percent, respectively, while according to Buber-Ennser et al. (2016), the share with no or very little schooling was also 14 percent in their sample.

Asylum seekers may also have interrupted or terminated their education due to conflicts in their home countries (see for instance Shemyakina, 2011, or Diwakar, 2015). The observed years of schooling should therefore be seen as a lower bound measure of the educational potential which might have been realized without home country conflicts. In addition to years spent in the education system, 73 percent of the asylum seekers reported that they have acquired work experience in their home countries. The average years of work experience amounts to 5.5 years in the overall sample, and 7.6 years for those with work experience only.

Fathers of the asylum seekers have accumulated, on average, 5.9 years of education. Thus, asylum seekers acquired on average 50 percent more schooling compared to their fathers—reflecting the educational expansion around the world (see Barro and Lee, 2013, and Morrison and Murtin, 2009). Mothers have acquired less years of schooling compared to fathers (3.8 versus 5.9 years of education), a gap that is not unusual for the countries under investigation (Duflo, 2012). We construct a further indicator, referred to as parental human capital, which corresponds to the maximum of fathers' and mothers' years of schooling. This variable is dominated by fathers' years of schooling, since for most asylum seekers fathers accumulated more years of schooling than mothers. Nevertheless, for over ten percent of our sample parental education exceeds fathers' years of schooling (6.4 versus 5.9 years), implying more schooling of mothers than fathers. Since we are also interested in the socioeconomic selection of asylum seekers, we use our indicator throughout our study as a measure of human capital of the households in which asylum seekers were raised. Individual and parental years of schooling exhibit a correlation of 0.45 in our sample. They thus cover different as well as related factors relevant for the selection of asylum seekers, and their integration outcomes.

The third panel of Table 1 presents two measures of short-term integration outcomes. Firstly, we rely on the results of a German language test taken during the survey, in order to assess the acquired language proficiency of participants. Using the test as a measure of German language skills is particularly important for avoiding individual misrepresentation, which seems to be common in self-assessed language measures (see Edele et al., 2015). The test was designed to be straightforward and focused on verbalization of single words rather than assessing grammatical knowledge. Survey

respondents were asked to name as many surrounding objects as possible in one minute in German. The environment was identical for all respondents. On average, asylum seekers were able to name almost 16 surrounding objects. Secondly, we utilize responses to the question as to whether asylum seekers have worked in the last week. We hereby deliberately allow for any kind of employment such as full- and part-time work, internships or other work arrangements. In line with the findings reported in Brücker et al. (2016) and Lange et al. (2017), 9 percent of asylum seekers self-reported as active in gainful employment.

3. The selection of asylum seekers

3.1 Individual, parental and source country years of schooling

In this section, we analyse the selection patterns of newly-arrived asylum seekers in Germany. Selection is empirically assessed by comparing the individual years of schooling of asylum seekers with the average years of schooling of same-aged persons from the same country. In order to do so, we use Barro's and Lee's (2013) dataset on educational attainment around the world. The main advantage of this data set is the possibility to compute age-group-by-gender cells of years of education as of 2010 for almost all sending countries.[9] Age groups are fine-grained by five year intervals. Since we know the age, gender and country of origin of the asylum seekers in our sample, we are able to match each observation with the average years of schooling of their peers from their home country. Furthermore, we analyse whether educational selection of asylum seekers is already reflected in the educational attainment of their parents, compared to same-aged persons in the home country.[10] Table 2 shows the mean and the standard deviation of the years of schooling of asylum seekers, of their home country equivalents, of their parents, and of the home country equivalents of the parents.

On average, Syrians and Iraqis accumulate more than ten years of schooling. Afghanis and Gambians spend considerably less time in the education system. On average, asylum seekers in our sample have 22 percent or 1.6 additional years of schooling than comparable-aged persons from their home

[9] Barro and Lee (2013) assess the years of schooling by combining various data sources on educational attainment in the various countries. Their data set unfortunately does not cover all asylum seeker sending countries. 26 asylum seekers from Eritrea, Palestine, Gabon and Nigeria are excluded, since we were not able to acquire information on the years of schooling for these sending countries. See Table A1 in the Appendix.

[10] Since our data does not contain information on the age of the parents, nor whether the asylum seeker is the first or any other child of the parents, we approximate the age of the parents in order to compare their years of schooling to same-aged nationals. Based on United Nation (2013) data on age at first birth for mothers, it is assumed that mothers are 25 years old when giving birth. In addition, data from United Nations (2001) suggests that fathers are, on average, 5 years older than mothers. Hence, it is assumed the age of fathers to be 30 years at birth of the survey respondent. Although the degree of educational selection of the parental households depends on the age-at-birth assumptions, variation in these assumptions does not change our results qualitatively. In any scenario presented in table A4, parental households acquired on average more human capital than same-aged nationals.

countries. The average asylum seeker thus seems to be positively selected in terms of human capital.[11] Furthermore, asylum seekers seem to originate on average from positively selected households. Their parents accumulate an additional 1.76 years of schooling than their same-aged nationals, a difference of 38 percent, which is statistically highly significant.

Table 2: Asylum seeker, parental and country of origin years of education

	$\bar{S}$		Average in home country	$\overline{S^P}$		Parents' average in home country
	mean	sd	mean	mean	sd	mean
Afghanistan	7.52	5.42	6.61	5.28	5.65	3.59
Syria	10.40	3.83	7.64	8.14	5.64	6.95
Iraq	10.49	4.20	8.76	9.92	5.11	5.43
Gambia	7.52	5.63	5.65	2.43	4.75	2.38
Rest	9.94	4.71	8.24	5.13	6.77	5.62
Total	8.85	5.04	7.25	6.41	5.96	4.65
N	203		203	203		203

Source: `Real-world Laboratory Survey among Asylum Seekers'. Data on average years of schooling in home countries have been calculated based on Barro and Lee (2013).

Exploring the relationship between parents' and asylum seekers' education further, we classify asylum seekers by their own, as well as their parents', years of education in relation to the home country averages (see Table 3) in four different categories. The first and second columns of Table 3 differentiate asylum seekers who have accumulated above average years of education from those who have accumulated below average years of schooling. The rows divide parents' education, where the first row refers to parents with above and the second row to parents with below average years of schooling.

Table 3: Asylum seeker and parental years of schooling relative to country of origin (# obs.; %)

	$S_i \geq \bar{S}$	$S_i < \bar{S}$	Total (row)
$S_i^P \geq \bar{S}^P$	90; 44%;	19; 9%	109; 54%
$S_i^P < \bar{S}^P$	46; 23%	48; 24%	94; 46%
Total (column)	136; 67%	67; 33%	203; 100%

Source: `Real-world Laboratory Survey among Asylum Seekers' for data on individual and parental human capital. Average years of schooling for home countries have been calculated based on Barro and Lee (2013).

If asylum seekers as well as their parents accumulated above average years of schooling, they should belong to the upper part of the skill distribution in the sending country. Analogously, asylum seekers and parents with below average years of schooling will belong to the lower part of the skill distribution. If asylum seekers accumulated more than the average number of years of schooling, but parents did not, this hints towards upward mobility. If asylum seekers accumulated less than the average number of years of schooling, but parents did not, this indicates a social decline (for instance, due to disrupted educational biographies from the start of violent conflicts in the home country).

[11] This is not an aggregation effect, but also holds for each home country separately.

In total, asylum seekers are by two thirds positively selected in terms of their own education. Yet, they stem from households with above or below the average human capital in almost equal proportions. Given this finding, there seems to be a considerable number of asylum seekers who were on an upward trajectory even before fleeing their home country. The cell in the second row of the first column in Table 3 supports this notion, with 23 percent of asylum seekers belonging to this category. On the contrary, asylum seekers experiencing downward social mobility make up only 9 percent of our sample. Furthermore, 44 percent of our sample have above average own education, and come from above average educated households. One third of asylum seekers are negatively selected, whereas 24 percent come from below average educated households and they themselves have a below average education.

Our findings with regards to the positive selection of asylum seekers is consistent with Chiswick's (1999, p.181) "standard proposition in the migration literature"; that immigrants are a positive selection of the home country's population. According to his study, predominantly the more capable strive for economic progress, and thus migrate to countries with better perceived economic opportunities net of migration costs. Although this proposition was originally developed for labour migrants, our results suggest that it also holds on average for our sample of humanitarian migrants.

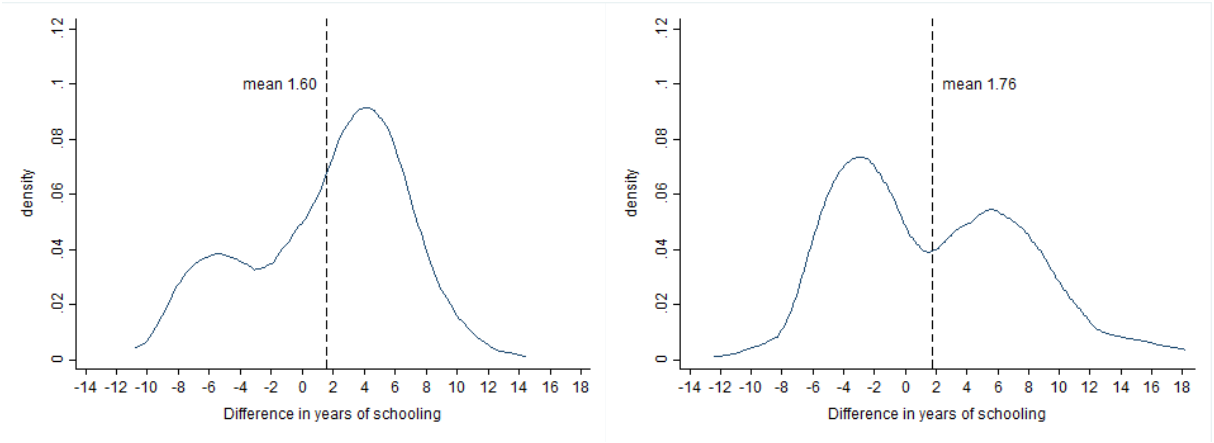
3.2 Selection of asylum seekers from their home countries

In this section, we investigate the distributional properties of the selection of asylum seekers. To do so, we calculate the difference between asylum seekers' years of schooling and the mean years of schooling of same-aged persons from their home countries: $\Delta S = S_i - \bar{S}$. The advantage of this measure is that it centres non-selection at zero, allowing for direct interpretation. Negative values mark below average human capital, and positive values above average human capital. We also calculate this difference for the parents of asylum seekers, in order to analyse whether asylum seekers stem from households with above or below average human capital of the parent population.

Figure 1 shows the density of ΔS for asylum seekers and their parents.[12] Panel (a) depicts the density estimates for asylum seekers, and Panel (b) for their parents. The estimated densities show a double hump-shaped pattern for asylum seekers. A local peak at approximately -6 indicates that a considerable number of asylum seekers have lower years of schooling in comparison to the average of their peers. However, the mode of the distribution, the second local peak, lies at around 4 additional years of schooling. With four more years of schooling, these asylum seekers have accumulated 51 percent more schooling than their average home country peers. Panel (b) illustrates the distribution

[12] The figures display the Stata Epanechnikov kernel density estimator with a bandwidth that minimizes the mean integrated squared error.

of parental years of schooling, which again is double humped-shaped. Now, the mode of the distribution in the difference of years of schooling is below zero (at approximately -4). Many asylum seekers stem from low or very low educated households, which seems to be in line also with Abramitzky et al. (2012). Nonetheless, parents' average years of schooling are above the number for nationals in the same age group. A second local peak is located at around 6 years of schooling. Thus, a substantial number of asylum seekers stem from relatively highly educated parents.



Panel (a): Asylum seekers

Panel (b): Parents

Figure 1: Differences in years of schooling compared to the home country

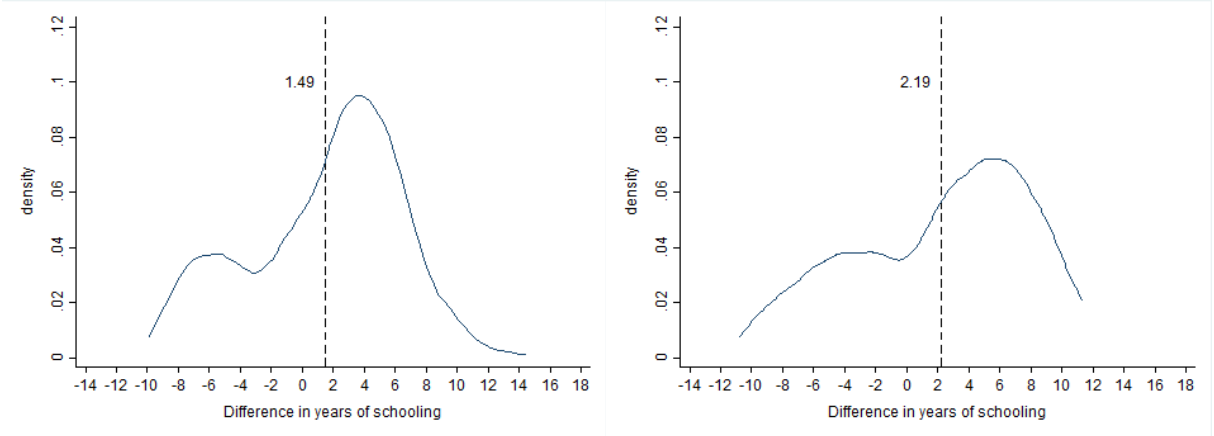
Figure 1 suggests a polarization in the indicator of human capital of asylum seekers and—even more pronounced—in that of their parents. Thus the patterns displayed in the figures seem to be at odds with stylized patterns of immigrant selection (see Borjas 1987, Figure 1, p. 537). The pattern may be the result of two effects. First, the group of asylum seekers might be divided into two sub-groups: one group being a non-selected sample of the sending country population, fleeing their home country because of political persecution and/or violent conflicts not specifically related to our indicator of human capital. These persons presumably do not migrate primarily for economic reasons. If this group is merged with persons in our sample who may have migrated (also) for economic reasons, the selection pattern observed in Figure 1 could be observed.

Secondly, since asylum seekers stem from different source countries, Borjas' (1987) hypothesis on migrant selection might explain the polarization pattern. His model focuses not only on earnings differences, but in addition, on relative earnings distributions in the home and destination countries. It is argued that migrants with low human capital living in a country with relatively higher income inequality will choose to migrate to a destination country with relatively lower income inequality, a negatively selected group. Migrants with high human capital living in a country with relatively lower income inequality will choose to migrate to the destination country with relatively higher income inequality. This group would be positively selected. If sending countries differ in their income inequality

relative to Germany, contrastingly selected groups of migrants might choose Germany as the destination country, leading to the observed pattern in Figure 1.

In order to investigate whether Borjas' (1987) predictions apply to our findings, we establish whether asylum seekers stem from countries with more or less dispersed income distributions. Relying on Gini coefficients of income inequality from the UNU-WIDER (2017) database, we compare income inequality of asylums seekers' home countries to Germany. Recent data on income inequality of sending countries is often not available, as such, we have to rely on Gini coefficients sometimes more than a decade old. According to the UNU-WIDER database all sending countries exhibit income inequality, higher than or similar to Germany (see table A3 in the appendix). Countries with a similar Gini coefficient comprise Afghanistan, Syria, Iraq, Pakistan and Tajikistan. Relating to Borjas (1987), we may predict that asylum seekers from these countries are neither positively nor negatively selected. For the other countries of origin income inequality is higher than in Germany which should lead to a negative selection of immigrants according to this reasoning.

We construct density plots for the asylum-seeker-home-country difference in years of years of schooling as in Section 3.2. We plot the distribution of the difference of asylum seekers' and their peers' education. Figure 2 presents the graphs for both groups of asylum seekers, where Panel (a) refers to the group of asylum seekers stemming from countries with similar income inequality, and Panel (b) for sending countries with higher income inequality. For Borjas' (1987) predictions to be applicable to our setting, Panel (a) should imply no selection on years of schooling among this group of asylum seekers, which is not the case. The mean difference is both positive and statistically significant.



Panel (a): Home countries with similar ginis to Germany (*N* = 170)

Panel (b): Home countries with higher ginis than Germany (*N* = 33)

Figure 2: Relative years of schooling by home country gini

Panel (b) should show predominantly a strong negative selection of asylum seekers, if Borjas' predictions were to be applicable to this group of asylum seekers. Yet, the mean difference is positive,

and two thirds of the asylum seekers accumulated more years of schooling than comparable peers from their home countries. Figure 2 thus seems to indicate Borjas' (1987) explanation for the selection of labour migrants is not transferrable to our sample of asylum seekers.

However, when looking at parental years of schooling, Borjas' (1987) prediction on a negative selection seems to hold. Panel (b) of Figure A1 in the appendix illustrates that asylum seekers from countries with higher income inequality than Germany stem from households with below average human capital. Parental education might proxy otherwise unobserved factors of international migrant selection, particularly when migrants are rather young and parents are still quite influential. The analysis thus far hints at different conclusions in regard to the relevance of Borjas' ideas on international migrant selection for asylum seekers, depending on which measure of human capital is utilized. The adoption of parental education enriches the understanding of humanitarian migrant selection. Despite predominantly non-economic reasons, the observed pattern appears to be in line with economic explanations of labour migration if the parental human capital indicator is used.

We conclude that the selection of asylum seekers is probably due to a mix of economic as well as non-economic motivations for migration. On the one hand, push factors such as violent conflicts and human rights abuse are important drivers of international migration of asylum seekers—generating international migration flows of persons with presumably no specific economic reasons for emigration. On the other hand, asylum seekers who have to leave their home country may deliberately engage in migration to far-away countries, in search of higher economic gains.

4. The role of human capital for short-term integration outcomes in Germany

This section studies whether three indicators of human capital, individual and parental years of schooling and work experience in the home country, contribute to the explanation of integration outcomes. How well prepared are asylum seekers to acquire the German language, and to find employment in Germany? The quite dispersed human capital distribution amongst asylum seekers might indicate that gaining labour market access could be differentially complicated for asylum seekers. Asylum seekers with higher levels of schooling may be more likely to achieve labour market access in the short-term, or to learn the German language faster. The general and potentially transferrable dimensions of human capital acquired during schooling may facilitate the adaption to a different language and employment culture. In addition, parental education might be an important factor influencing integration outcomes in Germany. It may signify otherwise unobserved factors, such as household wealth or social ties to the home country, which may foster or hinder integration.

The following equation is estimated in order to test the influence of human capital variables on these two outcomes:

$$y_i = \alpha + \beta_0 S_i + \beta_1 S_i^P + \gamma\, age_i + \theta\, T_i + d_c + u_i\,,$$

where y_i refers to the short-term integration outcomes for asylum seeker i. We use two different integration indicators. Firstly, we employ the result of a German language test described in Section 2. Secondly, we utilize the information as to whether asylum seekers were employed within the week before the survey was conducted. S_i denotes the years of schooling of the asylum seeker and S_i^P parents' years of schooling. T_i refers to the time spent in Germany until the day of the survey, in years.[13] As control variables we also include country dummies d_c for home countries c of the largest groups of asylum seekers (Afghanistan, Syria, Iraq and Gambia), and the age of the asylum seeker.

Table 4 summarizes the estimation results of the equation presented above. The first column of Table 4 shows the findings of a linear regression on the outcome of the German language test. Asylum seekers' years of schooling have a statistically significant effect on German language skills. One additional year spent in the education system in the sending country increases the number of words in the test by 0.7 words. This corresponds, on average, to a 4.5 percent increase in the number of known German words per additional year of schooling. Furthermore, estimation results suggest that the dominant factor in terms of effect size is the amount of time spent in Germany. An additional year spent in Germany increases the number of words by 7.26 words, on average.

Interestingly, given the positive effect of asylum seekers' education, the coefficient of parental years of schooling is negative, and statistically significant. If respondents reported one additional year of schooling for their parents, the number of words mentioned in the test decreased by 0.19 words; which corresponds to 27 percent of the individual schooling capital effect. Generally, one would assume that parental education is beneficial for their offspring. How can we explain this puzzling estimate? For one, our indicator of the human capital from parents education might be rather country specific and/or is working more through networks than through the transmission of ability. These 'soft' factors might become irrelevant or even detrimental in the host country. Secondly, if parental education is an indicator of wealth in the country of origin, it may reflect better return migration opportunities, or less need to integrate at a fast rate (Dustmann and Görlach, 2016).

[13] Since the misreporting of time spent in Germany is common among asylum seekers, we rely on data from the local foreigner's administration offices on that matter. This information was not available for all asylum seekers in our sample. Due to an otherwise high number of missing values, we imputed the time in Germany for individuals with missing information based on a regression framework which regresses the individual time in Germany on the mean time in Germany of other asylum seekers from the same home country, country of origin dummies, the costs associated with the flight, whether the asylum seeker migrated with their family, and whether they crossed the Mediterranean. Excluding time in Germany as a variable, or running the analysis on the reduced sample, does not change the results quantitatively nor qualitatively. Regressions are available upon request from the corresponding author.

Table 4: Regression results for short-term integration outcomes

	Number of Words (OLS)	Number of Words (OLS)	Work in Germany (Probit)	Work in Germany (Probit)
S_i	0.70***	-	0.011**	-
	(0.11)	-	(0.004)	-
S^P	-0.19*	-	0.002	-
	(0.10)	-	(0.004)	-
Upward mobile	-	1.54	-	-0.027
	-	(1.72)	-	(0.051)
Downward mobile	-	-3.89**	-	-0.066
	-	(1.78)	-	(0.077)
Low education	-	-4.61***		-0.144**
	-	(1.35)		(0.069)
Age	-0.20*	-0.16	0.003	0.004
	(0.11)	(0.12)	(0.003)	(0.004)
Time in Germany	7.26**	7.74**	-0.112	-0.098
	(2.95)	(2.89)	(0.100)	(0.099)
Constant	9.95***	14.2***	-	-
	(3.66)	(3.65)	-	-
Home country dummies	Yes	Yes	Yes	Yes
Adj. R^2 / Ps. R^2	0.25	0.19	0.10	0.09
N	193	193	201	201

Note: * p<0.10, ** p<0.05, *** p<0.01, robust standard errors in parentheses. Source: `Real-world Laboratory Survey among Asylum Seekers' for data on individual and parental years of schooling. Data on years of schooling in home countries are calculated from data based on Barro and Lee (2013).

Asylum seekers who exhibit upward mobility might perform best on the language test. If this is true, the coefficient for parental years of schooling may be negative. We test for the latter hypothesis directly in the second column of Table 4. Instead of asylum seekers' and parental years of schooling, a dummy variable is included for each category introduced in Table 3 (upward mobile $S_i > \bar{S}; S_i^P < \bar{S}^P$; downward mobile $S_i < \bar{S}; S_i^P > \bar{S}^P$, low education: $S_i < \bar{S}; S_i^P < \bar{S}^P$). The reference group is asylum seekers with above average schooling, whose parents also have above average levels. We find no evidence for the legitimacy of this hypothesis. The estimated coefficient of the group of upwardly mobile asylum seekers is statistically insignificant, although positive. Asylum seekers belonging to a group with below average education perform significantly worse than the reference group.

The third column of Table 4 reports the average marginal effects of a probit regression, with employment status in Germany as the dependent variable.[14] The dependent variable equals one if the asylum seeker had a paid job at the time of the survey, and zero otherwise. The estimated coefficient of the individual years of schooling is both positive and statistically significant from zero. According to

[14] The same explanatory variables are included in the probit estimation as in the linear regression with the number of words as the dependent variable.

the reported average marginal effect, an additional year of schooling in the home country leads to a 1.1 percent increase in the probability to find a job in Germany. The education of the parents, as well as the other included covariates, seems to have no additional effect. We also analysed whether the group of asylum seekers with high upward mobility perform best when finding employment. The last column of Table 4 presents the regression results of having a job in Germany on the three human capital groups. We find no evidence that asylum seekers of any group outperform asylum seekers with above average years of schooling and above average educated parents. For negatively selected persons, from households with below average human capital, we find on average a significant penalty of 14.4 percent in the probability of finding work.

Findings demonstrate that years of schooling in the home country fosters integration outcomes in Germany—at least in the very short-term. Whether this translates also into long-term integration depends on a number of additional factors that we do not observe so far (cf., for example, Hartog and Zorlu, 2009 who find no long run influences). Our results suggest that the parental background, which often is missing, has a moderately negative effect on language acquisition. Asylum seekers whose parents have acquired more schooling may have better financial or social support. The pressure to commit effort to integration activities may be lower with this background.

In addition, years of work experience in the home country is included as a third indicator of human capital in the estimation equation. We could not detect any statistically significant coefficient (see Table A5 in the appendix), thus concluding that work experience in the home country does not generate any gain for short-term integration outcomes, conditional on years of schooling and control variables. Investments in work experience in the home country presumably are specific to the labour market of the home country, and thus do not produce significant returns in the substantially different economic and cultural environment in Germany.

5. Conclusion

In this study, the human capital selection of recent young male asylum seekers from Middle Eastern and African countries in Germany is investigated. The main indicators of human capital used are individual and parental years of schooling in the country of origin. The selection on human capital is assessed relative to the averages of same-aged persons in their countries of origin. By including parental education, we aim to capture social and economic factors specific to the home country which are otherwise unobserved, and which should be informative for emigrant selection, particularly for young migrants.

Our findings suggest that asylum seekers have, on average, 22 percent more years of schooling than same-aged persons from their home countries; confirming a positive self-selection of asylum seekers

in Germany. However, polarization is present. Asylum seekers often have relatively high or rather low levels of schooling. Almost 14 percent of asylum seekers in our sample have never been to school. On the contrary, almost 16 percent have more than 12 years of schooling, which corresponds to the length it takes to finish high school in Germany. In addition, an even more pronounced polarization in parental education is observed. Asylum seekers have relatively less or highly educated parents, suggesting that a substantial number of asylum seekers stem from poor households and from households of the upper class.

We find no clear evidence for Borjas' (1987) predictions on the selection of international migrants. While the prediction is not valid for our indicator of years of schooling, it seems to be accurate for the indicator of parental human capital. Asylum seekers from countries with higher inequality than Germany stem, on average, from poorer parents. Our findings furthermore hint at a mix of economic and non-economic reasons for emigration. On the one hand, civil war and violent conflicts might affect most groups in the sending country equally, leading to international migration across every part of the skill distribution. On the other hand, long distance international migration might be particularly costly, and thus more beneficial to persons from the upper end of the skill distribution; explaining the on average positive selection of asylum seekers from Middle Eastern and African countries.

It is demonstrated that the indicators of human capital contribute to the explanation of short-run integration outcomes in Germany. Regression results hint at significantly positive effects of asylum seekers' schooling on the outcome of a language test, and on the probability of finding work. Years invested in education in the countries of origin thus seem to also be beneficial in Germany. Conversely, a statistically significant negative coefficient is found for parental schooling on language acquisition. We test whether strongly upward mobile asylum seekers are driving this result, but find no evidence for this hypothesis. One possible explanation could be that parental schooling indicates stronger ties to, or wealth in, the home country; which may decrease somewhat the need for integration.

Although asylum seekers are a positive selection of the home country's population, there is a substantial gap in their education level compared to young Germans. Disregarding any concerns about the comparability of years of schooling between asylum seeker sending countries and Germany, there is a difference of approximately five years of schooling. This gap is presumably partly the result of interrupted education biographies and of less investment in schooling in the home countries. Still, despite an on average positive selection, the significant gap in education may constitute a major burden for integration outcomes. As a consequence, investments into specific further education and training opportunities for humanitarian migrants after their arrival in Germany should be considered as one dimension of integration policies. These investments need to be targeted individually, given the

heterogeneity in the years of schooling from the home country—a challenging task for education policy.

Our study sheds light on the human capital selection of the cohort of recently arrived asylum seekers in Germany. Findings may help to better understand the latest inflow of asylum seekers, as well as their integration trajectories. Nonetheless, there are some limitations that we are aware of. For one, we rely on aggregate, not individual, educational data from the countries of origin in order to assess emigrant selection. Furthermore, we utilize cross-sectional data of a small sample of male asylum seekers who have been living in Germany for 10 months, on average. The conclusions drawn in this study should thus be considered preliminary in nature.

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Appendix

Table A1: Sequential sample reduction by selection criterion

	Sample size
Number of observations	370
- From Europe	17
- Women	5
- No information on individual schooling	30
- No information on father's schooling	78
- No information on mother's schooling	8
- No information on individual age	3
- No information on years of schooling in country of origin	26
Total	203

Source: `Real-world Laboratory Survey among Asylum Seekers'.

Table A2: Number of observations by country of origin

Country	# Observations (share in %)
Afghanistan	87 (42.9)
Syria	42 (20.7)
Gambia	21 (10.3)
Iraq	37 (18.2)
Iran	2 (1.0)
Algeria	4 (2.0)
Niger	2 (1.0)
Turkey	3 (1.5)
Pakistan	2 (1.0)
Tajikistan	2 (1.0)
Total	203 (100)

Source: `Real-world Laboratory Survey among Asylum Seekers'.

Table A3: Ginis from World Income Inequality Database (WIID)

Country	Gini	Year
Afghanistan	27.8	2008
Syria	32.0	2007
Gambia	47.0	2003
Iraq	30.9	2007
Iran	37.4	2013
Algeria	35.3	1995
Niger	34.0	2014
Turkey	40.2	2013
Pakistan	30.7	2013
Tajikistan	30.8	2014
Germany	30.1	2015

Source: UNU-WIDER Database WIID3.4.

Table A4: Parental years of schooling with alternative assumptions about parental age-at-birth

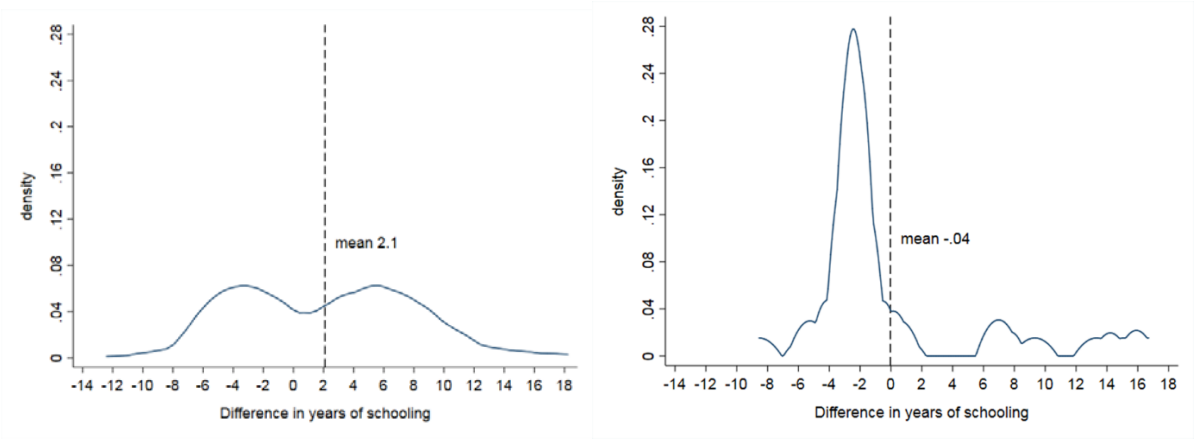
Assumption of parents age at birth of child	Father $\bar{S}^F$	Mother $\bar{S}^M$	Parents $\bar{S}^P$
20 years older than child	5.95	2.88	5.95
25 years older than child	5.40	2.37	5.40
30 years older than child	4.65	1.80	4.65
35 years older than child	4.10	1.42	4.10
Average	5.03	2.12	5.03
N	203	203	203

Source: `Real-world Laboratory Survey among Asylum Seekers'. Average years of schooling in home countries have been calculated based on Barro and Lee (2013).

Table A5: Further regression results for short-term integration outcomes

	Number of Words	Number of Words	Work in Germany (Probit)	Work in Germany (Probit)
S	0.72***	-	0.012**	-
	(0.12)	-	(0.005)	-
S^P	-0.18*	-	0.002	-
	(0.11)	-	(0.003)	-
Educational Climbers	-	1.15	-	-0.038
	-	(1.75)	-	(0.049)
Educational	-	-4.31**	-	-0.071
Downswing	-	(1.86)	-	(0.076)
Low Education	-	-4.78***	-	-0.154**
	-	(1.44)	-	(0.065)
Work in Home Country	1.39	1.75	-0.076	-0.074
	(1.66)	(1.75)	(0.052)	(0.051)
Work Experience	0.22	-0.05	0.004	0.004
	(0.20)	(0.21)	(0.006)	(0.006)
Age	-0.23*	-0.15	0.002	0.003
	(0.13)	(0.14)	(0.005)	(0.005)
Time in Germany	7.31**	7.66**	-0.115	-0.094
	(2.95)	(2.96)	(0.106)	(0.105)
Constant	9.29***	13.3***	-	-
	(3.80)	(3.79)	-	-
Regional Control Variables	Yes	Yes	Yes	Yes
Adj. R^2 / Ps. R^2	0.25	0.19	0.12	0.11
N	188	188	196	196

Note: * p<0.10, ** p<0.05, *** p<0.01, robust standard errors in parentheses. Source: `Real-world Laboratory Survey among Asylum Seekers' for data on individual and parental years of schooling. Average years of schooling in home countries have been based on Barro and Lee (2013).



Panel (a): Similar Gini (*N* = 170) Panel (b): Higher Gini (*N* = 33)

Figure A1: Relative parental years of schooling by home country gini