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# DISCUSSION PAPER

// MICHAEL KOLB, GUIDO NEIDHÖFER,  
AND FRIEDHELM PFEIFFER

## Intergenerational Mobility and Self-Selection of Asylum Seekers in Germany

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Michael Kolb

Guido Neidhöfer

Friedhelm Pfeiffer

ZEW - Leibniz Centre for European Economic Research Mannheim

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**Abstract:** We exploit a novel survey of recently arrived asylum seekers in Germany in order to estimate the degree of intergenerational mobility in education among refugees and compare it to the educational mobility of similar-aged individuals in their region of origin. The findings show that the refugees in our sample display high rates of educational mobility, and that their upward mobility is rather high when compared to the reference group in their region of origin. These results suggest that there exists positive skill selection among recently arrived refugees in Germany.

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

**JEL-Classification:** F22, J15, J24.

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## 1. Introduction

Europe, and in particular Germany, saw a rapid increase of asylum applications between 2014 and 2016. According to Eurostat, in 2016 alone around 750,000 refugees relocated to Germany.<sup>1</sup> Such a significant influx of people has renewed public concerns about the integration of immigrants into the resident society, even influencing voting outcomes in favour of anti-immigration parties (e.g. Dustman et al, 2018; Bratti et al., 2017). Apprehensions regarding refugees, and migrants in general, partly stem from cultural differences between migrants and the native society, and, in addition, the financial burden they may impose on the host country population (Dustmann and Preston, 2007, Fuest, 2016). Aside from the possible negative effect of migration on wages, public concerns are mostly centred on the fiscal burden that may be caused by migrants (Dustmann and Frattini, 2014; Boeri, 2010). This issue applies even more so to refugees, since they may begin to contribute only in the medium or long run, after their assimilation into the labour market is complete; and are often net beneficiaries for a short period immediately following their arrival.<sup>2</sup>

In the economics of migration, one of the main factors affecting the assimilation of migrants has been identified as their level of self-selection; i.e. their relative skill level in comparison to the skill distribution of their country of origin (Borjas, 1985; Chiswick, 1978). Individuals from the upper end of the skill distribution assimilate faster into the host country's society, while individuals from the lower end assimilate slower, and are thus more likely to be net beneficiaries of the social security system. Furthermore, as the Roy-Model of income maximization predicts, countries with more generous social insurance and benefit systems might attract negatively selected migrants who need more time to assimilate in the host country's labour market (Borjas, 1987; Borjas, 1999).

However, since refugees may differ from economic migrants in several ways, which in turn may affect their economic assimilation, it remains an open question as to whether and how these considerations apply to them. The scant existing international evidence shows contrasting results. Refugees in Sweden and the US have been shown to assimilate faster than economic migrants (Luik et al, 2018; Cortes, 2004), while the evidence for Norway points to a slower rate of assimilation for refugees (Bratsberg et al, 2014). As a consequence, a lack of information about

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<sup>1</sup> Henceforth, we will use the terms asylum seekers and refugees as synonyms.

<sup>2</sup> In Germany, for instance, asylum seekers are initially allocated to reception centres where their basic needs are met, and are later entitled to receive financial support, up to the amount warranted to citizens by the social security system, once they move to private accommodations. Depending on the dimension considered (labour earnings, educational attainment, etc) assimilation of migrant groups in the host country may also be an ongoing process lasting several generations, as shown by Bönke and Neidhöfer (2018) for the group of Italian immigrants in Germany. Furthermore, refugee flows may significantly affect the labour and wage opportunities of directly competing residents in the receiving countries (Borjas and Monras, 2017).

the relative skill level of current refugees makes it difficult to forecast their economic assimilation prospects within the destination countries (Dustmann et al., 2018). Due to the nature of their displacement, and reasons for its occurrence – mostly war, human rights violations or other fatal, unforeseen events – the migration decisions of refugees are, presumably, less based on economic considerations such as income maximization. Hence, the selection pattern of refugees may differ in both directions; refugees might be more positively or more negatively selected than other migrants from comparable countries of origin.

This study contributes to a widening of our knowledge on the skill selection of recently arrived refugees; taking advantage of novel survey data for asylum seekers living in southern Germany (see Lange and Pfeiffer, 2018). The survey includes information on the refugees' own education and retrospective questions about their parents' education. Lange and Pfeiffer (2018) show that, on average, young male asylum seekers in this sample, and also their parents, have more years of schooling when compared to same-aged males from their country of origin. In our analysis, we focus on the unobserved skills of these refugees and propose a novel way to measure it. First, we estimate the degree of intergenerational mobility of the refugees in our sample; for instance, their educational improvement in comparison to their parents' level of education. Then, we compare our estimates with cross-country estimates on the level of educational mobility in the regions of origin of these refugees. The difference between these two measures is indicative of the refugees' level of self-selection in unobserved skills. Our results show that, in our sample, refugees display higher than average absolute and average rates of intergenerational mobility when compared to the same-aged male population in their respective home region. We interpret this as a sign of positive selection on unobservable skills for our sample of refugees.

The remainder of the paper is organized as follows: Section 2 briefly summarizes the literature on the intergenerational persistence of education. Section 3 describes the Data. Section 4 presents and discusses our results. Section 5 concludes.

## **2. Relative and absolute intergenerational mobility in education**

Education, as a proxy for human capital, is strongly determined by family background; since education decisions are shaped by parental preferences, the availability of economic resources, and credit constraints (Becker & Tomes, 1979; Checchi et al., 2013). Hence, parent-child-schooling correlations are strongly related to other measures of social intergenerational mobility such as those based on income or occupation (Blanden, 2013; Black and Devereux, 2011). An established way to measure the intergenerational mobility of education is to estimate the following linear regression model:

$$S_i^O = \alpha + \beta S_i^P + \varepsilon_i. \quad (1)$$

Where  $S^O$  represent the offspring's and  $S^P$  the parents' education in family  $i$ , measured in years of schooling. The steeper the slope of the relationship between these two variables, the stronger is the association between parents' and children's education within the analyzed sample.  $\alpha$  is a constant, and  $\varepsilon_i$  an error term.  $(1 - \beta)$  measures the degree of intergenerational mobility (see e.g. Black and Devereux, 2011).

The cross-country study by Hertz et al. (2007) applies this framework, and shows that education is more persistent over generations in developing countries than in OECD countries. Furthermore, educational mobility is low in South America and South-East Asia, and rather high in Scandinavian countries.<sup>3</sup> Table A1 in the Appendix reports some published estimates of intergenerational mobility for developed countries, and for countries in the geographic regions from which the individuals in our sample of refugees originate. These estimates indicate that intergenerational mobility is higher in Germany than in the regions of origin of the refugees in our sample.

The degree of educational mobility within a population is considered to be a summary measure, indicating the persistence of human capital within families over time. As such, it comprises different channels of the human capital production function, and intergenerational transmission, into one single informative measure, at the cost of losing information about the strength of each component of the relationship. In our analysis, we would like to use the information contained in the mobility estimates to know more about the self-selection of refugees in their unobserved skills. Hence, we are interested in disentangling the structural component of educational mobility, caused by country level characteristics like educational expansions or cultural factors, while keeping the largely unobserved component influencing the relative improvement of individuals with respect to their parents, which depends on individual or family features, like motivation or abilities. The latter is, in our definition, a way to measure the self-selection of individuals on unobservable characteristics.<sup>4</sup>

We do so comparing the intergenerational mobility of refugees in our sample with the average degree of intergenerational mobility of same-aged non-migrants in their regions of origin. We retrieve the mobility estimates for the latter from the World Bank's Global Database on Intergenerational Mobility (GDMI; see Narayan et al., 2018). A higher rate of intergenerational mobility among the subgroup of

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<sup>3</sup> Neidhöfer et al. (2018) show that in most Latin American countries educational mobility has been rising substantially for people born in the eighties in comparison to their parents and grandparents.

<sup>4</sup> Borjas et al. (2019) use the residuals from earnings regressions to measure the self-selection on unobservable characteristics of Danish emigrants. Corneo and Neidhöfer (2019) measure the unobserved skill level of Italian migrants worldwide, via the probability an individual is either unemployed, or has a high occupational position in the destination country, given their level of education. These two methods for measuring unobserved skill selection are suitable for long-term migrants, but not applicable to this study, since the refugees in our sample were interviewed shortly after arrival, and thus most do not present any measurable labor market outcomes.

refugees with respect to their region of origin is a sign of a positive degree of skill selection for this group, while a lower mobility rate shows that refugees in this group are negatively self-selected.

In this application, we face one limitation when measuring intergenerational mobility using only the estimated slope coefficient in equation (1): the slope coefficient  $\beta$  measures the partial correlation between parents' and children's years of schooling and hence, is sensitive to each form of variation within a family from one generation to the next, without making a distinction between whether it is an improvement or a deterioration. However, only individuals improving their level of education in comparison to their parents should be in the upper end of the distribution of (unobserved) skills, and thus defined as positively self-selected. Hence, it is insightful to also estimate an absolute measure of intergenerational upward mobility for our refugee sample, namely, the probability of children to have a higher level of education than their parents, given that parents are not in the highest educational category  $m$  (tertiary education<sup>5</sup>):

$$Pr(c > p) = Pr(S_i^O > S_i^P | S_i^P < m). \quad (2)$$

The higher this probability, the higher is the average educational upward mobility within the sample.

### 3. Data

The sample of young male asylum seekers that we use stems from the 'Real-world Laboratory Survey among Asylum Seekers', a novel survey data set of asylum seekers who were part of the large influx to Germany in recent years (see Lange and Pfeiffer, 2018). The survey contains information on asylum seekers living in two group accommodations close to the city of Heidelberg, in southern Germany. In cooperation with the administration of these group accommodations and the local foreigner's administration offices, a scientific survey among the asylum seekers was conducted in August/September 2016. Participation in the survey was on a voluntary basis, and was open to all individuals over 18, living in the accommodations. The computer-assisted interviews were undertaken by professional and native speaking interviewers. The design of the survey aimed to cover the main languages spoken by the respondents (Arabic, Dari/Farsi, Tigrinya, Pashtu, English and German).

The data set contains items related to the socio-economic status of the respondents before and after they left their home country. We rely on self-assessment by the interviewees in regard to their own and their parents' educational attainment, and follow the literature in employing years of education as a proxy for human capital (e.g. Hertz et al., 2007). Years of schooling is retrieved from the answer

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<sup>5</sup> The necessary years of schooling to be eligible for attaining tertiary educational tracks vary between most sending countries (usually 12 or 13 regular years of schooling to finish secondary education). We follow the official and country specific UNESCO ISCED Educational Mappings from 2011. See <http://uis.unesco.org/en/isced-mappings> [latest view 03.06.2019].

to the following question: “How many years did you go to school? (If applicable, including university)” for the asylum seeker as well as his or her father and mother.<sup>6</sup> It is possible that, particularly among the young refugees in our sample, some individuals might not yet have completed their educational career. Brücker et al. (2016) report that 26% of the refugees dropped out of school or interrupted their education due to consequences of war and flight. Thus, education might be considered as a truncated variable, and our intergenerational mobility estimates as a lower bound if individuals were to continue their education in Germany.

The legally required minimum age to participate in the survey was 18. To preserve homogeneity within the sample, we set the maximum age to 34. We end up with a sample of 206 non-European, male asylum seekers within this age interval, with all necessary information available to measure the degree of intergenerational mobility. The average age of respondents in our sample is 23.34 years, and the median age is 22. According to the Federal Office for Migration and Refugees (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.<sup>7</sup> Hence, although our sample is not representative of the entire population of newly-arrived asylum seekers in Germany, it focuses on a crucial age interval for young male asylum seekers.

Our sample covers several source countries in Central Asia, the Middle East and Africa. Almost 41 percent of the asylum seekers in our sample stem from Afghanistan, 17 percent from Syria and 15.5 percent from Iraq. Gambians constitute the largest group of African asylum seekers in our sample (10.2 percent). The remaining 16.8 percent of our sample stem from other Asian and African countries. Thus, asylum seekers from Central Asia account for a total share of 43.5 percent of the sample, while 36.5 and 20 percent stem from the Middle East and Africa, respectively.<sup>8</sup>

Table 1 shows the average years of schooling for respondents ( $S_i^o$ ), their fathers ( $S_i^F$ ), mothers ( $S_i^M$ ), and the maximum value among both parents ( $S_i^P$ ). Per the literature, we use the maximum level of education among both parents as a proxy for parental education in order to estimate intergenerational

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<sup>6</sup> While almost all survey respondents answered the question about their own education (92%), the response rates on fathers’ years of schooling (69%) and mothers’ (72%) are lower. The presence of selective non-response on parental education might bias the intergenerational persistence estimates. However, we find no indication for selective non-response in our sample; response behavior on parental education is not associated with the average levels of education of individuals.

<sup>7</sup> Brücker et al. (2016) report an average age of 31.2 years within their representative survey among asylum seekers in Germany.

<sup>8</sup> Table A2 in the Appendix reports the complete list of countries of origin, as well as their respective absolute and relative frequencies. It is important to note that the employed sample is not representative of the recent influx of asylum seekers to Germany with respect to the country of origin. According to BAMF (2017), refugees applying for asylum in Germany predominantly stem from Syria (37%), Afghanistan (18%) and Iraq (13%). Asylum seekers from Afghanistan and Gambia are relatively overrepresented in our sample, while Syrian asylum seekers seem to be relatively underrepresented.

mobility.<sup>9</sup> We find an average of 9 years of education attained within the sample of asylum seekers. This figure is in line with results of other studies investigating educational patterns of newly-arrived asylum seekers. Buber-Ennser et al. (2016) for Austria, as well as Brücker et al. (2016) for Germany, find comparable average years of schooling based on survey data. None of these studies report the educational attainment of parents. In our sample, we observe 5.97 years of education, on average, for fathers, and 3.85 years for mothers. Decile values reveal a clustering pattern; particularly in the case of mothers (57% with zero years of schooling) and fathers (38.5% with zero years of schooling), but less so for the individual's level of educational attainment (13% have zero years of schooling).

**Table 1: Descriptive Statistics on Individual and Parental Human Capital**

	$S_i^O$	$S_i^F$	$S_i^M$	$S_i^P = \max\{S_i^F, S_i^M\}$	Age
mean	9.00	5.97	3.85	6.48	23.34
sd	4.89	5.87	5.21	5.91	3.92
10 <sup>th</sup> dec.	0	0	0	0	19
20 <sup>th</sup> dec.	4	0	0	0	20
30 <sup>th</sup> dec.	7	0	0	0	20
40 <sup>th</sup> dec.	9	2	0	3	21
50 <sup>th</sup> dec.	11	5.5	0	6	22
60 <sup>th</sup> dec.	12	8	3	9	24
70 <sup>th</sup> dec.	12	10	6	12	26
80 <sup>th</sup> dec.	12	12	9	12	27
90 <sup>th</sup> dec.	14	14	12	14	29

Source: Own estimates. Sample taken from 'Real-world Laboratory Survey among Asylum Seekers'.

## 4. Results

### a. The intergenerational mobility of asylum seekers

Table 2 shows the estimates for the  $\beta$  coefficient in Equation (1), further controlling for age and including country of origin fixed effects. The dependent variable is the years of schooling of the respondent. Column (1) and (2) show our main specifications, measuring parental human capital by the maximum level of schooling among both parents. We observe a point estimate of 0.36 for the average degree of intergenerational persistence (i.e. an estimate of 0.64 for the average intergenerational mobility) within our sample of young male asylum seekers. This means that an

<sup>9</sup> Other studies, such as Hertz et al. (2007), use the average among both parents instead. As shown by Neidhöfer et al. (2018), country rankings usually do not change when applying one or the other variable for sufficiently high and similar levels of spouse correlations among parents across countries. The correlation between father's and mother's years of schooling in our sample is 0.65, ranging from 0.48 for refugees from Sub-Saharan Africa to 0.74 for refugees from MENA countries.

additional year of parental schooling is associated with an increase of about one third of a year of schooling for the next generation.

In the subsequent columns we measure the association with father’s and mother’s years of schooling separately, and then include both in the regression. The estimates do not change the overall pattern substantially and show that father’s education is a better predictor of children’s education than the education of the mother. As is evident, the inclusion of age does not change the estimates significantly.

Generally, these estimates show that individuals in our sample of refugees are, on average, more mobile than the population in most transitioning and developing countries, but less mobile than the population in most refugee reception countries, such as Germany (see Table A1).<sup>10</sup>

**Table 2: Slope coefficient of parent-child associations in years of schooling**

	(1)	(2)	(3)	(4)	(5)	(6)
Schooling Parents ( $S^P$ )	0.35*** (0.05)	0.36*** (0.05)	-	-	-	-
Schooling Father ( $S^F$ )	-	-	0.33*** (0.05)	-	0.27*** (0.06)	0.27*** (0.06)
Schooling Mother ( $S^M$ )	-	-	-	0.29*** (0.05)	0.11 (0.07)	0.11* (0.07)
Age	-	0.21** (0.08)	-	-	-	0.20** (0.08)
Constant	5.71*** (0.63)	1.03 (1.87)	5.94*** (0.61)	6.83*** (0.59)	5.96*** (0.61)	1.45 (1.90)
adj. R <sup>2</sup>	0.204	0.241	0.207	0.156	0.211	0.232

N=206. \* for p<.10, \*\* for p<.05, and \*\*\* for p<.01. Schooling Parents refers to the maximum level of education among both parents. Controlling for Country of Origin Fixed Effects, Robust Standard Errors in parentheses. Source: Own estimates, sample taken from ‘Real-world Laboratory Survey among Asylum Seekers’.

## b. Comparison to region of origin

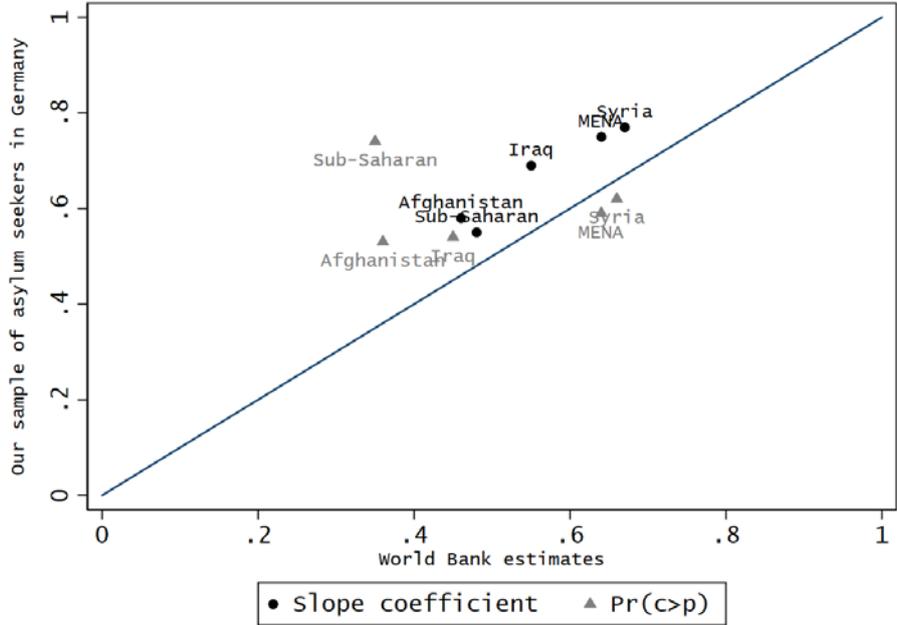
In this section we compare the intergenerational mobility estimates for our sample of asylum seekers in Germany with the overall level of intergenerational mobility in their country or region of origin. For this purpose, we estimate the intergenerational mobility separately for subgroups of refugees, clustered by their country or region of origin. Figure 1 shows our estimates in comparison to the World Bank estimates (Narayan et al., 2018) for males belonging to a comparable cohort.<sup>11</sup> For Afghanistan

<sup>10</sup> The estimates shown in Table A1 are comparable to our estimates, since most reported estimates rely on the same methodology, similar age cohorts and parent-son pairs (see A1 for additional information on samples and descriptive statistics).

<sup>11</sup> The comparison data selected from the Global Database on Intergenerational Mobility (GDIM, 2018) builds on large Microdata retrieved from population surveys, which were conducted in the corresponding countries. Selected data is restricted to parent-son pairs given that the male child is born in the 1980’s birth cohort. The underlying population surveys were conducted between 2010 and 2016.

and Iraq we have both enough observations to estimate the intergenerational mobility indices within our sample, and a direct comparison; as the countries are included in the GDIM. For Syria, since no country specific estimates are available in the GDIM, we built an artificial comparison group based on the same cultural and geographic region and the income group the countries are ranked in (middle income countries).<sup>12</sup> We then report the unweighted average among the countries belonging to this group.<sup>13</sup> We form two further subgroups of refugees by their region of origin - MENA<sup>14</sup> and Sub-Saharan Africa - and compare the estimates with the unweighted average of all country estimates contained in the GDIM in these regions. Table 3 shows more information on the estimates, like the confidence interval of our estimates and the range for cross-country averages of the World Bank estimates.

**Figure 1: Educational Mobility of Asylum Seekers in Comparison to their Region of Origin**



Notes: Figure shows the intergenerational mobility estimates for our sample of refugees and the World Bank estimates of the country or region of origin. Higher values mean higher intergenerational mobility in education. For more details on the estimates, see Table 4.

<sup>12</sup> Country classifications are drawn from published World Bank country classifications, online: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>. [10.04.2019]

<sup>13</sup> The artificial comparison groups drawn from the GDIM include the following countries. MENA: Djibouti Egypt Iran Iraq Jordan Lebanon Morocco Tunisia West Bank and Gaza Yemen; Sub-Saharan Africa: Benin Burkina Faso Central African Republic Comoros Ethiopia Guinea Guinea-Bissau Liberia Madagascar Mali Mozambique Malawi Niger Rwanda Senegal Sierra Leone South Sudan Chad Togo Tanzania Uganda.

<sup>14</sup> The MENA region covers a set of countries from the Middle East and North Africa. The region spans from Morocco to Iran, excluding Turkey.

We report the regression based indices for relative mobility, obtained by estimating equation (1) on our own sample and retrieved from the World Bank data for each country or region of origin, as  $1 - \beta$ . The table also contains the predicted probability that individuals have a higher level of education than their parents, given that neither of the parents is in the highest education category. The average probability that individuals in the sample improve their level of education with respect to their parents is 0.6, which is consistent with the high degree of relative mobility estimated within this sample. Hence, the regression based estimate for the sample of young male refugees is not driven by a downward mobility pattern.

The estimates show that the refugees in our sample display consistently higher rates of intergenerational mobility than the average for their respective country or region of origin. All relative mobility estimates within the subsamples of refugees are higher, as well as all absolute upward mobility estimates; with the exception of refugees from Syria and the MENA region, whose upward mobility rate is not significantly different, or slightly lower than the average rate of comparable individuals in their region of origin. Hence, the evidence provided by our analysis suggests generally positive skill selection on unobserved skills among our sample of young male refugees in Germany.

**Table 4: Educational Mobility of Asylum Seekers in Comparison to their Region of Origin**

Country/Region	N	Relative Mobility		Upward Mobility	
		$1 - \beta$	$1 - \beta$ World Bank	$\Pr(c > p)$	$\Pr(c > p)$ World Bank
Afghanistan	84	0.58 (0.09)	0.46	0.53 (0.06)	0.36
Syria	35	0.77 (0.12)	0.67 [0.52-0.79]	0.62 (0.10)	0.66 [0.46-0.77]
Iraq	32	0.69 (0.11)	0.55	0.54 (0.10)	0.45
MENA	78	0.75 (0.08)	0.64 [0.45-0.79]	0.59 (0.06)	0.64 [0.45-0.77]
Sub-Saharan	38	0.55 (0.10)	0.48 [0.22-0.77]	0.74 (0.07)	0.35 [0.13-0.64]
Total Sample	206	0.64 (0.05)	-----	0.60 (0.04)	-----

Notes: Relative mobility measures retrieved from the estimates of equation (1) on the respective subgroups of refugees.  $\Pr(c > p)$  is the probability of children to have higher education than their parents, given that the parent is not in the highest educational category (tertiary education). Below our estimates in parenthesis the bootstrapped standard errors with 200 replications. World Bank shows the estimates retrieved from the GDIM for males of the 1980's birth cohort: average values; range [min-max] in brackets. N shows the number of observations within the subgroup. Source: Own estimates, sample taken from 'Real-world Laboratory Survey among Asylum Seekers' - MENA: State of Palestine (6 observations), Syria (35), Iran (2), Iraq (32), Algeria (3); Sub-Saharan Africa: Eritrea (14), Gabun (1), Gambia (21), Niger (1), Nigeria (1). World Bank Global Database on Intergenerational Mobility - MENA: Djibouti Egypt Iran Iraq Jordan Lebanon Morocco Tunisia West Bank and Gaza Yemen; Sub-Saharan Africa: Benin Burkina Faso Central African Republic Comoros Ethiopia Guinea

Guinea-Bissau Liberia Madagascar Mali Mozambique Malawi Niger Rwanda Senegal Sierra Leone South Sudan  
Chad Togo Tanzania Uganda.

## 5. Conclusions

In this study we evaluate the self-selection of recently arrived asylum seekers in Germany using a novel survey dataset. Previously, Lange and Pfeiffer (2018) show that the asylum seekers in this sample are positively selected on observable characteristics, specifically, on years of education. To evaluate the degree of self-selection on *unobservable* characteristics for these young male refugees, we measured their degree of intergenerational mobility and compared it with the average for comparable individuals in their region of origin. We found that the individuals in our sample display, on average, a higher degree of intergenerational mobility than a same-aged reference group in their region of origin. Measures of relative and absolute upward mobility paint the same picture, providing additional evidence for a general pattern of positive skill selection for refugees in Germany.

Our sample covers refugees living in two group accommodations in a German municipality. Due to the novelty of both the data and the analysis, these findings provide interesting new evidence on the intergenerational mobility and self-selection patterns of recently arrived young male asylum seekers in Germany. In addition, the quota-based and random allocation of refugees among the German Federal States and municipalities further supports the external validity of these results. However, it should be noted that these findings have some limitations. First, because of the relatively small sample size, the resulting analysis has limited statistical power. Secondly, although our sample and estimates should be comparable with the World Bank estimates, some degree of uncertainty still persists. For instance, the measurement of educational achievement in our data is the years of schooling as indicated by the respondent, while the analysis performed by the World Bank uses the imputed regular years of schooling; based on the educational degree obtained as indicated by the respondent.

These findings add new insights regarding the recent refugee crisis and its implications for recipient countries. If the skill level of refugees is relatively high, as our results suggest, this, presumably, will positively affect their assimilation prospects within the host countries' labor markets, as well as their integration into society. Furthermore, their investment in location specific human capital should also be relatively high in the short run, as well as in the long run, and even in an intergenerational dimension; i.e. the investment of parents in the human capital of their children. A favorable environment facilitating these investments and supporting the economic assimilation of refugees may pay off in the long run for recipient countries.

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APPENDIX

**Table A1: Studies on the intergenerational Persistence of Years of Schooling**

Study	Sample	Survey type, country and year	Mean in years of Schooling (S)	Slope Coefficient $\beta$
<b>OECD Countries</b>				
<b>Hertz et al. (2007)</b>	Number of obs. per cohort unclear (results for 20-30 year old cohort)	Country specific surveys (1994-2000)	<b>Parent<sup>b</sup>:</b> USA 12.6; UK 10.6; Sweden 10.1; Denmark 12.6; Netherlands 10.9 <b>Child:</b> USA 13.0; UK 10.6; Sweden 12.1; 12.5; Netherlands 13.9;	USA 0.46; UK 0.71; Sweden 0.34; Denmark 0.24; Netherlands 0.32
<b>Narayan et al. (2018)</b>	Varying sample sizes (20-30 year old cohort)	Use large and recent population surveys for a set of 148 countries	<b>Parent<sup>a</sup>:</b> USA 14.2; UK 12.9; Germany 14.8, Sweden 14.1 <b>Son:</b> USA 14.1; UK 15.1; Germany 14.8; Sweden 14.2	USA 0.35; UK 0.17; Germany 0.20; Sweden 0.22
<b>Transition and Developing Countries</b>				
<b>Hertz et al. (2007)</b>	Number of obs. per cohort unclear (results for 20-30 year old cohort)	Country specific surveys (1991-1998)	<b>Parent<sup>b</sup>:</b> Pakistan 1.6; Egypt 3.4; Ghana 4.8; RSA 3.6 <b>Child:</b> Pakistan 4.3; Egypt 8.2; Ghana 8.0; RSA 8.1	Pakistan 1.00; Egypt 0.65; Ghana 0.49; RSA 0.45;
<b>Azam &amp; Bhatt (2015)</b>	9,351 obs. (20-25 year old)	IDHS-Survey (2005) from India	<b>Father:</b> 3.32 <b>Son:</b> 6.67 Means are overall means for all age cohorts	India 0.51
<b>Assaad &amp; Saleh (2016)</b>	4,139 Observations, no estimations for specific age cohorts	Jordan Labour Market Panel Survey (2010) & Jordan School Census (2010)	<b>Father:</b> 3.10 <b>Son:</b> 10.79	Jordan 0.23 <sup>c</sup>
<b>Azomahou &amp; Yitbarek (2016)</b>	5,725 obs. (Ghana); 4,088 obs. (Guinea) 1,993 obs. (Nigeria); 3,033 obs. (Uganda); (20-25 years old)	Country specific surveys (2000-2010)	<b>Parent<sup>b</sup>:</b> Ghana 5.4, Nigeria 4.29; Guinea 2.44; Uganda 5.13 <b>Son:</b> Ghana 8.28, Nigeria 8.63; Guinea 4.26; Uganda 6.75	Nigeria 0.38; Ghana 0.32; Guinea 0.36; Uganda 0.44
<b>Binzel &amp; Carvalho (2017)</b>	10,001 obs. (20-35 years)	Labor Market Survey (2006) from Egypt	<b>Father:</b> 2.7 <b>Child:</b> 9.78	Father: 0.48 Parents <sup>b</sup> : 0.60
<b>Narayan et al. (2018)</b>	Varying sample sizes (20-30 year old cohort)	Use large and recent population surveys for a set of 148 countries	<b>Parent<sup>a</sup>:</b> Afghanistan 3.9; Iraq 4.9; Pakistan 4.8; Brazil 4.9; China 7.7; India 5.0; Russian Federation 13.3; Uganda 5.3; Senegal 4.9; Mali 2.6; Burkina Faso 1.0; Guinea 2.7; Niger 1.6 <b>Son:</b> Afghanistan 5.9; Iraq 6.8; Pakistan 7.4; Brazil 9.5; China 10.0; India 8.7; Russian Federation 13.8; Uganda 8.8; Senegal 4.6; Mali 3.7; Burkina Faso 2.2; Guinea 4.9; Niger 4.0	Afghanistan 0.54; Iraq 0.45; Pakistan 0.53; Brazil 0.37; China 0.43; India 0.53; Russian Federation 0.40; Uganda 0.44; Senegal 0.43; Mali 0.74; Burkina Faso 0.78; Guinea 0.57; Niger 0.48

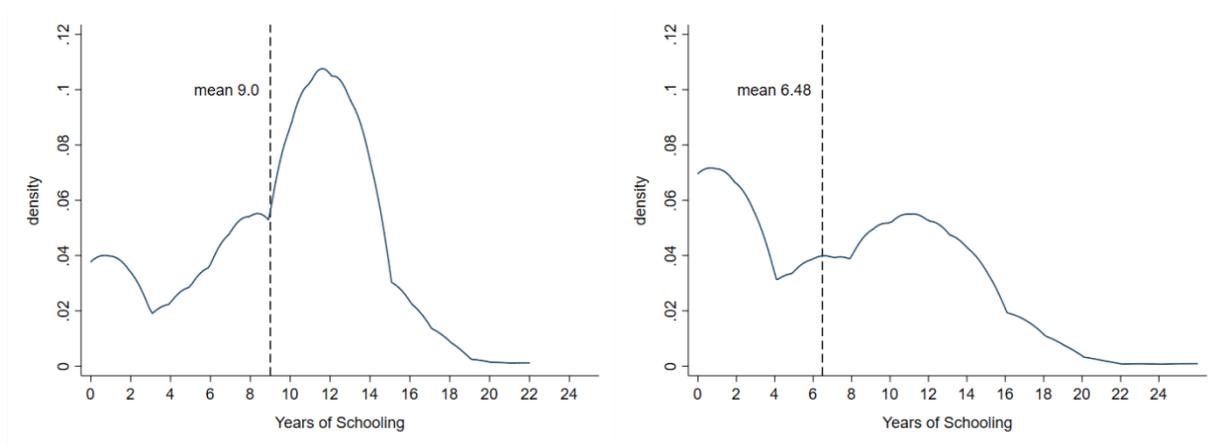
<sup>a</sup>:  $S_P = \max\{S_F, S_M\}$ ; <sup>b</sup>:  $S_P = \frac{S_F + S_M}{2}$ ; <sup>c</sup>: regressions included control variables

**Table A2: Number of observations by country of origin**

Country	# of Observations (share in %)
Afghanistan	84 (40.8)
Syria	35 (17.0)
Gambia	21 (10.2)
Iraq	32 (15.5)
Iran	2 (1.0)
Algeria	3 (1.5)
Niger	1 (0.5)
Turkey	3 (1.5)
Pakistan	1 (0.5)
Tajikistan	2 (1.0)
Eritrea	14 (6.8)
State of Palestine	6 (2.9)
Gabon	1 (0.5)
Nigeria	1 (0.5)
Total	206 (100)

Source: Sample taken from 'Real-world Laboratory Survey among Asylum Seekers'.

**Figure A1: Distribution of educational attainment among asylum seekers in our sample**



Panel (a): Sons' Years of Schooling

Panel (b): Parents' Years of Schooling

Source: Sample taken from 'Real-world Laboratory Survey among Asylum Seekers'.



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**ZEW – Leibniz-Zentrum für Europäische  
Wirtschaftsforschung GmbH Mannheim**

ZEW – Leibniz Centre for European  
Economic Research

L 7,1 · 68161 Mannheim · Germany

Phone +49 621 1235-01

info@zew.de · zew.de

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