The Impact of a Refugee Influx on Occupational and Educational Aspirations of German Youth
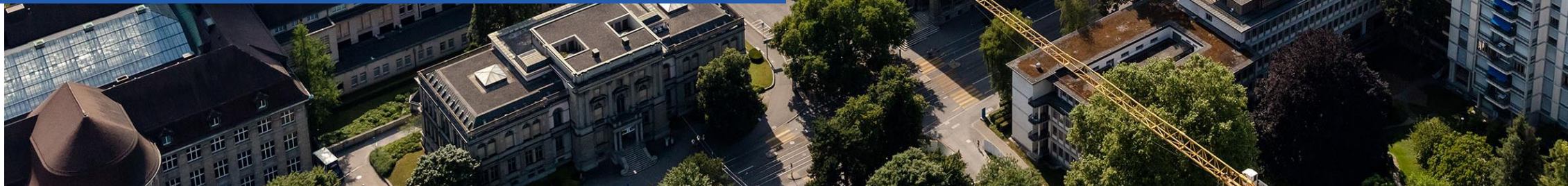*joint with Audrey Au Yong Lyn*

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Introduction

Research question: Does a sudden increase in mainly unskilled asylum seekers impact educational and labor market aspirations of the incumbent population?

Asylum seekers (German: *Asylbewerber*): Recipients of regular benefits under the Asylum Seekers Act

Motivation

- Aspirations are set by economy-wide outcomes; they serve as reference point for investment and social outcomes (Ray, 2006; Genicot & Ray, 2017)
    - Too little aspirations → stagnation
    - Medium high aspirations → investment
    - Too high aspirations → frustration

- Student aspirations are correlated with future academic performance (Khattab, 2015)

- Shifts in aspirations → changes in future educational/occupational outcomes

Background and context

- 2015 German 'refugee crisis' → sharp rise in mostly unskilled asylum seekers

- Distribution across and within states based on quotas; restricted mobility within district
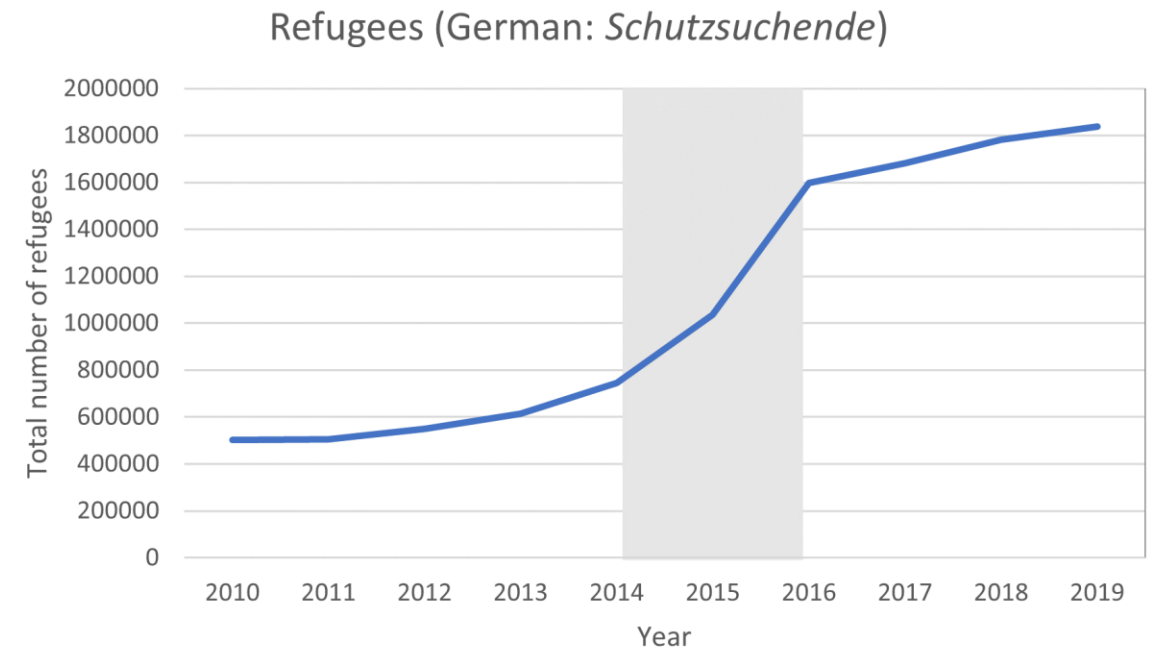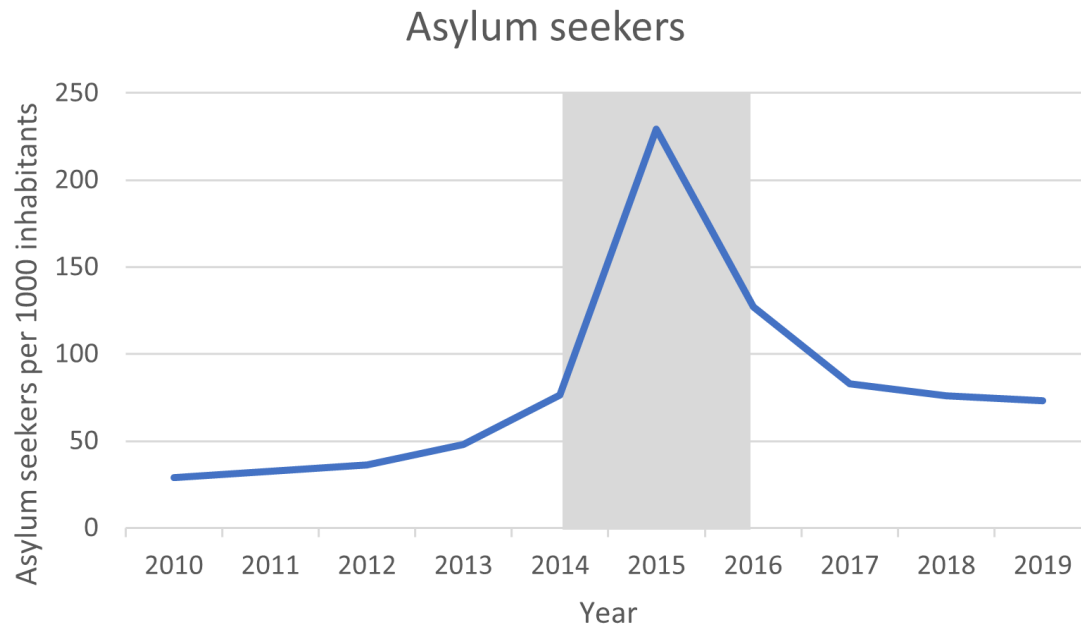
Source: INKAR, 2023; Federal Statistical Office of Germany (Destatis), 2023; own depictions.

Conceptual framework

Concept 1: Intergroup contact theory (Allport, 1954)

- Equal status, intergroup cooperation, common goals, support from social and institutional authorities
- Conditions in Germany not optimal → negative perceptions
  - Increased discrimination of employers against immigrants

Concept 2: Ethnic competition theory & Prospect theory

- Social identity theory (Tajfel and Turner, 1979): in-group superior to all out-groups
- Group conflict theory (Sherif, 1966): competition over resources → perceived threat
  - Growing size of outgroup and cultural disparities between ingroup and outgroup → Increased competition over limited resources such as employment and teacher-time
- Prospect theory (Kahneman & Tversky, 1979): socially determined reference points
  - Effect heterogeneity depending on comparison point

Hypotheses

Mechanism: Refugee influx → higher competition (or more discrimination)

Higher competition can either **increase or decrease** aspirations: empirical question

- Higher competition → individuals discouraged (to apply) → aspirations ⬇

- Higher competition → individuals panic/stress/motivated to get limited amount of positions → aspirations ⬆

Heterogeneity

- SES of parents
- Grades
- Gender (Niederle & Vesterlund, 2007 & 2011)
- Migration background
- Geographical location: East, rural

Data: National Educational Panel Study (NEPS)

- Survey data

- Cohort: 5th graders in 2010/11 (approx. 5000 individuals per cohort) → 9th graders in 2015

- 2010/11-2018/19

- Minimum regional aggregation level: district (German: *'(Land-)kreis'*) = NUTS3

- Relevant variables

  – **Realistic aspirations** = true expectations

    - Considering everything you know now…

      - …what qualification will you actually leave school with?

      - …what will probably be your occupation in the future?

  – **Demographic and socioeconomic** information of individuals (and parents)

Variations of dependent variable

Educational aspirations

- University entrance certificate (Gymnasium/Fachgymnasium)

Occupational aspirations

- ISCO → High demand occupation
- ISCO → Blue/white collar
- ISCO → Manual/non-manual
- ISCO → High skilled, medium skilled, low skilled
- ISEI → High socio-economic status
- SIOPS → High prestige

- ISCO → Routine-intensive
- ISCO → Language relevance

Data: Regional statistics

- Administrative data

- Varies by year, district and state (402 district clusters)

- Provided by German Federal Statistical Office and Statistical Offices of the German states and Federal Office for Building and Regional Planning
  - **Refugees, asylum seekers, population demographics geographic area, graduates by school type, apprenticeship positions, GDP per capita, unemployment rate, commuters, election results, buildings and housing, firms**

- Federal Office for Migration and Refugees & state laws
  - **Distribution quotas at state and district level**

Descriptive statistics I

Variable	Observations	Mean	Std. Deviation	Min	Max
Asylum seekers	59,825	478.863	535.274	0	13459.25
Female	61,955	0.491	0.500	0	1
Age	58,272	15.138	2.970	8	26
Migrant	64,270	0.225	0.417	0	1
# of bookshelves	61,335	4.313	1.421	1	6
Siblings	55,136	1.114	1.224	0	15
German grade	42,928	2.629	0.856	1	6
Math grade	42,895	2.714	1.014	1	6
Tax revenue (s)	61,141	33503.57	20672.85	2248	78442
Population (s)	61,141	9,335,288	5,628,070	652,182	$1.80e^7$
Share foreigners t-1	60,627	8.502	4.901	0.66	35.85

Descriptive statistics II

Variable	Observations	Mean	Std. Deviation	Min	Max
East	61,028	0.189	0.391	0	1
Rural	61,028	0.312	0.464	0	1
Population <30	61,028	19.044	2.820	11.23	30.19
Change log(pop.)	60,627	0.002	0.010	-0.072	0.058
Female-male ratio	61,028	1.034	0.026	0.094	1.162
Log(GDP/capita)	61,028	3.485	0.349	2.500	5.238
Conservative	61,028	49.347	8.500	27.15	71.06
Unemployment	61,028	6.286	2.960	1.25	21.91
Pop. density	60,627	669.799	507.831	35.61	3246.92
Depen. ratio young	61,028	20.423	1.745	12.24	29.69
Depen. ratio old	61,028	32.301	4.598	20.84	57.56
Average age	61,028	43.862	1.845	38.16	50.53
Net commuters	61,028	-8.769	27.335	-148.94	67.15

Descriptive statistics III

Variable	Observations	Mean	Std. Deviation	Min	Max
New dwellings	61,028	3.000	1.633	-1.39	11.88
Share foreigners	61,028	8.853	5.000	0.66	36.56
Smallest firms	57,653	2.990	1.567	-1.39	11.42
Small firms	57,653	9.108	1.376	4.62	15.58
Medium firms	57,653	2.090	0.531	0.69	4.37
Large firms	57,653	0.346	0.134	0.03	0.93
Students	61,028	10.718	1.772	5.82	21.24
Graduates (without)	61,028	6.000	2.230	1.13	17.78
Graduates (lowest)	61,028	17.376	5.248	4.72	59.12
Graduates (highest)	61,016	33.566	9.358	15.16	70.32
Apprenticeships	60,529	103.980	5.701	85.63	132.38
Apprentices	61,028	47.548	10.193	23.17	115.38

Identification strategy

- **Two-way fixed effects model**

- Difference-in-differences (Gallegos Torres, 2023)
    - Exogenous shock

- IV (Lange & Sommerfeld, 2024)
    - Exogenous placement

- Robustness checks

Two-way fixed effects

$$Y_{i,t,d} = \alpha + \beta \frac{X_{d,t}}{pop_{d,t-1}} + C'_{i,t}\gamma + K'_{d,t}\delta + \rho_t + \sigma_i + \varepsilon_{i,t,d}$$

i = individual
d = district
t = year

$Y_{i,t,d}$: realistic educational aspirations (categorical)

$\frac{X_{d,t}}{pop_{d,t-1}}$: share of refugees (per 100,000 inhabitants in previous year)

$C'_{i,t}$: set of individual level factors such as demographic and socioeconomic variables (e.g. age, grades, SES)

$K'_{d,t}$: set of district-level controls which vary over time (e.g. population figures, unemployment rate, GDP per capita)

ρ_t: year FEs

σ_i: individual FEs

$\varepsilon_{i,t,d}$: error term

Results I

Dep. var.: Occupational aspirations (bottleneck occupation)

	(I)	(II)	(III)
Asylum seekers per 100,000 inhabitants	-1.22e-05*	-1.84e-05*	-1.54e-05***
	(6.74e-06)	(1.01e-05)	(5.40e-06)
Controls	No	Yes	Yes
Endogenous controls	No	No	Yes
Individual FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Observations	24,510	13,541	13,506

Economically very small (change by 1 std. dev. In asylum seekers is associated with 4.6e^6 decrease in occupational aspirations)

Results II

Dep. var.: Educational aspirations (university entrance certificate)

	(I)	(II)	(III)
Asylum seekers per 100,000 inhabitants	-8.56e-06	-1.10e-05	-1.67e-05**
	(9.70e-06)	(8.60e-06)	(8.31e-06)
Controls	No	Yes	Yes
Endogenous controls	No	No	Yes
Individual FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Observations	42,055	28,385	27,982

Economically very small (change by 1 std. dev. In asylum seekers is associated with 8.0e^6 decrease in educational aspirations)

Static DiD model

$$Y_{i,t,d} = \beta X_{d,2015} * Post_t + \tau Post_t + C'_{i,t}\gamma + K'_{d,t}\delta + \sigma_i + \varepsilon_{i,t,d}$$

i = individual
d = district
t = year

$Y_{i,t,d}$: realistic aspirations

$X_{d,2015}$: dummy=1 if d (where i was living in 2015) has a share of refugees (per 100,000 inhabitants in 2013) larger than median share of refugees

$C'_{i,t}$: vector of individual level factors such as demographic and socioeconomic variables (e.g. age)

$K'_{d,t}$: vector of district-level controls that vary over time (e.g. population figures, unemployment rate, GDP per capita)
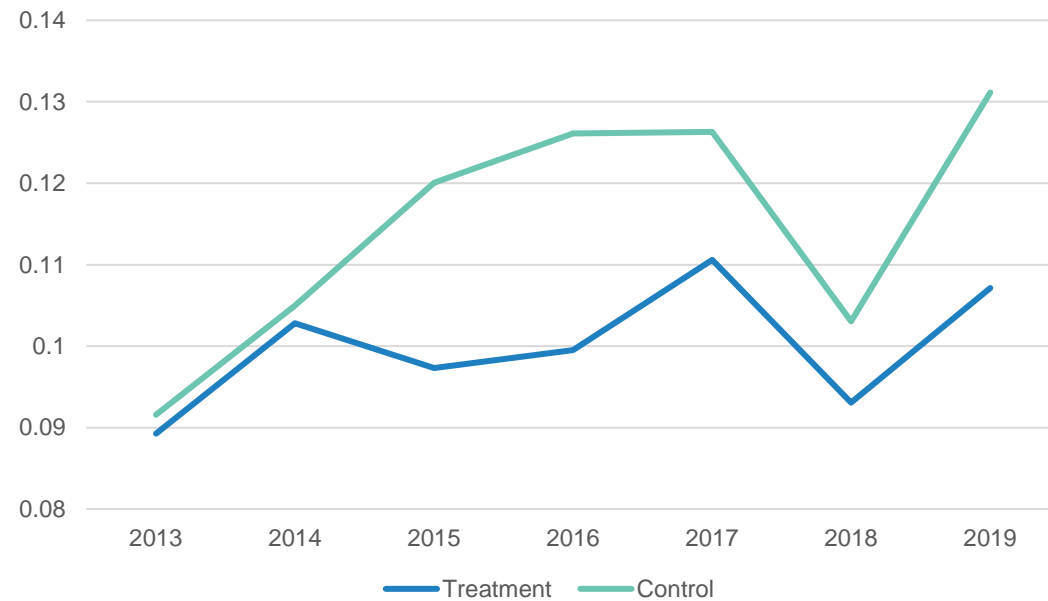
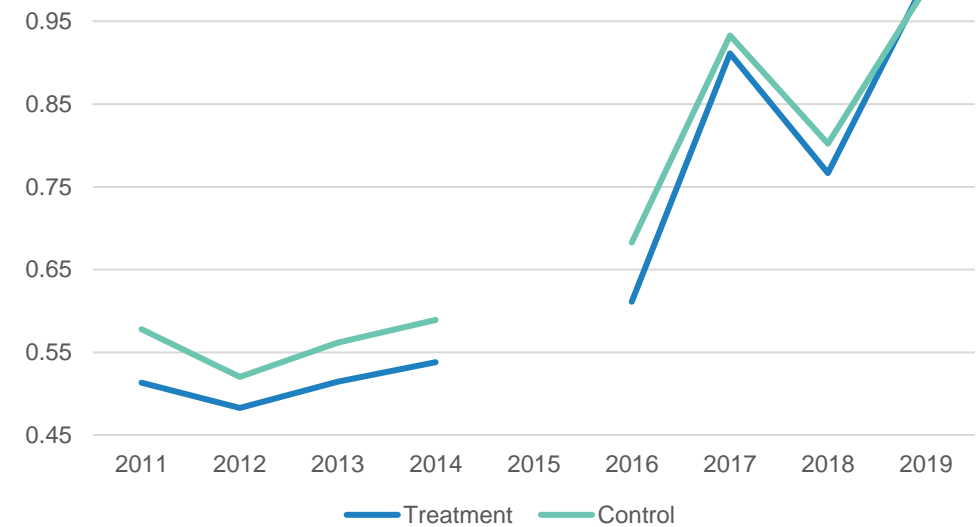σ_i: individual FEs

$\varepsilon_{i,t,d}$: error term

Parallel trends

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Dynamic DiD model

$$Y_{i,t,d} = \sum_{r=-3}^{-1} \beta_r X_{d2015,2014+r} + \sum_{r=0,r\neq1}^{5} \beta_r X_{d2015,2014+r} + C'_{i,t}\gamma + K'_{d,t}\delta + \sigma_i + \rho_t + \varepsilon_{i,t,d}$$

i = individual
d = district
t = year

$Y_{i,t,d}$: realistic aspirations

$X_{d,2015}$: dummy=1 if d (where i was living in 2015) has a share of refugees (per 100,000 inhabitants in 2013) larger than median share of refugees

$C'_{i,t}$: vector of individual level factors such as demographic and socioeconomic variables (e.g. age)

$K'_{d,t}$: vector of district-level controls that vary over time (e.g. population figures, unemployment rate, GDP per capita)

σ_i: individual FEs

ρ_t: year dummies (except 2014)

$\varepsilon_{i,t,d}$: error term

IV approach

$$Y_{i,t,d} = \beta \frac{X_{d,t}}{pop_{d,t-1}} + C'_{i,t}\gamma + K'_{d,t}\delta + \rho_t + \sigma_i + \varepsilon_{i,t,d}$$

i = individual
d = district
t = year

$Y_{i,t,d}$: realistic educational aspirations (categorical)

$\frac{X_{d,t}}{pop_{d,t-1}}$: share of refugees (per 100,000 inhabitants in previous year)

$C'_{i,t}$: set of individual level factors such as demographic and socioeconomic variables (e.g. age)

$K'_{d,t}$: set of district-level controls which vary over time (e.g. population figures, unemployment rate, GDP per capita)

ρ_t: year FEs

σ_i: individual FEs

$\varepsilon_{i,t,d}$: error term

Instrument: $IV_{d,t}$ = Hypothetical allocation = $Quota_{d,t} * \frac{Total\ assignment\ to\ state_{s,t}}{pop_{d,(t-1)}}$

Robustness checks for the future

- Use **refugees** instead of asylum seekers

- **Alternative IVs**: Initial reception facilities, military barracks, gymnasiums (Gehrsitz & Ungerer, 2022)

- Include **lags** of refugee inflow (Dehos, 2021)

- **Change dependent variable** to idealistic aspirations which mirror preferences and should not change due to a change in refugee numbers

- **Exclude** NEPS survey **participants** who were interviewed at time of largest national increase in refugee numbers

- Extend labor market search parameter and **focus not only on district effects**; focus also on **media coverage**

- **Heterogeneity analysis** by gender, migration background, parents' occupation in previous year, grades, east, rural

Thank you!

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