

Understanding Migration Selection from Poland

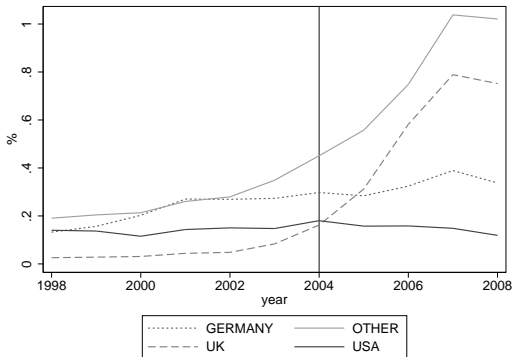
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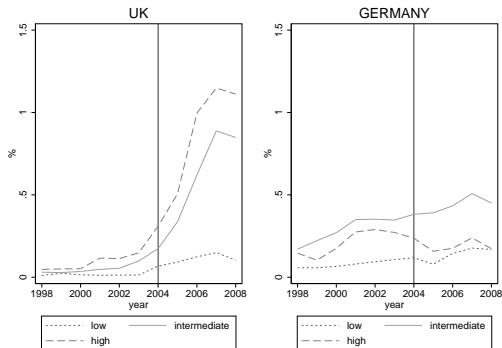
Introduction

- ▶ Poland experienced large migration outflows between mid-1990s and late 2000s
- ▶ Emigration has increased to all countries, in particular to the UK.



Who migrates?

- ▶ What type of selection of Polish emigrants into two major destination countries and what is driving the results?
- ▶ Positive selection (education) in both countries, more highly skilled in the UK
- ▶ Not consistent with the prediction of the Roy/Borjas model in terms of selection of education (theoretical framework)



This paper

- ▶ Descriptive analysis of the selection and sorting of Polish emigrants into two major destination countries: United Kingdom and Germany
 - ▶ Policy driven results?
 - ▶ Observable and unobservable selection
 - ▶ Using data from the source countries
- ▶ Roy/Borjas model: probability to emigrate as a function of the relative prices of skills
 - ▶ Prices of observable skills proxied by the return to education (Fernández-Huertas Moraga (2013, 2012); Gould and Moav (2010); Ibarrran and Lubotsky (2007))
 - ▶ Prices of unobservable skills proxied by the standard deviation of residual wages (Juhn, Murphy and Pierce (1993); Gould (2002); Gould and Moav (2010))
 - ▶ Effect of wage inequality on the incentives to emigrate (using labour market information before individuals emigrate)

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Overview of the results

- ▶ Prediction of the model confirmed only for unobservable skills in the UK
 - ▶ Higher returns in Poland compared to the UK: a decrease in the relative returns in the destination countries shifts the probability to emigrate so that emigrants are more negatively selected
- ▶ Prediction of the model for Germany not confirmed: selection defined by policies

Related literature

Selection of migrants: little evidence of the Borjas (1987) model

- ▶ Data from the destination or source country?
 - ▶ Chiquiar and Hanson (2005); McKenzie and Rapoport (2010); Grogger and Hanson (2011)
 - ▶ Fernández-Huertas Moraga (2013, 2012), Gould and Moav (2010); Ambrosini and Peri (2012) and Kaestner and Malamud (2013)
- ▶ The role of policies
 - ▶ Ramos (1992); Feliciano (2005); Abramitzky, Boustan, and Eriksson (2012)
 - ▶ Internal migration: Borjas, Bronars, and Trejo (1992)

Selection on unobservable skills

- ▶ Gould and Moav (2010): observable and unobservable selection from Israel to the USA
- ▶ From Mexico to the USA: Ambrosini and Peri (2012) and Kaestner and Malamud (2013) Fernández-Huertas Moraga (2013, 2012)

Polish Immigration to Germany and the UK- before

▶ Before 2004

▶ Germany

- ▶ 1991 new regulation allowed Poles to enter the country without visa but couldn't take up employment. Increase in temporary migration
- ▶ End of the 90s: new guest worker programmes (institutionalisation of temporary migration)

▶ UK

- ▶ Immigration Act of 1971 and Polish labour immigrants in the UK were subject to immigration controls (work permits for a particular employer in a particular job for a limited period)
- ▶ 1991 the EU Association Agreement to establish business

Polish Immigration to Germany and the UK- after

- ▶ **After 2004**
 - ▶ Germany
 - ▶ Free to move, but still need permits to work
 - ▶ Self-employment and cross-border provision of services (Poles sent to Germany) became easier
 - ▶ UK
 - ▶ Free to move and work in the UK only need to register with the WRS

Data

- ▶ Polish Labour Force Survey
 - ▶ Rotating panel from 1992 to 2008; every quarter 50 thousand individuals are sampled
 - ▶ Demographics and labour market information on Polish residents (i.e. net monthly wages, education)
 - ▶ Focus on working age (15-64) population
 - ▶ Information on members of private households living abroad for at least three months
 - ▶ Age, education, role in the household, destination country
 - ▶ **Subsample of emigrants before emigration: recover wages and occupational sector pre-migration: compare it with the full sample of emigrants (slide 21)**
- ▶ UK Labour Force Survey
- ▶ German Microcensus

Descriptive Statistics

	Non-Emigrants		Emigrants		
		Total	UK	Germany	Other
<i>log</i> hourly wages (real)	1.97 (0.001)	1.86 (0.013)	1.81 (0.035)	1.88 (0.040)	1.86 (0.015)
Education (years)	12.53 (0.004)	12.41 (0.062)	12.77 (0.179)	11.71 (0.173)	12.43 (0.071)
Primary	8% (0.000)	7% (0.006)	5% (0.016)	8% (0.020)	7% (0.007)
Secondary	70% (0.001)	74% (0.012)	73% (0.033)	83% (0.032)	73% (0.014)
Tertiary	22% (0.001)	19% (0.011)	21% (0.030)	9% (0.027)	20% (0.012)
Age	38 (0.017)	32 (0.235)	29 (0.541)	36 (0.780)	32 (0.271)
Age 16-25	10% (0.000)	21% (0.010)	27% (0.032)	10% (0.023)	21% (0.012)
Age 25-35	29% (0.001)	47% (0.013)	56% (0.036)	38% (0.041)	47% (0.015)
Females (%)	46% (0.001)	25% (0.012)	29% (0.033)	20% (0.035)	25% (0.013)
Professional	32% (0.001)	13% (0.009)	11% (0.024)	8% (0.026)	13% (0.010)
Services	22% (0.001)	24% (0.011)	26% (0.032)	17% (0.031)	24% (0.013)
Blue collar	46% (0.001)	63% (0.013)	62% (0.036)	76% (0.037)	62% (0.015)
observations	410,587	1,564	204	162	1,207

Explaining the wage gap

	Dependent variable: Log hourly wages									
	A. UK					B. Germany				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
emigrant	-0.162*** (0.034)	-0.183*** (0.038)	-0.118*** (0.036)	-0.077** (0.035)	-0.105*** (0.035)	-0.086** (0.040)	-0.014 (0.042)	-0.038 (0.039)	-0.012 (0.039)	-0.028 (0.039)
<i>Controls</i>										
Education	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Demographics	No	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Region FE	No	No	No	No	Yes	No	No	No	No	Yes
Occupation FE	No	No	No	Yes	No	No	No	No	Yes	No

Source: Polish LFS, year 1998 to 2008

Note: Individuals aged 16 to 64. Education control is in years of education, demographics control include 5 age-group dummies and a dummy for female. Occupations are grouped in three categories: professionals, service workers and blue collars. Standard errors reported in brackets. * indicates significance at 10%, ** indicates significance at 5%, *** indicates significance at 1% level.

regional differences (slide 22)

Theoretical model

$$\ln w_i = \mu_i + \delta_i s + \varepsilon_i$$

where $i = \{PL, DE, UK\}$, $\varepsilon_i \sim N(0, \sigma_i^2)$, and $s = \mu_s + \varepsilon_s$

Assumptions

- ▶ Constant cost of migration across skills and destination countries
- ▶ One dimension skill (observable or unobservable) and individual earnings perfectly correlated across countries
 - ▶ *Ranking of individuals is the same across countries*
- ▶ $\delta_{UK} \leq \delta_{DE} \leq \delta_{PL}$ while $\mu_{UK} > \mu_{DE} > \mu_{PL}$
(existence condition - Borjas, Bronars and Trejo (1992))

Theoretical model (cnt'd)

Results from the model:

- ▶ Lower return to skills attract lower skills level
 - ▶ Choose UK if: $s < \frac{\mu_{UK} - \mu_{DE}}{\delta_{DE} - \delta_{UK}}$
 - ▶ Choose region Germany: $\frac{\mu_{UK} - \mu_{DE}}{\delta_{DE} - \delta_{UK}} < s < \frac{\mu_{DE} - \mu_{PL}}{\delta_{PL} - \delta_{DE}}$
 - ▶ Choose region Poland : $s > \frac{\mu_{DE} - \mu_{PL}}{\delta_{PL} - \delta_{DE}}$

Probability to emigrate

- ▶ Following the model a person migrates ($M_{pjt}^i = 1$) if:

$$I^{PL,i}(s) = \mu_i - \mu_{PL} + (\delta_i - \delta_{PL})s + \varepsilon_i - \varepsilon_{PL} - \pi > 0$$

For each destination i :

- ▶ Selection on residual wages

$$Pr(M_{pjt}^i = 1) =$$

$$\gamma_0 + \gamma_1 x_{pjt} + \gamma_2 (SD_{pl} - SD_{dest})_{jt} * (residual)_{pjt} + \gamma_3 Z_{jt} + \tau + \alpha_j + \varepsilon_{pt}$$

- ▶ Selection on education

$$Pr(M_{pjt}^i = 1) = \gamma'_0 + \gamma'_1 x_{pjt} + \gamma'_2 (BETA_{pl} - BETA_{dest})_{jt} *$$

$$(education)_{pjt} + \gamma'_3 Z_{jt} + \tau + \alpha_j + \varepsilon_{pt}$$

Selection on unobservable skills- residual wages

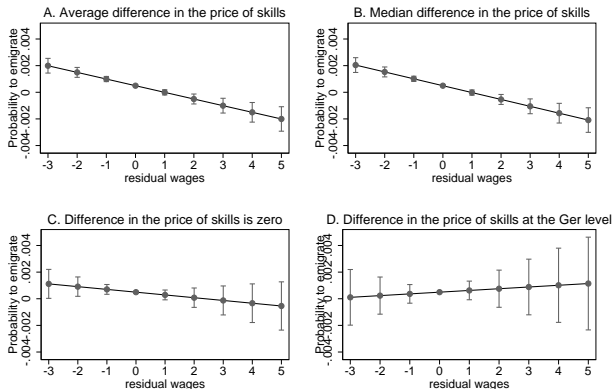
	OLS on probability to emigrate		
	UK	Germany	UK and Germany
	(1)	(2)	(3)
Occupation wage residual*Difference between Poland and UK Residual SD in Occupation j	-0.00404* (0.00220)		-0.00090*** (0.00026)
Occupation wage residual*Difference between Poland and Germany Residual SD in Occupation j		0.00484** (0.00219)	0.00034 (0.00022)
Occupation wage residual Poland	-0.00021 (0.00018)	0.00046** (0.00021)	0.00073* (0.00041)
Years of education	0.00009*** (0.00002)	-0.00001 (0.00002)	0.00009*** -0.00003
Occupation FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Observations	410,791	410,749	410,953

Selection on observable skills - years of education

	OLS on probability to emigrate		
	UK	Germany	UK and Germany
	(1)	(2)	(3)
Years of education*Difference between Poland and UK return to education in Occupation j	0.00318** (0.00154)		0.01266*** (0.00336)
Years of education*Difference between Poland and Germany return to education in Occupation j		0.00233 (0.00157)	-0.01144*** (0.00383)
Occupation wage residual Poland	-0.00050*** (0.00009)	0.00004 (0.00008)	-0.00046*** (0.00013)
Years of education	-0.00003 (0.00006)	-0.00007 (0.00004)	-0.00009 (0.00008)
Occupation FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Observations	410,791	410,749	410,953

Interpretation

UK



Robustness checks

- ▶ Adding regional dummies
- ▶ Year selection
- ▶ Unobservable and observable selection together
- ▶ Endogeneity

Conclusions

- ▶ Subsample of emigrants for whom I observe pre-migration wages and occupation
- ▶ Selection pattern of Polish emigration into different destination based on unobservable factors
- ▶ Lower relative returns to skill in Poland w.r.t. destination will lead to workers with higher residual wage to leave: explains why different pattern in Germany and the UK

Thank you!

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Appendix - Full and subsample *(back to slide 9)*

	UK			Germany		
	full	restricted	difference	full	restricted	difference
education (years)	13.267 (0.042)	12.721 (0.181)	0.546*** (0.186)	11.922 (0.032)	11.681 (0.171)	0.241 (0.174)
primary	0.036 (0.003)	0.064 (0.017)	-0.028 (0.018)	0.080 (0.004)	0.094 (0.022)	-0.014 (0.022)
secondary	0.676 (0.008)	0.725 (0.033)	-0.049 (0.034)	0.808 (0.006)	0.820 (0.032)	-0.012 (0.032)
tertiary	0.287 (0.008)	0.211 (0.030)	0.077** (0.031)	0.112 (0.005)	0.086 (0.025)	0.027 (0.026)
female (%)	0.391 (0.008)	0.287 (0.033)	0.104*** (0.034)	0.329 (0.007)	0.189 (0.033)	0.140*** (0.034)
age (years)	28.826 (0.131)	29.194 (0.544)	-0.368 (0.559)	34.126 (0.157)	36.045 (0.788)	-1.919** (0.803)
age 16-25	0.307 (0.008)	0.271 (0.032)	0.035 (0.033)	0.193 (0.006)	0.097 (0.022)	0.096*** (0.023)
age 25-35	0.520 (0.009)	0.550 (0.036)	-0.031 (0.037)	0.381 (0.008)	0.384 (0.040)	-0.003 (0.041)
age 35-45	0.103 (0.005)	0.106 (0.023)	-0.003 (0.024)	0.228 (0.006)	0.296 (0.037)	-0.068* (0.037)
age 45-55	0.059 (0.004)	0.072 (0.019)	-0.013 (0.020)	0.163 (0.006)	0.196 (0.031)	-0.033 (0.032)
age 55-64	0.011 (0.002)	0.000 (0.000)	0.011*** (0.002)	0.034 (0.003)	0.027 (0.013)	0.007 (0.013)

Source: Polish LFS, years 1998 to 2008.

Note: Individuals aged 16 to 64. Full sample is the whole sample of emigrants, restricted sample is the sample of emigrants for whom I observe positive wages. Primary educated are those who left education

Appendix - Regional differences

regions	A. Non-Emigrants		C. Emigrants to the UK			B. Emigrants to Germany		
	(1)	(2)	(1)	(2)	(3)	(1)	(2)	(3)
below 25th	20%	1.906 (0.002)	24%	1.717 (0.045)	0.189*** (0.045)	26%	1.936 (0.067)	-0.029 (0.067)
25th and 50th	24%	1.934 (0.001)	27%	1.679 (0.042)	0.255*** (0.042)	20%	1.685 (0.054)	0.250*** (0.054)
50th and 75th	20%	1.962 (0.002)	20%	1.837 (0.099)	0.125 (0.099)	33%	1.858 (0.072)	0.104 (0.073)
above 75th	36%	2.032 (0.001)	29%	2.054 (0.078)	-0.022 (0.078)	21%	2.053 (0.107)	-0.021 (0.107)
observations	410,587		204			162		

Source: Polish LFS, years 1998 to 2008

Note: Individuals aged 16 to 64, reporting positive wages. In each Panel (A,B,C), column (1) reports the regional distribution of individuals in the reference groups, column (2) reports the log hourly wages (in 2008 prices) between 1998 and 2008. Column (3) in panels B and C, reports the difference in log hourly wages between non-emigrants and emigrants. Regions are ranked according to the distribution of regional average log hourly wages (in 2008 prices), between 1998 and 2008. The group below 25th includes: Kuyavian-Pomeranian, Swietokrzyskie, Warmian-Masurian and Łódź; the group 25th to 50th includes: Greater Poland, Subcarpathian, Lubusz and Lublin; the group 50th to 75th includes: West Pomeranian, Opole, Pomeranian and Lower Silesian; the group above 75th includes Podlaskie, Lesser Poland, Silesian and Masovian. Standard errors reported in brackets. * indicates significance at 10%, ** indicates significance at 5%, *** indicates significance at 1% level.

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