

# Invandring og arbejdsmarkedet

## erfaringer fra Danmark

Baseret på Foged and Peri (2016, AEJ:Applied)

Nationaløkonomisk Forening

Mette Foged

2. Marts, 2017

# Indvandring og arbejdsmarkedet

## 1. Indvandrere er arbejdskraft

På kort sigt: arbejdskraftens marginale produktivitet falder

På lang sigt: kapital tilpasses og der er ingen løneffekter

Meget simplistisk!

## 2. Arbejdskraft adskiller sig ved uddannelse og erfaring. Relative udbud og elasticiteter bestemmer effekten. Statisk. Partiel. Ignorerer handel, kapital-færdighed komplementariteter og teknologitilpasninger

## 3. Der er en særlig dimension af færdigheder, der er central i forhold til internationale migranter (manuel-kompleks). Arbejdskraft og virksomheder tilpasser sig på måder, der påvirker den samlede effekt.

Vi skal se på arbejdsmarkedet som mere dynamisk

# Komparative fordele

På tværs af lande befinder migranter sig i lignende job; opgaver der er “internationalt overførbare”, og hvor de har en komparativ fordel.

- Lavt uddannede indvandrere: manual job fx rengøring, madlavning, samlebåndsarbejde, fysisk arbejde i byggesektoren og landbrug
- Højt uddannede indvandrere: tekniske men rutine-prægede job fx indenfor ingeniør området (matematik, IT)
- Indfødte: lande-specifik, kommunikation, inter-aktive and kognitive opgaver indenfor fx human resources, management

# Sammenfatning af Foged og Peri (2016)

Effekter af lavt-uddannet indvandring for indfødt arbejdskraft

Vi følger indfødte og hvordan de klarer sig på arbejdsmarkedet i 18 år

1. Kort og længere sigt
2. Skelner effekter for individer og gennemsnittet for et lokalt arbejdsmarked

Ny identifikation baseret på lokale arbejdsmarkeder:

1. Flygtningebosættelser ud fra en Spredningspolitik, 1986-1998
2. Stærk stigning i flygtninge-lande immigrant populationer i 1990erne relateret til kriser ude i verden og familiesammenføring.  
Familiesammenføring følger de tidligere bosættelser

Fuld population dansk register data og amerikansk “ONET” data

# Identifikationsmæssigt bygger vi på

“Area-based” analyse og “Bartik style” instrument baseret på pre-determinerede etniske enklaver (Altonji and Card, 1991; Card, 2001)

Push-episoder giver eksogene inflows men fordelingen på tværs af områder er endogen (Card, 1990; Friedberg, 2001)

Glitz (2012) bruger en spredningspolitik i Tyskland: 5 år, ingen cross-section variation, løn og beskæftigelse

# Hovedresultater i Foged og Peri (2016)

Indvandring stimulerede indfødtes mobilitet og deres specialisering i komplekse opgaver, men ramte ikke deres risiko for arbejdsløshed

I gennemsnit blev lavtuddannedes løn beskyttet af denne mekanisme; de unge med lille virksomhedsspecifik-erfaring har positive effekter

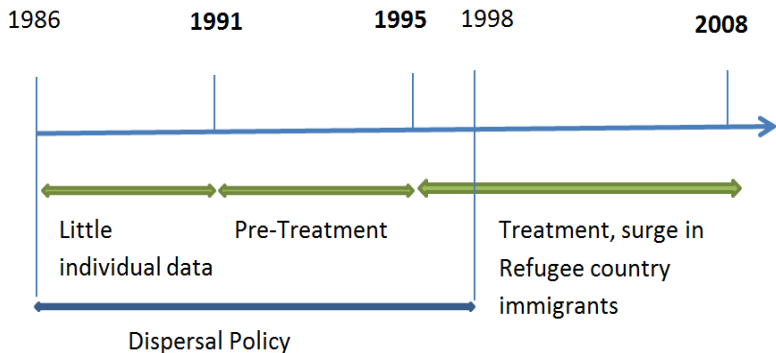
Højt uddannede oplever lønfremgang med meget lidt jobmobilitet - tegn på direkte komplementaritet

(“Area” giver konsistente estimater / repeated cross-section er ikke et problem)

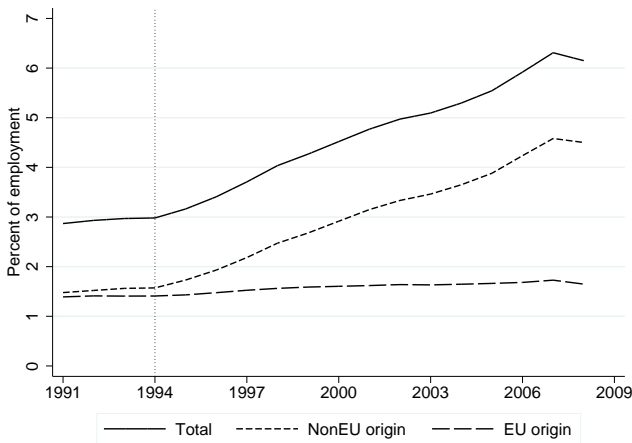
Fokus på de mest udsatte: lavt uddannede

# Timing: dispersal policy and immigration surge

## TIME LINE



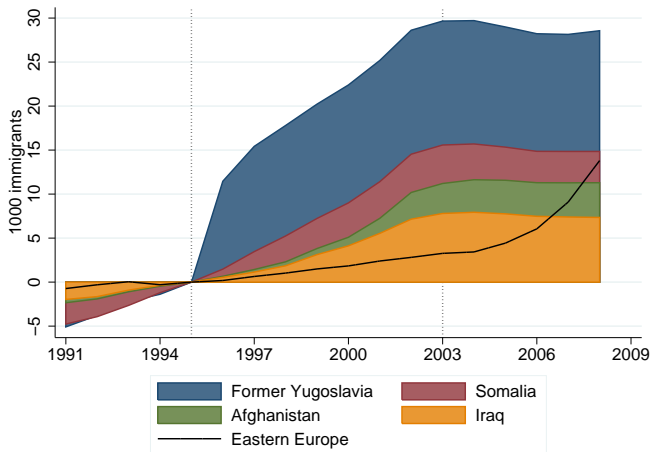
# Immigrants in the Danish labor market



Notes: "EU" is defined as EU15 plus Norway, Island og Liechtenstein (EEA) and Switzerland (bilateral agreement).



# Drivers of non-EU immigration growth



**Notes:** Growth in immigrant populations since January 1, 1995, from major source countries for refugee inflows between 1986-1998 and from Eastern Europe.

# Schooling and occupations

Table : Skills levels

	Refugee	Natives
<i>Panel A. Education</i>		
Primary	0.292	0.265
Secondary	0.104	0.059
Vocational	0.293	0.403
Higher	0.214	0.265
Unknown	0.097	0.008
<i>Panel B. Occupation</i>		
Most complex	0.000	0.002
Least complex	0.134	0.041
Best paid	0.003	0.030
Least paid	0.026	0.030

Notes: Occupation groups are the 2-digit  
ISCO classifications.

# Immigration in manual jobs

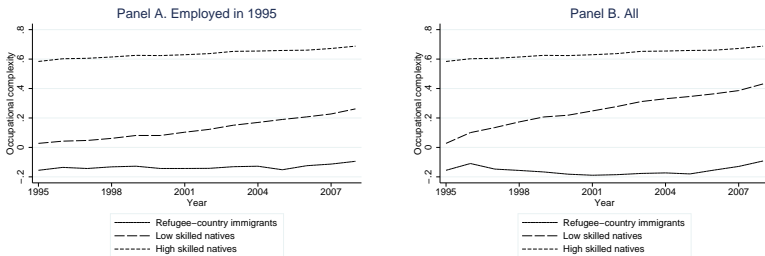
**Table :** Immigrant concentrations and skill contents of occupations

	Refugee share 1994-2008 dif.	Skill content of occupation			
		Cog.	Com.	Manual	Complex
<i>Panel A. Lowest inflow</i>					
Managers of small enterprises	-0.003	0.666	0.677	0.432	1.136
Legislators and senior officials	0.001	0.897	0.989	0.303	1.828
Skilled agricultural and fishery workers	0.001	0.362	0.248	0.736	-0.328
Corporate managers	0.002	0.796	0.796	0.367	1.488
Armed forces	0.002	0.441	0.390	0.633	0.225
<i>Panel B. Highest inflow</i>					
Laborers mining, constr., mfr. and transp.	0.022	0.215	0.156	0.769	-0.783
Drivers and mobile plant operators	0.023	0.352	0.265	0.810	-0.322
Other elementary occupations	0.027	0.260	0.205	0.742	-0.633
Machine operators and assemblers	0.036	0.276	0.146	0.790	-0.655
Sales and services elementary occupations	0.051	0.126	0.103	0.695	-1.234

*Notes:* Complexity index =  $\ln((\text{Communication} + \text{Cognitive}) / \text{Manual})$ . The skill content of each occupational grouping (2-digit ISCO) is the population weighted average of the underlying occupations (4-digit ISCO).

# Mean complexity, time series

**Figure :** Mean complexity of tasks over time for groups of workers



**Notes:** Each year the figure shows (for three groups) the mean complexity of tasks performed by either those employed in 1995 (Panel A) or all i.e. including new entrants to Danish employment (Panel B).

# Instrument

$$\hat{S}_{mt} = \left( \sum_{c \in \text{Refugee}} s_{cm} \times F_{ct} \right) / P_{m1988}$$

$F_{ct}$ : Total population from country  $c$  resident in Denmark in year  $t$

$s_{cm}$ : Share from country  $c$  placed, as first residence, in municipality  $m$  over the total population from country  $c$  dispersed 1986-1998

$P_{m1988}$ : Total population in municipality  $m$  in 1988

$F_{ct}$  varies according to aggregate events and  $s_{cm}$  was set by policy

$\hat{S}_{mt}$  are exogenous supply shocks of refugee-country immigrants

76,673 refugees allocated proportional to municipality inhabitants

Information on birth date, marital status, # children and nationality available from questionnaire, no face-to-face meeting between placement officers and refugees

When interviewed in 2008, DRC's chief consultant did not recall any turning down of the housing offer

No reallocation restrictions in this period, but 7 years after placement 52 percent still lived in the assigned municipality

▶ map

# Strong first stage 1995-2008 and no correlation with 1991-1994 outcomes

Table : Pre-trend in native outcomes and instrument power

	1991- 1994 difference in average			1994-2008 dif.	1994-2008 dif.
	Occupational complexity	Hourly wage	Fraction of year worked	in actual EU share	in actual refugee share
1994-2008 dif. in imputed share	-0.609 (0.904)	0.664 (0.516)	-0.152 (0.436)	0.030 (0.088)	0.858*** (0.123)
F-statistic instrument	0.45	1.65	0.12	0.12	48.88
Observations	97	97	97	97	97
R-squared	0.37	0.64	0.81	0.74	0.79

Notes: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ . Each regressions is at the municipality level and weighted by the size of the labor force in the municipality. The table shows correlation of instrument with pre-trends in outcomes for low skilled natives and with actual change in foreign born share.

# Initial dispersion and later growth in immigrant shares

Table : Immigrants' share of employment across municipalities

	1991	1994	2003	2008
<i>Panel A. Refugee</i>				
Upper quartile	0.616	0.763	1.936	2.537
Lower quartile	0.224	0.230	0.820	0.987
Difference	0.392	0.533	1.116	1.550
<i>Panel B. Total non-EU</i>				
Difference	2.052	2.177	4.029	4.797
<i>Panel C. EU</i>				
Difference	0.689	0.693	1.005	1.031

*Notes:* The actual share of immigrants in percent of employment in the upper and lower quartile of the 1994-2008 difference in predicted refugee share.



# Two empirical approaches

First approach: Identify the effect on employed Danish individuals in a 2SLS panel regression with very large set of FE

Second approach: Identify dynamic effect over 14 years by following workers in upper/lower quartile of predicted immigration (first stage) in a DID framework

# First approach: panel regressions

Sample of employed individuals between 1995-2008

$$y_{ijmt}^{NAT} = x'_{it}\alpha + \beta S_{mt} + \phi_{t,IND} + \phi_{t,REG} + \gamma_{i,u} + \varepsilon_{ijmt}$$

$y_{ijmt}$ : individual outcomes (wage, occupational mobility, specialization and employment)

$x_{it}$ : vector of individual characteristics (age, experience, tenure...)

$S_{mt}$ : refugee-country immigrants share

$\phi_{t,IND}, \phi_{t,REG}$ : industry-by-time and region-by-time effects

$\gamma_{i,u}$ : **Worker-establishment, worker-municipality or worker effects**

Cluster at the municipality. Use 2SLS

## Second approach: DID

Balanced sample of individuals (1991-2008)

$$y_{imt}^{NAT} = x_i' \alpha + \sum_{t=-3}^{-1} \gamma_t M_m D(year = t) + \sum_{t=1}^{14} \gamma_t M_{im} D(year = t) \\ + \phi_{t,IND} + \phi_{t,REG} + \phi_{t,EDUC} + \phi_{t,OCC} + \phi_m + \varepsilon_{it}$$

$M_m$ : Indicator for upper/lower quartile (rest are omitted) of **immigration exposure**

Interaction with year dummies,  $D(year = t)$ , allow us to identify the pre-trend  $[-3, -1]$  and the transitions during the surge in immigrant share  $[1, 14]$ . 0 (1994) is reference (we have year and municipality fixed effects)

Cluster at the 1994-municipality

# DID versions

We implement to versions of the DID regression

1. Following **cohorts**. All RHS variables are specific to the worker in 1994; hence, exposure to immigration is defined based on the location of the worker in 1994
2. Following **areas**: Variables take their actual values in time  $t$ ; hence, exposure is based on the current location meaning that selective in- and out-migration may contaminate the effect on the exposed cohort

- Sources: Danish registers (IDA) + American O\*NET data
- Sample: Individuals aged 18-65, not attending school and not permanently out of the labor force. Pre-trend (1991-1994), analysis window (1995-2008)
- Outcomes: Job mobility, mobility across municipalities, occupational complexity, hourly wage, annual earnings and employment
- Controls: Age, experience, tenure, marital status, education, position, region and industry [▶ Sum stats](#)
- Immigrant share measured at the municipality level (97 of them)
- Distinguish high (tertiary) and low skilled (no post-secondary)

# Panel regression

Table : Low skilled natives

► High skilled

	Worker-establishment		Worker-municipality		Worker	
	FE	FE-IV	FE	FE-IV	FE	FE-IV
Occupational complexity	0.255 (0.326)	0.259 (0.580)	1.310* (0.612)	3.170* (1.534)	0.602* (0.275)	1.340** (0.478)
- Manual intensity	-0.122 (0.143)	-0.289 (0.337)	-0.717** (0.224)	-1.947** (0.680)	-0.388** (0.131)	-0.851*** (0.230)
- Communication intensity	-0.144 (0.315)	-0.514 (0.526)	0.200 (0.512)	0.559 (1.001)	0.156 (0.210)	0.668* (0.333)
- Cognitive intensity	0.327 (0.198)	0.144 (0.488)	0.821* (0.407)	1.417 (0.855)	0.213 (0.148)	0.238 (0.233)
Occupational mobility	0.320 (0.295)	1.004 (0.785)	0.502 (0.412)	1.933* (0.983)	0.931*** (0.214)	1.781*** (0.457)
Hourly wage	0.620* (0.265)	1.601** (0.507)	0.169 (0.351)	0.983 (0.601)	0.787** (0.300)	1.802** (0.642)
Fraction of year worked	0.151 (0.129)	0.554* (0.262)	0.259* (0.106)	0.794** (0.287)	0.408*** (0.066)	0.735*** (0.101)
Observations	1564737	1564737	1816727	1816727	1864027	1864027
First stage <i>F</i> -statistic		53.53		58.01		468.87
First stage coefficient		0.551*** (0.075)		0.603*** (0.079)		0.476*** (0.022)

Notes: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ . 2SLS estimates. Standard errors in parentheses and *F*-statistic for significance of excluded instrument are clustered by municipality.

# Panel regression

What did we learn?

- Statistical significant occupational mobility and specialization in complex tasks *across* establishments
- This is driven by a move away from manual intensive tasks
- No or positive wage effects

Note: time-invariant heterogeneity of workers and match is controlled for; compositional bias is not a concern

Limitations: Does not consider employment / crowding out

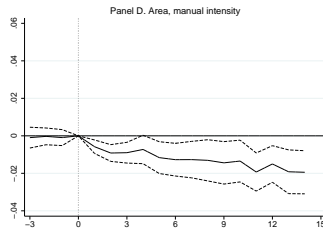
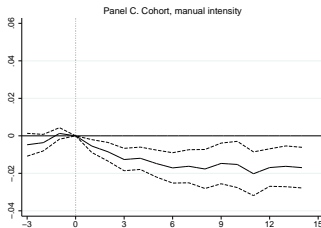
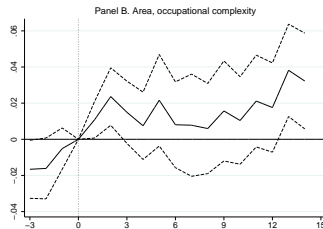
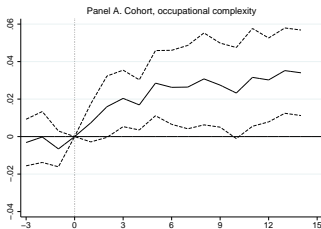
# DID

Consider all workers and follow them

- Discontinuous and differential refugee-country immigrant growth across municipalities 1994-2008
- Follow cohorts of individuals (differently exposed in their initial location) no matter where they moved or follow average in an area. This will show if the area bias results because of diffusion to other regions (Borjas, 2003)
- Consider the longer-run dynamic response of native workers

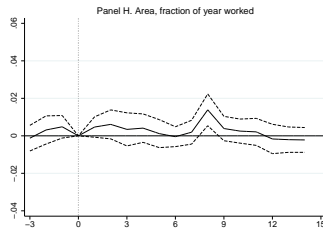
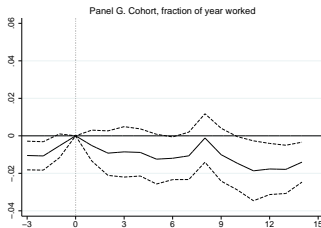
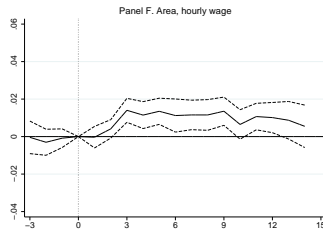
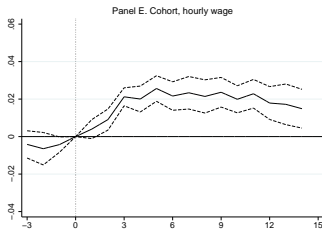


# Treatment-control differences, complexity and manual



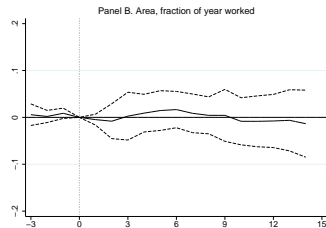
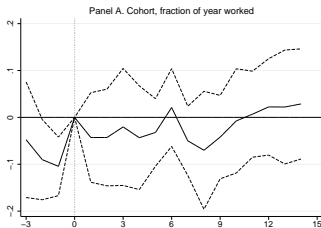
**Notes:** Parameter estimates (—) and 95% confidence limits (- -) on the interaction terms of immigration exposure and year dummies. Standard errors are clustered at the 1994-municipality.

# Treatment-control differences, wages and employment



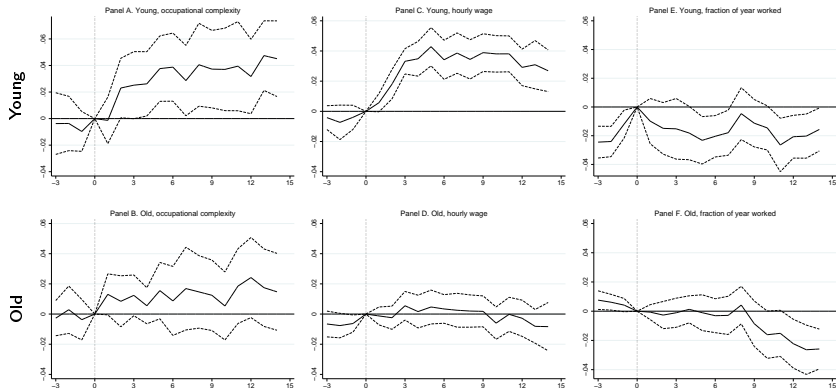
**Notes:** Parameter estimates (—) and 95% confidence limits (- -) on the interaction terms of immigration exposure and year dummies. Standard errors are clustered at the 1994-municipality.

# Treatment-control differences: crowding out of the non-employed?



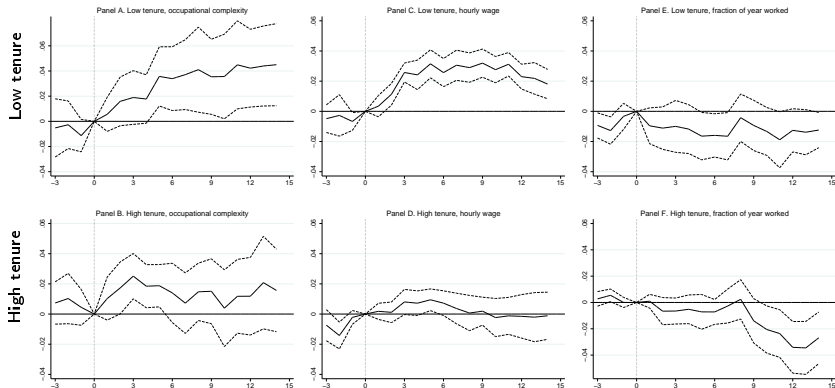
**Notes:** Parameter estimates (—) and 95% confidence limits (- - -) on the interaction terms of immigration exposure and year dummies. Standard errors are clustered at the 1994-municipality.

# Treatment-control cohort differences by age groups



**Notes:** Parameter estimates (—) and 95% confidence limits (---) on the interaction terms of immigration exposure and year dummies. Standard errors are clustered at the 1994-municipality. Young (old) are those aged 21-36 (37-51) in 1994.

# Treatment-control cohort differences by tenure groups



**Notes:** Parameter estimates (—) and 95% confidence limits (---) on the interaction terms of immigration exposure and year dummies. Standard errors are clustered at the 1994-municipality. Low (high) tenure are those with less than (at least) 4.35 years in the firm in 1994.

# Interpretation

- College and non-college educated are complementary (e.g. Card, 2009)
- Among non-college, manual and non-manual are complementary tasks. Refugee-country immigrants increase the supply of manual and push natives to non-manual (Peri and Sparber, 2009)
- Similar effects on cohort and municipality - area-based analysis are not uninformative due to large spillovers as suggested by e.g. Borjas (2006); Borjas, Freeman, and Katz (1997)
- Mainly young and low-tenure can redirect their career, takes place across firms
- No employment costs, maybe some early retirement

# Conclusion

Refugee-country immigrants, distributed as a supply shock to Danish municipalities, stimulated native occupational mobility

Natives, especially the young and low-tenure ones, redirected their career towards less manual and more complex tasks thereby increasing their wage

Employment was not affected, only for older that might have retired earlier

# Danish papers

- Malchow-Møller, Munch, and Skaksen (2011): The effect of foreign experts (eligible for the preferential tax scheme) on wages and productivity in the firm
- Malchow-Møller, Munch, and Skaksen (2012): The effect of immigrants on wages of native coworkers within worker-establishment spells
- Malchow-Møller et al. (2013): The impact of immigrant hirings on firm's job creation in the farm sector
- Parrotta, Pozzoli, and Pytlikova (2014): The effect of an ethnically diversified workforce on firm-level productivity

We consider municipality-level (not firm-level) changes in the immigrant share and exploits a quasi-random dispersion of refugees to municipalities



# Literature

The effect of immigration on native wages and employment

- Altonji and Card (1991); Friedberg (2001); Card (2001); Borjas (2003); Card (2009)...
- Review article by Blau and Kahn (2012)
- Glitz (2012) uses a similar identification strategy, consider 5 years and not cross sectional variation due to dispersal
- Cohen-Goldner and Paserman (2011): Wage effects change over time due to the dynamic adjustment of capital and of immigrants, not dynamic responses of natives

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# Deviations from the canonical labor demand-labor supply model

- Ottaviano and Peri (2012): Immigrants and natives differ (add an extra CES-nest to Borjas, 2003)
- Peri and Sparber (2009): Theory of task-specialization, evidence from U.S. states
- Lewis (2011, 2013); Dustmann and Glitz (2011); Ottaviano, Peri, and Wright (2013): Endogenous choice of technology and open economy adjustments

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# Summary statistics (spell sample)

	Low skilled		High skilled	
	Mean	S.d.	Mean	S.d.
Age	37.77	12.26	43.32	9.93
Labor market experience	14.68	10.13	19.42	9.31
Job tenure	4.16	5.45	5.62	6.23
Married	0.48	0.50	0.63	0.48
Education, primary	0.63	0.48	0.00	0.00
secondary	0.15	0.36	0.00	0.01
vocational	0.16	0.37	0.57	0.50
higher	0.05	0.22	0.43	0.50
Region, Northern Jytland	0.11	0.31	0.10	0.30
Central Jytland	0.23	0.42	0.23	0.42
Southern Denmark	0.23	0.42	0.21	0.41
Greater Copenhagen Area	0.28	0.45	0.31	0.46
Zealand	0.15	0.36	0.15	0.36
Agriculture, fishing and quarrying	0.03	0.16	0.01	0.10
Manufacturing	0.23	0.42	0.17	0.38
Electricity, gas and water supply	0.00	0.07	0.01	0.09
Construction	0.08	0.28	0.06	0.24
Wholesale and retail sale, hotels and rest.	0.18	0.38	0.14	0.34
Transport, post and telecommunications	0.10	0.30	0.05	0.23
Finance and business activities	0.10	0.29	0.14	0.34
Public and personal services	0.28	0.45	0.42	0.49
Observations	1,864,027		3,160,760	

# Settlements of refugees pre- and post dispersal policy

Figure : From Damm and Dustmann (2014) [▶ Back](#)

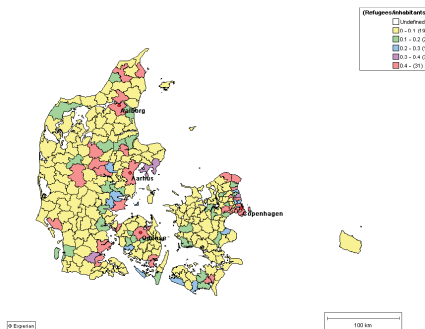


Figure A1a: Refugee Immigrant Allocation, pre-assignment policy

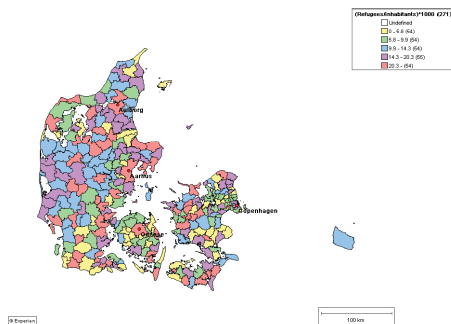


Figure A1b: Refugee Immigrant Allocation, post-assignment policy

# Panel regression

Table : High skilled natives [▶ Back](#)

	Worker-establishment		Worker-municipality		Worker	
	FE	FE-IV	FE	FE-IV	FE	FE-IV
Occupational complexity	-0.038 (0.256)	0.245 (0.457)	0.406 (0.256)	1.149** (0.410)	0.288* (0.139)	0.477* (0.220)
- Manual intensity	-0.132 (0.112)	-0.448 (0.243)	-0.308* (0.120)	-0.777** (0.246)	-0.237*** (0.070)	-0.387*** (0.096)
- Communication intensity	-0.346 (0.224)	-0.239 (0.361)	0.005 (0.246)	0.484 (0.352)	0.050 (0.122)	0.218 (0.176)
- Cognitive intensity	-0.084 (0.184)	-0.447 (0.522)	0.101 (0.199)	-0.009 (0.396)	0.021 (0.111)	-0.096 (0.197)
Occupational mobility	0.106 (0.235)	1.301* (0.546)	0.395 (0.272)	1.944*** (0.569)	0.209 (0.160)	0.378 (0.260)
Hourly wage	0.512*** (0.148)	2.068*** (0.452)	0.522* (0.203)	2.316*** (0.584)	-0.301 (0.381)	-0.034 (0.483)
Fraction of year worked	-0.083 (0.080)	0.178 (0.176)	-0.048 (0.073)	0.120 (0.166)	0.096* (0.040)	0.223*** (0.060)
Observations	2860183	2860183	3125934	3125934	3160757	3160757
First stage <i>F</i> -statistic		63.28		68.02		294.85
First stage coefficient		0.563*** (0.071)		0.607*** (0.074)		0.495*** (0.029)

Notes: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ . 2SLS estimates. Standard errors in parentheses and *F*-statistic for significance of excluded instrument are clustered by municipality.

Altonji, Joseph G. and David Card. 1991. "The Effects of Immigration on the Labor Market Outcomes of Less-skilled Natives. Chapter 7 in M. J. Abowd and R. B. Freeman (Eds.)." *Immigration, Trade and the Labor Market* (Chicago: University of Chicago Press):201–234.

Blau, Francine and Lawrence Kahn. 2012. "Immigration and the Distribution of Incomes." *NBER Working Paper* No. 18515:Cambridge, MA.

Borjas, George J. 2003. "The Labor Demand Curve Is Downward Sloping: Reexamining the Impact of Immigration on the Labor Market." *Quarterly Journal of Economics* 118 (4):1359–1374.

———. 2006. "Native Internal Migration and the Labor Market Impact of Immigration." *Journal of Human resources* 41 (2):221–258.

Borjas, George J., Richard B. Freeman, and Lawrence F. Katz. 

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