Skills, Distortions, and the Labor Market Outcomes of Immigrants Across Space

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Motivation: Immigrants key driver of US productivity, but earn 15% less than natives:

- Underperforming in the labor market reduces social cohesion and influences aggregate outcomes
- **Existing evidence**: US immigrants and natives mainly **differ in**:
 - i. Job choices → human capital (Lagakos et al., 2018), task specialization (Peri and Sparber, 2009), labor market barriers (Birinci et al., 2024)
 - ii. Residential choices \rightarrow preferences for locations (Albert and Monras, 2022)
 - \rightarrow Does not account for interaction among these choices

Research questions:

- What is the geography of immigrants' labor market outcomes in the US?
- How does it relate to earnings gaps with natives and spatial earnings inequality?
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Documents 3 stylised facts:

- i. The earnings gap b/w immigrants and natives is larger in big cities
- ii. No city-size earnings premia only for immigrants from low-income countries
- iii. Workers from high-income countries work more in cognitive jobs, especially in big cities
- Interprets these facts with a spatial GE model including:
 - Workers' heterogeneity: human capital and city-occupation amenities
 - Worker-specific local labor market distortions: wedges on the marginal product of labor
 - Cross-city heterogeneity: technology and housing supply
- Quantifies the role of heterogeneity and wedges on the earnings gap b/w
 - Immigrants and natives: human capital **-18.9%**, amenities **-6.2%** , wedges **-9.3%**
 - Big and small cities: human capital **+1.1%**, amenities **+3%** , wedges **-0.1%**
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 New fact: spatial distribution of occupational choices differ by origins

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 Rich heterogeneity in spatial GE to study inequality outcomes

Misallocation of production factors: Restuccia and Rogerson (2008), Hsieh and Klenow (2009), Gopinath et al. (2017), Bryan and Morten (2019), Hsieh et al. (2019), Guner and Ruggieri (2023), Birinci et al. (2024)

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Data & Stylised Facts

- i. The earnings gap b/w immigrants and natives is larger in big cities
 - Natives ightarrow doubling the city size increases hourly earnings by 3.6%
 - Immigrants ightarrow no significant change in earnings b/w small and big cities ($^{
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- iii. Workers from high-income countries work more in cognitive jobs, especially in big cities. Doubling the city size:
 - The share of natives in cognitive jobs +1pp
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Data shows:

- Earnings gap increases with city size for immigrants from low-income countries
- Workers from high-income countries work in cognitive occupations in big cities

A spatial equilibrium model to:

- Quantify how different factors affect job choices in U.S. cities b/w immigrants and natives
- Study the consequences of inflows of new immigrants on earnings inequality

The model has three building blocks:

- Differences in technology across cities (Atalay et al. (2023), Eeckhout et al. (2024), Giannone (2023))
- Workers' heterogeneity in skills and tastes for where to work and live (Schoellman (2012), Lagakos et al. (2018), Albert & Monras (2022))
- Labor market distortions (Hsieh et al. (2019), Birinci et al. (2024))

The Model in a Nutshell

Environment

Static economy: cities (local labor markets) and agents (workers)

- Cities, production and housing:
 - $j \in \{1, ..., J\}$ cities
 - Firm in city j produces Y_j with CES technology using human capital in two occupations $o \in \{M, D\}$
 - City-specific productivity bias θ_j in cognitive occupations D
 - Absentee landlords own land T_j and produce housing H_j

Workers:

- Continuum of workers $i \in [0, 1]$
- Each worker *i* is endowed with human capital $\mathbf{s} = (s_M, s_D)$ and belongs to a group g = (k, e, x)
- Each group has a measure ϕ_g s.t. $\sum_g \phi_g =$ 1
- Cobb-Douglas utility function in consumption and housing goods

$$U_{jog} = c_{jog}^{(1-lpha)} h_{jog}^{lpha} \mathbf{z_{jog}} \exp\{\varepsilon_{jo}\}$$

 $arepsilon_{jo}\sim$ Gumbel(0, 1) i.i.d. taste shock, city-occupation amenities $z_{jog},lpha$ expenditure share in housing

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The Model in a Nutshell: Choice Equation

Firms

- Set skills prices r_{io} to max profits and min costs Firm problem

A worker $i \in g$

- Earns: $w_{jog} = r_{jo} \mathbf{S_{og}} \tau_{jog}$
 - $\eta_{
 m jog}$ is a group-specific local labor market compensation wedge
- Given their city-occupation choice, max utility subject to her budget constraint (earnings) (Volter problem (Indirect addity)
- The share of workers from group *g* choosing a city *j* and an occupation *o* is:

$$\pi_{jog} = \frac{\gamma p_j^{-\alpha} \overbrace{r_{jo} \operatorname{Sog} \tau_{jog}}^{w_{jog}} \mathbf{Z}_{jog}}{\sum_{j' \in \mathcal{J}} \sum_{o' \in \mathcal{O}} \gamma p_{j'}^{-\alpha} \underbrace{r_{j'o'} s_{o'g} \tau_{j'o'g}}_{w_{j'o'g}} z_{j'o'g}}$$

Absentee landlords

- Housing supply is governed by: $p_j = \left(rac{H_j}{T_j}
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elasticity Housing supply

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Model Identification and Calibration

Identifying assumptions:

- Native workers are not subject to labor market distortions
- $z_{jog} = 1, \forall g$ in the smallest city and non-cognitive occupation

Other assumptions:

- ζ_j , T_j do not vary across city
- ϕ_g is given
- $au_{\textit{jog}} = au_{\textit{jok}}$, i.e. wedges vary only by origin, location, and occupation

Dimensionality reduction:

- 2 cities \rightarrow {Small City, Big City}
- 3 countries of origin \rightarrow {Natives, Low-Income, High-Income}
- 2 education groups \rightarrow {No College, College}
- 3 experience groups $\rightarrow \quad \{0 14, 15 29, 30 +\}$

Parameters:

- 6 externally calibrated Externally calibrated parameters
- 100 calibrated using the MSM Identification and internal calibration

Counterfactual Exercises

The Model as a Laboratory

Quantification: study the role of human capital, amenities and wedges on:

- Earnings gap b/w natives and immigrants $\overline{w}_{Workers}^{Gap}$
- Earnings gap b/w big and small cities $\overline{w}_{Cities}^{Gap}$ Gaps definitions

Counterfacutals: for all immigrants, keeping fixed the other parameters, remove:

- 1. Differences in human capital with natives
- 2. Differences in amenities with natives
- 3. Wedges on earnings
- 4. Differences in amenities and wedges
- 5. Differences in human capital, amenities and wedges



- Human capital: earnings gap -18.9% vs spatial earnings gap +1.1%
- Amenities: earnings gap -6.2% vs spatial earnings gap +3%
- Wedges: earnings gap -9.3% vs spatial earnings gap -0.1%



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Inequality trade-off



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Policy Exercises
- GE responses after an inflow of immigrants (overall employment +1pp):
 - Policy 1: inflow of immigrants with no college education
 - Policy 2: inflow of immigrants with college education



- Inflow of immigrants with no college education:
 - Earnings gap b/w immigrants and natives +2.6% vs spatial earnings inequality -0.3%
- Inflow of immigrants with college education:
 - Earnings gap b/w immigrants and natives **-5.9%** vs spatial earnings inequality **-0.1%**

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Amenities estimates Y Human capital estimates Y Allocations Y Competition vs. Skills Effect

Spatial Earnings

Conclusion

Conclusion

What is the geography of immigrants' labor market outcomes in the US?

- Earnings gap with natives grows with city size only for immigrants from low-income countries
 - Empirical contribution: job choices across space depend on country of origin

How does it relate to earnings gaps with natives and spatial earnings inequality?

- Model contribution: rich spatial GE framework with occupational choices
- **Quantitative contribution:** study drivers of occupational choices across space
 - i. No differences in human capital or amenities b/w immigrants and natives \rightarrow Inequality trade-off
 - ii. No origin-specific local labor market wedges \rightarrow No inequality trade-off
 - Improved allocation of <u>all</u> workers into occupations across space

How does immigration policy affect these outcomes?

- How the earnings gap b/w immigrants and natives change depends on who enters the country
- **Spatial earnings inequality** \downarrow regardless of who enters the country

Thank you!

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Data

- 2010 American Community Survey (ACS) sample from IPUMS:
 - Immigrants: foreign-born workers, first-generation
 - Hourly earnings
 - US cities: Metropolitan Statistical Areas (MSA)
 - Sample: male workers, 18-64 y.o., employed and work for wages
- O*NET:
 - Tasks intensity as in Acemoglu & Autor (2011)
- World Bank:
 - Countries GDP per capita 2017 USD
 - Low-income ightarrow GDP pc < \$30,000
 - High-income \rightarrow GDP pc \geq \$30,000

City-Size Earnings Premia: Natives vs Immigrants



- The earnings gap b/w immigrants and natives is larger in big cities
 - Natives ightarrow doubling the city size increases hourly earnings by 3.6%
 - Immigrants ightarrow no significant change in earnings b/w small and big cities



City-Size Earnings Premium by Country of Origin



- No city-size earnings premia only for immigrants from low-income countries
 - High-income ightarrow doubling the city size increases hourly earnings by 3.9%



Spatial Distribution of Workers into Cognitive Occupations and Cities



- High-income country workers choose more cognitive jobs, especially in large cities. Doubling the city size:
 - The share of natives in cognitive jobs +1pp
 - The share of immigrants from high-income countries in cognitive jobs +1.5pp
 - The share of immigrants from low-income countries does not change Fact 3 Table

Robustness Checks Fact 1

Econometric model: $\ln w_i = \alpha + \beta \ln \text{Employment}_{j(i)} + X_i + \varepsilon_i$

	Log Hourly Earnings (1)	Log Hourly Earnings (2)	Log Hourly Earnings (3)	Log Hourly Earnings (4)	Log Hourly Earnings (5)
			Immigrants		
	-0.049	-0.021	-0.024	-0.025	-0.014
Log City Employment	(0.021)	(0.011)	(0.012)	(0.014)	(0.012)
Countrate at	3.000	2.360	1.825	0.987	2.990
Constant	(0.256)	(0.136)	(0.160)	(0.198)	(0.195)
N. Obs	56,999	56,999	56,999	56,999	56,999
Adj.R2	0.00	0.27	0.28	0.23	0.41
			Natives		
Les City Employment	0.068	0.039	0.046	0.049	0.042
Log City Employment	(0.013)	Og Hourly Earnings (1) Cog Hourly (2) Cog Hourly Earnings (3) Cog Hourly Earnings (4) Cog Hourly Earnings (5) -0.049 -0.021 -0.024 (0.021) -0.024 (0.021) -0.024 (0.021) -0.025 (0.012) -0.025 (0.012) -0.024 (0.021) -0.024 (0.021) -0.025 (0.012) -0.014 (0.012) 0.002 2.360 1.825 0.987 2.990 (0.025) (0.011) (0.012) (0.014) (0.012) 56,999 56,999 56,999 56,999 56,999 0.000 0.27 0.28 0.23 0.41 0.068 0.0049 0.042 (0.073) 0.042 (0.015) (0.005) (0.022) (0.105) (0.961) (0.155) (0.095) 0.022 0.015 (0.962) 562,577 562,577 562,577 562,577 562,577 562,577 562,577 562,577 562,577 574 × X X X X X X X X X X			
Constant	1.950	1.705	0.639	-0.646	1.720
constant	(0.155)	(0.095)	(0.102)	Iog Hourty Log I ts Earnings Earn (4) (0) nts (4) (4) (0,025 (5) (0,074) (10) (0,074) (10) (0,198) (10) (0,198) (10) (0,098) (10) (0,008) (10) (0,008) (10) (0,008) (10) (0,008) (10) (0,008) (10) (0,008) (10) (0,008) (10) (0,008) (10) (0,008) (10) (0,008) (10) (0,008) (10) (0,008) (10) (0,003) (10) (10,015) (10) (10,015) (10) (10,015) (10) (10,015) (10) (10,015) (10) (10,015) (10) (10,015) (10) (1	(0.096)
N. Obs	562,577	562,577	562,577	562,577	562,577
Adj.R2	0.01	0.23	0.35	0.34	0.45
Years of School FE	×	1	1	×	1
Linear Years of School	×	×	×	1	×
Experience FE	×	×	1	×	1
Cubic Experience	×	×	×	1	×
Occupation FE	×	×	×	×	1
Origin FE	×	×	×	×	×



Robustness Checks Fact 1 City Prices

	Log Hourly Earnings (1)	Log Hourly Earnings (2)	Log Hourly Earnings (3)	Log Hourly Earnings (4)	Log Hourly Earnings (5)
			Immigrants		
Log City Employment	-0.152	-0.126	-0.128	-0.130	-0.115
Log City Employment	(0.052)	(0.051)	(0.051)	(0.055)	(0.043)
Constant	-2.325	-2.922	-3.697	-4.287	-2.577
Constant	(0.627)	(0.621)	(0.653)	(0.688)	(0.559)
N. Obs	56,999	56,999	56,999	56,999	56,999
Adj.R2	0.03	0.25	0.26	0.21	0.4
			Natives		
Log City Employment	-0.052	-0.079	-0.072	-0.069	-0.073
Log City Employment	(0.026)	(0.029)	(0.026)	(0.026)	(0.024)
Constant	-3.057	-3.332	-4.429	-5.572	-3.418
Constant	(0.306)	(0.334)	(0.295)	(0.301)	(0.270)
N. Obs	562,577	562,577	562,577	562,577	562,577
Adj.R2	0.01	0.20	0.32	0.31	0.42
Years of School FE	×	1	1	×	1
Linear Years of School	×	×	×	1	×
Experience FE	×	×	1	×	1
Cubic Experience	×	×	×	1	×
Occupation FE	×	×	×	×	1
Origin FE	×	×	×	×	×



Robustness Checks Fact 1: Conditional Regressions

	No College Education	College Education	0-14 Experience	15-29 Experience	30+ Experience
	Log Hourly Earnings (1)	Log Hourly Earnings (2)	Log Hourly Earnings (3)	Log Hourly Earnings (4)	Log Hourly Earnings (5)
			Immigrants		
Log City Employment	-0.026	-0.030	-0.015	-0.031	-0.026
	(0.014)	(0.024)	(0.013)	(0.015)	(0.016)
Constant	2.302 (0.176)	3.333 (0.310)	2.151 (0.168)	2.567 (0.189)	2.612 (0.195)
N. Obs	38,747	18,252	6,181	30,139	20,679
Adj.R2	0.03	0.01	0.36	0.23	0.12
			Natives		
Log City Employment	0.031	0.073	0.054	0.058	0.058
Log City Employment	(0.007)	(0.014)	(0.012)	(0.012)	(0.010)
Constant	1.777	1.840	1.500	1.852	1.950
constant	(0.090)	(0.170)	(0.143)	(0.144)	(0.124)
N. Obs	210,105	352,472	183,107	221,225	158,245
Adj.R2	0.13	0.08	0.17	0.16	0.12
College FE	×	×	1	1	1
Experience FE	1	1	×	×	×



Robustness Checks Fact 1: Conditional Regressions City Prices

	No College Education	College Education	0-14 Experience	15-29 Experience	30+ Experience
	Log Hourly Earnings	Log Hourly Earnings	Log Hourly Earnings	Log Hourly Earnings	Log Hourly Earnings
	(1)	(2)	(3)	(4)	(5)
			Immigrants		
Log City Employment	-0.137	-0.116	-0.133	-0.135	-0.124
Log City Employment	(0.049)	(0.059)	(0.05)	(0.051)	(0.052)
Constant	-2.911	-2.219	-2.966	-2.732	-2.802
Constant	(o.593)	(0.726)	(0.609)	(0.621)	(0.633)
N. Obs	38,747	18,252	6,181	30,139	20,679
Adj.R2	0.06	0.03	0.34	0.23	0.12
			Natives		
Log City Employment	-0.087	-0.047	-0.073	-0.056	-0.055
Log City Employment	(0.026)	(0.024)	(0.026)	(0.024)	(0.025)
Constant	-3.246	-3.204	-3.414	-3.199	-3.112
Constant	(0.313)	(0.285)	(0.307)	(O.281)	(0.291)
N. Obs	210,105	352,472	183,107	221,225	158,245
Adj.R2	O.14	0.09	0.15	O.14	0.10
College FE	×	×	1	1	1
Experience FE	1	1	×	×	×



Robustness Checks Fact 1: Female Workers

	Log Hourly Earnings (1)	Log Hourly Earnings (2)	Log Hourly Earnings (3)	Log Hourly Earnings (4)	Log Hourly Earnings (5)
			Immigrants		
Les City Freedowneet	-0.015	-0.003	-0.004	0.000	-0.007
Log City Employment	(0.018)	(0.012)	(0.012)	(0.011)	(0.012)
Constant	2.363	1.941	1.689	0.884	2.861
Constant	(0.222)	(0.149)	(0.186)	(0.169)	(0.263)
N. Obs	40,794	40,794	40,794	40,794	40,794
Adj.R2	0.00	0.22	0.22	0.19	0.38
			Natives		
Log City Employment	0.073	0.045	0.050	0.051	0.044
Log City Employment	(0.017)	(0.011)	(0.013)	(0.013)	(0.012)
Constant	1.670	1.438	0.587	-0.614	1.786
constant	(0.210)	(0.138)	(0.164)	(0.165)	(0.158)
N. Obs	479.097	479.097	479.097	479.097	479.097
Adj.R2	0.01	0.21	0.29	0.28	0.42
Years of School FE	×	1	1	×	1
Linear Years of School	×	×	×	1	×
Experience FE	×	×	1	×	1
Cubic Experience	×	×	×	1	×
Occupation FE	×	×	×	×	1
Origin FE	×	×	×	×	×

Fact 1 Plots

Robustness Checks Fact 1: Female Workers City Prices

	Log Hourly	Log Hourly	Log Hourly	Log Hourly	Log Hourly
	Earnings	Earnings	Earnings	Earnings	Earnings
	(1)	(2)	(3)	(4)	(5)
			Immigrants		
Log City Employment	-0.121	-0.110	-0.110	-0.106	-0.109
Log City Employment	(0.044)	(0.045)	(0.046)	(0.049)	(0.042)
Constant	-2.978	-3.369	-3.665	-4.466	-2.523
constant	(0.533)	(0.555)	(0.585)	(0.559)	(0.586)
N. Obs	40,794	40,794	40,794	40,794	40,794
Adj.R2	0.02	0.21	0.21	0.17	0.36
			Natives		
Log City Employment	-0.053	-0.078	-0.072	-0.072	-0.077
Log City Employment	(0.024)	(0.029)	(0.026)	oury ings Log Hourly Earnings Log Hourly Earnings ings Earnings (5) trants (5) trants (5) trants (0.042) (65 -4.466 -2.523 (794 40.794 40.794 21 0.17 0.36 Ves -0.097 479.094 (0.266) (0.026) (0.027) (0.308) (0.387) 0.397 479.097 479.097 479.097 (26 0.25 0.397 (72 0.25 0.397 (0.328) (0.381) (0.328) (0.3297) 479.097 479.097 (27 0.25 0.39 (28 - - (297) (0.328) (0.387) (397) 479.097 479.097 (26 0.25 0.39 (27 - - (28 - - (29 - -	
Constant	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$				
constant	(0.292)	(0.340)	(0.297)	(0.308)	(0.287)
N. Obs	479,097	479,097	479,097	479,097	479,097
Adj.R2	0.00	0.17	0.26	0.25	0.39
Years of School FE	×	1	1	×	1
Linear Years of School	×	×	×	1	×
Experience FE	×	×	1	×	~
Cubic Experience	×	×	×	1	×
Occupation FE	×	×	×	×	1
Origin FE	×	×	×	×	×



Robustness Checks Fact 1: Female Workers Conditional Regressions

	No College Education	College Education	0-14 Experience	15-29 Experience	30+ Experience
	Log Hourly Earnings	Log Hourly Earnings	Log Hourly Earnings	Log Hourly Earnings	Log Hourly Earnings
	(1)	(2)	(3)	(4)	(5)
			Immigrants		
Log City Employment	-0.020	0.025	0.003	0.003	-0.016
Log City Employment	(0.017)	(0.018)	(0.018)	(0.017)	(0.016)
Constant	2.109	2.285	1.819	1.939	2.261
Constant	(0.202)	(0.252)	(0.229)	(0.203)	(0.201)
N. Obs	26,646	14,148	2,835	20,619	17,340
Adj.R2	0.01	0.00	0.24	0.17	0.13
			Natives		
Log City Employment	0.040	0.074	0.059	0.067	0.060
Log City Employment	(0.010)	(0.020)	(0.016)	(0.016)	(0.015)
Constant	01.533	01.675	01.296	01.508	01.668
Constant	(0.124)	(0.239)	(0.193)	(0.202)	(0.185)
N. Obs	161,996	317,101	162,052	179,563	137,482
Adj.R2	0.08	0.04	0.17	O.14	0.11
College FE	×	×	1	1	1
Experience FE	1	1	×	×	×



Robustness Checks Fact 1: Female Workers Conditional Regressions City Prices

	No College Education	College Education	0-14 Experience	15-29 Experience	30+ Experience
	Log Hourly Earnings	Log Hourly Earnings	Log Hourly Earnings	Log Hourly Earnings	Log Hourly Earnings
	(1)	(2)	(3)	(4)	(5)
			Immigrants		
Log City Employment	-0.131	-0.070	-0.119	-0.103	-0.119
Log City Employment	(0.044)	(0.049)	(0.057)	(0.044)	(0.045)
Constant	-3.145	-3.191	-3.297	-3.386	-3.134
Constant	(o.533)	(0.575)	(0.705)	(0.532)	(0.547)
N. Obs	26,646	14,148	2,835	20,619	17,340
Adj.R2	0.04	0.01	0.23	0.17	0.14
			Natives		
Log City Employment	-0.08	-0.053	-0.076	-0.052	-0.058
Log City Employment	(0.027)	(0.024)	(0.028)	(0.023)	(0.023)
Constant	-3.488	-3.294	-3.538	-3.511	-3.357
Constant	(0.319)	(0.286)	(o.339)	(0.271)	(0.279)
N. Obs	161,996	317,101	162,052	179,563	137,482
Adj.R2	0.09	0.04	0.14	0.12	0.09
College FE	×	×	1	1	~
Experience FE	1	1	×	×	×



Robustness Checks Fact 2

	Log Hourly Earnings (1)	Log Hourly Earnings (2)	Log Hourly Earnings (3)	Log Hourly Earnings (4)	Log Hourly Earnings (5)
			Low-Income		
Log Employment	-0.039 (0.018)	-0.020 (0.012)	-0.024 (0.012)	-0.025 (0.014)	-0.016 (0.011)
Constant	2.800	2.341	1.803	1.164	2.681
N. Obs Adi Ra	51,470	51,470	51,470	51,470	51,470
Adjinz	0.00	0.14	High-Income	0.10	0.34
Log Employment	0.059	0.052	0.063	0.067	0.048
Constant	2.564	2.066	1.049	-0.917	2.127
N. Obs	5,529	5,529	5,529	5,529	5,529
Adj.K2	0.00	0.29	0.24	0.2	0.38
Log Employment	0.068 (0.013)	0.039 (0.008)	Natives 0.046 (0.008)	0.049 (0.008)	0.042 (0.007)
Constant	1.950 (0.155)	1.705 (0.095)	0.639	-0.646 (0.105)	1.720 (0.096)
N. Obs	562,577	562,577	562,577	562,577	562,577
Auj.kz	0.01	0.09	0.35	0.34	0.45
Years of School FE	×	1	1	×	1
Linear Years of School	×	×	×	~	x
Cubic Experience	×	Ŷ	×	<u>,</u>	×
Occupation FE	x	x	x	x	1

Fact 2 Plots

Robustness Checks Fact 2 City Prices

	Log Hourly Earnings (1)	Log Hourly Earnings (2)	Log Hourly Earnings (3)	Log Hourly Earnings (4)	Log Hourly Earnings (5)
			Low-Income		
Log Employment	-0.143	-0.125	-0.128	-0.129	-0.116
Log Employment	(0.053)	(0.052)	(0.053)	(0.056)	(0.044)
Constant	-2.522	-2.939	-3.797	-4.106	-2.981
constant	(0.641)	(0.635)	(0.733)	(0.699)	(0.671)
N. Obs	51,470	51,470	51,470	51,470	51,470
Adj.R2	0.03	0.64	0.21	0.16	0.34
			High-Income		
Log Employment	-0.044	-0.050	-0.038	-0.035	-0.048
Log Employment	(0.059)	(0.05)	(0.046)	(0.047)	(0.040)
Constant	-2.773	-3.386	-4.592	-6.366	-3.421
constant	(0.710)	(0.564)	(0.635)	(o.675)	(o.682)
N. Obs	5,529	5,529	5,529	5,529	5,529
Adj.R2	0.00	0.56	0.23	0.19	0.37
			Natives		
Log Employment	-0.052	-0.079	-0.072	-0.069	-0.073
Log Employment	(0.026)	(0.029)	(0.026)	(0.026)	(0.024)
Constant	-3.057	-3.332	-4.429	-5.572	-3.418
constant	(0.306)	(o.334)	(o.295)	(0.301)	(0.270)
N. Obs	562,577	562,577	562,577	562,577	562,577
Adj.R2	0.00	0.33	0.32	0.31	0.42
Years of School FE	×	1	1	×	1
Linear Years of School	×	×	×	1	×
Experience FE	×	×	1	×	~
Cubic Experience	×	×	×	1	×
Occupation FE	×	×	×	×	1

Fact 2 Plots

Robustness Checks Fact 2: Conditional Regressions

	No College	College	0-14	15-29	30+
	Education	Education	Experience	Experience	Experience
	Log Hourly Earnings				
	(1)	(2)	(3)	(4)	(5)
			Low-Income		
Log City Employment	-0.023	-0.035	-0.025	-0.030	-0.019
	(0.014)	(0.025)	(0.013)	(0.016)	(0.014)
Constant	02.251	03.283	02.277	02.544	02.499
	(0.170)	(0.317)	(0.173)	(0.198)	(0.173)
N. Obs	37,308	14,162	5,568	27,059	18,843
Adj.R2	0.03	0.01	0.3	0.17	0.08
			High-Income		
Log City Employment	0.030	0.081	0.082	0.054	0.087
	(0.026)	(0.032)	(0.046)	(0.025)	(0.037)
Constant	2.274	2.237	1.625	2.111	1.724
	(0.353)	(0.406)	(0.597)	(0.327)	(0.459)
N. Obs	1,439	4,090	613	3,080	1,836
Adj.R2	0.00	0.03	0.10	0.17	0.17
			Natives		
Log City Employment	0.031	0.073	0.054	0.058	0.058
	(0.007)	(0.014)	(0.012)	(0.012)	(0.01)
Constant	1.777	1.840	1.500	1.852	1.950
	(0.090)	(0.170)	(0.143)	(0.144)	(0.124)
N. Obs	210,105	352,472	183,107	221,225	158,245
Adj.R2	0.13	0.08	0.17	0.16	0.12
College FE Experience FE	×	×	✓ ×	✓ ×	√ ×



Robustness Checks Fact 2: Conditional Regressions City Prices

	No College Education	College Education	0-14 Experience	15-29 Experience	30+ Experience
	Log Hourly Earnings (1)	Log Hourly Earnings (2)	Log Hourly Earnings (3)	Log Hourly Earnings (4)	Log Hourly Earnings (5)
			Low-Income		
Log City Employment	-0.133	-0.117	-0.141	-0.135	-0.117
Log City Employment	(0.050)	(0.065)	(0.056)	(0.054)	(0.051)
Constant	-2.967	-2.288	-2.870	-2.744	-2.921
constant	(0.603)	(0.771)	(o.683)	(0.652)	(0.621)
N. Obs	37,308	14,162	5,568	27,059	18,843
Adj.R2	0.06	0.03	0.30	0.17	0.09
			High-Income		
Log City Employment	-0.106	-0.009	-0.058	-0.043	-0.009
Log City Employment	(0.068)	(0.041)	(0.043)	(0.046)	(0.057)
Constant	-2.643	-3.321	-3.254	-3.313	-3.739
constant	(O.849)	(0.514)	(0.557)	(0.529)	(o.685)
N. Obs	1,439	4,090	613	3,080	1,836
Adj.R2	0.02	0.03	0.08	0.17	0.18
			Natives		
Log City Employment	-0.087	-0.047	-0.073	-0.056	-0.055
Log City Employment	(0.026)	(0.024)	(0.026)	(0.024)	(0.025)
Constant	-3.246	-3.204	-3.414	-3.199	O — 3.112
constant	(0.313)	(0.285)	(0.307)	(0.281)	(0.291)
N. Obs	210,105	352,472	183,107	221,225	158,245
Adj.R2	O.14	0.09	0.15	O.14	O.1
College FE	×	×	1	1	1
Experience FE	~	1	×	×	×

Robustness Checks Fact 2: Female Workers

	Log Hourly Earnings (1)	Log Hourly Earnings (2)	Log Hourly Earnings (3)	Log Hourly Earnings (4)	Log Hourly Earnings (5)
			Low-Income		
Low Freedown and	-0.009	0.001	-0.001	0.003	-0.007
Log Employment	(0.017)	(0.012)	(0.012)	(0.011)	(0.012)
Constant	2.253	1.890	1.644	0.853	2.577
constant	(0.214)	(0.148)	(0.190)	(0.169)	(0.312)
N. Obs	37,531	37,531	37,531	37,531	37,531
Adj.R2	0.00	0.15	0.20	0.17	0.35
			High-Income		
Log Employment	0.053	0.018	0.027	0.028	0.021
Log Employment	(0.032)	(0.027)	(0.028)	(0.029)	(0.025)
Constant	2.040	1.925	0.556	-0.080	1.496
constant	(0.406)	(o.343)	(0.543)	(0.534)	(o.665)
N. Obs	3,263	3,263	3,263	3,263	3,263
Adj.R2	0.00	0.34	0.22	0.19	0.40
			Natives		
Log Employment	0.073	0.045	0.050	0.051	0.044
Log Employment	(0.017)	(0.011)	(0.013)	(0.013)	(0.012)
Constant	1.670	1.438	0.587	-0.614	1.786
constant	(0.21)	(0.138)	(0.164)	(0.165)	(0.158)
N. Obs	479,097	479,097	479,097	479,097	479,097
Adj.R2	0.01	0.14	0.29	0.28	0.42
Years of School FE	×	1	1	×	1
Linear Years of School	×	×	×	1	×
Experience FE	×	×	~	×	1
Cubic Experience	×	×	×	1	×
Occupation FE	×	×	×	×	1

Fact 2 Plots

Robustness Checks Fact 2: Female Workers City Prices

	Log Hourly Earnings (1)	Log Hourly Earnings (2)	Log Hourly Earnings (3)	Log Hourly Earnings (4)	Log Hourly Earnings (5)
			Low-Income		
Log Employment	-0.114 (0.044)	-0.105 (0.046)	-0.106 (0.046)	-0.102 (0.049)	-0.108 (0.043)
Constant	-3.11 (0.536)	-3.439 (0.558)	-3.727 (0.589)	-4.509 (0.565)	-2.893 (0.594)
N. Obs Adj.R2	37,531 0.02	37,531 0.56	37,531 0.19	37,531 0.15	37,531 0.33
			High-Income		
Log Employment	-0.065 (0.055)	-0.096 (0.048)	-0.086 (0.044)	-0.087 (0.047)	-0.085 (0.034)
Constant	—3.116 (0.666)	—3.345 (0.577)	-4.507 (0.694)	—5.364 (0.594)	—3.536 (0.65)
N. Obs	3,263	3,263	3,263	3,263	3,263
Adj.R2	0.01	0.58	0.21	0.18	0.40
			Natives		
Log Employment	-0.053 (0.024)	-0.078 (0.029)	-0.072 (0.026)	-0.072 (0.026)	-0.077 (0.025)
Constant	-3.286 (0.292)	-3.547 (0.340)	-4.435 (0.297)	-5.491 (0.308)	-3.322 (0.287)
N. Obs	479,097	479,097	479,097	479,097	479,097
Adj.R2	0.00	0.34	0.26	0.25	0.39
Years of School FE	×	1	1	×	1
Linear Years of School	×	×	×	1	×
Experience FE	×	×	1	×	1
Cubic Experience	×	×	×	<i>✓</i>	×
Occupation FE	X	x	×	×	~

Fact 2 Plots

Robustness Checks Fact 2: Female Workers Conditional Regressions

	No College Education	College Education	0-14 Experience	15-29 Experience	30+ Experience
	Log Hourly Earnings (1)	Log Hourly Earnings (2)	Log Hourly Earnings (3)	Log Hourly Earnings (4)	Log Hourly Earnings (5)
			Low-Income		
Log City Employment	-0.016	0.031	0.001	0.004	-0.009
Log City Employment	(0.016)	(0.018)	(0.020)	(0.016)	(0.016)
Constant	2.048	2.12	1.826	1.917	2.160
constant	(0.201)	(0.247)	(0.252)	(0.194)	(0.199)
N. Obs	25,450	12,081	2,520	18,995	16,016
Adj.R2	0.01	00	0.2	0.15	0.12
			High-Income		
Log City Employment	0.019	0.057	0.000	0.107	-0.023
Log city Employment	(0.030)	(0.045)	(0.055)	(0.04)	(0.042)
Constant	2.076	2.213	2.318	1.072	2.634
constant	(0.406)	(0.572)	(0.719)	(0.502)	(o.536)
N. Obs	1,196	2,067	315	1,624	1,324
Adj.R2	0.00	0.01	0.13	O.13	0.13
			Natives		
Log City Employment	0.040	0.074	0.059	0.067	0.060
Log city Employment	(0.010)	(0.020)	(0.016)	(0.016)	(0.015)
Constant	1.533	1.675	1.296	1.508	1.668
Constant	(0.124)	(0.239)	(0.193)	(0.202)	(0.185)
N. Obs	161,996	317,101	162,052	179,563	137,482
Adj.R2	0.08	0.04	O.17	O.14	0.11
College FE	×	×	1	1	1
Experience FE	~	1	×	×	×

Robustness Checks Fact 2: Female Workers Conditional Regressions City Prices

	No College Education	College Education	0-14 Experience	15-29 Experience	30+ Experience
	Log Hourly Earnings (1)	Log Hourly Earnings (2)	Log Hourly Earnings (3)	Log Hourly Earnings (4)	Log Hourly Earnings (5)
			Low-Income		
Log City Employment	-0.126	-0.061	-0.119	-0.101	-0.110
Log City Employment	(0.044)	(0.050)	(0.061)	(0.045)	(0.044)
Constant	-3.222	-3.386	-3.309	-3.417	-3.270
constant	(0.542)	(0.576)	(0.746)	(0.546)	(0.540)
N. Obs	25,450	12,081	2,520	18,995	16,016
Adj.R2	0.04	0.01	0.20	0.15	0.12
			High-Income		
Log City Franksyment	-0.120	-0.045	-0.136	-0.004	-0.142
Log city Employment	(0.055)	(0.051)	(0.073)	(0.053)	(0.056)
Constant	-2.880	-3.204	-2.675	-4.191	-2.522
constant	(0.670)	(0.634)	(0.912)	(0.649)	(0.681)
N. Obs	1,196	2,067	315	1,624	1,324
Adj.R2	0.03	0.00	0.15	0.11	0.17
			Natives		
Log City Employment	-0.080	-0.053	-0.076	-0.052	-0.058
Log City Employment	(0.027)	(0.024)	(0.028)	(0.023)	(0.023)
Constant	-3.488	-3.294	-3.538	-3.511	-3.357
Constant	(0.319)	(o.286)	(o.339)	(0.271)	(0.279)
N. Obs	161,996	317,101	162,052	179,563	137,482
Adj.R2	0.09	0.04	O.14	0.12	0.09
College FE	×	×	1	1	1
Experience FE	~	~	×	×	×

Hourly Earnings: Big vs Small Cities

	Small City (Pop. < 500,000)	Big City (Pop. \geq 500,000)	City-Size Gap
Natives	21.0	23.8	+2.8
High-Income	33.2	39.6	+6.4
Low-Income	13.3	11.9	-1.4



Workers Distributions across Cities and Occupations

		Small City (Pop. < 500,000)	Big City (Pop. \geq 500,000)	Δ
Natives	% Cognitive	63.9	68.8	4.9
	% Total	17.7	82.3	64.6
High-Income	% Cognitive % Total	71.6 19.3	80.4 80.7	8.9 61.3
Low-Income	% Cognitive % Total	27.5 10.7	24.7 89.3	-2.8 78.7

Workers from high-income countries work more in cognitive jobs in big cities
 Workers from low-income countries are more likely to live in big cities relative to all other workers

The Problem of the Firm

A firm in city *j* solves:

$$\max Y_{j} = \left[M_{j}^{\frac{\sigma-1}{\sigma}} + (\theta_{j}D_{j})^{\frac{\sigma-1}{\sigma}}\right]^{\frac{\sigma}{\sigma-1}} - r_{jD}D_{j} - r_{jM}M_{j}$$

where:

- σ is the elasticity of substitution between the two inputs
- r_{jo} is the city-occupation-specific skills price
- The city-occupation-specific skills price ratio is:

$$\frac{r_{jD}}{r_{jM}} = \left(\frac{D_j}{M_j}\right)^{-\frac{1}{\sigma}} \theta_j^{\left(1-\frac{1}{\sigma}\right)}$$

The Problem of the Worker and Demands for Goods

Given their city-occupation choice, a worker *i* from group *g* solves:

$$\begin{array}{ll} \max_{c_{jog},h_{jog}} & U_{jog} = c_{jog}^{(1-\alpha)} h_{jog}^{\alpha} z_{jog} \exp\{\varepsilon_{jo}\} \\ & \text{s.t.} & c_{jog} + p_j h_{jog} \leq w_{jog} \end{array}$$

where

- c consumption good, h housing good, α expenditure share in the housing good

Demands for goods are:

$$egin{aligned} \mathbf{c}^{\star}_{jog} &= (\mathbf{1} - lpha) \, \mathbf{W}_{jog} \ \mathbf{h}^{\star}_{jog} &= lpha rac{\mathbf{W}_{jog}}{\mathbf{p}_{j}} \end{aligned}$$

The Problem of the Worker and Demands for Goods

Given their city-occupation choice, a worker *i* from group *g* solves:

$$\begin{array}{ll} \max_{c_{jog},h_{jog}} & U_{jog} = c_{jog}^{(1-\alpha)} h_{jog}^{\alpha} \mathsf{Z}_{jog} \exp\{\varepsilon_{jo}\}\\ & \text{s.t.} & c_{jog} + p_j h_{jog} \leq \mathsf{w}_{jog} \end{array}$$

where

- c consumption good, h housing good, α expenditure share in the housing good

Demands for goods are:

$$egin{aligned} \mathbf{c}^{\star}_{jog} &= (\mathbf{1} - lpha) \, \mathbf{W}_{jog} \ \mathbf{h}^{\star}_{jog} &= lpha rac{\mathbf{W}_{jog}}{\mathbf{p}_{j}} \end{aligned}$$

Indirect Utility and Choice Equation

Indirect utility from living in city *j* and working in occupation *o* is:

 $V_{jog} = \gamma p_j^{-lpha} w_{jog} z_{jog} \exp\{\varepsilon_{jo}\}$

where $\gamma = (1 - \alpha)^{(1-\alpha)} \alpha^{\alpha}$

The share of workers from group g choosing a city j and an occupation o is:

$$\pi_{jog} = \frac{\gamma \mathbf{p}_{j}^{-\alpha} \mathbf{W}_{jog} \mathbf{Z}_{jog}}{\sum_{j' \in \mathcal{J}} \sum_{o' \in \mathcal{O}} \gamma \mathbf{p}_{j'}^{-\alpha} \mathbf{W}_{j'o'g} \mathbf{Z}_{j'o'g}}$$
$$= \frac{\gamma \mathbf{p}_{j}^{-\alpha} \mathbf{r}_{jo} \mathbf{Sog} \tau_{jog} \mathbf{Z}_{jog}}{\sum_{j' \in \mathcal{J}} \sum_{o' \in \mathcal{O}} \gamma \mathbf{p}_{j'}^{-\alpha} \mathbf{r}_{j'o'} \mathbf{S}_{o'g'} \tau_{j'o'g'} \mathbf{Z}_{j'o'g}}$$

Endogenous Housing Supply

The production function for housing is given by:

$$H_j = f(Y_j, T_j) = \omega_j Y_j^{\iota_j} T_j^{1-\iota_j}$$

where $\omega_j = \iota_j^{-\iota_j}$ is a constant, and $(1 - \iota_j)$ is the weight of land in the production of housing. The (absentee) landlord solves:

$$\max_{\mathsf{Y}_{j}} \quad p_{j}\left(\omega_{j}\mathsf{Y}_{j}^{\iota_{j}}\mathsf{T}_{j}^{1-\iota_{j}}
ight)-\mathsf{Y}_{j}$$

Solving FOC and rearranging:

$$Y_j = (p_j \omega_j \iota_j)^{\frac{1}{1-\iota}} T_j$$

Plug FOC into the production function to get the housing supply in a city *j*:

$$p_j = \left(\frac{H_j}{T_j}\right)^{\frac{1}{\zeta_j}}$$



Spatial Equilibrium

- A spatial equilibrium is a set of skills prices {r_{jo}^{*}}_{j∈J,o∈O}, housing prices {p_j^{*}}_{j∈J}, an allocation of workers across locations and occupations {π_{joq}^{*}}_{j∈J,o∈O}, such that:
 - The share of workers from group g in a city-occupation pair jo is:

$$\pi_{jog}^{\star} = \frac{\gamma p_{j}^{\star - \alpha} r_{jo}^{\star} \mathbf{Sog} \tau_{jog} \mathbf{Z}_{jog}}{\sum_{j' \in \mathcal{J}} \sum_{o' \in \mathcal{O}} \gamma p_{j'}^{\star - \alpha} r_{j'o'}^{\star} \mathbf{s}_{o'g} \tau_{j'o'g} \mathbf{Z}_{j'o'g}}$$

• Labor supply satisfies:

$$M_j^{\star} = \sum_g \pi_{jMg}^{\star} \mathbf{S_{Mg}} \phi_g, \quad D_j^{\star} = \sum_g \pi_{jDg}^{\star} \mathbf{S_{Dg}} \phi_g$$

• Labor markets clear for each city-occupation pair, that is $orall j \in \mathcal{J}$:

$$r_{jM}^{\star} = \frac{\left[M_{j}^{\star}\frac{\sigma-1}{\sigma} + (\theta_{j}D_{j}^{\star})\frac{\sigma-1}{\sigma}\right]^{\frac{1}{\sigma-1}}}{M_{j}^{\star}\frac{1}{\sigma}}, \quad r_{jD}^{\star} = \frac{\left[M_{j}^{\star}\frac{\sigma-1}{\sigma} + (\theta_{j}D_{j}^{\star})\frac{\sigma-1}{\sigma}\right]^{\frac{1}{\sigma-1}}}{D_{j}^{\star}\frac{1}{\sigma}}\theta_{j}^{(1-\frac{1}{\sigma})}$$

• The housing market clear in each city, that is $\forall j \in \mathcal{J}$:

$$p_{j}^{\star} = \left[\frac{\alpha}{T_{j}} \sum_{o} \sum_{g} \pi_{jog}^{\star} \phi_{g} r_{jo}^{\star} \mathbf{S}_{og} \tau_{jog}\right]^{\frac{1}{\zeta_{j}-1}}$$

From the Model to the Data: Internally Calibrated Parameters & Identification

	Description	N. Parameters	Value			
θ_j	City productivity bias	2	Bias			
Sog	Human capital	36	Human capital			
$ au_{jok}$	Wedge on earnings	8	Wedge on earnings			
Z jog	Amenities	54	Amenities			
Targeted Moments						
		Moment	N. Moments			
Avg.	2					
Avg.	36					
Avg.	8					
Shar	54					

Parameters Calibrated Using MSM
Externally Calibrated Parameters

Farameters from fr	e Literature	JI Assumed	•
Description	Symbol	Value	Source
Elasticity of substitution	σ	3	Hsieh et al. (2019)
Housing supply elasticity	ζ	1.54	Saiz (2010)
Share of expenditure in housing	α	0.32	Albouy (2008)
Share of group <i>g</i> in the economy	ϕ		ACS 2010
Small & Big City Land	Т	1	Assumed

Parameters From The Literature Or Assumed

Estimated City Productivity Bias In Cognitive Occupations

	Small City (1)	Big City (2)
Productivity Bias In Cognitive Occupations	1.3	1.5



Estimated Human Capital

Workers Origins	Non-Cognitive Occupation	Cognitive Occupation	Overall
	(1)	(2)	(3)
Nativos	7.0	15.2	11.1
Natives	(1.3)	(5.6)	(5.8)
High-Income	7.1	22.5	14.8
ingii income	(0.9)	(6.0)	(8.9)
	4.6	11.6	8.1
Low-Income	(0.7)	(4.4)	(4.7)



Estimated Wedges on Earnings

	Small	City	Big City		
Workers Origins	Non-Cognitive Cognitiv		Non-Cognitive	Cognitive	
workers Origins	Occupation	Occupation	Occupation	Occupation	
	(1) (2)		(3)	(4)	
High-Income	1.3	1.1	1.2	1.1	
Low-Income	1.2	0.9	1.0	0.7	



Estimated Amenities

	Small	City	Big City		
Workers Origins	Non-Cognitive	Cognitive	Non-Cognitive	Cognitive	
Workers origins	Occupation	Occupation	Occupation	Occupation	
	(1)	(2)	(3)	(4)	
		Amei	nities		
Nativos	1.0	1.3	3.9	6.4	
Natives	(0.0)	(o.8)	(0.2)	(4.5)	
	10	1 0	2.2	71	
High-Income	(0,0)	(1.1)	3.2	(7-7)	
	(0.0)	(1.1)	(1.4)	(1.1)	
Low Incomo	1.0	0.5	9.5	4.7	
Low-Income	(0.0)	(0.4)	(2.2)	(3.6)	



Model Fit: Earnings

	Sm	all City	ві	Big City		•	
	(Pop. <	< 500,000)	(Pop. ≥	<u>></u> 500,000)	Δ		
	Data	Model	Data	Model	Data	Model	
	(1)	(2)	(3)	(4)	(5)	(6)	
Natives	21.0	20.6	23.8	23.6	+2.8	+3.0	
High-Income	33.2	33.3	39.6	40.0	+6.4	+6.7	
Low-Income	13.3	13.7	11.9	12.1	-1.4	-1.6	



Model Fit: Shares

		Sm	all City	Ві	Big City		٨	
		(Pop. <	< 500,000)	(Pop. 🔤	≥ 500,000)	-		
		Data	Model	Data	Model	Data	Model	
		(1)	(2)	(3)	(4)	(5)	(6)	
Nativos	Cognitive Occ.	63.9	62.2	68.8	67.8	4.9	5.6	
Natives	Employment	17.7	18.0	82.3	82.0	64.6	64.1	
High Incomo	Cognitive Occ.	71.6	71.5	80.4	81.3	8.9	9.8	
nigh-income	Employment	19.3	17.2	80.7	82.8	61.3	65.6	
	Cognitive Occ.	27.5	29.6	24.7	25.8	-2.8	-3.8	
Low-Income	Employment	10.7	10.0	89.3	90.0	78.7	80.0	

Model Fit: Granular Human Capital



Parameters

Model Fit: Granular Earnings



Parameters

Model Fit: Granular Shares



Parameters

I measure the earnings gap between natives and immigrants as the ratio of the average natives' and immigrants' earnings:

$$\overline{W}_{\text{Workers}}^{\text{Gap}} = \frac{\overline{W}_{\text{US}}}{\overline{W}_{\text{Imm}}} = \frac{\sum_{j} \sum_{o} \sum_{e} \sum_{x} \pi_{joUSex} \phi_{USex} W_{joUSex}}{\sum_{j} \sum_{o} \sum_{k \neq \text{US}} \sum_{e} \sum_{x} \pi_{jokex} \phi_{kex} W_{jokex}}$$

Similarly, I define spatial earnings inequality as the ratio of average earnings in the big city and in the small city:

$$\overline{W}_{\text{Cities}}^{\text{Gap}} = \frac{\overline{W}_{\text{Big}}}{\overline{W}_{\text{Small}}} = \frac{\sum_{o} \sum_{k} \sum_{e} \sum_{x} \pi_{\text{Bigokex}} \phi_{kex} W_{\text{Bigokex}}}{\sum_{o} \sum_{k} \sum_{e} \sum_{x} \pi_{\text{Smallokex}} \phi_{kex} W_{\text{Smallokex}}}$$



	Baseline		Counterfactuals					
		Same Human Capital As Natives	Same Amenities As Natives	No Wedges On Earnings	Same Amenities As Natives & No Wedges On Earnings	Full		
		(1)	(2)	(3)	(4)	(5)		
Parameters								
$s_{okex} = s_{oUSex}$	-	х	-	-	-	х		
$z_{jokex} = z_{joUSex}$	-	-	х	-	х	х		
$ au_{\textit{jok}} = 1$	-	-	-	х	x	х		
W Workers	1	0.811	0.938	0.907	0.813	0.710		
W ^{Gap} Cities	1	1.011	1.030	0.999	1.025	1.023		



	Baseline		Counterfactuals					
		Same Human Capital As Natives	Same Amenities As Natives	No Wedges On Earnings	Same Amenities As Natives & No Wedges On Earnings	Full		
		(1)	(2)	(3)	(4)	(5)		
Parameters								
$s_{okex} = s_{oUSex}$	-	x	-	-	-	х		
$z_{jokex} = z_{joUSex}$	-	-	х	-	х	х		
$ au_{\textit{jok}} = 1$	-	-	-	х	х	х		
W Gap Workers	1	0.811	0.938	0.907	0.813	0.710		
W ^{Gap} Cities	1	1.011	1.030	0.999	1.025	1.023		



	Baseline		Counterfactuals						
		Same Human Capital As Natives	Same Amenities As Natives	No Wedges On Earnings	Same Amenities As Natives & No Wedges On Earnings	Full			
		(1)	(2)	(3)	(4)	(5)			
Parameters									
$s_{okex} = s_{oUSex}$	-	х	-	-	-	х			
$z_{jokex} = z_{joUSex}$	-	-	x	-	х	х			
$ au_{\textit{jok}} = 1$	-	-	-	х	х	х			
₩ Workers	1	0.811	0.938	0.907	0.813	0.710			
W ^{Gap} Cities	1	1.011	1.030	0.999	1.025	1.023			



	Baseline		Counterfactuals					
		Same Human Capital As Natives	Same Amenities As Natives	No Wedges On Earnings	Same Amenities As Natives & No Wedges On Earnings	Full		
		(1)	(2)	(3)	(4)	(5)		
Parameters								
$s_{okex} = s_{oUSex}$	-	х	-	-	-	х		
$z_{jokex} = z_{joUSex}$	-	-	х	-	х	х		
$ au_{\textit{jok}} = 1$	-	-	-	х	x	х		
W Workers	1	0.811	0.938	0.907	0.813	0.710		
W ^{Gap} Cities	1	1.011	1.030	0.999	1.025	1.023		



	Baseline	Counterfactuals						
		Same Human Capital As Natives	Same Amenities As Natives	No Wedges On Earnings	Same Amenities As Natives & No Wedges On Earnings	Full		
		(1)	(2)	(3)	(4)	(5)		
Parameters								
$s_{okex} = s_{oUSex}$	-	х	-	-	-	х		
$z_{jokex} = z_{joUSex}$	-	-	x	-	х	х		
$ au_{\textit{jok}} = 1$	-	-	-	X	х	х		
W Gap Workers	1	0.811	0.938	0.907	0.813	0.710		
₩ Gap	1	1.011	1.030	0.999	1.025	1.023		



What Determines the Differences in City-Size Earnings Premia?



Differences in city-size earnings premium:

- \blacksquare Human capital ightarrow no changes for low-income, -48.6% high-income
- Amenities \rightarrow +13.3% low-income, -51.3% high-income
- \blacksquare Wedges on earnings ightarrow +51.1% low-income, -13.5% high-income
- Amenities & wedges ightarrow +84.4% low-income, -56.7% high-income Main results ightarrow 4.4% low-income, -56.7% high-income

	Baseline		Co	unterfactuals			
		Same Human Capital As Natives	Same Amenities As Natives	No Wedges On Earnings	Same Amenities As Natives & No Wedge On Earnings	Full	
		(1)	(2)	(3)	(4)	(5)	
Parameters							
$s_{okex} = s_{oUSex}$	-	х	-	-	-	х	
$z_{jokex} = z_{joUSex}$	-	-	х	-	х	х	
$ au_{jok} = 1$	-	-	-	х	х	х	
			Housing	Prices			
Big-Small City Ratio	1	1.010	1.026	1.008	1.034	1.031	
		Real Output Per Capita					
US	1	1.018	1.007	1.002	1.009	1.023	

- Output gains larger than spatial increase in housing prices
- No differences in amenities or no wedges on earnings:
 - Output gains less than spatial increase in housing prices

	Baseline		Co	unterfactuals		
		Same Human Capital As Natives	Same Amenities As Natives	No Wedges On Earnings	Same Amenities As Natives & No Wedge On Earnings	Full
		(1)	(2)	(3)	(4)	(5)
Parameters						
$s_{okex} = s_{oUSex}$	-	x	-	-	-	х
$z_{jokex} = z_{joUSex}$	-		х	-	х	х
$ au_{\textit{jok}} = 1$	-	-	-	х	х	х
			Housing	Prices		
Big-Small City Ratio	1	1.010	1.026	1.008	1.034	1.031
		Real Output Per Capita				
US	1	1.018	1.007	1.002	1.009	1.023

- Output gains larger than spatial increase in housing prices
- No differences in amenities or no wedges on earnings:
 - Output gains less than spatial increase in housing prices

	Baseline		Co	unterfactuals			
		Same Human Capital As Natives	Same Amenities As Natives	No Wedges On Earnings	Same Amenities As Natives & No Wedge On Earnings	Full	
		(1)	(2)	(3)	(4)	(5)	
Parameters							
$s_{okex} = s_{oUSex}$	-	х	-	-	-	х	
$z_{jokex} = z_{joUSex}$	-	-	×	-	х	х	
$ au_{\textit{jok}} = 1$	-	-	-	х	х	х	
			Housing	Prices			
Big-Small City Ratio	1	1.010	1.026	1.008	1.034	1.031	
		Real Output Per Capita					
US	1	1.018	1.007	1.002	1.009	1.023	

- Output gains larger than spatial increase in housing prices
- No differences in amenities or no wedges on earnings:
 - Output gains less than spatial increase in housing prices

	Baseline		Co	unterfactuals		
		Same Human Capital As Natives	Same Amenities As Natives	No Wedges On Earnings	Same Amenities As Natives & No Wedge On Earnings	Full
		(1)	(2)	(3)	(4)	(5)
Parameters						
$s_{okex} = s_{oUSex}$	-	х	-	-	-	х
$z_{jokex} = z_{joUSex}$	-	-	х	-	х	х
$ au_{\textit{jok}} = 1$	-	-	-	x	х	х
			Housing	Prices		
Big-Small City Ratio	1	1.010	1.026	1.008	1.034	1.031
			Real Output	Per Capita		
US	1	1.018	1.007	1.002	1.009	1.023

- Output gains larger than spatial increase in housing prices
- No differences in amenities or no wedges on earnings:
 - Output gains less than spatial increase in housing prices

	Baseline		Соц	unterfactuals		
		Same Human Capital As Natives	Same No We Dital Amenities Or es As Natives Earni		Same Amenities As Natives & No Wedges On Earnings	Full
		(1)	(2)	(3)	(4)	(5)
Parameters						
$s_{okex} = s_{oUSex}$	-	х	-	-	-	х
$z_{jokex} = z_{joUSex}$	-	-	x	-	х	х
$ au_{\textit{jok}} = 1$	-	-	-	х	х	х
		Sha	re Of Workers	In The Big Cit	у	
Natives	82.0	-0.2	-0.4	-0.1	-0.5	-0.4
High-Income	82.8	-0.6	-1.5	0.5	-1.0	-1.1
Low-Income	90.0	-0.1	-12.3	1.2	-9.5	-9.6

- Big-to-small cities reallocation:
 - No differences in human capital \rightarrow workers from all countries
 - No differences in amenities \rightarrow massive for low-income
- Small-to-big cities reallocation:
 - No wedges on earnings \rightarrow largest effect for low-income Main result

	Baseline		Cou	unterfactuals		
		Same Human Capital As Natives	Same Amenities As Natives	No Wedges On Earnings	Same Amenities As Natives & No Wedges On Earnings	Full
		(1)	(2)	(3)	(4)	(5)
Parameters						
$s_{okex} = s_{oUSex}$	-	x	-	-	-	х
$z_{jokex} = z_{joUSex}$	-	-	x	-	х	х
$ au_{\textit{jok}} = 1$	-	-	-	х	х	х
		Sha	re Of Workers	s In The Big Cit	у	
Natives	82.0	-0.2	-0.4	-0.1	-0.5	-0.4
High-Income	82.8	-0.6	-1.5	0.5	-1.0	-1.1
Low-Income	90.0	-0.1	-12.3	1.2	-9.5	-9.6

- Big-to-small cities reallocation:
 - No differences in human capital ightarrow workers from all countries
 - No differences in amenities \rightarrow massive for low-income
- Small-to-big cities reallocation:
 - No wedges on earnings \rightarrow largest effect for low-income Main result

	Baseline		Cou	unterfactuals		
		Same Human Capital As Natives	Same Amenities As Natives	No Wedges On Earnings	Same Amenities As Natives & No Wedges On Earnings	Full
		(1)	(2)	(3)	(4)	(5)
Parameters						
$s_{okex} = s_{oUSex}$	-	х	-	-	-	х
$z_{jokex} = z_{joUSex}$	-	-	x	-	х	х
$ au_{\textit{jok}} = 1$	-	-	-	х	х	х
		Sha	re Of Workers	In The Big Cit	у	
Natives	82.0	-0.2	-0.4	-0.1	-0.5	-0.4
High-Income	82.8	-0.6	-1.5	0.5	-1.0	-1.1
Low-Income	90.0	-0.1	-12.3	1.2	-9.5	-9.6

- Big-to-small cities reallocation:
 - No differences in human capital \rightarrow workers from all countries
 - No differences in amenities \rightarrow massive for low-income
- Small-to-big cities reallocation:
 - No wedges on earnings \rightarrow largest effect for low-income Main result

	Baseline		Cou	unterfactuals		
		Same Human Capital As Natives	Same No Wedge Amenities On As Natives Earnings		Same Amenities As Natives & No Wedges On Earnings	Full
		(1)	(2)	(3)	(4)	(5)
Parameters						
$s_{okex} = s_{oUSex}$	-	х	-	-	-	х
$z_{jokex} = z_{joUSex}$	-	-	x	-	х	х
$ au_{\textit{jok}} = 1$	-	-	-	x	х	х
		Sha	re Of Workers	s In The Big Cit	у	
Natives	82.0	-0.2	-0.4	-0.1	-0.5	-0.4
High-Income	82.8	-0.6	-1.5	0.5	-1.0	-1.1
Low-Income	90.0	-0.1	-12.3	1.2	-9.5	-9.6

Big-to-small cities reallocation:

- No differences in human capital \rightarrow workers from all countries
- No differences in amenities \rightarrow massive for low-income
- Small-to-big cities reallocation:
 - No wedges on earnings \rightarrow largest effect for low-income Main result

Mechanism: Workers' Reallocation across Occupations



- No differences in human capital ightarrow immigrants in cognitive occupation \downarrow in both cities
- No differences in amenities \rightarrow low-income in cognitive occupation \uparrow in both cities
- No wedges on earnings \rightarrow immigrants in cognitive occupation \uparrow in both cities

Main result

		Baseline		Cc	ounterfactuals			
			Same Human Capital As Natives	Same Amenities As Natives	No Wedges On Earnings	Same Amenities As Natives & No Wedge On Earnings	Full	
			(1)	(2)	(3)	(4)	(5)	
Parameters								
$s_{okex} = s_{oUSex}$		-	х	-	-	-	х	
$z_{jokex} = z_{joUSex}$		-	-	х	-	х	х	
$ au_{jok} = 1$		-	-	-	x	х	х	
			Small City					
Non Cognitivo	Competition	1	0.989	1.003	1.002	1.007	0.993	
Non-cognitive	Skills	1	1.040	0.983	1.005	0.993	1.041	
e	Competition	1	1.004	0.999	0.999	0.998	1.002	
Cognitive	Skills	1	0.999	0.981	1.000	0.981	0.989	
				Big	City			
Non Cognitivo	Competition	1	0.978	1.018	1.004	1.023	1.008	
Non-Cognitive	Skills	1	1.089	1.028	1.003	1.033	1.084	
Cognitive	Competition Skills	1 1	1.006 1.001	0.995 0.990	0.999 0.998	0.994 0.986	0.998 0.992	

		Baseline		Cc	unterfactuals			
			Same Human Capital As Natives	Same Amenities As Natives	No Wedges On Earnings	Same Amenities As Natives & No Wedge On Earnings	Full	
			(1)	(2)	(3)	(4)	(5)	
Parameters								
$s_{okex} = s_{oUSex}$		-	x	-	-	-	х	
$z_{jokex} = z_{joUSex}$		-		х	-	х	х	
$ au_{jok} = 1$		-	-	-	x	х	х	
			Small City					
Non-Cognitivo	Competition	1	0.989	1.003	1.002	1.007	0.993	
Non-cognitive	Skills	1	1.040	0.983	1.005	0.993	1.041	
Comitivo	Competition	1	1.004	0.999	0.999	0.998	1.002	
Cognitive	Skills	1	0.999	0.981	1.000	0.981	0.989	
				Big	City			
Non-Cognitivo	Competition	1	0.978	1.018	1.004	1.023	1.008	
Non-cognitive	Skills	1	1.089	1.028	1.003	1.033	1.084	
Cognitive	Competition Skills	1 1	1.006 1.001	0.995 0.990	0.999 0.998	0.994 0.986	0.998 0.992	

		Baseline		Cc	ounterfactuals			
			Same Human Capital As Natives	Same Amenities As Natives	No Wedges On Earnings	Same Amenities As Natives & No Wedge On Earnings	Full	
			(1)	(2)	(3)	(4)	(5)	
Parameters								
$s_{okex} = s_{oUSex}$		-	х	-	-	-	х	
$z_{jokex} = z_{joUSex}$		-	-	x	-	х	х	
$ au_{jok} = 1$		-	-	-	x	х	х	
			Small City					
Non Cognitivo	Competition	1	0.989	1.003	1.002	1.007	0.993	
Non-cognitive	Skills	1	1.040	0.983	1.005	0.993	1.041	
Completion	Competition	1	1.004	0.999	0.999	0.998	1.002	
Cognitive	Skills	1	0.999	0.981	1.000	0.981	0.989	
				Big	City			
Non-Cognitivo	Competition	1	0.978	1.018	1.004	1.023	1.008	
Non-cognitive	Skills	1	1.089	1.028	1.003	1.033	1.084	
Cognitive	Competition Skills	1 1	1.006 1.001	0.995 0.990	0.999 0.998	0.994 0.986	0.998 0.992	

		Baseline		Cc	unterfactuals			
			Same Human Capital As Natives	Same Amenities As Natives	No Wedges On Earnings	Same Amenities As Natives & No Wedge On Earnings	Full	
			(1)	(2)	(3)	(4)	(5)	
Parameters								
$s_{okex} = s_{oUSex}$		-	х	-	-	-	х	
$z_{jokex} = z_{joUSex}$		-	-	х		х	х	
$ au_{jok} = 1$		-	-	-	x	х	х	
			Small City					
Non-Cognitivo	Competition	1	0.989	1.003	1.002	1.007	0.993	
Non-cognitive	Skills	1	1.040	0.983	1.005	0.993	1.041	
e	Competition	1	1.004	0.999	0.999	0.998	1.002	
Cognitive	Skills	1	0.999	0.981	1.000	0.981	0.989	
				Big	City			
Non Cognitivo	Competition	1	0.978	1.018	1.004	1.023	1.008	
Non-Cognitive	Skills	1	1.089	1.028	1.003	1.033	1.084	
Cognitive	Competition Skills	1 1	1.006 1.001	0.995 0.990	0.999 0.998	0.994 0.986	0.998 0.992	

Education	Small City		Big City	
	Non-Cognitive	Cognitive	Non-Cognitive	Cognitive
	Occupation	Occupation	Occupation	Occupation
	(1)	(2)	(3)	(4)
No College	1.0	0.4	7.3	2.1
	(0.0)	(o.3)	(4.4)	(o.8)
College	1.0	1.4	5.4	9.7
	(0.0)	(1.0)	(3.0)	(6.3)



Education	Small City		Big City	
	Non-Cognitive	Cognitive	Non-Cognitive	Cognitive
	Occupation	Occupation	Occupation	Occupation
	(1)	(2)	(3)	(4)
No College	1.0	0.4	7.3	2.1
	(0.0)	(0.3)	(4.4)	(o.8)
College	1.0	1.4	5.4	9.7
	(0.0)	(1.0)	(3.0)	(6.3)



Education	Small City		Big City	
	Non-Cognitive	Cognitive	Non-Cognitive	Cognitive
	Occupation	Occupation	Occupation	Occupation
	(1)	(2)	(3)	(4)
No College	1.0	0.4	7.3	2.1
	(0.0)	(0.3)	(4.4)	(o.8)
College	1.0	1.4	5.4	9.7
	(0.0)	(1.0)	(3.0)	(6.3)



Human Capital Estimates

Education	Occupation	Low-Income (1)	High-Income (2)	All Immigrants (3)
No College	Non-Cognitive	4.3 (0.5)	6.5 (0.5)	4.3 (0.5)
	Cognitive	9.4 (1.1)	13.6 (0.4)	9.9 (1.5)
College	Non-Cognitive	5.5 (0.5)	7.3 (1.0)	5.7 (0.6)
	Cognitive	18.8 (1.8)	25.8 (2.5)	20.7 (3.7)

Human Capital Estimates

Education	Occupation	Low-Income (1)	High-Income (2)	All Immigrants (3)
No College	Non-Cognitive	4.3 (0.5)	6.5 (0.5)	4.3 (0.5)
	Cognitive	9.4 (1.1)	13.6 (0.4)	<mark>9.9</mark> (1.5)
College	Non-Cognitive	5.5 (0.5)	7.3 (1.0)	5.7 (0.6)
	Cognitive	18.8 (1.8)	25.8 (2.5)	20.7 (3.7)



Human Capital Estimates

Education	Occupation	Low-Income (1)	High-Income (2)	All Immigrants (3)
No College	Non-Cognitive	4.3 (0.5)	6.5 (0.5)	4.3 (0.5)
	Cognitive	9.4 (1.1)	13.6 (0.4)	9.9 (1.5)
College	Non-Cognitive	5.5 (0.5)	7.3 (1.0)	<mark>5.7</mark> (0.6)
	Cognitive	18.8 (1.8)	25.8 (2.5)	<mark>20.7</mark> (3.7)


Immigration Policy Evaluation: Cities' Allocations

	Baseline	Polici	Policies	
		Inflow	Inflow	
		No College	College	
		(1)	(2)	
	Em	Employment Share		
Big City	82.8	+0.1	+0.1	
	Cognitiv	ve Occupation Share		
Small City	3.8	+0.2	+0.8	
Big City	5.4	+0.2	+1.1	

Policy: Competition vs. Skills Effects

		Baseline	Policies	
			Inflow	Inflow
			No College	College
			(1)	(2)
			Small City	
Non-Cognitive	Competition	1	0.999	1.001
	Skills	1	0.996	0.999
Cognitive	Competition	1	1.000	1.000
	Skills	1	0.999	1.002
			Big City	
Non-Cognitive	Competition	1	0.997	1.001
	Skills	1	0.993	0.999
Cognitive	Competition	1	1.001	1.000
	Skills	1	0.999	1.003

i. Competition and skills effect larger in big cities than in small cities

ii. In all cities, positive skills effect, while competition effect is negligible Policy



Policy: Competition vs. Skills Effects

		Baseline	Policies	
			Inflow No College	Inflow College
			(1)	(2)
			Small City	
Non-Cognitive	Competition	1	0.999	1.001
	Skills	1	0.996	0.999
Cognitive	Competition	1	1.000	1.000
	Skills	1	0.999	1.002
			Pig City	
Non-Cognitive	Composition		Big City	
	Competition	1	0.997	1.001
	Skills	1	0.993	0.999
Cognitive	Competition	1	1 0 0 1	1 000
	chille		1.501	1.000
	Skills	1	0.999	1.003

i. Competition and skills effect larger in big cities than in small cities

ii. In all cities, positive skills effect, while competition effect is negligible Policy



Policy: Competition vs. Skills Effects

		Baseline	Policies	
			Inflow	Inflow
			No College	College
			(1)	(2)
			Small City	
Non-Cognitive	Competition	1	0.999	1.001
	Skills	1	0.996	0.999
Cognitive	Competition	1	1.000	1.000
	Skills	1	0.999	1.002
			Big City	
Non-Cognitive	Competition	1	0.997	1.001
	Skills	1	0.993	0.999
Cognitive	Competition	1	1.001	1.000
	Skills	1	0.999	1.003

i. Competition and skills effect larger in big cities than in small cities

ii. In all cities, positive skills effect, while competition effect is negligible Policy

