Economía Urbana

Labor Market Polarization and the Great Divergence Theory and Evidence
Davis, Mengus y col. 2020

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Introducción

Introducción

Dos fenómenos recientes de mercados laborales en economías avanzadas.

1. Polarización de mercados laborales.
    - Aumento de trabajos con salarios altos y trabajos con salarios bajos en detrimento de trabajos con salarios medios.
2. Gran divergencia.
    - Teoría de economía espacial.
    - La brecha de habilidades laborales entre ciudades típicamente grandes, con condiciones iniciales de habilidad altas, y ciudades, típicamente pequeñas con condiciones iniciales de habilidad bajas, ha aumentado.

Introducción

Davis, Mengus y col. 2020

- Literatura ha estudiado ambos fenómenos de forma excluyente.
- Este documento de investigación:
  - Racionaliza polarización y divergencia en un mismo marco teórico.
  - Integrando marco teórico de polarización David y Dorn 2013 con aquel de equilibrio espacial de Davis y Dingel 2020.
  - Prueba predicciones teóricas en una muestra de ciudades de Francia para el periodo de 1994 a 2015.

Resultados: Predicciones teóricas validadas para Francia

- **Entre ciudades**, dada una ciudad grande y una ciudad pequeña.
  1. Si en la ciudad grande la ventaja comparativa (productividad) del sector con salarios altos es suficientemente grande con relación al sector con salarios medios $\Rightarrow$ proporción de trabajadores en sector con salario medio es mayor en la ciudad pequeña.
  2. En **ciudades grandes** la proporción de **trabajos con salario alto** es **mayor** que aquella de ciudades pequeñas. Por el contrario, la de trabajos con salarios medios y bajos es menor.

Introducción

Resultados: Predicciones teóricas validadas para Francia

- Polarización
  1. Entre 1994 y 2015 la polarización en el mercado laboral francés aumentó en el **agregado** y a **nivel ciudad**.
  2. En **magnitud**, la polarización estuvo relacionada a mayor destrucción de empleos con salario medio en ciudades grandes.
  3. En **reasignación**, la polarización estuvo relacionada a mayor creación de empleos con salario alto en ciudades grandes y mayor creación de empleos con salario bajo en ciudades pequeñas.
- Divergencia
  1. Proporción de trabajos con salario alto ha aumentado en mayor medida en ciudades grandes, donde las condiciones iniciales eran mejores.

Modelo

Modelo - Descripción

Bloques

- Hogares.
- Dos ciudades.
- Producción.
  - Bien final.
  - Bienes intermedios.
  - Bien de capital o relocalizado.

Modelo - Descripción

Ciudades

- Economía caracterizada por **dos ciudades**, $c \in \{1, 2\}$, en donde:
  - En cada una, existe un continuo de ubicaciones.
  - Ubicaciones indexadas según su distancia a ubicaciones ideales, e.g. ubicaciones con spillovers.
  - Ubicaciones difieren en productividad de los trabajadores. Homeomorfo a costos de transporte en modelo monocéntrico.

Modelo - Descripción

Hogares

- Ciudades pobladas por hogares tales que:
  - Consumen vivienda y un bien numerario final.
  - Deciden donde vivir, **intra e inter** ciudad, y sector donde trabajar.
  - Oferta de trabajo inelástica y **diferenciada según habilidad**.
  - Propietarios de la tierra ausentes, gastan ingreso por renta en bien final.

Modelo - Descripción

Producción - Bien Final

- Producido por continuo de firmas competitivas.
- Tecnología de producción:

$$Q = \left(p(h)q(h)^{\gamma} + \left(\underbrace{p(m)q(m)^{\frac{1}{\theta}} + p_Z Z^{\frac{1}{\theta}}}_{\text{Sustitutos relativos}} \right)^{\gamma\theta} + p(l)q(l)^{\gamma} \right)^{1/\gamma}.$$

- Donde $p(\sigma)$ y p_Z son los precios respectivos al bien intermedio del sector σ, (salario bajo, medio, alto).
- El bien de capital/relocalizado (Z) **es sustituto relativo** del bien intermedio **del sector salario medio** y complemento con relación al bien intermedio del sector salario alto y bajo.
- Tecnología no depende de $c \Rightarrow$ no hay producciones locales del bien final.

Modelo - Descripción

Producción - Bien Intermedio

- Bienes intermedios en sectores $\sigma \in \{l, m, h\}$, (salario bajo, medio, alto).
- Producidos únicamente con trabajo bajo rendimientos constantes a escala.
- Individuo con habilidad ω, que vive en c en la ubicación τ y trabaja en el sector σ tiene productividad:

$$H(\omega, \sigma, c) \underbrace{T(\tau)}_{\substack{\text{Spillovers} \\ T_\tau < 0}} .$$

Modelo - Descripción

Producción - Productividad

Figura 1: Supuesto de Forma Funcional de la Productividad

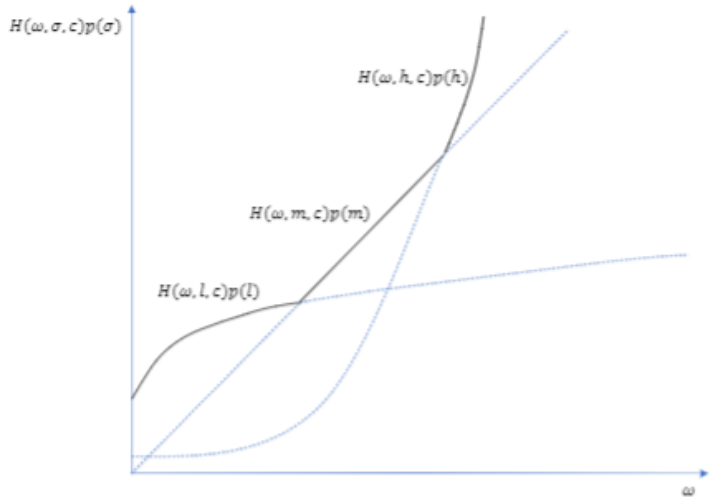


Figure 1 – Value marginal products in the different sectors.

This figure depicts the value marginal products as a function of the skill ω for the three sectors $\sigma \subset \{h, m, l\}$. The value marginal productivity is the productivity function $H(\omega, \sigma, c)$ weighted by the price of the sector's output ($p(\sigma)$, $\sigma \subset \{h, m, l\}$). The plain black line is the upper envelope of these value marginal products.

Modelo - Descripción

Producción - Productividad

- **Supuesto:** Ciudad 1 tiene **ventajas absolutas** en todo sector $\sigma \in \{l, m, h\}$.
- **Supuesto:** Ciudad 1 tiene **ventajas comparativas** en sector h. Por lo tanto, en equilibrio, ciudad 1 es más grande que ciudad 2.

Producción - Bien de capital o relocalizado

- Tecnología:

$$Z = (\quad \underbrace{\zeta}_{\text{Parámetro de tecnología}} \quad)^{-1} \underbrace{Q}_{\text{Bien final}} .$$

- Competencia perfecta implica $p_z = \zeta$.
- **Interpretación** ζ: Términos de intercambio.
  Caídas en p_z pueden ser choques de **rutinización o relocalización**.
  Corresponde a un choque negativo de demanda por empleo en sector con salario medio.

Modelo - Decisiones de los hogares

- Un hogar con habilidad ω, que decide ubicarse en (c, τ) y trabajar en el sector intermedio σ recibe utilidad:

$$H(\omega, \sigma, c)T(\tau)p(\sigma) - r(c, \tau)$$

- ¿Qué caracteriza su maximización respecto a c, τ, σ?

Decisión de sector de trabajo

- Definimos dos **umbrales de habilidad**, tales que, dado un hogar en la ciudad c:
  - $\omega(m, c)$ habilidad tal que hogar es indiferente entre l o m.
  - $\omega(h, c)$ habilidad tal que hogar es indiferente entre m o h.
- Umbrales caracterizan decisión sectorial según ω observado por cierto hogar.

Modelo - Decisiones de los hogares

Decisión de ubicación

- Un hogar con habilidad ω escoge la ubicación (c, τ) si no está mejor en alguna otra ciudad o ubicación.
- **Intra-ciudad**:
  - Ubicaciones más deseables tienen mayores rentas, i.e., gradiente de la renta negativo.
  - Hogares con mayor habilidad ocupan mejores ubicaciones.
- **Inter-ciudad**:
  Equilibrio espacial: para todo nivel de habilidad ω se cumple,

$$H(1, \omega, \underbrace{\sigma^*(\omega, 1)}_{\substack{\text{Sector óptimo} \\ \text{dado } \omega,\, c=1}})T(\tau) = H(2, \omega, \underbrace{\sigma^*(\omega, 2)}_{\substack{\text{Sector óptimo} \\ \text{dado } \omega,\, c=2}})T(\tau').$$

  τ' es la ubicación en la ciudad 2 donde la habilidad ω tiene mismos retornos.

Predicciones Teóricas en los Datos

Validación de Predicciones Teóricas

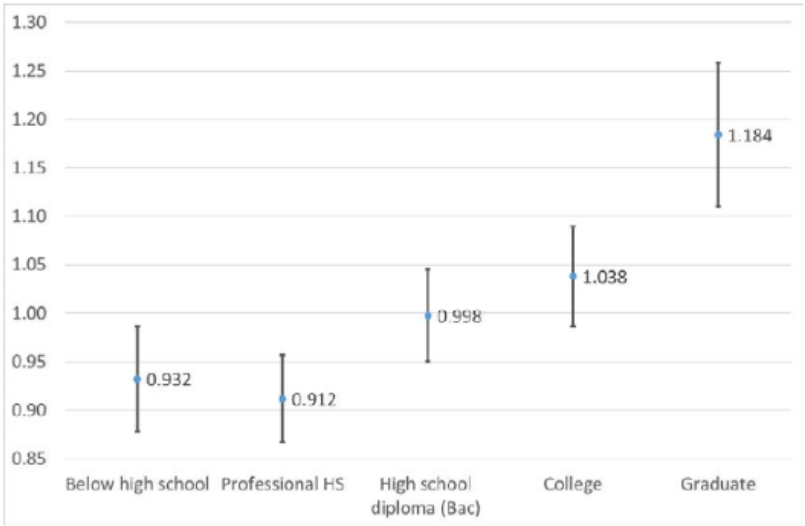
Datos

- Ciudades francesas con población mayor a 50 mil habitantes.
- Frecuencia anual de 1994 a 2015.
- Observaciones de ocupación, salarios y demás características a nivel ciudad.
  - 54 % de la población metropolitana (2015).
  - Trabajos considerados representan 65 % de salarios totales pagados (2015).
- Trabajos categorizados según:
  - Salarios bajos, medios y altos.
  - Probabilidad de rutinización y relocalización.

Validación de Predicciones Teóricas - Entre Ciudades

Distribución de habilidades: log-supermodular en tamaño de ciudad

Figure 5 — Population elasticities by diploma (5 categories) in the 1999 Census data.



Notes: This sample contains 112 cities with > 0.05m inhabitants defined by INSEE as of 1999 with population figures as of 1999. Data on diplomas and residency is from the 1999 Census. Exclusions in terms of 2-digit CS and age as for the main DADS data used in the paper. 95% confidence intervals shown.

This Figure shows coefficients from regressions of the logarithm of the number of workers by five educational categories on the logarithm of city size. We observe log-supermodularity of skill distribution in city size as in Davis and Dingel (2020). The population elasticity for workers with graduate education (Master degrees and beyond) is 1.184 (significantly different from one at the 1% level) while for those with college (undergraduate) is 1.038. This means that larger cities have on average relatively more educated workers. At the same time, the least skilled (those with no diploma/a diploma below the general high school one or vocational – professional high school diplomas) are more likely to reside in smaller cities: the population elasticity estimates are significantly below one. The patterns do not qualitatively differ depending on whether we consider only the French-born fraction of the population. Further details are provided in Online Table E.6.

Validación de Predicciones Teóricas - Polarización

Table 3 – Share of high-, middle-, low-paid and MRO occupations in hours worked per metropolitan area size in 1994 and 2015.

High-paid							
Agglo.size	Paris	> .75m	.5-.75m	.2-.5m	.1-.2m	.05-.1m	All cities
1994	0.23	0.14	0.12	0.10	0.09	0.08	0.16
2015	0.37	0.25	0.21	0.16	0.14	0.12	0.25
change	0.13	0.11	0.09	0.06	0.05	0.04	0.10
growth in %	57	77	71	63	61	49	62
Middle-paid							
Agglo.size	Paris	> .75m	.5-.75m	.2-.5m	.1-.2m	.05-.1m	All cities
1994	0.65	0.74	0.75	0.77	0.79	0.79	0.72
2015	0.45	0.57	0.61	0.64	0.66	0.67	0.56
change	-0.20	-0.17	-0.15	-0.13	-0.13	-0.12	-0.17
growth in %	-31	-23	-19	-17	-17	-15	-23
Low-paid							
Agglo.size	Paris	> .75m	.5-.75m	.2-.5m	.1-.2m	.05-.1m	All cities
1994	0.12	0.12	0.12	0.13	0.12	0.13	0.12
2015	0.18	0.18	0.18	0.20	0.20	0.21	0.19
change	0.07	0.06	0.06	0.07	0.08	0.08	0.07
growth in %	59	48	48	55	68	64	57
MRO							
Agglo.size	Paris	> .75m	.5-.75m	.2-.5m	.1-.2m	.05-.1m	All cities
1994	0.29	0.36	0.39	0.41	0.45	0.45	0.36
2015	0.19	0.25	0.27	0.29	0.31	0.32	0.25
change	-0.11	-0.11	-0.12	-0.12	-0.13	-0.12	-0.12
growth in %	-36	-32	-31	-29	-29	-27	-32

This Table shows the means of shares of hours in total employment of different occupational groups in 1994 and 2015 for all 117 cities in our sample allocated in 6 bins according to city size (with Paris being a separate category), showing the percentage point changes and growth rates between 1994-2015. One observation per bin of the hours totals.
The share of high- (middle-) paid jobs in total employment is increasing (decreasing) with city size whether in 1994 or 2015. It is constant for low-paid jobs in 1994 while weakly monotonically decreasing in city size as of 2015. Percentage point destruction of middle-paid jobs (also in terms of growth) is positively related with city size despite their lower initial share in employment for larger cities. Increases in high-paid jobs in percentage points are highest in largest cities, while there is no strong pattern for low-paid jobs. This provides evidence both for the magnitude and the reallocation effects in local labor markets.
The share of MRO jobs (CS 48, 54, 62 and 67) in total employment is decreasing with city size whether in 1994 or 2015. Percentage point destruction of these MRO jobs is similar across city sizes despite their lower initial share in employment for larger cities.

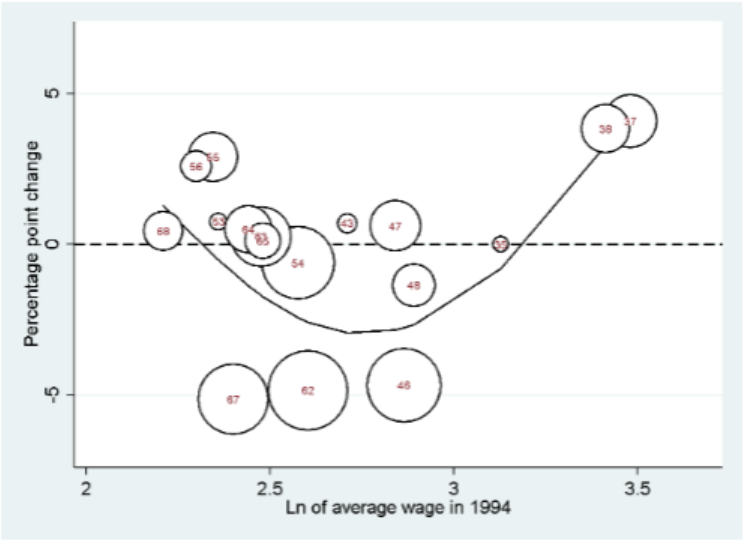
Proporción de trabajos bien pagados es mayor en ciudades grandes.
Proporción de trabajos mal pagados es menor.
Vía ventaja comparativa del sector salario-alto.

Validación de Predicciones Teóricas
Polarización en agregado

Mercados de trabajo exhiben polarización.

Vía choque negativo en P_z.

Figure 6 – Labor market polarization in France 1994-2015.



The figure shows the percentage point change in employment 1994-2015 of the considered 2-digit CS occupation categories plotted against their 1994 average wage in cities with >0.05m inhabitants as of 2015. Circle sizes correspond to employment shares in 1994. The line shows a cubic relationship between the average wage and the percentage point change. The CS category "23" - CEOs excluded.
This figure documents labor market polarization that occurred between 1994-2015 in mainland France. One can observe an increase in the employment share of managers and professionals (CS 37) and engineers (CS 38) by approximately 4 pp each. At the other end of the income distribution, low-paid occupation's shares in employment increase as well. For middle-paid occupations, there exist occupation categories whose shares fell strongly (approximately 5pp) over the period: skilled (CS 62) and unskilled industrial workers (CS 67), and associate professionals (CS 46) or mildly: office workers (CS 54) or supervisors and foremen (CS 48). Many other middle-paid jobs show low or no employment share gains. The fitted cubic curve weighted by 1994 employment shares shows a similar U-relationship between average wages and percentage point changes in employment shares as in Autor and Dorn (2013).

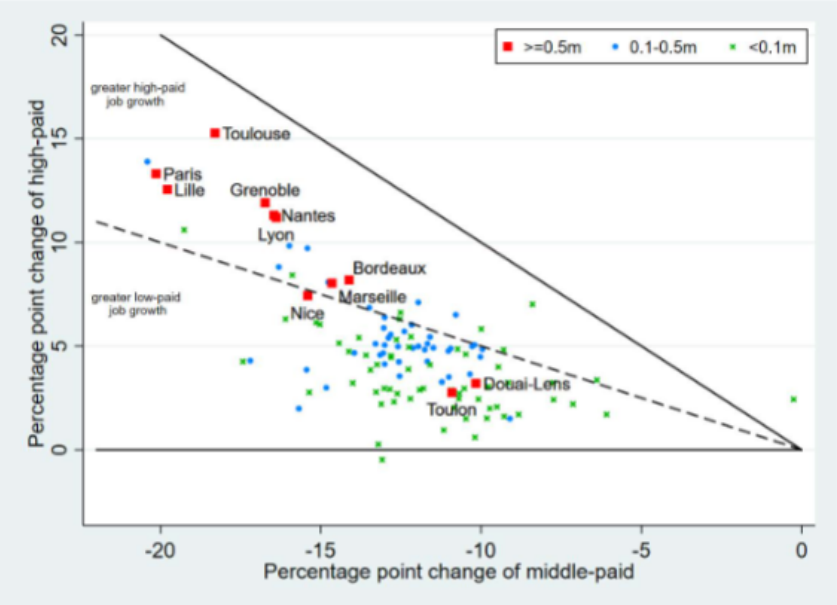
Validación de Predicciones Teóricas
Polarización intra e inter ciudades

Mercados de trabajo exhiben polarización ubicua.

En magnitud, atenuado en ciudades grandes.

Vía choque de relocalización con mayores efectos en ciudad grande dada su ventaja comparativa en $\sigma = h$.

Figure 7 – Labor market polarization within cities and the great divergence.



This figure shows percentage point changes in employment shares of middle-paid against high-paid jobs for individual cities for the period 1994-2015. Each red square, blue dot or green check symbolizes, respectively, a large (above >0.5m inhabitants), medium-sized (0.1-0.5m) or small (0.05-0.1m) city. Names of cities with more than 0.5m inhabitants are shown. N=117; 11 cities > 0.5m, 44 cities between 0.1-0.5m and 62 cities between 0.05-0.1m inhabitants in 2015.
All 117 largest cities in France experienced a decline in employment of middle-paid jobs over the period 1994-2015. One small city (Saint Cyprien), pictured below the horizontal zero axis had a decline in high-paid jobs over this period while another (Salon de Provence; rightmost, above the -1 slope line) experienced a fall in the employment share of low-paid jobs. Apart from those two cases, labor market polarization occurred at 115 cities out of 117 studied, and in particular in all cities above ca. 60,000 inhabitants. Cities depicted above the line with $(-\frac{1}{2})$ slope witnessed a stronger increase in the share of high-paid occupations. Most (8) large cities above 0.5m inhabitants were in this category while three (Nice, Toulon and Douai-Lens) experienced a stronger growth of low-paid occupations instead. It is clear that a great majority of middle-sized and small cities experienced a stronger growth of low-paid than high-paid jobs.

Validación de Predicciones Teóricas
Polarización inter-ciudades

En reasignación, empleos de salario medio disminuyeron más en ciudades grandes.

Table 5 – Comparison of means of changes in employment shares of different occupations at the city level, cities >0.5m vs. 0.05-0.1m.

Item	high-paid	middle-paid	low-paid	MRO	OMP	middle-paid above median	middle-paid below median
Changes							
mean change, cities >0.5m	0.116	-0.181	0.065	-0.108	-0.073	-0.130	-0.051
mean change, cities 0.05-0.1m	0.037	-0.116	0.080	-0.111	-0.006	-0.073	-0.044
difference	0.079***	-0.065***	-0.015***	0.003	-0.068***	-0.057***	-0.008
Growth in percent							
mean growth, cities >0.5m	63.0	-26.5	54.4	-33.1	-20.1	-36.0	-16.0
mean growth, cities 0.05-0.1m	45.7	-14.9	62.2	-25.2	-0.6	-19.9	-10.2
difference in growth	17.2***	-11.6***	-7.8	-7.9***	-19.5***	-16.1***	-5.8***

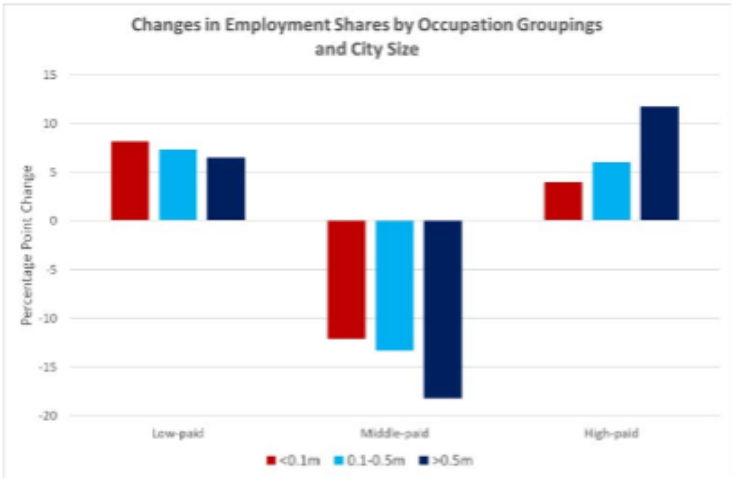
Notes: 1990 population weighted, robust standard errors. N=73; 11 cities > 0.5m and 62 cities between 0.05-0.1m inhabitants as of 2015. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels for the tests of equality of means between the groups of small and large cities. Differences remain significant at least at the 1% level without weighting or weighted by city population as of 2015 except for the difference in growth middle-paid below-median jobs for unweighted comparison. Individual mean changes or growth rates are significantly different from zero at the 1% level.

This Table shows the comparison of hours shares changes in total employment over the period 1994-2015 for different occupations for 11 largest cities >0.5m and 62 smallest cities between 0.05-0.1m inhabitants. The reported differences are coefficients in regressions of changes or growth of shares on a large city dummy. Values are population weighted at the city level.
This provides evidence that city sizes matter for the diverging patterns of labor market polarization, both in terms of the magnitude and reallocation effects. There is a stronger destruction of middle-paid jobs in large cities in comparison to smallest ones (18.1 pp vs. 11.6 pp). In large cities, there are on average twice as many high-paid jobs as low-paid created (11.6 pp vs. 6.5 pp change). In smallest cities, however, the pattern is reversed: twice as many low-paid jobs are created (8 pp vs. 3.7 pp change for high-paid).
The differential pattern in the magnitude of the destruction of middle-paid jobs can be attributed to the stronger destruction of OMP and/or top paid middle-paid jobs (with average wages in 1994 above the median).
Intermediate patterns can be observed for cities between 0.1-0.5m inhabitants (not shown).

Validación de Predicciones Teóricas
Divergencia

Mayor aumento en proporción de trabajos bien pagados: Ciudades grandes.

Figure 8 – The great divergence and labor market polarization across three different city size groups, 1994-2015: 3 employment groups.

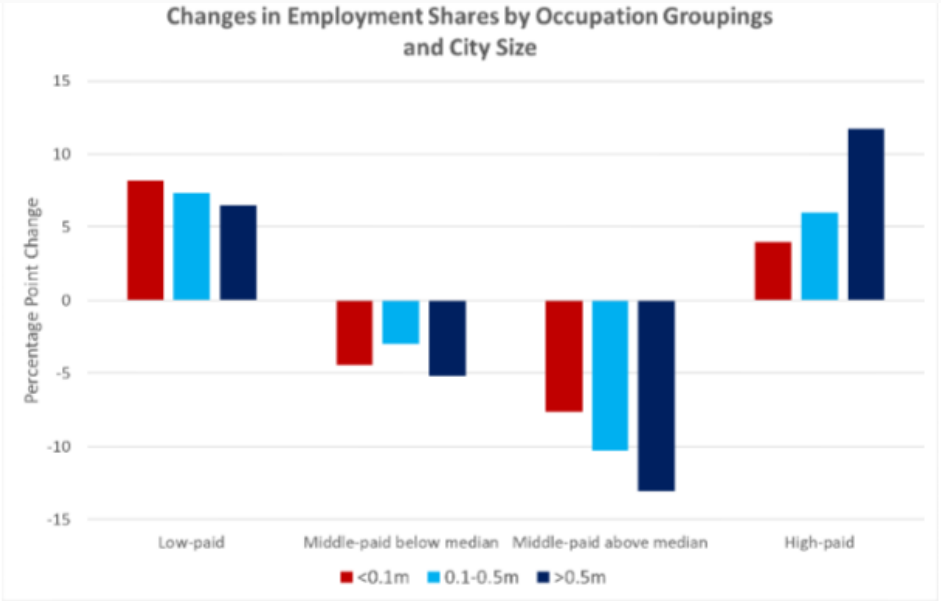


This figure shows percentage point changes in employment shares of high-, middle- and low-paid jobs with hours worked summed by the 3 job types and 3 city sizes: large (above >0.5m inhabitants), medium-sized (0.1-0.5m) and small (0.05-0.1m) in the period 1994-2015. Destruction of middle-paid jobs was the strongest in largest cities (18.2 pp) and weakest in smallest cities (12.1 pp), confirming the magnification effect. At the same time, the creation of high-paid jobs was strongest in largest agglomerations (11.7 pp) and weakest in smallest cities (3.9 pp). On the other hand, the strongest creation of low-paid jobs occurred in smallest cities (8.1 pp) while it was weakest in the cities above >0.5m (6.5 pp). The reallocation effect is clearly visible: nearly twice as many high-paid jobs as low-paid ones were created in largest cities, while the reverse was true in the smallest agglomerations.

Validación de Predicciones Teóricas
Exposición Inicial a relocalización/rutinización

Pérdida de empleos con salario medio se debe a pérdida de los mejores empleos dentro de los mismos.

Vía heterogeneidad en habilidades al interior del sector salario-medio.



This figure shows percentage point changes in employment shares of high-, low- and different types of middle-paid jobs with hours worked summed by job types and 3 city sizes: large (above >0.5m inhabitants), medium-sized (0.1-0.5m) and small (0.05-0.1m) in the period 1994-2015. The bars for high- and low-paid jobs are exactly as in Figure 8. The various partitions of middle-paid jobs in each panel order these jobs by median wage. In the upper panel middle-paid jobs are divided into most (MRO) and other middle-paid occupations (OMP). In the lower panel, the division is between the middle-paid jobs with average wages in 1994 above the median (CS 48, 46, 47, 43 and 62 in decreasing wage order) and those below the median (CS 54, 65, 63, 64, 67).
All of the panels show that, for all these partitions of the middle skill jobs, the destruction of the lower paid jobs was similar across all city sizes. At the same time, the panels show clearly that the destruction of the highest-paid middle-skill jobs rises monotonically with city size. Indeed, OMP occupations actually *grow* very modestly in the smallest cities.

Validación de Predicciones Teóricas
Exposición Inicial a relocalización/rutinización

Exposición inicial a empleos con salario medio no predice pérdida de los mismos, i.e., no es el principal determinante.

Table 6 – Changes in the employment shares of middle-paid jobs between 1994-2015 and exposure to middle-paid occupations in 1994.

Employment share change of middle-paid jobs								
employment share of middle-paid jobs in 1994	0.41***	0.03	0.27***	-0.03	0.28***	-0.04	0.27***	0.01
	(0.08)	(0.07)	(0.10)	(0.07)	(0.10)	(0.08)	(0.10)	(0.05)
middle × employment share of middle-paid in 1994			-0.01*	-0.02**	-0.01*	-0.02**	-0.01	-0.01*
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
large × employment share of middle-paid in 1994			-0.06***	-0.06***	-0.06***	-0.06***	-0.05***	-0.05***
			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
constant	-0.45***	-0.14***	-0.33***	-0.09*	-0.33***	-0.09	-0.33***	-0.13***
	(0.07)	(0.05)	(0.08)	(0.05)	(0.08)	(0.06)	(0.08)	(0.04)
R^2	0.47	0.00	0.59	0.16	0.59	0.17	0.63	0.18
Observations	117	117	117	117	115	115	115	115
population weighted?	y	n	y	n	y	n	y	n
no outliers in middle-paid share	n	n	n	n	y	y	n	n
no outliers with employment share change	n	n	n	n	n	n	y	y

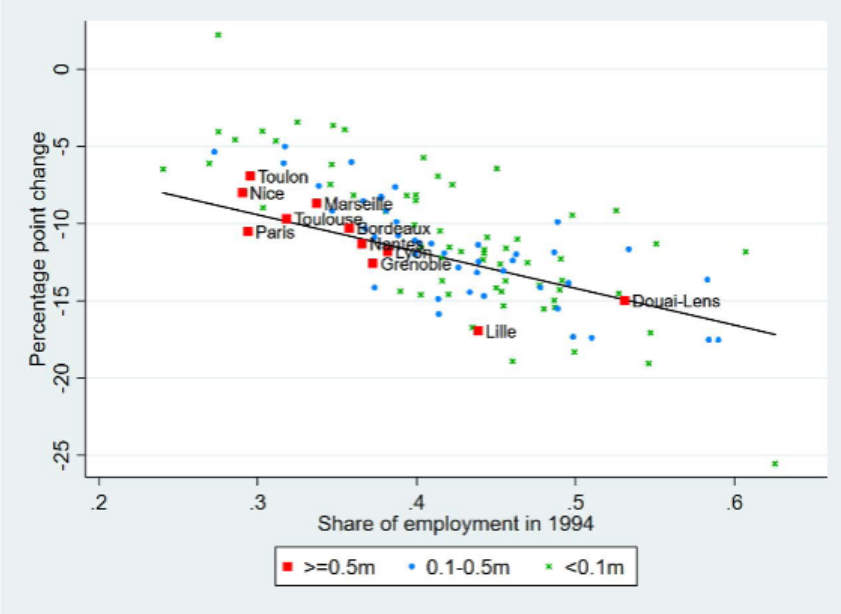
Notes: Robust standard errors. N=117; 11 cities > 0.5m, 44 cities between 0.1-0.5m and 62 cities between 0.05-0.1m inhabitants as of 2015. Population figures from 1990. ***, **, and * denote statistical significance at the 1 %, 5 %, and 10 % levels.

This Table shows the results of OLS regressions of the change in the employment share of the middle-paid jobs in total hours worked over the period 1994-2015 on their initial employment share at the individual city level in 1994. The first two columns report regression coefficients respectively with and without population (as of 1990) weighting. In the regressions reported in columns 3 and 4 an additional slope for medium size (0.1-0.5m) and largest cities (above 0.5m inhabitants) is allowed. The last four columns show robustness checks, without outlier observations either in the initial job share or the change of employment shares over 1994-2015.
The relationship between the exposure to the most offshorable jobs at the city level and their share change over the period 1994-2015 is positive (but not significant in the non-weighted regressions). The interpretation of these results together with the intercept is that, on average, cities that were *less* initially exposed to middle-skill jobs experienced their stronger destruction. However, conditioning on exposure, the destruction of middle-paid jobs was stronger in larger cities for all specifications.
The mixed and non-robust evidence in this Table points that there is no simple relationship between a higher initial exposure to middle-paid jobs at the city level and their subsequent destruction as a result of automation or offshoring shocks.

Exposición Inicial a relocalización/rutinización

Exposición inicial a empleos con rutinización y relocalización predice pérdida de los mismos.

Figure 9 – Exposure to MRO jobs and change in the employment shares of MRO jobs in cities, 1994-2015.



The figure shows the percentage point change in employment shares of MRO jobs (CS 48, 54, 62 and 67) between 1994-2015 plotted against their share in employment in 1994 at the city level. Each red square, blue dot or green check symbolizes, respectively, a large (above >0.5m inhabitants), medium-sized (0.1-0.5m) or small (0.05-0.1m) city. The line shows a linear, population-weighted (by 1990 population) fit of the relationship between employment changes and the initial exposure to MRO jobs. Names of cities with more than 0.5m inhabitants are shown. N=117; 11 cities > 0.5m, 44 cities between 0.1-0.5m and 62 cities between 0.05-0.1m inhabitants in 2015. The initial exposure of largest cities to the most routine and offshorable occupations (MRO) in 1994 is on average lowest in largest cities. The exceptions are Douai-Lens and Lille in the industrial North. The relationship between the employment share of the MRO occupations at the city level in 1994 and the change in the employment share of these jobs over the period 1994-2015 is negative as predicted by Autor and Dorn (2013) (cf. Table E.22 on the robustness of the slope of the fitted line). Conditional on the initial exposure, however, the decline in the MRO occupations is highest in largest cities. Moreover, the average decline in the MRO jobs is not significantly different (cf. Table 5, column 4) between the largest and smallest cities in the sample (which are on average more exposed to those occupations – see Table 4).

Conclusión

Conclusión

- Modelo teórico con:
  1. Sectores intermedios bien y mal pagados.
  2. Bien intermedio relocalizado sustituible por trabajo con salario medio.
  3. Ventajas absolutas y comparativas entre ciudades.
- Racionaliza la distribución de habilidades a través de ciudades y patrones del mercado laboral.
- Pérdida de empleos con salario medio: Exposición inicial a rutinización/relocalización importa. No obstante, ciudades grandes observan mayor pérdida.
- En Francia, polarización es ubicua y acompañada de divergencias.

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