The heterogenous effects of employers' concentration on wages: better sorting or uneven rent extracting?

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Introduction

When is labor market concentration high?

- When:
  1. there are few employers,
  2. the employment share of some employers is high (large employers)

- When a large employer increases his share of employment, or when medium- or small- sized employers leaves the market, labor market concentration increases

- Labor market concentration $\Rightarrow$ market structure on the employers' side

- Measured with Herfindahl-Hirschmann index (HHI), ▸ HHI
  - DoJ and European commission benchmarks = above resp. 0.25 and 0.2, product markets considered as very concentrated

Research questions

1. Beyond the average, how does labor market concentration affect the distribution of wages and hence wage inequality?
   - *Hypothesis* $\Rightarrow$ A rise in labor market concentration increases inequality

2. How can labor market concentration affect inequality?
   - *Two mechanisms investigated* $\Rightarrow$ Sorting versus bargaining sensitivity

Literature

1. **Labor concentration and average wage**
   - Empirics: *Azar, Marinescu, Steinbaum, Taska* (2020), *Rinz* (2020), *Marinescu, Ouss, Pape* (2021), *Bassanini, Batut, Caroli* (2020)
   - Theory: *Jarosch, Nimczik and Sorkin* (2021): in more concentrated market, higher probability of re-encountering twice the same employer
2. **Labor concentration and inequality**
   - Empirics: *Rinz* (2020): few measures, no study of mechanism
   - Theory: ?
3. **Sorting**
   - Empirics: *Card, Heining, and Kline* (2016), *Song, Price, Guvenen, Bloom, and von Wachter* (2019): most change in wage inequality attributed to change in between-firm inequality rather to within-firm inequality, i.e. sorting
   - Theory: *Eeckout* (2018) for a literature review
4. **Monopsony**: *Robinson* (1933) **Modern Monopsony**
   - - *Manning* (2003), *Berger, Herkenhoff, Mongey* (2021), *Lamadon, Mogstad, Setzler* (2021): unobserved idiosyncratic preference over non-wage job features

We explore two mechanisms

1. "Better sorting"
   - With more concentration, employers can be + demanding in the selection process ⇒ More efficient sorting ⇒ higher productivity workers gather in higher productivity firm (positive assortative matching)
   - *Inequality and productivity increases*

2. "Bargaining sensitivity"
   - Lower-paid jobs wage + sensitive to labor concentration: better-paid jobs wage depends relatively more on factors other than market structure
   - *Inequality increases but no productivity gain*

Contribution

1. Using a combination of IV and fixed effects, we quantify the effect of labor market concentration along the wage distribution and on wage inequality between jobs in France

   ▸ Quantification

2. We investigate mechanisms at play
   - We find evidence that increase in inequality brought by labor market concentration is not linked to a better sorting, which could increase productivity, but to a higher sensitivity of the bargaining position of the least paid jobs to employers' concentration

Data & Measures

Data overview

- French administrative employee-employers data, DADS-Postes (INSEE) + FICUS-FARE (INSEE): balance-sheet information - Annual data
- Mainland France + Corsica over 2000-2019
- 178 sectors, 304 CZ
  - To cover the whole period, we construct one unique sector classification (2 revisions of NAF: 2003, 2008), exclude: agriculture, extraction, public sector, financial intermediation
    ▸ List
  - We use the 2010 CZ classification for all the period

Definition of local labor market

- Local labor market: a sector in a Commuting Zone (CZ):
  - Example: the jobs in the rubber industry of the CZ including Béthune and 102 other '*communes*' make a local labor market

- We use sectors instead of occupations in main specification:
  1. Conceptual reason: we analyse between- and within- firm inequality, which makes more sense at sectoral level
  2. Data limitation: longer period covered with sectors, usable since 2009 only for occupations
  3. Worker mobility: similar using sectors or occupations, between 2017 and 2018, 7% of workers changed sector, 6.8% changed 3-digit occupation and 7.8% 4-digit occupation (DADS-Panel, authors' calculations)

- However, we conduct the analysis for robustness using occupations (3-digit and 4-digit) and results are similar

Effect on inequality

Specification

- Level of analysis: CZ/sector/year level (304 CZ, 178 sectors, 20 years)

$$log(Ineq_{c,j,t}) = \beta * log(HHI_{c,j,t}) + X_{c,j,t} + Z_{j,t} + \alpha_{c,t} + \omega_{c,j} + \epsilon_{c,j,t}$$

- $Ineq_{c,j,t}$ is the Inequality Measure (in log) in CZ c, in industry j, at time t.
- $HHI_{c,j,t}$ is the HHI in CZ c, in industry j, at time t.
- $X_{c,j,t}$ is a vector of controls (CZ/sector/year)
- $Z_{j,t}$ is a vector of controls (sector/year)
- Standard error are clustered at the CZ level

Concerns for identification

- Local decline in economic activity, job polarization and product market concentration can affect both labor market concentration and wage inequality

- To mitigate those concerns, our controls include:
  1. Controls at local labor market * year level
     - Average age of employees, average firm size, and average number of employees (size of the market)
     - Polarization
  2. Controls at the sector * year level
     - Labor productivity of the sector, each year
     - Product market concentration ▸ HHIs
  3. Fixed effect at the CZ * year level

Possible bias: local heterogenous productivity shock

- Local positive productivity shock benefiting only the larger firms (likely if larger firms are the most innovative ones):

  1. Can increase concentration as already larger firms become even bigger and increase their share of employment + if smaller, lower-productivity, firms exit ⇒ concentration increases

  2. Can decrease inequality if smaller, lower-productivity, firms exit : destruction of lower-paid jobs ⇒ inequality between *remaining* job decreases

- To deal with this omitted variable bias, we use an instrument

Instrument

- Instrument = employment-weighted average HHI within the same industry across *other* commuting zones ▸ First Stage

$$HHI^{-c}{}_{j,t} = \frac{\sum_{z \neq c}(HHI_{z,j,t} * empl_{z,j,t})}{\sum_{z \neq c} empl_{z,j,t}}$$

- Instrument captures sectoral changes that can affect local HHI through:
  1. Change in production function (ex: fixed cost) $\Rightarrow$ might require employers to concentrate more or less
  2. Financial factors affecting mergers and hence employers' concentration

- Eliminates local forces shaping concentration:
  1. Local heterogeneous productivity shock
  2. Change in economic dynamism of the local labor market

Labor market concentration decreases average wage

	Mean	
	(1) OLS	(2) IV
HHI employment (log, mkt)	0.030***	-0.058***
	(0.003)	(0.010)
Lab. prod. (mean log, sect)	0.028***	0.023***
	(0.002)	(0.002)
HHI sales (log, sect)	0.002***	0.003***
	(0.001)	(0.001)
Average age (mkt)	0.013***	0.014***
	(0.000)	(0.000)
Market size (log, mkt), post	-0.061***	-0.064***
	(0.005)	(0.005)
Firm size (mean log, mkt), decl. eff	0.076***	0.029***
	(0.003)	(0.004)
Polarization	0.012***	0.007***
	(0.002)	(0.002)
CZ year FE	Yes	Yes
CZ sector FE	Yes	Yes
Obs	210,551	210,551
R squared	0.092	0.025
Adjusted R-squared	0.091	0.024
KP Stat		840.8

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Labor concentration *increases* inequality between jobs

- Change of sign of estimate compared to OLS: confirms bias

	OLS		IV	
	(1) Gini	(2) 90/10	(3) Gini	(4) 90/10
HHI employment (log, mkt)	-0.016***	-0.023***	0.025***	0.083***
	(0.002)	(0.003)	(0.005)	(0.010)
Lab. prod. (mean log, sect)	-0.025***	-0.054***	-0.022***	-0.049***
	(0.002)	(0.005)	(0.002)	(0.005)
HHI sales (log, sect)	0.002***	0.004***	0.002***	0.002**
	(0.001)	(0.001)	(0.001)	(0.001)
Average age (mkt)	-0.008***	-0.023***	-0.009***	-0.025***
	(0.000)	(0.001)	(0.000)	(0.001)
Market size (log, mkt), post	0.077***	0.085***	0.078***	0.088***
	(0.003)	(0.005)	(0.003)	(0.005)
Firm size (mean log, mkt), decl. eff	-0.040***	-0.060***	-0.045***	-0.073***
	(0.002)	(0.005)	(0.003)	(0.006)
Polarization	0.032***	0.043***	0.034***	0.049***
	(0.002)	(0.004)	(0.002)	(0.004)
CZ year FE	Yes	Yes	Yes	Yes
CZ sector FE	Yes	Yes	Yes	Yes
Obs	210,551	210,551	210,551	210,551
R squared	0.046	0.029	0.030	0.009
Adjusted R-squared	0.045	0.028	0.029	0.008
KP Stat			840.8	840.8

▸ Quantification

Mechanism

Exploring two mechanisms

1. "Better sorting" mechanism

   - With better sorting, wage gap between different types of firm widens
     ⇒ between-firm inequality should increase (Dispersion of the average wage of each firm of the market) ▸ Def

2. "Bargaining position sensitivity" mechanism

   - Increase in employers concentration more damaging for the least-paid jobs (return of bargaining power from less concentration to wage concave or can afford to wait more)
     ⇒ within-firm inequality should increase (Dispersion of wages of jobs of a given firm) ▸ Def
   - Mechanically, the average wage of firms with more lower-paid jobs should decrease
     ⇒ between-firm inequality should increase

IV: Effect on between- and within-firm inequality

	Within		Between	
	(1)	(2)	(3)	(4)
	Gini	90/10	Gini	90/10
HHI employment (log, mkt)	0.048***	0.089***	0.059***	0.090***
	(0.007)	(0.011)	(0.008)	(0.009)
Lab. prod. (mean log, sect)	-0.008**	-0.026***	0.013**	0.015**
	(0.003)	(0.005)	(0.005)	(0.006)
HHI sales (log, sect)	0.002*	0.003*	0.001	0.003**
	(0.001)	(0.002)	(0.001)	(0.001)
Average age (mkt)	-0.006***	-0.013***	-0.012***	-0.019***
	(0.000)	(0.001)	(0.001)	(0.001)
Market size (log, mkt), post	0.078***	0.060***	0.097***	0.066***
	(0.004)	(0.006)	(0.004)	(0.005)
Firm size (mean log, mkt), decl. eff	-0.016***	-0.010**	-0.237***	-0.219***
	(0.003)	(0.005)	(0.005)	(0.005)
Polarization	0.022***	0.026***	0.045***	0.044***
	(0.003)	(0.006)	(0.003)	(0.004)
CZ year FE	Yes	Yes	Yes	Yes
CZ sector FE	Yes	Yes	Yes	Yes
Obs	210,551	210,551	210,551	210,551
R squared	0.011	-0.003	0.040	0.022
Adjusted R-squared	0.010	-0.004	0.040	0.021
KP Stat	840.8	840.8	840.8	840.8

Standard errors in parentheses

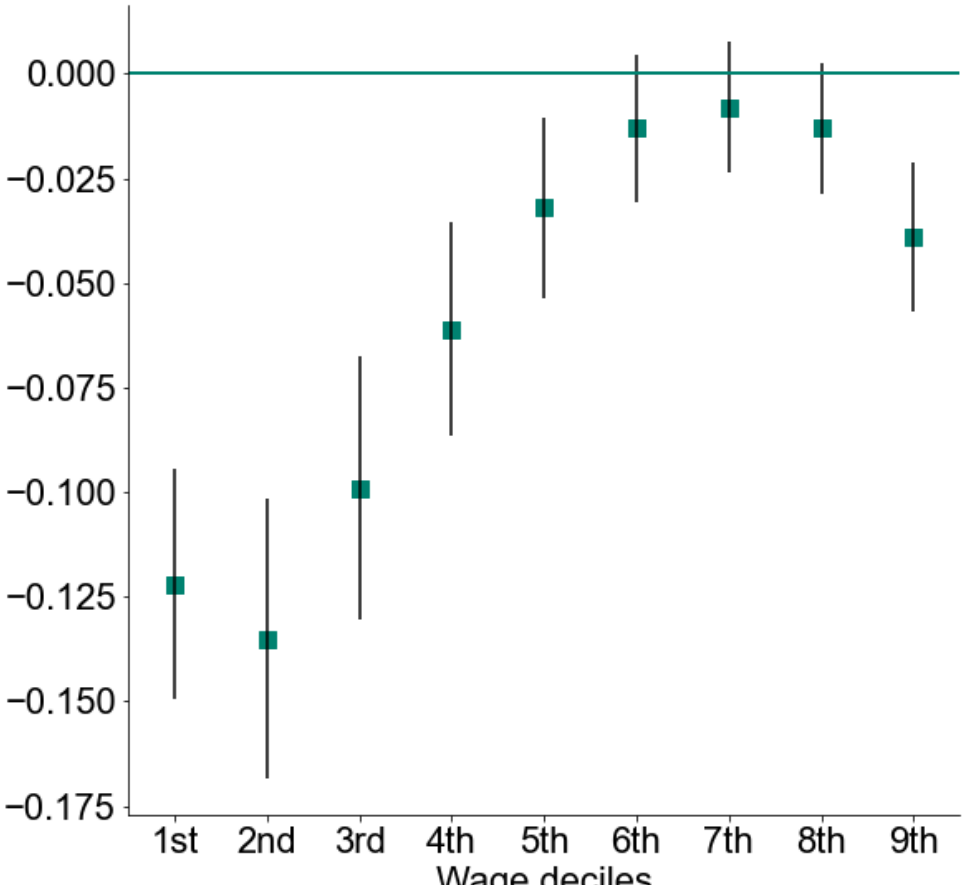
* p<0.1, ** p<0.05, *** p<0.01

Further exploring relevance of the 2 mechanisms

- Effect on within- and between- firm inequality consistent with bargaining and sorting
- As between-firm estimate is consistent with both and within-firm only with the bargaining one, weak evidence that the bargaining hypothesis might be more important
- Let's examine the effect of labor concentration on the wage along the wage distribution

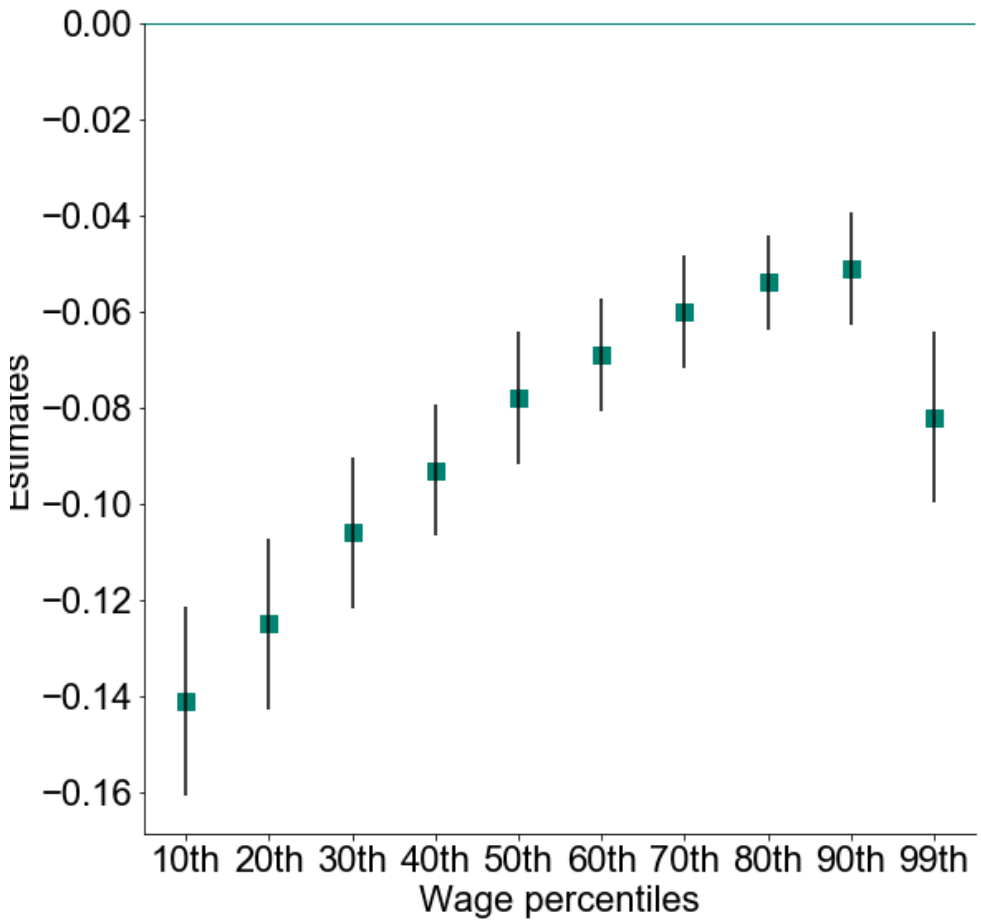
Negative effect along the wage distribution of jobs

- Sorting mechanism: some jobs shoud benefit
- We find that no deciles of jobs benefit, the 99th percentile either



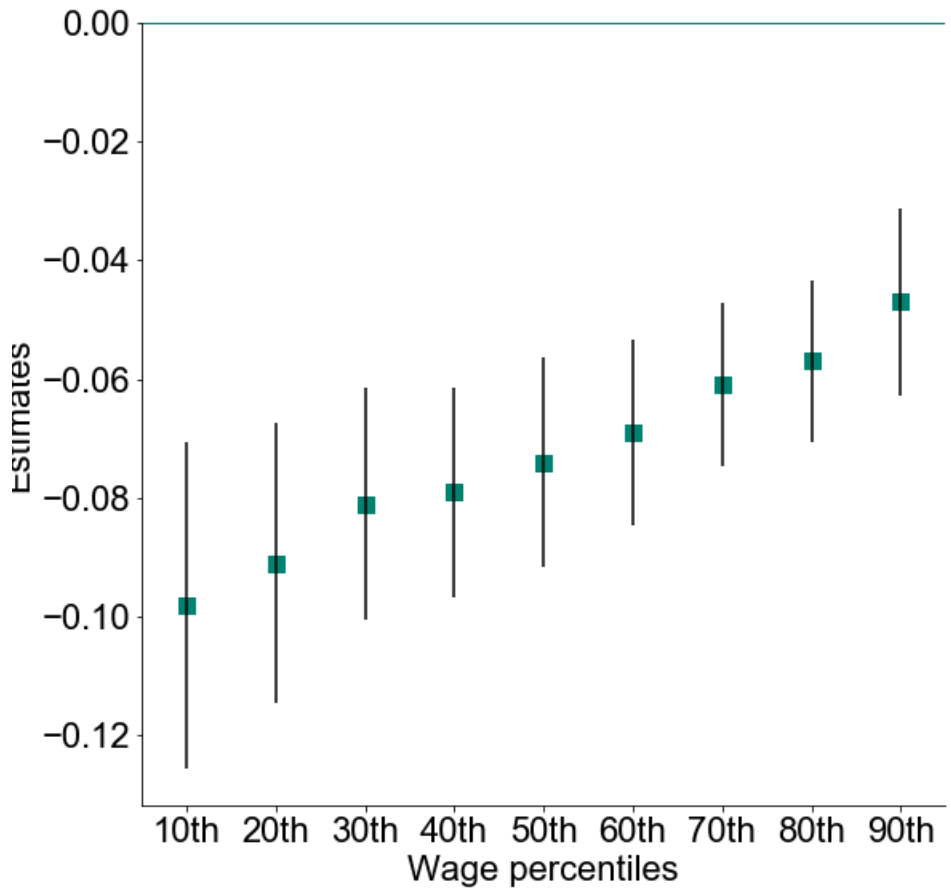
Effect of labor concentration on average wage of firms

- Sorting mechanism: some firms should benefit
- We find that no deciles of firms benefit



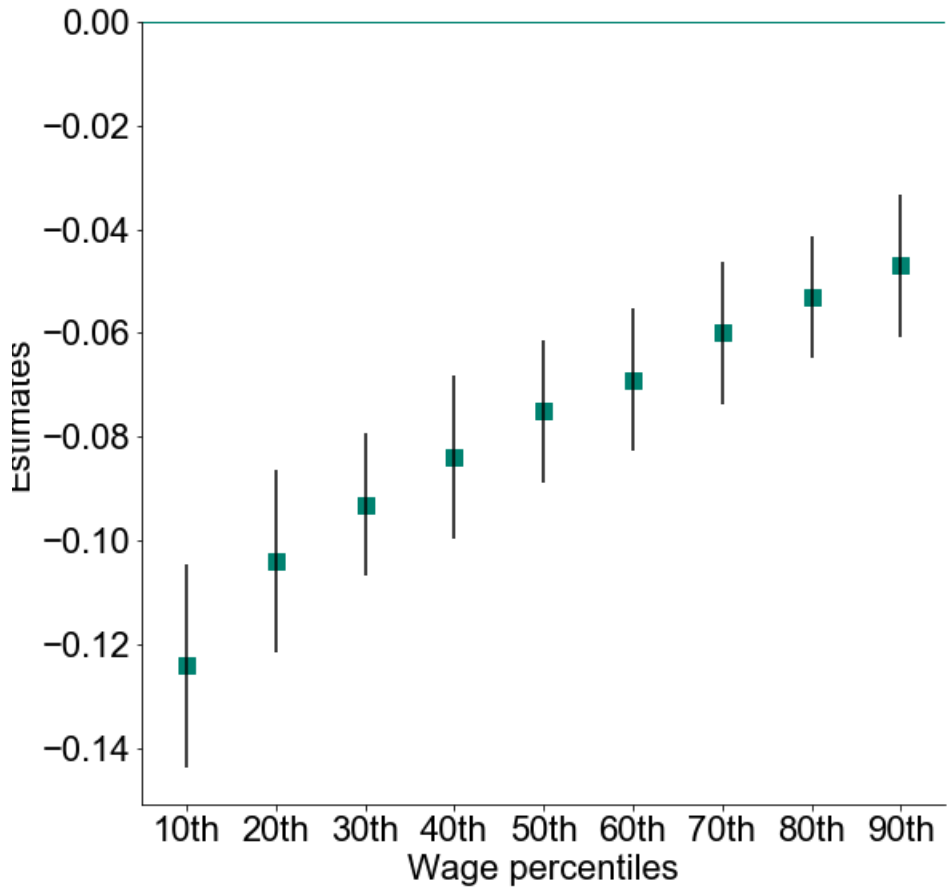
Effect on average wage of firms, for the richest markets

- Sorting: maybe only richest firms on richest markets (above median average wage) benefit?
- We find that this is not the case



Effect on average wage of firms, for the largest markets

- Sorting: maybe only richest firms on largest markets (above median number of employees) benefit?
- We find that this is not the case



Robustness

Robustness checks

1. Alternative definition of labor markets:
   - Occupation instead of sectors ▸ Table
   - '*Département*' instead of commuting zones ▸ Table
2. Alternative instruments:
   - Number of firms
   - Normalized HHI
3. Alternative measures of concentration: Payroll-HHI instead of employment-HHI ▸ Table 1 ▸ Table 2
4. Weighted regressions ▸ Table
5. More inequality measures ▸ Table

Alternative instruments

1. Inverse of number of firms: $1/N$
   - Captures the variation of HHI linked to the number of employers
   - Gini estimate (0.041) ▸ Table

2. Normalized HHI: $HHI_{norm} = \frac{HHI - 1/N}{1 - 1/N}$
   - Captures the variation of HHI linked to the dispersion of employment shares, i.e. the weight of each employer's - holding number of firms fixed
   - Gini estimate (0.015): indicates that effect does not come only from variation of number of employers but also from variation in their relative weights ▸ Table

Conclusion

Results overview

- Labor concentration decreases average wage and increases inequality between jobs in the same local labor market
- Labor concentration increases inequality between jobs in the same firm ("within-firm inequality") and between the average jobs in each firm ("between-firm inequality")
- Labor concentration decrease wages of jobs and average wage of all firms along the wage distribution, even on richest and largest markets
- $\Rightarrow$ We conclude that relative bargaining argument is much more prevalent than sorting: labor concentration increase inequality by undercutting relatively more the bargaining power of the lowest earners

Hirschmann Herfindhal Index

- Employment share of each firm in each sector/CZ

$$s_{j,c,f} = \frac{emp_{j,c,f}}{\sum_f emp_{j,c,f}}$$

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- We regroup all jobs in establishments of a given firm in same local labor market: common employer
- Employment HHI at the sector/CZ level:

$$HHI_{j,c} = \sum_f (s_{f,j,c,})^2 \text{ with } 0 \leq HHI \leq 1$$

- ***Robustness***: payroll-HHI

First stages

	Employment-HHI			Payroll-HHI
	(1)	(2)	(3)	(4)
	HHI, log	HHI, log	HHI, log	HHI, log
Instrument : employment-HHI	0.779***			
	(0.027)			
Instrument : 1/Number of firms		0.595***		
		(0.021)		
Instrument : normalized employment-HHI			0.486***	
			(0.017)	
Instrument : payroll-HHI				0.572***
				(0.026)
CZ year FE	Yes	Yes	Yes	Yes
CZ sector FE	Yes	Yes	Yes	Yes
Obs	210,551	210,551	210,551	210,551
KP stat	840.82	808.18	819.15	481.88

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

▸ Back

Alternative definition of market: sector*_département_ level

	(1) Gini	(2) 90/10	(3) 99/10
HHI employment (log, mkt)	0.028***	0.107***	0.074***
	(0.006)	(0.012)	(0.012)
Lab. prod. (mean log, sect)	-0.012***	-0.019***	0.006
	(0.002)	(0.002)	(0.006)
HHI sales (log, sect)	0.004***	0.004***	-0.001
	(0.001)	(0.001)	(0.002)
Average age (mkt)	-0.008***	-0.025***	-0.022***
	(0.000)	(0.001)	(0.001)
Market size (log, mkt), post	0.065***	0.081***	0.123***
	(0.004)	(0.007)	(0.008)
Firm size (mean log, mkt), decl. eff	-0.037***	-0.069***	-0.054***
	(0.003)	(0.007)	(0.007)
Polarization	0.033***	0.063***	0.095***
	(0.002)	(0.005)	(0.006)
DEP year FE	Yes	Yes	Yes
CZ sector FE	Yes	Yes	Yes
Obs	144,055	144,055	144,055
R squared	0.014	-0.008	0.004
Adjusted R-squared	0.013	-0.009	0.003
KP Stat	1076.9	1076.9	1076.9

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

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Alternative definition of market: 3-digit occupation*commuting zone level

	(1) Gini	(2) 90/10	(3) Mean
HHI employment (log, mkt)	0.627***	0.233***	-0.084***
	(0.174)	(0.036)	(0.021)
Average age (mkt)	-0.017***	-0.028***	0.018***
	(0.003)	(0.001)	(0.001)
Market size (log, mkt)	-0.147**	-0.102***	0.078***
	(0.059)	(0.015)	(0.008)
Firm size (mean log, mkt), decl. eff	0.013	-0.052***	0.026***
	(0.017)	(0.008)	(0.004)
CZ year	Yes	Yes	Yes
CZ occup FE	Yes	Yes	Yes
Obs	90,402	90,592	90,592
R squared	-0.078	-0.017	0.019
Adjusted R-squared	-0.080	-0.018	0.018
KP Stat	787.3	772.0	772.0

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

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Alternative instruments: Number of firms

	Overall		Between		Within	
	(1)	(2)	(3)	(4)	(5)	(6)
	Gini	90/10	Gini	90/10	Gini	90/10
HHI employment (log, mkt)	0.041***	0.123***	0.020**	0.054***	0.086***	0.162***
	(0.006)	(0.011)	(0.009)	(0.010)	(0.008)	(0.013)
Lab. prod. (mean log, sect)	-0.022***	-0.047***	0.011**	0.013**	-0.006*	-0.023***
	(0.002)	(0.005)	(0.005)	(0.006)	(0.003)	(0.005)
HHI sales (log, sect)	0.002***	0.002*	0.002*	0.003***	0.001	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Average age (mkt)	-0.009***	-0.025***	-0.012***	-0.019***	-0.007***	-0.014***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)
Market size (log, mkt), post	0.079***	0.090***	0.096***	0.065***	0.080***	0.063***
	(0.003)	(0.005)	(0.004)	(0.005)	(0.004)	(0.007)
Firm size (mean log, mkt), decl. eff	-0.046***	-0.078***	-0.232***	-0.215***	-0.020***	-0.019***
	(0.003)	(0.006)	(0.005)	(0.005)	(0.003)	(0.006)
Polarization	0.035***	0.051***	0.042***	0.042***	0.025***	0.031***
	(0.002)	(0.004)	(0.003)	(0.004)	(0.003)	(0.006)
CZ year FE	Yes	Yes	Yes	Yes	Yes	Yes
CZ sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs	210,551	210,551	210,551	210,551	210,551	210,551
R squared	0.015	-0.009	0.047	0.028	-0.004	-0.025
Adjusted R-squared	0.014	-0.009	0.046	0.028	-0.005	-0.026
KP Stat	808.2	808.2	808.2	808.2	808.2	808.2

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

▸ Back

Alternative instruments: normalized HHI

	Overall		Between		Within	
	(1)	(2)	(3)	(4)	(5)	(6)
	Gini	90/10	Gini	90/10	Gini	90/10
HHI employment (log, mkt)	0.015**	0.053***	0.067***	0.096***	0.028***	0.050***
	(0.006)	(0.012)	(0.010)	(0.012)	(0.009)	(0.013)
Lab. prod. (mean log, sect)	-0.023***	-0.051***	0.013**	0.015**	-0.009***	-0.028***
	(0.002)	(0.005)	(0.005)	(0.007)	(0.003)	(0.005)
HHI sales (log, sect)	0.002***	0.003**	0.001	0.003**	0.002**	0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Average age (mkt)	-0.009***	-0.024***	-0.012***	-0.019***	-0.006***	-0.012***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)
Market size (log, mkt), post	0.078***	0.087***	0.097***	0.067***	0.078***	0.059***
	(0.003)	(0.005)	(0.004)	(0.005)	(0.004)	(0.006)
Firm size (mean log, mkt), decl. eff	-0.043***	-0.069***	-0.238***	-0.220***	-0.013***	-0.006
	(0.003)	(0.006)	(0.005)	(0.006)	(0.003)	(0.005)
Polarization	0.034***	0.047***	0.045***	0.044***	0.021***	0.024***
	(0.002)	(0.004)	(0.003)	(0.004)	(0.003)	(0.006)
CZ year FE	Yes	Yes	Yes	Yes	Yes	Yes
CZ sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs	210,551	210,551	210,551	210,551	210,551	210,551
R squared	0.037	0.019	0.038	0.020	0.014	0.003
Adjusted R-squared	0.036	0.018	0.037	0.020	0.013	0.002
KP Stat	816.6	816.6	816.6	816.6	816.6	816.6

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

▸ Back

Payroll-HHI: average wage and overall inequality

	(1) Mean	(2) Gini	(3) 90/10
Payroll HHI (log, mkt)	-0.055***	0.002	0.044***
	(0.011)	(0.005)	(0.009)
Lab. prod. (mean log, sect)	0.025***	-0.024***	-0.052***
	(0.002)	(0.002)	(0.005)
HHI sales (log, sect)	0.003***	0.002***	0.003**
	(0.001)	(0.001)	(0.001)
Average age (mkt)	0.014***	-0.009***	-0.024***
	(0.000)	(0.000)	(0.001)
Market size (log, mkt), post	-0.063***	0.077***	0.086***
	(0.005)	(0.003)	(0.005)
Firm size (mean log, mkt), decl. eff	0.088***	-0.042***	-0.070***
	(0.004)	(0.003)	(0.006)
Polarization	0.008***	0.033***	0.046***
	(0.002)	(0.002)	(0.004)
CZ year FE	Yes	Yes	Yes
CZ sector FE	Yes	Yes	Yes
Obs	210,551	210,551	210,551
R squared	-0.009	0.042	0.022
Adjusted R-squared	0.042	-0.009	0.021
KP Stat	481.9	481.9	481.9

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

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Payroll-HHI: within- and between-firm inequality

	Between		Within	
	(1)	(2)	(3)	(4)
	Gini	90/10	Gini	90/10
Payroll HHI (log, mkt)	0.079***	0.113***	0.029***	0.065***
	(0.009)	(0.011)	(0.007)	(0.012)
Lab. prod. (mean log, sect)	0.011**	0.012*	-0.010***	-0.030***
	(0.005)	(0.006)	(0.003)	(0.005)
HHI sales (log, sect)	0.000	0.001	0.002*	0.003*
	(0.001)	(0.001)	(0.001)	(0.002)
Average age (mkt)	-0.012***	-0.019***	-0.006***	-0.012***
	(0.001)	(0.001)	(0.000)	(0.001)
Market size (log, mkt), post	0.096***	0.065***	0.077***	0.059***
	(0.004)	(0.005)	(0.004)	(0.006)
Firm size (mean log, mkt), decl. eff	-0.242***	-0.225***	-0.014***	-0.009*
	(0.005)	(0.006)	(0.003)	(0.005)
Polarization	0.045***	0.044***	0.021***	0.024***
	(0.003)	(0.004)	(0.003)	(0.006)
CZ year FE	Yes	Yes	Yes	Yes
CZ sector FE	Yes	Yes	Yes	Yes
Obs	210,551	210,551	210,551	210,551
R squared	0.037	0.020	0.016	0.002
Adjusted R-squared	0.036	0.020	0.016	0.001
KP Stat	481.9	481.9	481.9	481.9

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

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Weighted regressions

	Overall		Between		Within	
	(1)	(2)	(3)	(4)	(5)	(6)
	Gini	90/10	Gini	90/10	Gini	90/10
HHI employment (log, mkt)	0.0162**	0.0515***	0.0724***	0.0771***	0.0391***	0.0756***
	(0.0067)	(0.0127)	(0.0141)	(0.0177)	(0.0094)	(0.0177)
Lab. prod. (mean log, sect)	-0.0353***	-0.0938***	0.0141*	-0.0021	-0.0312***	-0.0747***
	(0.0055)	(0.0111)	(0.0076)	(0.0113)	(0.0041)	(0.0092)
HHI sales (log, sect)	0.0021***	0.0064***	0.0067***	0.0101***	0.0006	0.0041***
	(0.0006)	(0.0011)	(0.0017)	(0.0020)	(0.0006)	(0.0015)
Average age (mkt)	-0.0090***	-0.0250***	-0.0116***	-0.0193***	-0.0070***	-0.0161***
	(0.0006)	(0.0011)	(0.0009)	(0.0010)	(0.0011)	(0.0020)
Market size (log, mkt), post	0.3136***	0.6983***	0.1112	0.1305	0.4006***	0.8011***
	(0.0851)	(0.2605)	(0.0732)	(0.1633)	(0.0866)	(0.1784)
Firm size (mean log, mkt), decl. eff	-0.0190***	-0.0276***	-0.1223***	-0.0900***	-0.0117***	-0.0026
	(0.0051)	(0.0090)	(0.0057)	(0.0072)	(0.0044)	(0.0095)
Polarization	0.2971***	0.7021**	0.0907	0.1461	0.3558***	0.7728***
	(0.0924)	(0.2753)	(0.0761)	(0.1646)	(0.0935)	(0.1903)
CZ year FE	Yes	Yes	Yes	Yes	Yes	Yes
CZ sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs	208,463	208,463	208,463	208,463	208,463	208,463
R squared	0.0171	0.0244	0.0039	0.0054	0.0124	-0.0040
Adjusted R-squared	0.0163	0.0236	0.0031	0.0046	0.0116	-0.0048
KP Stat	55.6	55.6	55.6	55.6	55.6	55.6

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

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More inequality indices

	Overall			
	(1)	(2)	(3)	(4)
	Theil	Entrop	Piesch	Mehran
HHI employment (log, mkt)	0.032***	0.077***	0.018***	0.034***
	(0.009)	(0.009)	(0.006)	(0.005)
Lab. prod. (mean log, sect)	-0.032***	-0.044***	-0.019***	-0.026***
	(0.004)	(0.005)	(0.002)	(0.002)
HHI sales (log, sect)	0.002**	0.003***	0.002***	0.002***
	(0.001)	(0.001)	(0.001)	(0.000)
Average age (mkt)	-0.015***	-0.026***	-0.008***	-0.010***
	(0.000)	(0.001)	(0.000)	(0.000)
Market size (log, mkt), post	0.141***	0.104***	0.090***	0.065***
	(0.006)	(0.005)	(0.004)	(0.003)
Firm size (mean log, mkt), decl. eff	-0.070***	-0.053***	-0.045***	-0.044***
	(0.005)	(0.005)	(0.003)	(0.002)
Polarization	0.063***	0.064***	0.040***	0.028***
	(0.003)	(0.004)	(0.002)	(0.002)
CZ year FE	Yes	Yes	Yes	Yes
CZ sector FE	Yes	Yes	Yes	Yes
Obs	210,551	210,551	210,551	210,551
R squared	0.031	0.020	0.032	0.024
Adjusted R-squared	0.030	0.019	0.031	0.023
KP Stat	840.8	840.8	840.8	840.8

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

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More inequality ratios

	Overall				
	(1)	(2)	(3)	(4)	(5)
	50/10	90/50	80/50	50/20	99/10
HHI employment (log, mkt)	0.090***	-0.007	0.019***	0.103***	0.054***
	(0.009)	(0.006)	(0.005)	(0.008)	(0.012)
Lab. prod. (mean log, sect)	-0.041***	-0.008***	-0.016***	-0.060***	-0.012**
	(0.005)	(0.002)	(0.002)	(0.004)	(0.006)
HHI sales (log, sect)	-0.003***	0.006***	0.003***	0.001	-0.002*
	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Average age (mkt)	-0.024***	-0.001***	-0.003***	-0.018***	-0.021***
	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)
Market size (log, mkt), post	0.034***	0.055***	0.040***	0.059***	0.129***
	(0.004)	(0.003)	(0.003)	(0.004)	(0.007)
Firm size (mean log, mkt), decl. eff	-0.050***	-0.023***	-0.024***	-0.076***	-0.061***
	(0.005)	(0.003)	(0.002)	(0.004)	(0.006)
Polarization	0.026***	0.023***	0.012***	0.018***	0.089***
	(0.004)	(0.002)	(0.001)	(0.003)	(0.005)
CZ year FE	Yes	Yes	Yes	Yes	Yes
CZ sector FE	Yes	Yes	Yes	Yes	Yes
Obs	210,551	210,551	210,551	210,551	210,551
R squared	0.003	0.017	0.008	-0.009	0.012
Adjusted R-squared	0.002	0.016	0.007	-0.009	0.011
KP Stat	840.8	840.8	840.8	840.8	840.8

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

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Labor and product market concentration

- The two concepts should be dinstinguished:
  - Labor market concentration is local
  - Product market concentration, for most goods and some services (tradable), is not local

- Correlation between weighted average labor HHI and sectoral product market HHI in our data is positive but moderate: 0.48 in 2018

1. We control for the product market concentration at the sector * year level
   - *NB: No balance sheet at the establishment, i.e. local level*
2. We find higher estimates for manufacture sector (where both concepts are even more likely to be dissociated)

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Market power and concentration: ambiguous link

- Concentration is also an equilibrium outcome: cannot *a priori* equate concentration with employers' market power
- "*Burdett Mortensen effect*": decrease in market power of employers (i.e. more competitive labor market) can actually increase concentration
- In a labor market becoming more competitive, workers can more easily move to better-paying firms, which increase their market share and labor concentration (*if those better-paying firm already have a large share of the market*)

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US labor market concentration

Figure: HHI by CZ, average over SOC

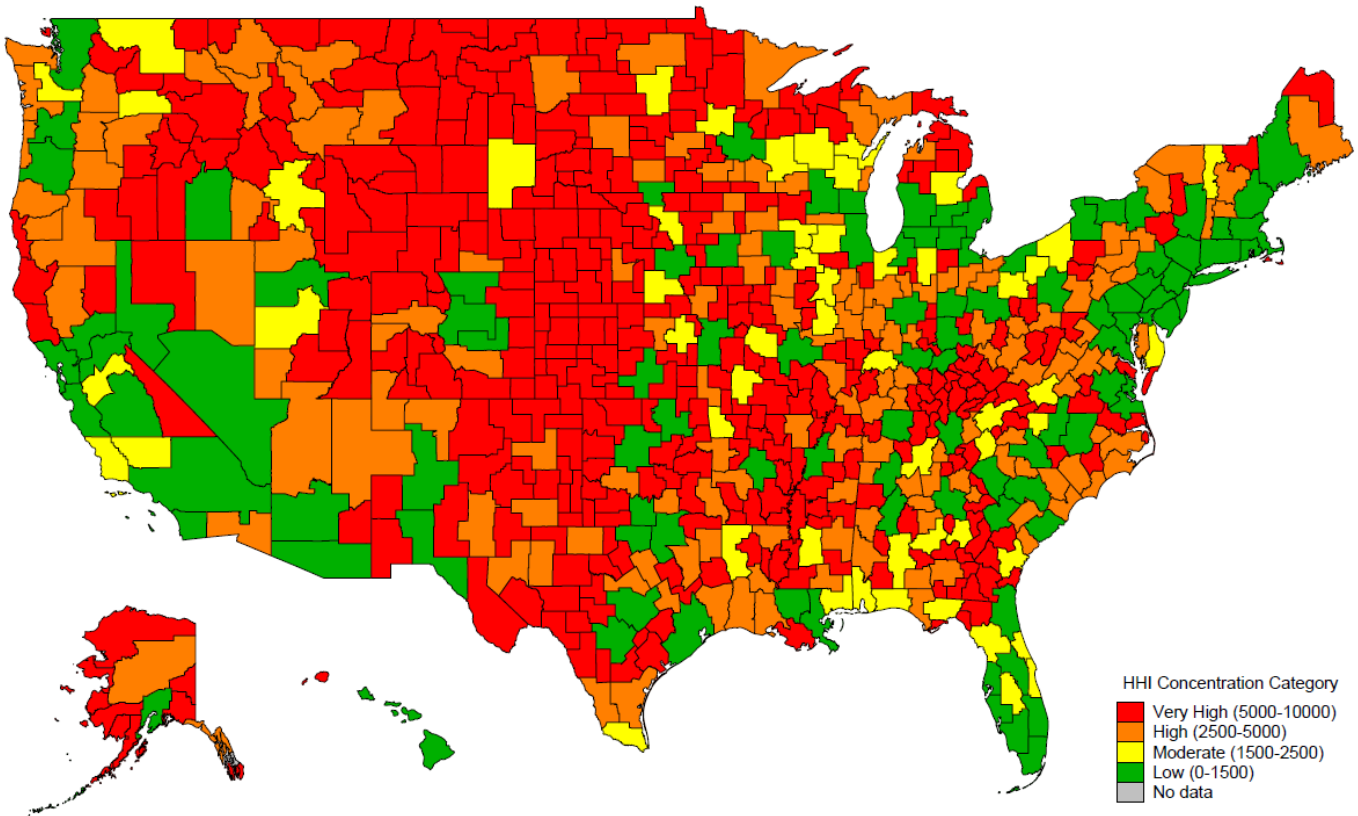

Figure: Source: Marinescu et al. 2018

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SECTOR	
151a2 Manufacture of meat and fish	153 Manufacture of fruit and vegetables
154 Manufacture of vegetable and animal oils and fats	155 Manufacture of dairy products
156 Manufacture of grain mill products, starches and starch products	157 Manufacture of prepared animal feeds
158 Manufacture of other food products	159 Manufacture of beverages
160 Manufacture of tobacco products	171 Preparation and spinning of textile fibres
172 Tissage Weaving of Textiles	173 Finishing of textiles
174 Manufacturing of textile articles	175 Manufacture of other textiles
176 Manufacture of knitted fabrics	177 Manufacture of knitted and crocheted apparel
181 Manufacture of leather clothes	182 Manufacture of textile clothing
183 Manufacture of articles of fur	191 Tanning and dressing of leather
192 Manufacture of luggage, handbags, saddlery and harness	193 Manufacture of footwear
201 Sawmilling, planing and impregnation of wood	202 Manufacture of veneer sheets and wood-based panels
203 Manufacture of other builders' carpentry and joinery	204 Manufacture of wooden containers
205 Manufacture of products of wood, cork, straw and plaiting materials	211 Manufacture of pulp, paper and paperboard
212 Manufacture of articles of paper and paperboard	221 Publishing
222 Printing and service activities related to printing	223 Reproduction of recorded media
241 Manufacture of basic chemicals	242 Manufacture of pesticides and other agrochemical products
243 Manufacture of paints, varnishes and similar coatings	244 Pharmaceutical industry
245 Manufacture of soap , cleaning and perfumes preparations	246 Manufacture of other chemical products
247 Manufacture of artificial or synthetic fibres	251 Manufacture of rubber products
252 Manufacture of plastics products	261 Manufacture of glass and glass products
262 Manufacture of other porcelain and ceramic products	263 Manufacture of ceramic tiles and flags
264 Manufacture of bricks, tiles and construction products, in baked clay	265 Manufacture of cement, lime and plaster
266 Manufacture of articles of concrete, cement and plaster	267 Cutting, shaping and finishing of stone
268 Manufacture of non-metallic mineral products	271 Steel industry
272 Manufacture of tubes	273 Manufacture of other products of first processing of steel
274 Manufacture of basic precious and other non-ferrous metals	275 Casting of metals
281 Manufacture of structural metal products	282 Manufacture of tanks, reservoirs and containers of metal
283 Boiler making	284 Forging, pressing, stamping and roll-forming of metal; powder metallurgy
285 Treatment and coating of metals; machining	286 Manufacture of cutlery, tools and general hardware
287 Manufacture of other fabricated metal products	291 Manufacture of mechanical equipment
292 Manufacture of general-purpose machinery	293 Manufacture of agricultural machinery
294 Manufacture of machine tools	295 Manufacture of other special purpose machinery
296 Manufacture of weapons and ammunition	297 Manufacture of household appliance
300 Manufacture of office machinery and computer equipment	311 Manufacture of electric motors, generators, transformers
312 Manufacture of electricity distribution and control apparatus	313 Manufacture of wiring and wiring devices
314 Manufacture of batteries and accumulators	315 Manufacture of electric lighting equipment
316 Manufacture of other electrical equipment	321 Manufacture of electronic components and boards
322 Manufacture of transmitting and receiving apparatus	323 Manufacture of sound and video reception, recording and reproduction apparatus
331 Manufacture of medical, surgical and orthopaedic equipment	332 Manufacture of measuring and checking instruments
333 Manufacture of industrial process control equipment	334 Manufacture of optical instruments and photographic equipment
335 Watches and clocks	341 Manufacture of motor vehicles
342 Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers	343 Manufacture of parts and accessories for motor vehicles
351 Building of ships and boats	352 Manufacture of railway locomotives and rolling stock
353 Manufacture of air and spacecraft and related machinery	354 Manufacture of motorcycles and bicycles
355 Manufacture of transport equipment n.e.c.	361 Manufacture of furniture
362 Manufacture of jewellery, bijouterie and related articles	363 Manufacture of musical instruments
364 Manufacture of sports goods	365 Manufacture of games and toys
366 Manufacturing n.e.c.	37 Recovery of recyclable and non-recyclable metal materials
401 Electric power generation and distribution	402 Manufacture of gas; distribution of gaseous fuels through mains
403 Steam and air conditioning supply	410 Water collection, treatment and supply
451 Site preparation	452 Construction of residential and non-residential buildings or civil engineering
453 Installation works	454 Building completion and finishing
455 Renting of construction equipment with operator	501 Sale of motor vehicles
502 Maintenance and repair of motor vehicles	503 Sale of motor vehicle parts and accessories
504 Sale, maintenance and repair of motorcycles and related parts and accessories	505 Retail sale of automotive fuel
511 Wholesale on a fee or contract basis	512 Wholesale of agricultural raw materials
513 Wholesale of food	514 Wholesale of household goods
515 Wholesale of non-agricultural intermediate products	518 Wholesale of other machinery, equipment and supplies
519 Other wholesale	521 Retail sale in non-specialised stores
522 Retail sale of food, beverages and tobacco in specialised stores	523 Dispensing chemist in specialised stores
524 Retail sale of other goods in specialised stores	525 Retail of second-hand goods
526 Retail trade not in stores	527 Repair of personal and household goods
551 Hotels and similar accommodation	552 Other short-stay accommodation
553 Restaurants	554 Beverage serving activities
555 Event catering and other food service activities	601 Rail transport
602 Urban and Road transport	603 Transport via pipeline
611 Sea and coastal passenger water transport	612 Water transport
62 Passenger air transport and Freight air transport	623 Space transport
631 Warehousing and Cargo handling	632 Management of transport infrastructures
633 Travel agency activities	634 Organization of freight transport
642 Telecommunications	660 Insurance
671 Activities auxiliary to financial services	672 Activities auxiliary to insurance
701 Buying and selling of own real estate	702 Renting of real estate
703 Real estate activities on a fee or contract basis	711 Renting and leasing of motor vehicles
712 Renting and leasing of transport equipment	713 Renting and leasing of other machinery, equipment
714 Renting and leasing of personal and household goods	721 Consultancy
722 Computer programming and related activities	723 Data processing
724 Database activities	725 Maintenance and repair of office machines and computer equipment
731 Research and experimental development on natural sciences and engineering	732 Research and experimental development on social sciences and humanities
741 Legal and accounting activities Management consultancy activities	742 Architectural and engineering activities and related technical consultancy
743 Control activities and technical analysis	744 Advertising
745 Selection and supply of personnel	746 Security and investigation activities
747 Cleaning activities	748 Other services provided mainly to businesses
852 Veterinary activities	900 Remediation activities and other waste management services
924 Press Agencies	930a Laundry
930b Hairdressing	930c Other beauty treatment
930d Funeral and related activities	930e Physical well-being activities
930f Other personal service activities	

Départements instead of CZ

- Local labor markets are defined as the intersection of a sector and a *'département'*
- 304 CZ versus 99 *'départements'*: larger labor markets
- Estimates slightly higher: 0.028 for Gini (versus 0.025 using CZ), 0.107 for 90/10 (versus 0.083 using CZ)

▸ Table

Occupations instead of sectors

- Local labor markets are defined as the intersection of an occupation and a *'département'*
- 99 3-digit occupations (versus 178 sectors)
- Estimates are higher: 0.627 for Gini (versus 0.025 using sectors), 0.233 for 90/10 (versus 0.083 using CZ)

▸ Table

Payroll-HHI instead of employment-HHI

- Berger *et al.*, 2021: When there is a positive relationship between wages and employment, the payroll-HHI is strictly larger than the employment-HHI
- In our data, the payroll-HHI = 0.48 versus 0.46 for the employment-HHI
- A firm with a wage bill share of 20% might effectively be a larger employer, i.e. have a higher weight on the labor market, than a firm with an employment share of 20%, as wage and size are strongly correlated.

$$s^{w}_{j,c,f,t} = \frac{wage_{j,c,f,t}}{\sum_f wage_{j,c,f,t}} \; ; \; HHI^{w}_{j,c,t} = \sum_f (s^{w}_{f,j,c,t})^2$$

- All estimates significant and of the same sign as with employment-HHI, except Gini overall

▸ Table 1 ▸ Table 2

Weighted regressions

- NB: regression conducted on our restricted sample of already large markets
- Regression weighted by size of the market in terms of numbers of jobs
- Estimate for Gini is 0.0162 versus 0.025 for non-weighted regression

▸ Table

More inequality measures

- More inequality ratios
  - Higher estimate for 90/10 and 99/10 ratios than 50/10, 90/50, 80/50 and 50/20
  - Labor concentration has an effect on inequality through its impact on the tails of the distribution ▸ Table

- More inequality measures
  - Theil index, Entropy index, Piesch index, Mehran index
  - Find similar results, higher estimates ▸ Table

"Within-firm" inequality

- Inequality within the same firm: "Within-firm" = Dispersion of wages of jobs of a given firm f

- Example for Gini:
  1. Calculate the inequality measure at the firm level

$$Gini_f = \frac{\sum_i \sum_j |w_i - wj|}{\sum_i \sum_j w_i} \text{ for wages of all jobs } i \text{ and } j \text{ in firm } f$$

  2. Compute weighted average at the local labor market level using employment shares as weights

$$Gini^{With}_{j,c,t} = \frac{\sum_f (Gini_{f,c,j,t} * empl_{f,c,j,t})}{\sum_f empl_{f,c,j,t}}$$

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"Between-firms" inequality

- Inequality between average wage in each firm:
  "Between-firms" = Dispersion of the average wage of each firm of the market

- Example for Gini:
  1. Calculate the average wage of each firm f, $\overline{w}_f$
  2. Calculate the inequality measures between those average wages

$$Gini^{Btw}_{j,c,t} = \frac{\sum_f \sum_g |\overline{w}_f - \overline{w}_g|}{\sum_f \sum_g \overline{w}_f}$$

for average wages of all firms f and g in local labor market

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Quantification of the effect of employers' concentration

1. ***Distribution***: Comparing labor market with average level of concentration in manufacturing (0.6) and a labor market with average level in services (0.3): wages of the 1st decile would be 6.7% lower, 5.5% for the 3rd decile, and 2.2% for the 9th decile

2. ***Inequality***:
   - Wedge between 1st and 9th decile higher by almost 5% at average level in manufacture compared to average in services
   - A 10% increase in labor concentration is associated with a rise in the Gini index of 0.3% and a rise in the 90/10 earnings ratio of 0.8%

▸ Back Contrib ▸ Back Table