THE FALL OF LABOR SHARE AND THE RISE OF SUPERSTAR FIRMS

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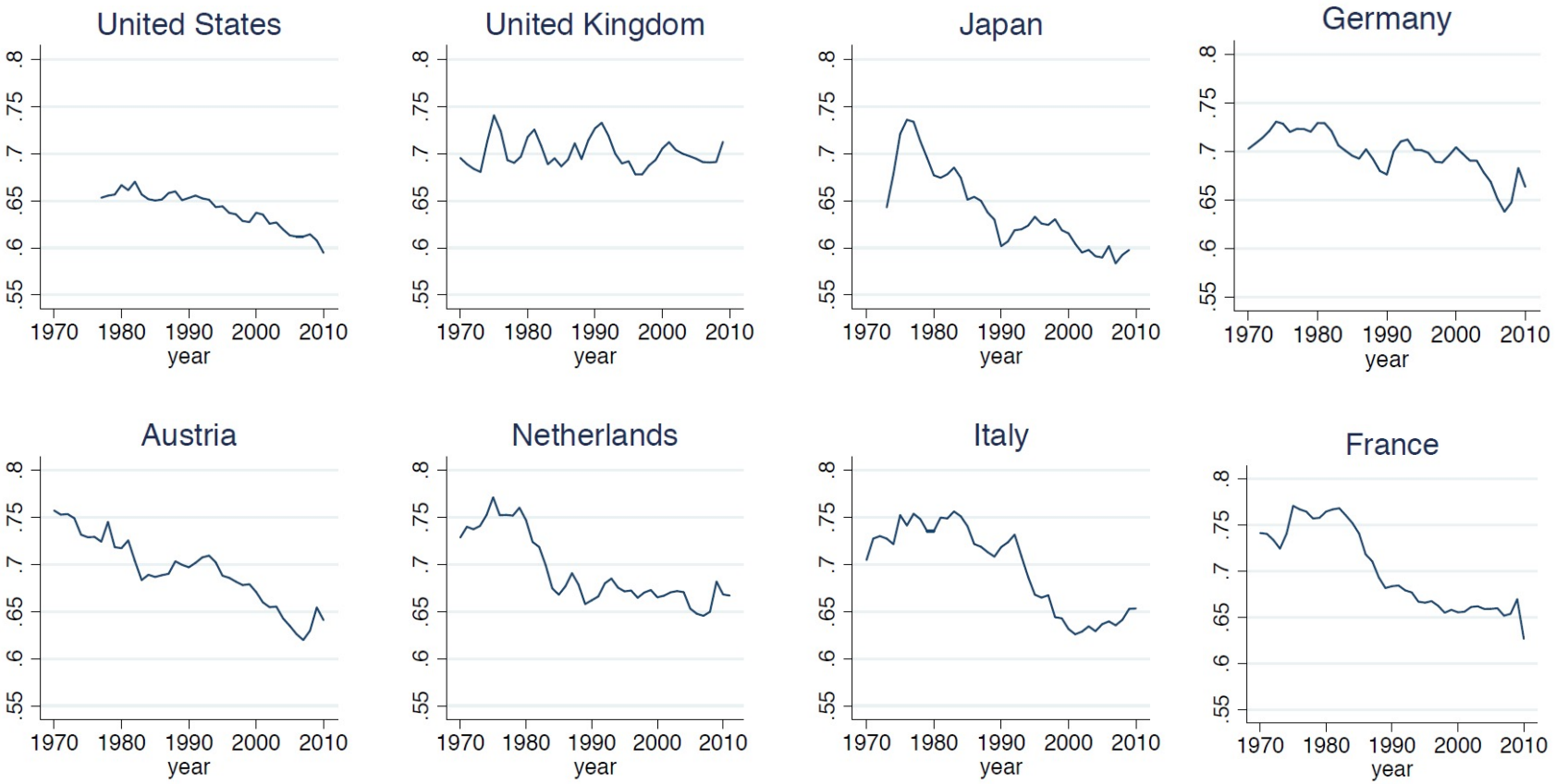
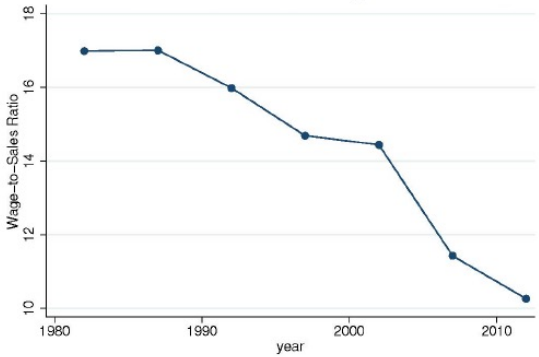
Fact: labor share of output has been declining worldwide

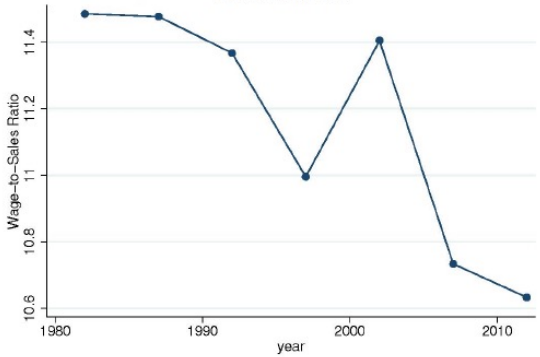


Fact: payroll-to-sale ratio has been declining for most sectors in the U.S.

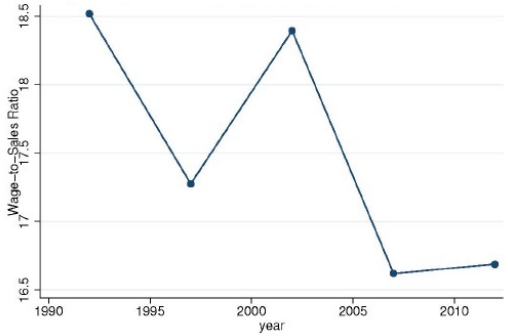
Manufacturing



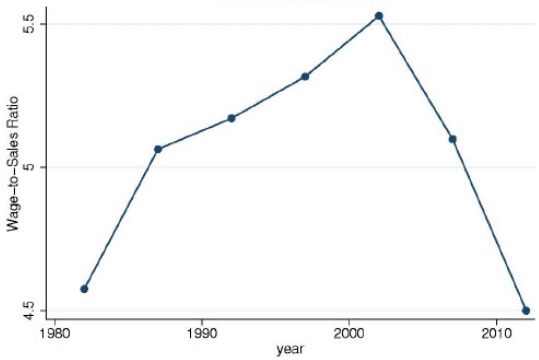
Real Estate



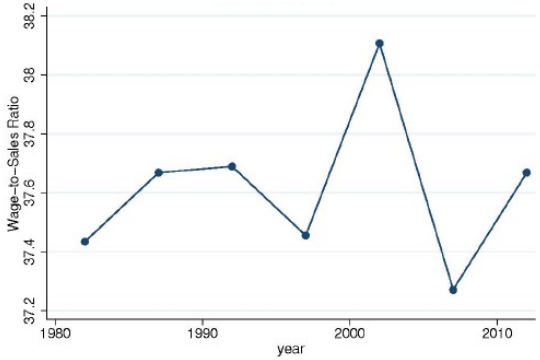
Utilities and Transportation



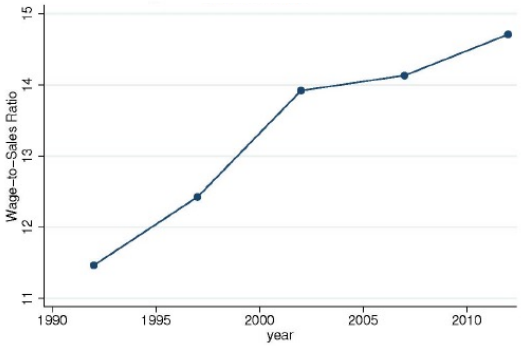
Wholesale



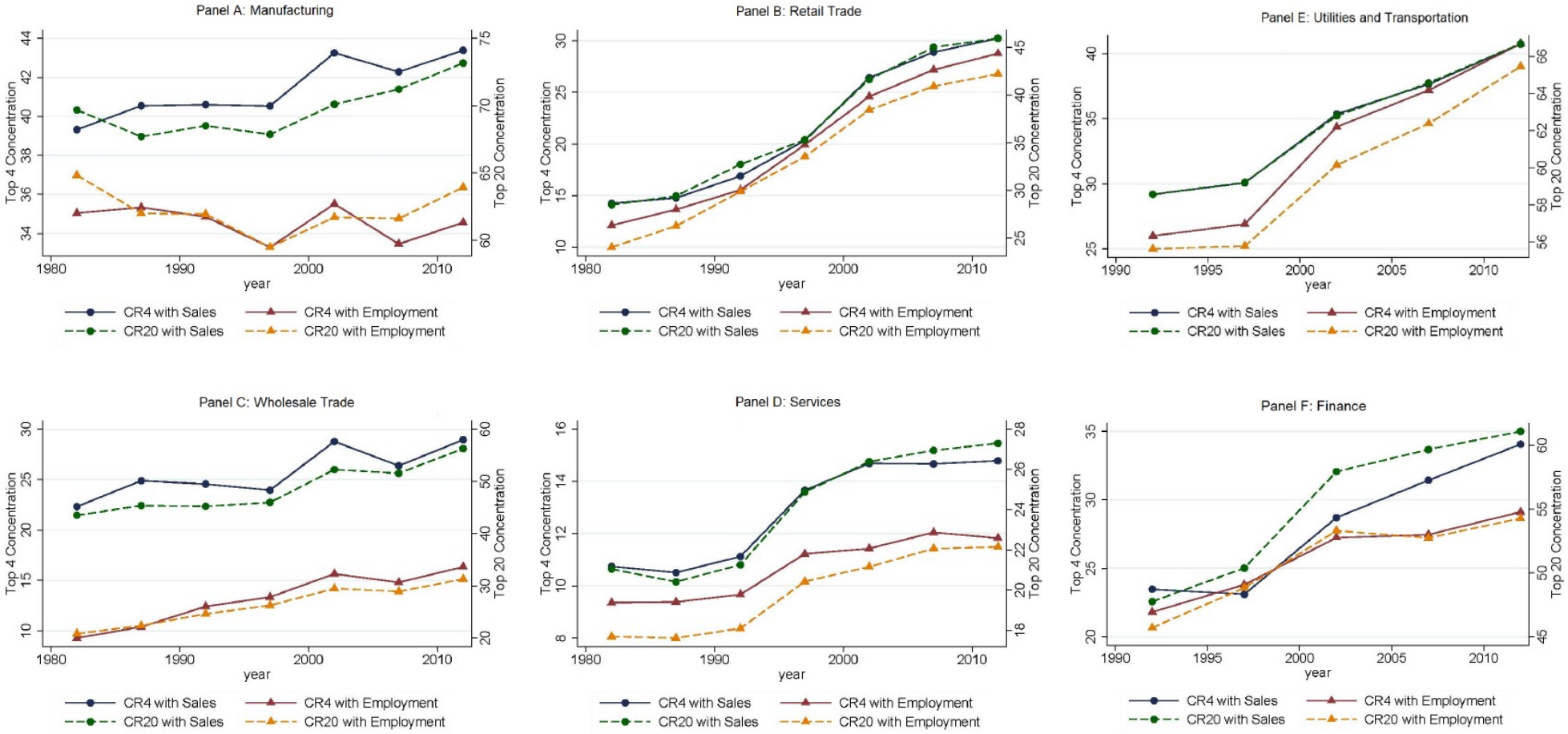
Services



Finance



Fact: industry concentration has been steadily rising across all sectors

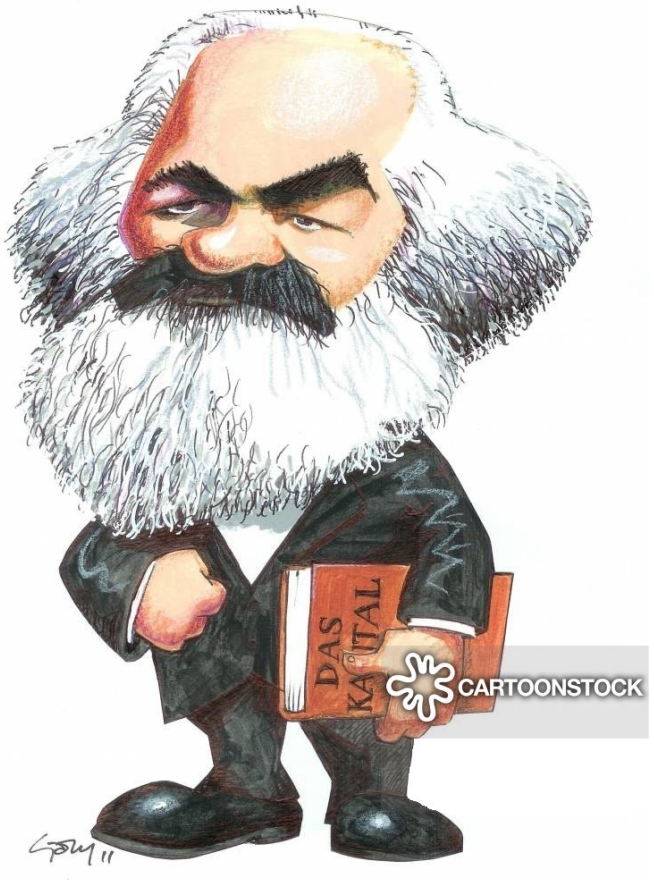


A short digression…

This expropriation is accomplished by the action of the immanent laws of capitalistic production itself, by the *concentration of capital*. One capitalist always kills many ……

Along with the constantly diminishing number of the magnates of capital, who usurp and monopolise all advantages of this process of transformation, grows the mass of misery, oppression, slavery, degradation, exploitation; but with this too grows the revolt of the working-class……

— Karl Marx



Alternative explanations for the declining labor share

- Capital prices decline and the capital-labor elasticity of substitution > 1
  - The bulk of empirical studies suggest the elasticity < 1
- The fall in labor share occurs *within* firms that all firms face simultaneously
  - This paper will show the fall is largely explained by reallocation *between* firms
- Increasing imports and labor out-sourcing to developing countries
  - A decline of labor shares also happen in non-traded sectors (retail, wholesale, utilities)
- Change in social norms and labor market institutions (labor unions)
  - Labor share also declines in sectors where unions have had little presence
  - Labor share falls in countries where union power has not fallen so steeply as in the US

Superstar firm hypothesis

- Superstar firms will be larger as they produce more efficiently and capture a higher share of industry output with lower labor share
- Superstar firms crowd out less efficient firms (reallocation of sales towards superstar firms) without increasing their hired labor proportionately ("scale without mass")
- Once they gain a commanding position, they use their market power to erect various barriers to entry to protect their position

Rationale of this paper

- There has been a rise in sales concentration within industries in most sectors
- Industries with larger increases in concentration have experienced larger declines in the labor share
- The fall in the labor share is largely due to the reallocation of sales between firms rather than a general fall in the labor share within firms
- The reallocation is most pronounced in industries which had the largest increase in sales concentration
- These patterns are also present in other OECD countries

Data sources

- **U.S. Economic Census**: 1982-2012, 676 industries, establishment level
- KLEMS: 1980-, international trade and intermediate service inputs
- UN Comtrade Database: 1992-2012, changes in the size of domestic market
- CompNet: 2000-2012, frim-level balance sheets from 14 European countries
- BVD Orbis database: firm-level labor shares in manufacturing in Europe

Empirical framework

$$\Delta S_{jt} = \alpha \Delta CONC_{jt} + \tau_t + u_{jt}$$

- S_{jt} is the labor share of industry j at period t
  - Labor share can be measured by
    i. payroll (or compensation) to value-added (manufacturing only)
    ii. payroll (or compensation) to sales (available for all sectors)
- $CONC_{jt}$ is a measure of concentration
  - Concentration can be measured by
    i. CR4: the fraction of total sales accrued by the top 4 largest firms
    ii. CR20: the fraction of total sales accrued by the top 20 largest firms
    iii. HHI: Herfindahl-Hirschman Index
- τ_t is a set of time dummies for each period
  - 1982-2012 is divided into six 5-year periods or three 10-year periods

Change in labor share and the change in concentration (manufacturing)

- Baseline: labor share represented by payroll divided by value added

	5-year changes			10-year changes		
	CR4 (1)	CR20 (2)	HHI (3)	CR4 (4)	CR20 (5)	HHI (6)
1 Baseline	-0.148 *** (0.036)	-0.234 *** (0.047)	-0.189 ** (0.096)	-0.135 *** (0.043)	-0.165 *** (0.058)	-0.173 * (0.096)

$* p \leq 0.10, ** p \leq 0.05, *** p \leq 0.01$

Change in labor share and the change in concentration (manufacturing)

- Broader measure of labor compensation: include employer contributions to fringe benefits such as private health insurance

	5-year changes			10-year changes		
	CR4 (1)	CR20 (2)	HHI (3)	CR4 (4)	CR20 (5)	HHI (6)
2 Compensation share of value added	-0.175 *** (0.046)	-0.264 *** (0.061)	-0.231 ** (0.121)	-0.143 ** (0.056)	-0.166 ** (0.076)	-0.193 (0.129)

$* p \leq 0.10, ** p \leq 0.05, *** p \leq 0.01$

Change in labor share and the change in concentration (manufacturing)

- The value-added measures measure in the Census does not reflect all intermediate service input. Use information from the KLEMS data to correct the measure for use of intermediate services.

	5-year changes			10-year changes		
	CR4 (1)	CR20 (2)	HHI (3)	CR4 (4)	CR20 (5)	HHI (6)
3 Deduct service intermediate from value added	-0.331 *** (0.062)	-0.517 *** (0.071)	-0.501 *** (0.176)	-0.269 *** (0.055)	-0.347 *** (0.066)	-0.313 (0.261)

$* p \leq 0.10, ** p \leq 0.05, *** p \leq 0.01$

Change in labor share and the change in concentration (manufacturing)

- A stringent robustness test: include a full set of industry dummies

	5-year changes			10-year changes		
	CR4 (1)	CR20 (2)	HHI (3)	CR4 (4)	CR20 (5)	HHI (6)
4 Industry dummies	-0.171 ***	-0.307 ***	-0.208 *	-0.198 ***	-0.275 ***	-0.219 *
	(0.042)	(0.053)	(0.118)	(0.065)	(0.093)	(0.129)

$* p \leq 0.10, ** p \leq 0.05, *** p \leq 0.01$

Change in labor share and the change in concentration (manufacturing)

- Trade effect: control for the growth in imports over value-added, and redefines industry concentration to include imports (treat each block of source countries for US imports as its own firm)

	5-year changes			10-year changes		
	CR4 (1)	CR20 (2)	HHI (3)	CR4 (4)	CR20 (5)	HHI (6)
6 Including imports (1992-2012)	-0.104 ** (0.045)	-0.327 *** (0.060)	-0.052 (0.174)	-	-	-

$* p \leq 0.10, ** p \leq 0.05, *** p \leq 0.01$

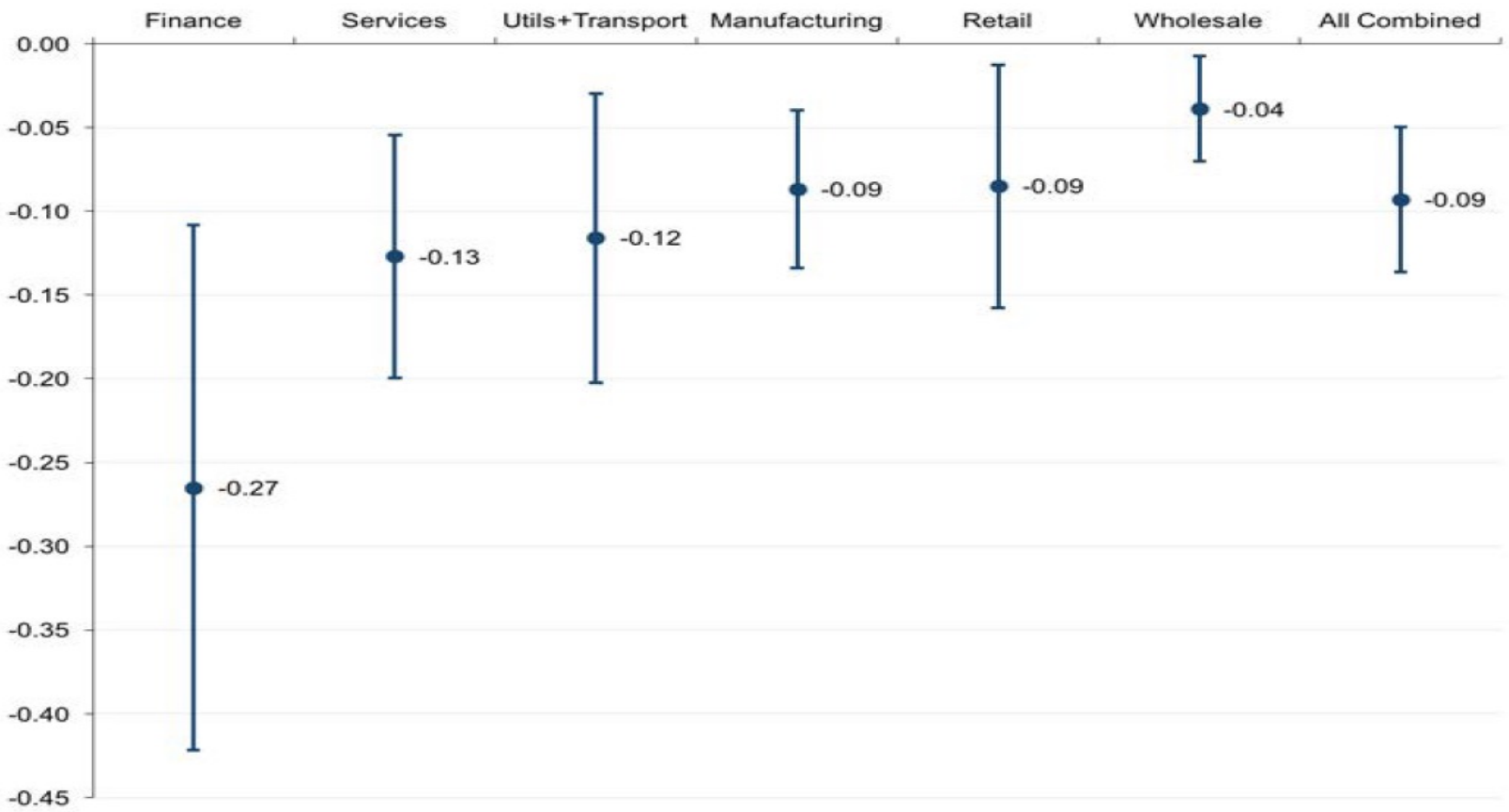
Change in labor share and the change in concentration (manufacturing)

- Concentration based on employment: the fraction of workers employed by the top largest firms to the total employment of the industry

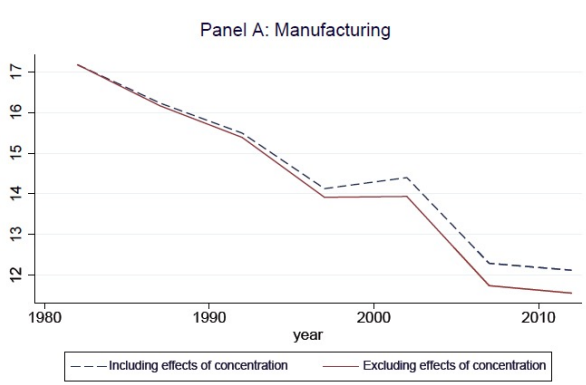
	5-year changes			10-year changes		
	CR4 (1)	CR20 (2)	HHI (3)	CR4 (4)	CR20 (5)	HHI (6)
7 Employment based concentration measure	0.048 (0.036)	0.039 (0.036)	0.195 ** (0.082)	0.024 (0.035)	0.032 (0.044)	0.081 (0.080)

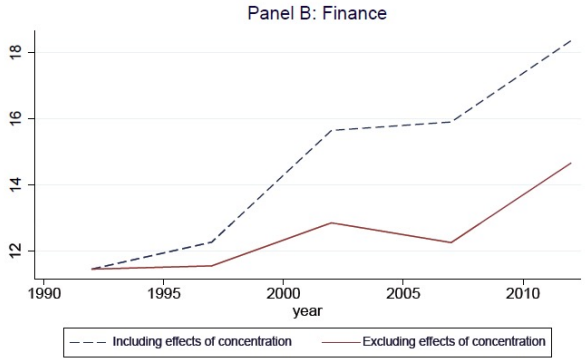
$* p \leq 0.10, ** p \leq 0.05, *** p \leq 0.01$

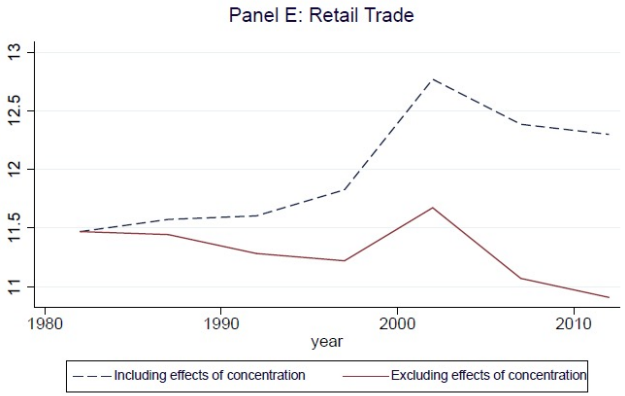
Concentration has a negatively impact on labor share across all six sectors

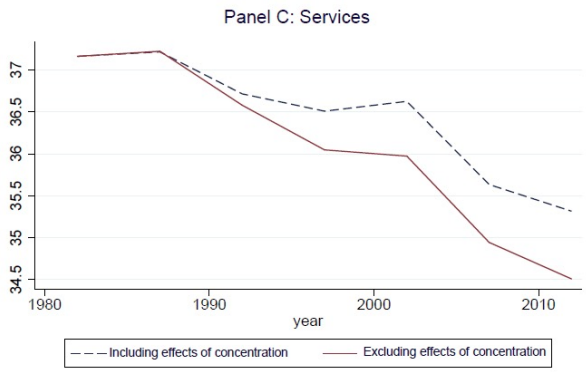


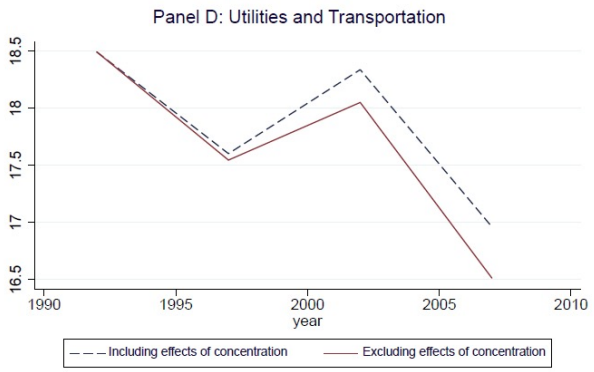
Magnitudes: how important is concentration in account for the total fall in labor share

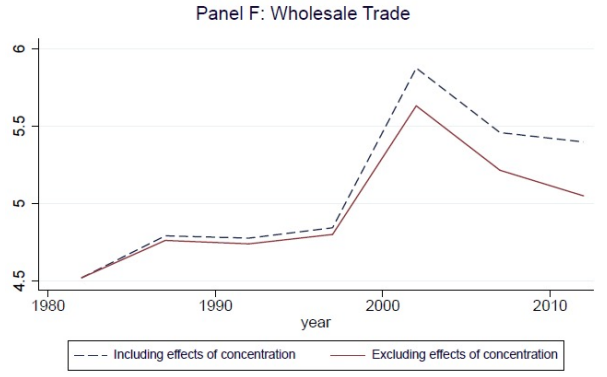












Decomposing changes in the labor share

- Olley and Pakes (1996) decomposition

$$S = \sum \omega_i S_i = \bar{S} + \sum(\omega_i - \bar{\omega})(S_i - \bar{S})$$

$$\Delta S = S_2 - S_1 = \Delta\bar{S} + \Delta[\sum(\omega_i - \bar{\omega})(S_i - \bar{S})]$$

$\omega_i = P_i Y_i / \sum P_i Y_i$ is firm i's share of value-added in an industry

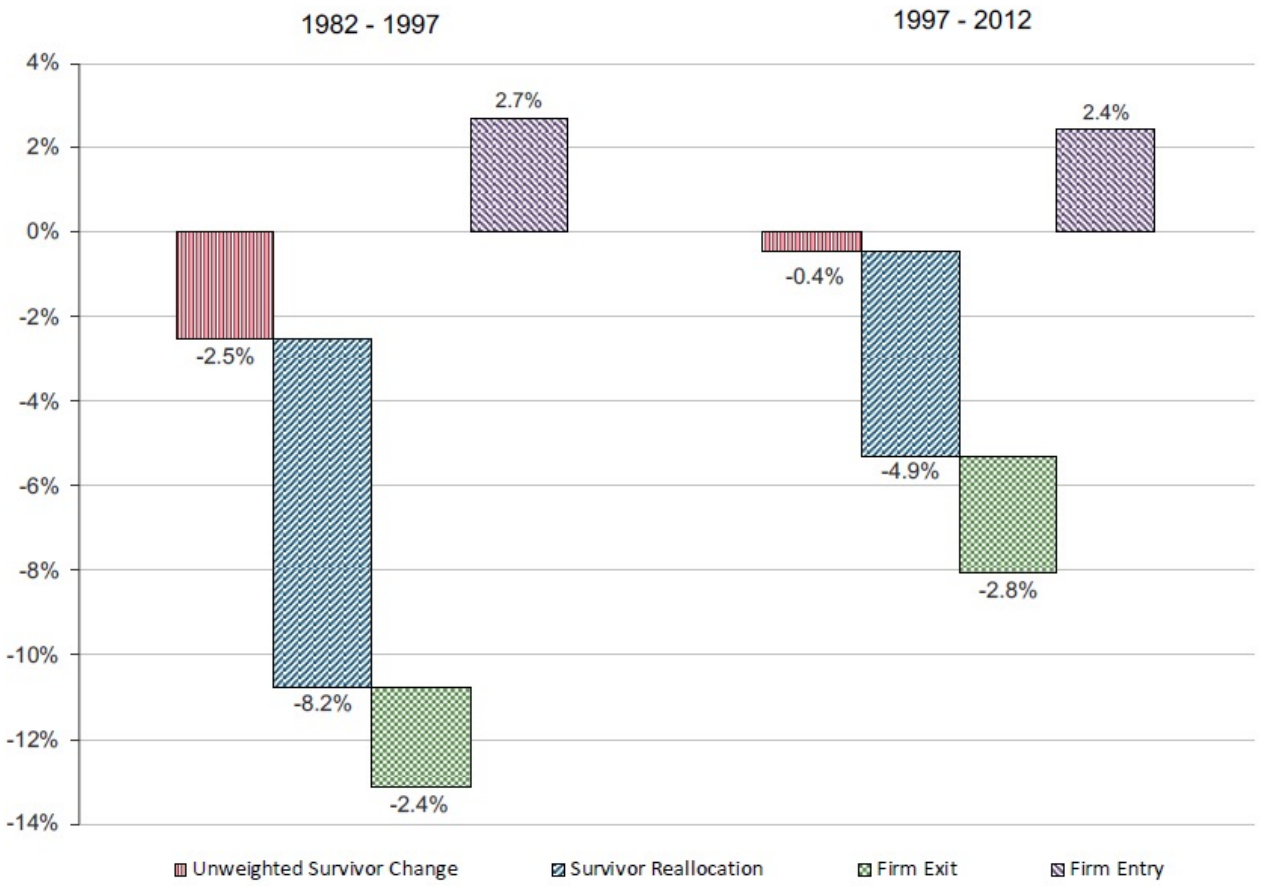
$\bar{S}$ is the unweighted mean labor share of all firms

$\bar{\omega}$ is the unweighted mean value-added share

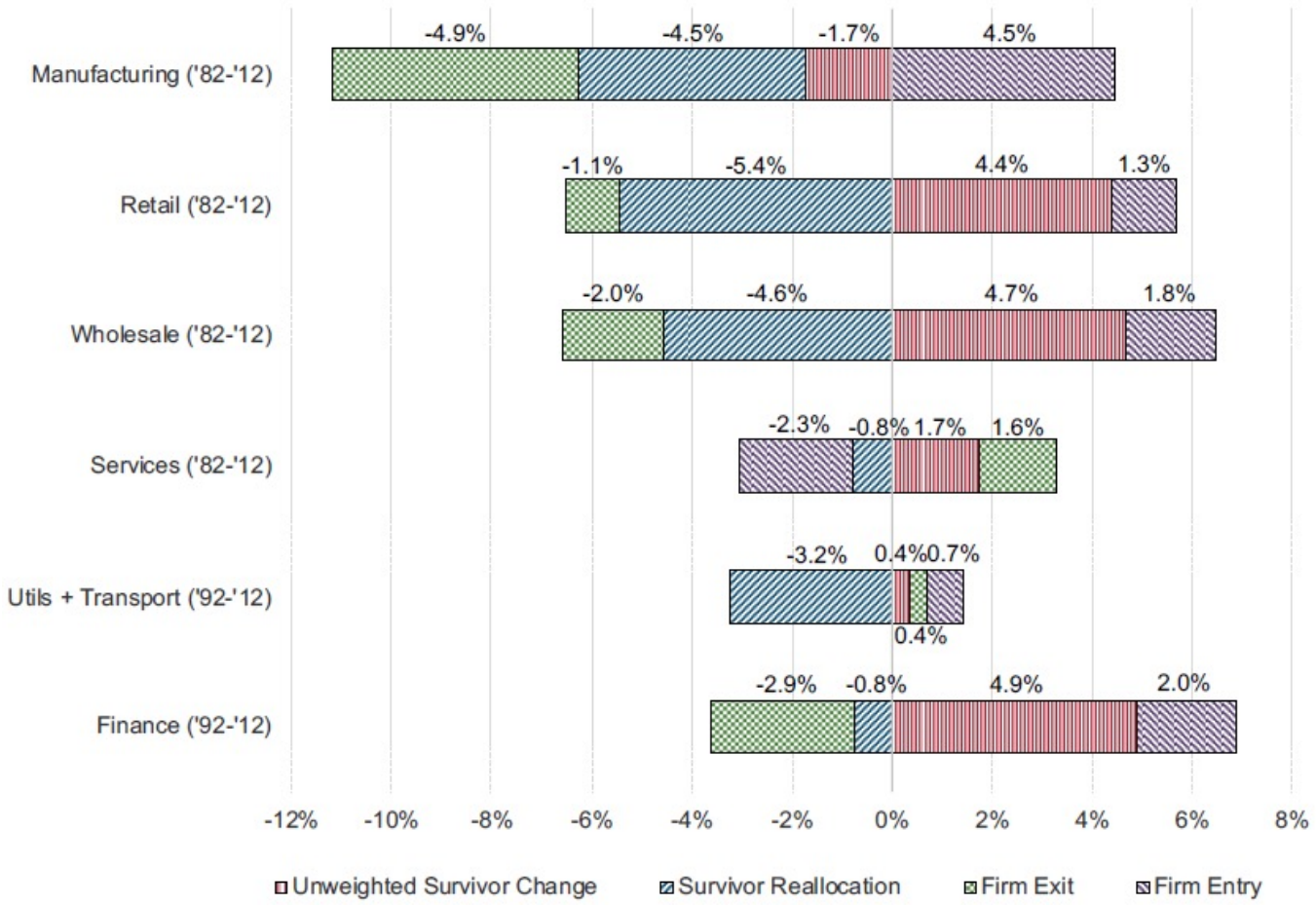
- Melitz and Polanec (2015) decomposition

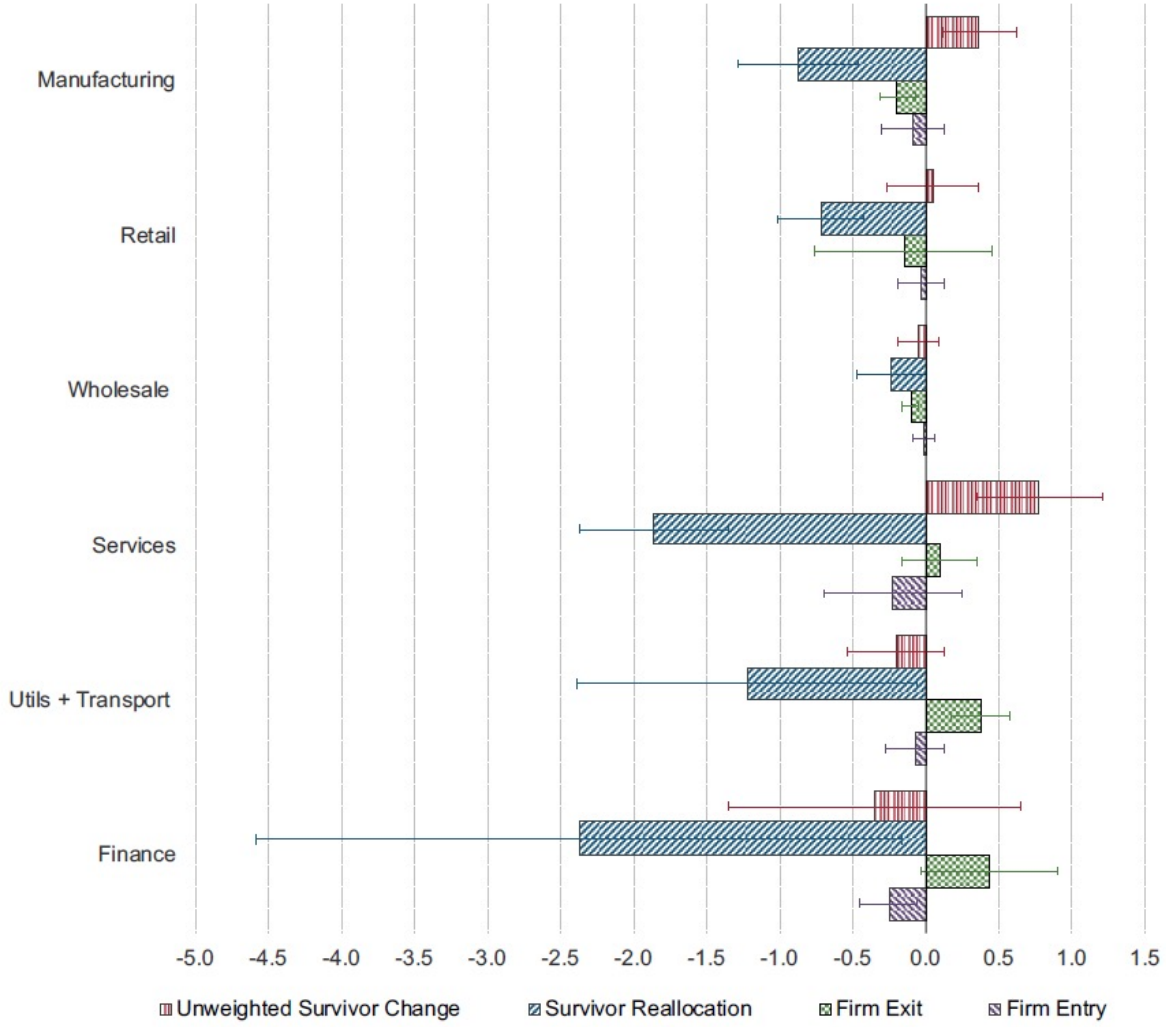
$$\Delta S = S_2 - S_1 = \underbrace{\Delta\bar{S}}_{\text{within component}} + \underbrace{\Delta[\sum(\omega_i - \bar{\omega})(S_i - \bar{S})]}_{\text{between component (reallocation)}} + \underbrace{\omega_{X,1}(S_{S,1} - S_{X,1})}_{\text{exit component}} + \underbrace{\omega_{E,2}(S_{E,2} - S_{S,2})}_{\text{entrance component}}$$

Reallocation was the main driver of the fall in manufacturing



Reallocation plays an important role in all six sectors





The reallocation component of the fall in the labor share is related to rising concentration

International evidence from OECD countries

	5 Year Change (1)	10 Year Change (2)	Obs (3)
Italy	-0.124 ** (0.052)	-0.200 ** (0.095)	53
Estonia	-0.140 (0.197)	-0.125 (0.084)	53
Portugal	-0.083 (0.063)	-	53
Slovenia	-0.106 (0.140)	-0.101 (0.187)	53
Slovakia	-0.153 ** (0.060)	-0.343 *** (0.100)	52
Finland	-0.208 *** (0.059)	-0.181 ** (0.076)	53
Belgium	-0.008 (0.053)	0.330 * (0.176)	53

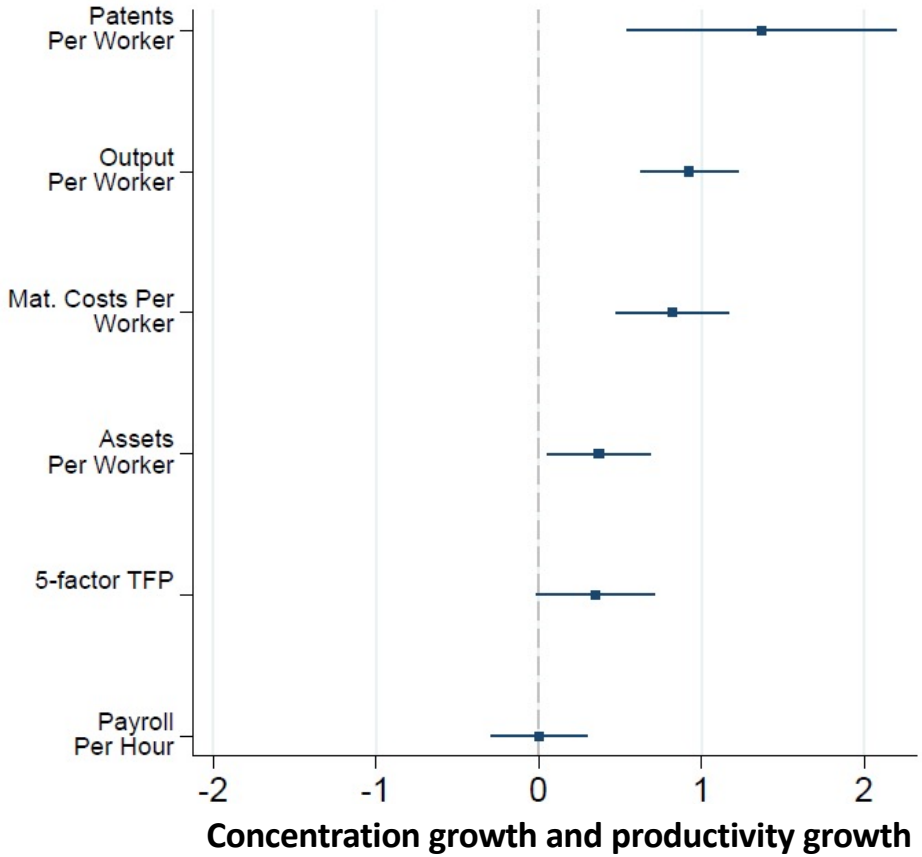
International evidence from OECD countries

	5 Year Change (1)	10 Year Change (2)	Obs (3)
Germany	-0.091 (0.060)	-0.151 (0.094)	44
Poland	0.007 (0.076)	-	53
France	0.325 (0.255)	-0.183 ** (0.087)	53
Latvia	-0.039 (0.108)	-	52
Romania	-0.137 (0.096)	-	53
Austria	-0.297 *** (0.098)	-0.275 ** (0.108)	37
Lithuania	-0.124 (0.156)	-0.045 (0.201)	53

What explains the rise in concentration?

Technology

- Concentration is more prevalent in industries exhibiting rapid technological advances
- A slowdown of technological diffusion could be a reason for the growth of superstar firms



What explains the rise in concentration?

Trade

- Offshoring of the labour-intensive manufacturing may have contributed to the falling domestic labor share during 1990s and 2000s
- Industries more exposed to Chinese imports had greater falls in sales, payroll and value-added than other sectors

Table A.10: The Labor Share and the Rise in Chinese Imports

Δ Years	ln(Sales) (1)		ln(Payroll) (2)		ln(Value-Added) (3)		CR4 (4)		CR20 (5)		HHI (6)		Labor Share (7)		Payroll-to-Sales (8)	
A. OLS Estimates																
5 Year Δ's	-1.98	**	-0.46	*	-0.79	**	1.16		0.341		1.18		6.64	**	2.28	
1992-2012	(0.77)		(0.28)		(0.35)		(4.39)		(4.12)		(2.00)		(2.98)		(1.82)	
10 Year Δ's	-2.55	***	-0.83	**	-1.36	***	-4.89		-1.80		-0.85		12.38	***	6.85	***
1992-2012	(0.76)		(0.34)		(0.43)		(7.91)		(7.30)		(3.64)		(2.98)		(1.14)	
5 Year Δ's	-2.66	***	-0.66	**	-0.67	**	16.58	*	7.36	**	11.17	**	-1.44		-1.10	
1992-2007	(1.00)		(0.30)		(0.26)		(9.23)		(3.25)		(5.39)		(2.98)		(1.12)	

Conclusions

- This paper presents a new “superstar firm” explanation for the widely remarked fall in the labor share of GDP, though the work of this paper is “descriptive and suggestive” rather than causal.
- Why the market environment seems becoming increasingly “winner takes all”? Technological barriers or “rigged economy”?
- Linking the rise of superstar firms and the fall of the labor share with the trends in inequality between employees should be an important avenue of future research.