

# Lecture 10: The Decline in the Labor Share

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ECON 416-1

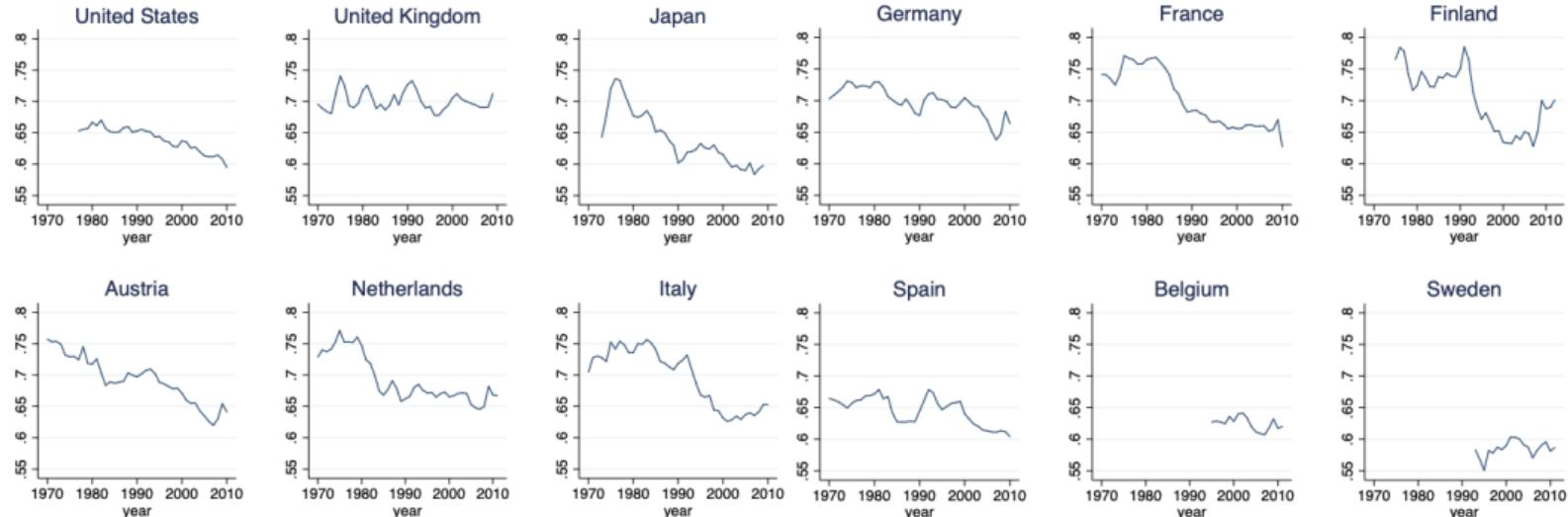
## Roadmap

- The first part of the course focused on how microeconomic shocks affect aggregate efficiency, welfare, measured real GDP, aggregate profits, and factor income shares.
- Goals: (i) understand forces underlying past trends and (ii) evaluate counterfactuals.
- Next: We will take up two trends that have become central puzzles in macro.
- Grossman and Oberfield (2022): *“A search of the Google Scholar website for the joint appearance of the phrase ‘labor share’ and the word ‘decline’ generates a list of more than 12,000 books, articles, and papers written in the last decade alone.”*

## The Relative Constancy of the Labor Share

- Keynes (1939): “*The stability of the proportion of the national dividend accruing to labor, irrespective apparently of the level of output as a whole and of the phase of the trade cycle... is one of the most surprising, yet best-established, facts in the whole range of economic statistics, both for Great Britain and the United States.*”
- Kaldor (1957): “*It was known for some time that the share of wages and the share of profits in the national income has shown a remarkable constancy in ‘developed’ capitalist economies of the United States and the United Kingdom since the second half of the nineteenth century.*”
  - “*Existing theories are unable to account for such constancies except in terms of particular hypotheses (unsupported by any independent evidence), such as the unity-elasticity of substitution between Capital and Labour, or more recently, constancy of the degree of monopoly or the ‘neutrality’ of technical progress.*”

# Decline in labor share across many countries



Source: Autor et al. (2020), using EU KLEMS data from 2012.

- Karabarbounis & Neiman (2014) collected this evidence from across many countries.

# The robust(?) global(?) decline in the labor share



FIGURE I  
Declining Global Labor Share

Source: Karabarbounis and Neiman (2014).

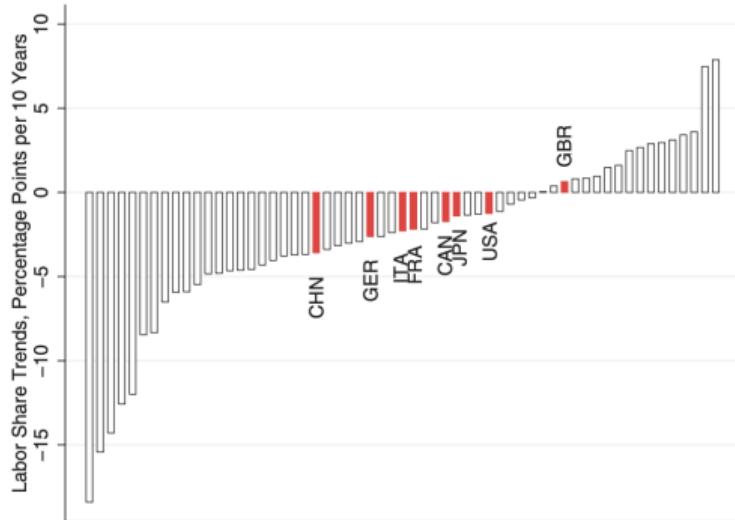


FIGURE III  
Estimated Trends in Country Labor Shares

The figure shows estimated trends in the labor share for all countries in our data set with at least 15 years of data starting in 1975. Trend coefficients are reported in units per 10 years (i.e., a value of -5 means a 5 percentage point decline every 10 years). The largest eight economies are shaded.

# The robust(?)<sup>1</sup>, global(?) decline in the labor share

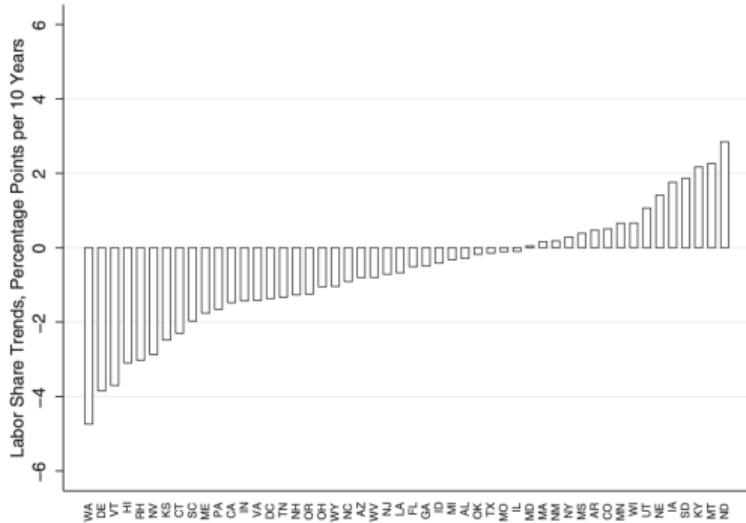


FIGURE IV

Estimated Trends in U.S. State Labor Shares

The figure shows estimated trends in the labor share for 51 U.S. states plus the District of Columbia in BEA data starting in 1975. Trend coefficients are reported in units per 10 years (i.e., a value of -5 means a 5 percentage point decline every 10 years).

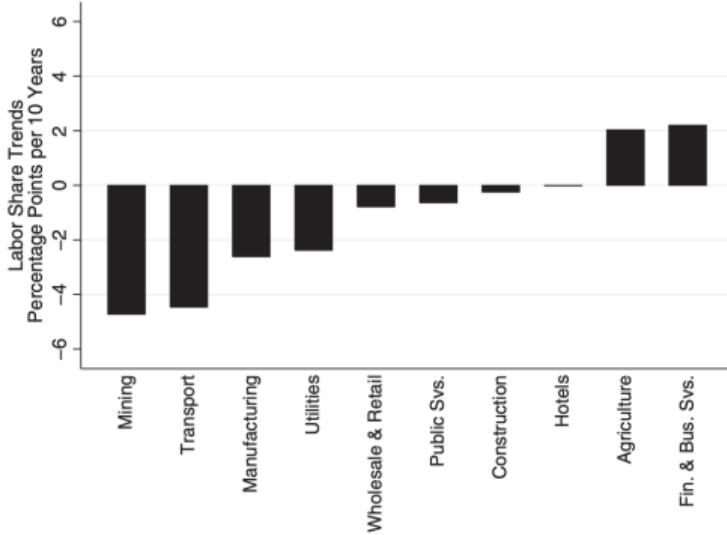


FIGURE V

Estimated Trends in Industry Labor Shares

The figure shows estimated trends in the labor share for 10 non-overlapping industries in the KLEMS data starting in 1975. Trend coefficients are reported in units per 10 years (i.e., a value of -5 means a 5 percentage point decline every 10 years).

Source: Karabarbounis and Neiman (2014).

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Will the real labor share please stand up?

Disaggregated production approach: Solow (1958)

Micro evidence

## Defining the labor share

- In national accounts,

$\text{Gross Value Added} = \text{Gross Output} - \text{Intermediate Inputs}$

$= \text{Labor Income} + \text{Taxes} - \text{Subsidies} + \text{Gross Operating Surplus}.$

- Subtract off taxes/subsidies on production to get gross value added at factor cost.

$$\text{Labor Share} = \frac{\text{Labor Income}}{\text{Gross Value Added} - (\text{Taxes} - \text{Subsidies})}.$$

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- Subtract off taxes/subsidies on production to get gross value added at factor cost.

$$\text{Labor Share} = \frac{\text{Labor Income}}{\text{Gross Value Added} - (\text{Taxes} - \text{Subsidies})}.$$

- Note: *Initial* distribution of income.

- Labor Income  $\Rightarrow$  wages & salaries + supplementary benefits.
  - Sizeable share will be paid to government in taxes.
- Gross Operating Surplus  $\Rightarrow$  consumption of fixed capital, proprietors' income, corporate profits, business current transfer payments.
  - Corporate profits will include inventory adj., interest payments to debt and equity investors.
  - Share of remaining corporate / proprietor income will be paid to govt in taxes.

## Defining the labor share: Gross vs. net

- Alternatively, we could define value added net of depreciation,

Net Value Added = Gross Output – Intermediate Inputs – Depreciation.

- Is labor share of net value added higher or lower than of gross value added?

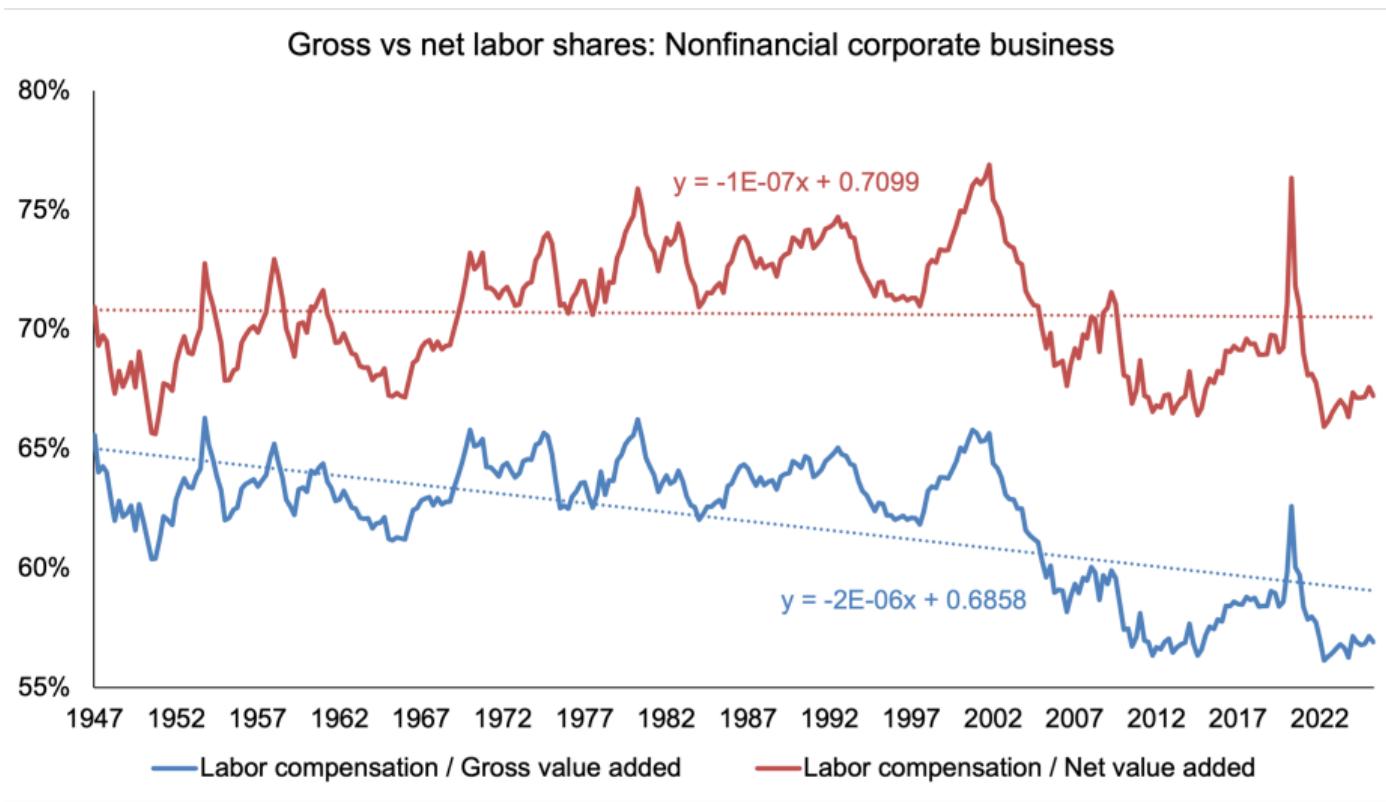
## Defining the labor share: Gross vs. net

- Alternatively, we could define value added net of depreciation,

$$\text{Net Value Added} = \text{Gross Output} - \text{Intermediate Inputs} - \text{Depreciation}.$$

- Is labor share of net value added higher or lower than of gross value added?
- Higher depreciation rate → larger gross capital income.
- Which is more relevant, labor share of gross value added or net value added?

## Defining the labor share: Gross vs. net



- Note: Nonfinancial corporate sector. We will circle back to this soon...

## Bridgman (2018): “Is Labor’s Loss Capital’s Gain?”

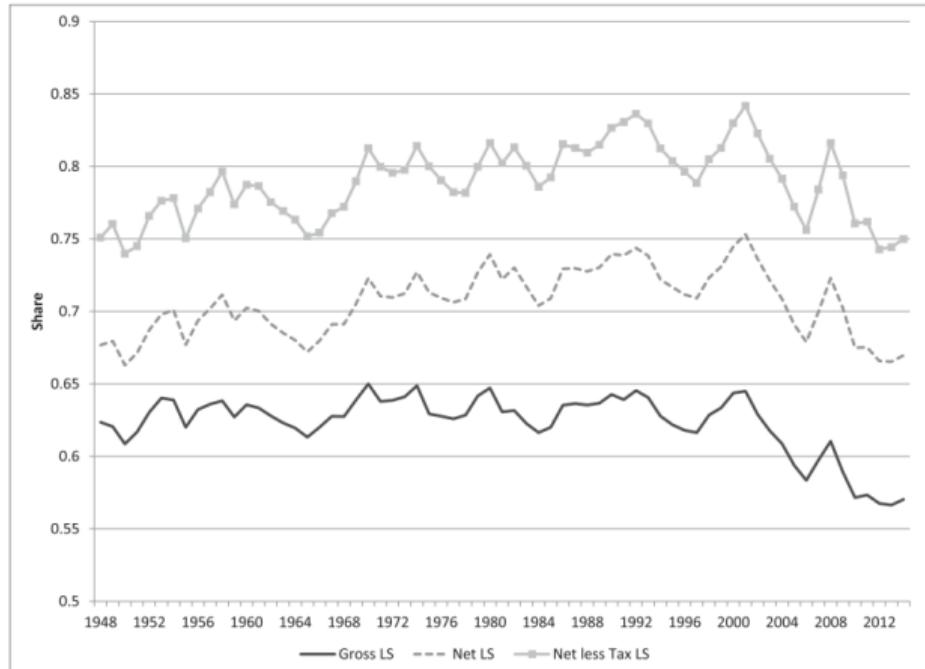


FIGURE 1. US corporate sector labor share, 1948–2014.

- Bridgman defines Gross LS as

$$\frac{\text{LaborIncome}}{\text{Gross VA}}.$$

- Net LS is

$$\frac{\text{LaborIncome}}{\text{Gross VA} - \text{Depreciation}}.$$

- Net less Tax LS is

$$\frac{\text{LaborIncome}}{\text{Gross VA} - \text{Depreciation} - \text{Taxes}}.$$

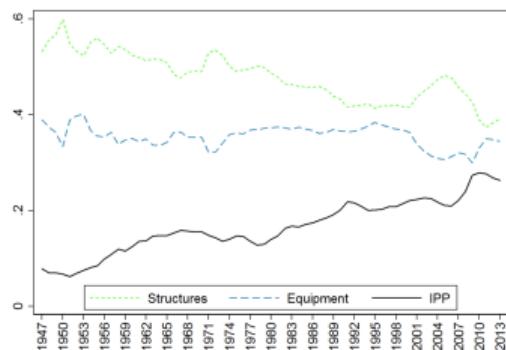
## Bridgman (2018): “Is Labor’s Loss Capital’s Gain?”

**TABLE 1.** Percentage point decline in labor shares

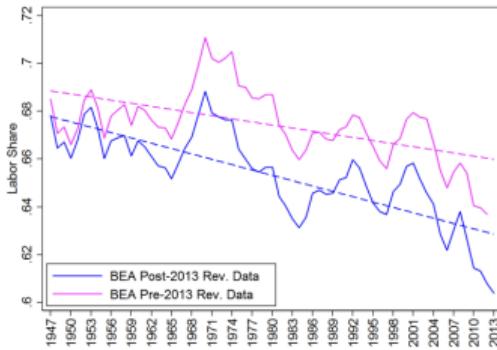
Country (years)	Gross	Net	Net less Taxes
Proprietors’ income adjustment			
Canada (1961–2011)	2.3	1.6	2.9
France (1978–2014)	5.5	3.7	3.2
Ireland (1995–2014)	9.6	9.1	11.4
Japan (1980–2009)	2.5	-4.4	-7.3
Sweden (1980–2015)	6.1	4.5	2.6
United Kingdom (1950–2014)	11.3	9.4	9.2
No proprietors’ income adjustment			
Austria (1976–2012)	4.8	3.9	5.7
Germany (1991–2015)	3.2	2.4	1.5
Italy (1980–2010)	6.0	4.9	-0.6
The Netherlands (1969–2012)	2.0	-0.3	-2.4

# Defining the labor share: Capitalizing intellectual property products

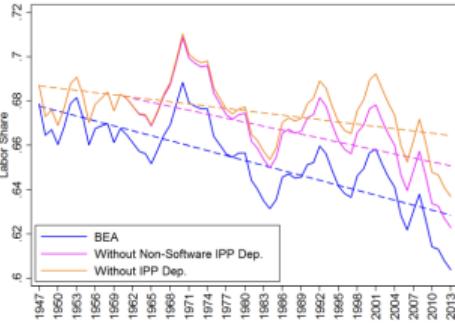
Figure 2: Structures, Equipment and IPP Investment Shares, BEA 1947-2013



(a) Labor Share, US 1947-2013



(b) Labor Share Net of Software and non-Software IPP Depreciation



Source: Koh, Santaeulàlia-Llopis, and Zheng (2020).

- Intellectual property (IPP) previously treated as intermediate nondurable consumption.
- Capitalization in 1999 and 2013 revisions treats IPP as investments.
- Increases value added by amount equal to gross investment, and all to capital income.

## Defining the labor share: Mixed income

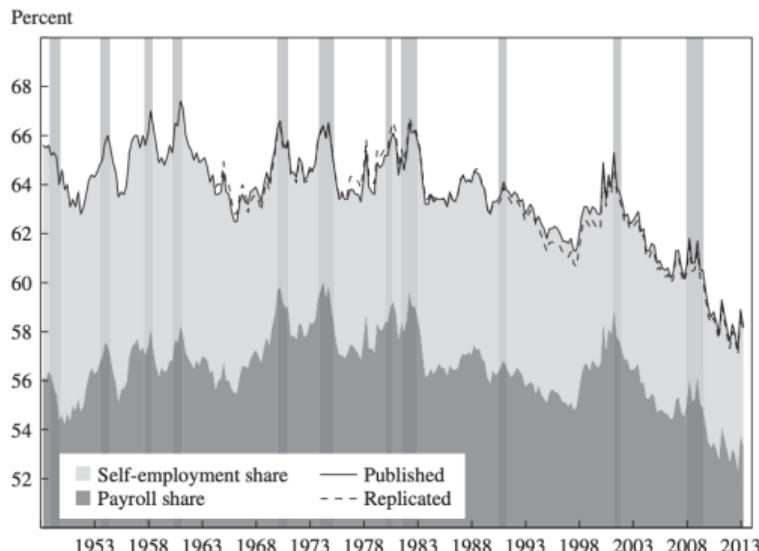
- What about income earned by the self-employed?
- Proprietors' income recorded as part of gross operating surplus.
  - How do we disentangle returns to labor vs. capital investment of self-employed?
- Age-old issue: dramatic rise in labor share from 1850–1910 due to transition from entrepreneurship (farms) to formal labor income.

Period and Source	Employee Compensation	Entrepreneurs <sup>a</sup>		Other Property	Total Labor	Total Property
		Labor	Property			
<b>A. King's data <sup>b</sup></b>						
1850–60	36.5	41.6			78.1	21.9
1860–70	42.9	35.8			78.7	21.3
1870–80	50.1	26.4			76.5	23.5
1880–90	52.5	23.0			75.5	24.5
1890–1900	50.4	27.3			77.7	22.3
1900–10	47.2	28.8			76.0	24.0

Figure: Johnson (1954).

# Defining the labor share: Mixed income

Figure 1. Labor Share, Payroll Share, and Replicated Labor Share in U.S. Nonfarm Business Sector, 1948–2013

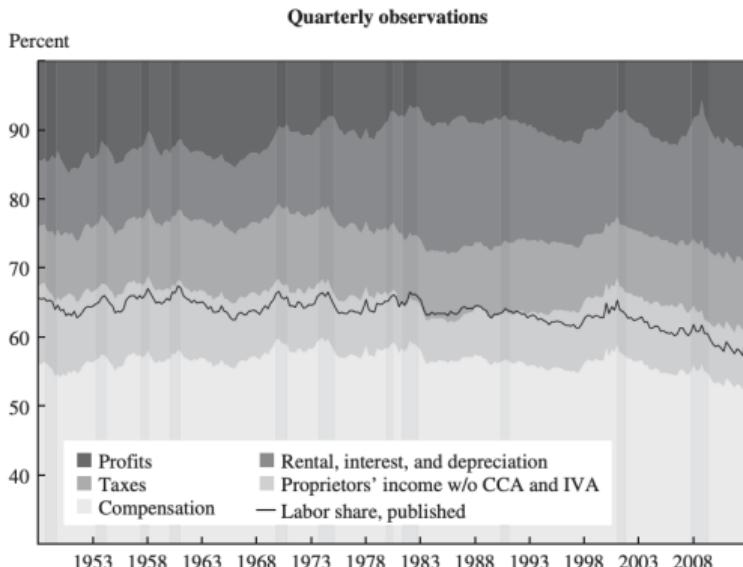


Source: Bureau of Labor Statistics, Bureau of Economic Analysis, and authors' calculations.

Source: Elsby, Hobijn, and Sahin (2013).

- BEA assumes avg. hourly comp. for self-employed is same as those on payroll.

Figure 2. Composition of Nonfarm Business Sector Income, 1948–2013

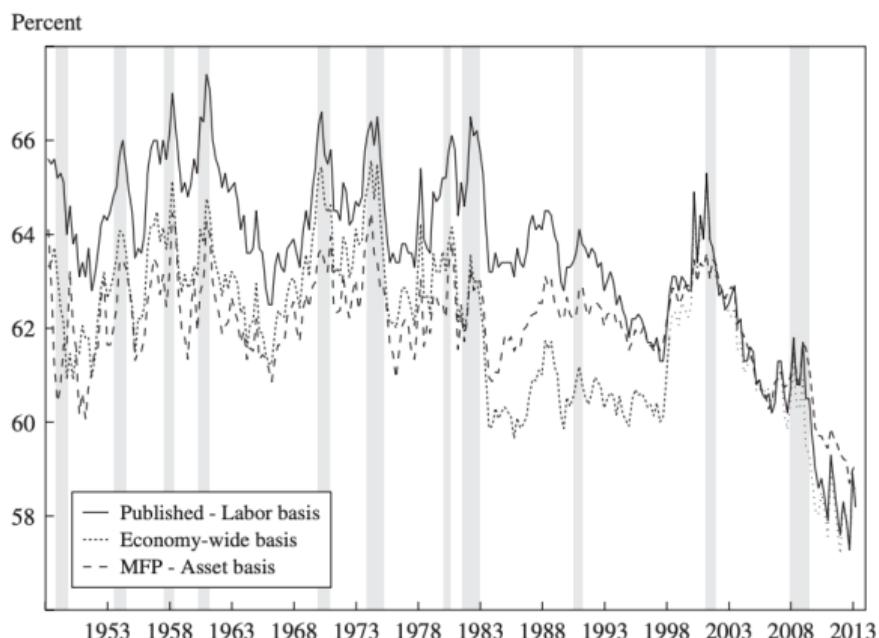


Source: Bureau of Economic Analysis and authors' calculations.

Note: Share of gross value added of NFB sector.

# Defining the labor share: Mixed income

Figure 3. Alternative Measures of Labor Share Based on Three Estimates of Self-Employment Labor Income, 1948–2013



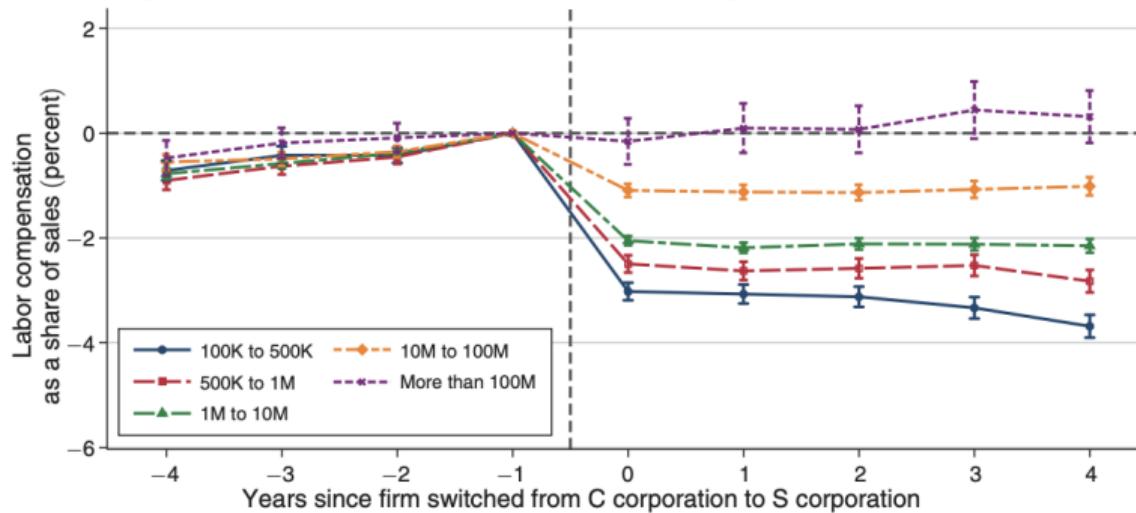
Source: Bureau of Labor Statistics, Bureau of Economic Analysis, and authors' calculations.

Source: Elsby, Hobijn, and Sahin (2013).

- Alternatives (Kravis 1959):
  - 1. Assume user cost of capital is the same for self-employed vs. payroll-employed. ("Asset basis")
  - 2. Assume labor share in entrepreneurial income is same as labor share for rest of economy.
- Either approach reduces decline in labor share by  $\approx 1/3$ .
- One solution: Sidestep by focusing on corporate sector?

## Defining the labor share: Mixed income

Panel A. Organizational form switches reveal recharacterized wages

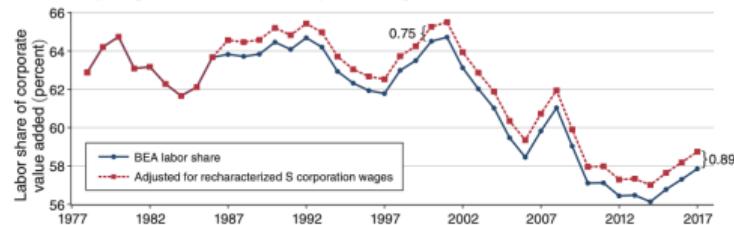


Source: Smith, Yagan, Zidar, and Zwick (2022).

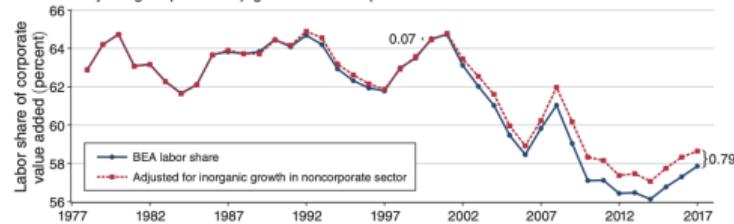
- 1986 Tax Reform Act lowered personal income tax, raised tax on C-corps.
- Registering as “pass-through entity” (S-corp) allows owners to avoid C-corp taxes.
- Had firms remained C-corps, owners would have continued to pay themselves as labor income to avoid corporate tax.

# Defining the labor share: Mixed income

Panel A. Adjusting for recharacterized S corporation wages



Panel B. Adjusting for partnership growth in noncorporate sector



Panel C. Combining both adjustments

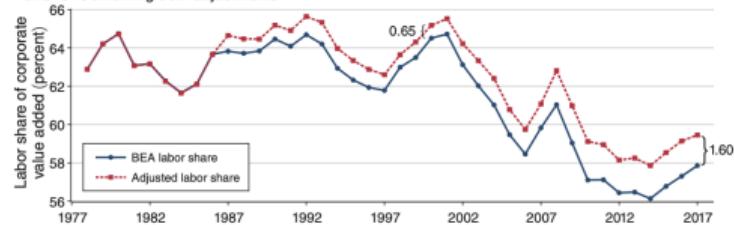


FIGURE 3. ADJUSTED CORPORATE-SECTOR LABOR SHARES (1978–2017)

Source: Smith, Yagan, Zidar, and Zwick (2022).

- Switching S-corps back to C-corps reduces decline by 0.89pp.
- Accounting for increased partnerships (financial, legal, consulting services) reduces decline 0.79pp.
- Explains (another!) 1/3 of decline in labor share.

## Defining the labor share: Which sectors to include?

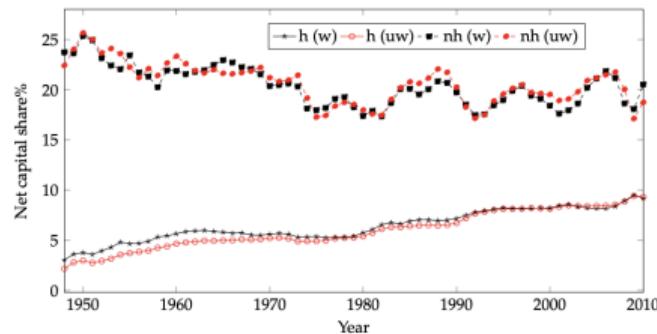


Figure 3: Components of average net capital share of private domestic value added for G7 countries: housing (h) versus other (nh) sectors, weighted (w) and unweighted (uw).

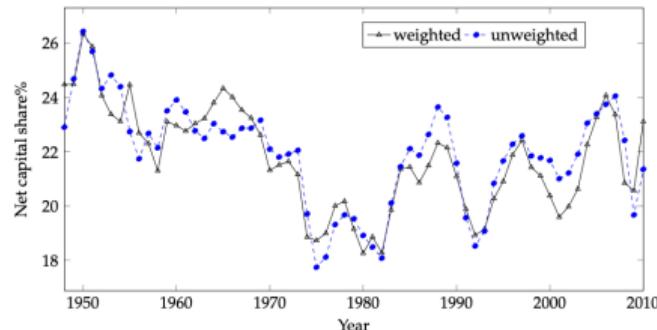


Figure 4: Average net capital shares of corporate sector value added for G7 countries.

Source: Rognlie (2015)

- Rognlie (2015) points out that nearly 1/3 of net capital income in G7 countries is housing income.
- Housing ownership is broad-based — is rising housing share informative about inequality?
- Moreover, housing income based on imputed rents paid by homeowners to themselves.
- Little sign of systematic rise in corporate sector.

## Defining the labor share: Summary

- Grossman and Oberfield (2022): “*A vast literature purports to explain the recent decline in the share of labor in national income. Unfortunately, it explains the phenomenon many times over. If we sum the amounts explained by the various mechanisms proposed in the literature, the total easily comes to three or four times the amount by which the labor share actually fell.*”
- Gross vs. net income, treatment of intellectual property, mixed income, owner-occupied housing... And this is just measurement, not underlying mechanisms!

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- Gross vs. net income, treatment of intellectual property, mixed income, owner-occupied housing... And this is just measurement, not underlying mechanisms!
- Grossman and Oberfield (2022): “*We conclude that, after more than 12,000 research projects, we still do not have a firm grip on why the labor share in national income has fallen and whether that decline is likely to be temporary, permanent, ongoing, leveling out, or reversed.*”

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## Solow (1958): A Skeptical Note on the Constancy of Relative Shares

- Before the recent excitement about its decline, Solow was skeptical of the constancy of the labor share.
  - “Ever since the investigations of Bowley and Douglas it has been widely believed that the share of the national income accruing to labor is one of the great constants of nature, like the velocity of light or the incest taboo. [...] The object of this paper is to suggest that, like most miracles, this one may be an optical illusion.”*
- Argument: Labor share is stable relative to what benchmark?
- Suppose we have  $N$  industries, with variable labor shares.

$$\Psi_{iL} = \bar{\Psi}_{iL} + \varepsilon_i, \quad \varepsilon_i \sim \mathcal{N}(0, \sigma_i^2).$$

- Labor share of overall economy is

$$\Lambda_L = \sum_i \lambda_i \Psi_{iL}.$$

## Solow (1958): A Skeptical Note on the Constancy of Relative Shares

- Suppose shares  $\lambda_i$  are fixed, and  $\varepsilon_i$  are i.i.d. with variance  $\sigma_i^2$ .

$$\Lambda_L = \sum_i \lambda_i \Psi_{iL}, \quad \sigma^2 = \sum_i \lambda_i^2 \sigma_i^2.$$

- What could explain why  $\Lambda_L$  has lower variance than implied by  $\sigma^2$ ?

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- What could explain why  $\Lambda_L$  has lower variance than implied by  $\sigma^2$ ?
- Option 1: GE force causes  $\varepsilon_i$  to be negatively correlated across industries.
  - Offsetting changes in  $\Psi_{iL}$  across industries.

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- What could explain why  $\Lambda_L$  has lower variance than implied by  $\sigma^2$ ?
- Option 1: GE force causes  $\varepsilon_i$  to be negatively correlated across industries.
  - Offsetting changes in  $\Psi_{iL}$  across industries.
- Option 2: GE reallocations of value-add to low- $\Psi_{iL}$  sectors when labor shares rise.
  - $\lambda_i$ 's changing endogenously due to some macro force.
- Either could explain relative constancy of aggregate labor share.

## Solow (1958): A Skeptical Note on the Constancy of Relative Shares

- Both options have testable predictions:
- Option 1: If  $\varepsilon_i$  negatively correlated across industries,  $\hat{\sigma}^2 < \sum_i \lambda_i^2 \hat{\sigma}_i^2$ .
- Option 2: If  $\lambda_i$  changes offset aggregate movements,  $\sum_i \lambda_i^2 \Psi_{iL} < \sum_i \bar{\lambda}_i^2 \Psi_{iL}$ .

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- Solow (1958) uses data from different sectors and different mfg. industries.
- Across sectors,  $\sum_i \lambda_i^2 \Psi_{iL} = 0.0007$ ,  $\sum_i \bar{\lambda}_i^2 \Psi_{iL} = 0.0008$ .
- Across mfg. industries,  $\sum_i \lambda_i^2 \Psi_{iL} = 0.00028$ ,  $\sum_i \bar{\lambda}_i^2 \Psi_{iL} = 0.00036$ .

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- Across mfg. industries,  $\sum_i \lambda_i^2 \Psi_{iL} = 0.00028$ ,  $\sum_i \bar{\lambda}_i^2 \Psi_{iL} = 0.00036$ .
- Across mfg. industries,  $\hat{\sigma}^2 = 0.00028$ ,  $\sum_i \lambda_i^2 \hat{\sigma}_i^2 = 0.00007$ .
- If anything, aggregate labor share is way too volatile relative to i.i.d. benchmark!

## Solow (1958): A Skeptical Note on the Constancy of Relative Shares

- Why the positive correlation?
- Suppose each sector buy labor and capital inputs from shared markets, and each has some elasticity of substitution of  $\theta_i$ . *"If nearly all elasticities of substitution are on the same side of unity, then the wage shares will go up and down together in nearly all industries and there will be strong positive correlation. If elasticities of substitution are evenly divided on both sides of unity, there will be two groups of industries whose wage shares will move in opposite phase. Whether the net result is to increase or reduce the variance of the aggregate wage share [...] will depend in a complicated way on the arrangement of weights and elasticities."*

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- Admittedly, Solow's argument is largely about short-run fluctuations.
- Argues that even if aggregate elasticity of substitution were, say, 2/3 or 1.5, the degree of capital accumulation would imply very slight labor share changes.

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## Micro data: An accounting approach

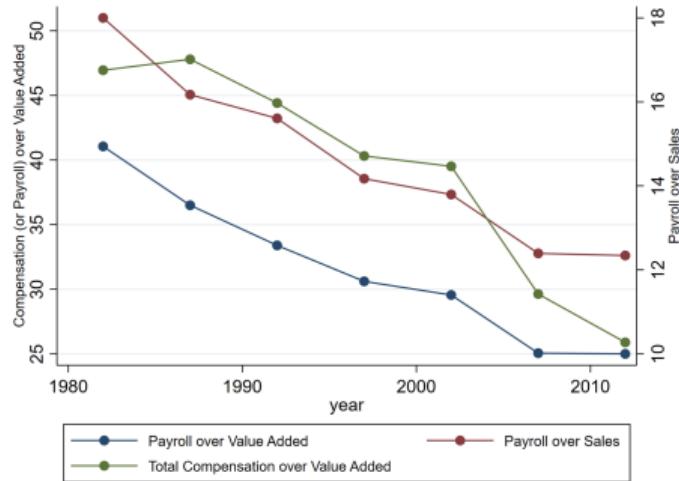
- Many mechanisms from speculating about the time series.
- Sometimes bring additional cross-industry or cross-country data to bear.
- Autor et al. (2020) and Kehrig and Vincent (2021) differ in that they attempt to “fully account” for the decline in the labor share.
- Autor, Dorn, Katz, Patterson, and Van Reenen (2020): *“Our micro-level analysis is distinct from most existing empirical evidence that is largely based on macroeconomic and industry-level variation. More aggregate approaches, while valuable in many dimensions, obscure the distinctive implications of competing theories, particularly the contrast between models implying heterogeneous changes (such as our superstar firm perspective) compared to homogeneous changes in the labor share across firms within an industry.”*

## Autor et al. (2020) theoretical framework

- Autor et al. (2020) model broadly accords with “Darwinian” reallocations we studied.
- Non-CES demand with Marshall’s Second Law and a choke price.
- Lower choke price (“tougher competition”) leads to lower markups within firm.
- However, reallocations across firms can increase aggregate markup.
- Depends on whether productivity distribution is thicker- or thinner-tailed than Pareto.

# Decline in manufacturing labor share

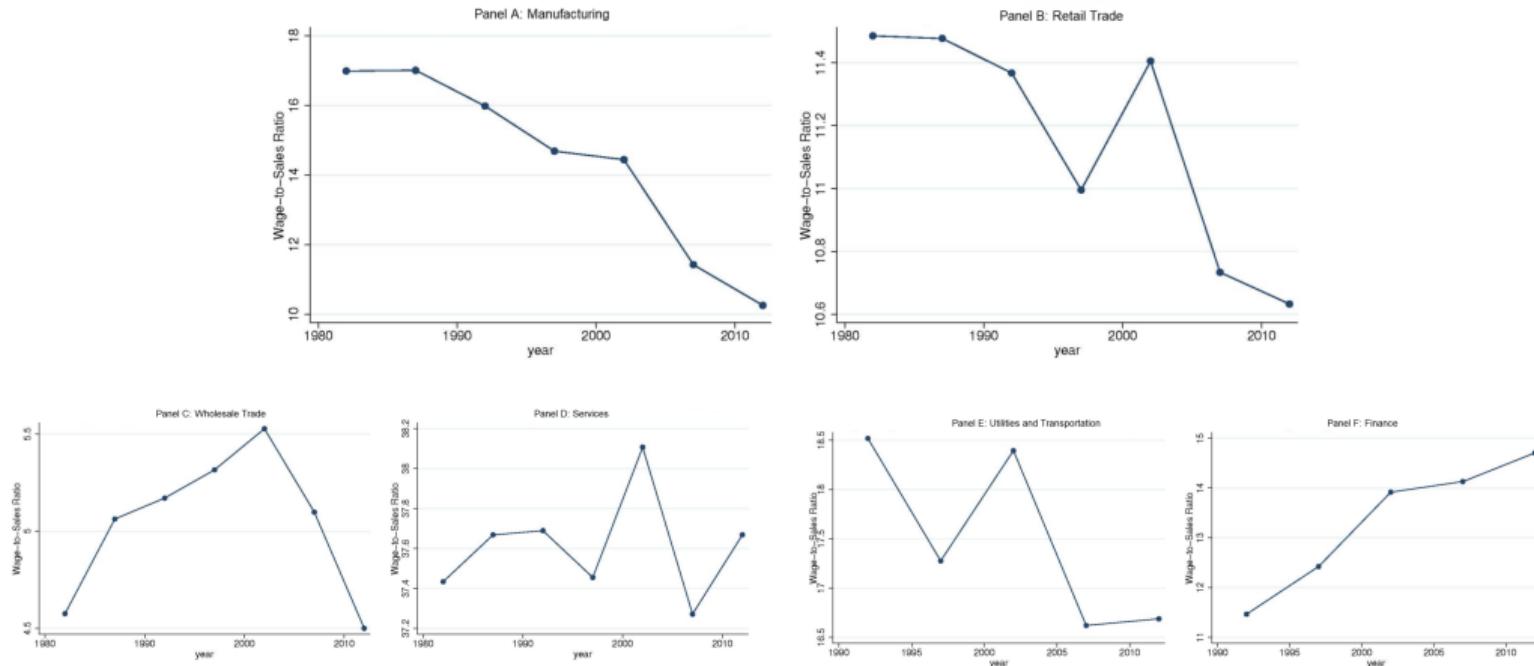
Figure 2: The Labor Share in Manufacturing



- Despite ambiguity about overall corporate net labor share, manufacturing labor share seems to feature a robust decline.
- (We will see an even more pronounced version from Kehrig and Vincent, 2021).

**Notes.** This figure plots the aggregate labor share in manufacturing from 1982-2012. The green circles represent the ratio of wages and salaries (payroll) to value-added (plotted on the left axis). The red diamonds include a broader definition of labor income and plots the ratio of wages, salaries and fringe benefits (compensation) to value-added (also plotted on the left axis). The blue squares show wages and salaries re-normalized by sales rather than value-added (plotted on the right axis using a separate scale).

# Decline in labor share: All sectors



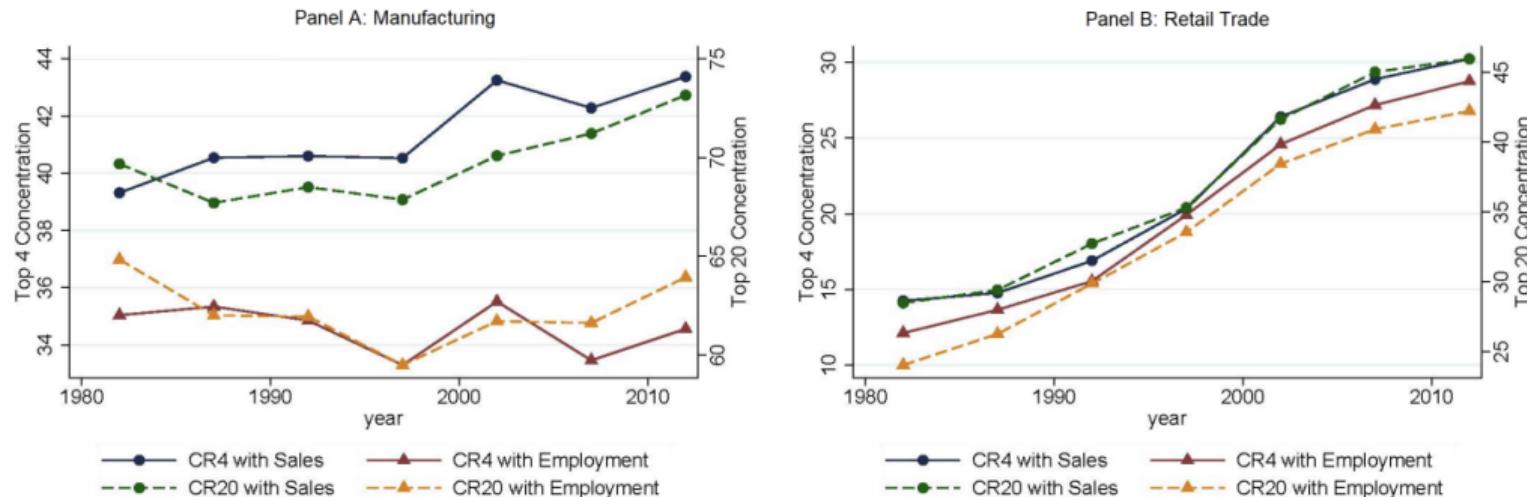
- “The 1997–2002 period stands out as a notable deviation.”
- Finance? For banks, BEA uses spread btwn lending and deposit rates as value-add.

## Autor et al. (2020): Seven patterns

1. Industry sales will become more concentrated.
2. Industries with the greatest increases in concentration will have the largest declines in the labor share.
3. Fall in labor share due to reallocation rather than fall in unweighted average.
4. Reallocation will be greatest in sectors with greatest incr. in concentration.
5. Industries with greatest increases in concentration will have greatest productivity growth.
6. Aggregate markup will rise more than typical firm's markup.
7. Same patterns will be observed internationally. [\[paper\]](#)

# 1. Rising concentration

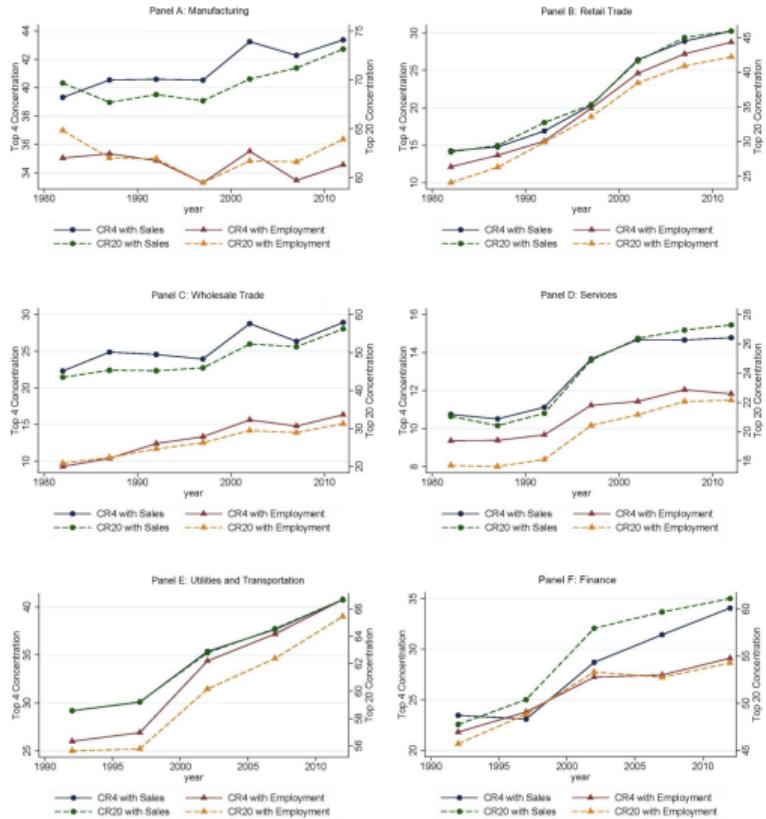
**Figure 4: Average Concentration Across Four Digit Industries by Major Sector**



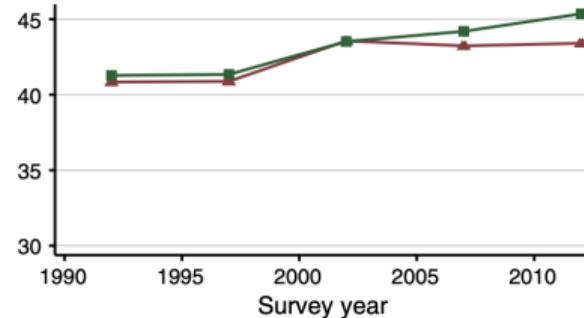
- Rising concentration is significantly less pronounced in employment than sales.

# 1. Rising concentration

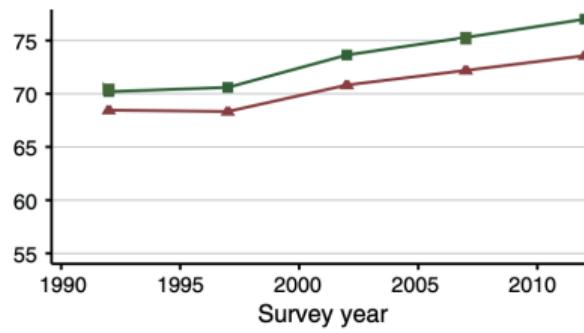
Figure 4: Average Concentration Across Four Digit Industries by Major Sector



Panel A. Top 4 concentration



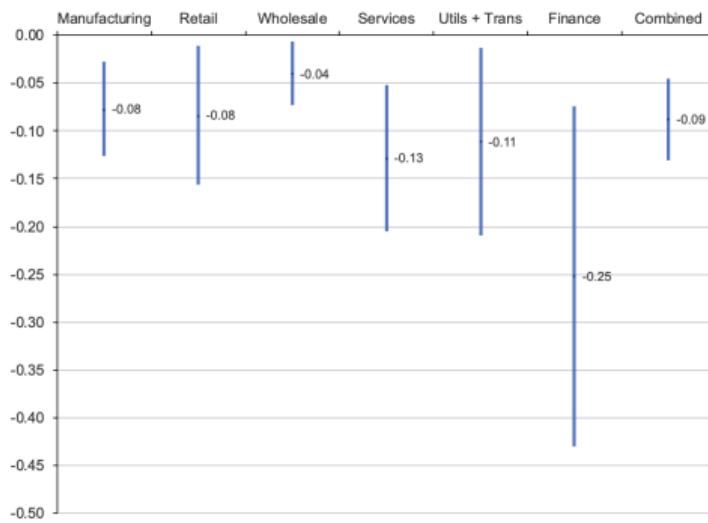
Panel B. Top 20 concentration



— Sales by domestic firms    ■ Including imports

## 2. ↑ concentration, ↓ labor share

Figure 6: The Relationship Between the Change in Labor Share and the Change in Concentration Across Six Sectors



**Notes.** The figure indicates OLS regression estimates that relate  $\Delta \text{Labor Share}$  (payroll over sales) to  $\Delta \text{CR20}$ . The six sector-specific regressions include stacked five-year changes from 1982 to 2012 (1992 to 2012 in Utilities/Transportation and Finance) and control for period fixed effects. Industries are weighted by their sales in the initial year. Dots indicate coefficient estimates and lines indicate 95% confidence intervals based on standard errors clustered at the four-digit industry level. The estimates in this figure correspond to panel A column (2) of Table 3, which also tabulates the full regression results using alternative specifications.

- Autor et al. (2020) estimate

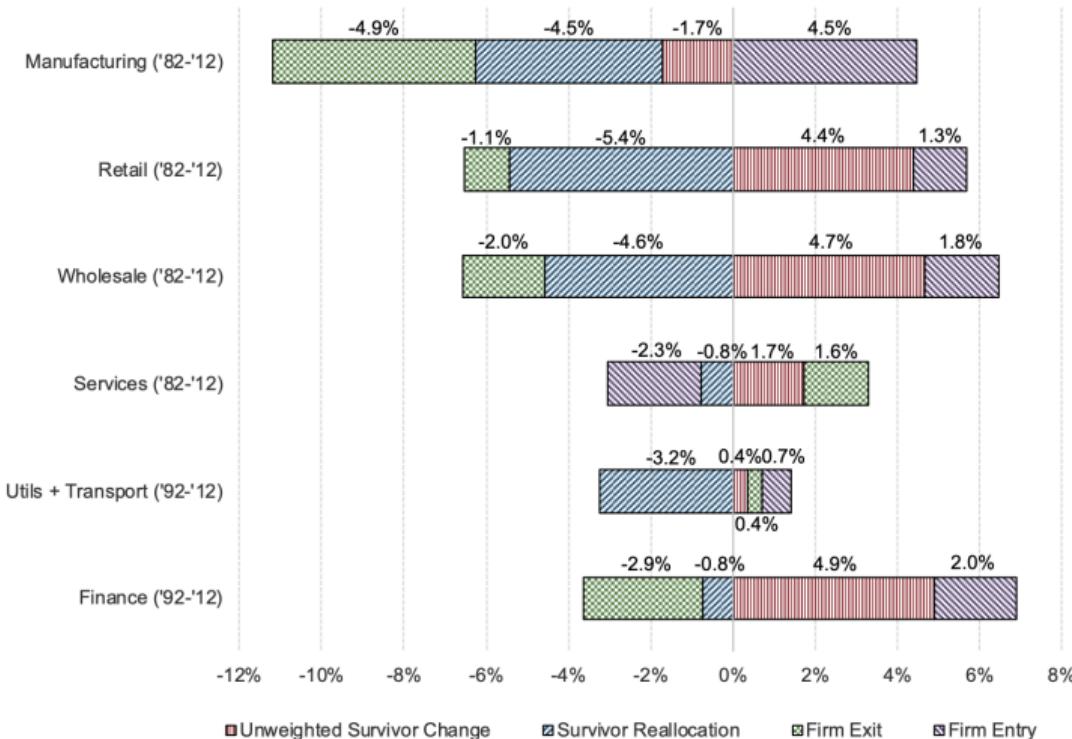
$$\Delta \Lambda_{jt} = \beta \Delta \text{Concentration}_{jt} + \tau_t + \varepsilon_{jt},$$

across 4-digit SIC industries in each sector.

- Time/SIC FE's alleviate some concerns about mechanical correlation.
- Horse-race against several other patterns:
  - Import penetration?
  - Falling  $p$  of investment goods  $\Rightarrow K$ -intensity (Karabarbounis and Neiman 2013).
  - Just using CR1.
  - High-tech vs. other.

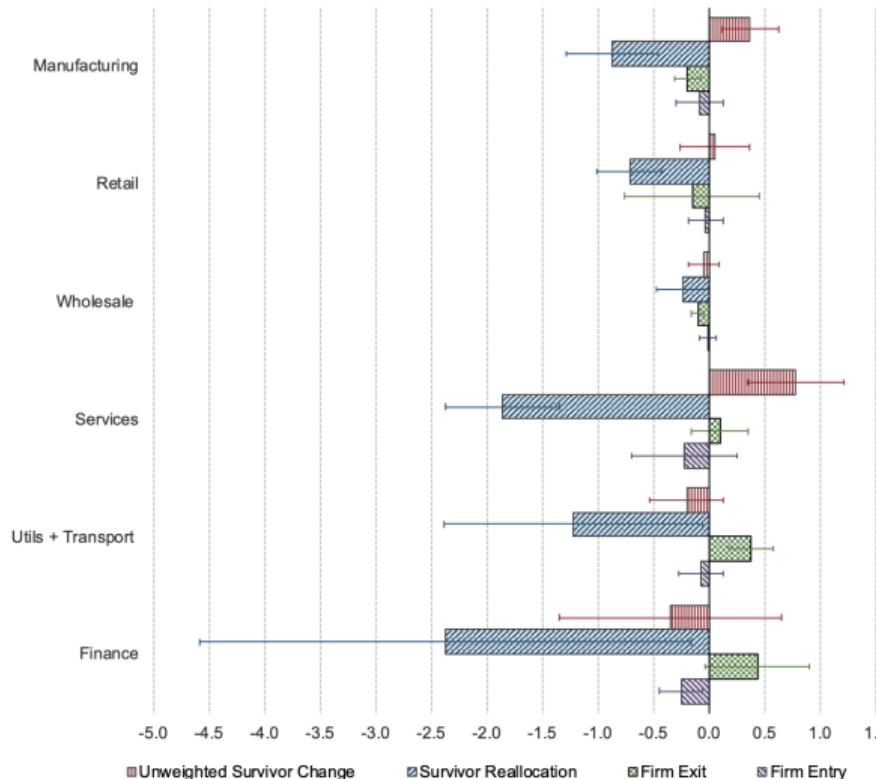
### 3. Decline due to reallocation (mostly)

Figure 8: Melitz-Polanec Decomposition of the Change in Labor Share in all Six Sectors



#### 4. ↑ concentration, ↑ reallocation-induced decline in labor share

Figure 9: Regressions of the Components of the Change in Labor Share on the Change in Concentration



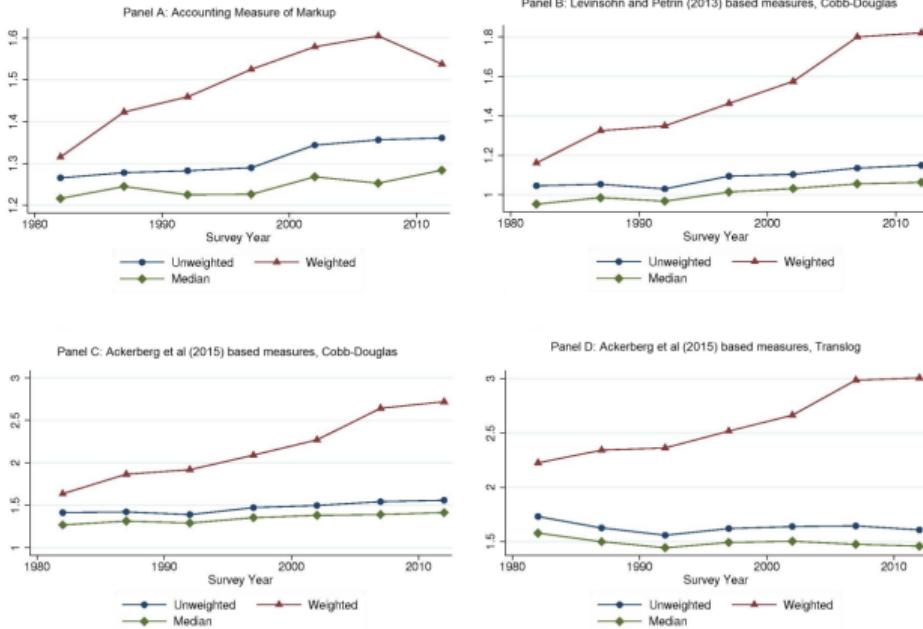
## 5. ↑ concentration, ↑ innovation/productivity growth

	CR4 (1)	CR20 (2)	HHI (3)			
<i>A. Manufacturing Only</i>						
1 Patents Per Worker	0.09 (0.006)	** (0.022)	0.057 (0.022)	*** (0.022)	0.056 (0.022)	** (0.022)
2 Value-Added Per Worker	0.126 (0.028)	*** (0.020)	0.074 (0.020)	*** (0.025)	0.067 (0.025)	*** (0.025)
3 Capital per Worker	0.092 (0.041)	** (0.022)	0.026 (0.022)		0.081 (0.029)	*** (0.029)
4 5-Factor TFP	0.055 (0.019)	*** (0.013)	0.024 (0.013)	*	0.028 (0.017)	*
5 Payroll Per Worker	0.013 (0.018)		0.005 (0.011)		0.016 (0.010)	
6 Material Costs Per Worker	0.120 (0.028)	*** (0.018)	0.074 (0.018)	*** (0.023)	0.068 (0.023)	*** (0.023)

$$\Delta \text{Concentration}_{jt} = \beta \Delta \text{ProductivityMeasure}_{jt} + \varepsilon_{jt}.$$

## 6. Aggregate markup will rise more than typical firm

Figure 10: Markup Changes



- Measure markups for mfg. firms using ratio estimator:

$$\mu_i = \frac{\text{OutputElasticity}}{\text{CostShareInRevenue}}.$$

- Assuming constant returns, “accounting measure” is

$$\mu_i^{\text{accounting}} = \frac{\text{Sales}_i}{\sum_k \text{Costs}_{ik}}.$$

- Levinsohn–Petrin and ACF procedures for output elasticities.

## Zooming in on manufacturing

- Autor et al. (2020) presented and unified many of the facts about the labor share, markups, reallocations, concentration, etc. that we take for granted today.
- Kehrig and Vincent (2021) take a microscope to manufacturing.
- These facts are less familiar, though by no means any less compelling.
- While dozens of models have been written with the flavor of Autor et al. (2020), I have not seen a paper that captures the dynamics in Kehrig and Vincent (2021).

## Kehrig and Vincent (2021): Six Facts

1. Decline in labor share due to reallocation of value-added among continuing firms.
2. Low labor shares are transient.
3. Low labor shares increasingly correlated with past size.
4. Low labor shares driven by high TFPR.
5. Employment responds less to positive TFPR shocks than previously.
6. Low labor shares related to product price premium.

# 1. Decline due to reallocations

Figure 2: The aggregate labor share in U.S. manufacturing

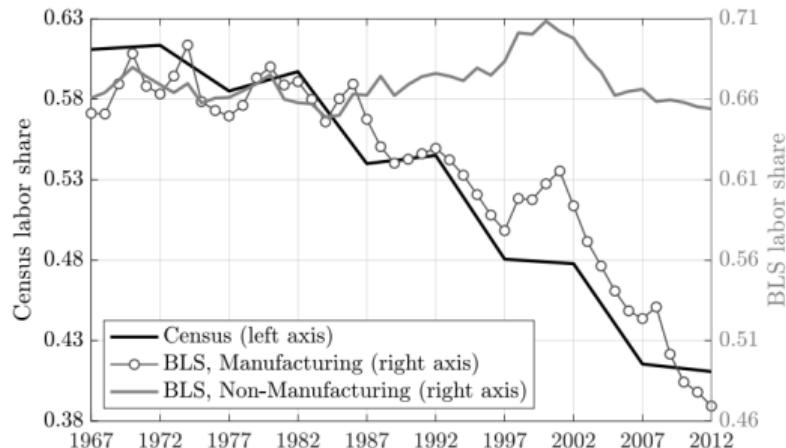
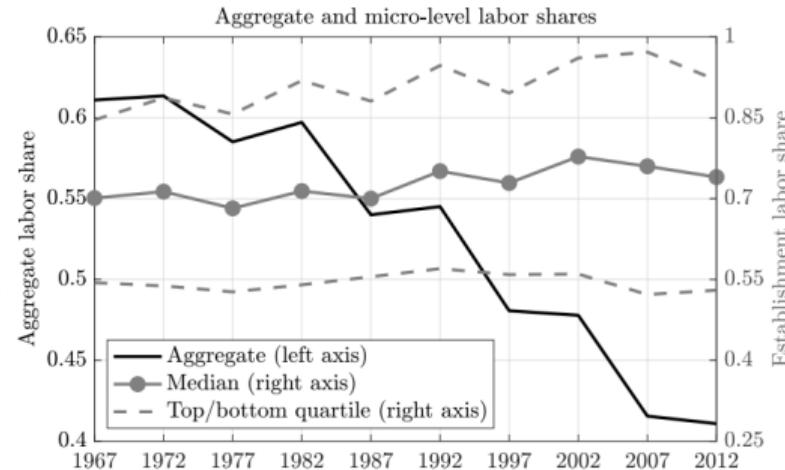


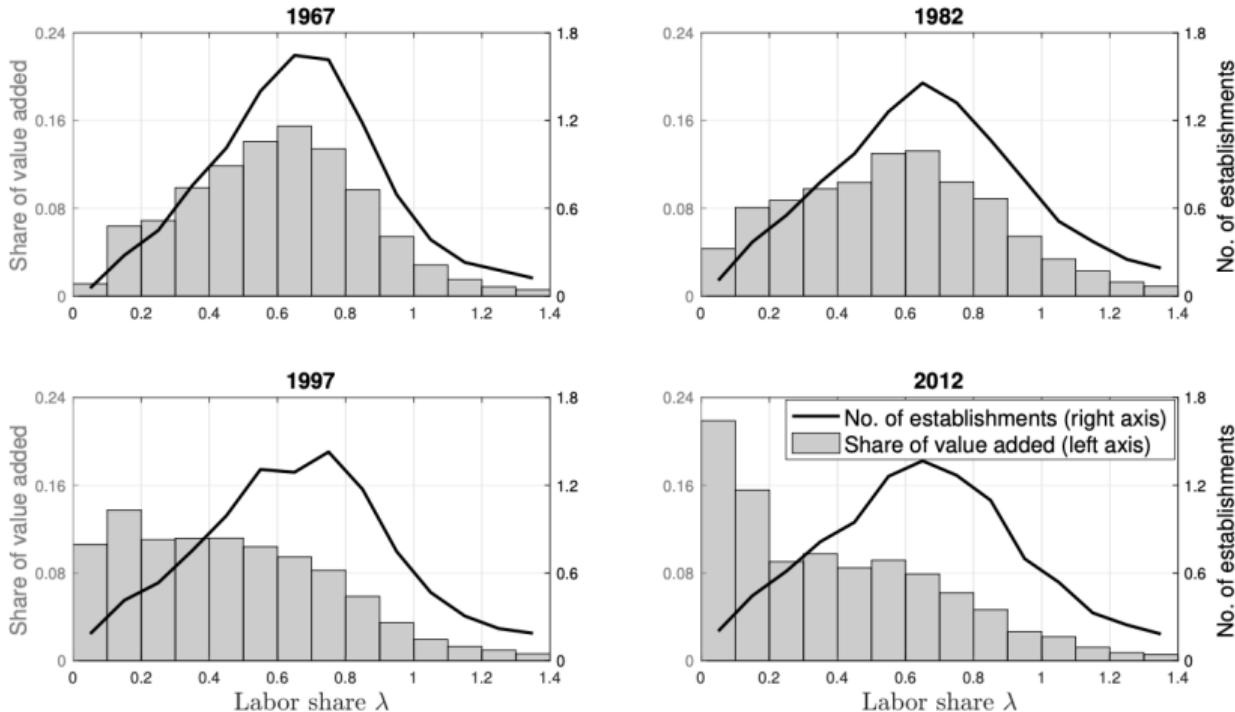
Figure 3: Aggregate and establishment-level labor shares



- Extend sample for manufacturing back to 1967.
- Dramatic decline in labor share by 4.5pp/decade, 6.2pp/decade since 1982 Census.
- Labor share of median establishment actually *increased*.

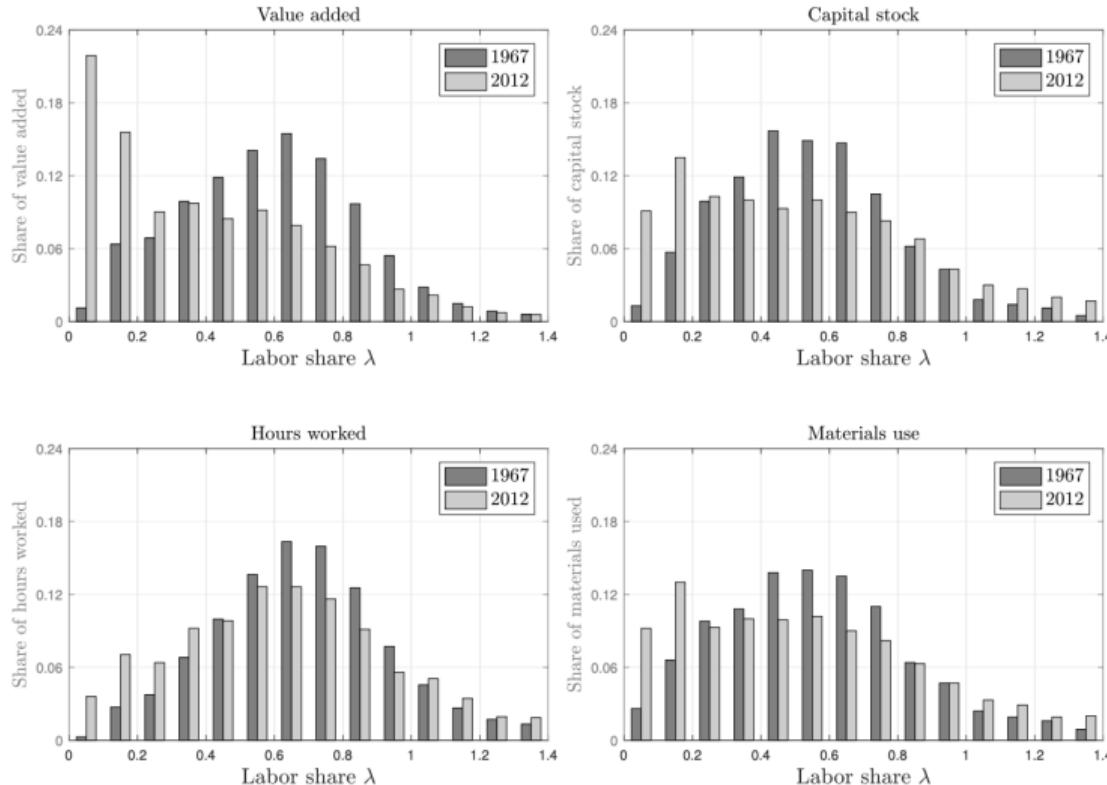
# 1. Decline due to reallocations

Figure 4: Value-added weights and labor share distribution



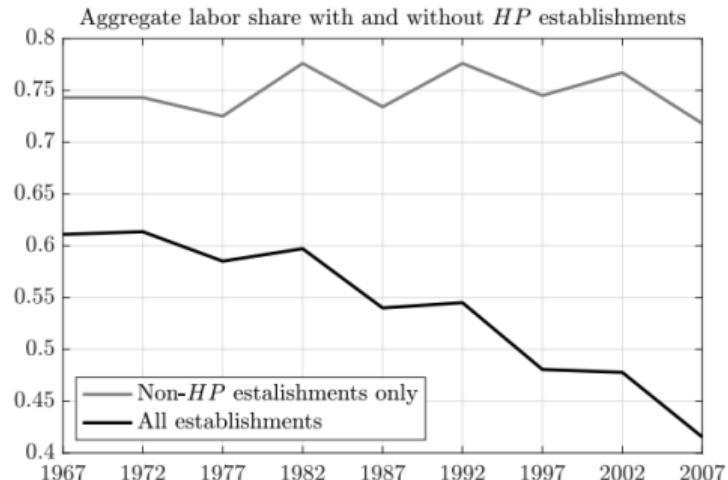
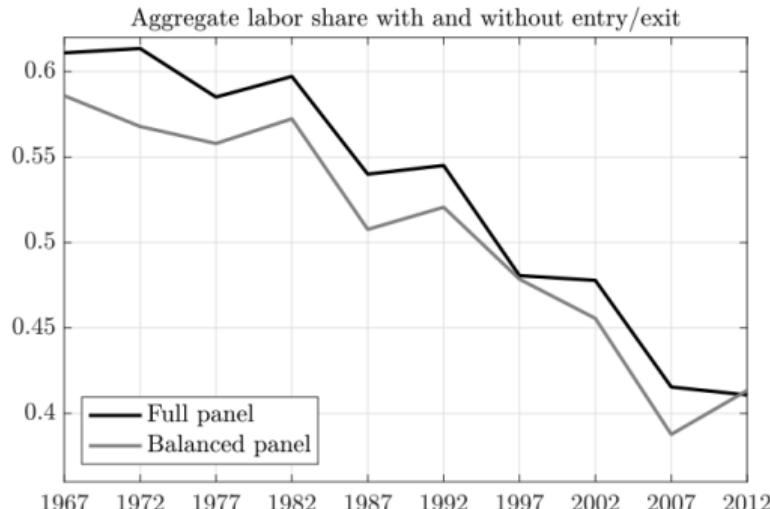
# 1. Reallocations of value added, not of labor/capitals/materials

Figure 7: Dramatic reallocation of output, limited reallocation of inputs



# 1. Decline not due to entry/exit, driven by *HP* tail

Figure 6: The importance of *HP* establishments



- Downward trend not due to entry/exit.
- Label hyper-productive (*HP*) establishments in lowest quintile of labor share.
- Decline driven by *HP* establishments.

## 2. Dynamics: Low labor shares are transient

Table 1: Transition probabilities of  $HP$  status

*Panel A. Unweighted transitional dynamics*

	Non- $HP_{t+5}$	$HP_{t+5}$
Non- $HP_t$	0.854	0.146
$HP_t$	0.583	0.417

*Panel B. Weighted transitional dynamics*

	Non- $HP_{t+5}$	$HP_{t+5}$
Non- $HP_t$	0.922	0.078
$HP_t$	0.536	0.464

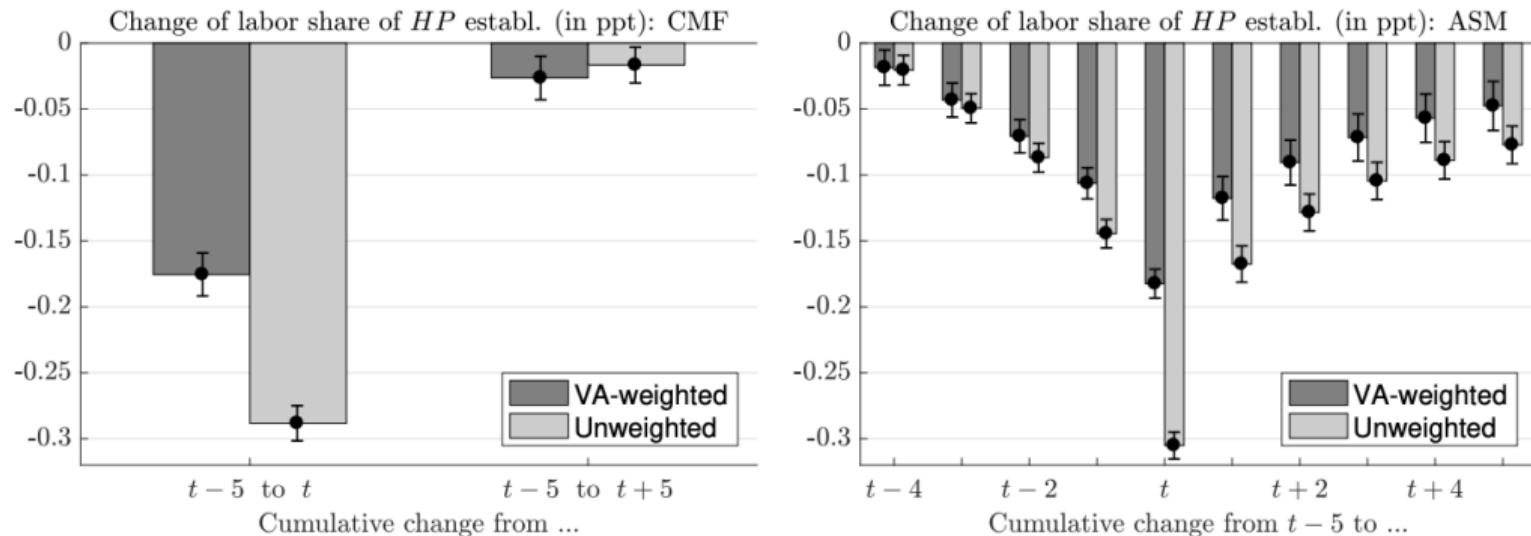
Table 2: The dynamics of  $HP$  establishments

Variable	(I)	(II)	(III)	(IV)
$\beta_{-5}$	-0.2883*** (0.0068)		-0.1755*** (0.0083)	
$\beta_{+5}$		+0.2717*** (0.0069)		+0.1491*** (0.0084)
$R^2$	0.111	0.096	0.102	0.070
Weights	none	none	VA weights	VA weights

- If perfectly random, what would we expect?
- What concern comes to mind when seeing these transient labor shares?

## 2. Dynamics: Low labor shares are transient

Figure 8: The temporary fall and rise of labor shares of *HP* establishments



- Annual Survey of Manufacturers sample allows us to check for measurement error.
- Kehrig & Vincent also build up sales from individual products as check.
- V-shaped pattern for *HP* establishments has become steeper over time.

### 3. Relative probability of becoming *HP* by size

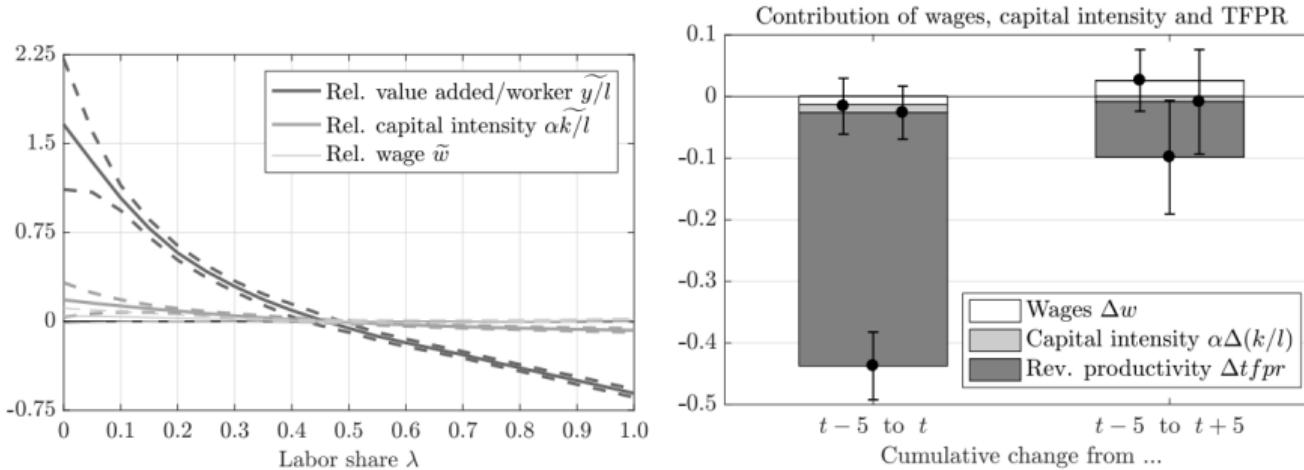
Figure 10: Relative probability of becoming *HP*: largest vs. smallest size quintile



- Specification (within industry/region):  $1\{HP_{it+5}\} = \sum_{n=1}^5 \beta_n 1\{i \text{ in size quintile } n\} + \varepsilon_{it}$ .
- Figure plots ratio of  $\beta_5 / \beta_1$  by year.

## 4. Low labor shares driven by high TFPR

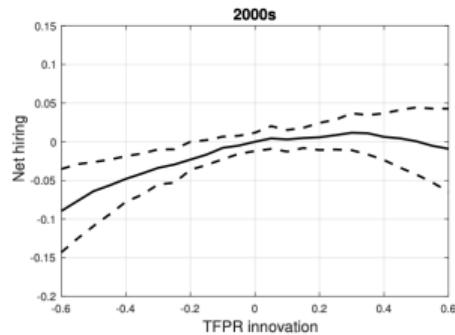
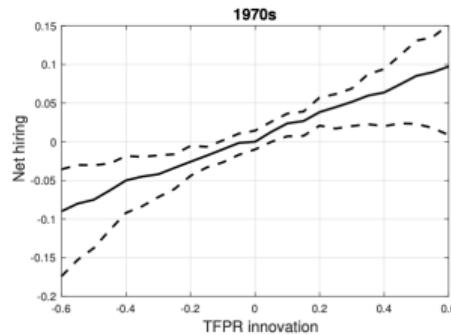
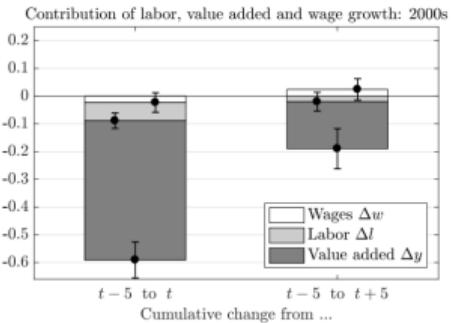
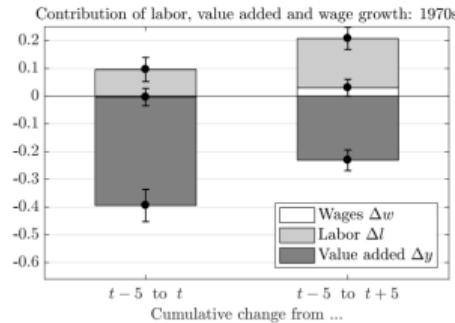
Figure 11: Labor productivity dominates cross-sectional differences and time-series dynamics of labor shares of *HP* establishments.



*Note:* Left panel displays the cross-sectional differences in relative value added per worker  $\tilde{y}/l$ , the relative capital intensity  $\alpha\tilde{k}/l$  and the relative wage  $\tilde{w}$  against the labor share; we multiply the relative capital intensity by the typical capital elasticity in a constant-returns-to-scale Cobb-Douglas production function with  $\alpha = 1/3$ . All relative measures denote log-point differences vis-à-vis their peers as defined in Equation (8). Dashed lines denote 95% error bands.

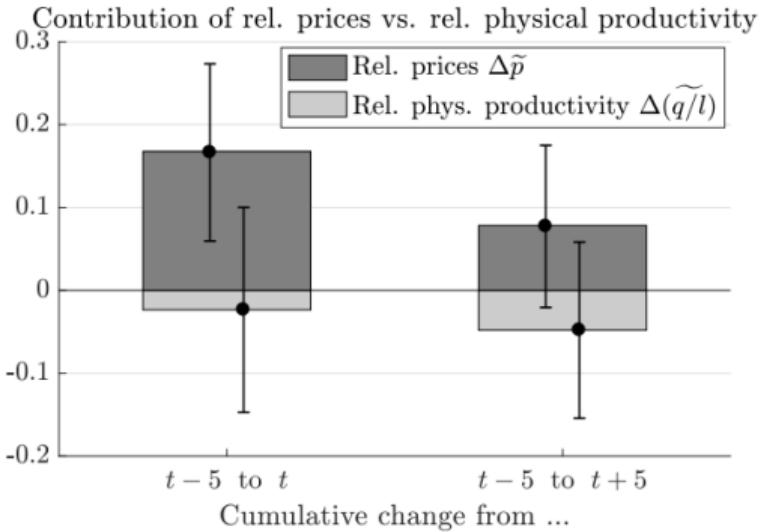
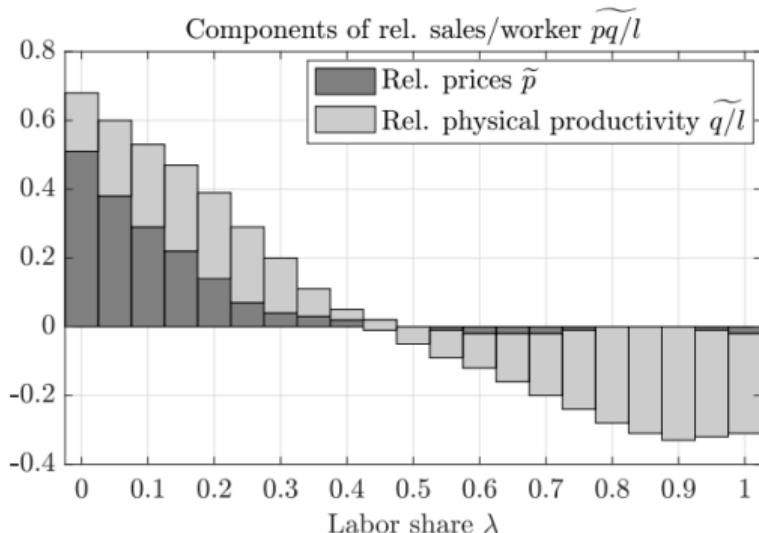
Right panel displays the dynamic contributions of labor productivity growth and wage growth for labor share growth of the average *HP* establishment relative to their peers. The first bars display their cumulative contributions before  $(t - 5$  to  $t)$  and after  $(t$  to  $t + 5)$  the year an establishment is in *HP* status. Whiskers denote 95% error bands.

## 5. Employment responds less to TFPR innovation recently



- HP estabs used to add labor as value-add rose.
- Emp. vs. TFPR much flatter (related pattern for inv. by Gutierrez & Philippon, 2017).

## 6. TFPR growth due to price premium or TFPQ?



- Product trailer of Census of Manufacturers records sales and physical quantities.
- 10-digit NAICS products: chemicals, metals, boxes, coffee, ice, etc.
- Different story than lower price  $\Rightarrow$  higher market share.

## Recap

- In the first class, we saw how the interaction of empirical observations and theory can push forward understanding of the Phillips Curve.
- Decline in labor share in recent years received comparable amount of attention.
- From 12,000 studies: perhaps not able to predict future movements.
- But better measurement, consensus on overarching patterns (e.g., reallocations vs. within-firm changes), new body of facts for theory to confront.
- One pattern clearly emerges at micro level: demand and markups.