Structural Change and the Rise in Markups
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Outline

- Summary
- Decomposition
- Relative productivity growth

Framework

Can structural change explain recent increase in markups?

- 2 sector model of structural change
- Monopolistic competition in both: Services **(s)** and goods **(g)** sector
- Structural change:
  1. Increase in relative productivity in manufacturing
  2. Increase in relative demand for services
- 2 types of consumers: high-skilled and low-skilled
- Skill-biased technological change
- High-skilled=wealthy, low-skilled=poor
- Non-homothetic preferences over goods and services
- Price elasticity of demand is different across consumer types and for different prices of the same good/service

Mechanism

Rise in markups

1. **Goods sector**
   - Relative productivity in manufacturing $\uparrow \rightarrow$ marginal cost in manufacturing $\downarrow$
   - Relative price of goods $\downarrow \rightarrow$ Price-elasticity of demand $\downarrow$ + Imperfect competition $\rightarrow$ Firms can charge higher markups
2. **Services sector**
   - Increase in income (wealth inequality)
   - High-skill consumers become wealthier $\rightarrow$ price-elasticity of demand $\downarrow$ Demand for luxuries=services $\uparrow$ + Imperfect competition
   - Firms can charge higher markups

- Quantitative model matching the trends in the data to assess relative importance of **1** vs **2**

Results: Missing reallocation

- Contribution of services to aggregate markup grew from 46% in 1980 to 72%
- $\frac{2}{3}$ of increase in aggregate markup is driven by growth in markups of services
- 7% is due to reallocation from goods to services

- **Why is reallocation component so small?**
- De Loecker at al (2020): $\frac{2}{3}$ of increase in aggregate markup is driven by reallocation towards high-markup firms

Results: Missing reallocation

- **Why is reallocation component so small?**

$$\mu_t = \omega_{s,t}\overline{\mu_{s,t}} + (1-\omega_{s,t})\overline{\mu_{g,t}}$$

$$\overline{\mu_{s,t}} = \sum \omega^s_{i,t}\mu^s_{i,t}$$

$$\overline{\mu_{g,t}} = \sum \omega^g_{j,t}\mu^g_{j,t}$$

- There is much more reallocation within services and manufacturing
- Alternative interpretation:
- There has been reallocation of market shares towards high-markup firms within services, without increase in services markups

Decomposition: Missing reallocation

- Decomposition of markup change: Haltiwanger (1997), Olley and Pakes (1996)
- $\Delta\mu =$ within + between + cross
- Paper uses **shift-share decomposition**
- Define:
- $\overline{w_g} = \frac{w_{g,t}+w_{g,t-1}}{2}$
- $\overline{\mu_g} = \frac{\mu_{g,t}+\mu_{g,t-1}}{2}$

$$\Delta\mu_t = \underbrace{\overline{w_g}\Delta\mu_{g,t} + \overline{w_s}\Delta\mu_{s,t}}_{\text{Shift-share within}} + \underbrace{\overline{\mu_g}\Delta w_{g,t} + \overline{\mu_s}\Delta w_{s,t}}_{\text{Shift-share between}}$$

Decomposition

- Haltiwanger decomposition:

$$\Delta\mu_t = \underbrace{w_{g,t-1}\Delta\mu_{g,t} + w_{s,t-1}\Delta\mu_{s,t}}_{\text{Haltiwanger within}} + \underbrace{\mu_{g,t-1}\Delta w_{g,t} + \mu_{s,t-1}\Delta w_{s,t}}_{\text{Haltiwanger between}}$$
$$+ \underbrace{\Delta\mu_{g,t}\Delta w_{g,t} + \Delta\mu_{s,t}\Delta w_{s,t}}_{\text{Haltiwanger cross}}$$

Decomposition

- Weder (2023)
- Shift-share between = Haltiwanger between + $\frac{1}{2}$ Haltiwanger cross
- Shift-share within = Haltiwanger within + $\frac{1}{2}$ Haltiwanger cross
- Haltiwanger cross = $\Delta\mu_{g,t}\Delta w_{g,t} + \Delta\mu_{s,t}\Delta w_{s,t}$
- If cross component < 0, De Loecker at al (2020) $\rightarrow$ reallocation component is underestimated by shift share decomposition
- Matters for the mechanism: If reallocation is large, the shift is not simply driven by increase in productivity in good sectors

  $\rightarrow$ Use Haltiwanger method and decompose increase in markups within services and goods sectors

Relative Productivity

- Relative productivity of manufacturing firms increased $\rightarrow$ relative prices of services went up
- Intangible capital used more intensively in services sectors
- **Industrial revolution of services**: Hsieh and Rossi-Hansberg (2023)
- New fixed-cost-intensive technologies that yield lower marginal costs of services sectors (U.S. Hospitals)

Relative Productivity

- **Why does it matter?**
- Observed decline in relative prices of goods vs services is driven by something else than productivity gains
- If services have become relatively more productive, their higher prices reflect higher market concentration and markups
- Matters for mechanism and welfare analysis

Relative Productivity

- Empirics: Motivating discussion of relative productivity
- Empirics: Compute TFP using production function approach
- Theory: could I get the same result with services becoming relatively more productive? $\rightarrow$ pass-through of lower marginal cost negative due to high market concentration and low price elasticity

Conclusion

- Great idea
- Important paper
- Very intuitive model
- Is it reallocation to most productive firms in services?