Sectoral dynamics of income distribution in the US economy

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The project in a nutshell

Structural Change

Economic Growth (Stagnation?)  →  Income Distribution

→
Stagnation & inequality: US economy is characterized by a slowdown in average real GDP and labor productivity growth, as well as decline in the labor share.

How do these macroeconomic phenomena manifest at the sectoral level?

Divisia index decomposition of the labor share across sectors points towards “reverse–Lewis,” rather than Baumol, as the relevant narrative.
Baumol’s cost disease as reference point

2–sector economy with differential productivity growth rates.

Baumol assumes labor homogeneity, mobility, and competition ⇒ no change in distribution.

Structural change: employment share in services rises:

- Stagnation: aggregate productivity growth is decreasing ...
- ... with a constant labor share: aggregate real wage growth = aggregate labor productivity growth.
- But: relative price of services increases!
Baumol’s cost disease as reference point

Baumol (2012):

“[N]o matter how painful rising medical and educational bills may be, society can afford them, and there is no need to deny them to ourselves or to the less affluent […]. Overall incomes and purchasing power must rise quickly enough to keep these services affordable, despite their persistently rising costs.”

True, if the distribution of income does not change, and gains in high–productivity sectors are widely shared!
Reverse–Lewis, rather.

But: **labor share secularly declines** since (at least) 1980.

Re–dualization is characterized by:

- labor shedding in high–productivity activities,
- surplus labor absorption in low–productivity activities,
- and *no need to offer high wages in the latter*: labor is not homogeneous, not mobile, and labor markets are not clearing!

Temin’s “Vanishing middle class” (2017); Storm’s “New normal” (2017); Taylor & Ömer’s “Race to the bottom” (2018).
Methodology: Divisia index decomposition

US labor share \( (\psi) \), 1987–2016, 14 sectors, decomposed into

- real compensation \( \omega_i \),
- employment structure \( \lambda_i \),
- labor productivity \( \varepsilon_i \) and
- relative prices \( p_i \).

\[
\psi = \frac{\sum_{i=1}^{n} w_i L_i}{\sum_{i=1}^{n} P_i X_i} = \frac{\sum_{i=1}^{n} w_i L_i}{PL} \frac{PL}{\sum_{i=1}^{n} P_i X_i} = \frac{\sum_{i=1}^{n} \omega_i \lambda_i}{\sum_{i=1}^{n} p_i \varepsilon_i \lambda_i}
\] (1)
Methodology: Divisia index decomposition

$\phi_i$: Nominal compensation share of sector $i$

$\theta_i$: Nominal value added share of sector $i$

\[ D_{comp} = \exp\left[\sum (\phi_{i,t} + \phi_{i,t-1})/2 \ln(\omega_i)\right] \]

\[ D_{empl} = \exp\left[\sum [(\phi_{i,t} + \phi_{i,t-1})/2 - (\theta_{i,t} + \theta_{i,t-1})/2] \ln(\lambda_i)\right] \]

\[ D_{price} = \exp\left[\sum (\theta_{i,t} + \theta_{i,t-1})/2 \ln(p_i)\right] \]

\[ D_{techn} = \exp\left[\sum (\theta_{i,t} + \theta_{i,t-1})/2 \ln(\varepsilon_i)\right] \]

$\Rightarrow$ Decomposition shows contributions of 4 components in 14 sectors to **percentage change of aggregate wage share** over sample period.
Results: Overview, 1

- Economic Growth (Stagnation?)
- Structural Change
- Income Distribution

Labor share declines:
- Real wages don’t keep up
- Man, Fin, IT, WTR
Results: Overview, II

- Empl. shifts to AER, EHS, PBS
- Low wage & productivity, but relatively high wage share!

Structural Change

Economic Growth (Stagnation?)

Income Distribution

Labor share declines:
- Real wages don’t keep up
- Man, Fin, IT, WTR
Results: Overview, III

- Empl. shifts to AER, EHS, PBS
- Low wage & productivity, but relatively high wage share!

**Structural Change**

**Economic Growth (Stagnation?)**
- ... and average productivity growth declines!

**Income Distribution**

**Labor share declines:**
- Real wages don’t keep up
- Man, Fin, IT, WTR
Contributions to $\Delta \psi / \psi$: Four components, 1987–2016

- Wage share %Δ: -2.67
- Relative price: 0.18
- Productivity: -49.3
- Structure: 6.0
- Wage: 40.5
Contributions to $\Delta \psi / \psi$: Four components, by year
Contributions to $\Delta \psi / \psi$: Fourteen sectors, 1987–2016

- Others
- Arts, entertainment, recreation
- Education, health, social assistance
- Professional and business services
- Finance and insurance
- Information
- Transportation and warehousing
- Retail trade
- Wholesale trade
- Manufacturing
- Construction
- Utilities
- Mining
- Agriculture
Contributions to $\Delta \psi/\psi$: Real wages & productivity
Contributions to $\Delta\psi/\psi$: Employment & relative prices

- Others
- Arts, entertainment, recreation
- Education, health, social
- Professional & business services
- Finance & Insurance
- Information
- Transportation
- Retail trade
- Wholesale trade
- Manufacturing
- Construction
- Utilities
- Mining
- Agriculture

Change in employment shares

-11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8
sector's prod < average prod
rise in employment share

sector's prod > average prod
rise in employment share

sector's prod < average prod
decline in employment share

sector's prod > average prod
decline in employment share

Relative productivity: average of 1987-2016
Concluding question marks

- Inevitable course of development?!

- Economic Growth (Stagnation?)
  - Demand management: Contractionary bias?!

- Structural Change

- Income Distribution
  - Unions, bargaining, regulation
  - Globalization & technology