Discussion of ”Growth Accounting for the States” by Liu, McMurry and Williams

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The Issue and the Paper

- Highlights a **key gap**: lack of comprehensive growth accounting for U.S. states.

- **Major challenges**:
  - → Limited data, especially on capital and investment.
  - → No firm-level financial data covering the universe of the U.S. businesses.

- **The paper's approach**:
  - → Top-down method: estimates state-industry capital stocks from aggregate data.
  - → Relaxes assumptions from existing literature.
  - → Largely an accounting exercise, with minimal reliance on modeling.

- **My view**:
  - → An ambitious project in an early stage: room for improvements on many fronts.
  - → I am skeptical about the reliability of the current estimates.

My Take on the Paper

1. Estimates of required return on capital.
2. Income shifting between tax bases.
3. Omitted factor of production.
4. Theory ahead of measurement.

Estimates of R_{ijt} are biased and getting worse over time

The key step to back out the capital series at the state level is to estimate:

$$R_{ijt} = \left(\frac{D_t}{D_t + E_t} i_t^D \left(1 - \tau_{it}\right) + \frac{E_t}{D_t + E_t} i_t^E - \mathbb{E}\left(\pi_{jt+1}^k\right) + \delta_{jt} \right) \frac{1 - z_t \tau_{it}}{1 - \tau_{it}}$$

where

- τ_{it} is a **corporate income tax rate** in state i at date t paid by C corporations

The issue:

- Most of the U.S. businesses do not pay corporate income taxes.
- Instead, their profits are passed-through to their owners and subject to **personal income tax**.
- Worse: pass-throughs have been on the rise in the U.S. since 1980.
- Have corporate and personal income taxes evolved similarly across U.S. states?

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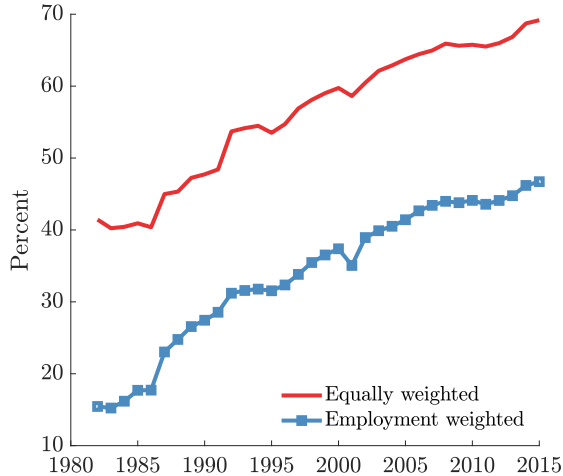
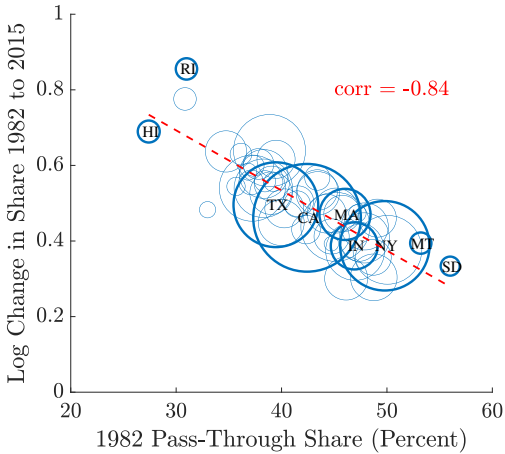
The rise of pass-throughs in the U.S.

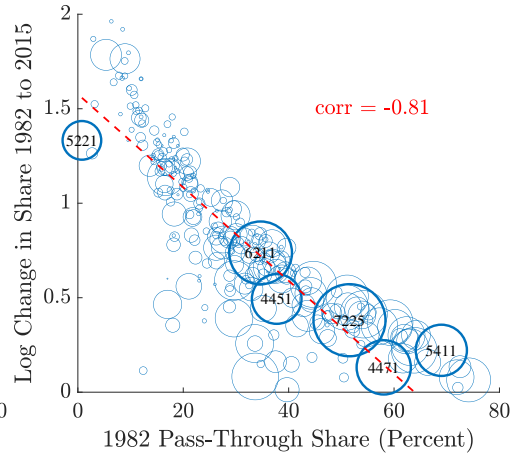
- The share of businesses organized as pass-throughs has increased from roughly **40% to almost 70%**.
- Imporatntly, factors of production in the U.S. have been reallocated to pass-throughs.
- The share of employment tripled, rising from **15% to 47%**.



Source: LBD-TLFO data set, Dyrda and Pugsley, 2024

Convergence across states and industries





Source: LBD-TLFO data set, Dyrda and Pugsley, 2024. Industries reported at NAICS4 level.

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Tax-Induced Income Shifting Distorts Labor and Profit Measures

Recall the gross value added

$$\tilde{Y}_{ijt} = \underbrace{W_{ijt}N_{ijt}}_{\text{Employee Compensation}} + \underbrace{R_{ijt}K_{ijt} + \Pi_{ijt}}_{\text{Gross Operating Surplus}}$$

The Issue:

- $W_{ijt}N_{ijt}$ and Π_{ijt} in the data do not reflect true labor compensation or economic profits.

Why?

- Incentives to manipulate income classification.
- Owners of S corporations (pass-through entities) often classify income as profits rather than wages to avoid payroll taxes.

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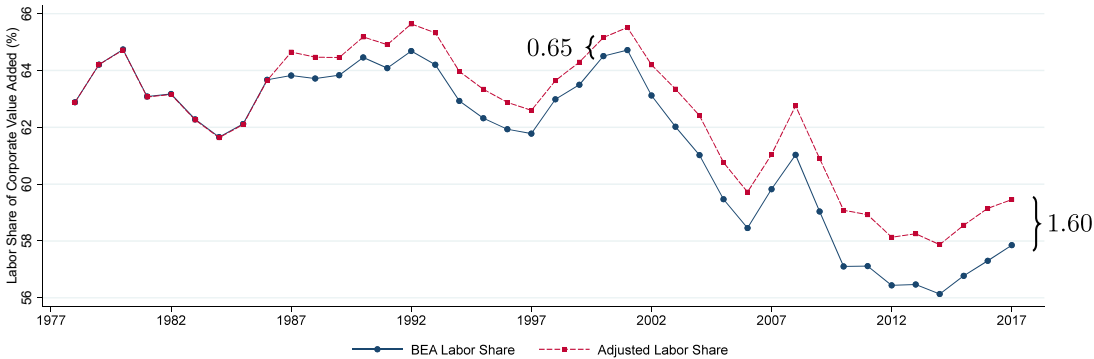
Labor share drop is overestimated - Smith et al., 2022



- Shifting income + rise of pass-throughs = overestimated fall of the labor share
- **Reinterpreting the assumption** of equal profit shares across states:
  → Pass-through business owners report the same fraction of income as profits, regardless of state.

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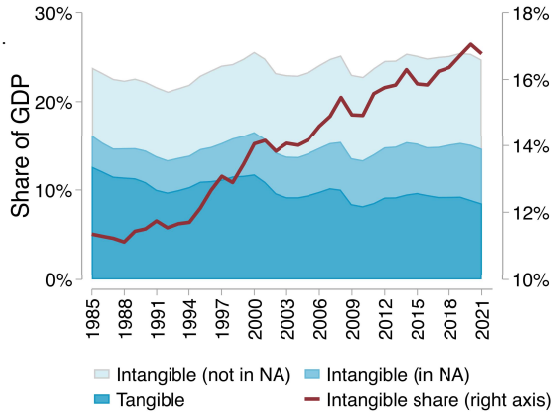
Rising Importance of Intangible Capital

- The paper relies on BEA estimates on capital.
- BEA measures of capital include physical capital, such as structures and equipment, as well as measures of intangible capital, such as R&D, software, and artistic designs.
- Other forms of **intangible capital not included** in the existing BEA measures, e.g. market research and branding, financial product development.



Note: GDP includes all intangible investment. Source: Corrado et al., 2022

Implications of Intangible Capital Omission

Return to gross value added (GVA):

$$\underbrace{\tilde{Y}_{ijt}}_{\text{Increases with intangible investment}} = \underbrace{W_{ijt}N_{ijt}}_{\text{Employee Compensation}} + \underbrace{R_{ijt}K_{ijt} + \Pi_{ijt}}_{\text{Gross Operating Surplus}} + \underbrace{R^I_{ijt}K^I_{ijt}}_{\text{Cost of intangible capital} > 0} \quad (1)$$

- **Capital costs rise:**
  → Intangible capital has a positive required return, so its use incurs additional capital costs.
- **GVA increases:**
  → Current GVA measures partially exclude intangible capital, leading to an underestimation of GVA.
- **Ambiguous effect on profits, Π_{ijt}:**
  → Profits may decrease due to rising capital costs but could also increase due to enhanced GVA.

Growth accounting:

- Total Factor Productivity (TFP) contribution is likely overstated, as it includes gains driven by intangibles rather than productivity growth.

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A Structural Model as a Measurement Tool

- **Data limitations:**
  - → Nonexistent in key areas.
  - → Distorted by accounting manipulation and tax avoidance.
  - → Mismeasurement of important production factors.
  - → And more...
- Accounting methods alone can't address these flaws.
- **"Theory ahead of measurement"**: A structural model is essential—not just to guide analysis, but to serve as a measurement device that helps quantify mismeasurement and omissions.
- **Key margins** the model should capture:
  - → Intangible capital.
  - → Endogenous choices in income classification.
  - → Distinctions between pass-throughs and C corporations.
  - → Heterogeneity across states and industries.

Applause to the organizers of this great conference!

Additional Slides

Actual and tax legal forms of organization of for-profit businesses