Discussion of "Does the US Tax Code Favor Automation?"

By Acemoglu, Manera, and Restrepo

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COMMENT 1: EVALUATING KEY CAPITAL MARKET ASSUMPTIONS

Question: Which assumptions are important for the main results?

1. Elasticity of capital supply ($\varepsilon_k = 0.67$)
   - ▶ Source: Elasticity of wealth to wealth tax (JJKZ 2020)
   - ▶ Very sensitive to assumed pretax rate of return
   - ▶ House and Shapiro (2008) estimate is 6 to 14

2. Capital market frictions ($\varrho_k = 0$)
   - ▶ By assumption
   - ▶ Cf. the field of corporate finance, BPEAs going back to Fazzari Hubbard Petersen

3. Effective tax rate on capital ($\tau_k = 10\%$)
   - ▶ Source: Corporate tax revenues / gross operating surplus (NIPA)

Takeaway: Defensible changes in these assumptions quantitatively relevant

COMMENT 2: THE ROLE OF BONUS DEPRECIATION

$$\frac{1}{1-\tau^k} = \frac{1}{1-\tau^{e,c}} \left(\frac{r+\delta}{r} \cdot \frac{1-\alpha\tau^c}{1-\tau^c} - \frac{\delta}{r} \right) \quad \text{where} \quad \alpha \in [0,1]$$

Question: How much does bonus depreciation "distort" investment?

1. Bonus accelerates the timing of deductions, but does not change the amount.
   - ▶ Value driven by discounting
   - ▶ Distinct from changes τ^c or ITC (currently missing from 1980s analysis)

2. When interest rates are low, subsidy is small.
   - ▶ Cf. Perhaps not for firms facing financial frictions (Zwick Mahon 2017)

3. So, aggregate effective tax rate shouldn't be very sensitive to bonus
   - ▶ This is why JCT and Treasury think bonus is not very expensive

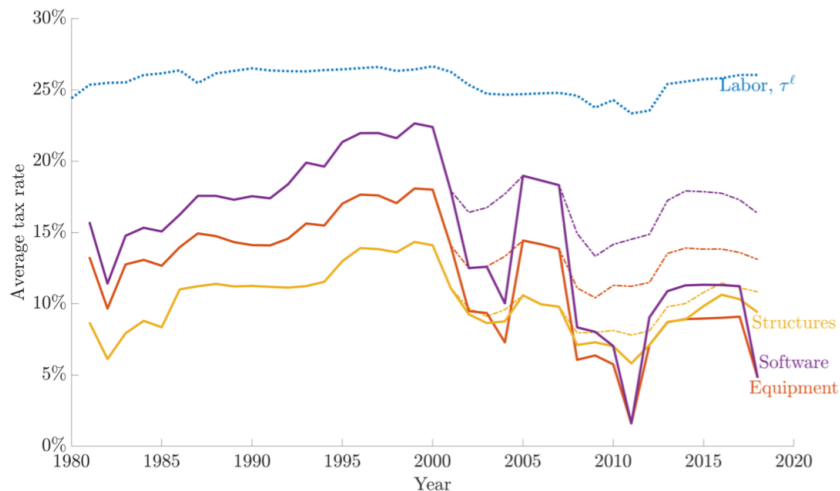# COMMENT 2: THE ROLE OF BONUS DEPRECIATION

FIGURE 2: EFFECTIVE TAX RATES ON LABOR, SOFTWARE CAPITAL, EQUIPMENT, AND NON-RESIDENTIAL STRUCTURES.
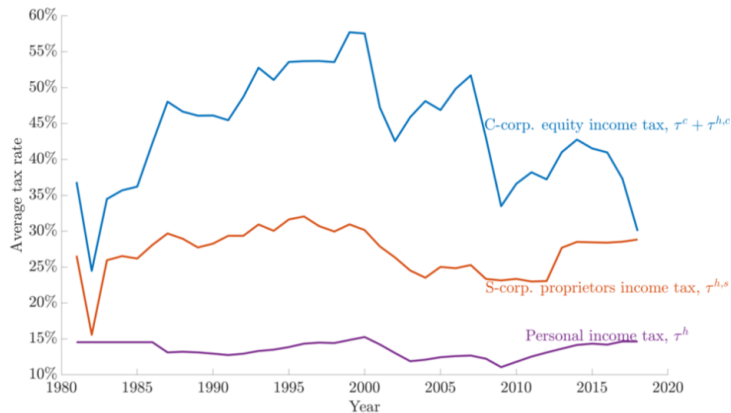
COMMENT 2: THE ROLE OF BONUS DEPRECIATION

FIGURE 1: AVERAGE TAX RATES ON CAPITAL INCOME, CORPORATE INCOME AND PERSONAL INCOME, 1981-2018.

Comment 2: The Role of Bonus Depreciation

Question: What do we know about labor market effects of bonus?

1. Investment increases, more for firms valuing liquidity and immediate benefits.
   - ▶ House Shapiro (2008), Zwick Mahon (2017)
   - ▶ Implies employment effects through output effects among capital suppliers.

2. The wage bill increases.
   - ▶ Zwick Mahon (2017), Garrett Ohrn Suarez-Serrato (2019), Ohrn (2020)

3. Total employment is flat or increases.
   - ▶ Garrett Ohrn Suarez-Serrato (2019), Ohrn (2020)

4. Skilled labor increases, unskilled labor falls.
   - ▶ Tuzale Zhang (2019)

Takeaway: More empirical work needed to show these incentives promote automation.

"an **automation tax**—a higher tax on the use of capital in tasks where labor has a comparative advantage."

Research Robot

Avoidance Responses to an Automation Tax

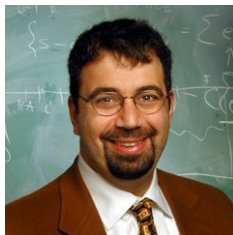Research Robot   Research "Darobot"

Avoidance Responses to an Automation Tax

Research Robot   Research "Darobot"

Conjecture: Tax avoidance behavior is increasing in the number of tax instruments.

What Is Cost Segregation?

Cost segregation is the process of identifying property components that are considered "personal property" or "land improvements" under the federal tax code.

The primary goal of a cost segregation study is to identify all construction-related costs that can be depreciated over a shorter tax life (typically 5, 7 and 15 years) than the building (39 years for non-residential real property).

Source: ascsp.org

American Society of Cost Segregation Professionals

The ASCSP was founded in 2006 as the pre-eminent professional Society for all members of the cost segregation industry.

Source: ascsp.org

American Society of Cost Segregation Professionals

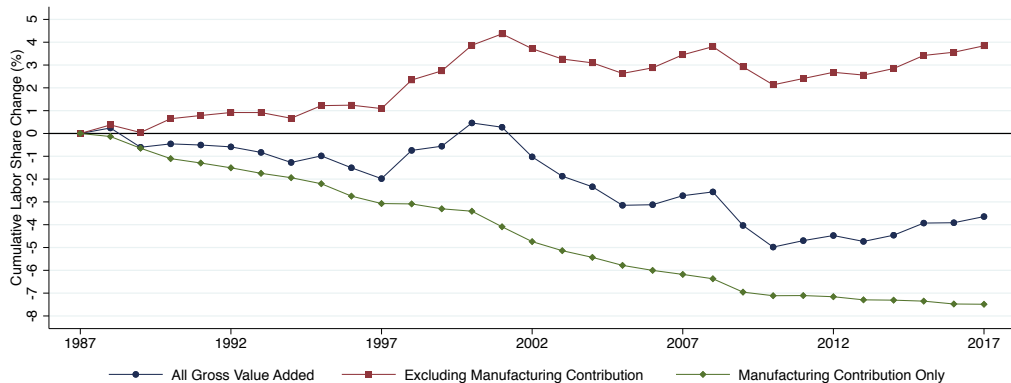**Concern:** Automation tax likely to increase employment. . . of accountants

Goal: Understand which tax policy instruments affected the labor share.

Why? Points to possible reforms (if targeting labor share is a policy priority)

Manufacturing Driving the Decline

Fully offset until 2000, partly since then

Cumulative Labor Share Change (%), 1987–2017. Legend: All Gross Value Added; Excluding Manufacturing Contribution; Manufacturing Contribution Only.

Source: Smith, Yagan, Zidar, Zwick (2020)

EMPLOYMENT DECLINES SORTED BY AUTOMATION EXPOSURE

1990s

Industrial Machinery	
Miscellaneous	
Electronics	
Paper and Printing	
Textiles	
Minerals	
Wood and Furniture	
Food and Beverages	
Metal Products	
Basic Metals	
Shipbuilding and Aerospace	
Automotive	
Plastics and Chemicals	

Change in employment 1993-2000 ('000s)

2000s

Shipbuilding and Aerospace	
Miscellaneous	
Textiles	
Paper and Printing	
Minerals	
Industrial Machinery	
Wood and Furniture	
Basic Metals	
Electronics	
Food and Beverages	
Metal Products	
Plastics and Chemicals	
Automotive	

Change in employment 2000-2007 ('000s)

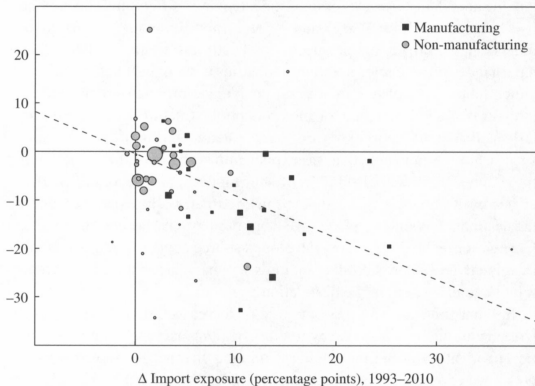**Source:** Acemoglu Restrepo (2019), Author calculations

OFFSHORING EVIDENCE IS QUITE STRONG

Elsby Hobijn Sahin (2013)

Pierce Schott (2016)

Figure 12. Import Competition and Changes in Payroll Shares by Industry

Δ Payroll share (percentage points), 1987–2011

- ■ Manufacturing
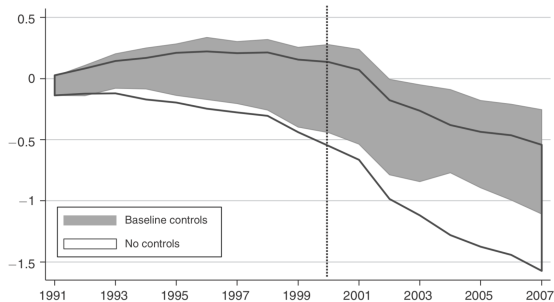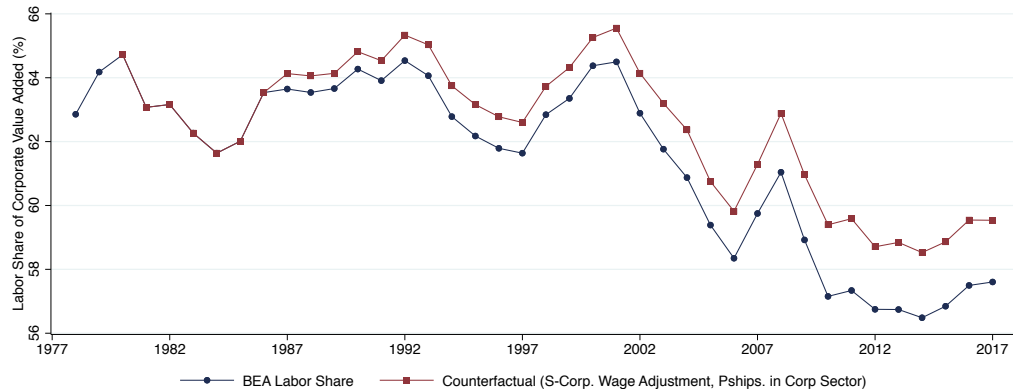- ○ Non-manufacturing

Δ Import exposure (percentage points), 1993–2010

FIGURE 4. ESTIMATED TIMING OF THE PNTR EFFECT (*LBD*)

- Baseline controls
- No controls

Note: Strong tax incentives to locate both profits and real activity offshore

TAX AVOIDANCE DISTORTS THE LABOR SHARE BY 30%

Source: Smith, Yagan, Zidar, Zwick (2020)

MINOR COMMENTS FOR THE AUTHORS

1. One historical motivation for the accelerated depreciation rules was that deductions are nominal. In high inflation periods, this was an important implicit tax on investment. Related to this, do you account for high inflation when implementing the tax rates?

2. I may be mistaken, but the investment tax credit is not included in the effective rate calculations for the early 1980s. My reading is that the ITC was much more generous than accelerated depreciation for equipment expenditures. So it seems important to include.

3. Self-developed software is expensed, not depreciated (e.g., when Google programmers write a new app). To the extent this is automation, does it face an even lower tax rate?

4. The cost per job estimates likely overstate the cost if they don't account for higher future tax revenues due to the retiming of deductions. I would take a look at Garrett Ohrn Suarez-Serrato for an example of how to do this.

5. Footnote 23: should be 2011, not 2016.

6. Footnote 25: is net capital income the right tax base for the broader capital tax rate? Perhaps yes, but thinking about owner imputed rents and tax avoidance in the proprietors sector, for example.

7. Footnote 26: I think the CBO motivation is partly about the temporary nature (as you write) but also about the retiming of deductions. The latter motivation is consistent with how the scorekeepers at JCT and OTA account for this.

Very Interesting Paper

Punchline

1. Thought-provoking perspective on capital taxes and automation.
2. Very clearly written and intuitive.
3. Where does this rank relative to other tax policy considerations?

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Thanks!