

SCALE-BIASED TECHNICAL CHANGE AND INEQUALITY

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discussion by

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[†]The views expressed here are those of the authors and do not necessarily reflect those of the Board of Governors or the Federal Reserve System.

Introduction

- ▶ Insightful paper!
- ▶ Skillful analysis of technology adoption, scale bias, and top inequality
- ▶ Extensive and meticulous empirical work blending novel data sources

Outline:

- i. Brief highlights
- ii. Broad implications
- iii. Specific comments

In a nutshell

Theory

- ▶ Technologies ranked by scale (fixed cost): higher fc \rightarrow lower mc
- ▶ Firms with higher inherent productivity choose larger scale
- ▶ Scale-biased tech (higher fc) leads to
 1. Lower entry
 2. Higher avg. firm size
 3. Higher average profits and lower wages
 4. Higher inequality

Empirics

Coal v. Hydro potential \Rightarrow Steam v. Electric adoption \Rightarrow Firm size \Rightarrow Profit/wage ratio in US, wealth inequality in NE

Main findings

Fig: Firm size

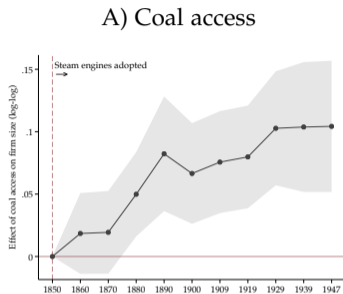
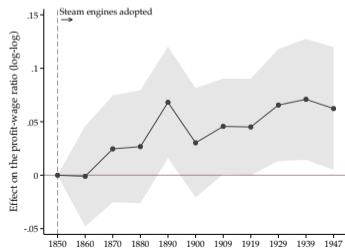
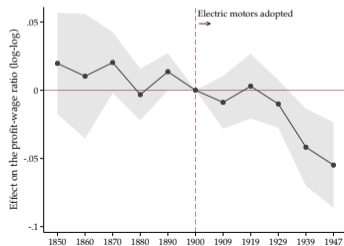
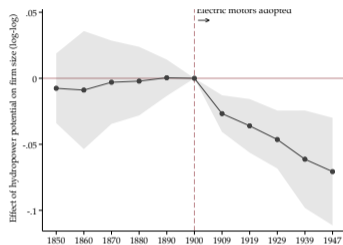


Fig: Profit/wage



B) Hydro potential



Broad take: scale-biased technical change

A valuable insight into the nature of technologies and heterogeneous adoption by firms

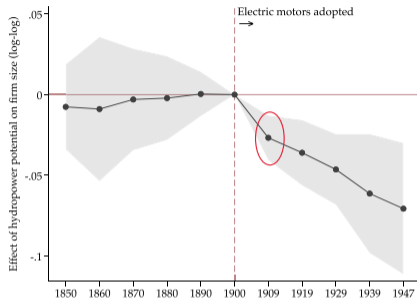
Implications for recent debates:

- ▶ Technology and slowing business dynamism
(de Ridder, 2024; Decker et al., 2020; Ates and Akcigit, 2023)
- ▶ Data as productive input (Begenau, Farboodi and Veldkamp, 2018)

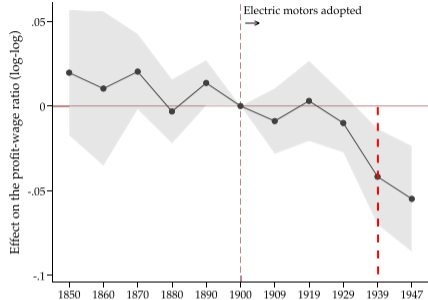
Comments I: theory and empirics

1. Evidence on scale-biased tech and entrepreneurship / entry rate
 - ▶ Theory: scale-biased tech reduces entry
 - ▶ Changes in avg. firm size: less entry or expanding large firms?
2. Small-scale tech: uniform adoption in data vs. low-TFP adopters in model?
 - ▶ Maybe think of it as a uniform decline in fixed costs?

Comments II: small-scale-biased technology



A) Firm size

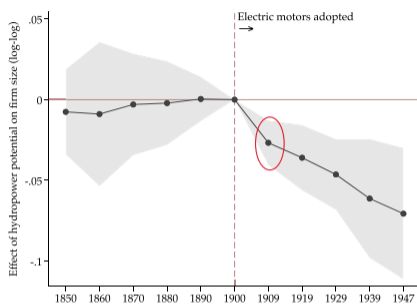


B) Wage/profit

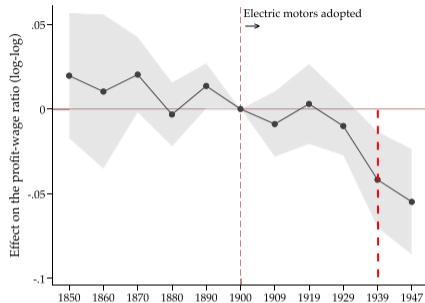
1. Immediate and sizeable response of firm size to electric motor adoption

- ▶ Adoption accelerates in the 1920s
- ▶ Profit-wage ratio responds meaningfully a couple of decades later

Comments II: small-scale-biased technology



A) Firm size



B) Wage/profit

2. Interaction with (endogenous) skill-biased technical change

- ▶ Expansion of high-school enrollment in the 1910s (Goldin and Katz, 1995)
- ▶ SBTC subsequently favoring educated workforce (Acemoglu, 1998)
- ▶ “... switch to electricity from steam and water-power ... was reinforcing [technology-skill complementarity]...” (Goldin and Katz, 1998)

Conclusion

- ▶ *Overall, impressive work!*