

Does Skill Abundance Still Matter?

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 - rationalize w/ amend. theory: prod. requires skilled labor and tasks, w/ tasks done by...
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- my discussion: intuition + one big question

A simple empirical framework

Multi-sector Eaton and Kortum (2002)

w/ two skill types...

$$\lambda_{ijst} \equiv \frac{X_{ijst}}{X_{jst}} = \frac{(c_{ist}\tau_{ijst})^{-\theta}}{\sum_{\ell} (c_{\ell st}\tau_{\ell jst})^{-\theta}}$$

$$\ln c_{ist} = \alpha_{st}^H \ln \left(\frac{w_{it}^H}{w_{it}^L} \right) + \ln w_{it}^L$$

$$\ln \left(\frac{w_{it}^H}{w_{it}^L} \right) \equiv -\gamma \ln \left(\frac{H_{it}}{L_{it}} \right) + \nu_{it}$$

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... leads to estimating equation

$$\lambda_{ijst} = \exp \left\{ \beta \left[\alpha_{st}^H \ln \left(\frac{H_{it}}{L_{it}} \right) \right] + \eta_{ijt} + \eta_{jst} \right\} + \varepsilon_{ijst}$$

where...

$$\beta \equiv \theta\gamma$$

$$\eta_{ijt} \equiv -\theta \ln w_{it}^L - \theta \ln \tau_{ijt}$$

$$\eta_{jst} \equiv -\theta \ln \tau_{jst} - \ln \left(\sum_{\ell} (c_{\ell st}\tau_{\ell jst})^{-\theta} \right)$$

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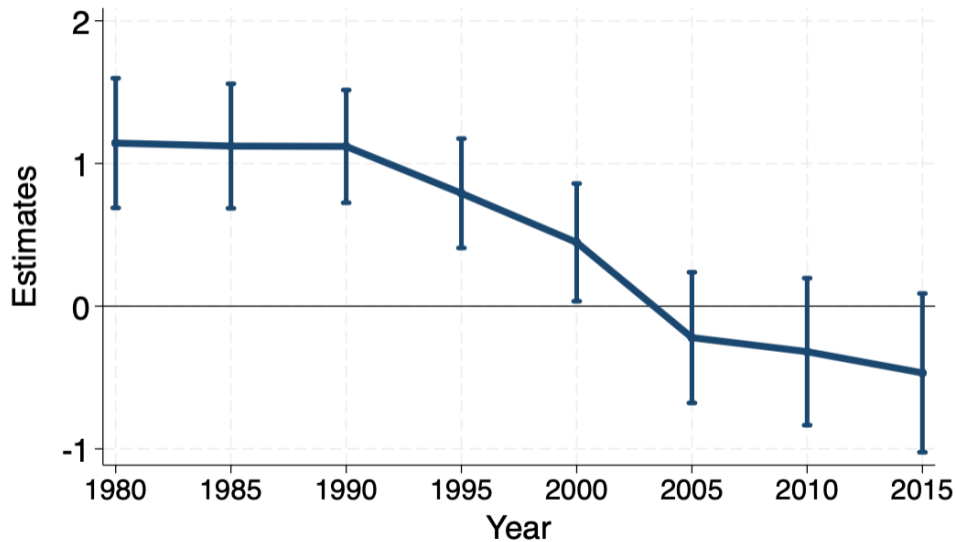
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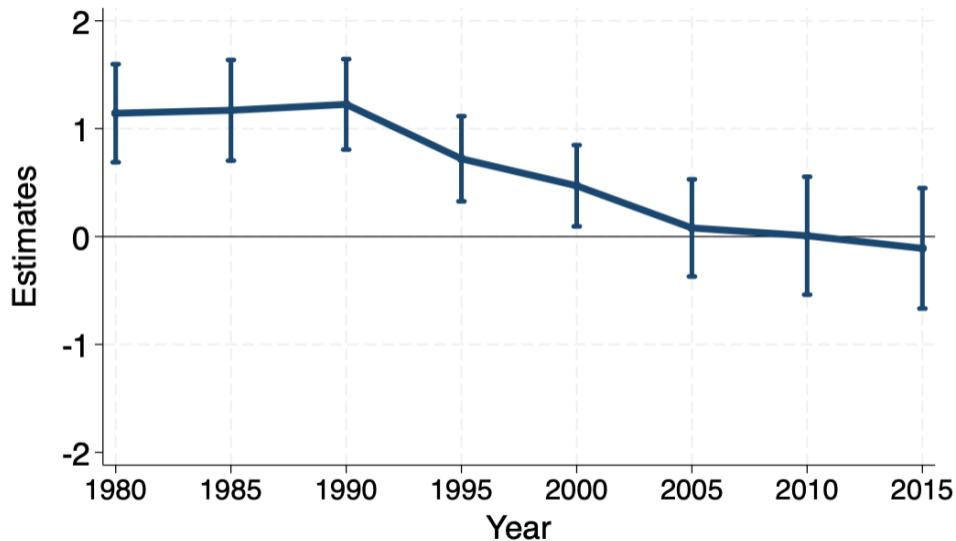
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What if we estimate w/ time-varying β_t ?

The key figure...



... and key robustness check: Use $\alpha_{s,1980}^H \ln(H_{i,1980}/L_{i,1980})$



What could be going on?

- fundamentally, time-varying β_t means...
 - time-varying trade elasticity θ_t (\rightarrow don't ever consider this)
 - time-varying **elasticity of skill premia w.r.t. skill abundance** γ_t , or
 - time-varying secret third thing \dots_t
- robustness check \rightarrow result can't just be about $\alpha_{st}^H \ln(H_{it}/L_{it})$, but a bit odd to consider
- counterfactuals follow specification of this robustness check (but $t_0 \equiv 1995$)

How automation could generate declining β_t

Amend: **Multi-sector EK + tasks** (Acemoglu and Restrepo, 2021; Grossman and Rossi-Hansberg, 2008)

$$\beta_t = (1 - \alpha_{Rt}^H \Gamma_t^A) \theta \gamma_t$$

- $\alpha_{Rt}^H \equiv$ value-added share of high-skill in robot production
- $\Gamma_t^A \equiv$ automation share (assumed *constant* across i, s)
- $\gamma_t \equiv$ elasticity of skill premia w.r.t. skill abundance, **but that's now a GE object**

So, an increase in Γ_t^A (simulated in cftl) decreases β_t thru **two channels**:

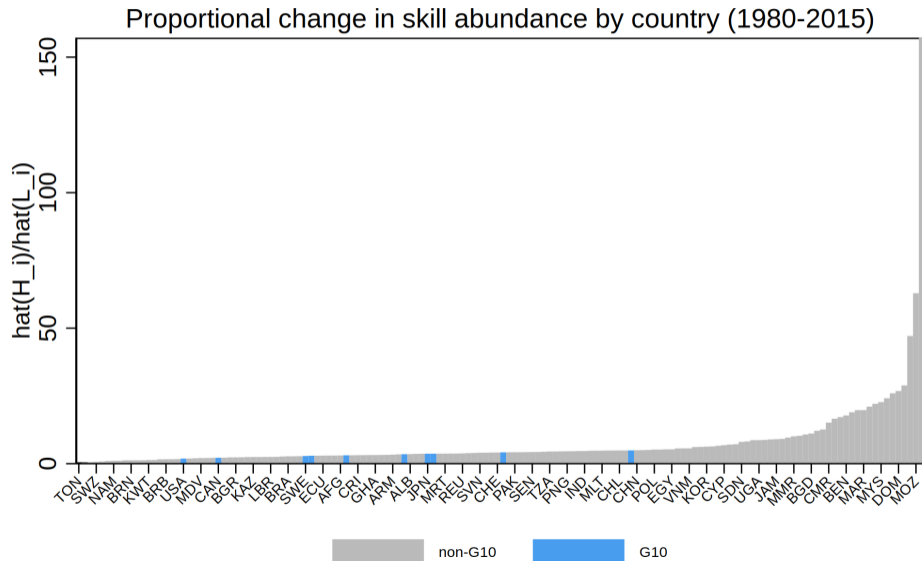
- **directly** thru no-longer-secret third term $(1 - \alpha_{Rt}^H \Gamma_t^A)$
- **indirectly** by lowering γ_t , as $\uparrow \Gamma_t^A$ drives up the skill premium **but H/L is fixed**

... and skill abundance pops up in new spot \rightarrow please add the proofs!

A simpler story? Converging skill abundance

- **What are we ultimately trying to explain?** Given $\{X_{ijs,0}\}$, predict $\{\hat{X}_{ijs,t}\}$
- Could use $\{\beta_t, H_{i0}/L_{i0}\}$, like this paper, but why not $\{\beta, \hat{H}_{it}/\hat{L}_{it}\}$?
 - main empirical specification uses $\{\beta_t, \hat{H}_{it}/\hat{L}_{it}\}$, but counterfactuals hold H/L fixed
 - still, these changes are implicit in $\Delta\eta_{jst}$ thru multilateral resistance term
 - if we feed $\hat{H}_{it}/\hat{L}_{it}$ into automation-amended model, **what happens?**
- Trade is fundamentally about **heterogeneity** → if skill abundance is converging, then its role in determining trade patterns should diminish
 - Not apples-to-apples with paper's story, but maybe simpler
- In a paper re: evolution of comparative advantage w/ source = factor abundance, seems odd to mostly ignore evolution of said factor abundance

Plotting long differences \hat{H}_i/\hat{L}_i (1980–2015)



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- **Not so much!** And the **rise of automation** can explain why...
- ...but maybe a simpler story about converging factor abundance could, too?
- A very well-done paper—**check it out!**

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Thanks!

References

- Acemoglu, Daron and Pascual Restrepo. 2021. "Tasks, automation, and the rise in US wage inequality." National Bureau of Economic Research, Working Paper 28920.
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