High-tech Clusters, Labor Demand, and Inequality: Evidence from Online Job Vacancies in China

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Discussion by

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This paper: can PBPs improve (spatial) inequality?

- Policymakers use various tax/grant levers to promote regional economic convergence
- This paper suggests PBPs may make inequality worse along **three** dimensions:
  1. Spatial (city-level): jump in labor demand in targeted areas at expense of neighbors
  2. Labor market: gap between wages of non-routine and routine workers
  3. Housing: real wage (W/P^{β}) falls in targeted areas
- Setting: "Made in China 2025" (MIC25) policy and job postings data
  - Combination of tax incentives and land grants targeting high-tech sector
  - Matched DD event study design
  - Some staggered rollout but concentrated over 1.5 years

Main comment: links between model and empirics

- Kline & Moretti (2014) model extended by separating labor into routine/non-routine
- Welfare depends on how cost of capital moves city $\times$ occupation-specific real wage

$$\frac{dV_t^s}{d\rho} = \sum_{j_0} N_t^{j_0,s} \left[\sum_j \frac{N_{j,t}^{j_0,s}}{N_t^{j_0,s}} \cdot \underbrace{\left(\frac{dw_{j,s,t}}{d\rho_a} - \frac{dr_{j,t}}{d\rho_a} \right)}_{= \text{total change in real wage}} \right]$$

- Key to define treatment at the treated city $\times$ industry level to get $dw_{j,s,t}/d\rho_j$
- **What is the shock to the firm's cost of capital ρ_j, and does it only vary by city?**
  - Treatment includes many policy instruments, each with potentially different implications for the relative cost of production inputs
  - Example: subsidize robots which are complementary with non-routine labor

Related point – are equilibrium objects being measured?

- Job posting data is a double-edged sword
  - Pro: high-frequency nature means can be more precise about timing relative to policy dates
  - Con: only observe labor demand and not contractual wages
- Authors show pre/post gap between listings and employment does not grow, but...
  - **This is puzzling!** Given *hukou* system, can workers move to meet that demand within two years? More details here would be helpful...
  - **Negotiation?** If there is excess demand for IT labor in target areas, workers in that sector have more bargaining power $\implies$ Δ listed wage $<$ Δ contractual wage
  - Partial fix: use last observed wage within each listing (take out firm or listing FE)
- Important because welfare relies on movements in **equilibrium** objects

Suggestions on improving the framing

- PBP literature has **exploded** in last two years since onset of opportunity zones
  - Empirical literature focuses on short-term effects in labor and housing markets
  - Theoretical literature focuses on aggregate welfare implications (e.g. Gaubert 2018)
- One route: "robots" vs. routine labor and economic development
  - If going to pursue this route, need more information on the capital input composition
  - Or, need more information on how tax incentives alter relative prices of production inputs
- Alternative: spatial inequality can quickly grow in response to these policies
  - Not using neighboring cities in the main empirical design (PSM + staggered DD)
  - And pilot/non-pilots could be in same commuting zone (HSR), so nature of this inequality is unclear $\longrightarrow$ spillovers to local tax bases, spending, etc. (*hukou*?)

Final takeaways

- Interesting take on the labor market effects of PBPs
  - High-frequency nature of data is unique to PBP context
  - Ambitious in that also trying to do welfare analysis $\longrightarrow$ calculations?
- Some measurement problems
  - Unclear if authors can identify labor market equilibrium objects
  - What is the shock to the cost of capital?
- **Two paths: focus on either spatial or routine/non-routine worker inequality**
  - Data limitations make spatial inequality more straightforward route
  - Sharper definition of what spatial inequality means given control groups

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THANKS!