Saving the American Dream? Education Policies in Spatial General Equilibrium

Eckert and Kleineberg (2021, Working Paper)

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Motivation and Summary

Childhood neighborhoods matter for children's outcomes

- **Local labor market access**
  - Wage and returns to education + costly migration
- **Local education quality**
  - Local schools, neighborhood characteristics

RQ: How do these interactions shape education policy effects?

This paper: dynamic spatial GE model + policy experiments

- **Policy:** School funding equalization across US
  - improves social mobility but GE effects make it modest

Key Contribution

Theory: Inequality, local human capital formation, schooling:
Benabou (1993, 1996), Durlauf (1996 ab), Fernandez and Rogerson (1996, 1997) etc

Empirics: Neighborhoods/school on children's education/ economic outcomes:
Jackson et al (2016), Alton and Mansfield (2018), Chetty and Hendren (2018 ab) etc

Tool: Quantitative Spatial GE model:
Redding and Rossi-Hansberg (2017) and many more

→ **This paper:** connect Theory to Empirics using Tool

Model and its Implication

Standard QSGE with dynastic structures

- Parents: Choose location to live/work and raise children
- Children: Choose education (high/low skill = college)

Education outcome: children of parents e in region $n \in \mathbb{N}_m$

$$\log\left(\frac{Pr(h\,|\,n,e)}{Pr(l\,|\,n,e)}\right) = \frac{1}{\sigma_E}(R(m,h) - R(m,l)) + \frac{1}{\sigma_E}Q_n^e(\{L_n^e\},\{w_n^e\})$$

College Odds $\equiv \hat{E}_n^e$ | Education Return $\equiv \hat{R}_m$ | Education Quality $\equiv \hat{Q}_n^e$

$$\hat{Q}_n^e = \hat{K}_n^e + \hat{f}_n$$

"Exogenous quality" Funding

Policy Experiments

College odds Skill premium Edu. quality Funding

Education outcomes: $\hat{E}_n^e = \hat{R}_m + \hat{K}_n^e + \hat{f}_n$

Status-quo policy: $\hat{f}_n$ is high

- for the high-skilled on average
- in regions with high $\hat{R}_m$ and low $\hat{K}_n^e$

Policy experiment: Equalizing $\hat{f}_n$ and see effects on $\hat{E}_n^e$

- **Direct effect:** Holding other margins ($\hat{R}_m, \hat{K}_n^e$) constant
  - Policy: funding are more allocated to the low-skilled
  - **Positive (negative) for the low (high)-skilled**

Table

Policy Experiments

College odds Skill premium Edu. quality Funding

Education outcomes: $\hat{E}_n^e = \hat{R}_m + \hat{K}_n^e + \hat{f}_n$

Policy experiment: Equalizing $\hat{f}_n$ and see effects on $\hat{E}_n^e$

- Direct effect: Holding all else margins constant
- **GE effect:** Activate all the margins
  - Education return (skill premium), $\hat{R}_m$
    - **Negative for all** b/c the reform reduce $\hat{f}_n$ in high $\hat{R}_m$
  - Exogenous education quality (accessibility), $\hat{K}_n^e$
    - **Negative (positive) for the low (high)-skilled**
      - "Too much $\hat{f}_n$ in low $\hat{K}_n^e$ place" $\rightarrow$ More $\hat{f}_n$ to high $\hat{K}_n^e$
      - In response, $\hat{R}_m$ increases in low $\hat{K}_n^e$ place, but limited

Table

Comments

Strengths: Roles of GE effects to quantitatively alter policy effects

Weakness: Baseline covariance of $\hat{f}_n$ and local characteristics determines all

Extensions:

Theory

1. **Efficiency:** Optimal dynamic spatial policy
2. **Political economy:** Why status-quo? (Bothering economists' Q)
3. **College:** Policies relocating for college?
4. **Another externality:** Information frictions: "Why school?"
   - Exposure to high-skill ppl motivates schooling (Porcher 2020)
5. **Time-horizon:** Adjustments take generations. Transition?

Quant./ Empirics

6. **Local demographics:** Policy effects change in demographics?
7. **Tax:** Change from uniform ("10% for all") to nonlinear income tax
8. **Causal evidence:** Educational reforms in reality (if any)

Appendix

Results: Direct Effects

Parental Skill	Direct Effect
Panel A: Probability of Attending College (p.p. change)	
All	1.15
Low	3.15
High	-0.47
Panel B: Effect from School Funding	
Low	(+)
High	(−)
Panel C: Effect from Education Returns	
Low	None
High	None
Panel D: Effect from Exogenous Education Quality	
Low	None
High	None

Results: GE Effects

Parental Skill	Direct Effect	General Equilibrium
Panel A: Probability of Attending College (p.p. change)		
All	1.15	0.11
Low	3.15	0.57
High	-0.47	-0.33
Panel B: Effect from School Funding		
Low	(+)	(+)
High	(−)	(−)
Panel C: Effect from Education Returns		
Low	None	(−)
High	None	(−)
Panel D: Effect from Exogenous Education Quality		
Low	None	(−)
High	None	(+)