The End of the American Dream? Inequality and Segregation in US Cities

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Becker Brown Bag Lunch
February 2020
Motivation

- over last 40 years large increase in US income inequality
- simultaneous rise in residential income segregation

Question:

has residential segregation contributed to amplify inequality response to underlying shocks?

This paper:

model of human capital accumulation and local spillovers disciplined with new micro estimates by Chetty-Hendren
We now propose a model of a metro area where families choose the neighborhood where to live taking into consideration that there are local spillovers affecting their children's future income.

3.1 Set up

The economy is populated by overlapping generations of agents who live for two periods. In the first period, the agent is a child and accumulates human capital. In the second period, the agent is a parent. A parent at time $t$ earns a wage $w_t \in [w, w]$ and has one child with ability $a_t \in [a, a]$.

The ability of a child is correlated with the ability of the parent. In particular, $\log(a_t)$ follow an AR1 process $\log(a_t) = \rho \log(a_{t-1}) + \nu_t$, where $\nu_t$ is normally distributed with mean zero and variance $\sigma_{\nu}$, and $\rho \in [0, 1]$ is the autocorrelation coefficient. The joint distribution of parents' wages and children's abilities evolves.
An Example: Chicago

The figure plots the share of rich households (top 20th percentile)
Preview

• data: correlation between inequality and segregation

• macro model with human capital and residential choice

• key ingredient: \textit{neighborhood spillover}
  • public schools, peer effects, social norms, networks . . .

• endogenous response of house prices \rightarrow feedback between inequality and segregation

• \textbf{main exercise}: response to skill premium increase in 1980

• segregation contributes to 28\% of the increase in inequality
Main Focus

Skill Premium

Inequality

Segregation
Data and Indexes

- Census tract data on family income 1980 - 2010
  - geographic unit and sub-unit: metro and tracts (according to Census 2000)

- inequality measure = Gini coefficient

- segregation measure = dissimilarity index
  - it measures how uneven is the distribution of two mutually exclusive groups across geographic subunits
  - groups: rich and poor as above and below the 80th percentile
Inequality and Segregation Across Time
Dissimilarity with different percentiles
Different Measures of Segregation

- $H^R$ Index
- Bias-Corrected $H^R$
- Dissimilarity
Different Measures of Inequality
Inequality and Segregation Across Space
Inequality and Segregation Across Space and Time
Intergenerational Mobility Matrices

(a) Low Segregation Metros

(b) High Segregation Metros

High/low: above/below median Dissimilarity p50 in 1980
Set Up

- overlapping generations of agents who live for 2 periods: children and parents

- at any time each parent has a wage $w$ and observes the talent of her child $a$

- children’s talents are correlated with their parents’ talents

- parents make two important choices:

  1. educational choice: low or high education ($e_L$, $e_H$)
  2. residential choice: neighborhood A or B
Housing Market and Wage Dynamics

- neighborhood A has a fixed supply of houses $H$ and rental rate is endogenous.

- neighborhood B has fully elastic supply of houses and rental rate is equal to a constant marginal cost.

- wage of child with ability $a$, education $e$, growing up in neighborhood $n$:

  $$w' = \Omega(w, a, e, S^n, \varepsilon)$$

- $S^n = \text{average human capital in neighborhood } n$

- key: complementarity between $a$ and $S^n$ and $e$ and $S^n$
Residential Segregation

\[ \hat{w}_t(a_t) \]

\[ n=A \cdot e=e^H \]

\[ n=B \cdot e=e^H \]

\[ n=B \cdot e=e^L \]
Response to Skill Premium Increase

(c) Partial Equilibrium

(d) General Equilibrium
Feedback Mechanism

- Inequality
- Spillover Gap
- Segregation
- House Prices
Main Exercise

- calibrate the model steady state to 1980 US data

- one-time, unexpected, permanent increase in skill premium in 1980

- skill premium increased from .39 in 1980 to .54 in 1990

- look at responses of inequality, segregation, mobility

- look at counterfactual exercises to understand the amplifying role of segregation on inequality
Response to Skill Premium Shock

Panel a: Inequality
- Model data
  - 1980: 0.26
  - 1990: 0.3
  - 2000: 0.34
  - 2010: 0.4

Panel b: Segregation
- Model data
  - 1980: 0.3
  - 1990: 0.34
  - 2000: 0.38
  - 2010: 0.42
Main Counterfactual: Random Re-Location

• how much does segregation amplify the response of inequality to the skill premium shock?

• main counterfactual: shut down residential choice after the shock

• after the shock families randomly re-located in the two neighborhoods

• spillover equal in two neighborhoods → global spillover
Main Counterfactual: Random Re-Location
Additional Exercises

two alternative exercises to quantify the contribution of segregation to inequality

1. no spillover (local or global)
   - wage function not affected by local spillovers

2. fixed local spillover (not responsive to the shock)
   - keep $S^A$ and $S^B$ fixed at the initial steady state levels
No Spillover and No Spillover Feedback

Panel a: Inequality
- Model
- Fixed Spillover
- No Spillover

Panel b: Segregation
- Model
- Fixed Spillover
- No Spillover
Decomposing the Spillover Feedback

GE effect: as $R^A$ increases, the degree of sorting by income increases
Model with No Spillover
To conclude

- GE model with human capital accumulation, residential choice and local externalities
- Local externalities generate segregation by income across neighborhoods
- Segregation contributed to roughly 28% of the increase in inequality in response to a skill premium shock
- Work in progress: policy implications with particular attention to neighborhood-placed policies