Why Has Regional Income Convergence in the U.S. Declined?

Peter Ganong (UCicago) and Daniel Shoag (Harvard)

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Change in Log Income Per Capita

1940-1960, Coef: -.488 SE: .019

1990-2010, Coef: -.198 SE: .057
Coef: \( d\text{Inc} = b \cdot \text{inc}_{t-20} \)

Timeseries of Coefficients - Convergence
Change in Log Population

1940-1960, Coef: .33 SE: .07

Log Income, 1940

Change in Log Population
Timeseries of Coefficients - Convergence and Pop

Coef: \( \text{dInc} = b \times \text{inc}_t - 20 \)

Coef: \( \text{dPop} = b \times \text{inc}_t - 20 \)

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Outline

1. Facts About Housing Prices

2. How Does Housing Supply Affect Convergence? New Measure of Supply Restrictions
Outline

1. Facts About Housing Prices
   ▶ Differences in Housing Prices Have Grown Relative to Differences in Incomes
   ▶ Housing Prices Have Lowered the Returns to Living in Productive Places For Unskilled Workers
   ▶ Migration Flows Respond to Skill-Specific Gains Net of Housing Prices

2. How Does Housing Supply Affect Convergence? New Measure of Supply Restrictions
Differences in Housing Prices

1960, Coef: .95 SE: .08

2010, Coef: 2.04 SE: .25
Changes in Returns to Migration

Effect of $1 of Statewide Inc on Skill-Specific Inc Net of Housing

- Unskilled HH
- Skilled HH

Coef


Values: 0, 0.5, 1, 1.5
Migration Flows – 2000

Low Skill Coef: -2.17 SE: 1.00

Net Migration as % Pop

Log Nominal Income

Low Skill Coef: 4.30 SE: 2.00

Net Migration as % Pop

Log (Inc-Housing Cost) for Low Skill

High Skill Coef: 4.07 SE: .69

Net Migration as % Pop

Log Nominal Income

High Skill Coef: 4.71 SE: .89

Net Migration as % Pop

Log (Inc-Housing Cost) for High Skill
Outline

1. Facts About Housing Prices

2. How Does Housing Supply Affect Convergence? New Measure of Supply Restrictions
A New Regulation Measure

- **Construction**
  - Number of hits per capita from state appeals courts for “land use”
  - Omnibus measure. Captures many different anti-development tactics.

- **Properties**
  - correlated with cross-sectional measures
    - American Institute of Planners, 1975
    - Wharton Residential Land Use Regulatory Index, 2005
  - correlated with prices, conditional on state and year fixed effects

- Look at patterns separately for low elasticity and high elasticity states
How Regulations Affect Convergence

- The previous graphs split states at the median within each year.
- We can instead exploit the regulation measure to fix a cutoff level of regulation.

\[
Reg_{s,t} = \text{Percentile}\left\{ \frac{\text{LandUseCases}_{st}}{\text{Pop}_{st}} \right\}
\]

\[
Y_{s,t} = \alpha_t + \alpha_t Reg_{s,t} + \beta \ln c_{s,t} + \beta^{\text{high reg}} \ln c_{i,t-1} \times Reg_{s,t} + \varepsilon_{s,t}
\]

- Dependent variables: log housing prices, population, human capital (growth accounting measure from a Mincerian regression), and income.
## How Regulations Affect Convergence

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N 384

Indicators for Year and Year*Reg in all specifications.
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Indicators for Year and Year*Reg in all specifications.
Omitted Variable Bias

- More generally, could there be a post-1980 shock that raised regulation levels and lowered convergence?
- Use pre-1980 measures of housing supply elasticity
### Omitted Variable Bias

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<th>Constraint:</th>
<th>Regs in 2005</th>
<th>Regs in 1965</th>
<th>Buildable Land</th>
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<td>-1.80*** (0.33)</td>
<td>-2.05*** (0.15)</td>
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<td>0.22 (0.27)</td>
<td>2.01*** (0.66)</td>
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| N       | 1,248 | 1,200 | 1,248 | 1,200 | 8,413 | 9,194 |
| Geo     | State | State | State | State | County | County |

*Indicators for Year and Year*Constraint in all specifications.*
Conclusion

- Weakening of directed migration and convergence in last 30 years
- Directed migration drove convergence:
  - Regional labor markets clear through skill-sorting rather than net migration. Can be explained by supply shifts.
  - Continued convergence in places with unconstrained supply
- State-level panel measure for housing regulations.
  - We are happy to share this with other researchers.
Model Overview

- Model with multiple skill types, endogenous migration, and potentially restricted housing supply.
- Proposition 1: Directed migration drives convergence
- Proposition 2: Housing prices affect migration differently by skill level

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<th>Substantive</th>
<th>Expositional</th>
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<td>Regional labor demand is downward sloping</td>
<td>$Y = AL^{1-\alpha}$</td>
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<td>Land is an Inferior Good within a City</td>
<td>$U = c^\beta (h - H)^{1-\beta}$</td>
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<td>Migration is Costly</td>
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Simulation

Income Convergence Rate

Mig Rate from South to North (Skilled & Unskilled)

Reg ↑ Begins (Unanticipated)

Reg ↑ Complete

Rate of Convergence / Migration

0

Income Convergence Rate

Mig Rate (Skilled)

Mig Rate (Unskilled)

Time

\( t_0 \)

\( t_1 \)

\( t_2 \)