

Trickle-down housing economics

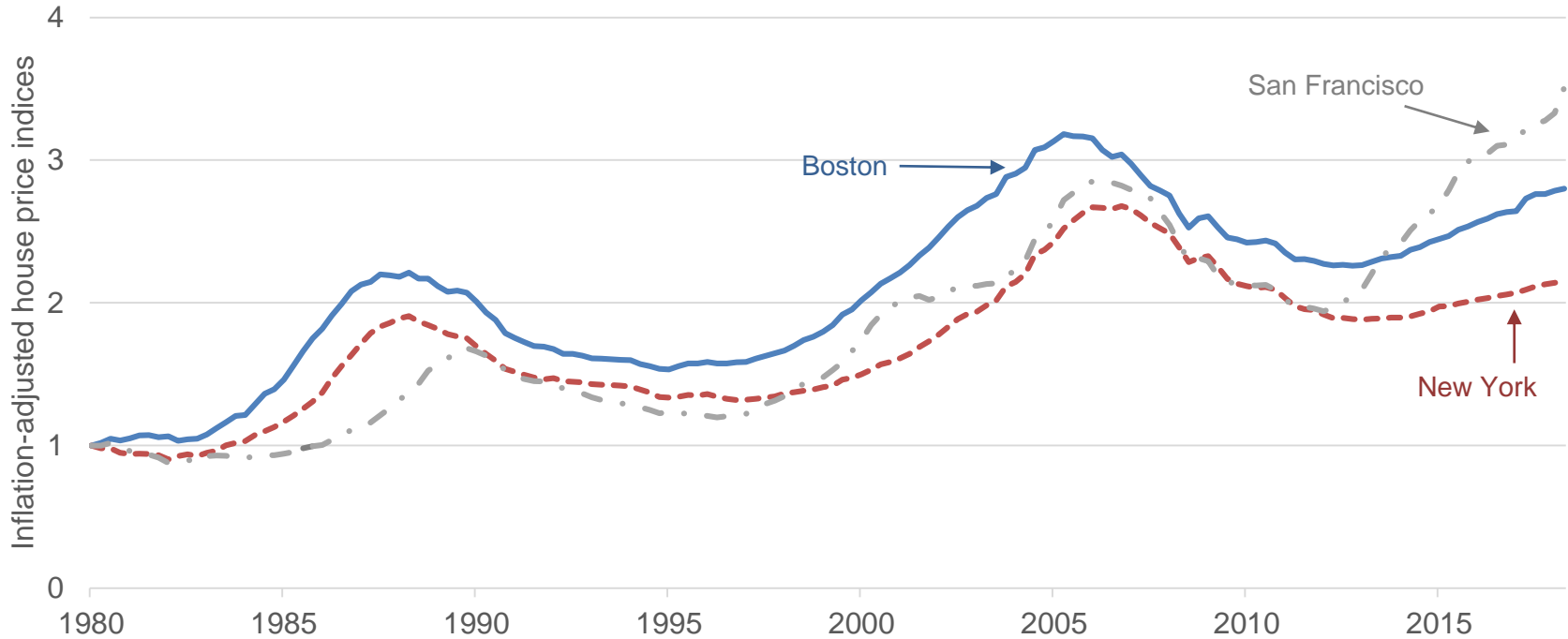
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“Housing, Household Debt, and the Macroeconomy” conference
Becker Friedman Institute, University of Chicago

Northwestern | Kellogg

The affordability crisis



Sources: BLS, FHFA



One57 (NYC)
Built in 2014
Penthouse sold for \$100m

How effective is luxury development for stemming the out-migration of poor households without a college degree from expensive metros?

Should economists support these policies?

National



- Low-income housing tax credit
- Opportunity zones tax incentives

Local



- Affordable housing plans
- Inclusionary zoning
- Foreign buyer taxes

What do we already know?

- Construction quality can affect city's house prices
 - Assumptions: open city & indivisible housing
 - Sweeney (1974a,b); Braid (1981)
 - **Missing: urban spillovers, welfare, estimation**
- New development can increase prices of nearby units
 - Schwartz et al. (2006); Baum-Snow, Marion (2009); Diamond, McQuade (2017)
 - **Missing: effects on metro**

This paper's findings

Luxury development...

induces little rich migration, keeps poor households in metro, and
leads existing residents to live in nicer housing

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Low-quality development...

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Labor market changes...

drive poor households out of metro; *tripling* Boston's construction rates reverses this effect, while rent control exacerbates it

Caveats

- Static model
 - Estimates are **long-run** effects
 - Home equity channel is absent (Fischel 2001)
- New construction is exogenous
 - Okay if local policy effectively determines construction (Glaeser, Gyourko 2003)
- Within-city richness is missing from the model
 - Housing is identical within neighborhood
 - Reduced-form specification for local amenities
 - No explicit geography

Related literatures

1. Recent papers on this question
 - Anenberg, Kung (2018); Mast (2018); Asquith, Mast, Reed (2018); Favilukis, Mabile, Van Nieuwerburgh (2019); Couture, Gaubert, Handbury, Hurst (2019)
2. Political economy of housing supply regulation
 - Fischel (2001); Hilbert, Robert-Nicoud (2013); Ortalo-Magné, Prat (2014); Gyourko, Molloy (2015); Albouy, Behrens, Robert-Nicoud, Seegert (2019)
3. Filtering
 - Sweeney (1974b); Rosenthal (2014)
4. Unidimensional housing quality
 - Sweeney (1974a,b); Braid (1981); Landvoigt, Piazzesi, Schneider (2015); Davis, Dingel (2018); Epple, Quintero, Sieg (2019)
5. Heterogeneous preferences for amenities by education
 - Bayer, Ferreira, McMillan (2007); Guerrieri, Hartley, Hurst (2013); Diamond (2016)

Environment and equilibrium

Housing and households

Housing

- Cities $t \in \{1, \dots, T\}$
- Housing quality $q_{0,t}, \dots, q_{J,t,t}$
- Housing supply $h_{j,t}$ (exogenous)
- House price $p_{j,t}$ (endogenous)
- Price-taking rentiers initially hold all housing

Households

- Education $e \in \{L, H\}$, labor endowment z , idiosyncratic city preferences ϵ_t
- Cobb-Douglas pref. over non-housing c , housing q , amen. a , and ϵ_t
 - Differ by education

Wages, amenities, and equilibrium

- In each city, competitive firms set wages
 - CES production function in L and H labor (Goldin, Katz 2008; Card 2009)
 - Productivity rises in city pop. & H share (Lucas 1988; Moretti 2004; Gennaioli et al. 2013; Combes, Gobillon 2015)
- City amenities rise in H share (Guerrieri, Hartley, Hurst 2013; Diamond 2016)
- Equilibrium: housing markets clear & households optimize by choosing one city and one type of housing

Estimation strategy and data



AMERICAN COMMUNITY SURVEY

U.S. CENSUS BUREAU

- Public-use microdata sample from IPUMS
- Aggregate persons to households
- Sample:
 - Boston metro 2016 (no rent control)
 - Drop renters paying no cash rent
 - Keep “group quarters” persons only if non-institutionalized, adult, non-student, and non-employed

Estimation strategy

Data steps

- Annualize house prices using user cost
- Create 51 house price bins (lowest is homelessness)

Model steps

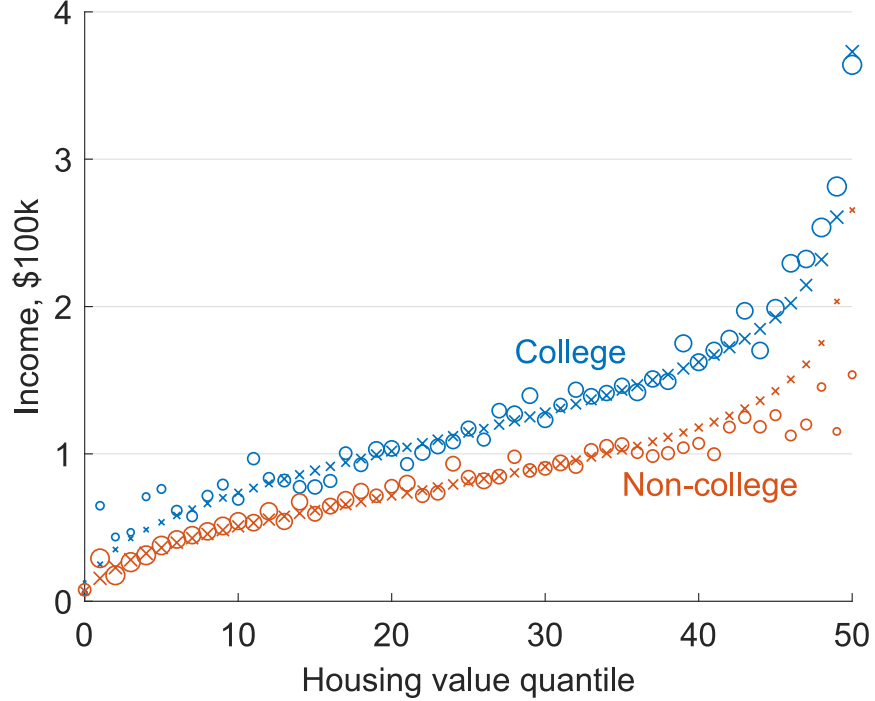
- Estimate joint distribution of income and education
- Moments for each bin:
 - College share
 - College income
 - Non-college income
- GMM

ELASTICITIES AND PREFERENCES

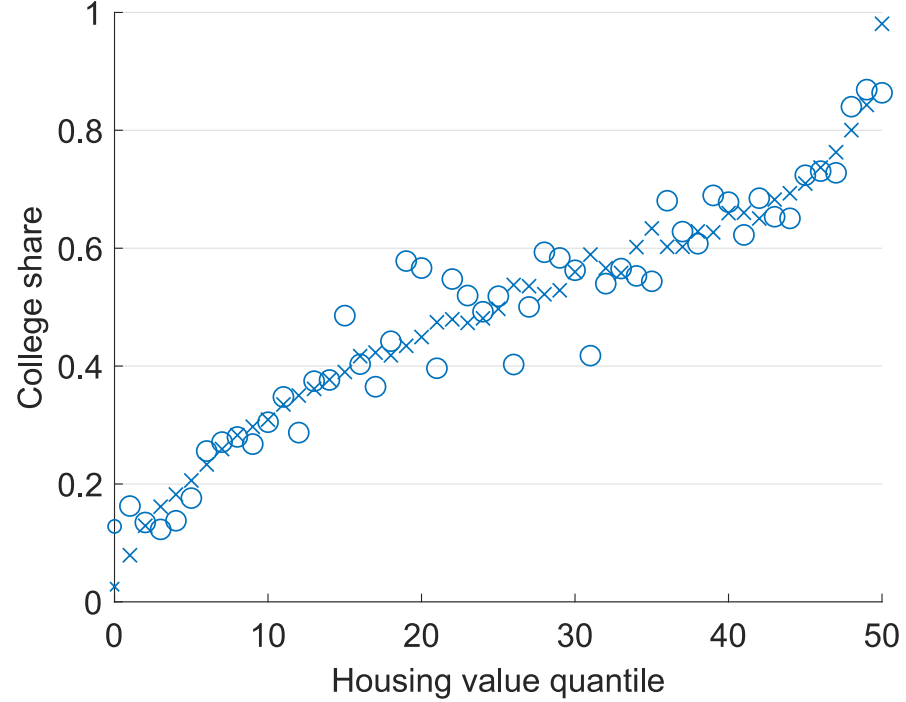
Name	Value	Source
L, H labor substitution inverse	0.7	Card (2009)
Density productivity spillover	0.055	Combes, Gobillon (2015)
College productivity spillover	0.1	Moretti (2004); Gennaioli et al. (2013)
College amenity spillover	1.1	Diamond (2016)
User cost	0.09	RCA data
a pref, L	0.3	Diamond (2016)
c pref, L	3.3	Davis, Ortalo-Magné (2011); Diamond (2016)
a pref, H	1.7	Diamond (2016)
c pref, H	1.0	Davis, Ortalo-Magné (2011); Diamond (2016)

Quantitative results

Panel A. Income by education group



Panel B. College shares



Construction effects

1. Build all new housing at 80th percentile (\$3,500/mo rent)
2. Build all new housing at 20th percentile (\$1,000/mo rent)

Quantity = 0.45% of housing stock (actual intensity in data)

Household subgroups:

- “Poor non-college” (bottom income quartile)
- “Rich college” (top income quartile)

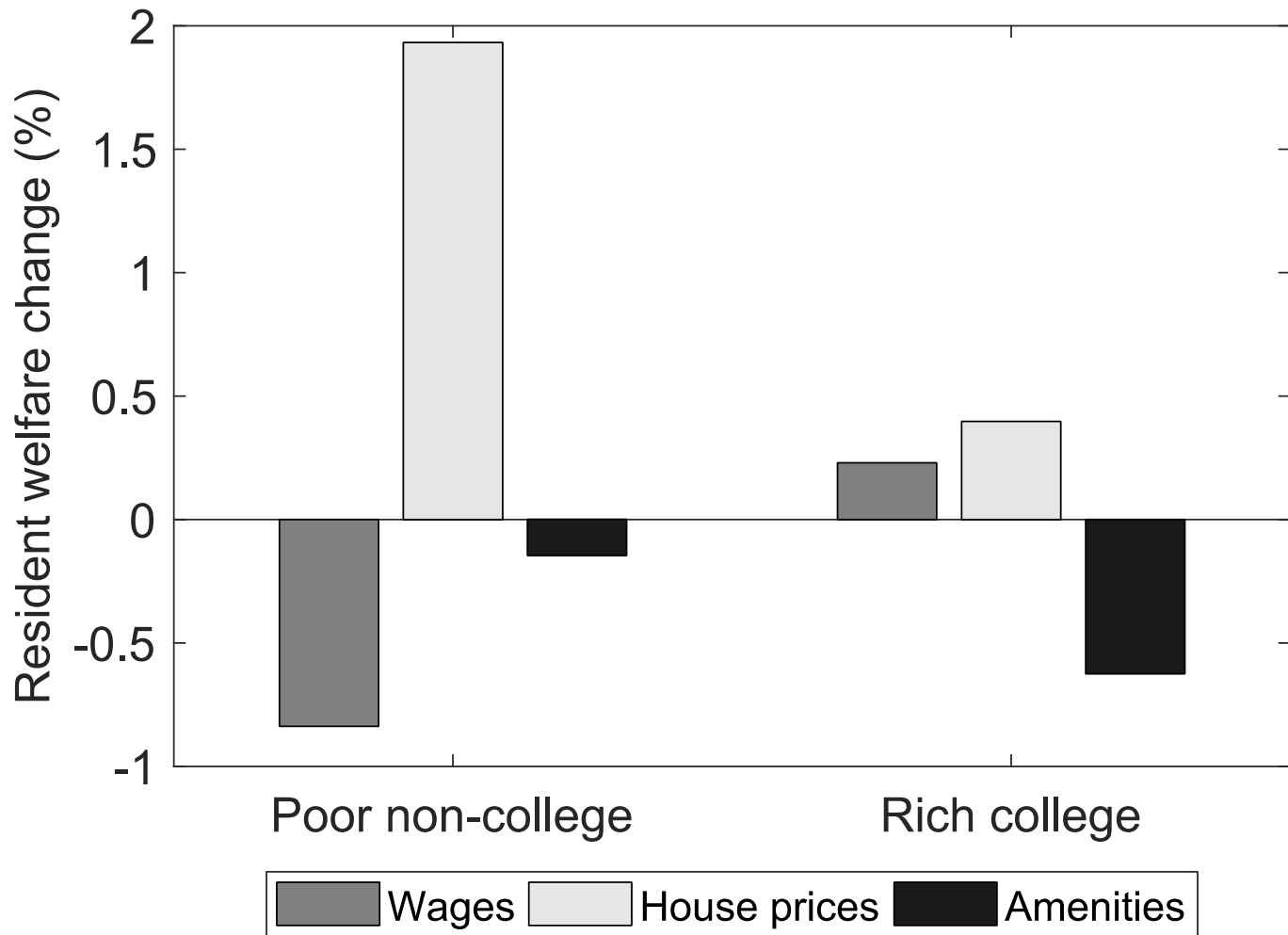
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CONSTRUCTION WELFARE EFFECTS (%)

	Poor non-college		Rich college	
	20 th	80 th	20 th	80 th
Baseline	1.7	0.9	-0.4	-0.0
Homogeneous preferences				
Exogenous amenities				
Neighborhood amenities				
Non-college service sector				
Increased mobility				
Closed city				

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	Poor non-college		Rich college	
	20 th	80 th	20 th	80 th
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Homogeneous preferences	0.9	0.5	0.1	0.4
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Exogenous amenities	1.0	0.5	0.2	0.3
Neighborhood amenities	1.9	1.4	-0.5	-0.2
Non-college service sector	1.6	0.9	-0.4	0.0
Increased mobility				
Closed city				

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	20 th	80 th	20 th	80 th
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Increased mobility	2.5	0.9	-1.1	-0.2
Closed city				

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Non-college service sector	1.6	0.9	-0.4	0.0
Increased mobility	2.5	0.9	-1.1	-0.2
Closed city	6.1	6.1	0.5	0.7

Effects of skill-biased productivity shock

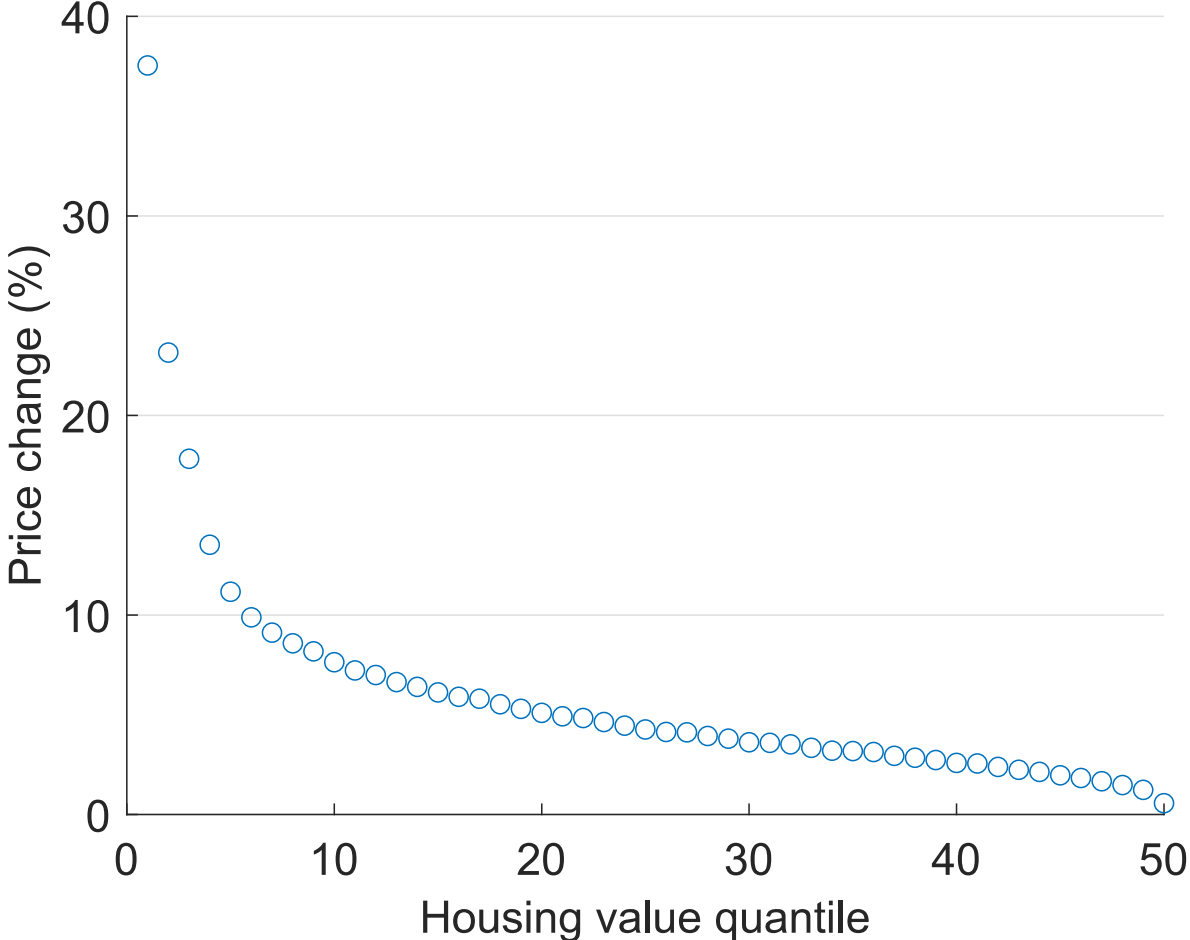
Annual Boston shock, 1980–2000 (Diamond 2016)

- –1.6% for non-college, 0.4% for college

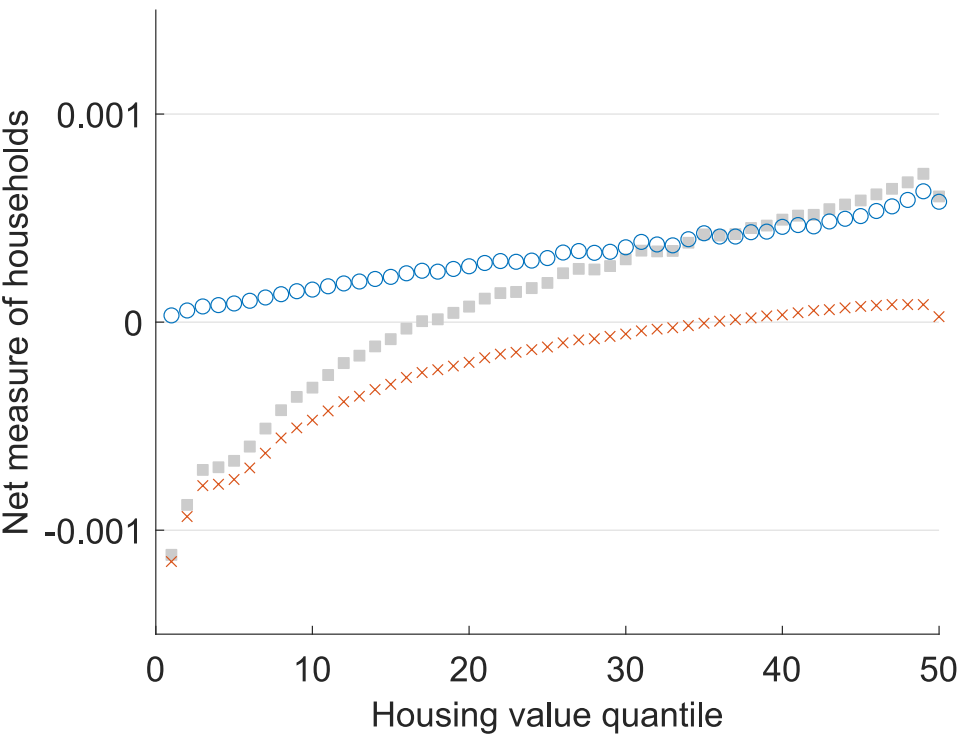
Policy analysis:

1. None
2. Construction (various qualities/intensities)
3. Rent control

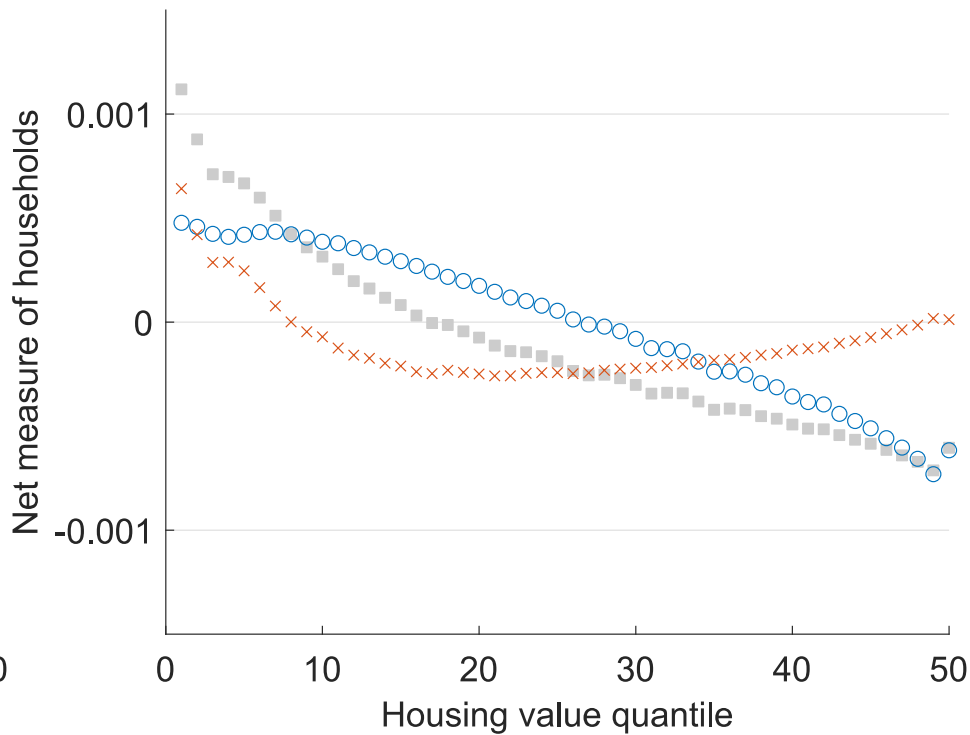
Panel A. House prices, relative changes



Panel C. Cross-city migration



Panel D. Within-city switching



○ College × Non-college ■ Total

SHOCK EFFECTS (%), DIFFERENT POLICIES

	None	<i>Construction policies</i>				
		2015	Unit- minimizing optimum	Cost- minimizing optimum	2015 quality optimum	Rent control
Poor non-college population	-3.8					
Rich college population	3.6					
Median house price	4.1					
Housing units	0.0					
Construction cost	0.0					
Construction quality	-					

SHOCK EFFECTS (%), DIFFERENT POLICIES

	<i>Construction policies</i>					
	None	2015	Unit- minimizing optimum	Cost- minimizing optimum	2015 quality optimum	Rent control
Poor non-college population	-3.8	-2.8				
Rich college population	3.6	3.5				
Median house price	4.1	3.1				
Housing units	0.0	0.5				
Construction cost	0.0	0.7				
Construction quality	-	0.0				

SHOCK EFFECTS (%), DIFFERENT POLICIES

	<i>Construction policies</i>					
	None	2015	Unit- minimizing optimum	Cost- minimizing optimum	2015 quality optimum	Rent control
Poor non-college population	-3.8	-2.8	0.1			
Rich college population	3.6	3.5	3.0			
Median house price	4.1	3.1	0.5			
Housing units	0.0	0.5	1.4			
Construction cost	0.0	0.7	1.7			
Construction quality	-	0.0	-17			

SHOCK EFFECTS (%), DIFFERENT POLICIES

	<i>Construction policies</i>					
	None	2015	Unit- minimizing optimum	Cost- minimizing optimum	2015 quality optimum	Rent control
Poor non-college population	-3.8	-2.8	0.1	0.1		
Rich college population	3.6	3.5	3.0	2.9		
Median house price	4.1	3.1	0.5	0.4		
Housing units	0.0	0.5	1.4	1.4		
Construction cost	0.0	0.7	1.7	1.5		
Construction quality	-	0.0	-17	-29		

SHOCK EFFECTS (%), DIFFERENT POLICIES

	<i>Construction policies</i>					Rent control
	None	2015	Unit-minimizing optimum	Cost-minimizing optimum	2015 quality optimum	
Poor non-college population	-3.8	-2.8	0.1	0.1	0.3	
Rich college population	3.6	3.5	3.0	2.9	3.3	
Median house price	4.1	3.1	0.5	0.4	0.1	
Housing units	0.0	0.5	1.4	1.4	1.7	
Construction cost	0.0	0.7	1.7	1.5	2.5	
Construction quality	-	0.0	-17	-29	0.0	

SHOCK EFFECTS (%), DIFFERENT POLICIES

	<i>Construction policies</i>					
	None	2015	Unit- minimizing optimum	Cost- minimizing optimum	2015 quality optimum	Rent control
Poor non-college population	-3.8	-2.8	0.1	0.1	0.3	-4.2
Rich college population	3.6	3.5	3.0	2.9	3.3	4.1
Median house price	4.1	3.1	0.5	0.4	0.1	2.0
Housing units	0.0	0.5	1.4	1.4	1.7	0.0
Construction cost	0.0	0.7	1.7	1.5	2.5	0.0
Construction quality	-	0.0	-17	-29	0.0	-

Conclusion: Lessons for policy

- 100 new luxury units induce:
 - 6 above-median income households to arrive
 - 68 below-median income households to stay
- For poor non-college households:
 - 2 luxury units = 1 low-quality unit
- Labor market, not new construction, causes affordability crisis
 - Construction offers a solution with winners & losers
 - Rent control makes the problem worse