

Urban Economics

Lecture 9: Economics and Urban Planning

Spring 2021

Tuukka Saarimaa

Outline

- **In this lecture, we will analyze urban planning from an economic point of view**
 - The focus will be on the incentives of different actors in the urban development process and whether we should regulate their actions
- **We also present conceptual framework for estimating costs and benefits of regulation**
- **Present an empirical paper on the effects of construction market-rate housing**
- **The lecture does not follow the textbook**

In what situations should we regulate the actions of market participants?

Do I have too few or too many socks?



Do I have too few or too many socks?

- **Answer: I have exactly the right amount of socks!**
- **How do I know?**
- **Because I alone get the benefits and I alone bear the costs**
- **There is no reason to think that anybody would know better**



Do we have too little or too much pollution?



Do we have too little or too much pollution?

- Answer: we can be pretty sure that we have too much pollution
- How do we know?
- Because a polluter does not bear the full costs of his/her activity
 - Pollution externality or spillover



Do we have too few or too many cars in downtown Helsinki at 4pm on a Friday?



Do we have too few or too many cars in downtown Helsinki at 4pm on a Friday?

- Answer: we can be pretty sure that we have too many cars
- How do we know?
- Because drivers do not bear the full cost when they enter downtown
 - Congestion and pollution externalities or spillovers



**Do we or are we going to have too few
or too many housing units in Jätkäsaari**



Do we or are we going to have too few or too many housing units in Jätkäsaari

- **Answer: I'm not sure**
- **We would probably have too many without zoning and planning**
 - Private profit-maximizing developers would not internalize negative externalities
 - No one would leave their lot unbuilt to provide green areas etc.



Do we or are we going to have too few or too many housing units in Jätkäsaari

- **But are we going to get too few because the planner is too strict?**
- By planner, I mean the political process that has led to the Jätkäsaari plan



More generally

- **If we want to know whether we have too much or too little of something, we need to look at the **incentives** faced by the relevant decision-makers**
 - Do they feel all the **costs** of their activity or do some costs spillover to others?
 - Do they feel all the **benefits** of their activity or do some benefits spillover to others?

What are the incentives faced by developers?

	Private	Spillover
Benefit		
Cost		

What are the incentives faced by developers?

	Private	Spillover
Benefit	The revenue from selling the building or renting out the units	
Cost		

What are the incentives faced by developers?

	Private	Spillover
Benefit	The revenue from selling the building or renting out the units	
Cost	The construction costs of the building and maybe land acquisition	

What are the incentives faced by developers?

	Private	Spillover
Benefit	The revenue from selling the building or renting out the units	
Cost	The construction costs of the building and maybe land acquisition	Blocked views, less open space, congestion, fiscal burdens

What are the incentives faced by developers?

	Private	Spillover
Benefit	The revenue from selling the building or renting out the units	More people to meet, more services in the n'hood, fiscal benefits
Cost	The construction costs of the building and maybe land acquisition	Blocked views, less open space, congestion, fiscal burdens

Regulation

- **Housing development/construction and city-life more generally is riddled with market failures**
 - E.g. externalities or spillovers from new development
 - Incentives to provide green spaces within cities
- **There is need for urban planning and regulation. But have we gone too far?**
 - If we constrain development too much, we get high housing costs, small housing units, long commutes and sprawl
- **Let's think about this from an economics point of view**

Why is Manhattan so expensive?

WHY IS MANHATTAN SO EXPENSIVE? REGULATION AND THE RISE IN HOUSING PRICES*

EDWARD L. GLAESER,
Harvard University

JOSEPH GYOURKO,
University of Pennsylvania

and

RAVEN SAKS
Harvard University

ABSTRACT

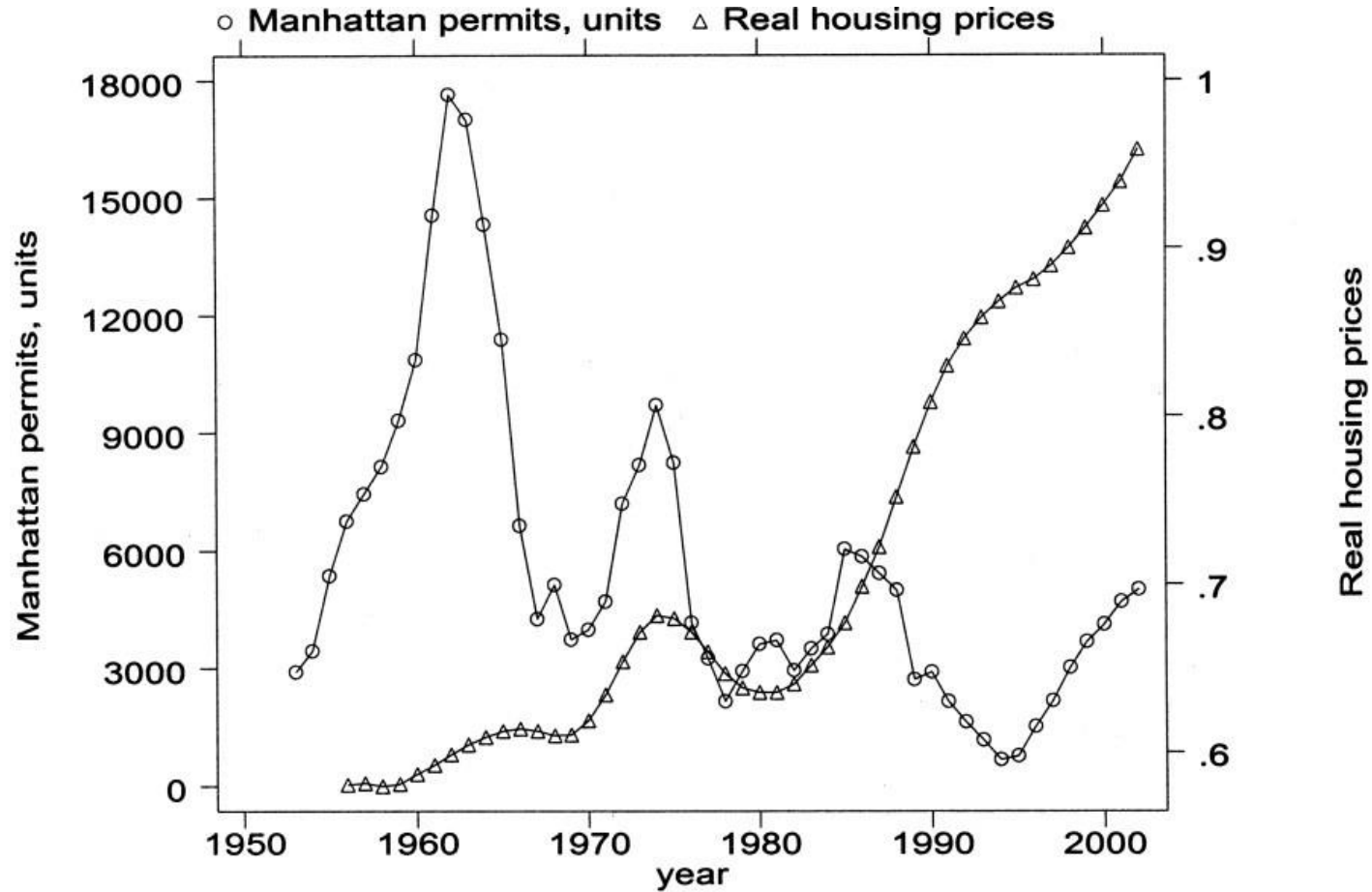
In Manhattan, housing prices have soared since the 1990s. Although rising incomes, lower interest rates, and other factors can explain the demand side of this increase, some sluggishness in the supply of apartment buildings is needed to account for high and rising prices. In a market dominated by high-rises, the marginal cost of supplying more housing is the cost of adding an extra floor to any new building. Home building is a highly competitive industry with almost no natural barriers to entry, and yet prices in Manhattan currently appear to be more than twice their supply costs. We argue that land use restrictions are the natural explanation for this gap. We also present evidence that regulation is constraining the supply of housing in a number of other housing markets across the country. In these areas, increases in demand have led not to more housing units but to higher prices.

<https://www.journals.uchicago.edu/doi/10.1086/429979>

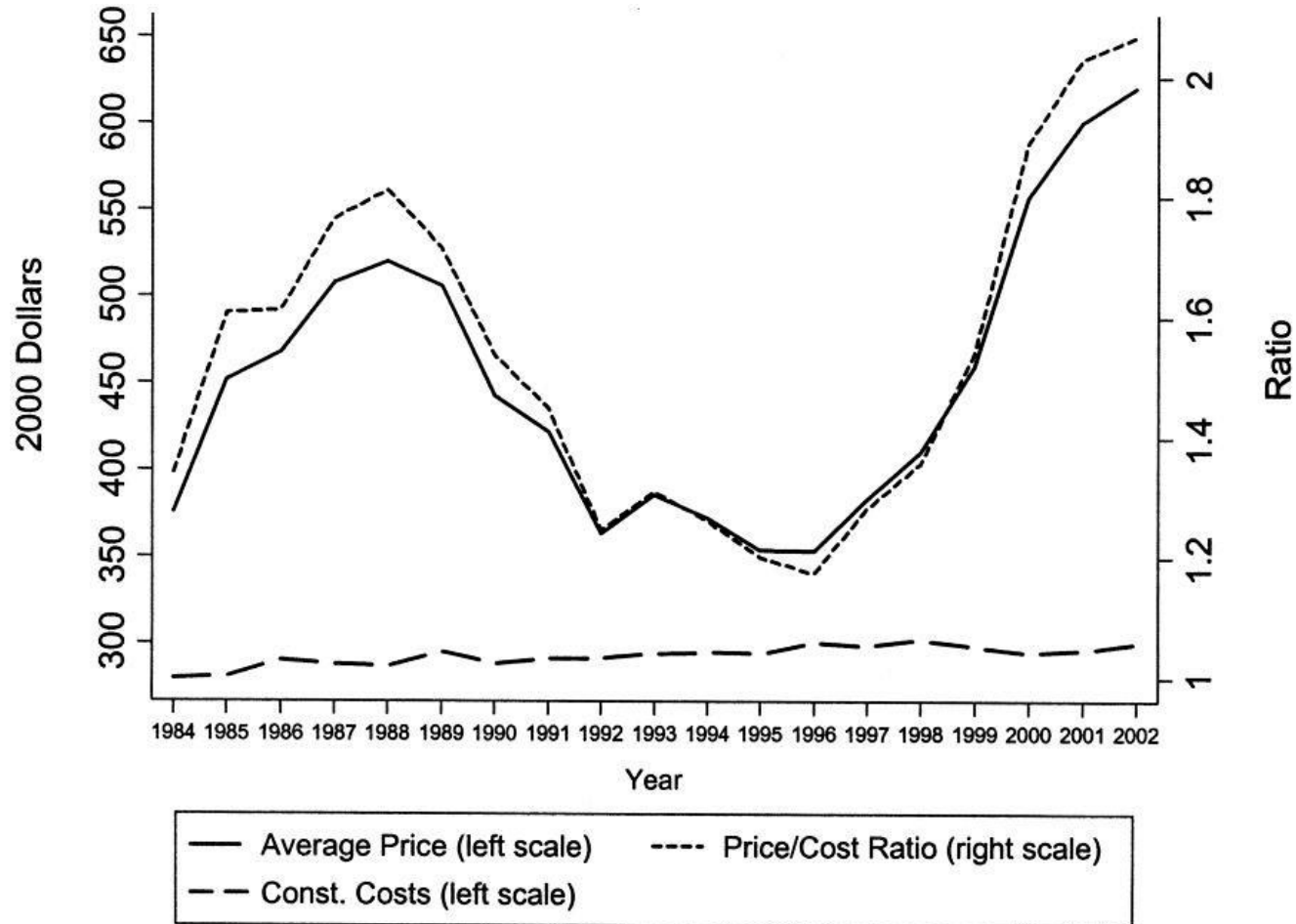


The Journal of Law and Economics
Volume 48, Number 2
October 2005

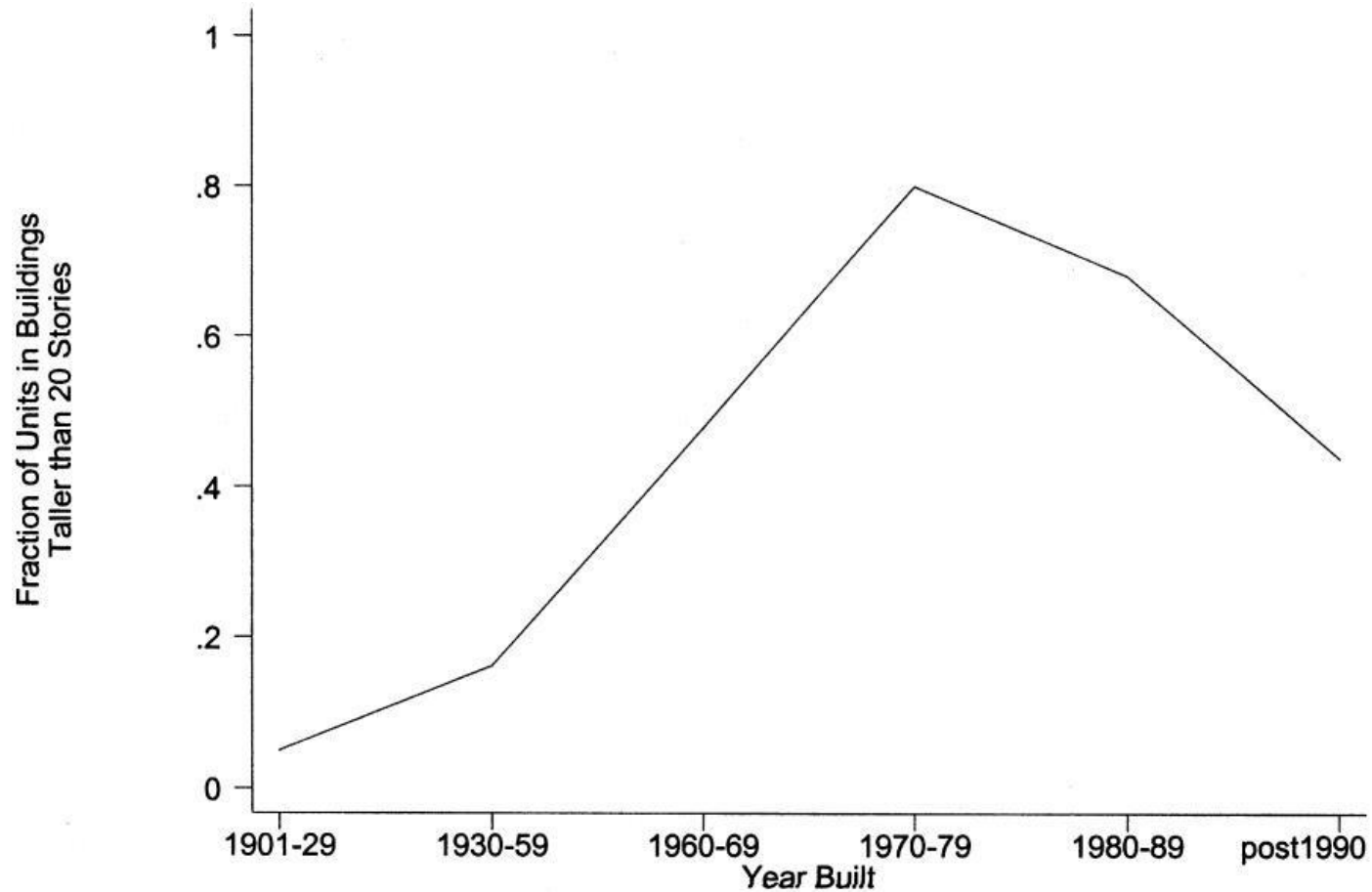
Background



Background



Background



The paper

- **Empirical strategy is to measure the gap between real estate prices and the costs of producing the marginal apartment**
 - Use this difference to measure regulatory distortions in the housing market
- **Why?**
 - In the absence of government regulation, standard economic theory predicts that buildings will be sufficiently large so that price will equal marginal cost
 - If government regulation limits building heights (or supply more generally), prices will be above marginal costs

Regulatory tax

- **Regulatory tax** = market price of a housing unit – marginal cost of that unit
- **If this is positive and large, something is preventing additional housing construction**
 - It would be profitable to build more
 - Glaeser et al. argue that this gap could, in principle, arise from monopoly power in the construction industry, but they reject this explanation due to very high number of construction firms in NY

TABLE 1

DISTRIBUTION OF PRICE PER SQUARE FOOT FOR CONDOMINIUMS (in 2002 Dollars)

	<i>N</i>	Mean (\$)	25th Percentile (\$)	Median (\$)	75th Percentile (\$)
Manhattan ^a	23,060	468	339	455	572
Manhattan ^b	156	500	271	461	664
Other boroughs ^b	165	149	89	120	177
By unit size: ^a					
<600 square feet	5,460	434	311	432	534
600–<800 square feet	6,722	445	339	439	542
800–<1200 square feet	6,729	472	346	460	580
1200 square feet	4,149	542	378	519	680
By building height: ^a					
<10 stories	3,686	377	252	365	474
10–19 stories	5,760	400	269	385	500
20–29 stories	3,199	497	396	482	577
30–39 stories	5,227	498	384	489	589
≥40 stories	4,788	573	438	543	678

TABLE 2

DISTRIBUTION OF MANHATTAN CONDOMINIUM PRICE PER SQUARE FOOT,
BY GEOGRAPHIC AREA (in 2002 Dollars)

	<i>N</i>	Mean (\$)	25th Percentile (\$)	Median (\$)	75th Percentile (\$)	Average Height ^a
Manhattan	23,060	468	339	455	572	27
By neighborhood:						
Greenwich Village/ Financial District	2,703	416	309	405	501	16
Lower East Side/ Chinatown	711	373	240	378	474	7
Chelsea/Clinton/ Midtown	4,086	515	355	490	648	34
Stuyvesant Town/ Turtle Bay	6,534	436	330	443	539	31
Upper West Side	3,913	494	361	476	592	24
Upper East Side	4,759	509	372	490	611	29
Morningside Heights/Hamilton Heights	18	162	130	141	190	5
Harlem	131	277	191	245	371	6
Washington Heights/ Inwood	128	169	91	162	210	6

SOURCE.—Condominium sales records, First American Real Estate Corporation, 1984–2002 (data on file with the authors). All nominal values are converted to real 2002 dollars using the Consumer Price Index.

^a Average number of stories.

TABLE 3

CONSTRUCTION COSTS (in 2002 Dollars)

	Average Cost per Square Foot (\$) (1)	Marginal Cost per Square Foot (2)
R. S. Means: apartments in New York City: ^a		
8–24 story	249	273
4–7 story	225	
1–3 story	221	
Marshall & Swift: 25-story apartments in Manhattan: ^b		
High-quality luxury	353	373
Average-quality luxury	257	272
Good-quality	204	216
Average-quality	163	172
NYU Center for Real Estate and Urban Policy: ^c		
15-story luxury high-rise	301	362
6-story midrise	209	
AHS condos in apartment buildings ^d		
Chicago	144	N.A.
<10 stories	148	N.A.
United States excluding N.Y. MSA	129	N.A.
<10 stories	176	N.A.

NOTE.—Price is the reported market value of owner-occupied units from R. S. Means, Square Foot Costs (2002). All values are converted to 2002 dollars using the Consumer Price Index. NYU = New York University. MSA = metropolitan statistical area.

^a Marginal cost is calculated assuming a quadratic cost function passing through the points (2,221), (5,225), and (15, 249). The reported value is the marginal cost of adding a 24th story.

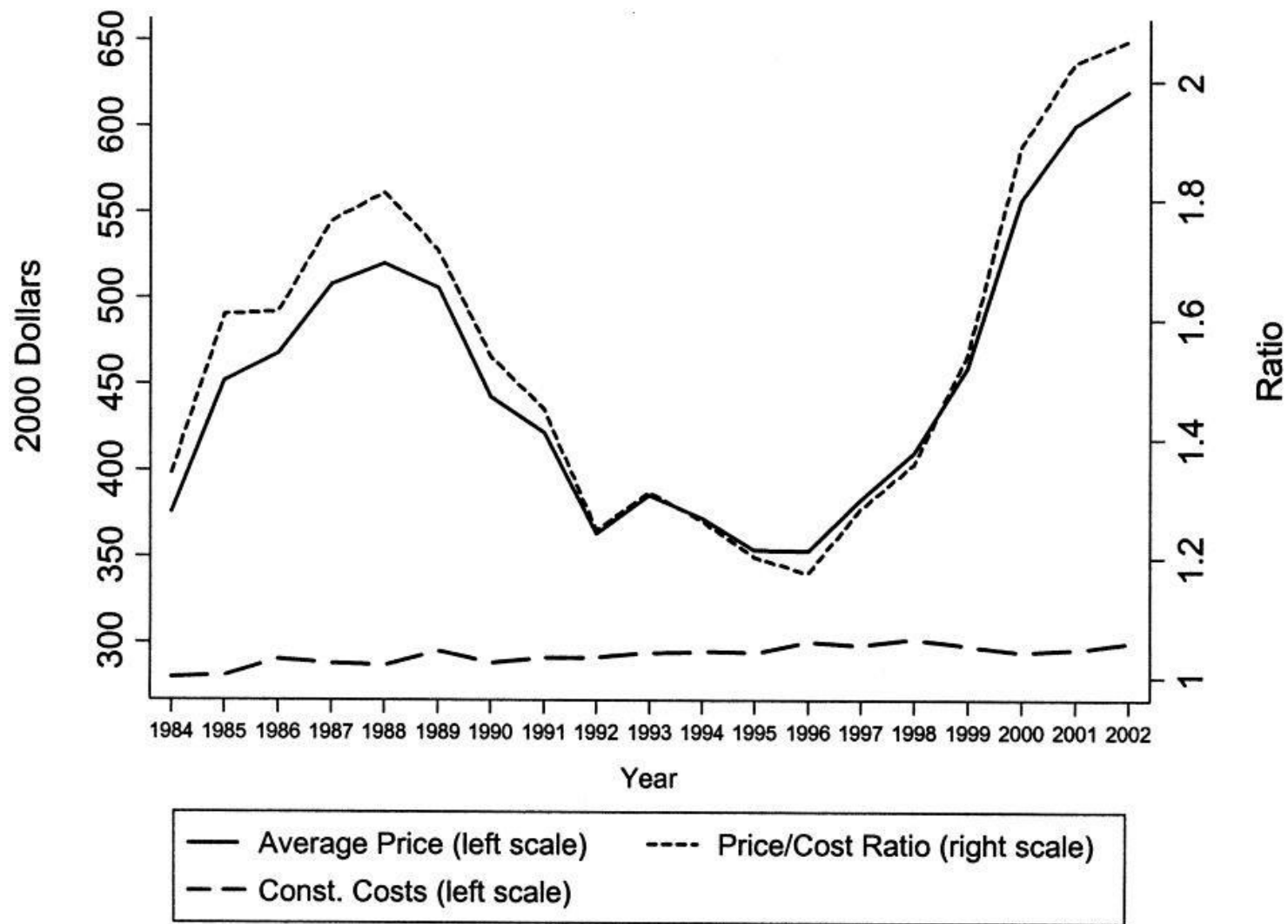
^b Costs per square foot are from the Marshall & Swift, Commercial Cost Estimator (Web site data accessed in 2002). Average costs per square foot are the average of reported values for building classes A, B, C, and D in November 2002. Marginal costs are reported for the 25th floor and are calculated from the statement that each floor above 3 stories adds an additional .5 percent to the average cost.

^c Average cost estimates are from Zaxon, Inc., and were converted to real 2002 dollars using the Consumer Price Index. Marginal cost is calculated at the 15th story from the difference between costs of a 6-story and 15-story building.

^d U.S. Census Bureau, American Housing Survey (<http://www.census.gov/hhes/www/housing/ahs/metropolitandata.html>).

Regulatory tax

- “Taken together, the construction cost data strongly suggest that something near \$275 per square foot is a reliable upper bound on the cost of building up for the vast majority of Manhattan apartments.”
- “Even so, to be conservative in our computation of the regulatory tax, we will use a figure of **\$300 per square foot.**”
- “For a majority of Manhattan condominium owners, these data suggest that some form of regulatory constraint means that their **cost of housing now is at least 50 percent more than it would be under a free-development policy.**”



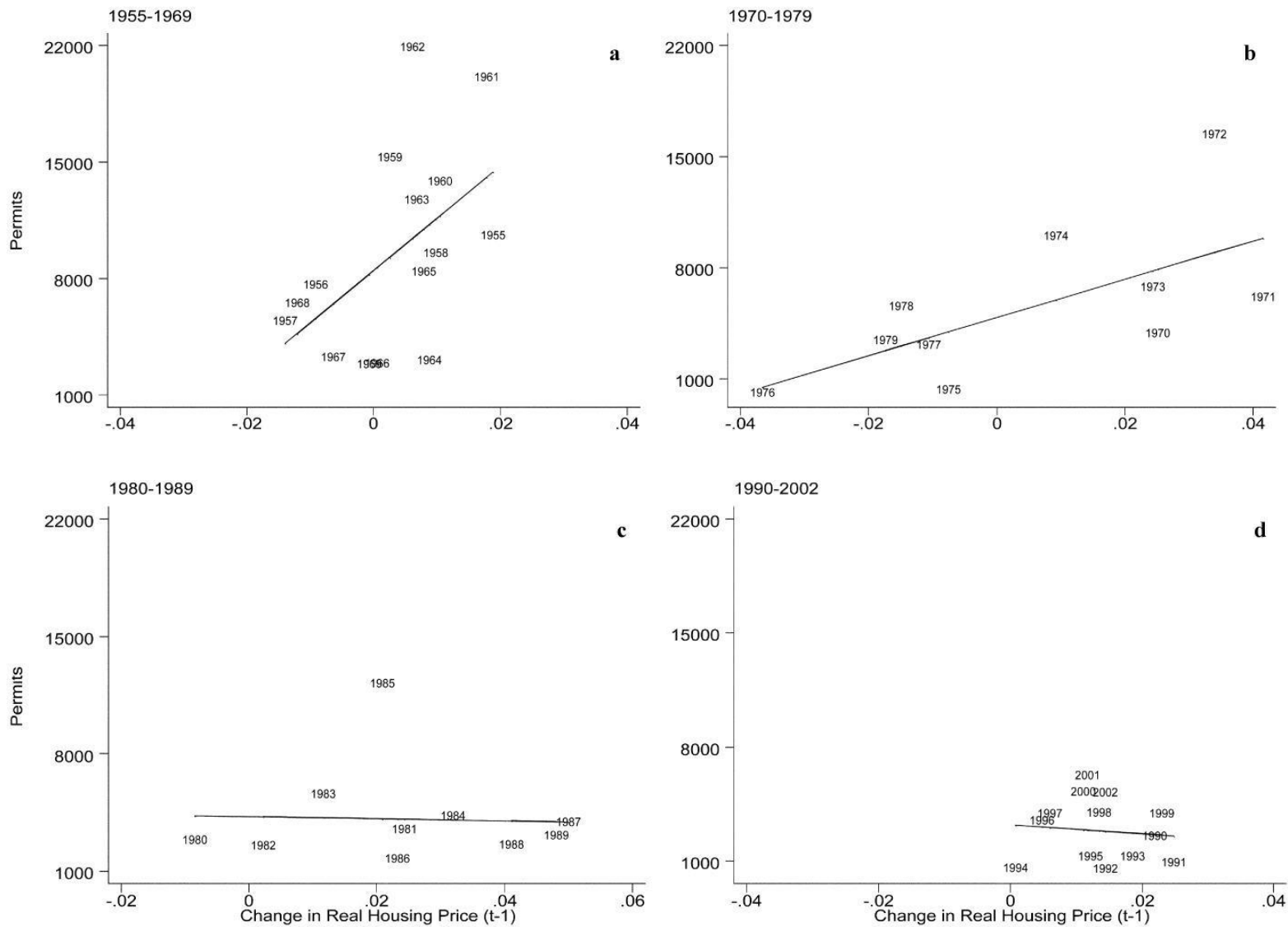


Figure 4.— Manhattan permits and changes in (lagged) housing prices, by decade

Can Manhattan's regulatory tax be justified?

- **Existence of this regulatory tax is not necessarily inefficient**
 - If there are **negative externalities** from building too much or too tall buildings, the **regulatory tax is Pigouvian tax** that forces developers to internalize the social costs of their actions
- **Are there likely to be negative externalities large enough to warrant a regulatory tax of the magnitude found in the paper?**
 - While welfare analyses of zoning are inherently difficult to perform, Manhattan provides perhaps the best possible laboratory
 - Adding a large number of housing units, and therefore a large number of people, would not change the basic nature of the place
 - Even so, our results are most properly viewed as **educated guesses and not precise estimates**

At least three things to consider

1. **Zoning tax should reflect the fact that a new apartment may eliminate views from existing apartments**
 - Indeed, most current height restrictions in Manhattan exist for exactly that reason
2. **New development should be taxed to the extent there are negative externalities created by extra crowding**
3. **The tax should reflect the fiscal burden of the new resident on current residents**

Estimating the value of views

- **Estimate the price premium of upper floor units compared to lower floor units of the same building:**

$$\begin{aligned} \log(\text{Price}) = & \underset{(.006)}{.08} \times I_{11-20} + \underset{(.009)}{.16} \times I_{21-30} + \underset{(.01)}{.23} \times I_{31+} \\ & + \underset{(.008)}{1.00} \times \log(\text{Square Footage}). \end{aligned} \quad (2)$$

- The difference in value between being very high up in a building and being on the first 10 floors is **about 25 percent** of unit price

Regulatory tax for protecting views

- **Assume that one unit blocks the view for 0.5 unit**
 - Since the loss of one complete view would reduce the value of the apartment by 25 percent, each extra dollar of tall building will lead to about 12.5 cents of lost view
 - As such, this analysis suggests that apartments should face a construction-related regulatory tax equal to approximately 12.5 percent of their value

Congestion costs

- **Very difficult to estimate**
 - Gross vs. net congestion? Are there costs or benefits?

- **“Guesstimate” from this regression:**

$$\begin{aligned} \log(\text{Median Rent}) = & 3.4 + 1.04 \times \log(\text{Per Capita Income}) \\ & (.64) \quad (.06) \\ & - .05 \times \log(\text{City Population}). \end{aligned} \tag{3}$$

- **A 1 percent increase in population “causes” a .05 percent decrease in rents**
- **An extra percent of population in NY should cause the value of all homes to drop by one-twentieth of 1 percent**
 - Therefore, there should **be an additional 5 percent regulatory tax** on new apartments owing to these congestion externalities

Fiscal burden

- **There are good reasons to believe that new residents in Manhattan condominiums would represent a considerable fiscal transfer to, not from, the city**
 - These would be rich people with small number of children
 - Rich people enroll their kids into private schools while paying taxes for public schools
 - Many government expenditures entail large **fixed costs**. For these expenditures, new population is an unqualified improvement since it allows those expenditures to be spread over a larger base

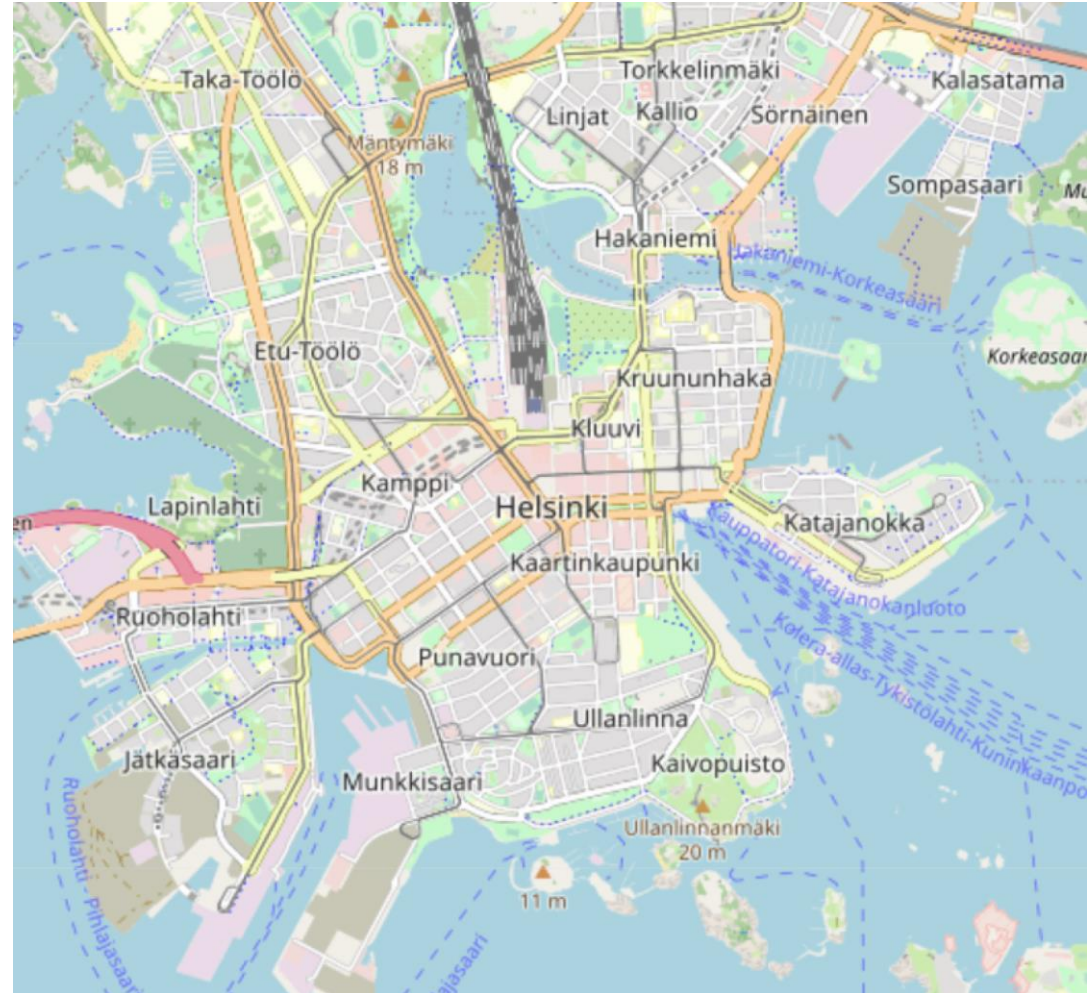
Conclusions: Glaeser et al. (2005)

- Analysis suggests that **negative externalities are not large enough** to justify the current gap between prices and production costs of condominiums in Manhattan
- Moreover, it is possible that a thorough analysis of the impact on transportation might even justify subsidizing denser construction in Manhattan
- Also, we have been very conservative in not adjusting market values for depreciation, it is hard to escape the conclusion that regulatory constraints on building in Manhattan are far too restrictive

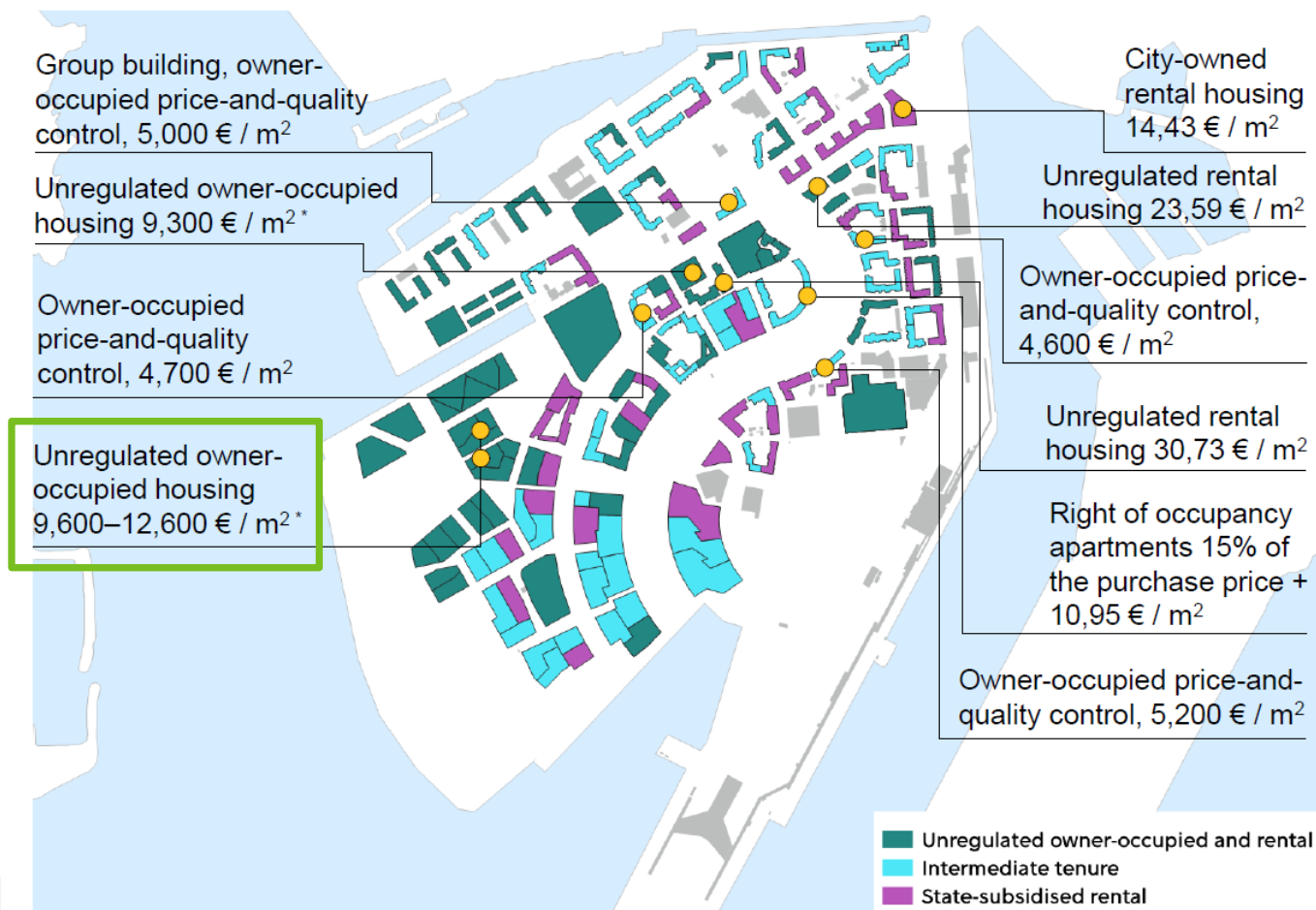
Regulatory tax in Jätkäsaari

Jätkäsaari

- In 2030, Jätkäsaari is going to have about 21,000 inhabitants
- The average building height will be roughly 8 floors
- Is this just the right amount, too few or too many?



Jätkäsaari prices



Source: Helsinki

* Plot price included

Regulatory tax in Jätkäsaari

- **Regulatory tax related to building one additional floor to Jätkäsaari buildings?**
 - One additional floor would allow roughly 2600 additional residents ($21,000/8 \approx 2600$)
 - The price per square meter is roughly €9000 and the **private** construction cost €3000(?) per square meter
 - Each additional square meter of housing space leads to a private benefit of €6000 ($9000 - 3000$)
 - If all the additional residents would each consume 30 m², private benefits would add up to €468 million ($2600 * 30 * 6000$)
- **For the current plan to be optimal, there must be spillover costs or negative externalities that exceed this €468 million**

Regulatory tax in Jätkäsaari

Price (€/m ²)	Construction cost (€/m ²)	Regulatory tax (€)
9000	3000	468M
9000	4000	390M
9000	5000	312M
9000	6000	234M
9000	7000	156M
9000	8000	78M

Mechanisms to internalize externalities

Mechanisms to internalize the externalities

- **Can we think of mechanisms that would internalize the externalities?**
 - This means that the decision-makers would incentives to consider all the various spillover costs and benefits to others
 - For example, is there anyway that the developers themselves would be able agree on the optimal height of buildings in an area?
 - Often used example here is a polluting plant in the upstream of a river and a fishing company in the downstream (what is the solution?)

Valkoiseksi määrätystä Kalasataman tornitalosta tulikin yllättäen harmaa – Mitä tapahtui Helsinkiin nousevalle Suomen korkeimmalle asuintalolle?



Taiteilijan näkemys tulevasta Kalasataman keskuksesta. Kuvakaappaus Redi.fi
sivulta. © REDI.FI

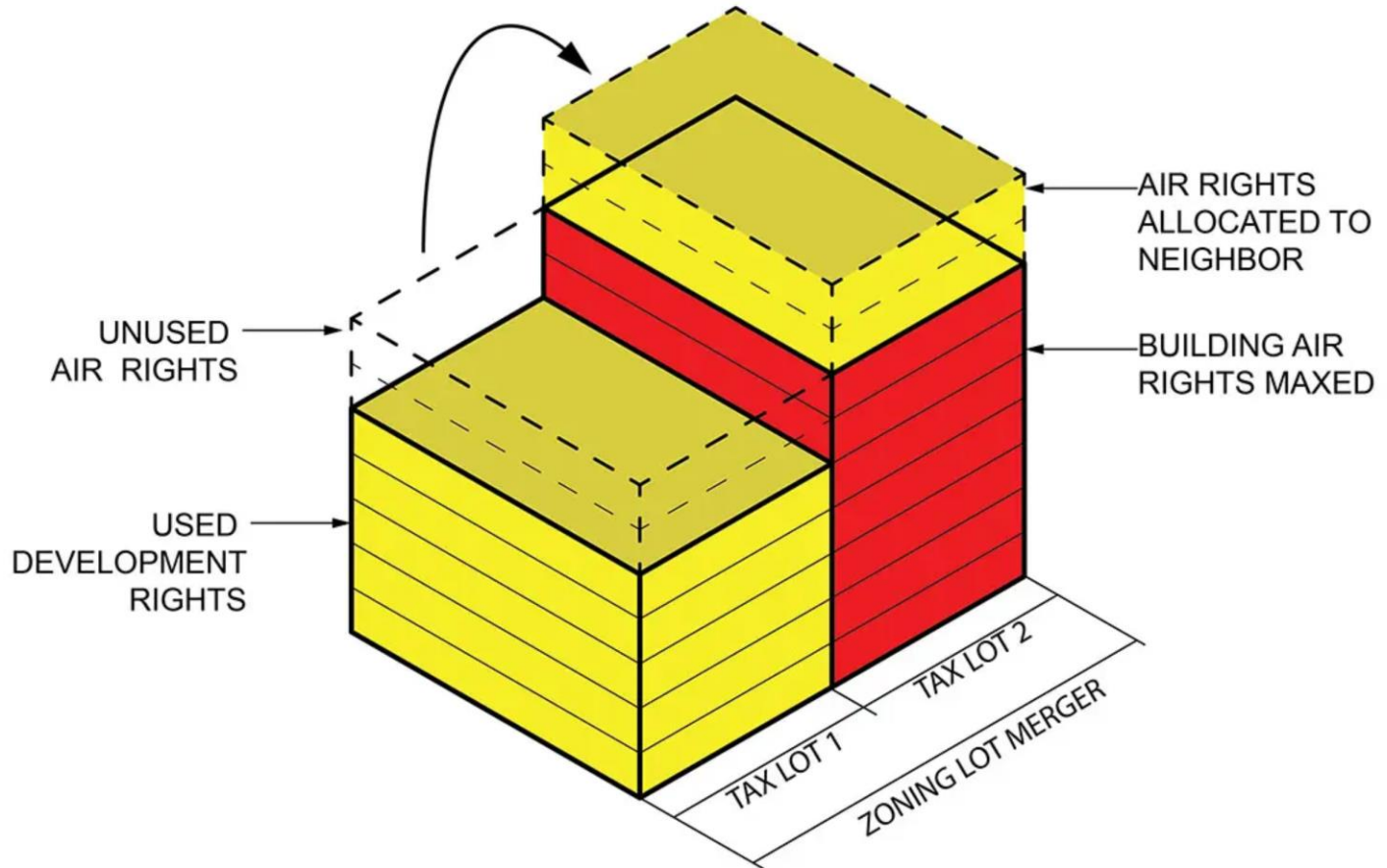
Mechanisms to internalize the externalities

- **A single developer is building all the towers in Kalasatama and other smaller buildings also**
- **The developer internalizes at least some of the benefits coming from beautiful buildings**
 - The prices of the units in neighboring buildings are lower if the towers are ugly and make the neighborhood unpleasant
- **What if Kalasatama was developed by a single developer?**

Air-rights in Manhattan

- Often the problem is that property rights are not well defined
- In Manhattan, there is a FAR policy in place, but they have a system of **transferrable development rights**
- If you are not at the FAR limit, you can sell your unused “floor area”
- This allows neighboring landowners/developers to build taller buildings than the FAR limit would allow
 - This is voluntary exchange so even if there are negative externalities from tall buildings, they are smaller than the what price or the transfer to the seller of “air-rights”

Air-rights in Manhattan



Effects of new market-rate housing construction

Background

- **Housing costs are high and have risen rapidly in many major cities around the world**
- **Increasing supply by relaxing land-use regulation especially in central and expensive parts of cities is frequently proposed as a solution to rising housing costs**
- **Counterargument:**
 - Constructing market-rate housing in high-demand locations only benefit the rich because these units will be expensive
 - We should build new housing in places where new units would be cheap

But don't we already know the answer?

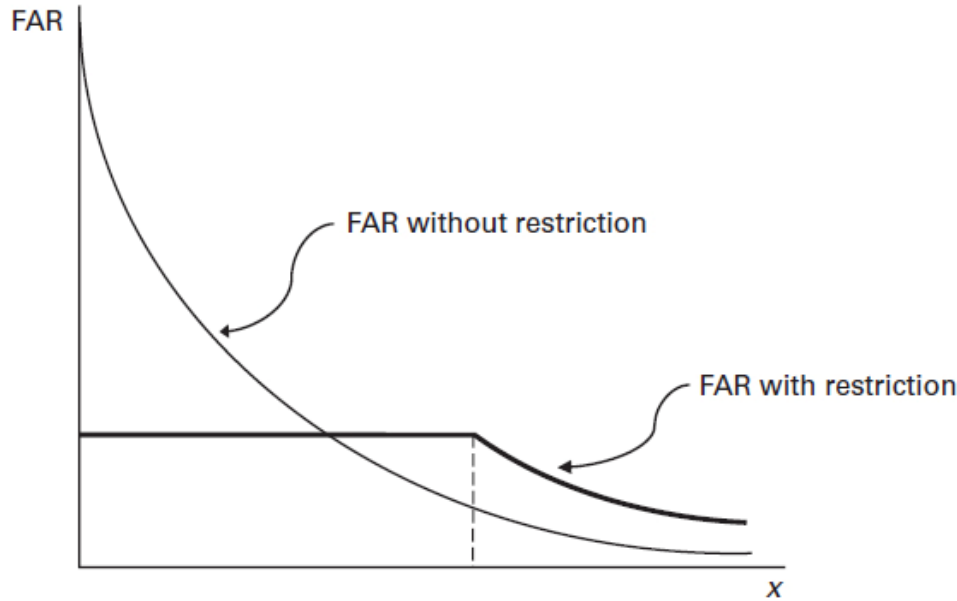


Figure 4.3
Effect of building-height restrictions.

- The FAR restriction increases the price per square meter of housing in all locations
- There are fewer dwellings in central parts of the city, and they become relatively more scarce
- Some households need to find housing somewhere else, which increases the demand for housing causing prices to increase there as well
- Higher prices lead consumers to reduce dwelling sizes

Not necessarily

- **The effect is obvious in a simple model of homogenous housing units, but housing is highly differentiated**
 - New construction is predominately expensive and quite different from units that are affordable to lower-income households
 - If the housing market is highly **segmented**, with few households searching or moving across dissimilar housing types, an increase in the supply of expensive new units could have little effect on the market for lower-income housing
- **The strength of this relationship is crucial to policymakers considering reforms that increase market-rate construction**
 - Need to weigh benefits against costs, such as objections from neighbors, concerns of gentrification etc.

7-1-2019

The Effect of New Market-Rate Housing Construction on the Low-Income Housing Market

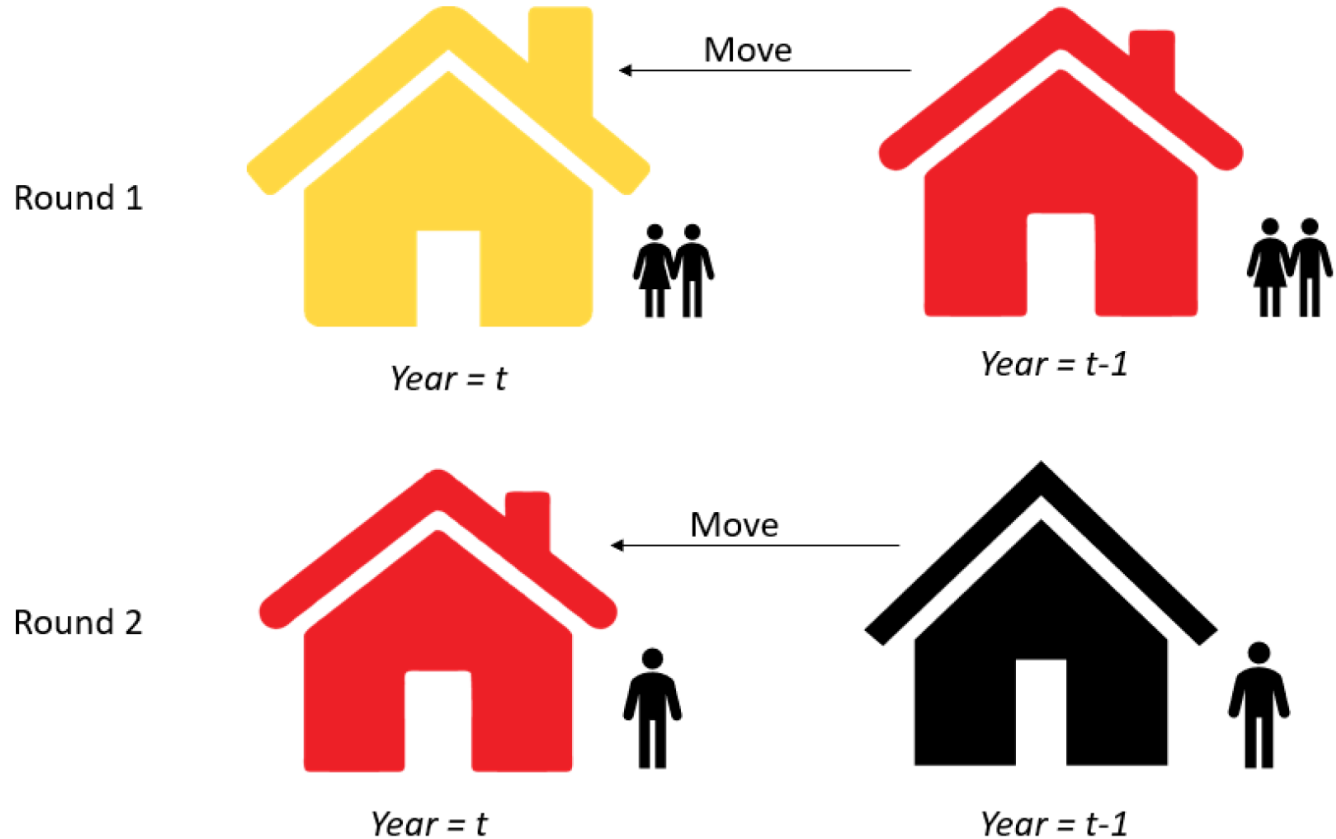
Evan Mast

W.E. Upjohn Institute, mast@upjohn.org

Mast (2019)

- **Use a large sample of address-level individual migration histories to provide evidence**
 - That new market-rate construction substantially loosens the market for middle- and low-income housing by inducing a series of moves that reduces demand for these areas
- **Data from Infutor Data Solutions**
 - Addresses reported at the unit level and, since they are intended for use in direct mailing, are quite high quality
 - Each address is accompanied by an estimated date of arrival, and contain some limited demographics
 - 12 largest metropolitan areas in the US: NYC, Chicago, Dallas, Houston, Washington, Philadelphia, Atlanta, Boston, SF/Oakland, Denver, Seattle, Minneapolis

New housing units trigger a chain of moves



Example from Chicago

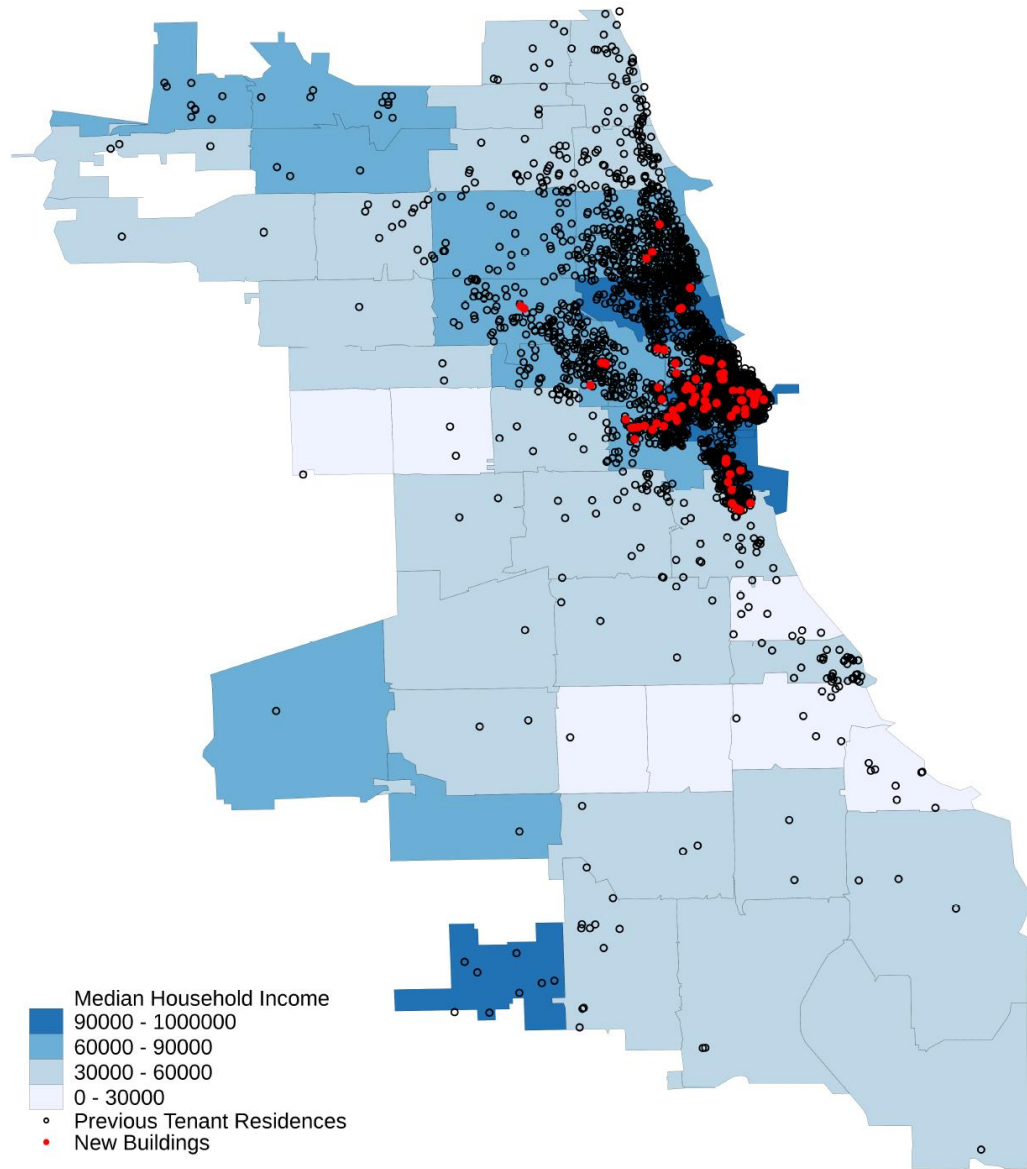
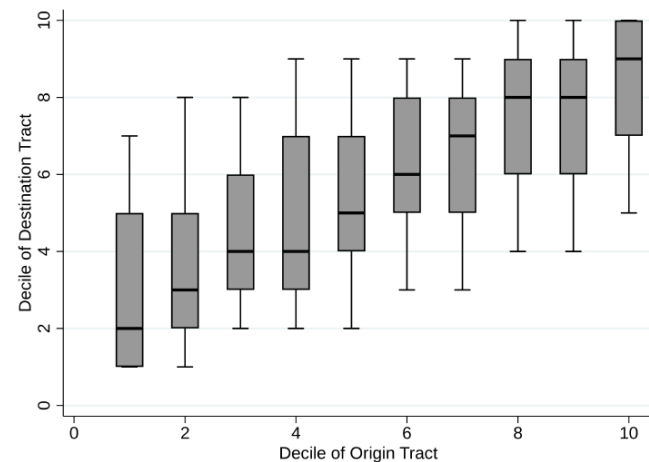
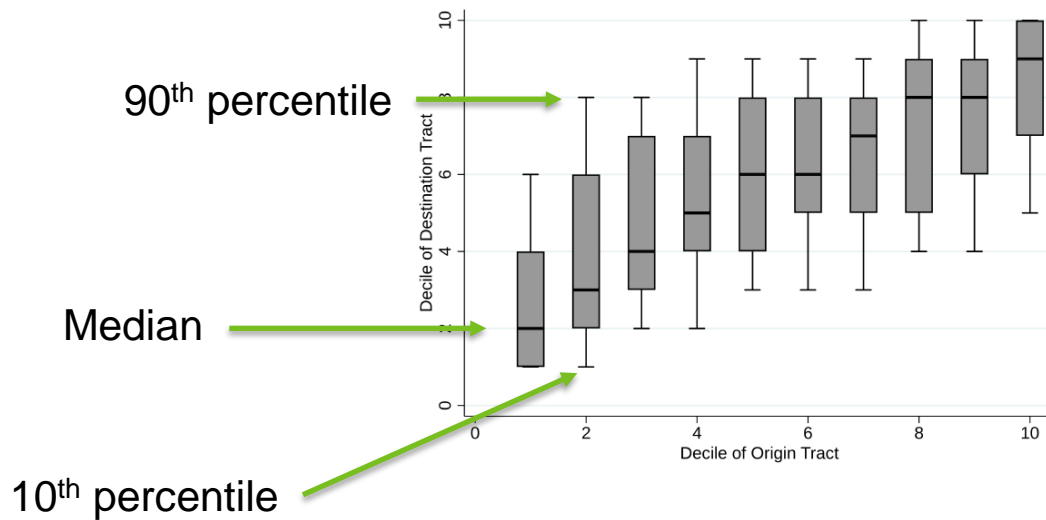


Figure 3: Migration between Census Tracts in Chicago Metropolitan Area

Panel A: Median Household Income

Panel B: Median Two-Bedroom Rent



Panel C: Percent White

Panel D: Median Rent Burden

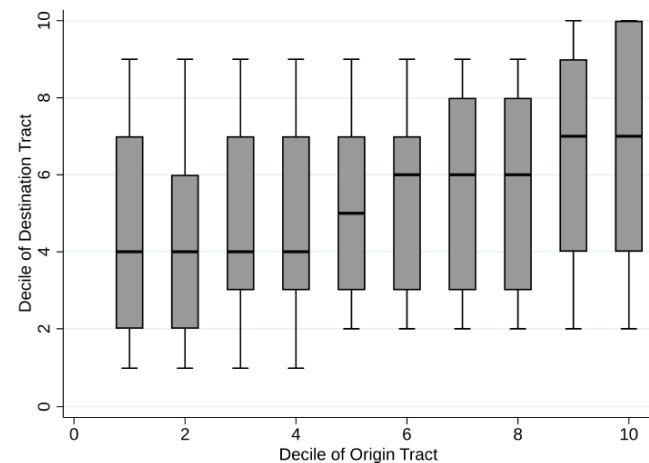
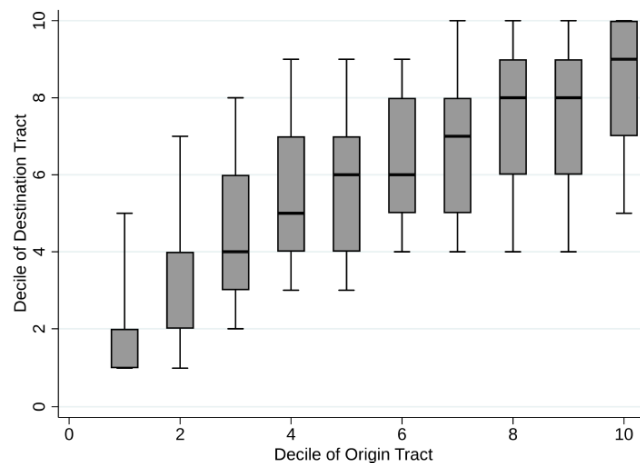


Figure 4: Percent of Individuals Originating in CBSA Principal City by Migration Round

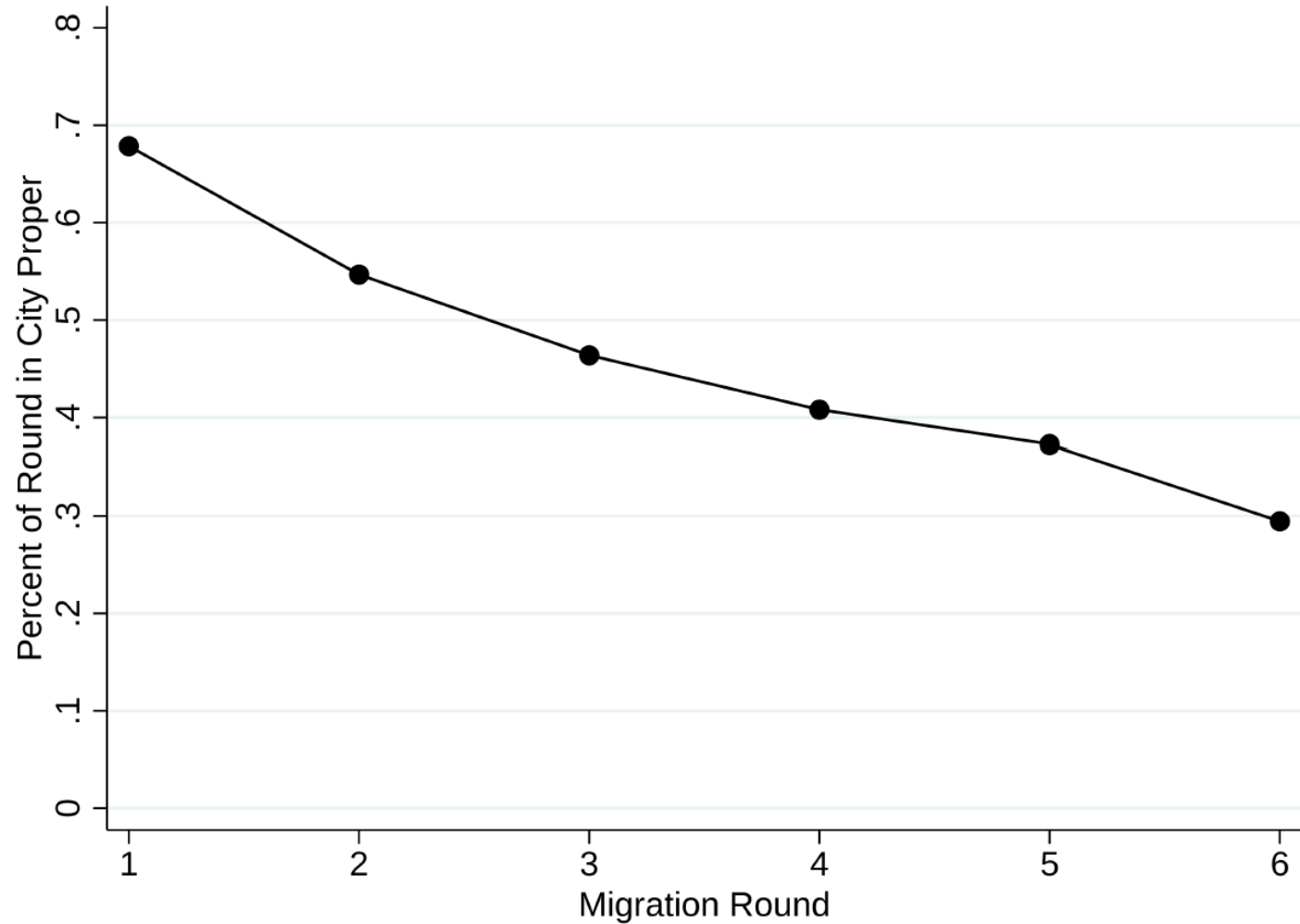
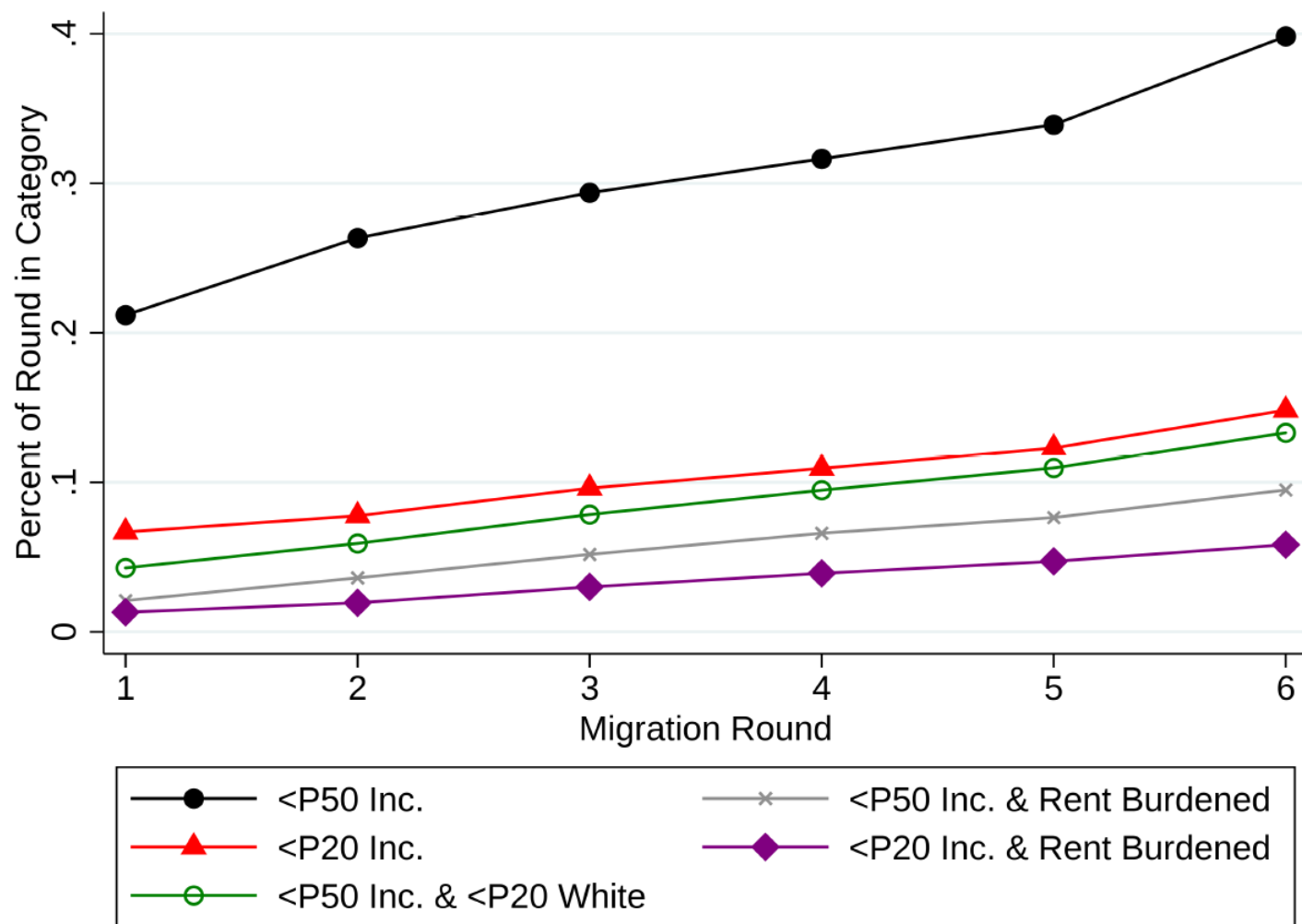


Figure 5: Percent of Individuals Originating in Tract Categories by Migration Round



Conclusions: Mast (2019)

- **Market-based strategies can play an important role in improving housing affordability for middle- and low-income households**
 - New market-rate construction loosens the housing market in middle- and low-income areas even in the short run
 - Market-rate construction is likely to improve affordability, even outside of the submarkets where new construction occurs
- **New buildings could have very different effects on their immediate area**
 - May change amenities or household composition in ways that affect prices

Politics

Incentives of local politicians

- **The planner is an agent of current residents of the municipality**
 - Current residents can vote in municipal elections
 - People living in other municipalities do not have a democratic channel to affect land use policy and housing supply
 - And one could argue that these are the people most affected by local land policy as their labor market depends on new supply
- **The goals of the current residents may conflict with the goals of future residents (or wannabe residents) => NIMBY**
 - It is not clear that land use policy should be at the local level

Recap

- **Housing development and city-life more generally is riddled with market failures**
 - E.g. externalities or spillovers from new development
 - There is need for urban planning and regulation. But have we gone too far?
- **We have just scratched the surface**
 - A framework for thinking about benefits and costs
 - How to **reliably quantify** the foregone benefits due to regulation and the relevant spillovers?
 - How to design mechanisms that would internalize the spillovers so that decision-makers would take them into account?