

# Housing III: Regulation

October 27, 2016

## 1 Recap and Discussion: Dynamic Allocation (Last Meeting)

We covered Leshno's paper on dynamic matching with overloaded waiting lists. He analyzes a model where the goal is simply to minimize misallocation, and then shows how to do that. There are many possible extensions of his work that came up during our discussion:

- Differences in “need”: the social planner might prefer to provide an object to some types of agents rather than others. e.g. Targeting households with the lowest incomes or greatest housing instability, since they are likely to apply and select developments with shorter waiting times. This, along with reneging below, is seen to be important from looking at data from the Cambridge Housing Authority waiting list.
  - If need is observable, can use a priority system to target high-need.
  - If need is unobserved, might want to alter the mechanism to elicit that information.

Defining the “neediest” applicants is an interesting challenge in and of itself. We have seen before that one alternative to ranking households by income is to use percentage of income that they spend on housing. A potential ranking system that came up during our discussion is to rank households based on ability to absorb shock (e.g. lose job, having a child get sick, etc.)

- Reneging: many applicants move and lose touch with the housing authority before being housed. This is observed in Cambridge, MA, for instance. This disproportionality affects households who should be more likely to move, and the city of Cambridge thinks that is what has often happened. That is, it is not that they no longer want housing assistance. We therefore might want to alter the mechanisms depending on why this is happening.
  - Externalities: agents may care not only about their own assignment, but the assignments of others (who their neighbors are).
  - Social cost of rejections: it takes time to offer a family a housing unit, show them the apartment, and get a response. Meanwhile the apartment stays vacant. We could justify penalizing offer rejections. Many cities including Chicago and Cambridge have various ways of handling this including freezing people's application by a fixed period of time when they reject an offer or moving them to the back of the list. A suggested alternative is to allow applicants to reject some number of offers but not too many to balance needs from both sides.
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- Another consideration is whether stability is a necessary concept in a setting like this.
  - Incentives: Leshno’s paper does not look at incentives. What about unobserved factors where mechanism design does not play a huge role? We may run into incentive issues when trying to elicit information on who has the highest need for assistance. We can potentially resolve this by separating it out into two mechanisms, so the allocation mechanism can assume accurate information about housing need.
  - Elicitation of preferences is also an issue. In addition to the usual difficulties with preference elicitation, in housing there might be additional constraints including that elderly people or people with disabilities might have hard constraints, the demographic of people that we are looking at in general might be difficult to track down, or they might interact with the allocation system differently than what we might expect.
  - Multiple queues: in Leshno’s paper, we only have one queue, but we can consider extensions where there are multiple queues and scenarios where interaction with one queue can be treated independent of other queues (e.g., joining wait list of different childcare services), or where there is a central authority that imposes some universal rules and regulations (limiting the number of queues that you can join, etc), but the different queues are somewhat independent, which would allow for complex interactions between the agents and allocation authorities.
    - In the “childcare problem,” parents time getting on the waiting list for daycare based on when they think the baby will be born. More generally, we have different queues that are moving at different speeds, and agents have preferences over them. Agents are able to enter these queues at different times so as to maximize the likelihood of getting the childcare they want subject to getting one by a specific time (when their child is the desired age to start). They therefore need to strategically enter the queues at different times; if they come up first in their “safety” queue before hearing back from a preferred one, then they are faced with difficult choice of (1) saying no to their “safety” childcare and risking not having a slot, or (2) saying yes and settling for one that is lower on their preference list.
    - Also applicable for job applicants timing their applications (i.e. industry’s process is way faster than academic, but it’s best to make decisions at the same time).
    - In housing, you can get priority on the waitlist in one city (your local city), but you can also apply anywhere (e.g., Boston, Cambridge, Somerville, etc). Similarly, one can apply for elderly housing a couple of years before being eligible to live in elderly housing, so we observe some of this effect described above in housing.
    - Note also that family size, or need (e.g. disability), can change while in the queue, and the waitlist would have to account for this.
    - Look up “consideration set” for different queues.
    - Possibly similar to a model by Vickrey of rush hour traffic.
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## 2 Housing Affordability: “The rent is too damn high!”

Question: How do we regulate new housing development, especially in cities with high rents and where certain neighborhoods are gentrifying rapidly? Hopefully, by seeing some applied examples and going through the complexities involved, we will have ideas about how to isolate and formalize certain aspects of this problem.

Why is the rent too high? To a first approximation,  $\text{affordability} = \text{income} - \text{rent}$ .

Income is a poverty issue, but not necessarily a housing issue (though consider Desmond, Chetty). In contrast, the rent is.

So what determines rents? Supply and demand. In practice, cities impose supply restrictions through housing regulation. Many housing regulations either restrict supply (zoning restrictions, neighborhood approval processes, building regulations) or cap prices (rent control). Often, existing residents can block new development.

Questions:

- Are these restrictions worth the cost, in terms of lower supply and higher rents?
- Trade-off between rights of existing owners and tenants, character of neighborhood, etc; and lower housing costs for everyone.
- How do we decide where new housing should be built, given that there are externalities everywhere? Potential mechanism design problem for establishing initial “rights” and then deciding where new housing construction should occur by aggregating preferences/willingness-to-pay of existing tenants. It would be interesting to formalize this idea.

What about for the general case where a private developer wants to build new housing? Imagine a luxury apartment complex going up near Kendall Square. Suppose we have the following pros and cons:

Pros:

- Households who want to live in the new housing development will benefit (Google employees who want to live near work and the Red Line).
- The surrounding area may benefit from investment and amenity changes due to the new housing (there were no bars, now there is Meadhall).
- Most importantly, on average, renters city-wide benefit from the relief in upward pressure on rents.

Cons:

- If the new housing makes the neighborhood more desirable, it could raise rents for existing tenants (i.e. for me) *in that neighborhood* despite relieving upward pressure on rents overall.
  - Direct costs of gentrification for existing tenants who move away due to higher rents (I have to move and commute from Magoon Square in Somerville).
  - It may alter the existing community as long-time residents leave.
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- The new amenities may not be valued by existing tenants, while raising the costs of goods and services for them (e.g. Whole Foods replaces Johnny's Foodmaster).

### 3 Glaeser & Gyourko: Regulation Keeps Costs High

This paper was written in 2003, but is equally relevant in 2016. Many say that the US is going through a growing affordability housing crisis that needs to be addressed soon.

Why are housing costs so high? What should we do about it? The authors are responding specifically to calls for more and subsidized housing construction.

*Authors' thesis: It's not that land is fundamentally scarce, or that it's super expensive to construct new physical units; it's that building regulations and zoning restrictions are driving up prices.*

They advocate for separating out poverty arguments from housing cost arguments (i.e., ability to pay might be a worse benchmark for housing affordability arguments than physical construction costs.) In addition, in most of the country, housing is selling at or near construction cost. The "affordability" issue seems specific to a few cities/regions. We won't go too much into the details of their methods, and I find them not too convincing, but they are very thought-provoking.

They therefore focus on the gap between housing costs and construction costs. They argue that the US might be going through a poverty crisis, which is a separate issue, but that housing prices are being affected by the cost of new construction. Their basic argument is that housing costs depend on three things:

1. Physical construction costs.
2. The price/value of the land on which the unit is built.
3. Costs imposed by regulation.

To a first approximation,  $\text{price} = (1) + (2) + (3)$ .

They measure (1) and estimate (2) in different cities. They also have data on housing prices in those cities. Some cities have prices much greater than (1) + (2). Authors argue that the residual is (3), costs imposed by regulation. In fact, the cities with the largest differences tend to be cities with high regulatory barriers: tighter land use restrictions, longer time to approval for specific construction projects, etc. This suggests that regulatory barriers drive high housing costs in cities like New York, LA, San Francisco, Boston, etc.

Note here that they focus on the role of housing supply and do not focus on the demand side. In Economics, there are two basic hypotheses on housing cost:

Hypothesis I: Houses are expensive because land is expensive (high demand).

Hypothesis II: Houses are expensive because of regulations, not due to some intrinsic scarcity.

What they do in this paper is to look at two different ways of valuing land:

Method I: Use a housing hedonic and compare the price of similar homes situated on different sized lots .

Method II: Subtract the construction costs from the home value and divide by the number of acres.

The two hypotheses would imply very different relationships between these two methods of valuing. In this paper, they present three pieces of evidence based on three methods, including the above one, presented as the rows of the following table and what we would expect to see under the two hypotheses.

Methods	Hypothesis I	Hypothesis II
Two ways of valuing land presented above	Value would be same	Value can be drastically different
Crowding in high-cost areas	If there is high cost of land, the crowding would be higher	High regulation will lead to large lots and high prices
Correlate regulation measures with housing price value	N/A	There would be strong correlation

They argue that we observe results consistent with the second hypothesis, and thus affordable housing debate should include zoning reform and not just public or subsidized construction programs.

My personal view as a Cambridge resident (during a local boom in housing demand) is that regulatory barriers play an important role here.

- Zoning – there are restrictions on what a plot of land may be used for.
- It's very difficult to build high: the default height limit is 96 feet, roughly 9 stories. But that's not a binding constraint in most parts of Cambridge, and it's being relaxed in some areas like Kendall Square.
- More relevantly, there is a long neighborhood approval process with input from current residents. As a result,
  - It can take years to even get a project approved. Investors need a higher return on investment to justify the delay.
  - Many economically viable projects do not happen, or they are smaller than they would otherwise be.

Prices would be lower if there were fewer restrictions on construction. No idea how much lower though.

Some additional comments on Glaeser & Gyourko:

- Regulation cannot be the whole story. Milwaukee, where Desmond did his work, has relatively relaxed building restrictions, and housing prices are not very high. Desmond highlighted a puzzle, which is that rents for similar apartments in the poorest neighborhoods aren't that much lower than in the wealthiest neighborhoods, and landlords make substantial profits. My conjecture is that something else is going on, apart from building restrictions, in the low-income rental market in many cities. This is keeping rents high relative to income for some sectors of the rental market.
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- Glaeser & Gyourko argue that the price of housing is a separate issue from poverty. From what we read about eviction and neighborhood effects, this argument can be disputed.
- As they briefly point out, they do not argue the benefits of zoning, so it would be unwise to suggest that zoning should be greatly reduced or eliminated without doing so.

## 4 NY Times Article: Neighborhood Opposition to Affordable Housing Development

Case study of a dispute over new construction of affordable housing on the Upper West Side of Manhattan. Highlights the obvious benefits from the project that current residents are opposing, but also illuminates some of the legitimate costs of new development. The situation:

- NYC wants to demolish 3 parking lots on West 108th St. to build 268 affordable units for poor and elderly/disabled households.
- Community groups who don't want to lose their parking are opposing this.
- Their concerns:
  - The parking, for which there are no plans to replace, which would make it difficult for many residents to get to their jobs and put 800 cars out competing for street parking
  - People who work for the garages would also be out of jobs
  - Existing residents used to be poor, but now they're not and their kids went to college. Parents want their children to move back to the neighborhood, but they will make too much money to qualify for the affordable units!
    - \* Couldn't they afford other units nearby?
  - Existing employees of local amenities (shops) may have trouble parking
    - \* Should they be the ones working there?
  - More broadly, residents are worried about changing the character of a neighborhood and community they worked hard to build for themselves.

On the other hand: why build *affordable* housing on the upper west side?

- Affordable housing crisis is felt acutely in the city
- Personal cars can perhaps be substituted by CitiBike, car sharing, public transportation, while there might not be as many options for housing
- Ironically, parking spots aren't necessary for affordable complexes unlike current developments since people who need subsidized housing often do not own cars

Article highlights a specific zoning law that raises the cost of housing:

- The law mandates a certain # parking spots per housing unit.
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- It was made in 1961! Relaxed in some areas but not most of NYC as it was faced with fierce pushback.
- The cost of a parking spot (foregone rents) to an *affordable* housing unit can be as high as \$50K.

How should we resolve the dispute in the NY Times article? In some sense, it's not a great example because the welfare gains on one side seem so much greater than the costs to the other side. But how do we determine that? And, how does that inform what policy we should adopt?

## 5 Coase: Externalities and Property Rights

How do we resolve disputes over “social costs,” or externalities, when one agent's actions hurt other agents?

Example: A farmer (A) and a rancher (B) own adjacent plots. The rancher's cattle sometimes stray onto the farmer's land and destroy some of his crops. The rancher harms the farmer by being there.

Conventional wisdom (Pigou, etc): The rancher should be taxed based on the *gap* between the private and social costs of raising cattle, including damage to the farmer's crops. Then the cattle raiser will raise cattle only if it is profitable relative to the *true* (social) *cost* of raising the cattle, and the farmer will also grow the efficient quantity of crops.

Coase: This is misguided! The rancher doesn't just impose a cost on the farmer; the farmer also imposes a cost on the rancher by constraining what he can/must do. If the farmer stopped cultivating his land, the rancher would no longer be harming anyone and could raise cattle unfettered: “We are dealing with a problem of a reciprocal nature. . . the real problem to be decided is this: should A be allowed to harm B or should B be allowed to harm A.”

Based on this idea, Coase considers what would happen under two legal regimes:

1. The rancher is liable for damage to the farmer's crops.
2. The rancher is not liable for damage; the farmer is on his own.

The key insight from Coase, which inspired the “Coase Theorem,” is that under certain conditions the legal regime doesn't matter! The initial endowment of property rights over externalities does not affect the allocation of resources. Whether the legal regime is (1) or (2), the farmer will end up growing the same amount of crops, and the rancher will raise the same number of cattle. In addition, any mitigating activities (e.g. building a fence) will be the same.

The key condition for this to hold is zero transaction costs: if there is a profitable trade to be made, the agents will make it. This rules out many scenarios, including:

- No bargaining frictions: Bargaining agents will always reach a pareto-efficient allocation.
- Symmetric information: The harms are common knowledge. Becomes a big problem when there are multiple agents on each side, and when the harm is difficult to measure (e.g. depends on subjective preferences).

Let's consider what happens under regimes (1) and (2) in the farmer-rancher example.

Under (1), the rancher is liable. There are several potential mitigating actions the rancher could take:

- Build a fence to keep the cattle off of the farmer's land.
- Raise fewer cattle, and compensate the farmer for the damage from the smaller number of cattle.
- Pay the farmer to stop growing crops, or even buy the farmer's land.
- Stop raising cattle.

The rancher will take whichever action is lowest-cost, where costs include both direct costs (paying for a fence, paying the farmer, etc) and opportunity cost (foregone profits from raising fewer/no cattle). When an action involves convincing the farmer to change his behavior, the cost of doing so will depend on the value/profitability of the farming activity. This is socially efficient: the total product of the economy will be maximized. For example, the rancher will only pay the farmer to stop farming if farming profits are smaller than the difference in the rancher's profits between buying out the farmer and any other option available to the rancher.

Under (2), the rancher is not liable. But the farmer can still achieve any of the options under regime (1) by paying the rancher or by ceasing to farm. For example, the farmer will stop farming if farming profits are lower than what the farmer would have to pay the rancher to pursue another mitigating activity. This is the same condition as when the rancher would pay the farmer to stop farming under regime (1). So the outcome is the same, up to a transfer between the farmer and the rancher.

That's the key insight from Coase: we don't need to directly tax externalities. Instead, assign property rights for the externality (who gets to harm whom), and let agents trade. With zero transaction costs, they'll reach a pareto-efficient allocation. Applied to our housing regulation example, this suggests that building codes and restrictions are a bad idea. Instead, property owners and tenants should negotiate with developers to determine the Pareto-efficient outcome. Suppose developers are liable for the costs. If the social benefits of the new development outweigh the costs to existing residents, the developer will compensate the residents and go forward with the project. If the harms outweigh the benefits, the developer won't be willing to pay residents enough that they'll allow the project, and the development won't be built. And we could achieve the same outcome if we reversed the initial endowment of rights: requiring existing residents to pay to keep developers out would achieve the same outcome.

Right?

Well, there are a lot of features that prevent the interested parties from reaching a Pareto-efficient outcome:

Who *are* the interested parties?

- Pro high-rise:
    - The developer wants the high-rise.
    - Hypothetical new tenants want the high-rise.
    - City-wide renters may want the high-rise if it leads to lower rents.
    - I (Cambridge resident) like to visit the Upper West side, and maybe I like the amenities the new development will lead to. Am I a party to the negotiation?
    - Workers who will benefit from new amenities through jobs.
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- Anti high-rise:
  - Existing residents and property owners: In particular, if some residents will be displaced, they don't like it. Those who stay face a changing neighborhood.
  - Workers who may be displaced by the new amenities.
  - I (Cambridge resident) like(d) to visit Williamsburg because it is/was full of hipsters and Orthodox Jews. The high-rise might change that. Should I be compensated?

Suppose we decided who the interested parties are. How would we reach the agreement?

- Most harms are subjective. How much do I (Cambridge resident) want to keep hipsters in Williamsburg?
  - If property rights are on the anti high-rise / existing resident side, I'll overstate my value of hipsters.
  - If property rights are on the pro high-rise side, I'll understate my value. (Bargaining frictions with asymmetric information.)
- Relatedly, since there are many interested parties, eliciting each individual's value for the purposes of bargaining as a group is challenging.
  - If I have to pay, I should understate my value.
  - If I get paid, I should overstate. (Classic public goods provision problem.)
- What are the outside options? In reality, there are many developers, many neighborhoods, many potential building sites, and many types of buildings.

Dynamics: This isn't the only time someone will want to build on the upper-west side.

- Reputation is a concern. Neighborhood might drive a hard (inefficient) bargain now to preserve its reputation for future negotiations.
- Today's outcome may also *directly* affect what's at stake tomorrow: if the neighborhood starts to gentrify now, it may end up gentrifying completely.

More generally, there is a large literature in economics about the conditions under which bargaining may or may not yield a pareto-efficient outcome.

This is a mess! Given all of these transaction costs, there is probably a benefit to some kind of regulation and/or centralization. But what kind? To what extent can market-based mechanisms determine where new housing should be built? Can we design mechanisms to mitigate some of the problems outlined above?

Are there some connections to computational social choice? <https://users.cs.duke.edu/~conitzer/introCOMSOCBOOK15.pdf> seems to have a good overview and lots of references.