The Market

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Contents

1 Constructing a Model

- A **model** is a simplified representation of reality, focusing on key aspects to understand specific economic phenomena.
- **Exogenous variables**: Variables determined outside the model and taken as given (e.g., external apartment prices).
- **Endogenous variables**: Variables determined within the model (e.g., equilibrium rent prices).

Key Idea: Simplified models help focus on essential factors affecting outcomes without unnecessary complexity.

2 Optimization and Equilibrium

- **Optimization Principle:** Individuals aim to choose the best option available given their constraints.
- **Equilibrium Principle:** Prices and allocation adjust until supply equals demand.

Key Idea: Markets reach equilibrium when no individual can improve their situation without making someone else worse off.

3 The Demand & Supply Curve

- **Demand Curve:** Shows the quantity demanded at each price. It slopes downward because lower prices attract more renters.
- **Reservation Price:** The maximum price someone is willing to pay for an apartment.
- **Supply Curve:** Shows the quantity supplied at each price. In the short run, supply is often fixed (vertical supply curve).
- **Competitive Market:** Many landlords and renters operate independently, leading to a single equilibrium price.

Key Idea: The interaction of demand and supply determines the equilibrium price and quantity.

4 Market Equilibrium

- **Equilibrium Price (p^*):** The price where quantity demanded equals quantity supplied.
- **Comparative Statics:** Examines how changes in external factors (e.g., taxes, new apartments) affect equilibrium outcomes.

Key Idea: Market equilibrium ensures compatibility between landlords' supply and renters' demand.

5 Other Ways to Allocate Apartments

Assumption: All apartments are identical in size, rooms, quality, and location.

Case	Allocation Mechanism	Key Outcome
Competitive Market	Supply meets demand at p^*	Efficient allocation at equilibrium
Discriminating Monopolist	Different prices for each renter	Efficient allocation, maximized revenue
Ordinary Monopolist	Single uniform price	Fewer apartments rented, inefficiency
Rent Control	Price ceiling below p^*	Excess demand, misallocation

Table 1: Comparison of Allocation Mechanisms

Key Idea: Different allocation methods have different efficiency and fairness outcomes.

6 Which Way is Best?

- **Competitive Market:** Best for consumers due to fair pricing and efficient allocation.
- **Discriminating Monopolist:** Best for landlords, but consumers pay more.
- **Ordinary Monopolist:** Neither consumers nor landlords benefit fully due to inefficiencies.
- **Rent Control:** Some renters benefit, but long-term inefficiencies harm both renters and landlords.

Key Idea: The "best" allocation depends on whether the focus is on efficiency, fairness, or profit maximization.

Criteria	Competitive Market	Discriminating Monopolist	Ordinary Monopolist	Rent Control
Market Structure	Many buyers and sellers	Single seller with full market control	Single seller with market power	Many landlords, price ceiling imposed
Product Differentiation	Homogeneous apartments	Apartments can vary, but pricing is individualized	Homogeneous or slightly differentiated apartments	Apartments may vary, but price is capped
Information	Perfect information for buyers and sellers	Perfect information about each renter's reservation price	Imperfect information	Imperfect information; allocation is random or non-price based
Pricing Strategy	Single price set by market equilibrium	Each renter pays their maximum willingness to pay	Single price set to maximize total revenue	Maximum price set below equilibrium
Entry and Exit Barriers	No barriers to entry or exit	High barriers to entry	High barriers to entry	No new entry; potential landlord exit
Objective of Seller	Maximize profit under perfect competition	Maximize profit by capturing all consumer surplus	Maximize profit by restricting output	Ensure affordability, but reduces incentives for supply
Allocation Efficiency	Efficient; no deadweight loss	Efficient; apartments go to those who value them most	Inefficient; fewer apartments rented	Inefficient; excess demand and reduced supply over time

Table 2: Comparison of Market Structures with Rent Control

7 Pareto Efficiency

- **Pareto Improvement:** A change that makes someone better off without making anyone worse off.
- **Pareto Inefficient:** There are unexploited gains from trade.
- **Pareto Efficient:** No further trades can make anyone better off without harming someone else.

Key Idea: Efficiency focuses on whether all possible beneficial trades have been made, not on fairness.

8 Comparing Ways to Allocate Apartments: Pareto Efficiency

Case	Pareto Efficient?	Reason for Inefficiency
Competitive Market	✓	All gains from trade are realized
Discriminating Monopolist	✓	Apartments go to those who value them most
Ordinary Monopolist	✗	Some apartments remain unrented
Rent Control	✗	Arbitrary allocation creates inefficiencies

Table 3: Pareto Efficiency Across Allocation Mechanisms

Key Idea: Competitive and discriminating monopolist outcomes are Pareto efficient, while ordinary monopolist and rent control outcomes are not.

9 Exercises and Solutions

- **Q1. Suppose that there were 25 people who had a reservation price of $500, and the 26th person had a reservation price of $200. What would the demand curve look like?**

  Solution: The demand curve would have a horizontal segment at $500 for the first 25 apartments, representing the 25 people who are each willing to pay $500. At the 26th apartment, the price would drop sharply to $200, showing the reservation price of the 26th person. In short:

  - Flat horizontal segment at $500 for the first 25 units.
  - Sharp vertical drop to $200 at the 26th unit.
  - Flat segment at 200 if more renters exist at that price.

- **Q2. In the above example, what would the equilibrium price be if there were 24 apartments to rent? What if there were 26 apartments to rent? What if there were 25 apartments to rent?**

  Solution: Equilibrium Price in 3 Different Scenarios are as follows:

  1. If There Are 24 Apartments to Rent:
     - There are 25 people willing to pay $500.
     - Only 24 apartments are available.
     - Result: The price will settle at $500 because demand exceeds supply, and renters will compete until the price reaches the maximum they are willing to pay. The equilibrium price is then $500.
  2. If There Are 26 Apartments to Rent:
     - The first 25 apartments will be rented at $500 (matching the reservation price of the 25 people).
     - The 26th apartment can only be rented to the 26th person, who is willing to pay $200.
     - Result: To fill all 26 apartments, the price must drop to $200. The equilibrium price is then $200.
  3. If There Are 25 Apartments to Rent:
     - There are exactly 25 people willing to pay $500, matching the number of available apartments.
     - Result: The price will remain at $500, as supply perfectly matches demand. The equilibrium price is then $500.

  Key Takeaways: When demand exceeds or equals supply (24 or 25 apartments): Equilibrium price stays at $500. When supply exceeds demand (26 apartments): Equilibrium price drops to $200 to attract the marginal renter.

- **Q3. If people have di!erent reservation prices, why does the market demand curve slope down?**

  Solution: The market demand curve slopes downward precisely because people have different reservation prices, which reflect their willingness to pay for an apartment:

  - At a high price, only those with the highest reservation prices will rent an apartment.
  - As the price decreases, more people with lower reservation prices become willing to rent.

  In short: Lower prices attract more renters, increasing the quantity demanded, which creates the downward slope of the demand curve.

- **Q4. In the text we assumed that the condominium purchasers came from the inner-ring people—people who were already renting apartments. What would happen to the price of inner-ring apartments if all of the condo- minium purchasers were outer-ring people—the**

people who were not cur- rently renting apartments in the inner ring?

Solution. If all condominium purchasers were outer-ring people (not current renters in the inner ring), the demand for inner-ring apartments would decrease because:

- Outer-ring people would move out of the rental market and into their purchased condos.
- This reduces competition for inner-ring apartments.

As a result, the price of inner-ring apartments would fall due to the decrease in demand.

- **Q5. Suppose now that the condominium purchasers were all inner-ring people, but that each condominium was constructed from two apartments. What would happen to the price of apartments?**

Solution: If each condominium is built by combining two inner-ring apartments and all purchasers are current inner-ring renters, then:

- Supply of apartments decreases: Two rental apartments are removed from the market for every condo built.
- Demand remains the same: The same number of renters still want inner-ring apartments.

As a result, with reduced supply and unchanged demand, the price of inner-ring apartments will rise due to increased scarcity.

- **Q6. What do you suppose the e!ect of a tax would be on the number of apartments that would be built in the long run?**

Solution: In the long run, a tax on apartments would disincentivize new construction and investment in the rental market. This would lead to:

- Decreased supply of apartments.
- Higher rents due to reduced availability.

In short: Taxes discourage new supply, reducing availability and driving up rent prices over time.

- **Q7. Suppose the demand curve is $D(p) = 100 - 2p$. What price would the monopolist set if he had 60 apartments? How many would he rent? What price would he set if he had 40 apartments? How many would he rent?**

Solution: The demand curve is $D(p) = 100 - 2p$, where D is the number of apartments demanded and p is the price per apartment. Setting $D(p) = 60$ and solving for p, we obtain $p = 20$. Analogously, with 40 apartments we obtain $p = 30$.

- If the monopolist has 60 apartments, he sets the price at \$20 and rents all 60 apartments.
- If the Monopolist Has 40 Apartments: Setting $D(p) = 40$ and solving for p, we obtain $p = 30$.

- **Q8. If our model of rent control allowed for unrestricted subletting, who would end up getting apartments in the inner circle? Would the outcome be Pareto efficient?**

Solution: If unrestricted subletting is allowed under rent control, then:

- Who Gets the Apartments? The people with the highest reservation prices (those who value the apartments most) will eventually sublet and occupy the inner-ring apartments, even if they weren't the initial renters.

– Would It Be Pareto Efficient? Yes, this outcome would be Pareto efficient because renters (both inner-ring and outer-ring) can freely trade and sublet, ensuring that apartments go to those who value them the most without leaving potential gains from trade unrealized.