



光华管理学院  
Guanghua School of Management

# Microeconomics

## 微观经济学

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## Two roles of economists

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# Two roles of economists

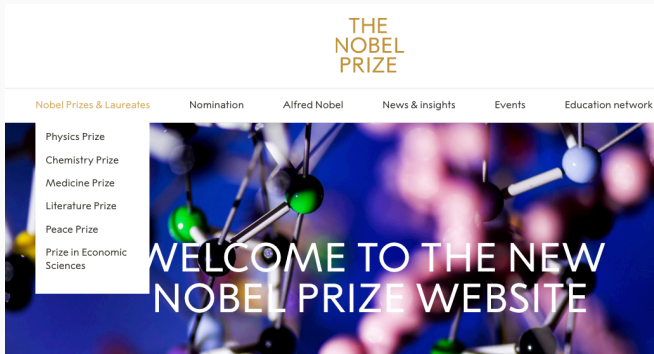
Economists play two roles:

- Scientists: try to explain the world
- Policy Advisors: try to improve it

# Two roles of economists

## The Economists as Scientists

- Economists employ the scientific method: observe, develop theory, collect data, analyze data to test theory



# Two roles of economists

What is a model:

- Graphical, mathematical (symbolic), physical, or verbal representation or simplified version of a concept, phenomenon, relationship, structure, system, or an aspect of the real world.
- **Assumptions** simplify the complex world, make it easier to understand.

**Whether assumptions are good depend on the problem at hand.**

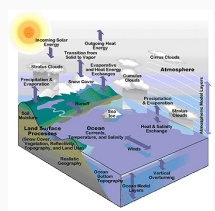
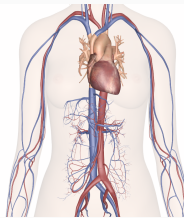
- 1 kg iron ball vs. 10 kg iron ball
- 1 kg cotton ball vs. 1 kg iron ball

# Two roles of economists

## The Economists as Scientists

Economic models:

- In most of the time, economic models try to make predictions.
- We are interested in causal relationship 因果关系.
  - Does eating ice cream make you smart?
  - Does jogging cause people to be healthy? Does good health cause people to jog?
  - Does more spending on a wedding ceremony or the engagement ring lead to divorce?
- 'As if' models (think about playing pool)



- Economics, human health and weather use similar methods of prediction (mathematical models). Their systems —the economy, the human body and the atmosphere —also have similar levels of complexity.
- Forecasts fail because the models suffer from two problems : (i) they cannot capture the full detail of the underlying system, so rely on approximate equations; (ii) they are sensitive to small changes in the exact form of these equations.

Thus, predictions of things like economic recessions are still highly inaccurate, despite the use of enormous models running on fast computers.



# Two roles of economists

## The Economists as Policy Advisors

As scientists, economists make **positive statements** (实证陈述), which attempt to describe the world as it is.

As policy advisors, economists make **normative statements** (规范陈述), which attempt to prescribe how the world should be.



# Two roles of economists

## Normative:

*subjective statements –i.e. they carry **value judgments**.*

- Paying people who are not working, even though they could work, is wrong and unfair.
- The government should raise taxes on the wealthy to pay for helping the poor.

## Positive:

*not necessarily true, but can be tested, amended or rejected by referring to the available **evidence**.*

- Programs like welfare reduce the incentive for people to work.
- Raising taxes on the wealthy to pay for government programs grows the economy.
- Raising taxes on the wealthy slows economic growth.

## Think

- The inflation has been above 5% per year for last 5 years.
- The government should take measures to reduce inflation.
- Poverty should be eliminated given the size of our economy, and that's a fact.
- People's reluctant to reproduce will cause the problem for the pension system in the long run, and this is very irresponsible.

## Why Economists Disagree

- Economists often give conflicting policy advice.
- They sometimes disagree about the validity of alternative positive theories about the world.
- They may have different values and, therefore, different normative views about what policy should try to accomplish.

## **An example: the housing market**

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# Think like an economist

- We will examine a model of a particular market: the housing market in a college town
- Get a flavor of how economists establish a theory to analyze practical issues

At what level of details shall we model an economic phenomenon?

## Endogenous vs. Exogenous 内生 vs. 外生

- Endogenous variables: the variables that are determined by the model.
- Exogenous variables: the variables that are determined outside the model.

Example: Jogging tomorrow or not?

## Markets

What is a market?

- A market is a group of buyers and sellers of a particular good or service.
- The buyers as a group determine the demand for the product.
- The sellers as a group determine the supply of the product.



## Competition

What is a competitive market?

- A market in which there are so many buyers and so many sellers that each has a negligible impact on the market price.
- In perfectly competitive markets, buyers and sellers must accept the price the market determines, they are said to be *price takers*.

# Some concepts

## Equilibrium



In equilibrium

In equilibrium, everyone is simultaneously optimizing, so nobody would benefit by changing his or her own behavior.



Out of equilibrium

# Modeling the housing market

As a student:

- **Money** is scarce, **time** is also scarce.
- Trade-offs: distance to the university and the price

## Central question:

How is the price determined? What determines who will live in the inner-ring apartments and who will live farther out?

# Modeling the housing market

As a student:

- **Money** is scarce, **time** is also scarce.
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## Central question:

How is the price determined? What determines who will live in the inner-ring apartments and who will live farther out?

Simplified assumptions:

- apartments are close or distant, but otherwise identical
- distant apartments rents are *exogenous* (determined by factors not discussed in this particular model).
- many potential renters and landlords, i.e., competitive market.

# Modeling market demand

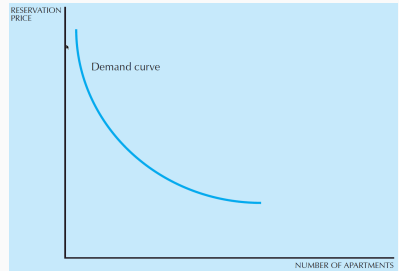
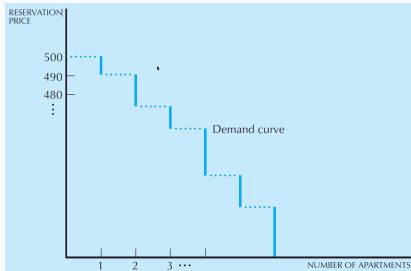
Suppose there are many renters, and if we rank everyone's maximum willingness to pay, we will find one person that ranks the highest.

## Reservation price:

a person's maximum willingness to pay for something

- Suppose the first highest payer is willing to pay for \$500 and the price  $p = \$500$ , then the demand quantity is  $Q = 1$ .
- Suppose the second highest payer is willing to pay for \$490 and the price  $p = \$499$ , then the demand quantity is still  $Q = 1$ .
- Suppose the second highest payer is willing to pay for \$490 and the price  $p = \$490$ , then the demand quantity is  $Q = 2$ .

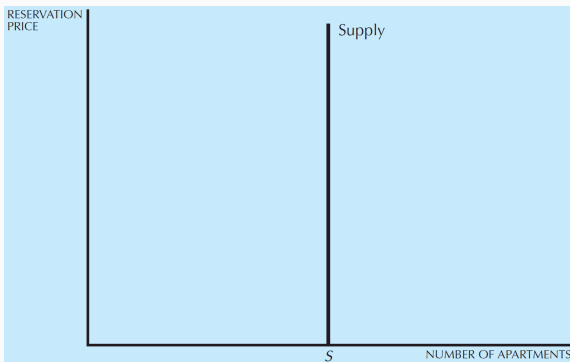
# Market demand curve



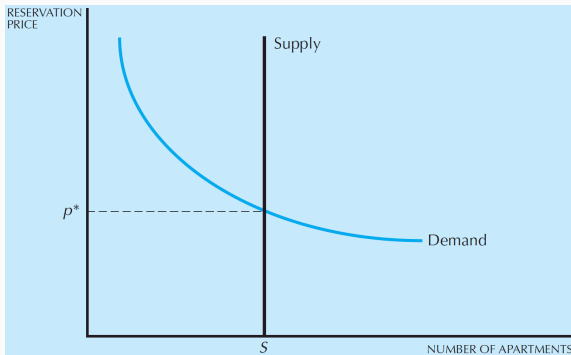
# Market supply

## Supply:

- It takes time to build more close apartments so in this short-run the quantity available is fixed.
- Owners are willing to rent out their apartment as long as the rent (marginal profit) is larger than their (marginal) cost.
- Without loss of generality, we assume marginal cost = 0.



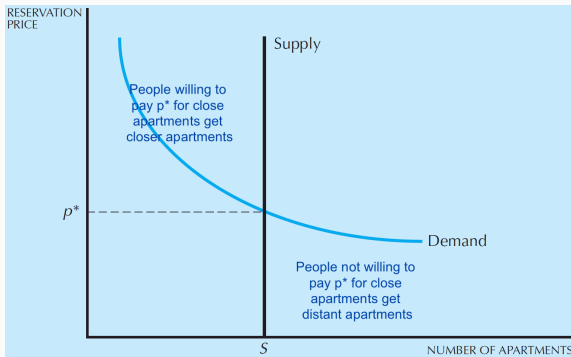
# (Competitive) Market Equilibrium



At  $p^*$ , quantity demand = quantity available



# (Competitive) Market Equilibrium



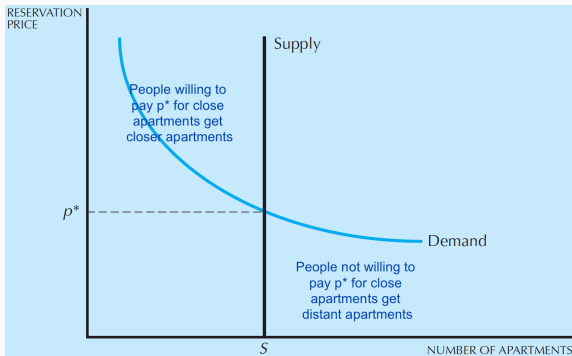
**Who rents the close apartments?**

Those who are most willing to pay.

**Who rents the distant apartments?**

Those who are least willing to pay.

# (Competitive) Market Equilibrium



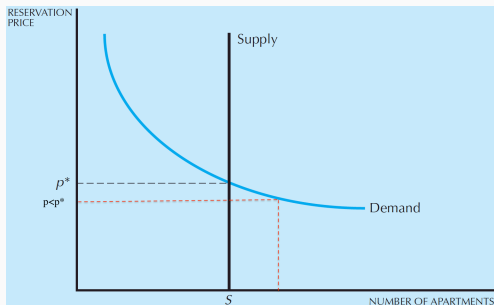
## Equilibrium price

- The competitive market allocation is by "willingness-to-pay".
- In the equilibrium no one is willing to change their behavior: no renters who have reservation price  $> p^*$  choose not to rent an apartment nearby, and no landlord choose not to rent out their apartments.

# (Competitive) Market Equilibrium

Think: what would happen at a price other than  $p^*$ ?

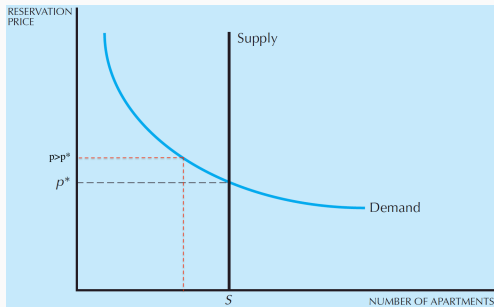
- Consider some price  $p < p^*$ . Can this price persist?
  - demand is greater than supply.
  - there are more people who are willing to pay the price  $p$  than there are apartments.
  - some landlords would find it in their interest to raise the price.



# (Competitive) Market Equilibrium

Think: what would happen at a price other than  $p^*$ ?

- Consider some price  $p > p^*$ .
  - some of the apartments will be vacant.
  - some of the landlords are now in danger of getting no rent at all.
  - thus they will have an incentive to lower their price.



What are the **exogenous variables** in the model?

- quantity of the close apartments
- price of the distant apartments

**What happens if these are changed?**

What are the **exogenous variables** in the model?

- quantity of the close apartments
- price of the distant apartments

**What happens if these are changed?**

static

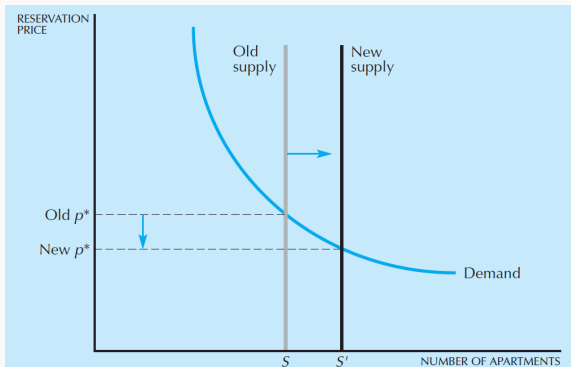
comparing two “static”  
equilibria

dynamic

how the market moves from  
one equilibrium to another

# Comparative *static* analysis 比较静态分析

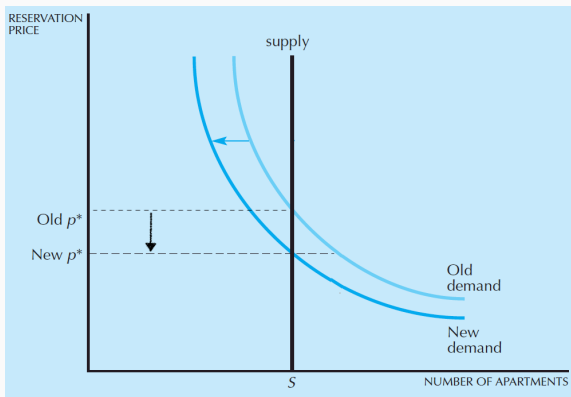
Suppose the supply of the apartments is increased:



**Increasing the supply of apartments.** As the supply of apartments increases, the equilibrium price decreases.

# Comparative *static* analysis 比较静态分析

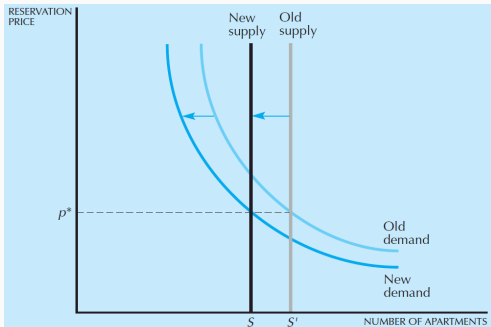
Suppose the price of the distant apartments drops





## Comparative *static* analysis 比较静态分析

Suppose that a developer decides to turn several of the apartments into condominiums 私人公寓.



**Effect of creating condominiums.** If demand and supply both shift left by the same amount the equilibrium price is unchanged.

Suppose the demanders with the 10 highest reservation prices decide to buy condos rather than rent apartments.

### Think

Suppose the city council decides that there should be tax on the apartment. Each landlord has to pay a certain amount of tax to the city.

How will this tax policy change the apartment price?

The price can't change as a result of the tax.

- The supply curve doesn't change: there are just as many apartments after the tax as before the tax.
- The demand curve doesn't change either.

Before the tax is imposed, each landlord is charging the highest price that he can get that will keep his apartment occupied. If they could raise the price and keep their apartments occupied, they would have already done so!

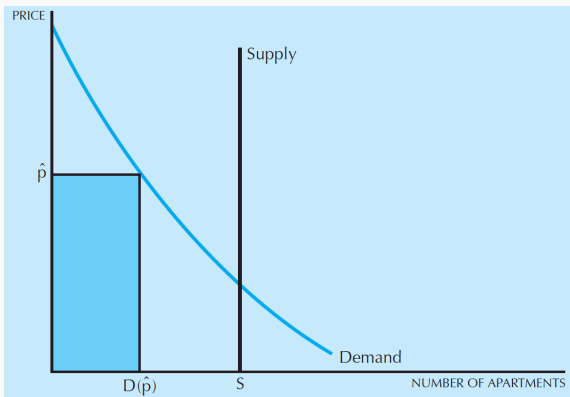
# Imperfect competitive market

Now let's consider situations where the market is no longer "perfectly competitive". Among many possibilities are:

- an ordinary monopolistic (垄断) landlord
- a perfectly discriminatory monopolistic landlord
- a competitive market subject to rent control

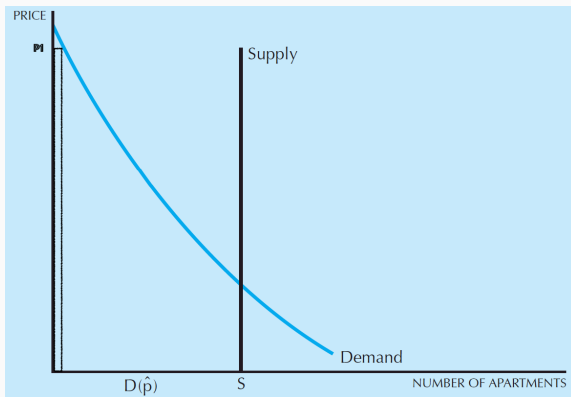
A situation where a market is dominated by a single seller of a product is known as a **monopoly**.

- when the landlord sets a rental price  $p$ , he rents out  $D(p)$  apartments.
- Revenue =  $p \times D(p)$
- The monopolist would want to choose a price that has the largest associated revenue box.



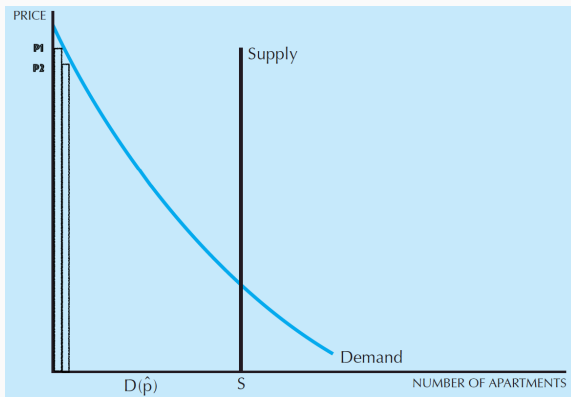
## (Perfectly discriminatory) monopolistic landlord

Imagine the monopolist knew everyone's willingness-to-pay and he was able to charge different renter with different prices



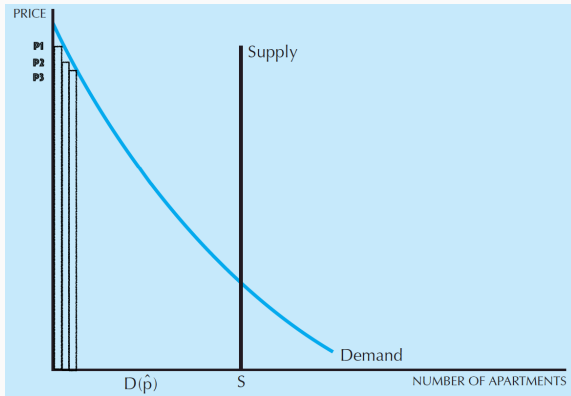
## (Perfectly discriminatory) monopolistic landlord

Imagine the monopolist knew everyone's willingness-to-pay and he was able to change different renter with different prices



## (Perfectly discriminatory) monopolistic landlord

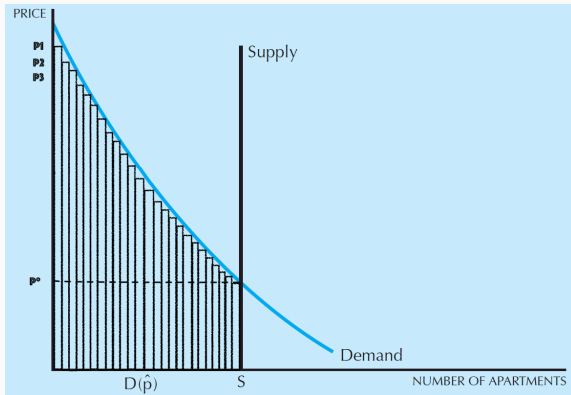
Imagine the monopolist knew everyone's willingness-to-pay and he was able to change different renter with different prices





## (Perfectly discriminatory) monopolistic landlord

Imagine the monopolist knew everyone's willingness-to-pay and he was able to change different renter with different prices

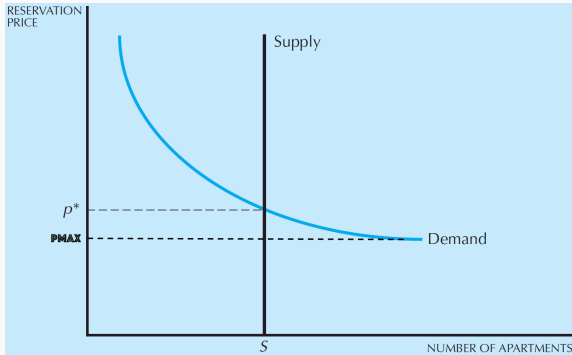


Discriminatory monopolist charges the competitive market price to the last renter, and rents the competitive quantity of close apartments.

# Rent control

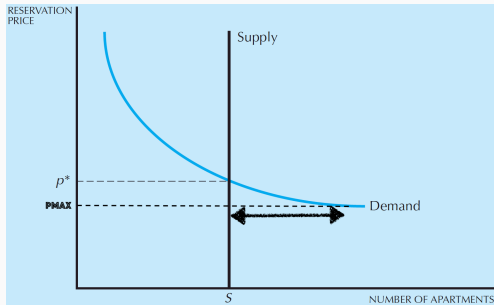
Local government imposes a maximum legal price:  $p^{max}$  最高限价

- when  $p^{max} < p^e$



# Rent control

The close apartments are no longer allocated by willingness-to-pay (lottery, queuing, large families first, bribery...).

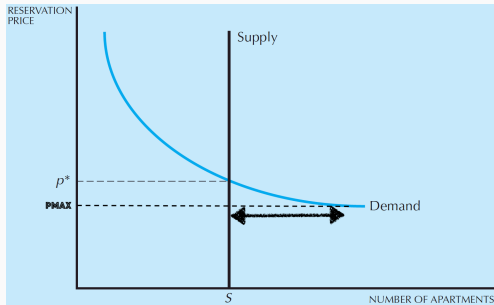


## Think

Can you give an example of controlled price in real life?

# Rent control

The close apartments are no longer allocated by willingness-to-pay (lottery, queuing, large families first, bribery...).



## Think

Can you give an example of controlled price in real life?

- milk tea long queue
- car plate with controlled price which is zero

# Allocation of resources

Which outcome is desirable?

- perfect competition
- monopoly
- discriminatory monopoly
- rent control

# Allocation of resources

Which outcome is desirable?

- perfect competition
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Perfect competition assigns scarce resource by money: efficient, but is it fair?

Discriminatory monopoly harms renters but benefits landlords.

Rent control harms the landlords, and not necessarily benefits the renters.

How to define which one is "good"?

from normative to positive...

# Pareto Efficiency 帕累托有效

- Vilfredo Pareto: 1848-1923
- A Pareto outcome allows for no "wasted welfare".
- An allocation is **Pareto efficient** if we can't find another allocation such that no one is worse off and at least someone is better off.



- Given an allocation, if we can find a way to make some people better off without making anybody else worse off, we have a **Pareto improvement**.
- If an allocation allows for a Pareto improvement, it is called **Pareto inefficient**.
- If an allocation doesn't allow for any Pareto improvement, it is called **Pareto efficient**.



**Think**

Is *competitive equilibrium* Pareto efficient?

## Think

Is *competitive equilibrium* Pareto efficient?

- all close apartment renters value them at the market price  $p^e$  or more.
- those who value close apartments at price lower than  $p^e$  choose to live at distant apartments.
- so no mutually beneficial trades remain. The outcome is Pareto efficient.

**Think**

Is *(ordinary) Monopoly* Pareto efficient?

## Think

Is *(ordinary) Monopoly* Pareto efficient?

- not all apartments are occupied.
- if we assign an empty close apartment to a person who lives distant, we can increase this person's welfare without lowering anybody else's welfare.
- so the monopoly outcome is Pareto inefficient.

## Think

Is *Rent control* Pareto efficient?

## Think

Is *Rent control* Pareto efficient?

- there are excess demand for close apartments that larger than the supply.
- some close apartments will be assigned to renters valuing them at below the competitive price  $p^e$ .
- some renters valuing a close apartments above  $p^e$  don't get close apartments.
- Price control leads to Pareto inefficient outcome.

Think

Is *Discriminatory Monopoly* Pareto efficient?

## Think

Is *Discriminatory Monopoly* Pareto efficient?

- assigns the apartments according to willingness-to-pay
- no mutually beneficial trades remain
- so it is Pareto efficient
- Note that Pareto efficient outcomes could be very unequal!!



# Discuss: price gouging (坐地起价)

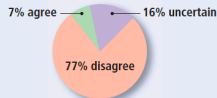


## ASK THE EXPERTS

### Price Gouging

"Connecticut should pass its Senate Bill 60, which states that during a 'severe weather event emergency, no person within the chain of distribution of consumer goods and services shall sell or offer to sell consumer goods or services for a price that is unconscionably excessive.'"

What do economists say?



Source: IGM Economic Experts Panel, May 2, 2012.

**Questions?**