Market Structure

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Textbook: Varian, Microeconomics a modern approach

Agenda

- Economics: some basics
- Production theory
- Pure competition
- Monopoly

Introduction

In these slide we will discuss about the **economic principles** that shape the energy markets:

- Competitive markets vs. monopolies
- Why regulation is different in different countries

The economic fundamentals introduced in these slides are crucial to understand the **basics** of the organizational models that have been in place throughout the history of the electricity industry, from monopolies to markets

Some definition

Economics: Discipline that deals with the allocation of scarce resources to satisfy human needs. It is the social science that studies the production, distribution, and consumption of goods and services

Microeconomics: focuses on how individual consumers and producers make their decisions. This includes a single person, a household, a business or a governmental organization. Microeconomics ranges from how these individuals trade with one another to how prices are affected by the **supply and demand of goods.** Also studied are the efficiency and costs associated with producing goods and services.

Macroeconomics: studies the overall economy. This can include a distinct geographical region, a country, a continent or even the whole world. Topics studied include government fiscal and monetary policy, unemployment rates, growth as reflected by changes in the Gross Domestic Product (GDP) and business cycles that result in expansion, booms, recessions and depressions.

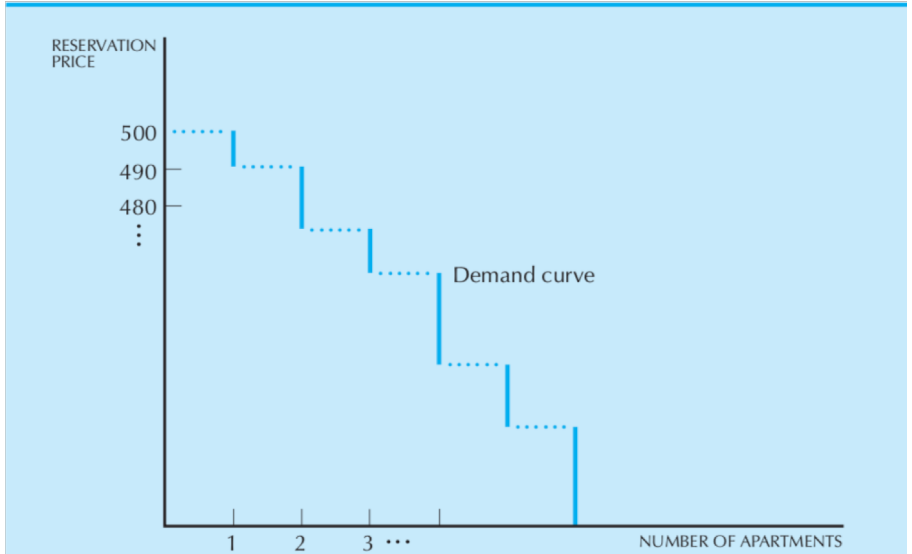
Basics: The demand curve

Suppose we want to describe the apartment market in Bovisa, we consider all the possible renters of the apartments and ask each of them the maximum amount that he or she would be **willing to pay** to rent one of the apartments

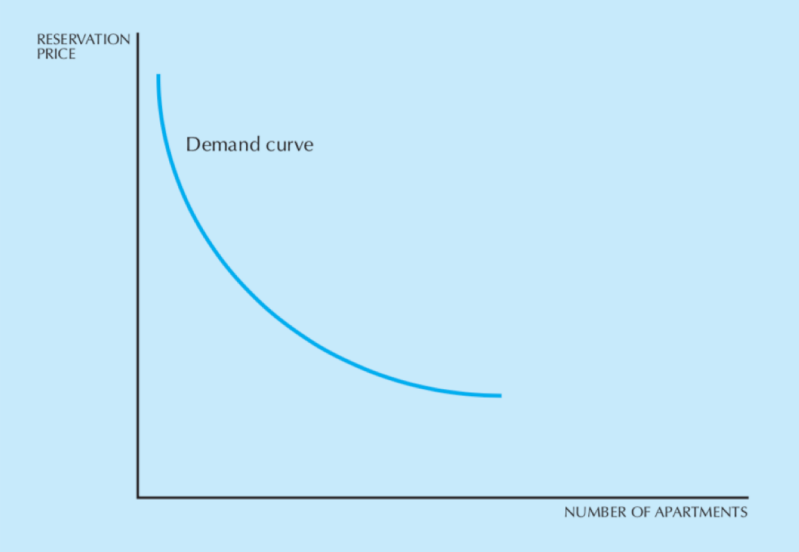
Let's start at the top:

- There must be someone who is willing to pay the highest price. Let's say: 500€
- Suppose that the next highest price that anyone is willing to pay is 490€
- The third highest price is 470€

The demand curve



The demand curve for apartments. The vertical axis measures the market price and the horizontal axis measures how many apartments will be rented at each price.



Demand curve for apartments with many demanders. Because of the large number of demanders, the jumps between prices will be small, and the demand curve will have the conventional smooth shape.

The **demand curve** is the function that describe the relationship between the price of a product and the amount of it that consumers are willing to purchase at that price

The demand curve

Economists call a person's maximum willingness to pay for something that person's **reservation price**

- The reservation price is the highest price that a given person will accept and still purchase the good
- In other words, a person's reservation price is the price at which he or she is just indifferent between purchasing or not purchasing the good

Consumer surplus

I need two volunteers:

Consumer surplus

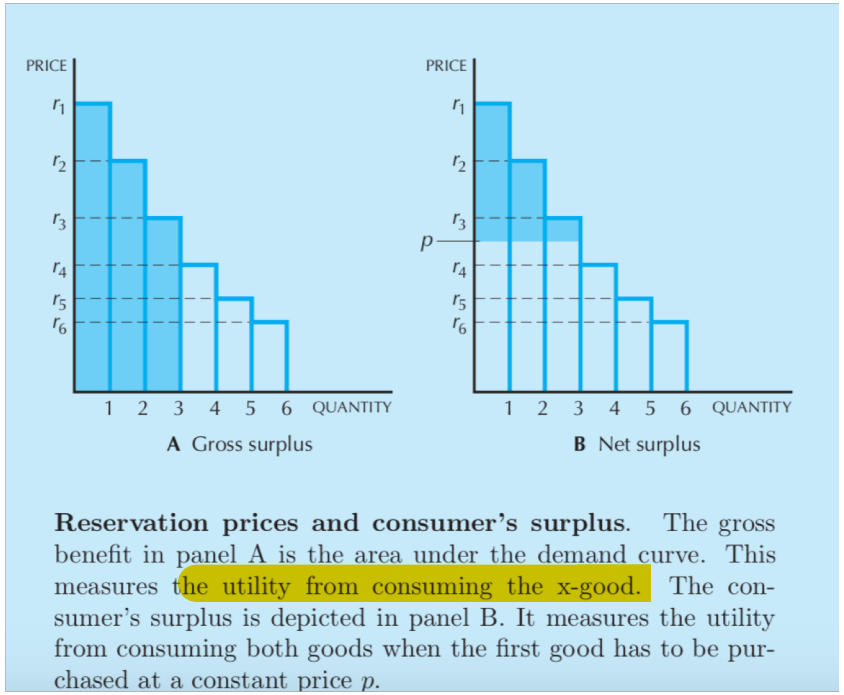
Buyer reservation price: **300$**

Consumer surplus

I need two volunteers:

Consumer surplus

Consumer Surplus is the difference between the price that consumers pay and the price that they are willing to pay (**reservation price**)



Reservation prices and consumer's surplus. The gross benefit in panel A is the area under the demand curve. This measures the utility from consuming the x-good. The consumer's surplus is depicted in panel B. It measures the utility from consuming both goods when the first good has to be purchased at a constant price p.

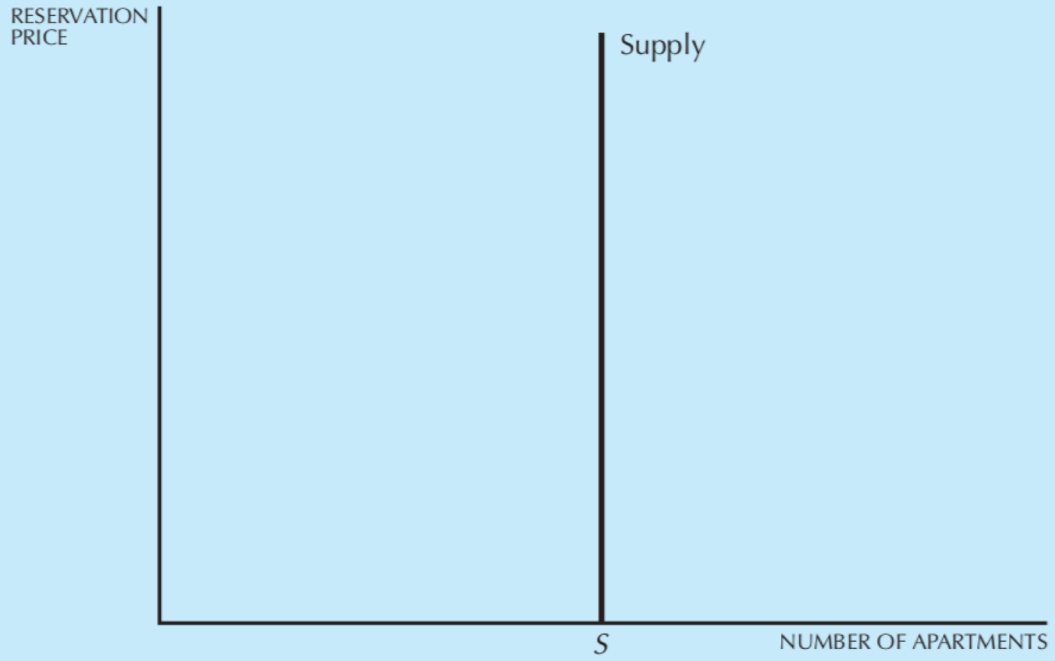
Basics: The supply curve

Let us try the method that we used in our construction of the demand curve: we will pick a price and ask how many apartments will be supplied at that price

Consider there are many **independent** landlords who are each out to rent their apartments for the highest price the market will bear (**competitive market**)

In the **short run** the number of apartments is more or less **fixed**. So, the supply of apartments will be constant at some predetermined level.

The supply curve



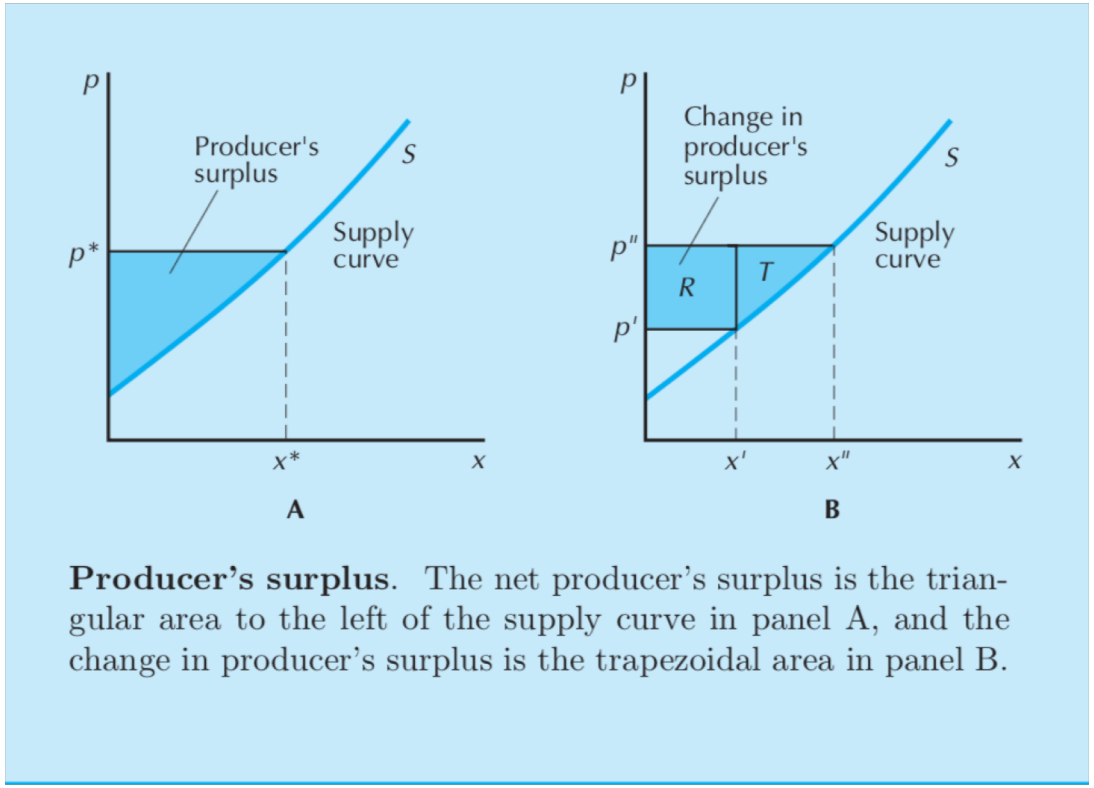
Short-run supply curve. The supply of apartments is fixed in the short run.

*Note: often the quantity supplied, vary with the price

In the remind of this lesson we will often deal with this kind of supply curve

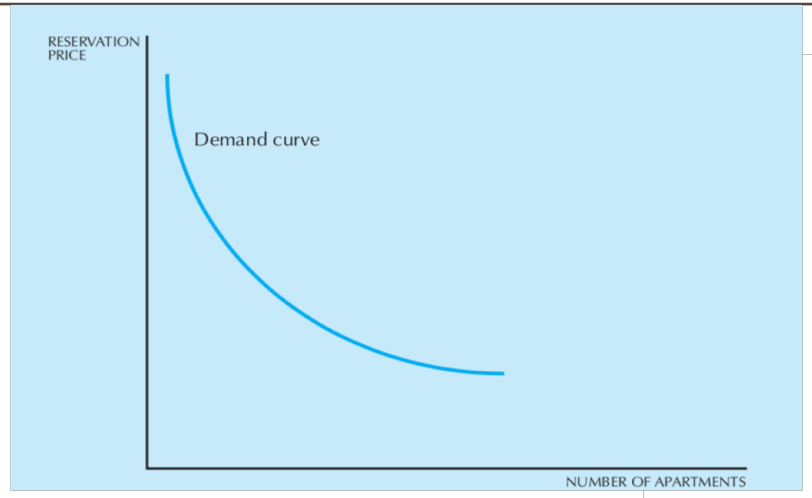
Monopoly- Producer surplus

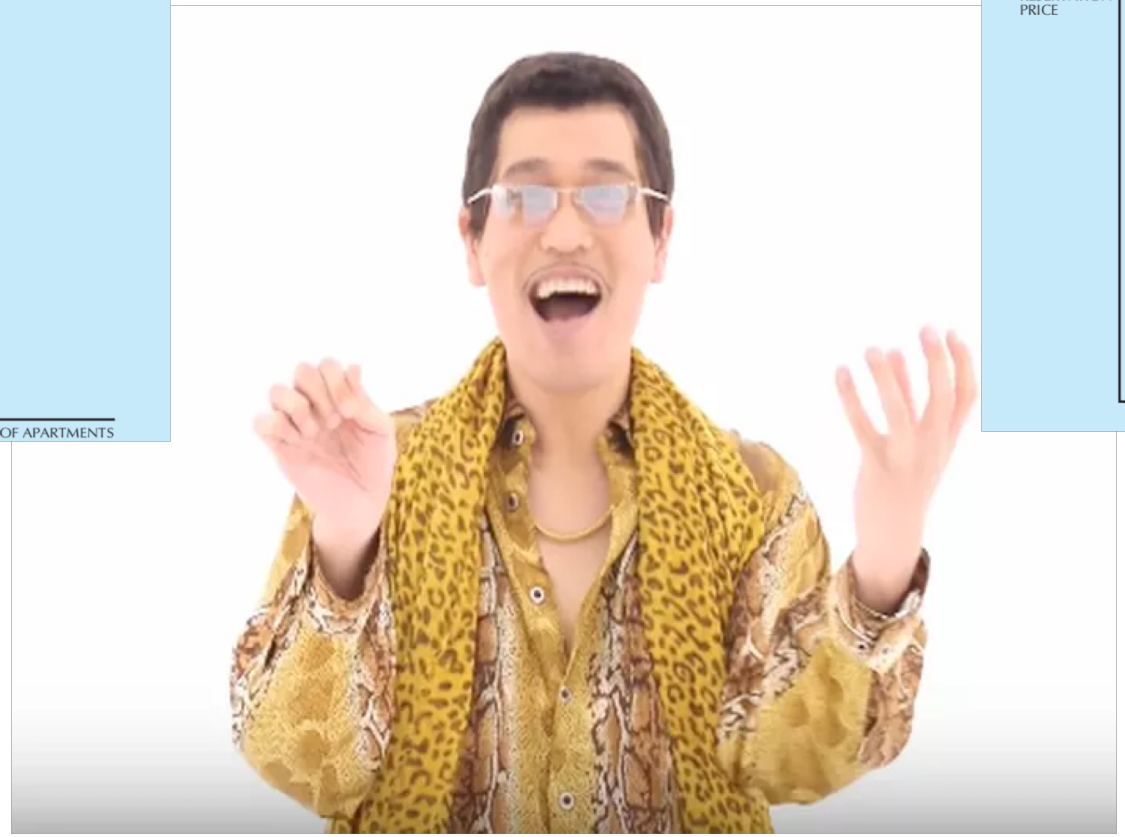
By analogy with consumer surplus, the area above the supply curve is known as producer's surplus

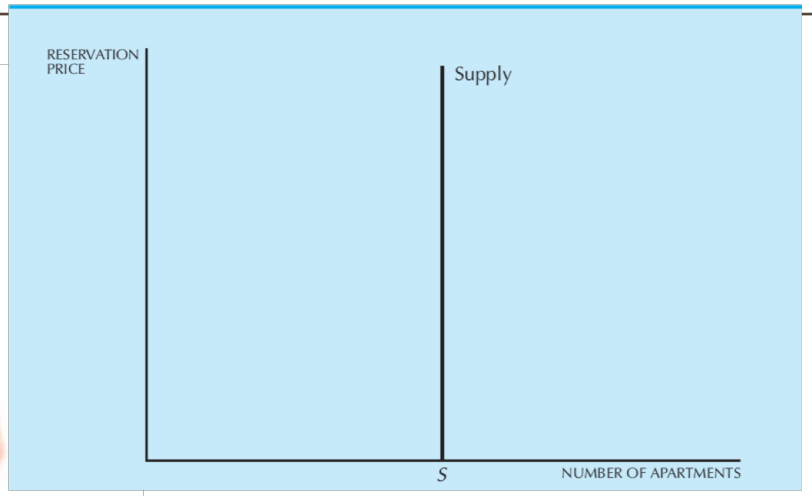


Producer's surplus. The net producer's surplus is the triangular area to the left of the supply curve in panel A, and the change in producer's surplus is the trapezoidal area in panel B.

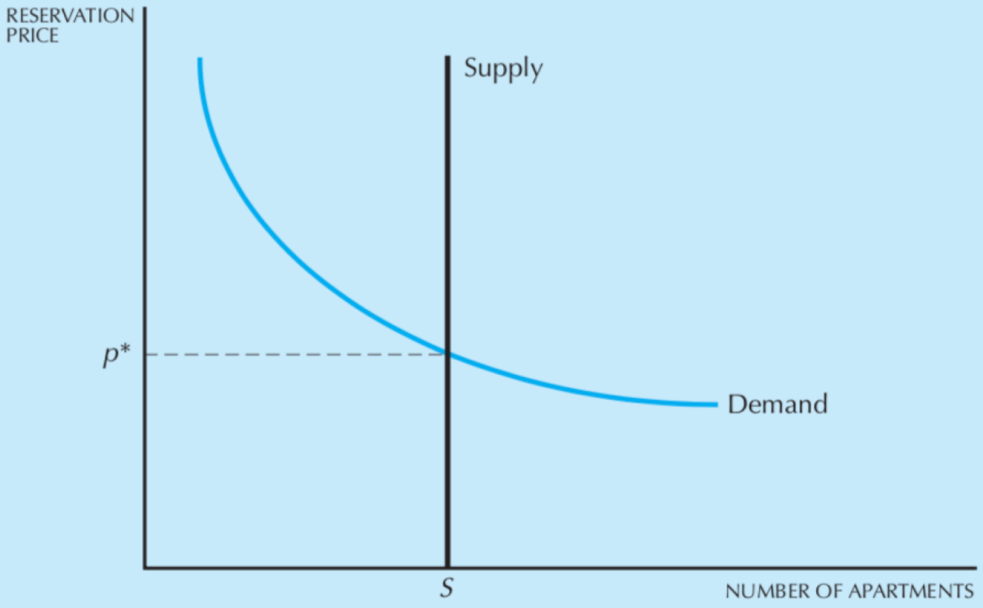
Basics: Market Equilibrium







Market Equilibrium



Equilibrium in the apartment market. The equilibrium price, p^*, is determined by the intersection of the supply and demand curves.

The demand supply game

We will play 2 rounds

- Each student is given a card at the beginning of a round that tells her/him if s/he is a buyer or a seller
- Each buyer card has a maximum bid price (**reservation price**): tells the buyer the highest price s/he could pay in a transaction
- Each seller card has a minimum offer price: tells the seller the lowest price s/he could accept in a transaction

The student who get the highest **surplus value** at the end of the 3 rounds wins (a six-pack…at the end of the course… to share)

The demand supply game

When a deal is made, upload the online form, and/or contact the instructor to validate the transaction

Round Number	Price	Buyer name	Surplus	Seller name	Surplus

https://docs.google.com/spreadsheets/d/1jPeRUNKo3-6-NRH3PoptLAYl4pbVZ2jEn4MvUMyHjqQ/edit?usp=sharing


ART
ATACK

The demand supply game

When a deal is made, upload the online form, and/or contact the instructor to validate the transaction

https://docs.google.com/spreadsheets/d/1jPeRUNKo3-6-NRH3PoptLAYl4pbVZ2jEn4MvUMyHjqQ/edit?usp=sharing

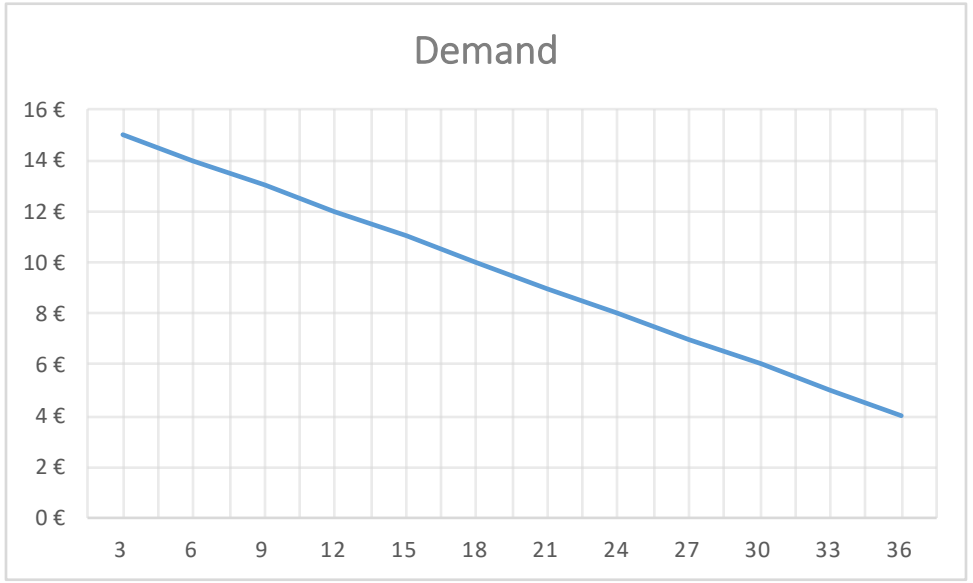
The demand supply game-Demand

There are exactly **3** **card** with each of the following reservation price (4€ to 15€)

Reservation price
4€
5€
6€
7€
8€
9€
10€
11€
12€
13€
14€
15€

From reservation price we are able to graph the demand curve. How many product are purchased at each price?

Price	Quantity
15 €	3
14 €	6
13 €	9
12 €	12
11 €	15
10 €	18
9 €	21
8 €	24
7 €	27
6 €	30
5 €	33
4 €	36



p= **16-q/3**

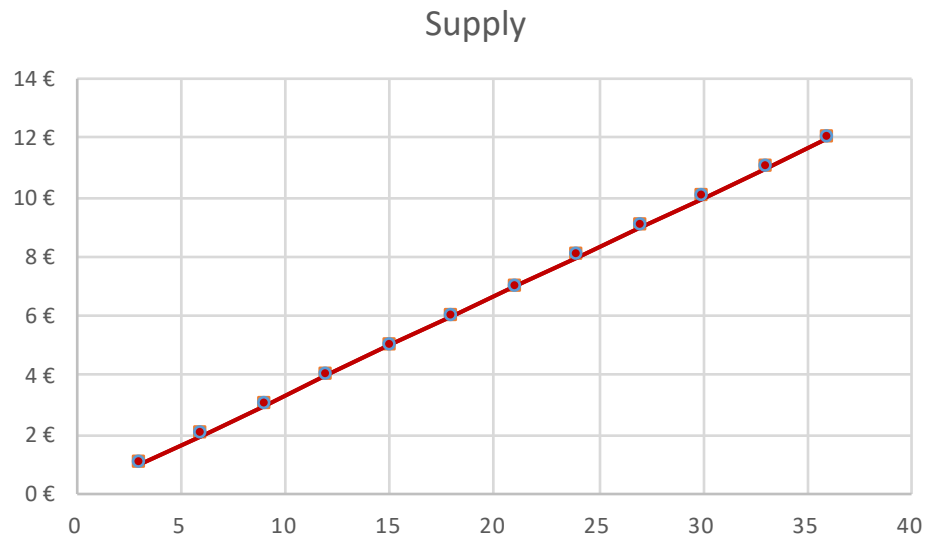
The demand supply game- Supply

There will be exactly **3** **card** with each of the following minimum offer prices (1€ to 12€)

Minimum offer
1€
2€
3€
4€
5€
6€
7€
8€
9€
10€
11€
12€

From minimum offer price we are able to graph the supply curve. How many product are sold at each price?

Minimum offer	Quantity
1 €	3
2 €	6
3 €	9
4 €	12
5 €	15
6 €	18
7 €	21
8 €	24
9 €	27
10 €	30
11 €	33
12 €	36



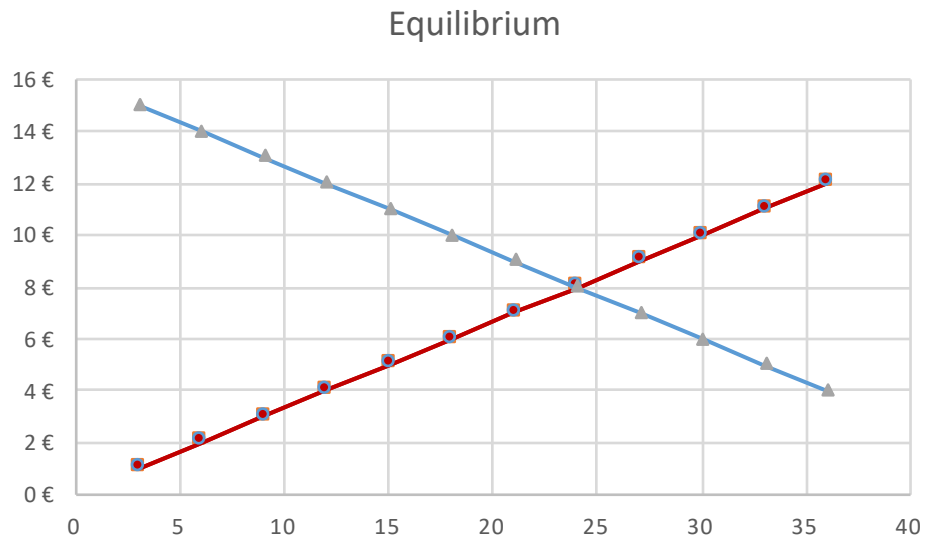
p=q/ **3**

The demand supply game- Equilibrium

$$\begin{cases} p=16-q/3 \\ p=q/3 \end{cases}$$

→

$$\begin{cases} p=8 \\ q=24 \end{cases}$$

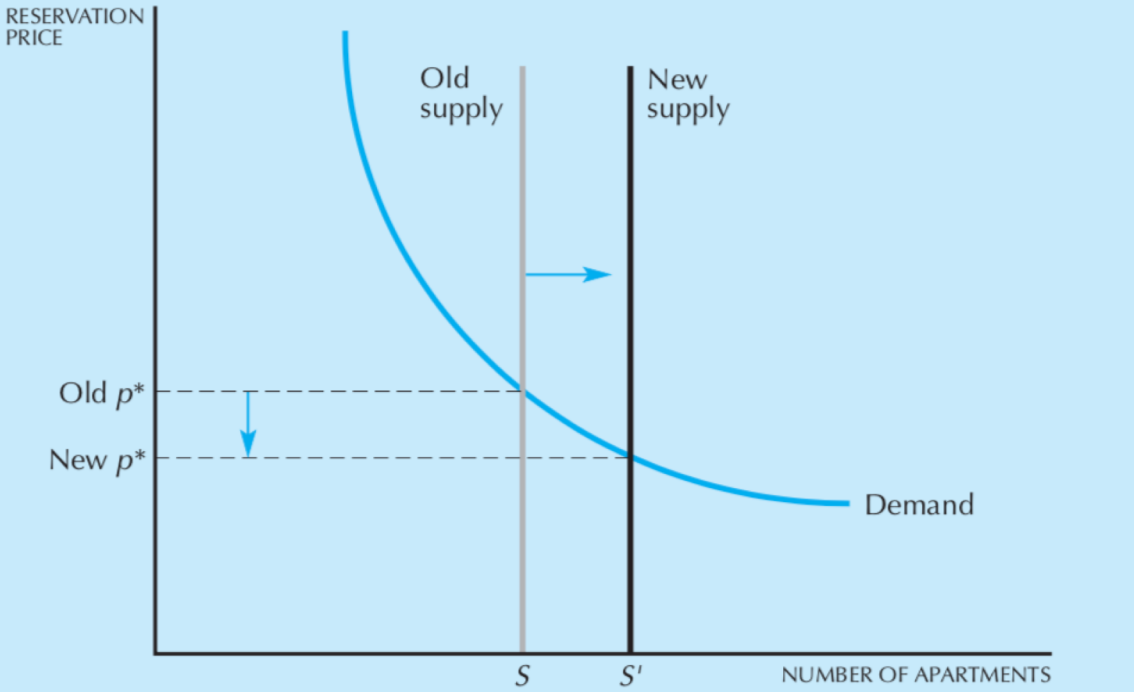


The demand supply game- Take away

Selfish, rational maximizers, acting without government intervention or regulation, arrived at an **efficient price**

An **efficient price** is one that creates no **shortages of demand and no surpluses of offer**

Comparative statics



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

Basics: The elasticity of the demand curve

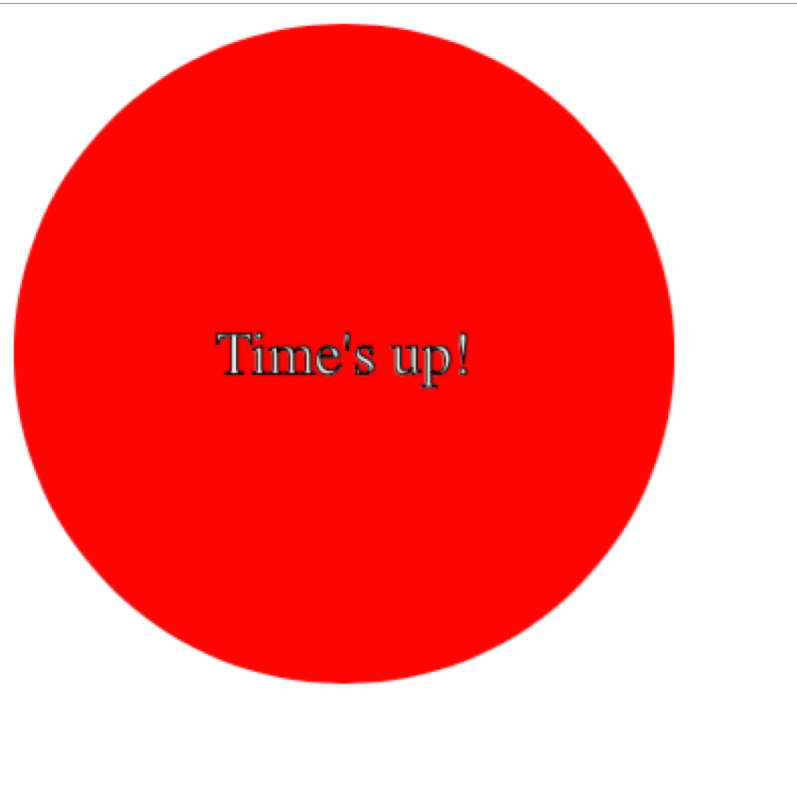
It is often of interest to have a measure of how "**responsive**" demand is to some change in **price**

The price elasticity of demand, ε, is defined to be the percent change in quantity divided by the percent change in price

$$\varepsilon = \left| \frac{\frac{\Delta q}{q}}{\frac{\Delta p}{p}} \right| = \left| \frac{p}{q} \frac{\Delta q}{\Delta p} \right|$$

The elasticity of the demand curve

- Consider the linear demand curve, q= a-bp, for which value of p and q, the elasticity is equal to 1?



The elasticity of the demand curve

- Consider the linear demand curve, q= a-bp, for which value of p and q, the elasticity is equal to 1?

$$\varepsilon = \left|\frac{\frac{\Delta q}{q}}{\frac{\Delta p}{p}}\right| = \left|\frac{p}{q}\frac{\Delta q}{\Delta p}\right| = \left|\frac{-bp}{q}\right| = \left|\frac{bp}{a-bp}\right| = 1$$

p=a/2b

q=a/2

The elasticity of the demand curve

If a good has an elasticity of demand greater than 1 in absolute value we say that it has an **elastic demand**

If the elasticity is less than 1 in absolute value we say that it has an **inelastic demand**

If it has an elasticity of exactly 1, we say it has **unit elastic demand**

- If a good has many close substitutes, we would expect that its demand curve would be very responsive to its price changes
- On the other hand, if there are few close substitutes for a good, it can exhibit a quite inelastic demand

The elasticity of the demand curve

Electricity is an «atypical» consumer good:

- Demand varies with time
- Electricity is non-storable
- Electricity consumers are only exposed to uniform prices that only change about once a year or longer

These factors combined make

demand for electricity **highly inelastic**