Lesson 1

Microeconomic environment

September 13, 2025

Structure

1. Economics as a science
2. How the markets work
3. Demand
4. Supply
5. Market equilibrium
6. Demand elasticity

1. Economics as a science

- Two centuries old
- Starting point 1776 Adam Smith book The wealth of nations
- The “invisible hand” concept
- True development from end of XIX
- Topics: economic systems, economic growth, economic policy, globalisation, green economy, circular economy, sustainability, etc

Definition of Economics

> “Economics is the study of how people and society choose,
> with or without the use of money,
> to employ scarce productive resources which could have alternative uses,
> to produce various commodities over time and
> distribute them for consumption now and
> in the future among various persons and groups of society.”

Economic theory

Microeconomics

the study of individuals, households and firms' behavior in decision making and allocation of resources. It generally applies to markets of goods and services and deals with individual and economic issues such as price formation

It deals with: demand and supply, price factors, consumer income distribution

Macroeconomics

branch of economics that studies how an overall economy—the market or other systems that operate on a large scale—behaves

Macroeconomics studies economy-wide phenomena such as inflation, price levels, rate of economic growth, national income, gross domestic product (GDP), and changes in unemployment. Also economic cycles and trends

Microeconomics deals with prices and production in single markets and the interaction between different markets but leaves the study of economy-wide aggregates to macroeconomics.

Sectors of economy

Sector: area of economy with the same or related business activity, product or service

Usually:

- Primary: raw materials
- Secondary: manufacturing
- Tertiary: providing a service
- Quaternary: information services (inside tertiary?)

More on sectors

Aerospace industry

- Industries transform raw materials and other intermediate goods into goods (products)

More on intermediate goods

- They work with:
  - material capital (assets): machinery, buildings, equipment, tools, etc
  - human capital (people)
  - also intangible capital (patents, brands, know-how)
- Within the aerospace industry, the Statistical classification of economic activities in the European Community shows:
- 30.30 - Manufacture of air and spacecraft and related machinery

NACE 30.30

30.30 - Manufacture of air and spacecraft and related machinery

This class includes:

- manufacture of airplanes for the transport of goods or passengers, for use by the defence forces, for sport or other purposes
- manufacture of helicopters
- manufacture of gliders, hang-gliders
- manufacture of dirigibles and hot air balloons

NACE 30.30

- manufacture of parts and accessories of the aircraft of this class:
  - major assemblies such as fuselages, wings, doors, control surfaces, landing gear, fuel tanks, nacelles etc.
  - airscrews, helicopter rotors and propelled rotor blades
  - motors and engines of a kind typically found on aircraft
  - parts of turbojets and turboprops for aircraft
- manufacture of ground flying trainers
- manufacture of spacecraft and launch vehicles, satellites, planetary probes, orbital stations, shuttles
- manufacture of intercontinental ballistic missiles (ICBM)

More NACE

NACE 30.30 excludes:

- manufacture of parachutes, see 13.92
- manufacture of military ordinance and ammunition, see 25.40
- manufacture of telecommunication equipment for satellites, see 26.30
- manufacture of aircraft instrumentation and aeronautical instruments, see 26.51
- manufacture of air navigation systems, see 26.51
- manufacture of lighting equipment for aircraft, see 27.40
- manufacture of ignition parts and other electrical parts for internal combustion engines, see 27.90
- manufacture of pistons, piston rings and carburettors, see 28.11
- manufacture of aircraft launching gear, aircraft carrier catapults and related equipment, see 28.99
- C33.1.6 - Repair and maintenance of aircraft and spacecraft
- G46.1.4 - Agents involved in the sale of machinery, industrial equipment, ships and aircraft

Sectors importance in Spain

GDP: Gross Domestic Product (total production of a country)

Sector	2020	1995	1964
Primary	3,45 %	3,90 %	16,00 %
Secondary	16,09 %	19,80 %	26,00 %
Building	6,22 %	8,60 %	8,00 %
Tertiary	74,24 %	60,20 %	50,00 %

GDP sharing in other countries

Business management

- Administration of a commercial enterprise
- It implies supervising fields such as:

  production, accounting, finance, designing, quality, sales, data analysis, project management, research, marketing, human resources…
- It implies management and leadership

Enterprise definition

- Company, firm, business
- > OECD definition:
  >
  > An enterprise is a term in the commercial world used to describe a project or venture undertaken for gain. It is often used with the word “business” as in “business enterprise”.
  >
  > Usually, by extension, it refers to the business entity carrying out the enterprise and is thus synonymous with “undertaking”, “company” or “firm”.
- A more classical definition: organized unit of production within a social structure

Enterprise definition II

- A business is defined as an organization or enterprising entity engaged in commercial, industrial, or professional activities.

- Businesses can be for-profit entities or non-profit organizations.

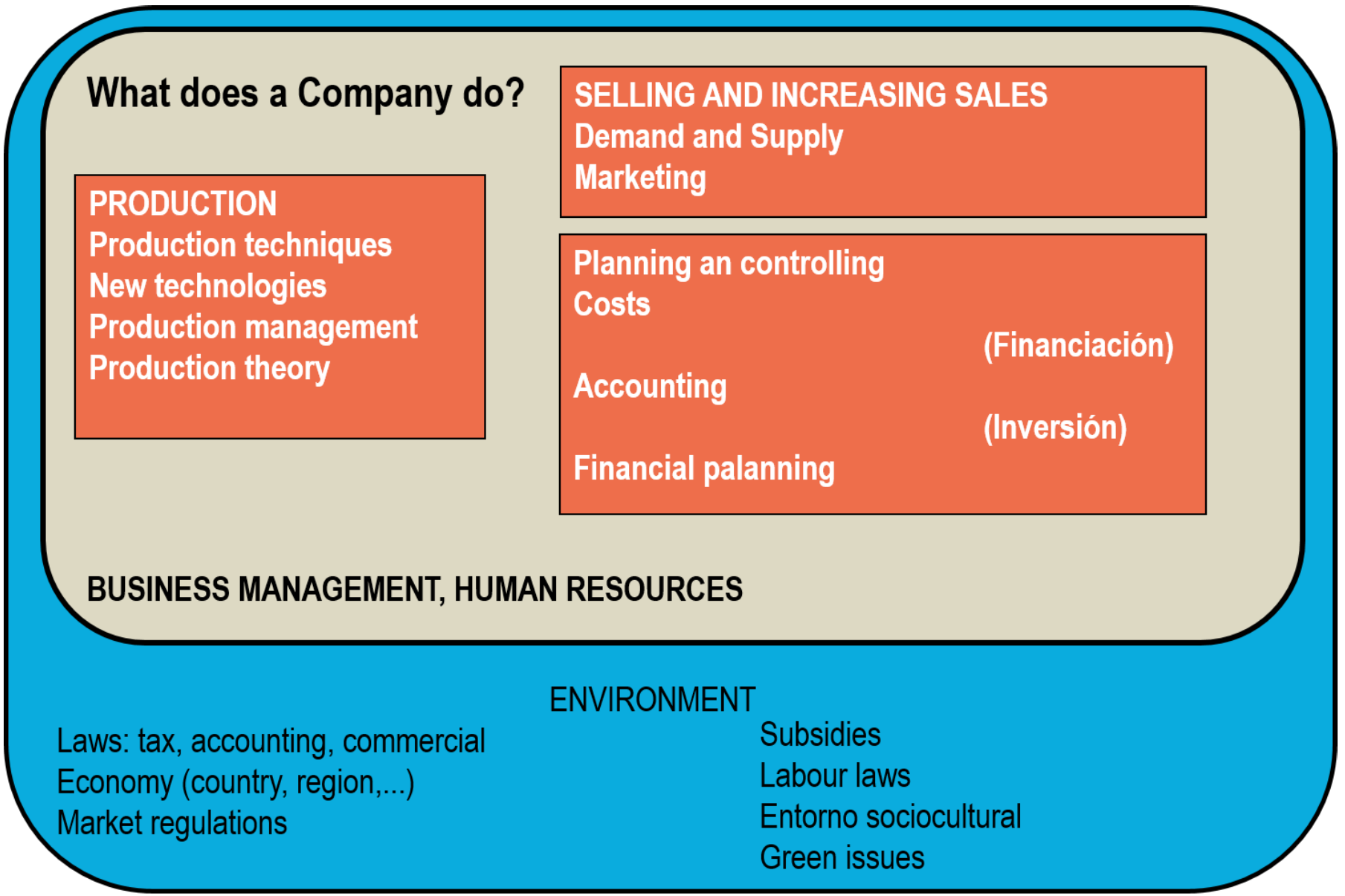
- Business Economics: social science which studies businesses as production economic units, specifically the running of the company as a system and the relationship between their subsystems and the relationship with their environment

- Business Management: coordination and organization of business activities.

Business characteristics

- Economic unit of production and management
- It transforms inputs into goods and services
- It has a structure
- It is the outcome of something devised by the human brain
- It has goals, they set specific and general objectives
- Its activity implies risks (economic, financial, technical and moral)

What does a company do?



Micro and macroenvironment

Microenvironment

- Factors under company´s control (ish)
- Competition, customers, suppliers, public, wholesalers,
- They affect a company, an industry or a specific region

Macroenvironment

- Factors of the economy considered as a whole
- GDP trend, inflation, employment rate, public expenditure, tax policy, monetary policy
- Not controlled by the companies
- Very related with the economy cycles
- It affects all the companies (systemic)

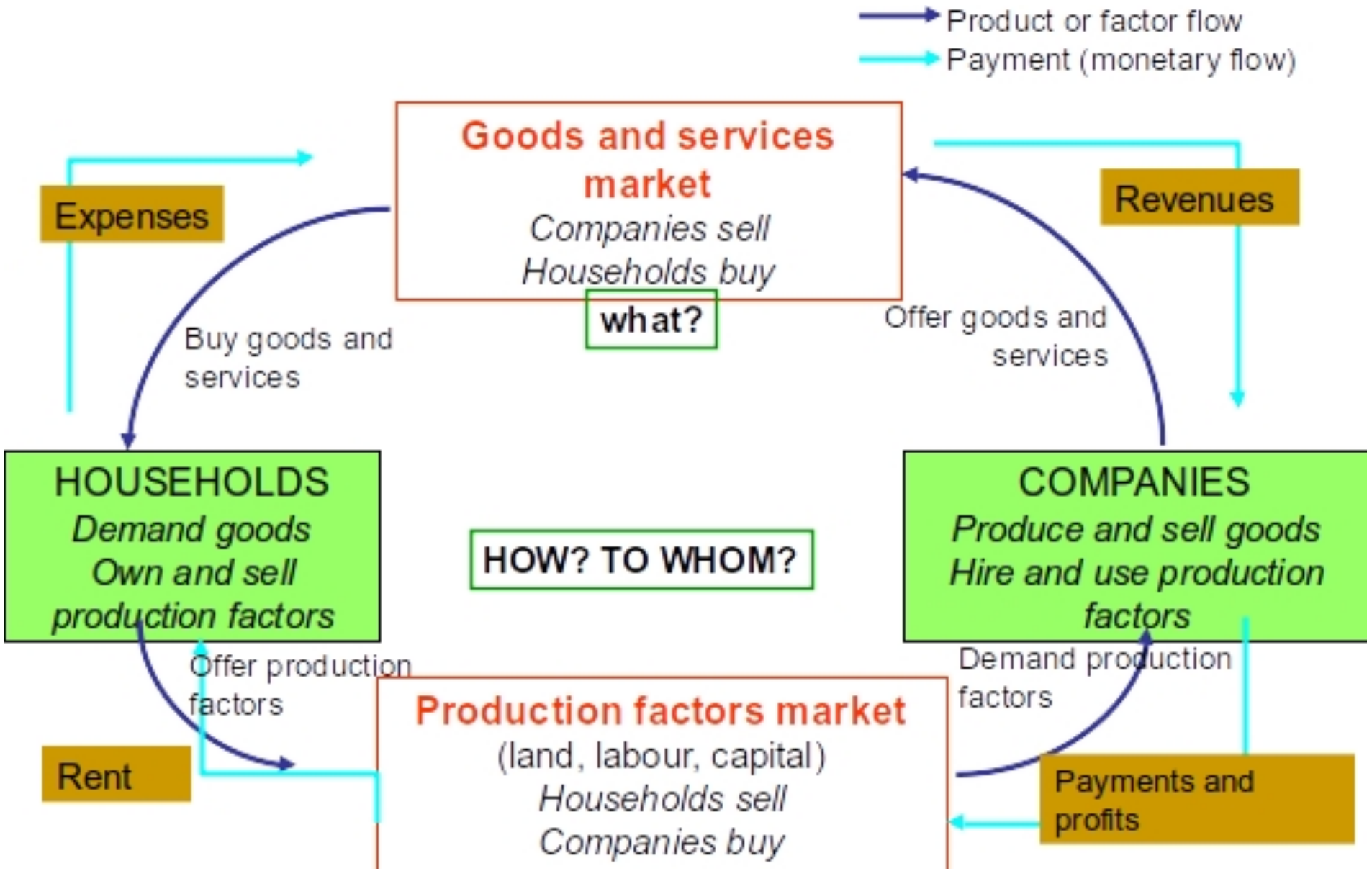
Structure

1. Economics as a science
2. How the markets work
3. Demand
4. Supply
5. Market equilibrium
6. Demand elasticity

2. How the markets work

- The economic system is the framework to:
  - distribute or assign production factors: capital, labour and land in an efficient way among different alternatives to obtain positive results
  - organize the production and consumption of goods and services
- The organization provided by the system can be more or less intervening or even planned
  - In a planned system: there is no price mechanism and the resources assignation is carried out by a planning agency
  - In market economies, the interaction between supply and demand provides the price. This price mechanism is the mean to assign resources
- To produce implies to answer what? how? to whom?

Resource allocation



Market definition

- In literal sense, market are places in which things are bought and sold
- A market is a place where buyers and sellers can meet to facilitate the exchange or transaction of goods and services
- Whole geographical area in which sellers compete with each other for customers
- A freely competitive market is one in which firms, independent of each other, engage in the same activity and compete to attract consumers (European Commission)

Market characteristics

Defined over a perfect competition market

A perfect competition market shows all the characteristics

Freedom:

- of entry and exit
- no regulations over the prices

Homogeneity:

- Similar products

Transparency:

- Buyers have full information

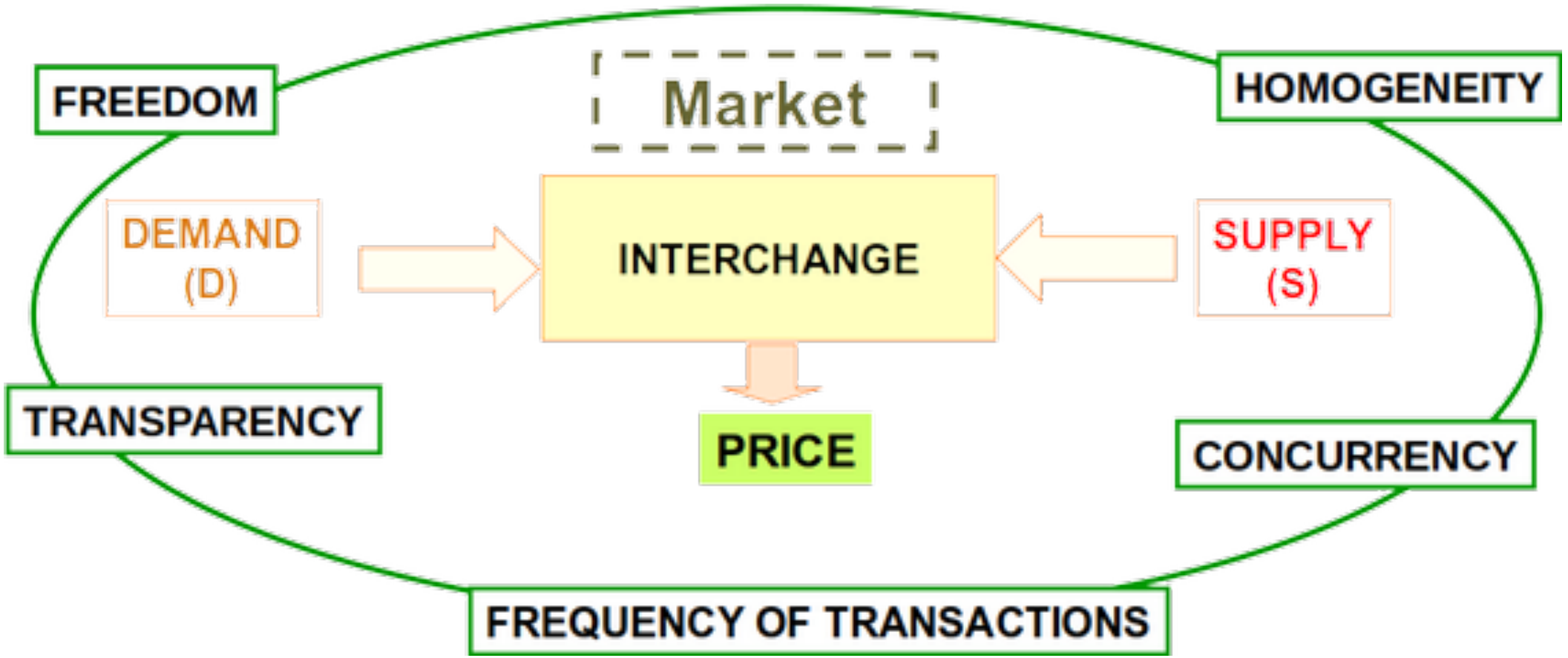
Concurrency:

- High number of active buyers and sellers

Frequency of transactions:

- High

Market characteristics



Market types

- Perfect competition market
- Monopoly
- Oligopoly reading on american airlines oligopoly
  - duopoly Airbus-Boeing 🎥
  - what is a cartel? why are cartels bad for business?
- Monopsony
- Oligopsony
- Monopolistic competition
- Bilateral monopoly
- Other: Black markets, shadow markets (scalpers)

Monopoly

Market structure where a single company is the sole provider of a product or service. Because there are no close substitutes and barriers to entry are very high (legal, technological, or resource-based), the monopolist has significant power to set prices and control supply. This often leads to less consumer choice and potentially higher prices compared to more competitive markets.

A market where one company controls the supply of a product or service. Since there are no close competitors, it can decide prices and conditions.

- - Google in search engines.
  - Microsoft Windows in PC operating systems
  - De Beers (historically in the diamond industry).
  - Pharmaceutical patents (exclusive rights to sell a new medicine).
  - Water supplies companies (in each city)

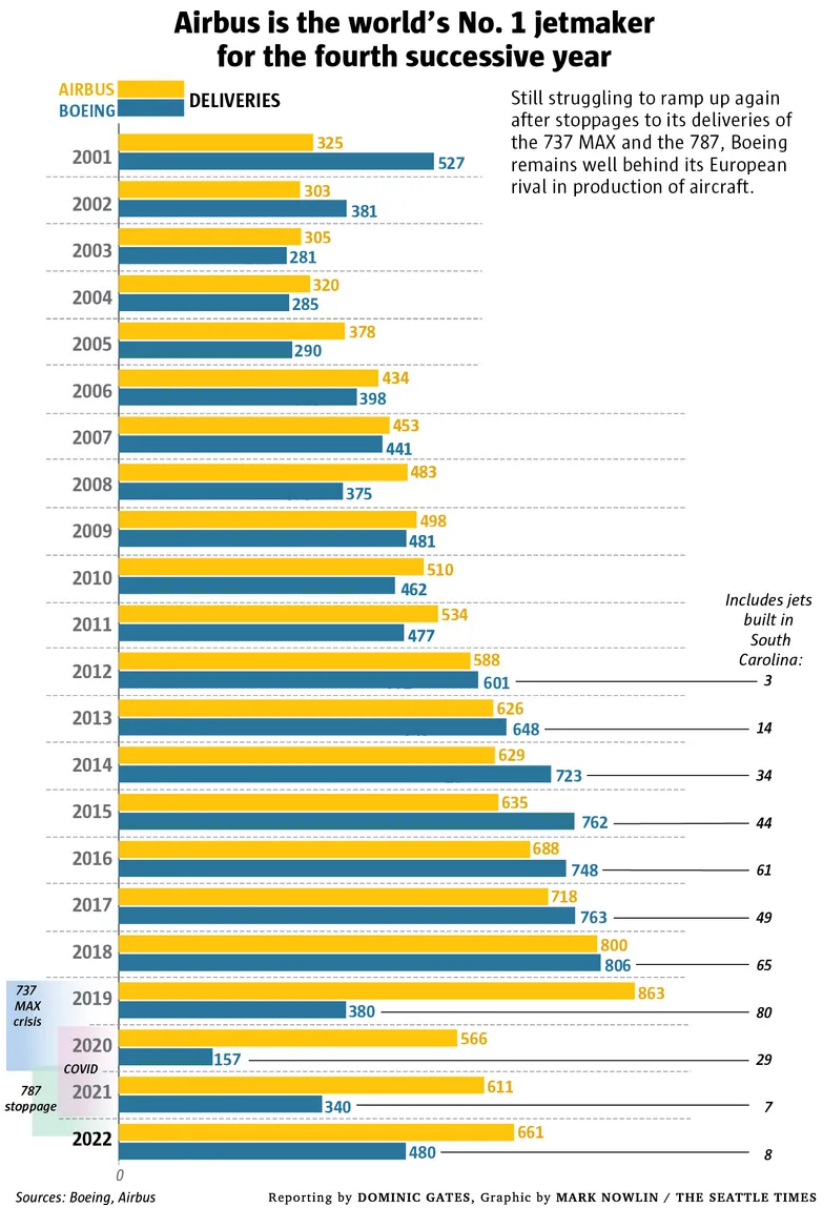
Oligopoly

An oligopoly is a market structure characterized by the dominance of a small number of firms, whose strategic decisions (about prices, production, or innovation) are interdependent. Barriers to entry are usually high, and competition tends to be based on pricing, product differentiation, or marketing power.

> **Note**
>
> An oligopoly is when a few big companies control most of the market, so each one's moves affect the others.

- Airbus and Boeing in the aircraft manufacturing industry
- Apple, Samsung, and Huawei in smartphones
- Coca-Cola and Pepsi in soft drinks
- OPEC (Organization of the Petroleum Exporting Countries) group of countries controlling oil supply
- Telefónica, Orange, Vodafone in Spain (telecommunications)
- Santander, BBVA, CaixaBank in Spain (banking sector)

Boeing Airbus duopoly



Monopsony

Market structure where there is only one buyer facing many sellers. This situation gives the buyer strong power to set prices and terms, often pushing them down because suppliers have no alternative demand.

> **Note**
>
> Only one big buyer exists, so sellers must depend on it.

- Amazon in online retail, as many small producers depend on selling through its platform
- Government defense departments buying military equipment from multiple contractors
- Major employers in isolated towns or regions (e.g., a mining company being the only buyer of local labor)
- Public health systems like the NHS in the UK or the SNS in Spain as sole large buyers of medicines and healthcare services

Oligopsony

An oligopsony is a market structure where a small number of buyers purchase from many sellers. Because sellers depend on just a few clients, those buyers have significant power to influence prices and conditions.

> **Note**
>
> An oligopsony is when only a few buyers exist, so they can pressure many sellers.

- Large coffee buyers such as Nestlé, JDE Peet's, and Starbucks purchasing from millions of coffee farmers
- Big cocoa buyers like Mars, Mondelez, and Ferrero purchasing from West African producers
- Automobile manufacturers buying parts from many small suppliers
- Large supermarket chains concentrating food purchases worldwide

Monopolistic competition

Monopolistic competition is a market structure where many firms compete, but each one differentiates its product through quality, brand, or other attributes. Entry barriers are low, and firms have some power over prices thanks to product differentiation, but not as much as in a monopoly or oligopoly.

> **Note**
>
> Monopolistic competition is when many companies sell similar products, but each brand tries to stand out.

- McDonald's, Burger King in fast food
- Nike, Adidas, and Puma in sportswear
- Hotels and restaurants worldwide, each offering slightly different services
- Smartphone apps and games in digital marketplaces
- Clothing retailers like Zara, Mango, and Desigual
- Restaurants and cafés

Bileteral monopoly

A bilateral monopoly is a market structure where there is only one seller (monopoly) and only one buyer (monopsony). The price and conditions are determined through negotiation or bargaining between the two, since both sides hold market power.

> **Note**
>
> A bilateral monopoly is when one seller and one buyer face each other, and they must negotiate because neither has alternatives.

- Lockheed Martin and the U.S. Department of Defense in the development of the F-35 fighter jet: Lockheed is the only producer, and the Pentagon the only buyer of this aircraft
- ADIF and RENFE in Spain before liberalization: ADIF as the sole provider of rail infrastructure, RENFE as the sole operator using it
- TSMC and Nvidia for specific high-end GPU manufacturing runs: TSMC as the unique foundry capable of producing them, Nvidia as the sole client for that custom design

Structure

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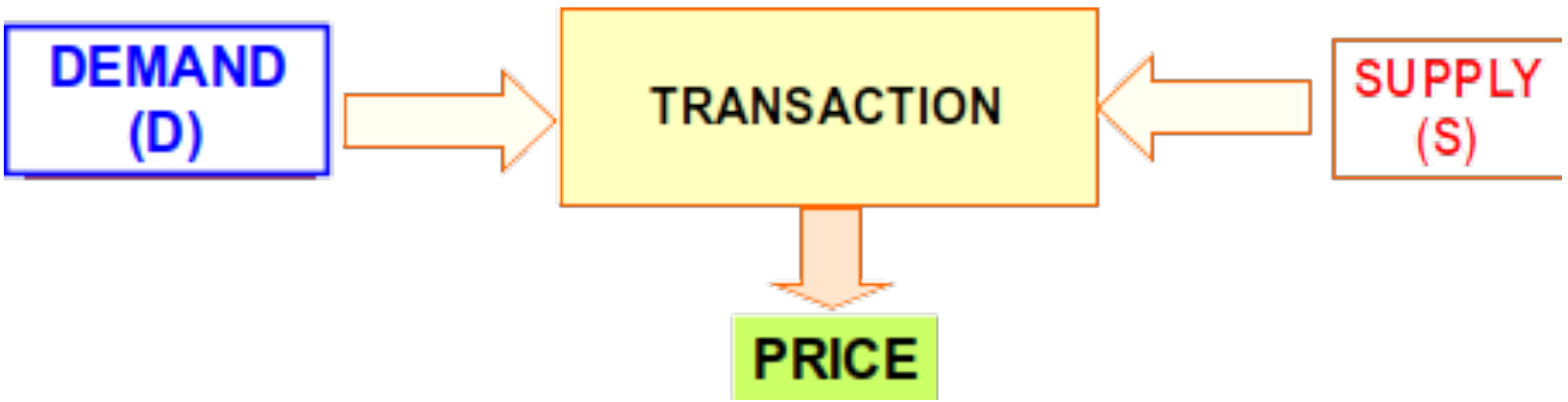
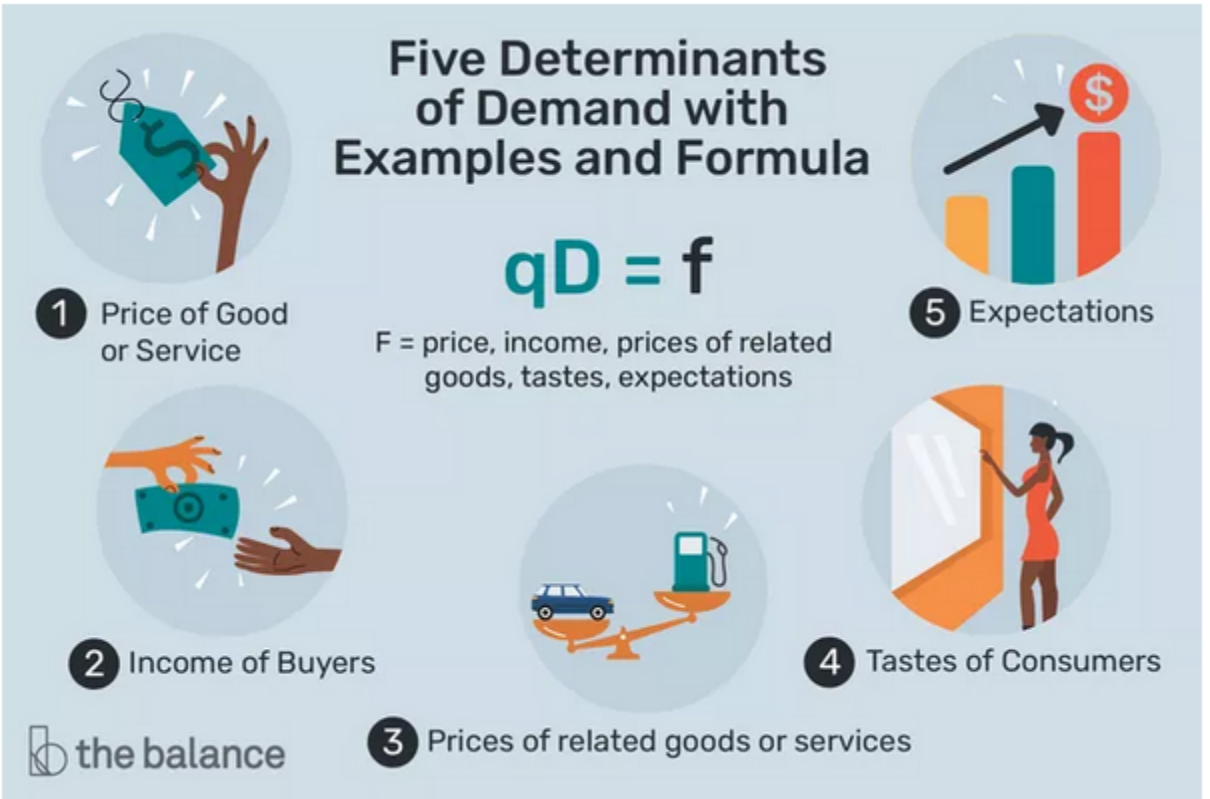
3. Demand



The quantity of a good demanded by an individual is the quantity that the buyer would be willing to buy at a certain price

Consumption is the quantity really bought

Determinants of the individual demand



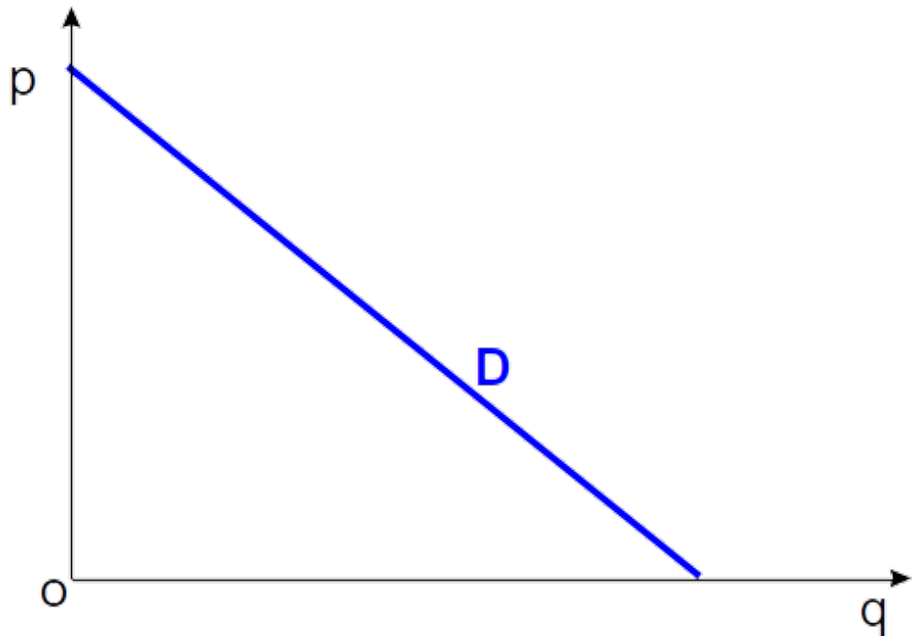
- Pa = price, I = income of buyers, Pb = price of other goods, T = tastes, E = expectations

More on determinants of demand

Law of demand

- The quantity bought of a good or service is a function of price
- The quantity purchased varies inversely with price
- The higher the price, the lower the quantity demanded
- Under “ceteris paribus” conditions (“all other things remain equal”)

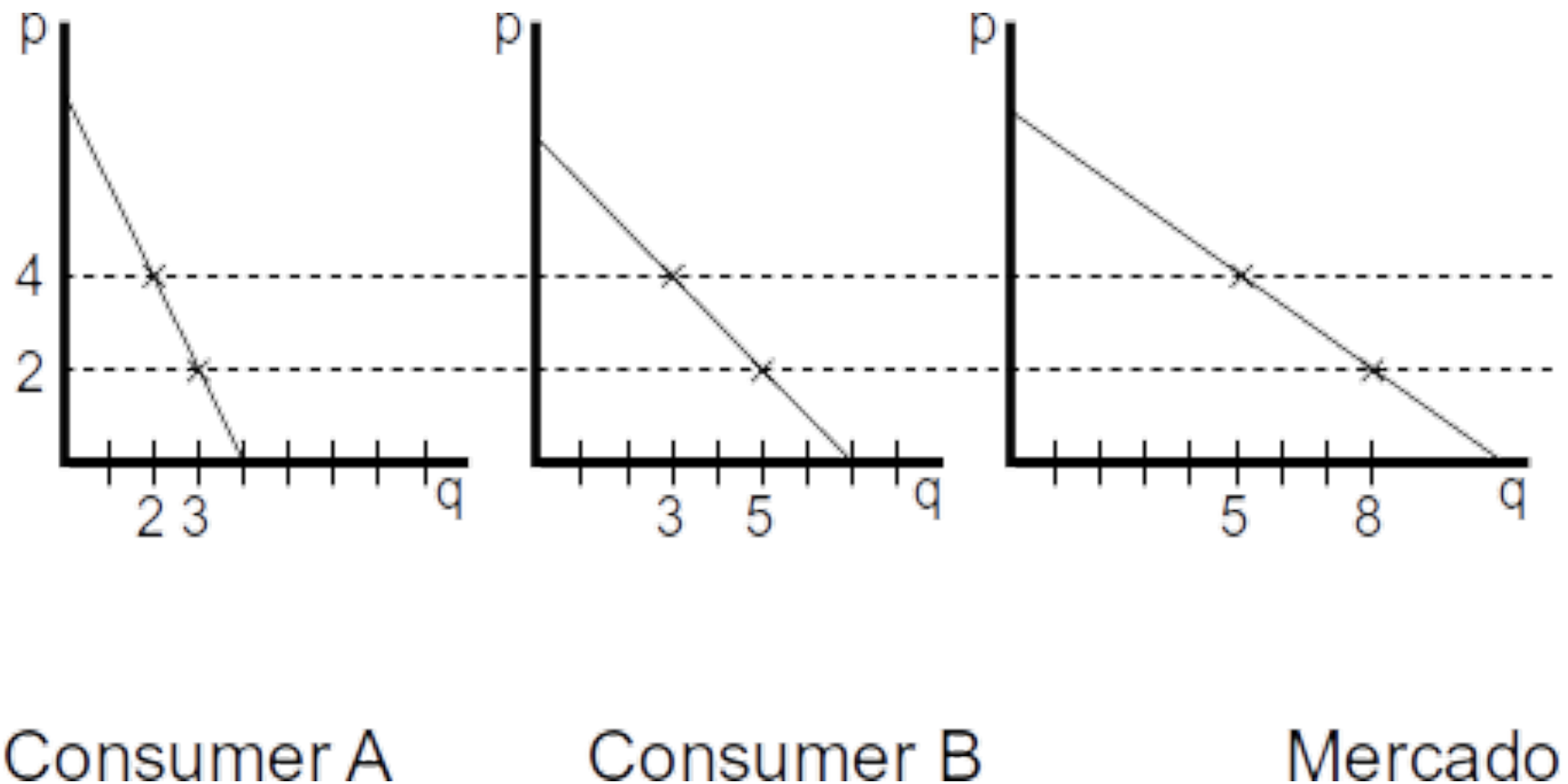
Individual demand curve



- It explains the relationship between the price of a good and the demanded quantity
- Decreasing relationship
- It is not always a straight line

Market demand curve

- Horizontal sum of all the individual curves
- Horizontal: quantities for each price



Income

More income ➜ More demand

Less income ➜ Less demand

- Increasing relationship
- Does it happen with all the goods?
  - Normal goods
  - Inferior goods:

income 🔼 ➜ demand 🔽

income 🔽 ➜ demand 🔼

Price of other goods

- The price of goods (services) related with A will influence the price of A
- Related goods?

  - Substitute goods
  - Complementary goods

- Substitute goods: goods which can be consumed instead of the product
- If the price of A goes up then the consumption of B goes up
- Complementary goods: goods which are consumed together with the product.
  - If the price of A goes up then the consumption of A goes down
  - complementary goods videogames industry

Tastes

- Taste clearly affect demand
- Taste is hard to quantify but people's taste can be influenced and modified
- How?
- Brand advertising tries to increase the desire for consumer goods
- Consumer preference

Expectations

- Future expectations
  - Future price
  - Future income

Important

- A change in quantity demanded is caused by a change in its own price of the good
- A change in demand is caused by a change in determinants.

Demand curve shift

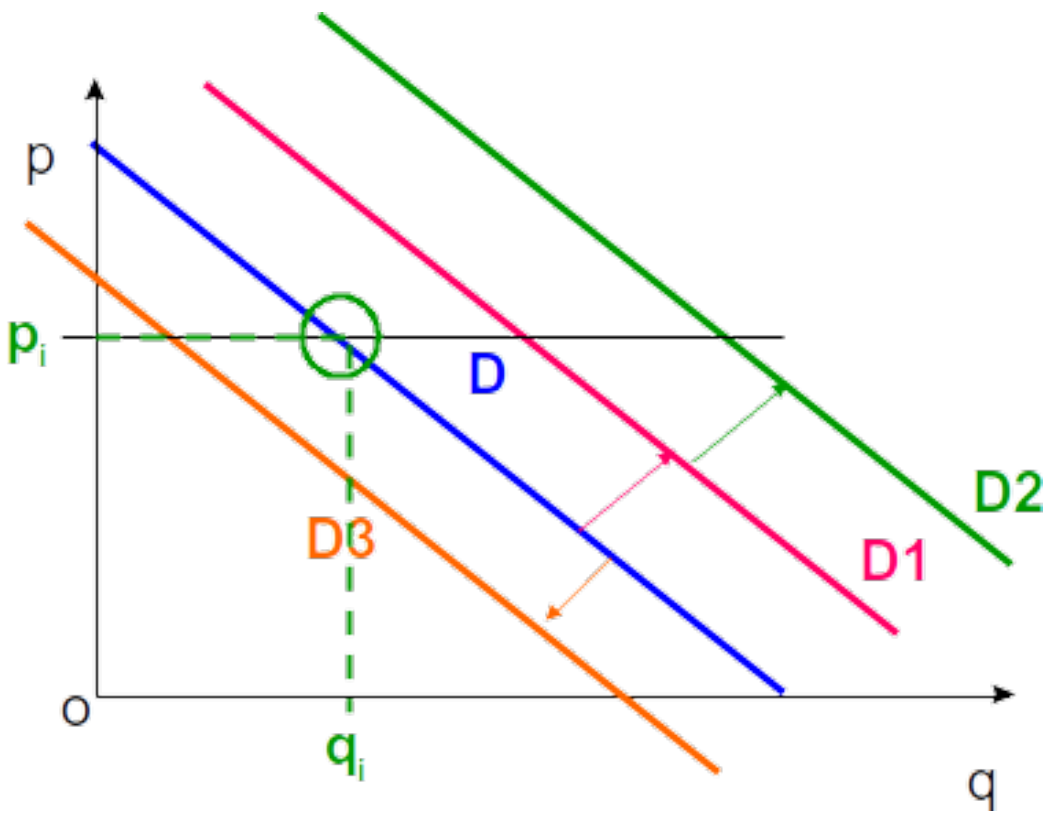
Demand Curve is a graph, indicating the quantity demanded by the consumer at different prices.

- The **movement in demand curve** occurs due to the change in the price of the good (movement along the curve)
- The **shift in demand curve** is because of the change in one or more factors other than the price (the curve position changes)

Demand curve shift II

What will happen with the demand curve if…

- the income increases (for a normal good)?
- the price of a substitute good goes up?
- the taste for the good diminishes?



Example 1.1

The demand function for a good can be expressed as:

$$X^d = -2P_x + 5R - 0.5P_y + 0.25P_z + 50$$

Where:

- X^d: The quantity demanded of good x
- P_x: Price of good x
- P_y: Price of good y
- P_z: Price of good z
- R: Income

a) Is good *x* normal or inferior?

b) Define good *x* in relation to *y* and *z*

c) Obtain and plot the demand curve for x if $R = 1, P_z = 4, \text{ and } P_y = 8$

d) Obtain and plot the demand curve for x if $R = 2, P_z = 4, \text{ and } P_y = 8$

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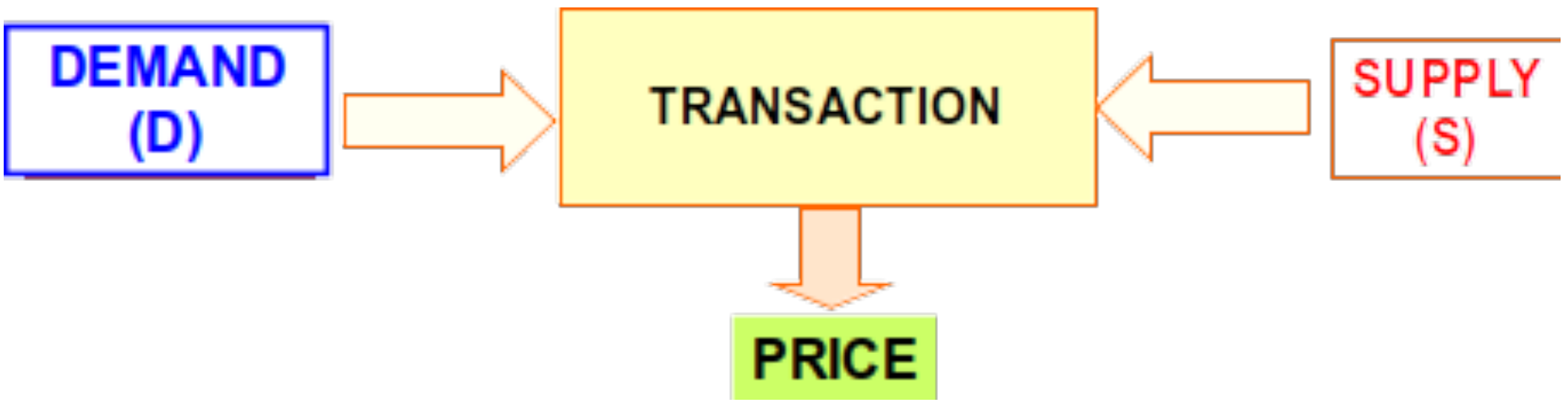
4. Supply



What factors influence the decision of producing and selling?

Determinants of the individual supply

- Price
- Price of other goods
- Price of production factors
- Technology
- Expectations

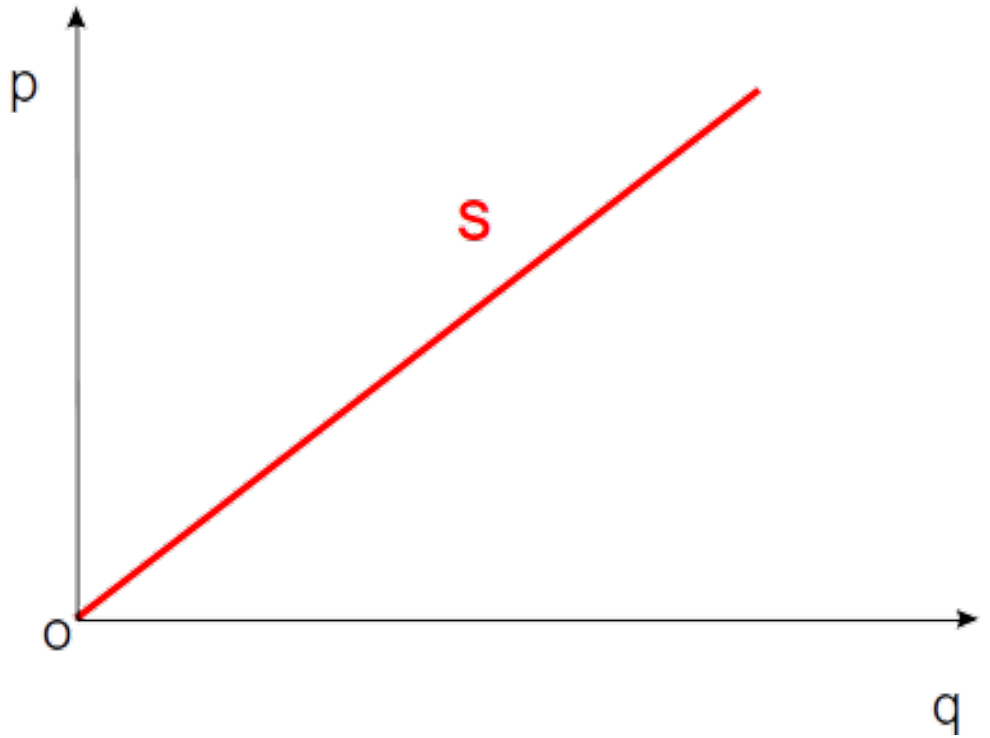
For market supply: the same and the number of sellers (suppliers)

Law of supply

- The quantity purchased varies directly with price
- The higher the price, the higher the quantity produced
- The law of supply says that a higher price will induce producers to supply a higher quantity to the market

- Businesses seek to increase revenue, when they expect to receive a higher price for something, they will produce more of it
- If prices fall, suppliers will not produce as much.

Individual supply curve



- Increasing relationship
- It is not always a straight line
- Under “ceteris paribus” conditions
- The market supply curve is obtained from summing the supply of all the sellers
- Horizontal sum

Supply curve shift

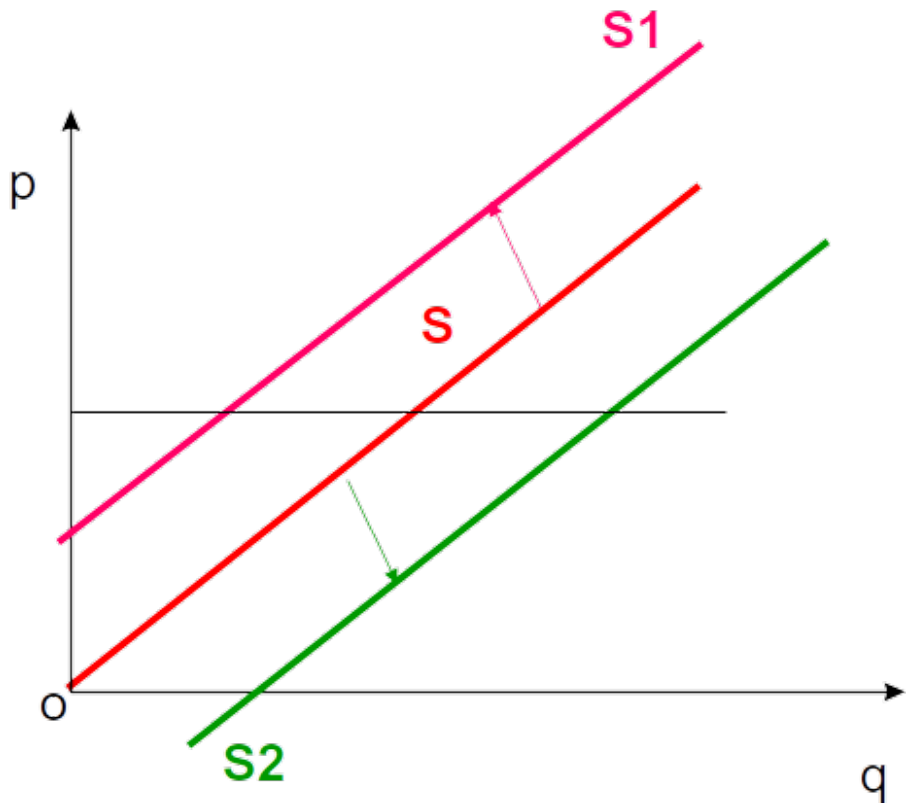
Supply Curve is a graph, indicating the quantity offered by the sellers at different prices.

- The **movement in supply curve** occurs due to the change in the price of the good (movement along the curve)
- The **shift in supply curve** is because of the change in one or more factors other than the price (the curve position changes)

Important

- A change in quantity supplied is caused by a change in its own price of the good
- A change in supply is caused by a change in determinants

Supply curve shift II



- When one of the determinants (Price of other goods, Price of production factors, Technology, Expectations) changes the curve shifts

Example 1.2

The supply function of a good can be expressed as:

$X^S = P_x - 2 \cdot W - P_M$

X^S: the quantity supplied

W: wage

P_M: price of raw materials

a) Obtain and plot the supply curve for good x when $W = 1$ and $P_M = 2$

b) Obtain and plot the supply curve for good x when $W = 2$ and $P_M = 2$

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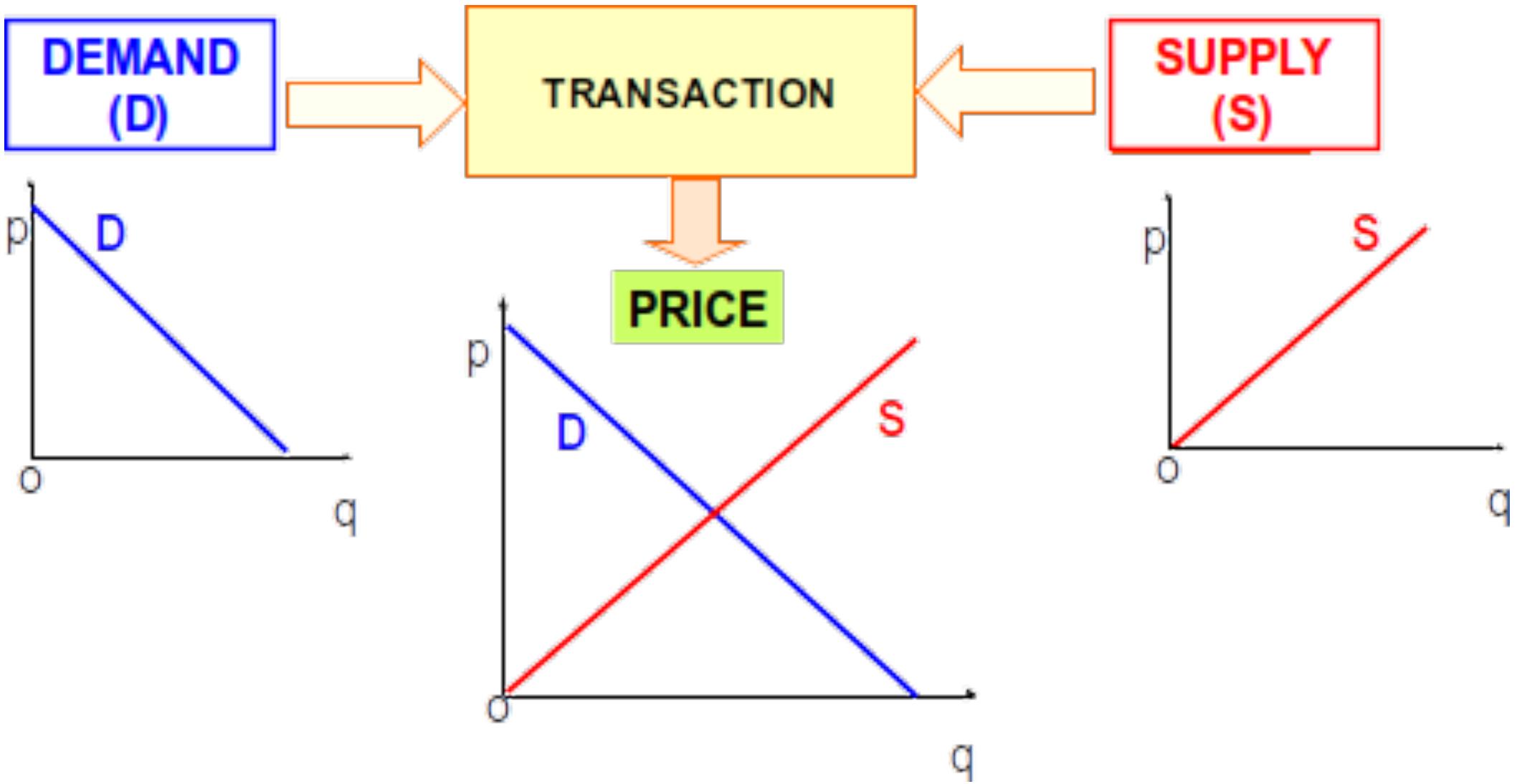
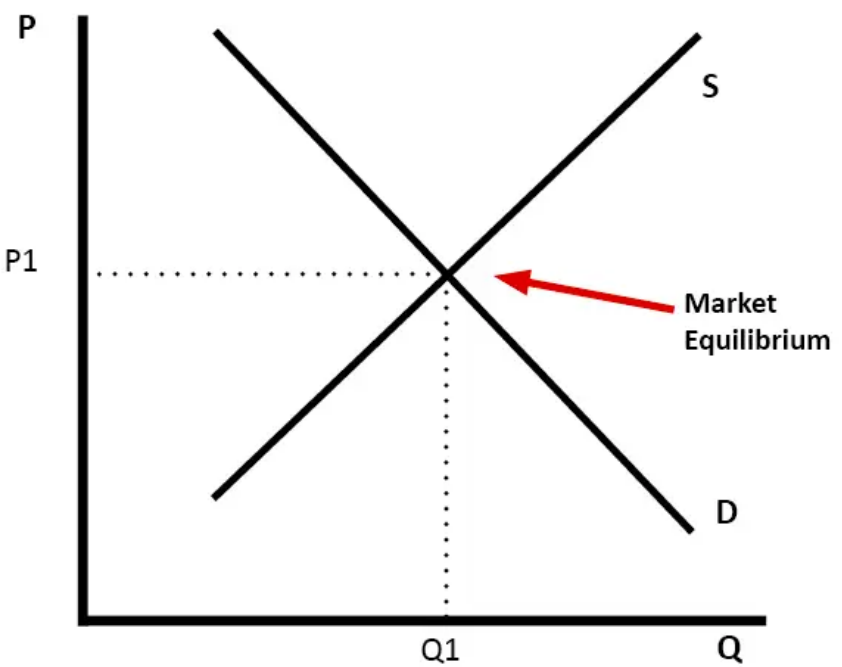
5. Market equilibrium

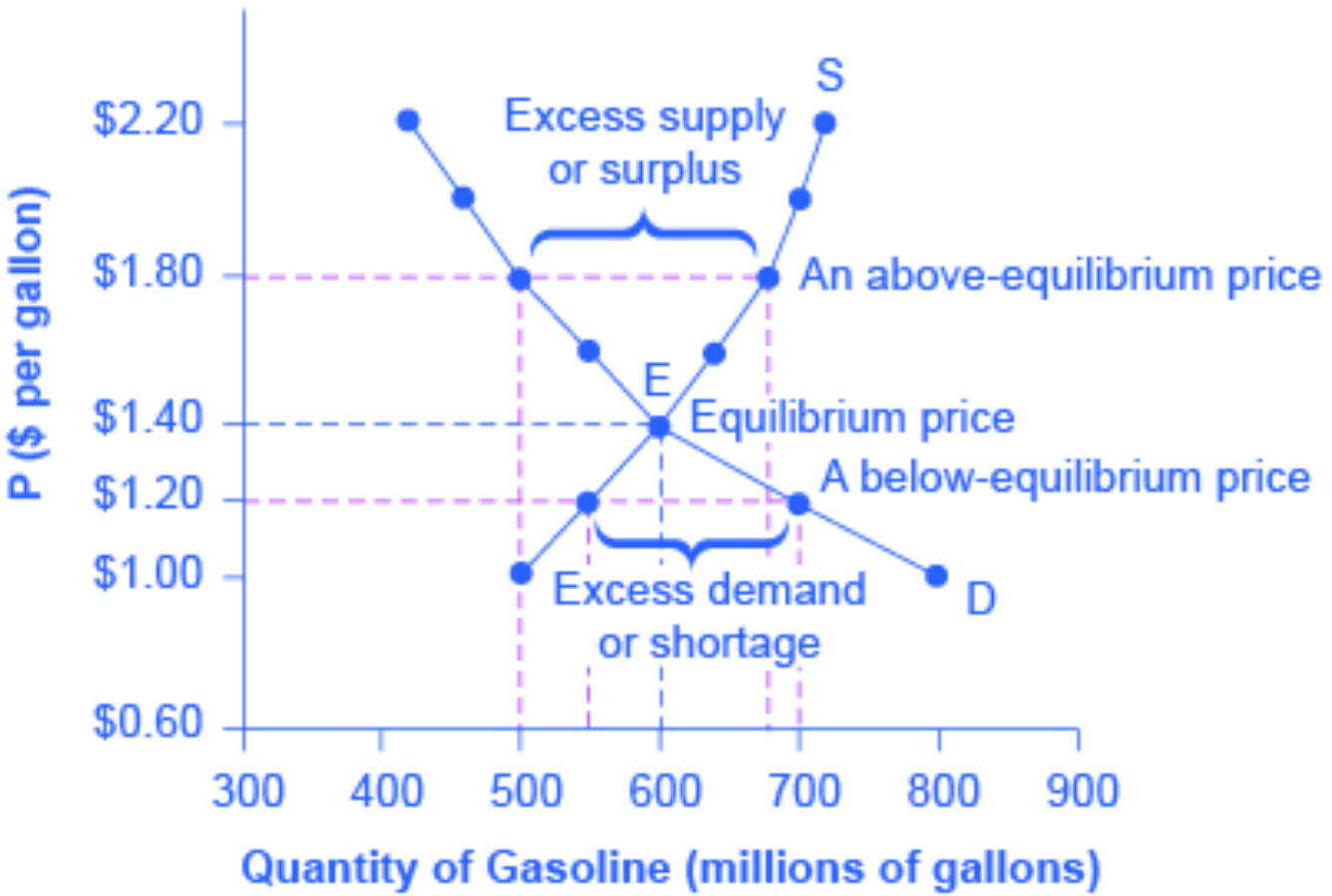


Market equilibrium

- Balance between supply and demand
- Equilibrium is achieved at the price at which quantities demanded and supplied are equal
- Supply and demand are equated in a free market through the price mechanism
- A market in equilibrium can be represented with plot by showing the combined price and quantity at which the supply and demand curves intersect



Excess supply and excess demand



Excess supply: equilibrium price 🔽

Excess demand: equilibrium price 🔼

Example 1.3

The demand and supply curves for a given good are:

$$X^d = 40 - 2 \cdot P_x$$

$$X^S = P_x - 5$$

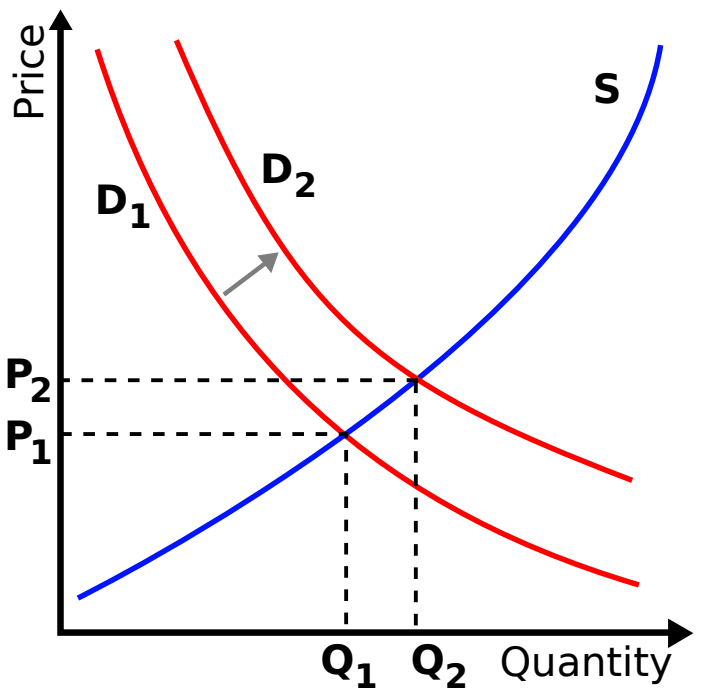
a) Find the equilibrium price and quantity

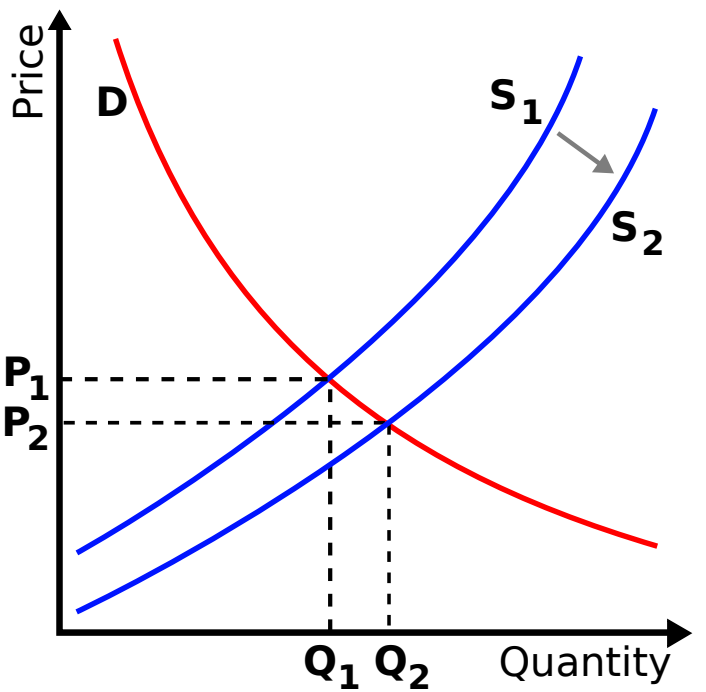
b) Plot the supply and demand curves

c) Calculate the excess demand at the price of 10

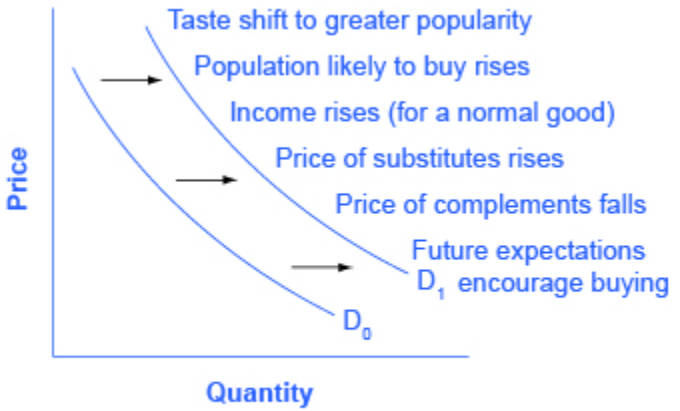
Demand or supply shifts

Demand or supply shifts will change the equilibrium price

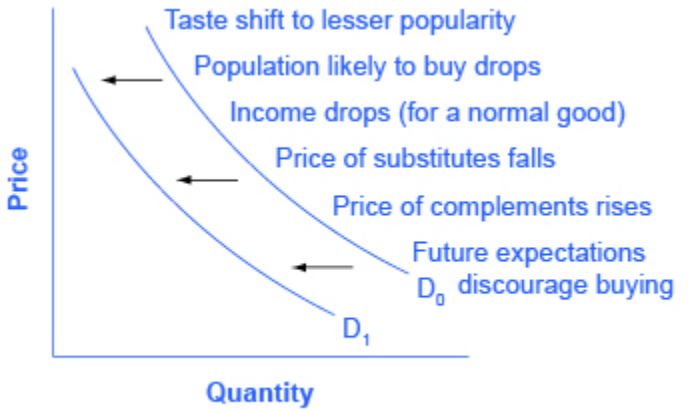




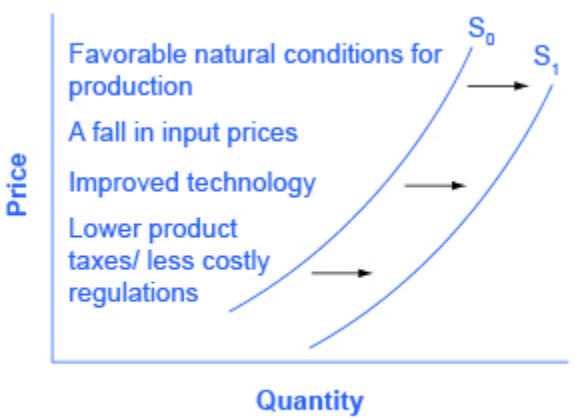
Demand or supply shifts



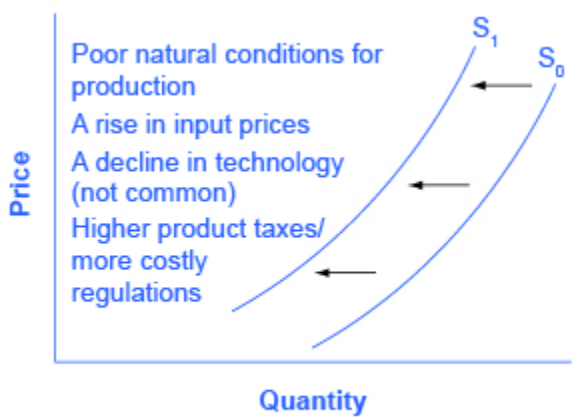
(a) Factors that increase demand



(b) Factors that decrease demand



(a) Factors that increase supply



(b) Factors that decrease supply

Example 1.4

Using the previous demand and supply curves

a) Calculate and plot the market equilibrium if $R = 1, P_z = 4, P_y = 8, W = 1, P_M = 2$

b) Calculate and plot the market equilibrium if $R = 2, P_z = 4, P_y = 8, W = 1, P_M = 2$

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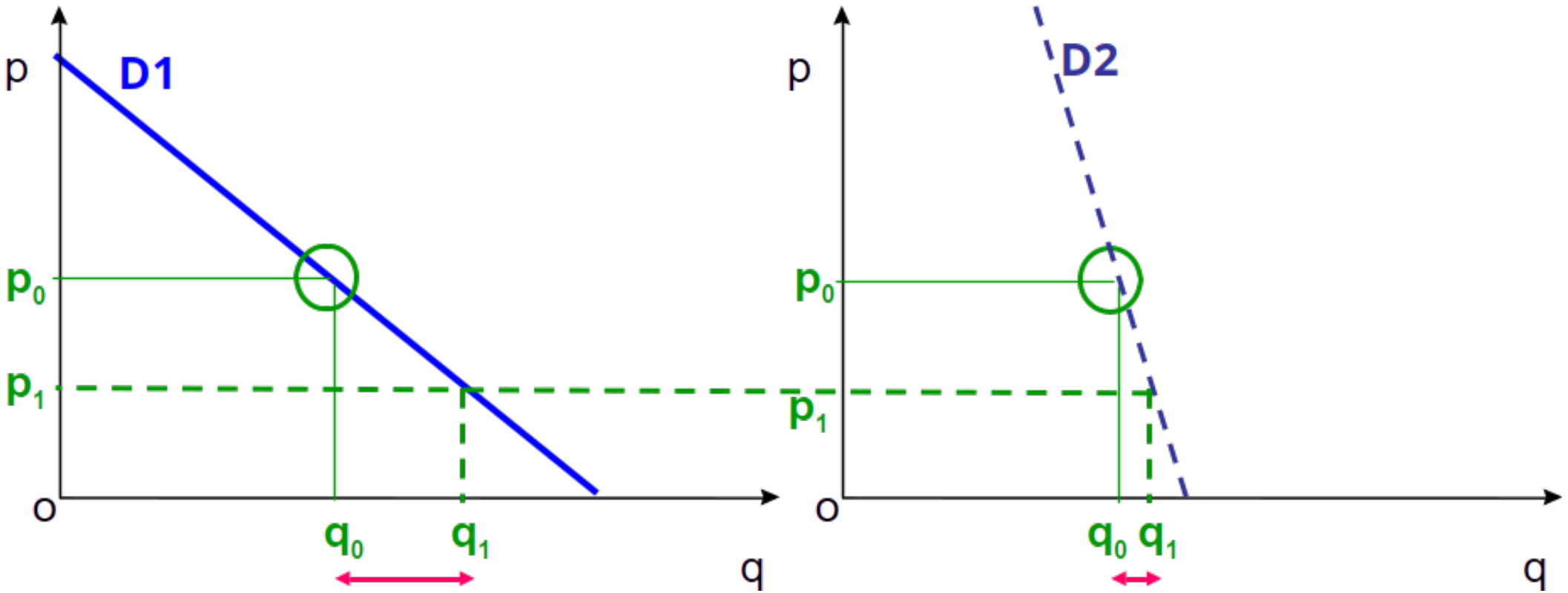
6. Demand elasticity

- It measures how demand responds to a change in price or income
- Commonly referred to as price elasticity of demand because the price of a good or service is the most common economic factor used to measure it

$$E_p = \frac{\frac{\Delta q}{q}}{\frac{\Delta p}{p}}$$

Elasticity: plot example



Example 1.5

Suppose the price of ice cream rises from 2 to 2.20 €. This causes the quantity demanded to drop from 10 to 8 ice creams per month.

Work out the elasticity of iice cream demand

Price elasticities of passenger demand

Table 3: Estimated Price Elasticities of Passenger Demand

	Route/Market level		National level		Supra-national level	
	Short-haul	Long-haul	Short-haul	Long-haul	Short-haul	Long-haul
Intra N America	-1.5	-1.4	-0.9	-0.8	-0.7	-0.6
Intra Europe	-2.0	-2.0	-1.2	-1.1	-0.9	-0.8
Intra Asia	-1.5	-1.3	-0.8	-0.8	-0.6	-0.6
Intra Sub-Saharan Africa	-0.9	-0.8	-0.5	-0.5	-0.4	-0.4
Intra S America	-1.9	-1.8	-1.1	-1.0	-0.8	-0.8
Trans-Atlantic	-1.9	-1.7	-1.1	-1.0	-0.8	-0.7
Trans-Pacific	-0.9	-0.8	-0.5	-0.5	-0.4	-0.4
Europe-Asia	-1.4	-1.3	-0.8	-0.7	-0.6	-0.5

table source

Values for price elasticity of demand

Types of Price Elasticity of Demand

If the percentage change in quantity demanded divided by the percentage change in price equals:	It is known as:	Which means:
Infinity	Perfectly elastic	Changes in price result in demand declining to zero
Greater than 1	Elastic	Changes in price yield a significant change in demand
1	Unitary	Changes in price yield equivalent (percentage) changes in demand
Less than 1	Inelastic	Changes in price yield an insignificant change in demand
0	Perfectly inelastic	Changes in price yield no change in demand

more on price elasticity

price discrimination and elasticity

Example 1.6

The demand function for good *x* is given as:

$$X^d = -500 \cdot P_x + 3 \cdot R + 200 \cdot P_z + 240$$

Where:

P_x is the price of good *x*

R is income (450 is given)

P_z is the price of another good *z* (6 is given)

a) Calculate the price elasticity of demand for good x when the price is 2

b) Calculate the price elasticity of demand for $P_x = 4$ and explain why elasticity changes

Example 1.7

The demand function for good *x* is given as:

$$X^d = -2000 \cdot P_x + 2 \cdot R - 20 \cdot P_y + 200 \cdot P_z + 3220$$

P_x is the price of good x

R is income (R = 100)

$P_y = 1$ is the price of good y

$P_z = 3$ is the price of good z

a) Calculate the price elasticity of demand for good x for $P_x = 1.5$. How do sellers' revenues change if the price increases slightly?

b) Calculate the price elasticity of demand for good x for $P_x = 1$. Why does elasticity change as price increases?

Example 1.8

The demand and supply for computers can be expressed through the following functions:

$$X^d = -2P_x + 1.5R + 6P_s - 4P_t + 325$$

$$X^s = 2P_x - 8P_c + 4780$$

where:

X^d: Quantity of computers demanded per year

X^s: Quantity of computers supplied per year

P_x: Price of the computer in €

P_t: Price of monitors in €

P_s: Price of tablets in €

P_c: Price of motherboards in €

R: Average monthly household income in €

The following values have been verified: R: 3000 € P_t: 150 € P_s: 700 € P_c: 80 €

Example 1.8 questions

1. Observing the demand function, describe the characteristics of good x

2. Derive the expressions for the demand and supply curves and represent them graphically

3. Calculate the equilibrium price and explain the mechanisms by which the market tends to set this price.

4. Recalculate the equilibrium if:

a. Income increases by 200 €

b. The price of tablets decreases by 70 €

c) The price of monitors increases by 20 €

d) The price of motherboards increases by 10 €