EUROPEAN REGULATORY ECONOMICS
MODULE 1 – ERE

Lecture 1
12/01/2023

Why Governments intervene in the economy?

Why governments want to intervene in the economy? What are the possible reason for the government to interfere with a perfect competitive market? It's related to Market failures

Market failures may arise in case of:

- **Natural Monopoly** → big firm have advantages in relation to small firms and this could be harmful
- Externalities → an economic agent carries out an action which has a negative or positive consequence. The action does not have to compensate in case of a negative outcome, and it's non compensated in case of a positive one.
- Anti-competitive behaviours → collusion among firms, etc are all actions carried out by firms that will produce negative outcome
- Provision of public goods → no rivalry and no excludability
- Asymmetric information → not all economic actors have the same degree of information
- …

Network industries are natural monopolies

Government intervention:

- Price mechanism, changing the price of a good to encourage or discourage use

  1. through taxes: which raise the price for private sales or purchases of goods that are overproduced. → used in case of negative externalities
  Examples: pollution taxes, sugar & plastic taxes, taxes on cigarettes and alcohol consumption, etc.

  2. through subsidies, which lower the price for private sales or purchases → used in case of positive externalities
  Examples: subsidies for electric cars, solar panels, etc.

- Public provision: the government provides the good directly in order to potentially attain the level of consumption that maximizes social welfare. → ex: public school, education, public defence, public transports
- Public financing of private provision: finance private entities to provide the desired level of provision (subsidies in some service sectors). → the government pays the private sector in order to have a free service or a partially free service by the private sector.
- **Regulation**

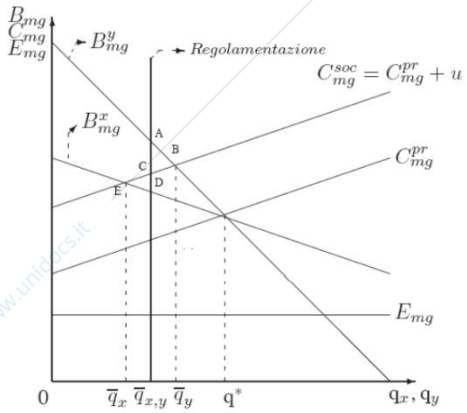
Definition: Regulation is generally defined as legislation imposed by a government on individuals and private sector firms in order to regulate and modify economic behaviours (by firms and individuals). Regulatory economics (or economics of regulation) is the application of law by government or independent administrative agencies for various purposes (e.g., remedying market failure, protecting the environment, etc.)

The government regulates a wide range of economic and social activities:

- In the US the Food and Drug Administration (FDA): food, cosmetics, drugs, and medical devices.

- European Food Safety Authority (EFSA) in Parma + European Medicines Agency (EMA) in Amsterdam (EMA had monitored over covid vaccines and has approved them)
- The Environmental Protection Agency (EPA) in US + European Environment Agency (EEA): pollution of air, water, and food supplies.
- International Energy Agency (IEA): reliability, affordability and sustainability of energy

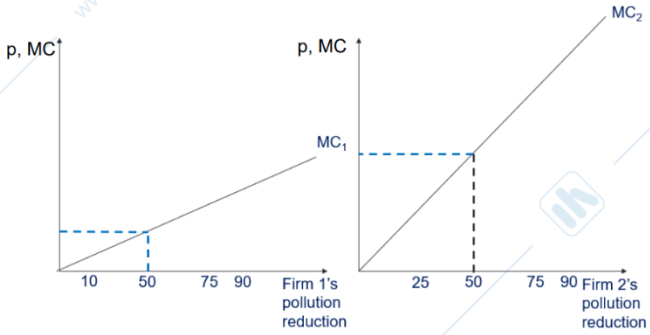
Regulation – Example 1



→ the government cannot introduce specific regulations for each firms, it's more likely that the government will introduce a general regulation for all the firms in the industry. It may introduce a regulation that says to produce an equal level of quantity ($q_{x,y}$)

In example 2, firm 1 – the government has decided to intervene directly in the specific firm

Regulation – Example 2



The objectives of regulation are to Increase consumers/social welfare (example 1, the goal was to Improve a situation where there was overproduction) and to safeguard Government strategic interests (Hp: in same cases the Government not 'captured' by private interests)

Regulation operated on many different outcomes.
The Objects of regulation are Prices, Profits, Entry, Quality, M&A.
ex: the government intervened recently in the gas industry with a price floor, it also intervened in the price of masks with a maximum of price as during the covid-19 surge prices for masks in the private sector were rising rapidly due to the demand increased.

Why to use regulation in network industries? They are important because regulations are a Relevant sectors for a country's economy: telecoms, transports and energy account for around 9% of value added and 6% of employment in EU27

The goods produced are crucial inputs for many other sectors, think about electricity, gas, energy which is use in any kind of industrial production.

Services of General Economic Interest (SGEI) https://ec.europa.eu/info/topics/single-market/services-generalinterest_en

Relevant costs incurred by consumer

Introduction to the analysis of network industries

In network industries we can include energy, railway, water, **electricity, gas and telecommunications** → there are crucial ingredients for economic well-being.

These industries are heterogeneous in regard to technological environments, they all have in common the fact that are natural monopolies even though the adopt different technology.

Despite their widely different technological environments, e.g. - pipelines of natural gas - optical fibre cables - high-voltage lines - aerials transmitting electromagnetic waves - etc.

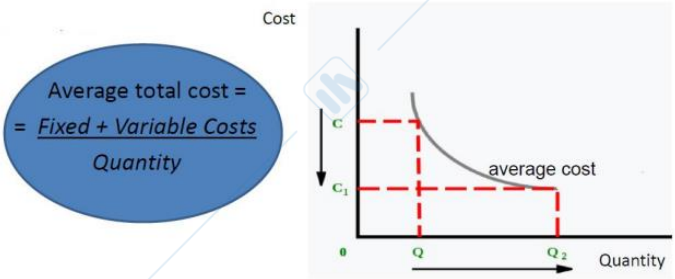
A **natural monopoly** is a monopoly in an industry in which high infrastructural costs and other barriers to entry give the largest supplier in an industry an overwhelming advantage over potential competitors.
big firms have an advantage regarding small firms.

Main features of natural monopoly:

- Economies of scale
- High capital intensity
- Non-storability with fluctuating demand
- Users consider the goods produced as necessities

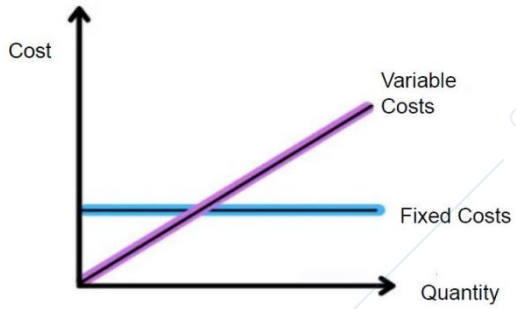
Natural monopolies were recognized as potential sources of market failure. Hence, governments' regulation is advocated.

ECONOMIES OF SCALE – we have a large-scale production is usually more efficient than a low-scale production.
Cost advantages for firms when they increase the level of production

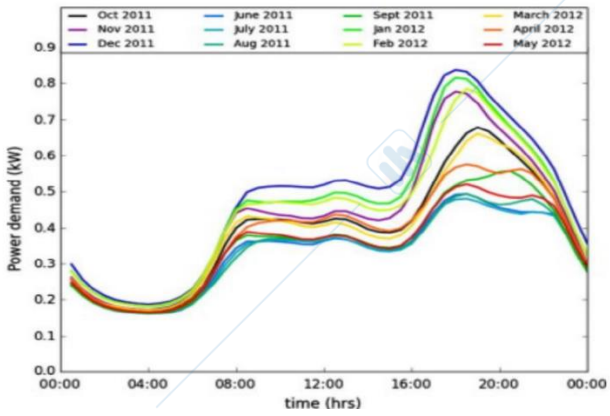


→ If (quantity)Q↑ → unitary fixed cost ↓ → avg costs↓

HIGH CAPITAL INTENSITY – There are the high barriers to entry are often due to the large amount of capital needed to acquire fixed assets (fixed costs) which firms use in their production activity.
High fixed costs may discourage potential entrants, because potential entrants have a competitive disadvantage.



Non-storability with fluctuating demand



we have high variability during the day and it changes from month to month. It's a big issue because if we think about a energy providing company will have a loss in months of less usage which will recuperate in the months of more usage → it's not a problem for big firms because the have the capital to afford so, however for small providers the story is different as the temporary loss they will face will be bigger that what they'll gain in future months.
Another issue is that when we have a 'tick' of energy, I you have small providers it's possible that they are not able to provide that much demand, so there'll be blackouts.

A SHIFT IN THE PARADIGM

This belief was widespread among economists: An industry, under a natural monopoly, seems unlikely to become competitive because of there are some features of the industry that provide more advantages to big firms, and lesser smaller firms will enter the market.

Until decades ago, many firms were either private, and had a private monopoly, regulations were made in order for private monopoly to private the service to the public.

Indeed, the arrangement of network services for most of the XX century was either as: a strictly regulated private monopoly (e.g., telephony in the USA and water in France), or a public monopoly (such as railways in the UK and electricity in France).

Why then, in the 1980s and 1990s, did many governments around the world adopt reforms that reversed the previous consensus and tried to inject competition in these sectors?
Europe was at the forefront of such a change. Historically, in the EU, the reform of network services has been promoted by different parallel policy trends.
4 drivers can be identified:

- the overarching goal by the European Commission in the 1980s to **create a unique internal market for those services that were previously excluded by the Treaty of Rome** (1957)
  → Lisbon Treaty (2009): SGEI now treated as potentially competitive industries
- the **UK example** under the Thatcher and Major governments (1979–97), and deregulation in the USA under the Reagan administration (1981–89)
- the **collapse of the Soviet Union** and of other planned economies
- the **advent of global financial markets**

Lecture 2
13/01/2023

In the last decades, first in the UK, then subsequently in all the other EU Member States, governments have increasingly moved away from the direct provision of public services and from ownership of utilities.

Ministries and independent regulators have shown a greater reliance on market mechanisms, and now consider the network service providers as market players. → Former public corporations, and new entrants, are now mostly profit-seekers.

There still are many municipally-owned enterprises, public–private ventures, and some important government-owned corporations, but they have been forced to compete with private newcomers and often regard themselves as not very different from their private competitors → **mixed enterprises** (enterprises that are partially state owned, line ENEL)

The former public service providers had broadly defined social objectives and missions, e.g., universal service provision, consumers and environmental protection, etc.

This has changed. The government objectives have not entirely disappeared, but they have been weakened and have shifted to the marketplayers.

→ National industrial strategies, consumer protection, environmental and energy concerns, and other polices have been delegated to private or quasi-private firms.

Even though the timing, speed, and depth of the reform process have varied across industries and countries, 3 (4) core dimensions (**"Pillars"**) of the new paradigm can be identified:

1. **Privatization**
2. **Partial unbundling** or **vertical separation** of the net from upstream and downstream activities
3. **(Price** regulation**)**
4. **Liberalization** of entry and regulation intended to encourage (or even force) competition

In the real world, these 3 (4) measures are strictly interconnected with each others.
These components can be combined in different ways in actual policy-making and regulatory arrangements.

Solutions tailored for one industry are said to be not always transferable to other industries. For example, in Europe:
- less unbundling in telecommunications than in electricity
- more limited privatization of water services than of airways
- modest liberalization of railways as compared to postal services
However, competition is desirable and feasible in most network utilities.

THE 1ST PILLAR: PRIVATIZATION

Governments until the '80s of the last century dealt with market failures in network industries either through public ownership or through heavy regulation of privately owned monopolies.
Over the past three decades, policymakers became increasingly convinced of the prevalence of government or regulatory failures and tended to see market failures as relatively less costly.
→ It started to be widespread the idea that privatization of public monopolies is a necessary (but **not sufficient**!) condition for the liberalization of markets gained more support.

The EU has never officially endorsed the mandatory privatization of utilities. The Treaty of Rome required neutrality of the European legislation on issues of ownership of the firms: *"This Treaty shall in no way prejudice the rules in Member States governing the system of property ownership"*. (Part Six, art. 295)
However, "indirect" measures have weakened the role of SOEs.

THE 2ND PILLAR: UNBUNDLING

This is the separation of non-competitive segments (typically the network core facilities), from those that are potentially competitive (such as production, supply, and maintenance). → like the railways industry.

Main reason for unbundling: prevent network operators from granting privileged access conditions to their own production operations, at the expense of competitors.

The stronger the separation (e.g., ownership separation vs legal separation), the lower the risk of anti-competitive conduct.

Es: you have no unbundling. There's the industry, the vertically integrated firm which operates both in the upstream part of the industry (that is network owner) and in the downstream, that is a service provide provider like Italo that provides a service using nationally owned railways.
INSERIRE DISEGNO (FOTO SUL TELEFONO)

The position of the EC has been clearly in favour of vertical separation between the competitive and natural monopoly segments of network industries

Unbundling in different industries

Industry	Competitive?
Electricity	
Production	Yes
Transmission	No
Distribution	No
Sale	Yes
Gas	
Extraction	Yes
Distribution	No
Sale	Yes
Railways	
Rails and stations	No
Services	Yes

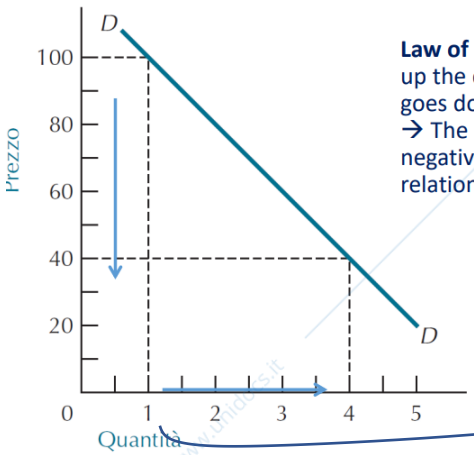
THE 3RD PILLAR: MARKET OPENING

Before the 1980s the network industries were almost everywhere considered natural monopolies because of their large fixed costs. Competition was often considered **wasteful**. Some of the nationalizations were emergency measures after the collapse of the private service providers in the 1930s. In other cases, social cohesion, national security, and defence issues played an important role in shaping the views of policy-makers.
In the last 30 years, however, the perception that technological change could weaken the traditional problems of natural monopoly has often been cited as supporting evidence in favour of **market opening**. With technological change even small firms could achieve high production with a low cost, this resulted in a higher competitive pressure should generate higher productivity leading to lower prices and ultimately higher economic growth.
Based on the above reasoning, the purpose of liberalizing the network industries in the EU has been pursued via a steady flow of directives.

KEY QUESTION OF THIS COURSE: How far are these policy reforms keeping their promise of delivering greater welfare to citizens? (it the price has increased the reforms was not useful, if the price has gone down the reform was successful
FOCUS OF THE COURSE: benefits (eventually) generated to households by the reforms

Microeconomics review

The demand function tells us the relation between price and quantity.



Law of Demand: the price goes up the quantity demanded goes down
→ The demand curva has a negative slope (inverse relationship bw P and Q

The demand Function shows how the quantity of a good demanded by consumers varies with its price, and it can be interpreted as the consumers' willingness to pay for an additional unit of the good
→ It reflects the **marginal benefit** (MB) that comes from the consumption of an additional unit of the good

For the first unit the consumer if willing to pay 100.

Quantity consumed	ΔQ	Total Benefit	MB
1	1	10	10
2	1	19	9
3	1	27	8
4	1	34	7
5	1	40	6
6	1	45	5
7	1	49	4
8	1	52	3
9	1	54	2
10	1	55	1

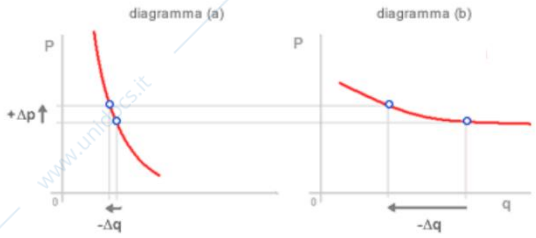
It's usually assumed that the MB id positive but decreasing in the quantity consumed.
The tot. benefit is always positive, it's always bigger.

The Total Benefit is always positive and increasing in Q
The MB is positive but decreasing in Q

The slope of the demand functions tells us how much the quantity demanded changes when the price changes.
Slope = ΔP/ΔQ (absolute change)

(a) Slope of the demand function for necessities – Demand is rigid
- **Steep demand function, slope is high:** when the price changes, the quantity demanded doesn't change much.

(b) Slope of a the demand function for a replaceable good –Demand is elastic
- **Flat demand, slope is small:** when the price changes, the quantity demanded changes a lot



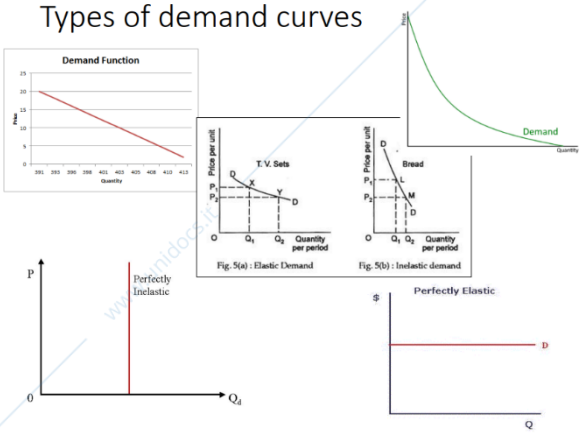
ELASTICITY OF DEMAND FUNCTION

For every point of the demand curve, the elasticity of demand to the price measures the % change in quantity due to a % change in price (since this number is negative it is usually expressed in absolute terms)

$$Elasticity = \frac{\Delta\%Q}{\Delta\%p} = \frac{\Delta Q/Q}{\Delta p/p} = \frac{\Delta Q}{p} * \frac{\Delta p}{Q}$$

If a 1% change in price causes a % change in the quantity demanded…
… >1%, the demand of the good is elastic (ε < -1 → abs value >1)
… < ε ≤0 → abs value bw 0 and 1)
… =1% the demand is unitary elastic (ε = -1)

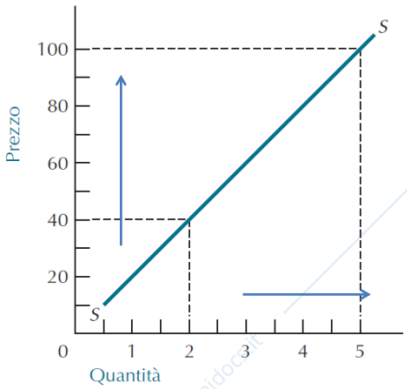
Types of demand curves



$$Elasticity\ (\varepsilon) = \frac{\Delta\%\,Q}{\Delta\%\,p} = \frac{(Q_1 - Q_0)/Q_0}{(P_1 - P_0)/P_0}$$

$$\varepsilon = \frac{\Delta Q/Q}{\Delta P/P} \rightarrow \varepsilon = \frac{\Delta Q}{Q}\frac{P}{\Delta P} \rightarrow \varepsilon = \frac{P}{Q}\frac{1}{\frac{\Delta P}{\Delta Q}} \rightarrow \boldsymbol{\varepsilon = \frac{P}{Q}\frac{1}{\text{slope}}}$$

Elasticity ≠ slope
- The slope of the demand function is the ratio bw the absolute change in price and the abs change in Q
- The elasticity is the ratio bw the % change in Q and the % change in p



SUPPLY FUNCTION → It can be interpreted as the availability (of the producers) to accept a payment to produce an additional unit of a good.
If the price increases the producers are willing to produce an additional unit of the good → **positive slope**.

At which price is the producer willing to produce/sell an additional unit of the good?
Price should be at least equal to the cost of producing the additional unit → supply curve should reflect the marginal cost (MC) of producing one additional unit

Recall: the demand curve reflects the marginal benefit that comes from the consumption of one additional unit of the good

Quantity produced	ΔQ	Total Cost	MC
1	1	10	10
2	1	20	10
3	1	30	10
4	1	40	10
5	1	50	10
6	1	60	10
7	1	70	10
8	1	80	10
9	1	90	10
10	1	100	10

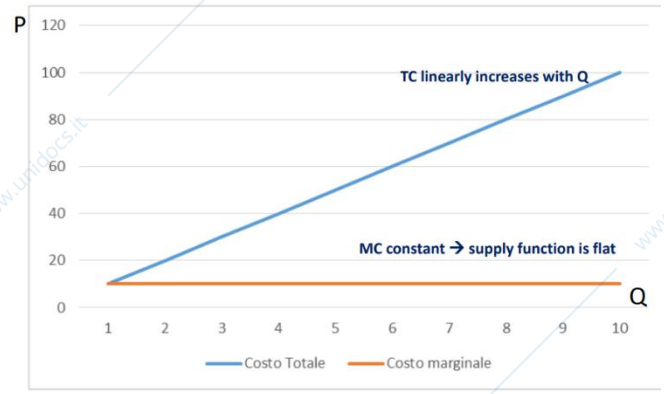
If the production increases, what happens to the marginal cost? It increases, decreases or stay constant? It depends on the quantity produced.

$CT = 10q$ → Total cost (linearly) increases in Q

$C'(q) = 10$ → MC is constant (does not depend on Q)

Both marginal cost and total cost increase with quantity overtime.

Quantity produced	ΔQ	TC	MC
1	1	10	10
2	1	25	15
3	1	45	20
4	1	70	25
5	1	100	30
6	1	135	35
7	1	175	40
8	1	220	45
9	1	270	50
10	1	325	55



PERFECTLY COMPETITIVE EQUILIBRIUM

CONT. COPIA SLIDES

Lecture 3
19/01/2023

TYPES OF MARKET STRUCTURES

ASSUMPTIONS OF PERFECT COMPETITION:

- Many producers (firms) and consumers. Each firm produces a small fraction of the total production; each consumer contributes to a small part of the total demand
- Firms are price takers, not sufficiently large to influence the equilibrium price → they take their production decision considering the price as given
- Firms produce identical or homogeneous goods
- Freedom of entry and exit: no sunk costs
- Firms and consumers have perfect information and knowledge→ no asymmetric information
- Firms take their production decision independently from each other (no cartels)

If neither the producers nor the consumers influence the price, who sets the price? It is the mkt itself, through the meeting of demand and supply → p*

The competition and the free trade between agents that maximize their utility lead to a Pareto efficient equilibrium which maximizes the social welfare

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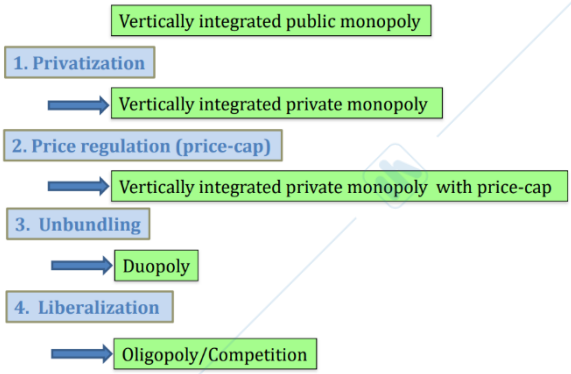
Theoretical models on the impact of regulation

Sequence of reforms



Public monopoly

Cont

Lecture 4
20/01/2023

Slides of lecture 3

Courtnot competitions

New slides

Privatization is able to enhance individual freedom → political philosophical argument

Public firms have no incentive to minimize costs and the prices are not reflective.

Issue like incentive argument and prices of government owned firms are not cost reflective create a productive and allocative inefficiency.

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