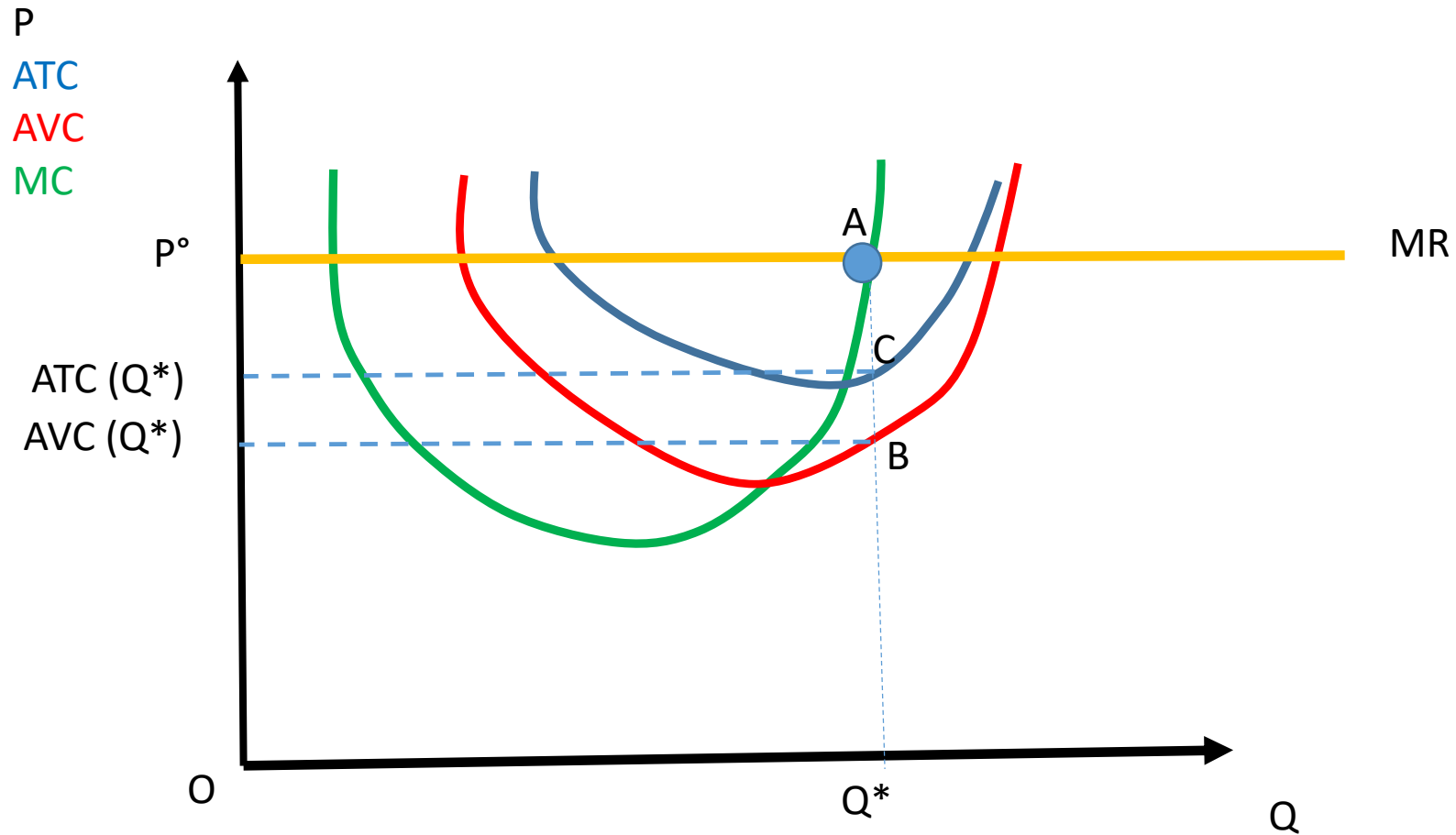


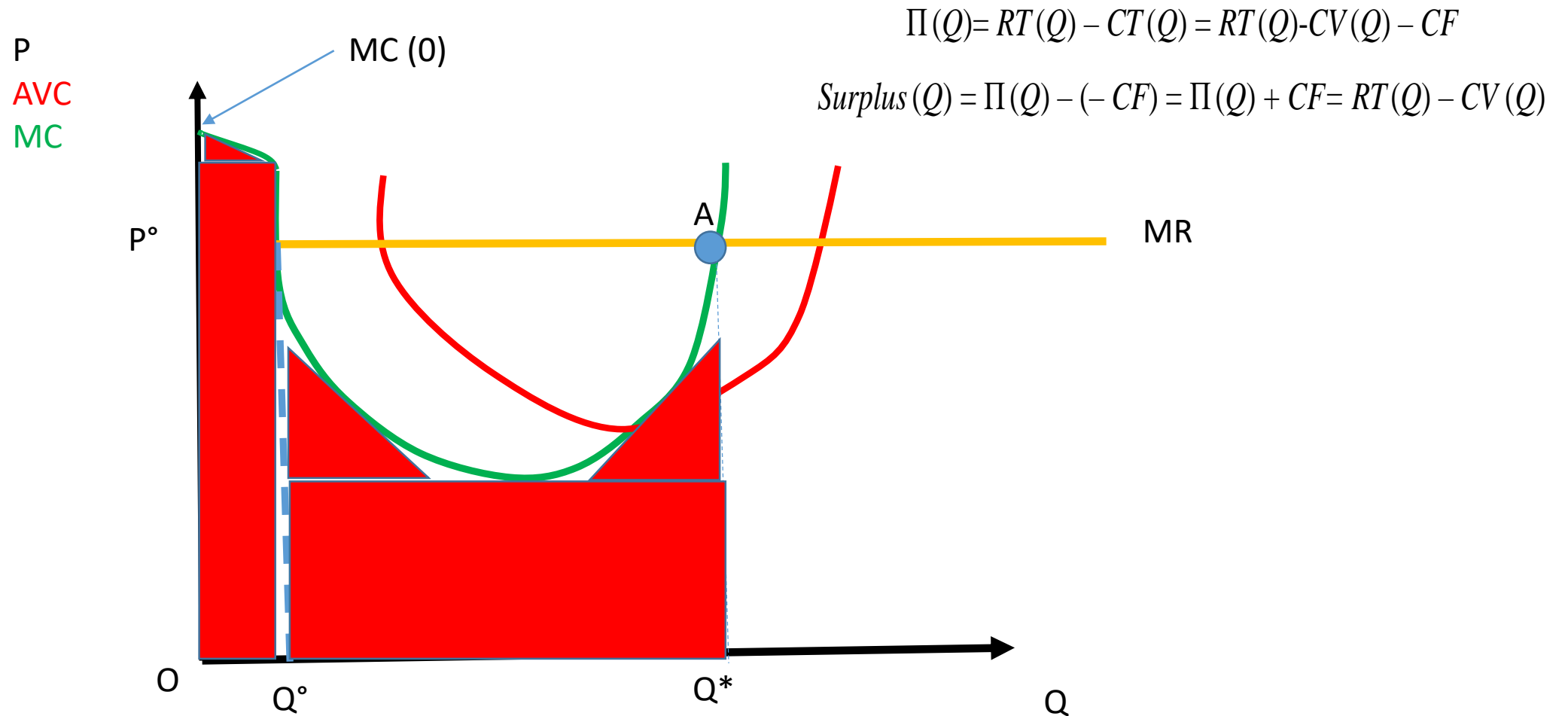


# Economic and accounting profits: where are they?



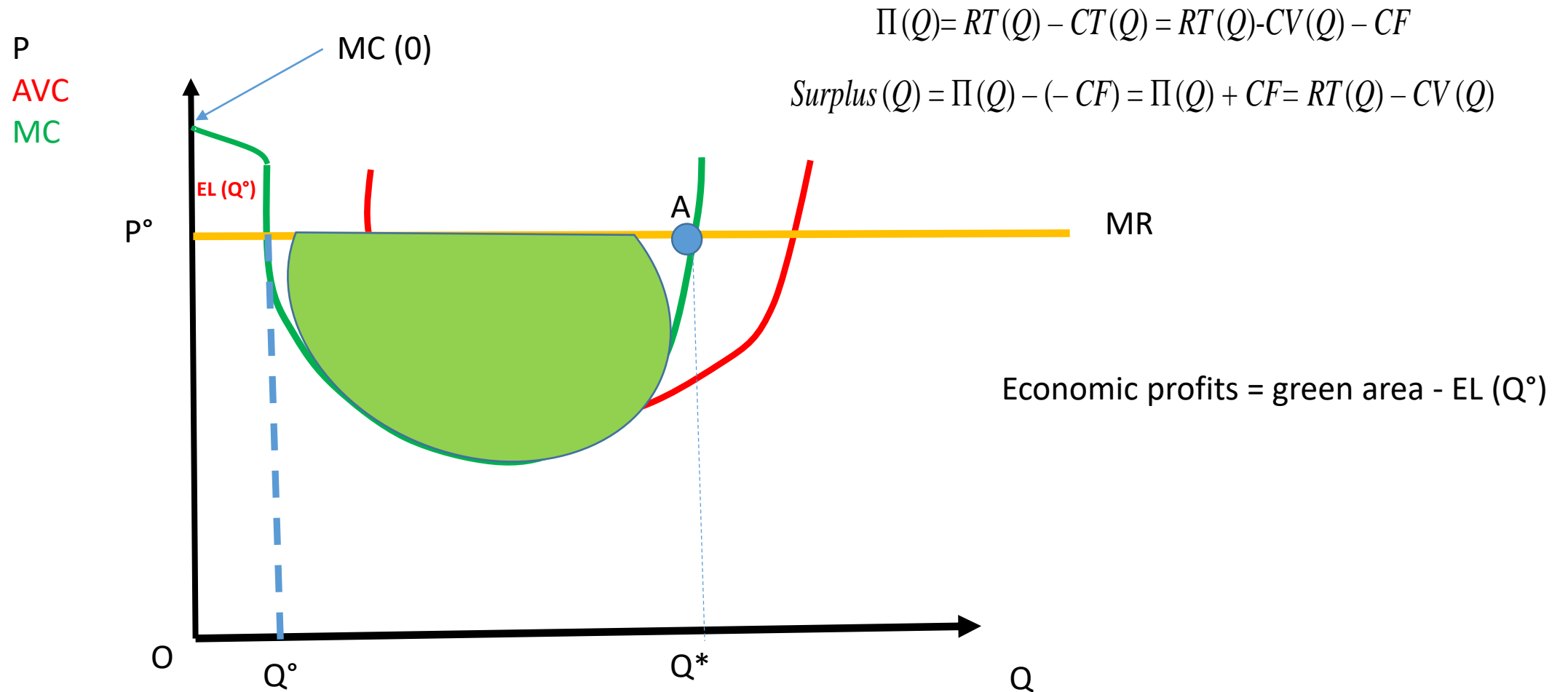


# Economic profits: where are they?



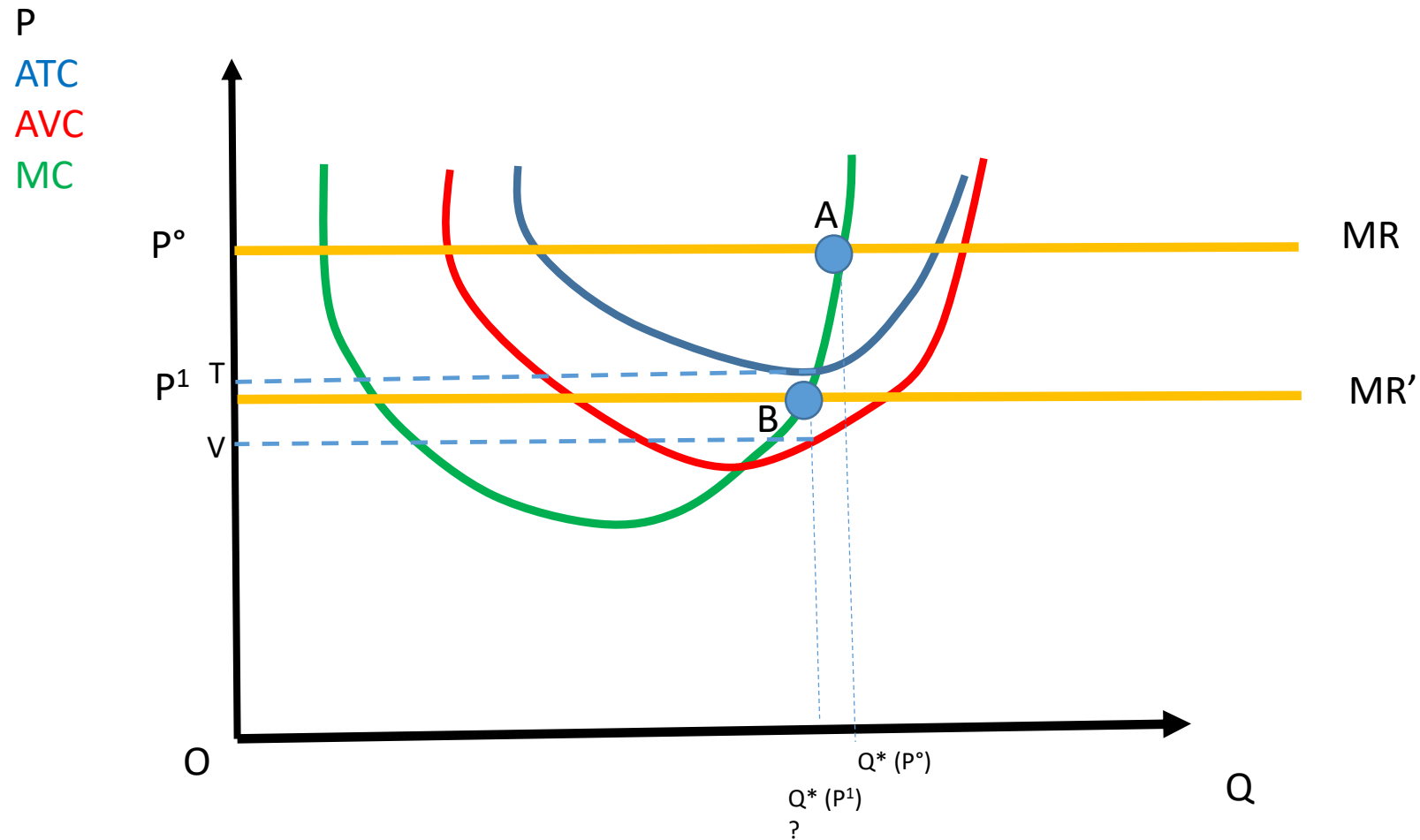


# Economic profits: where are they?





# New price P1

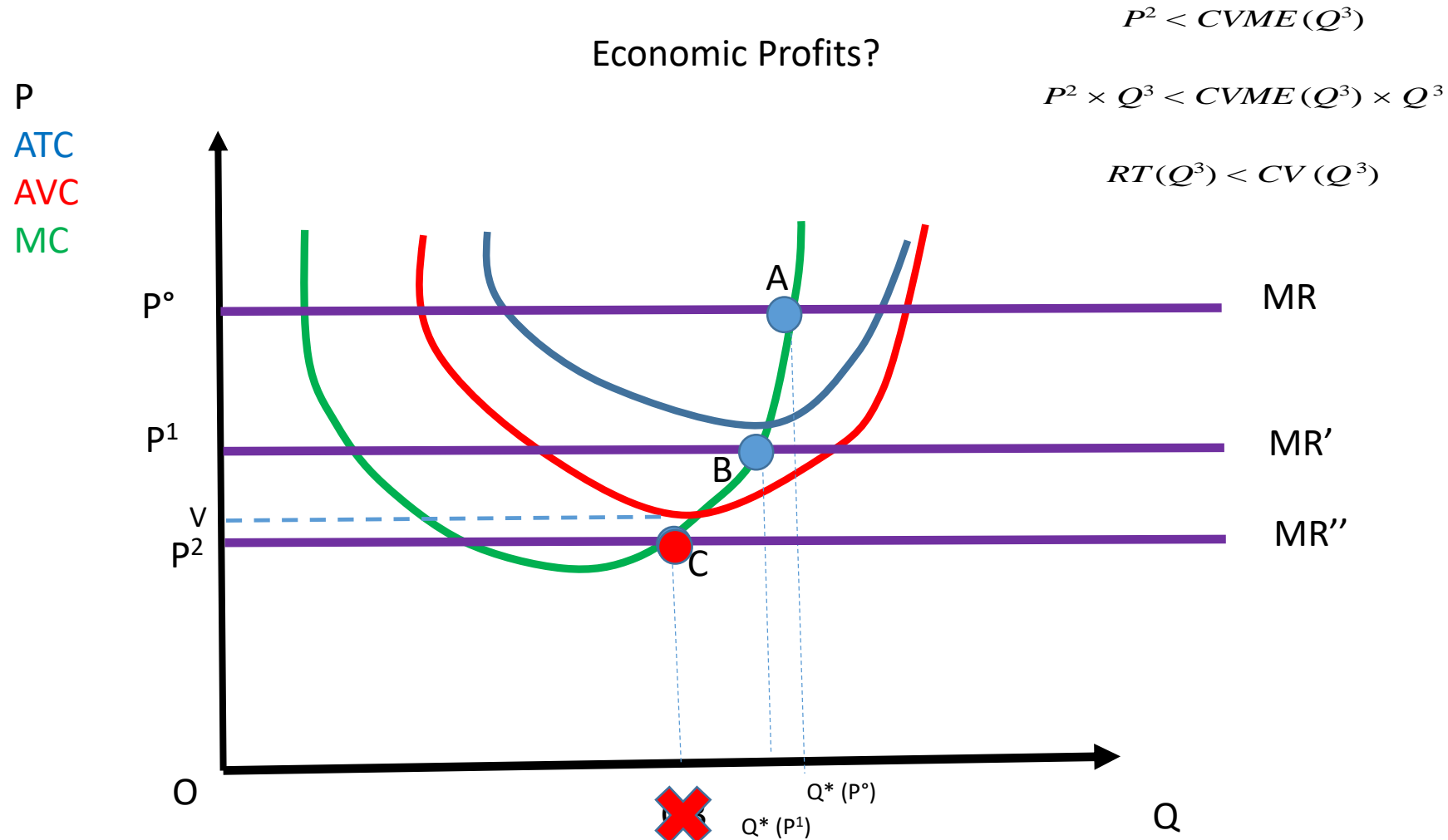


Accounting Profits?

Economic Profits?

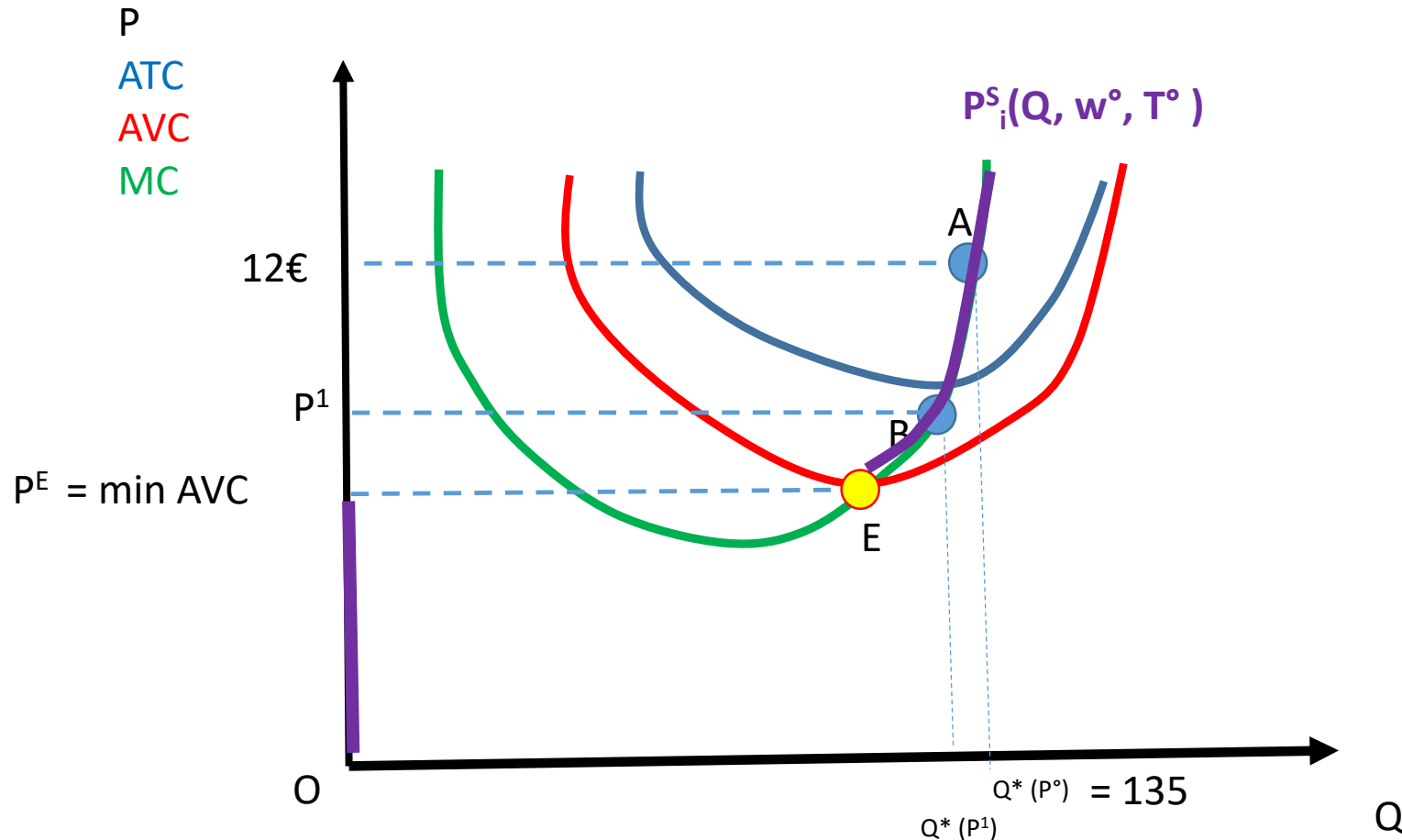


# New price P2





# Exit Point and the supply curve of firm «i»

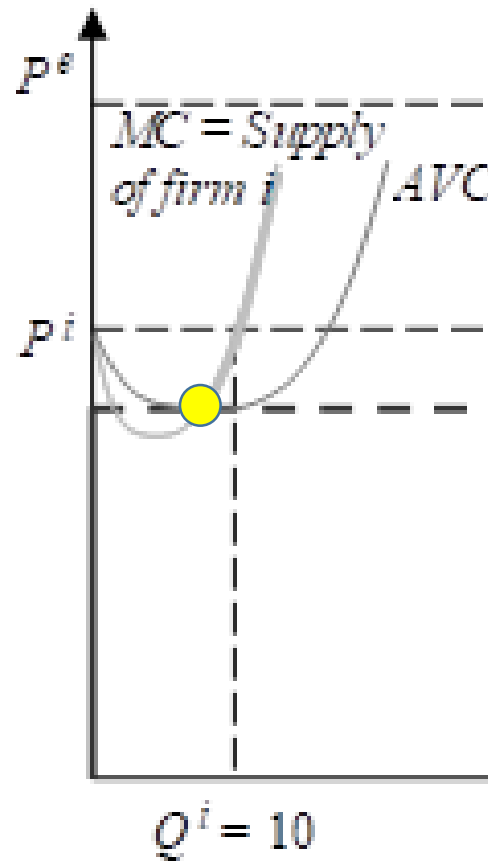


From the x ( $Q$ ) to the y ( $P$ ) axis:  
Marginal Cost curve  
The 135<sup>th</sup> unit costs 12 € for the firm

From the y ( $P$ ) to the x ( $Q$ ) axis:  
Supply curve of firm «i»  
At the price of 12 € the firm **desires** to supply 135 units.



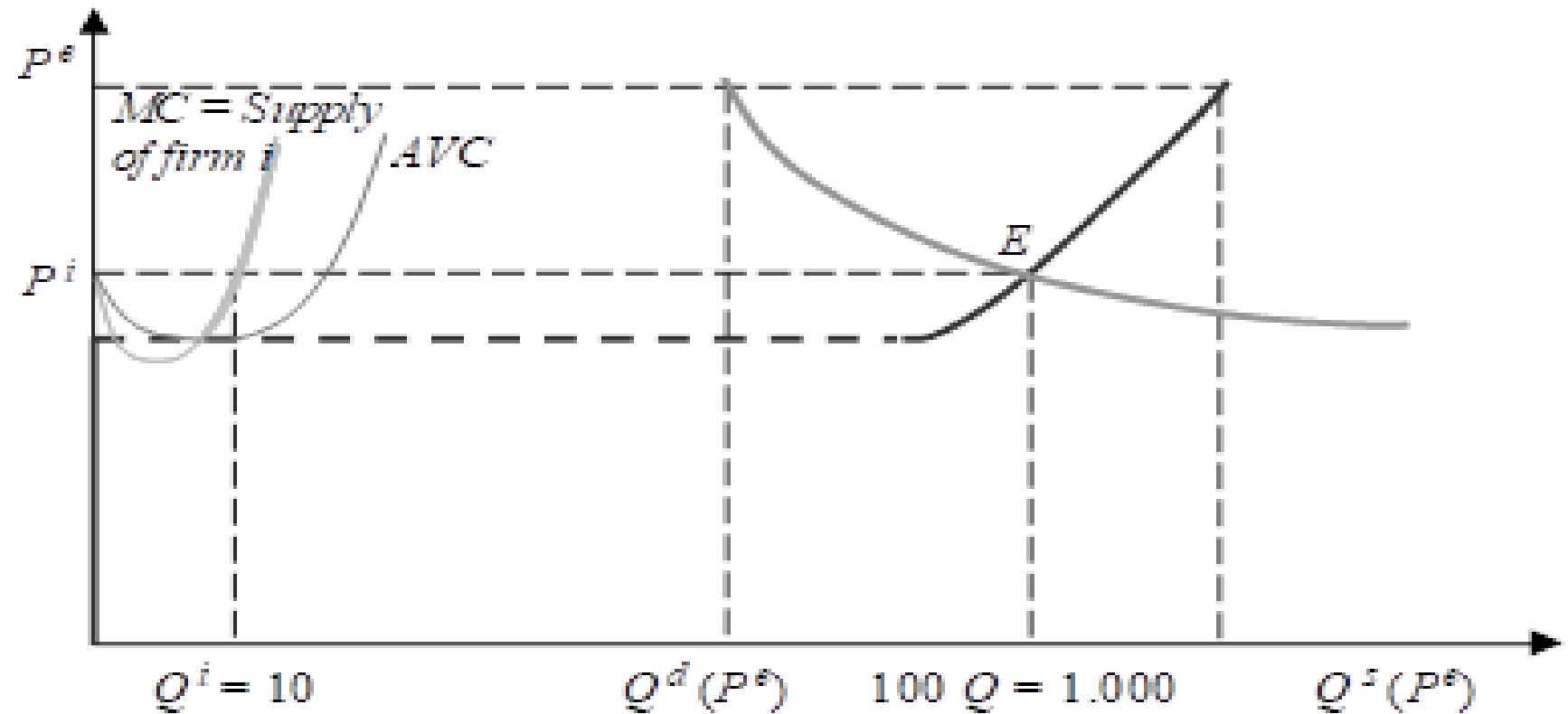
# The ST supply curve of the industry - Case 1



# The ST supply curve of the industry - Case 1

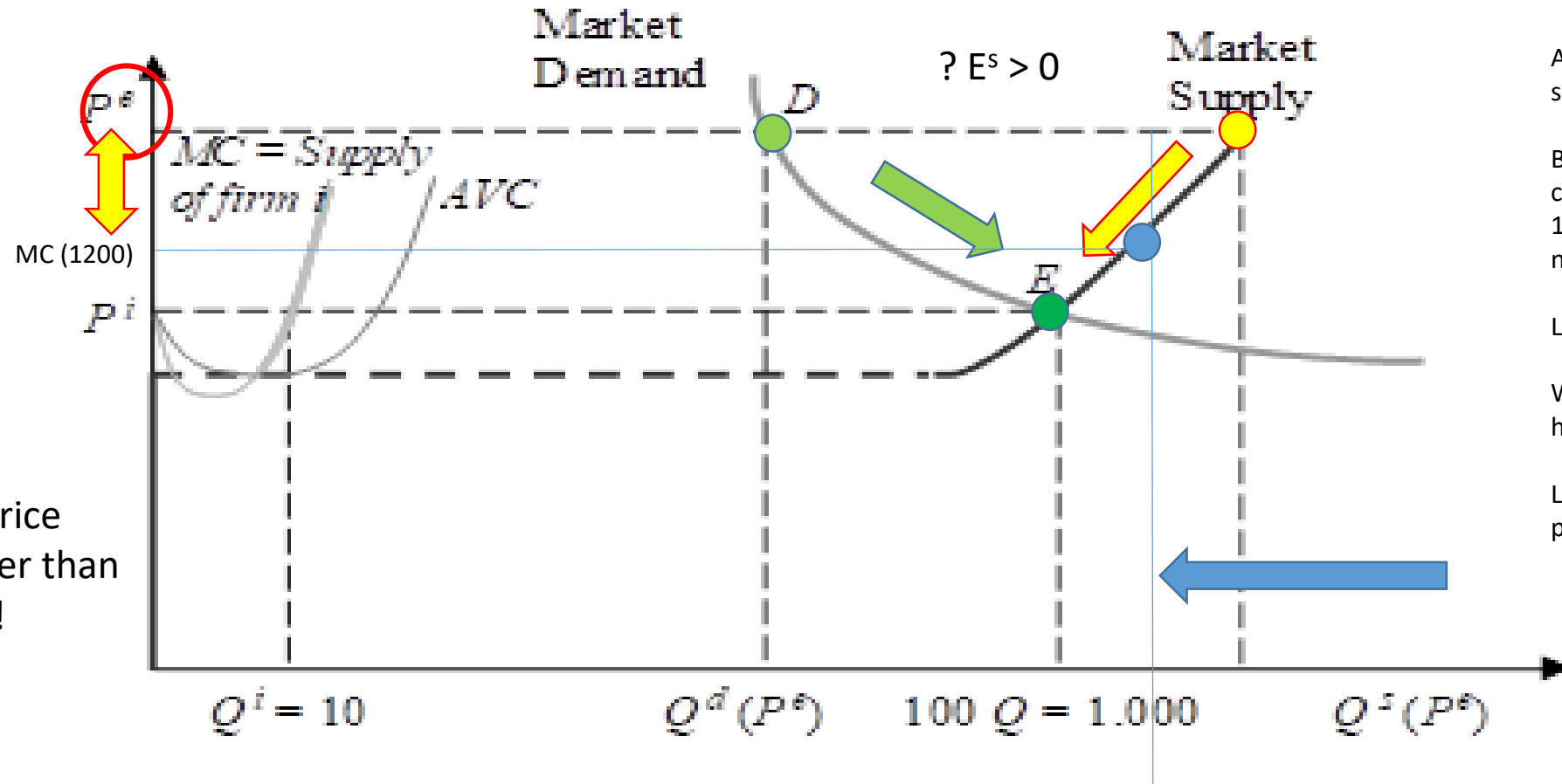
Fixed unitary costs of productive factors:  $w = w^0$

$N^0 = 100$  firms





## The ST supply curve of the industry, toward equilibrium - Case 1



PS: and if the price were to be lower than  $P^I$ ? Try to train!

Look carefully to this firm.  
It would like to sell to the  
1200th consumer.

At price  $P^o$  it does not succeed.

But how much does it cost to produce the 1200th quantity it does not sell?

Less than  $P^\circ$ !

What would you do in her/his shoes?

Lower infinitesimally  
price!

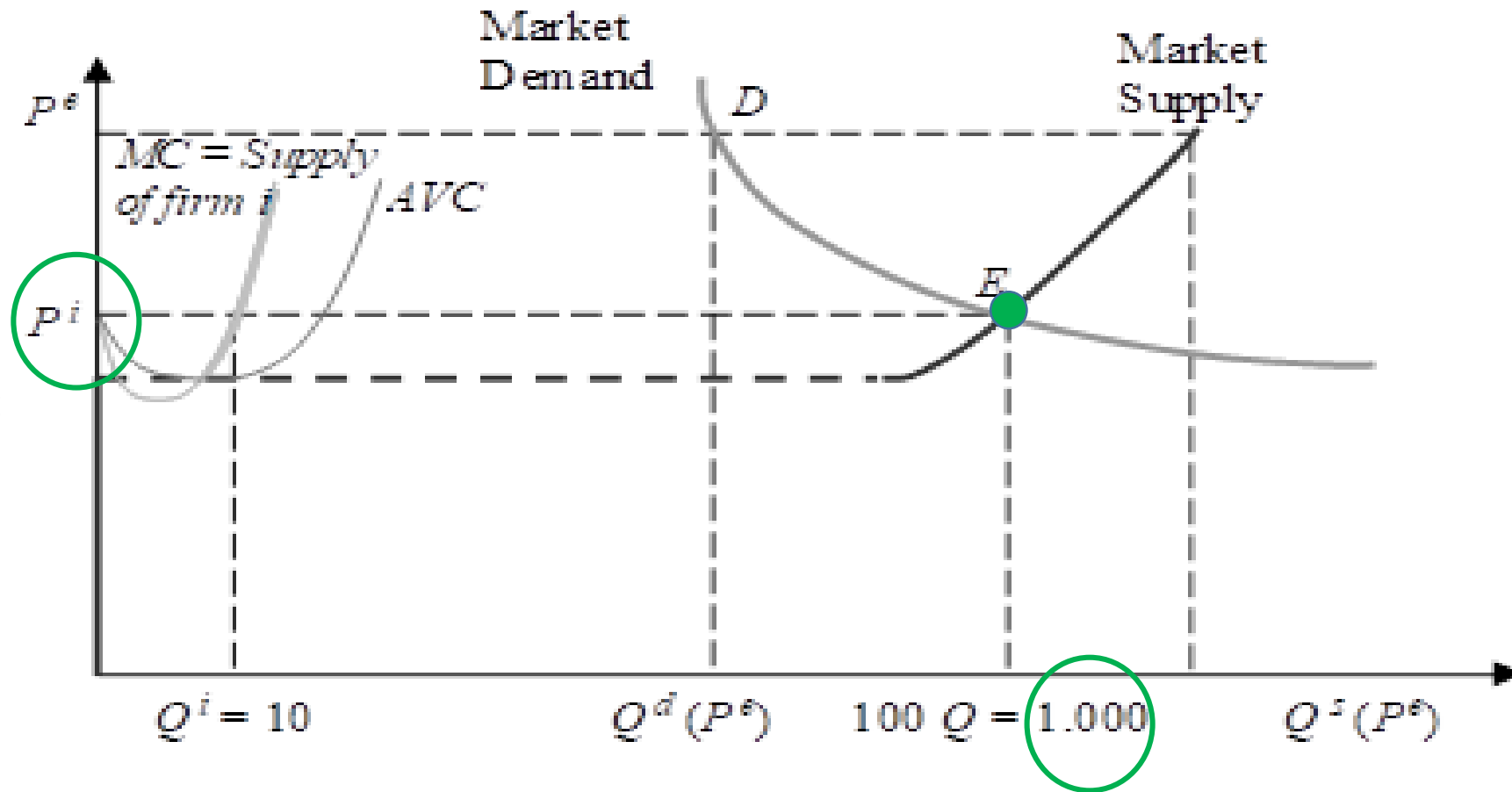
$$Q = 1200$$



# The ST supply curve of the industry: equilibrium – Case 1

In the short-term, in equilibrium the prices of goods and the quantity produced -  $P^I$  and  $Q(P^I)$  - are such to guarantee the maximization of profits and of utility and the equality between quantities supplied and demanded in the market.

Preferences and technology thus explain a given exchange value (price) we see out there



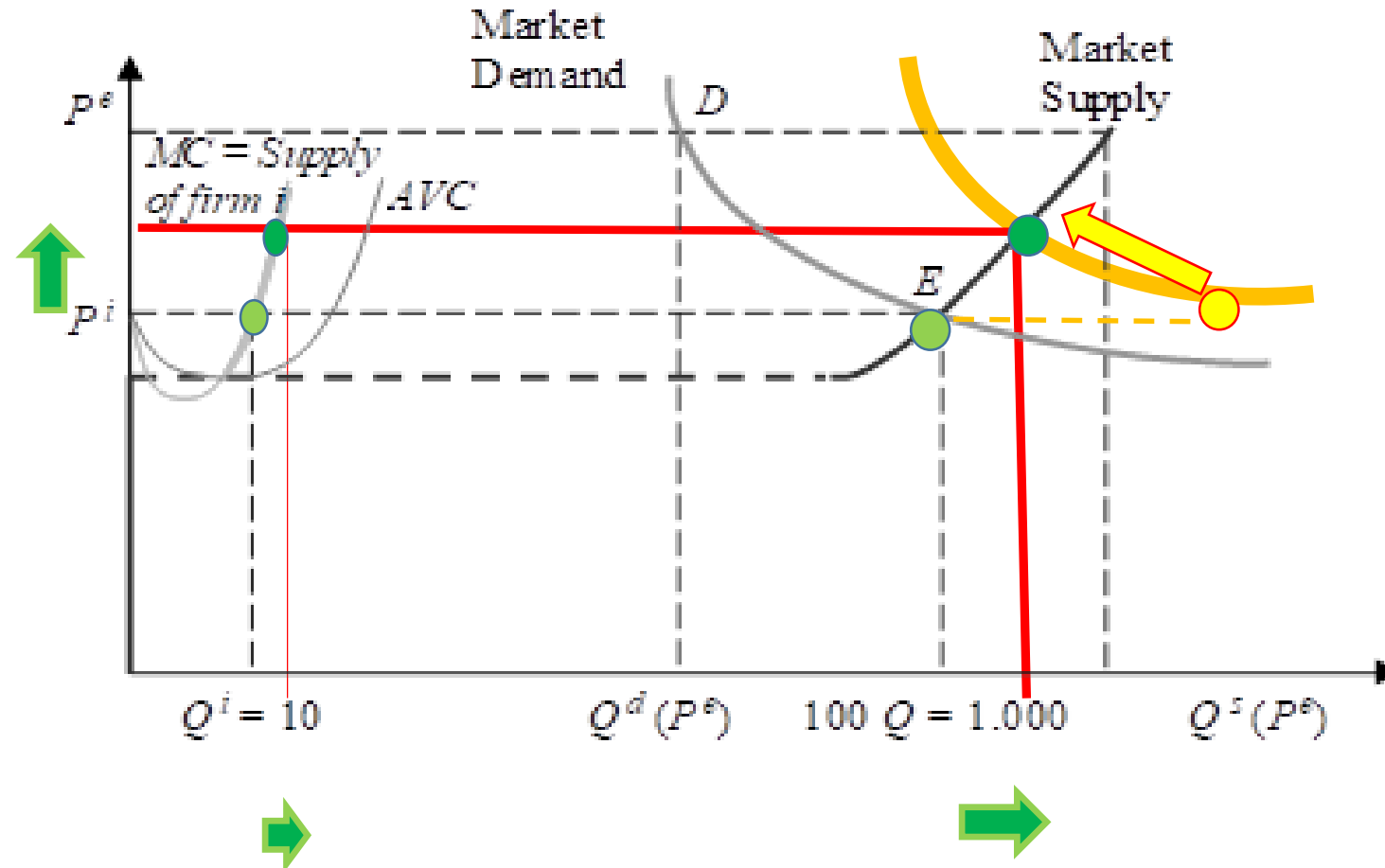


# Masks and price – Case A

At  $P^i$ , an excess demand. How much are consumers willing to pay for quantities greater than 1000 that they do not find? Where do you see this info?  
More than  $P^i$ !

Higher price leads each producer to raise production and accommodate the greater demand

What is the impact of an increase in demand on quantities sold and price?  
Demand (and preferences) matter!

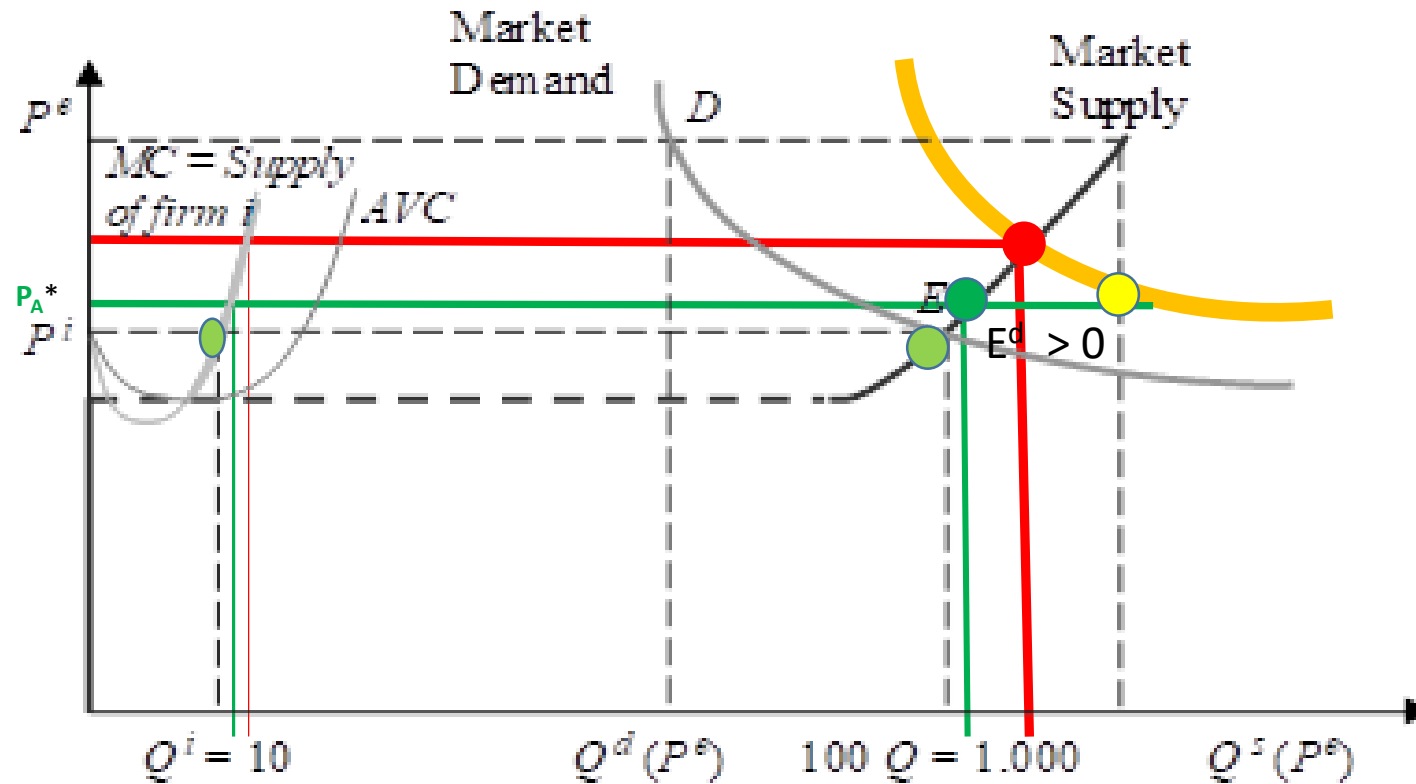


# Masks and price – Case B: price ceiling

Introduction of a maximum price (green), rationing of demand. Protests by 100 firms demanding higher maximum price.

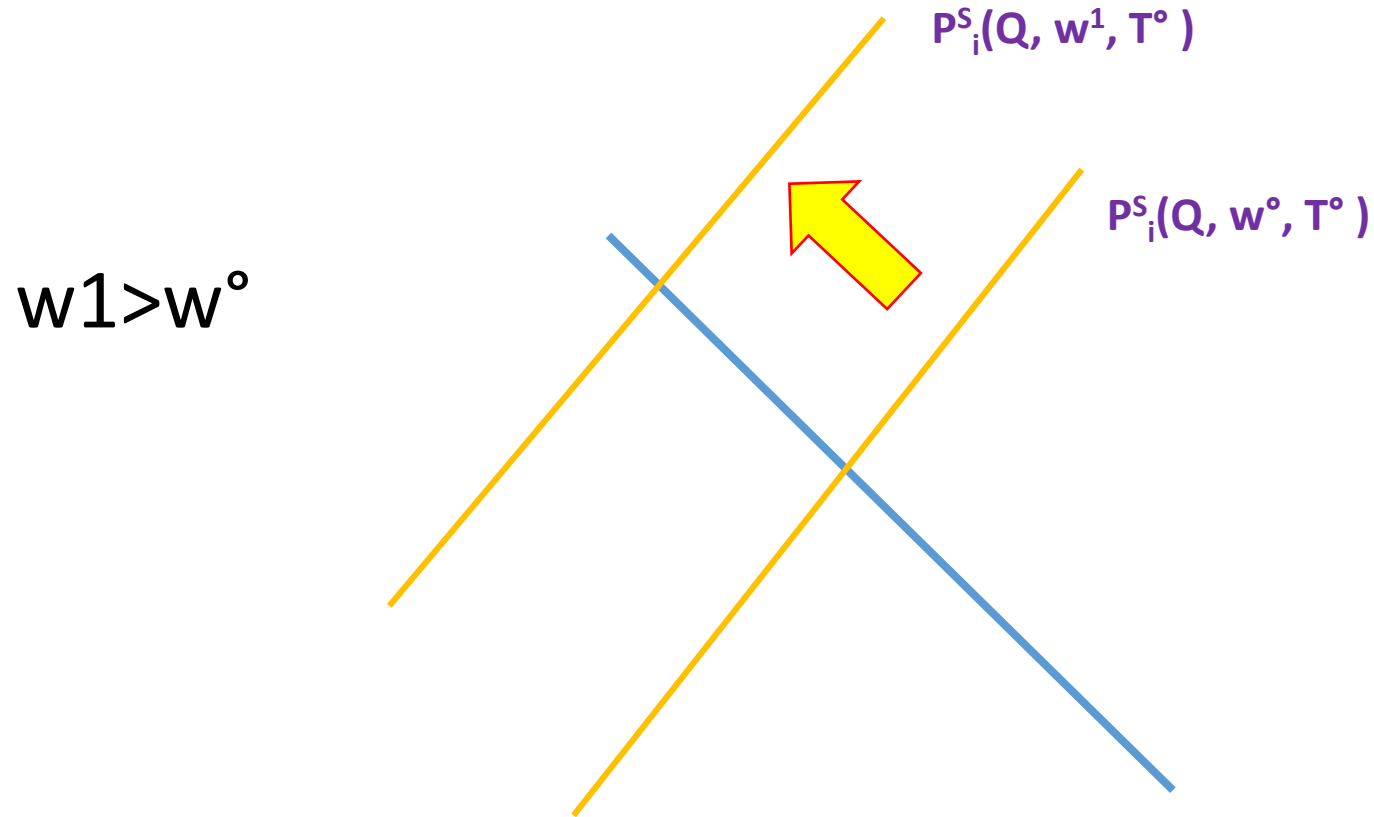
Prices of masks in the end were kept low and firms were «helped» to produce more (who pays?)

Here too, demand (preferences) count!





# Supply shocks



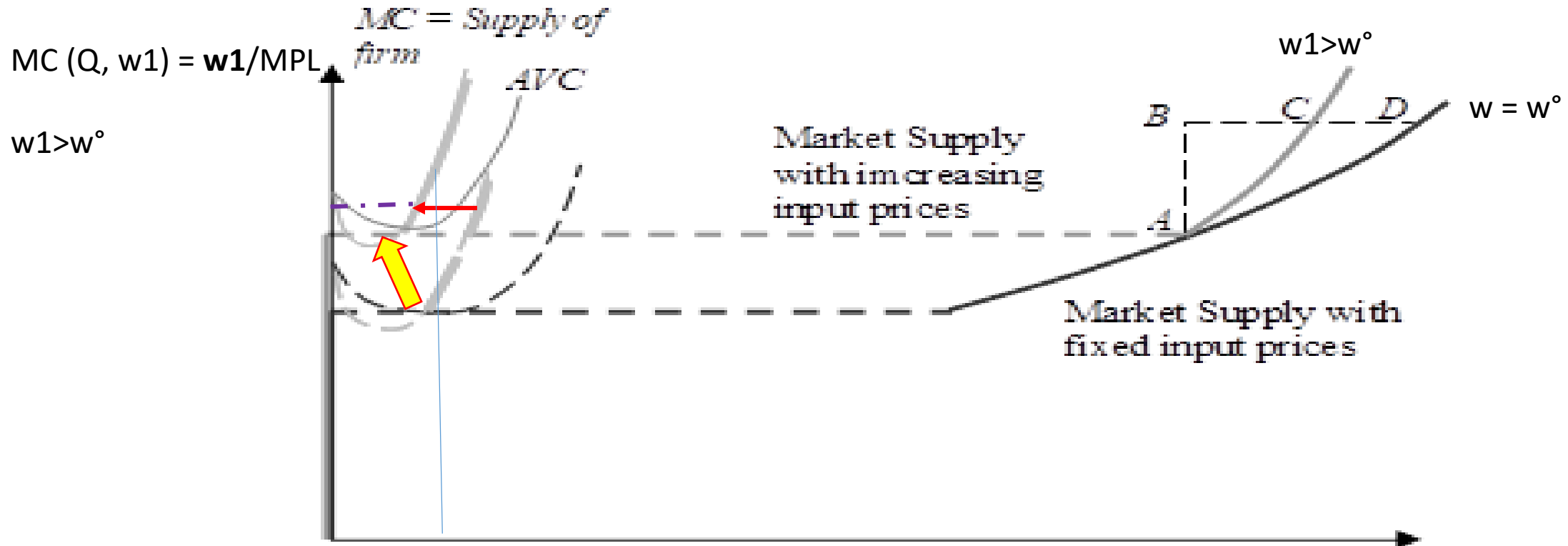
The effect of an increase of the price of an input on the supply curve.



## The ST supply curve of the industry - Case 2

**Variable** factor unitary cost of production  $w$  (input) was kept fixed: what if it rises with production of  $Q$ ?

$$MC(Q, w^0) = w^0 / MPL$$



A given increase in price (trait AB) generates higher desired supply but also higher demand of inputs:  $w^0$  goes up to  $w_1$ .

So this increase in price generates a lower increase in quantities supplied

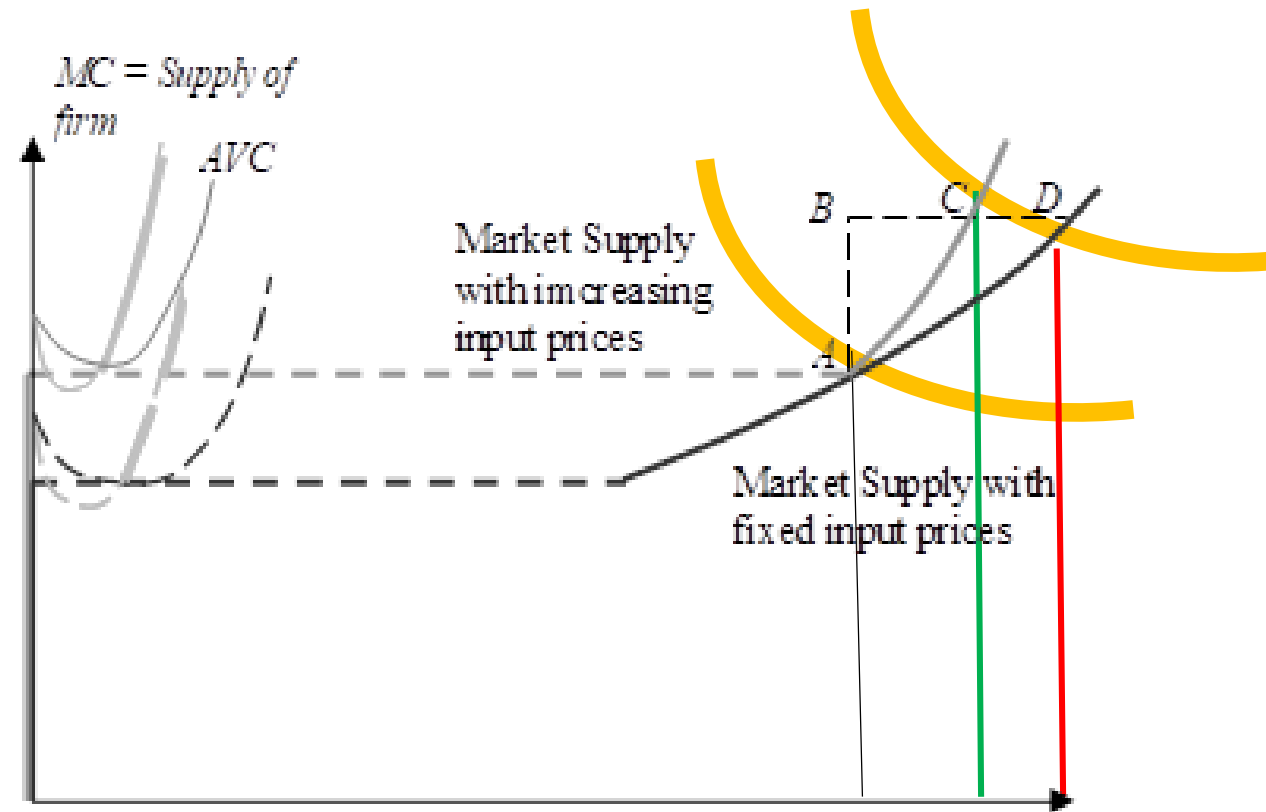
(trait BC rather than trait BD) compared to case where  $w$  remains fixed. **The supply curve shifts west.**

# Masks and Price -Case C

$$MC(Q, t^o) = t^o / \text{MPT}$$

**Variable** unitary costs of production factor tissue (t)

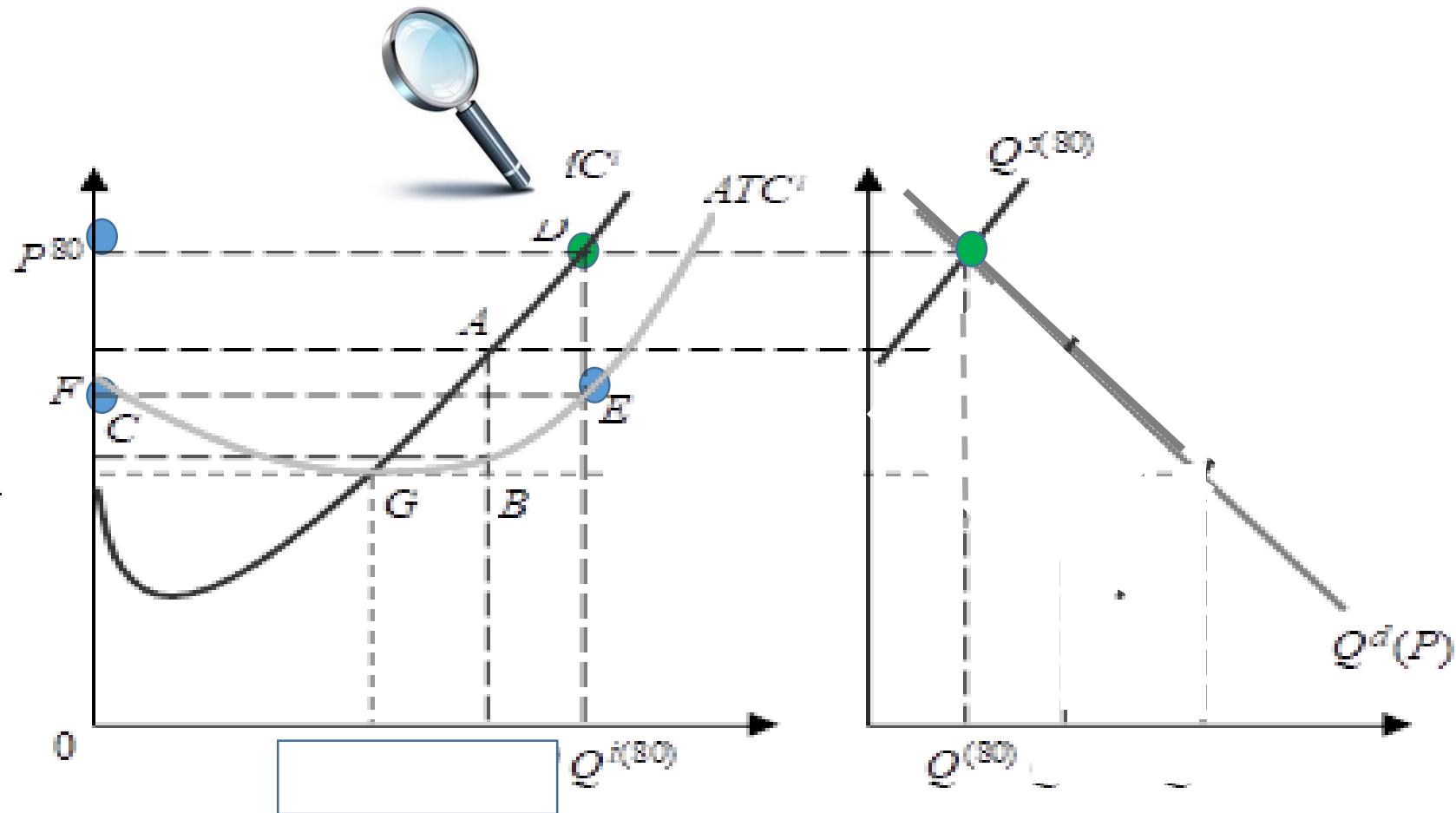
Marginal cost rose.  
From 0,08 to 0,39 €.  
Because of technology  
(red, same cost  
function) yes but also  
changed cost of inputs  
(green, new cost  
function)?





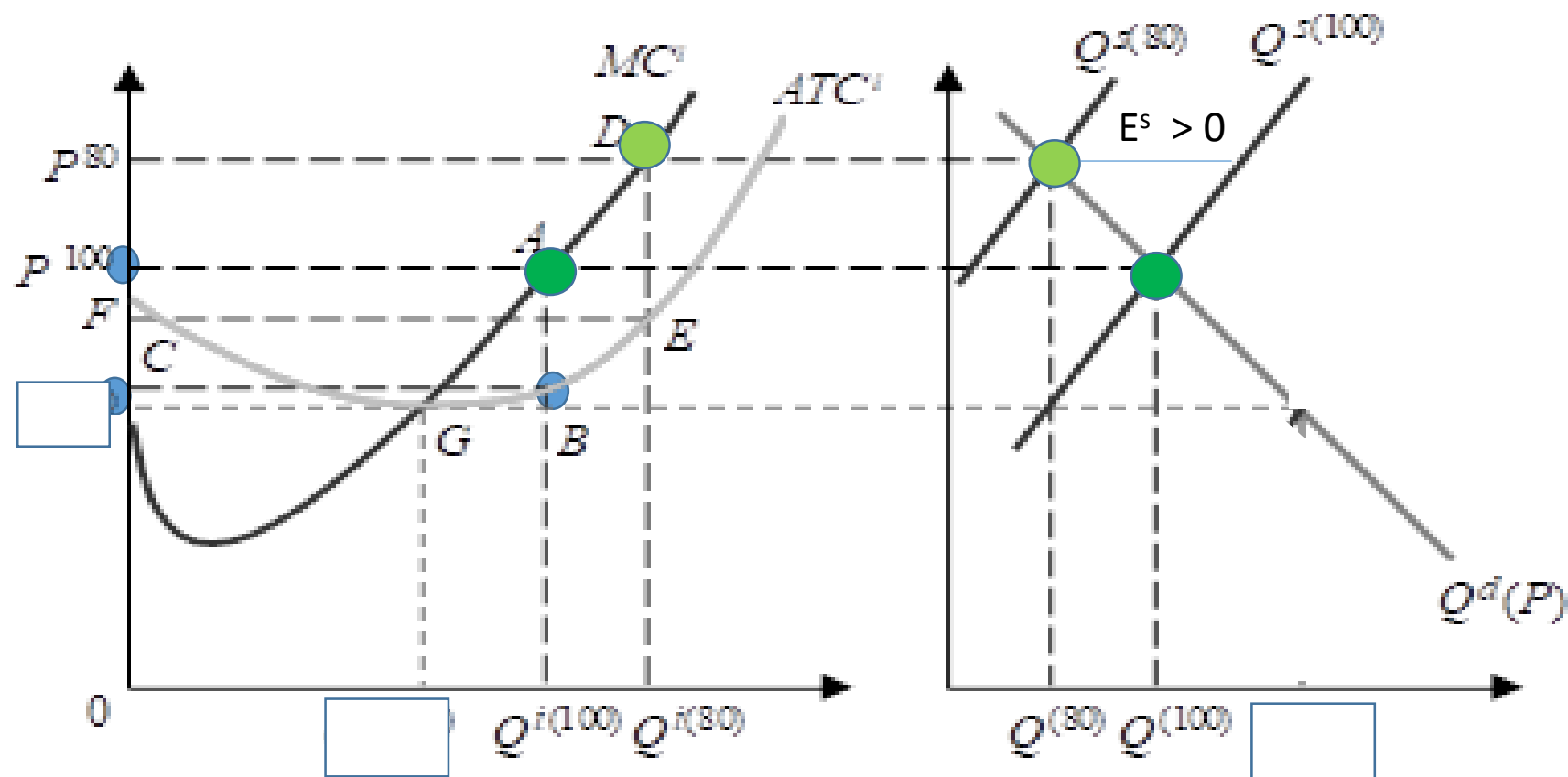
# PC and ST Equilibrium with 80 firms: profits?

LT  
equilibrium  
with free  
entry: what  
changes?



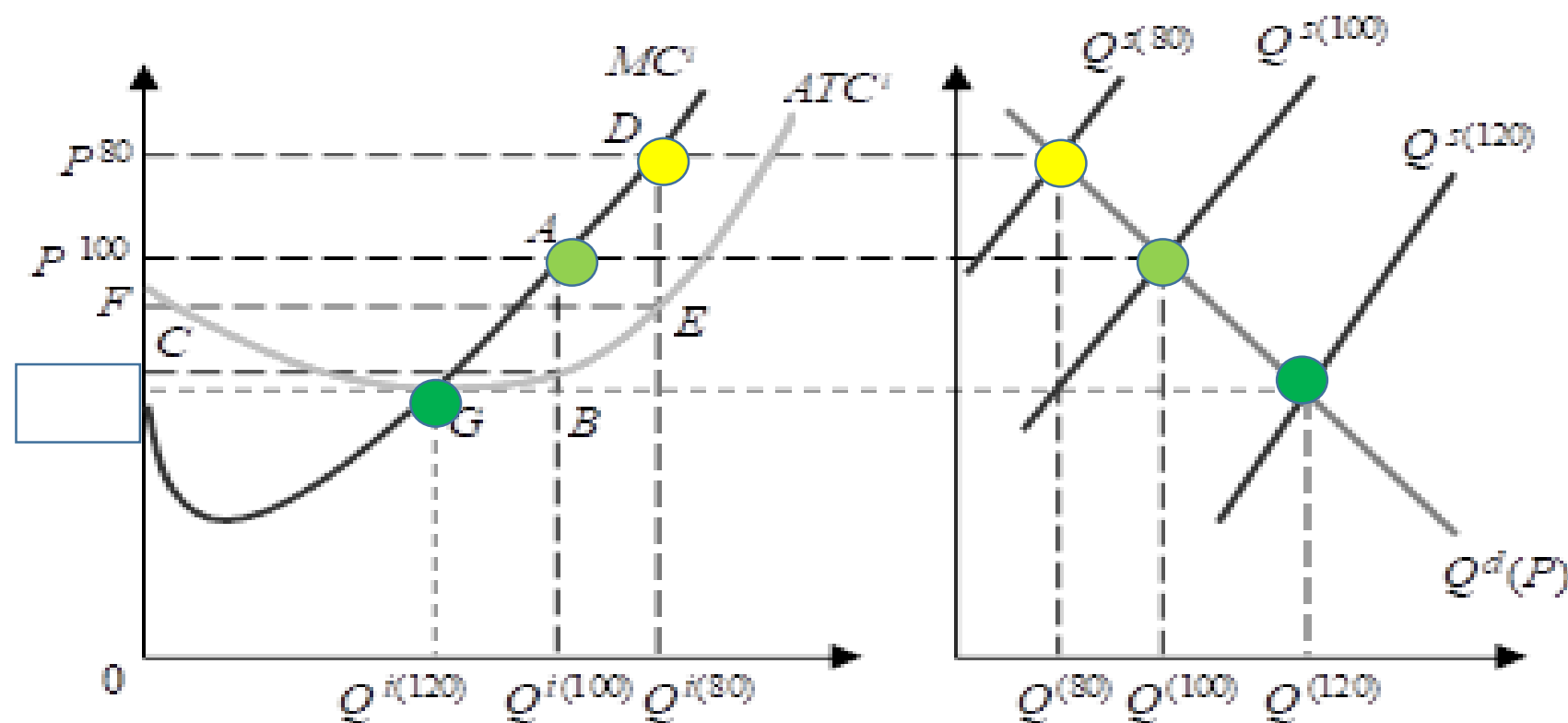


# PC and LT with free entry – Equilibrium?



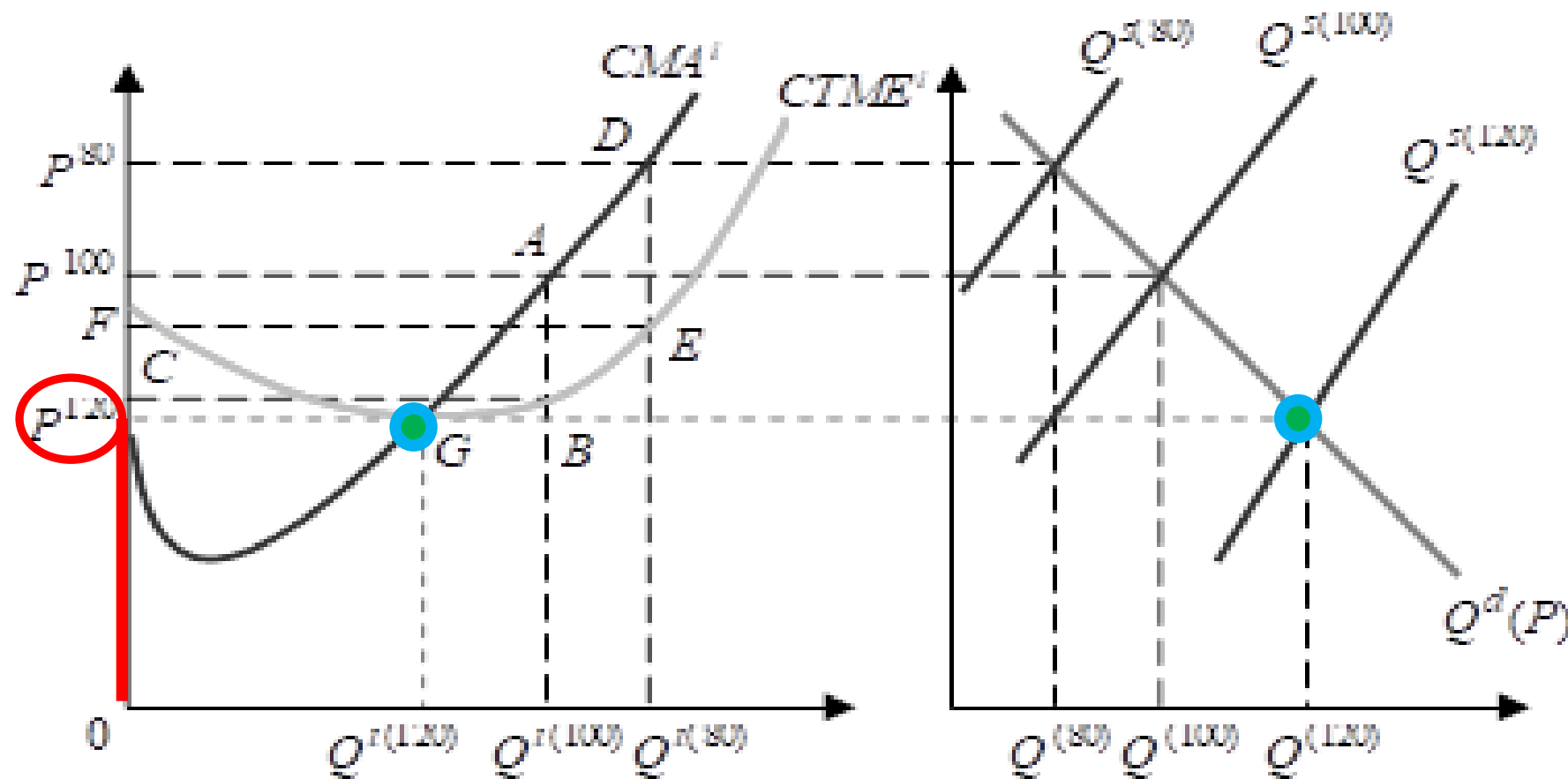


# PC and LT – Equilibrium



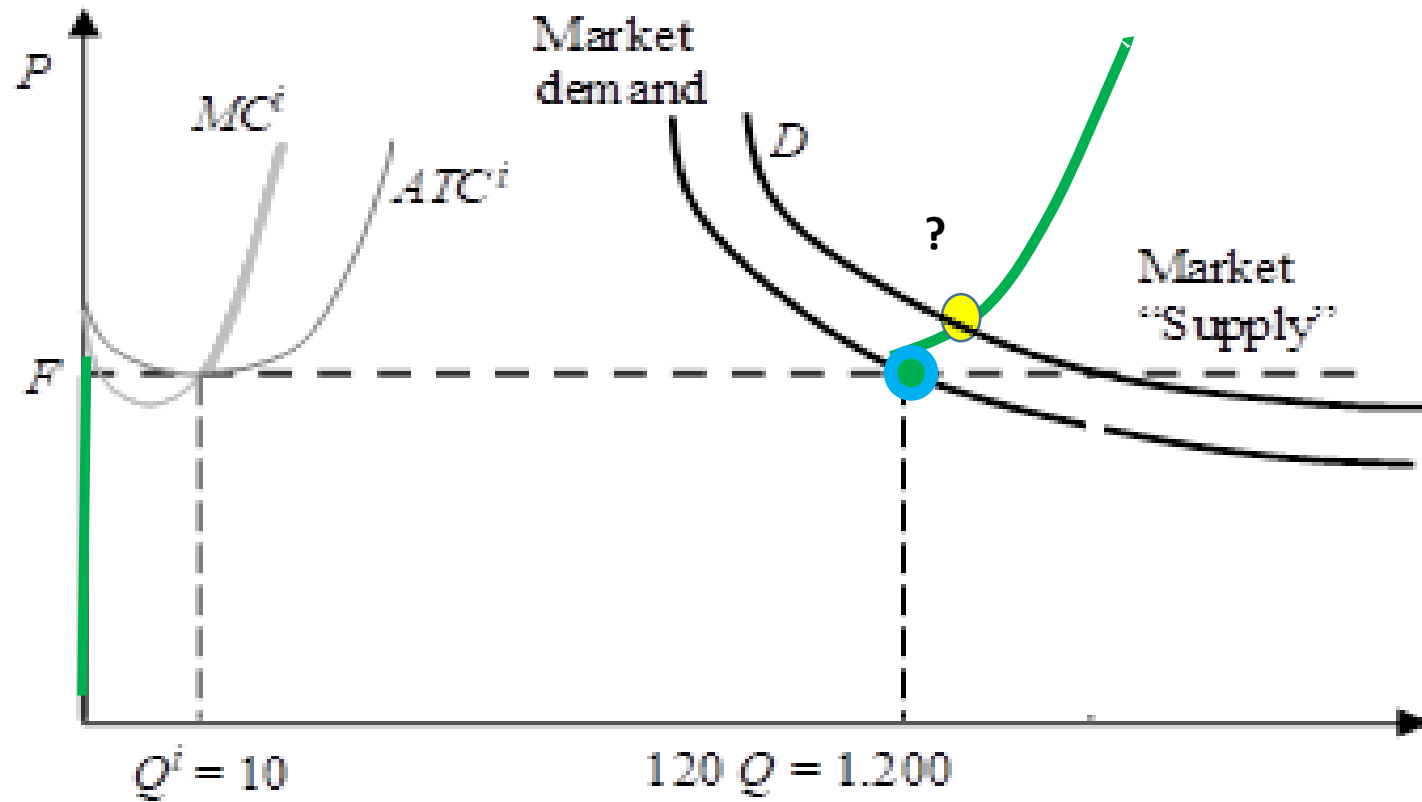
# PC and LT – Constant Costs

Exit Point  
Min AVC G



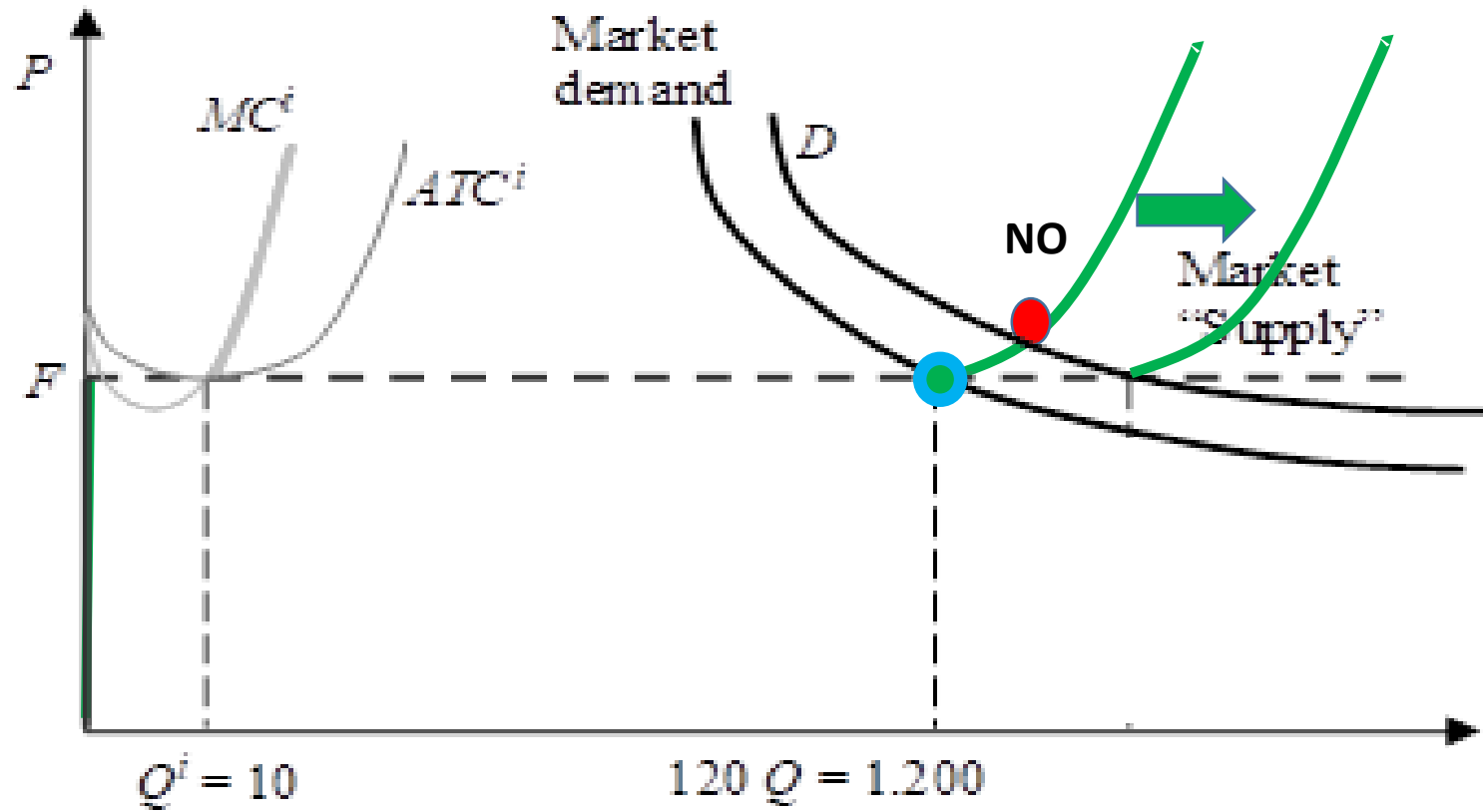


# PC, LT and Price: demand changes



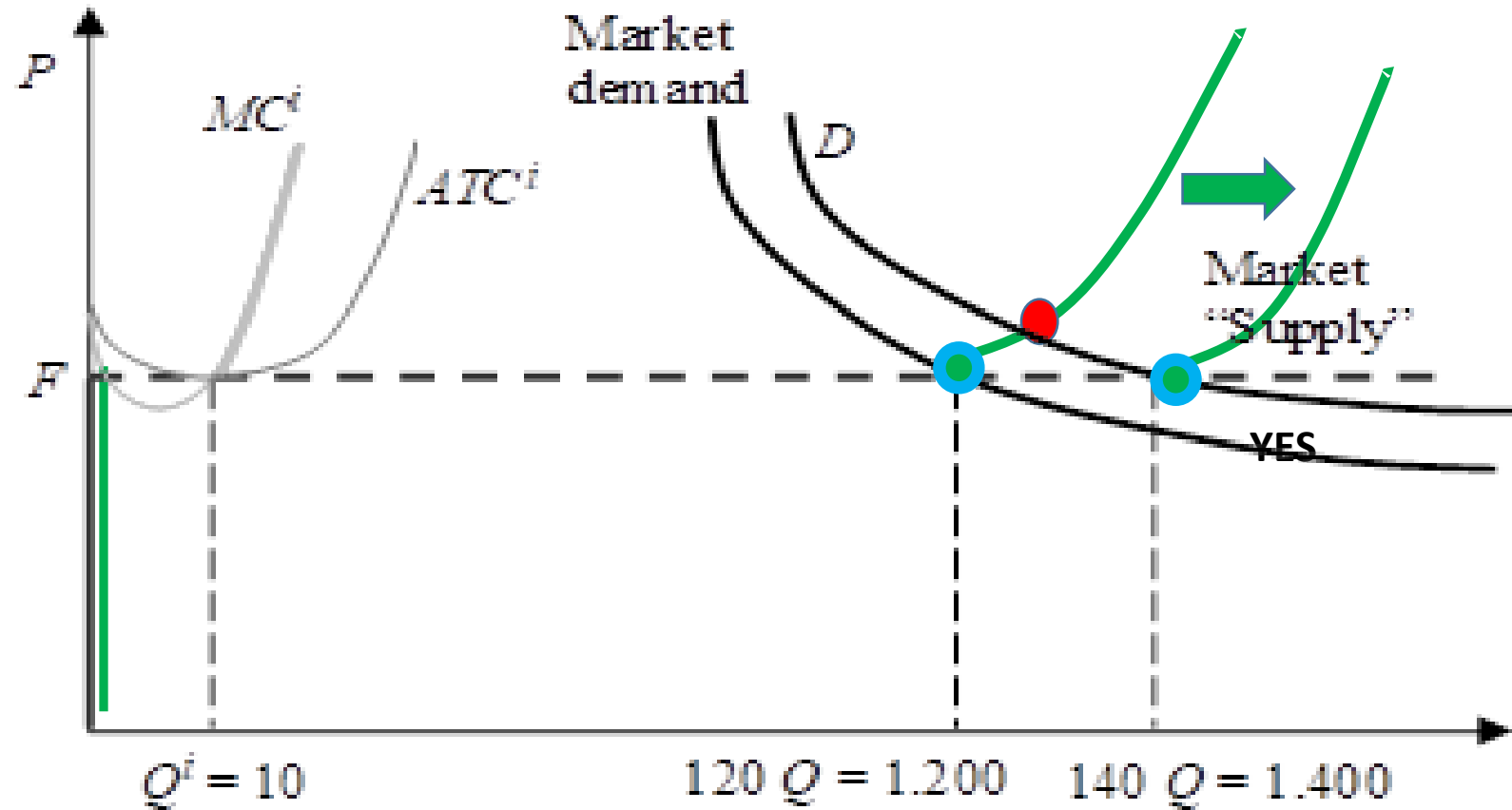


# PC, LT and Price





## PC, LT and Price





## LT equilibrium with identical firms and constant costs

As in the short-term equilibrium, in the long-term equilibrium the prices of goods and the quantities produced  $P^{120}$  and  $Q^{120}$  are such as to ensure that profits and utility are **maximised** and that the quantities offered and demanded on the market are equal, subject to the following **additional conditions**:

- (i) no company on the market wishes to change the size or quantity of the inputs;
- (ii) no company on the market will wish to leave the market as it achieves exactly what it could achieve in other sectors;
- (iii) no company outside the market will wish to enter the market, because it obtains exactly what it could obtain in other sectors. That is, there are **no extra profits**.

In the long-term competitive equilibrium companies produce at the lowest point of average costs, where average costs, marginal costs and price coincide, at the **efficient scale**.

In the long run, as opposed to the short run in which an increase in the price made the production of each firm grow and therefore the market supply too, an increase in the price does not increase the supply of each individual firm present on the market but rather attracts new firms, until the price has fallen back to the point of minimum average costs.

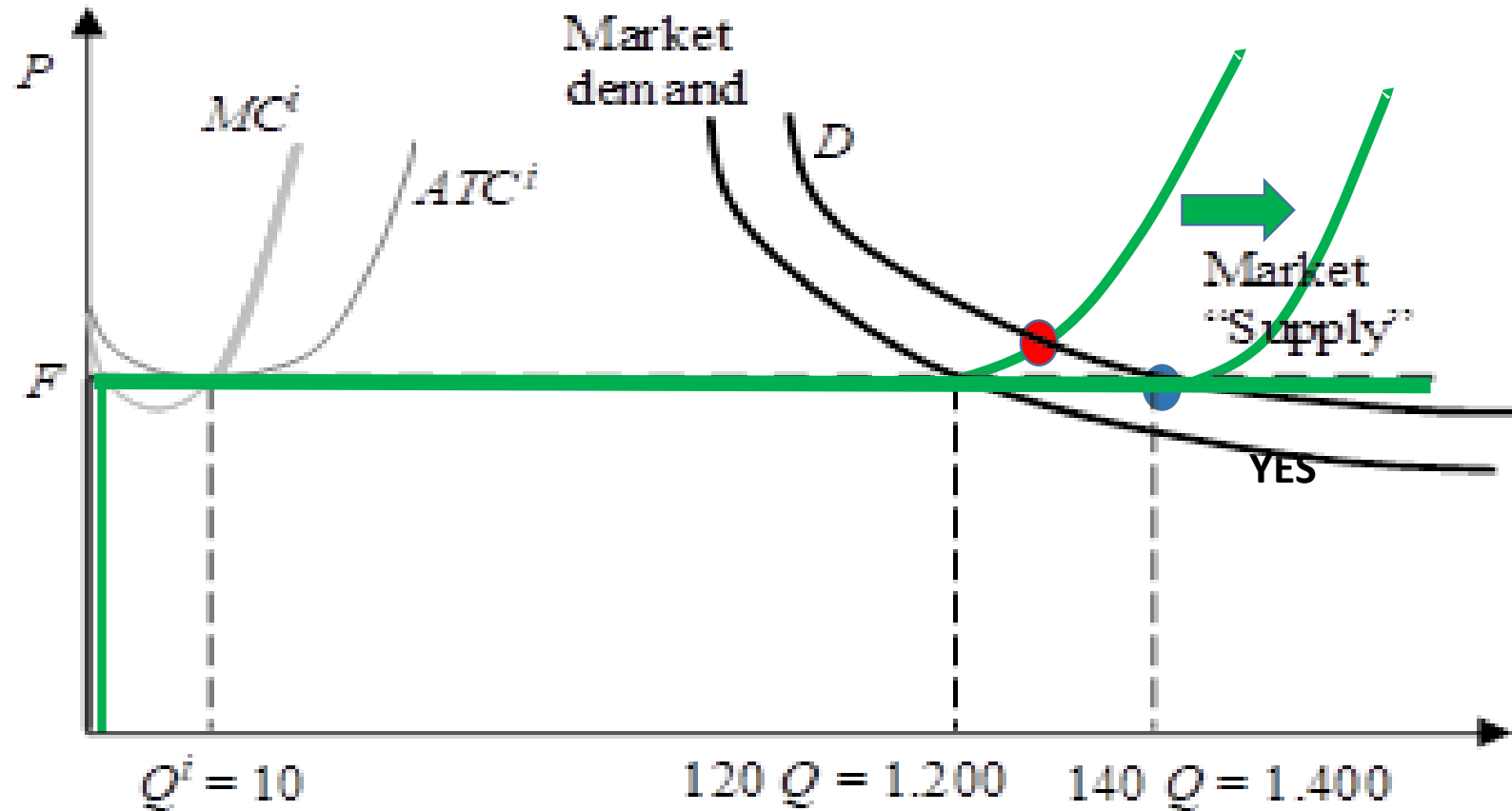
In the long-term greater demand generates a rise in the number of firms and of quantities, not of price, which remains always equal to the exit price.

Price is NOT anymore explained by preferences or demand but only by TECHNOLOGY (min AVC)!



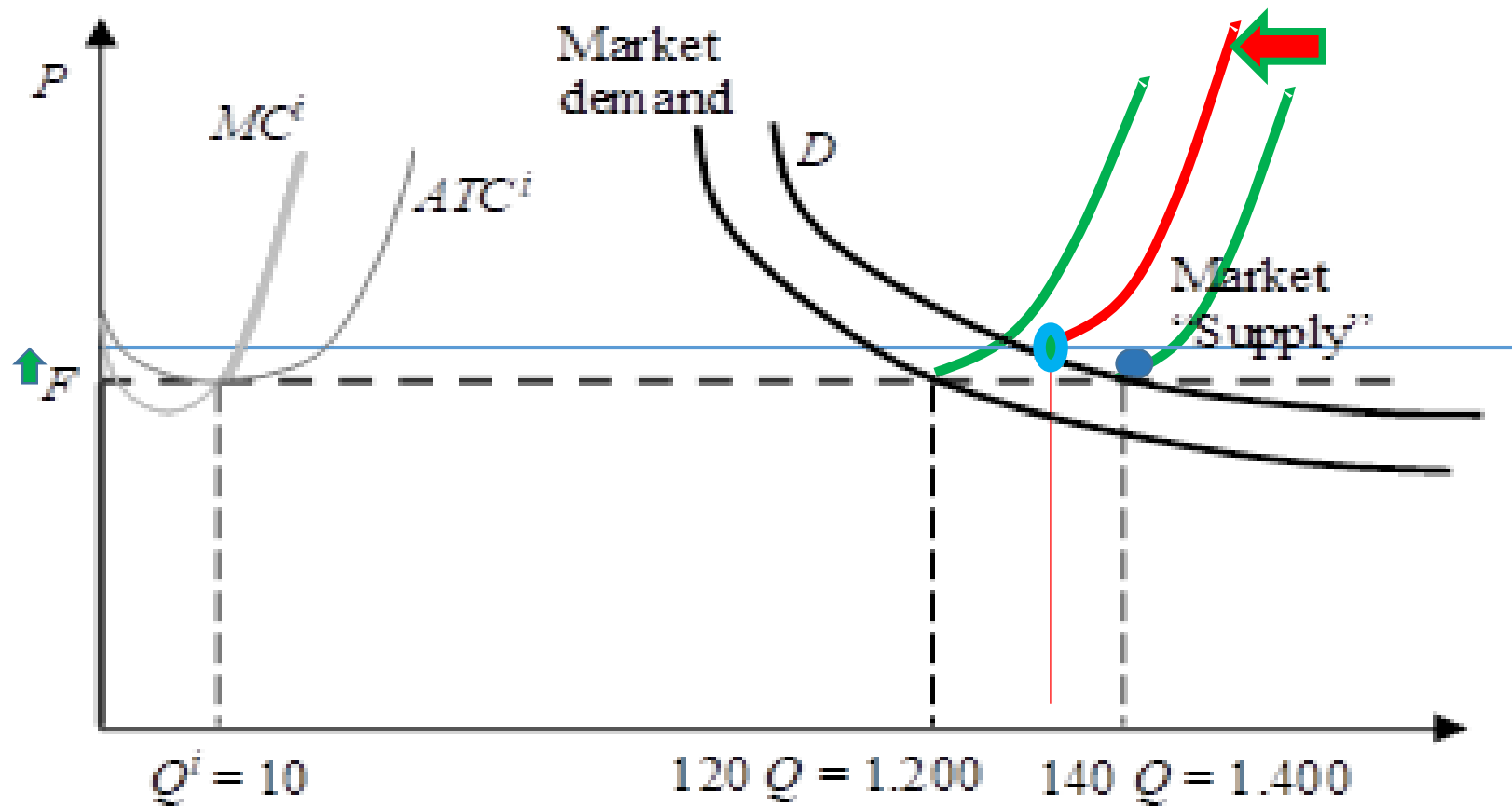


## LT supply curves in PC, constant unitary costs





## PC, LT and price at variable input prices



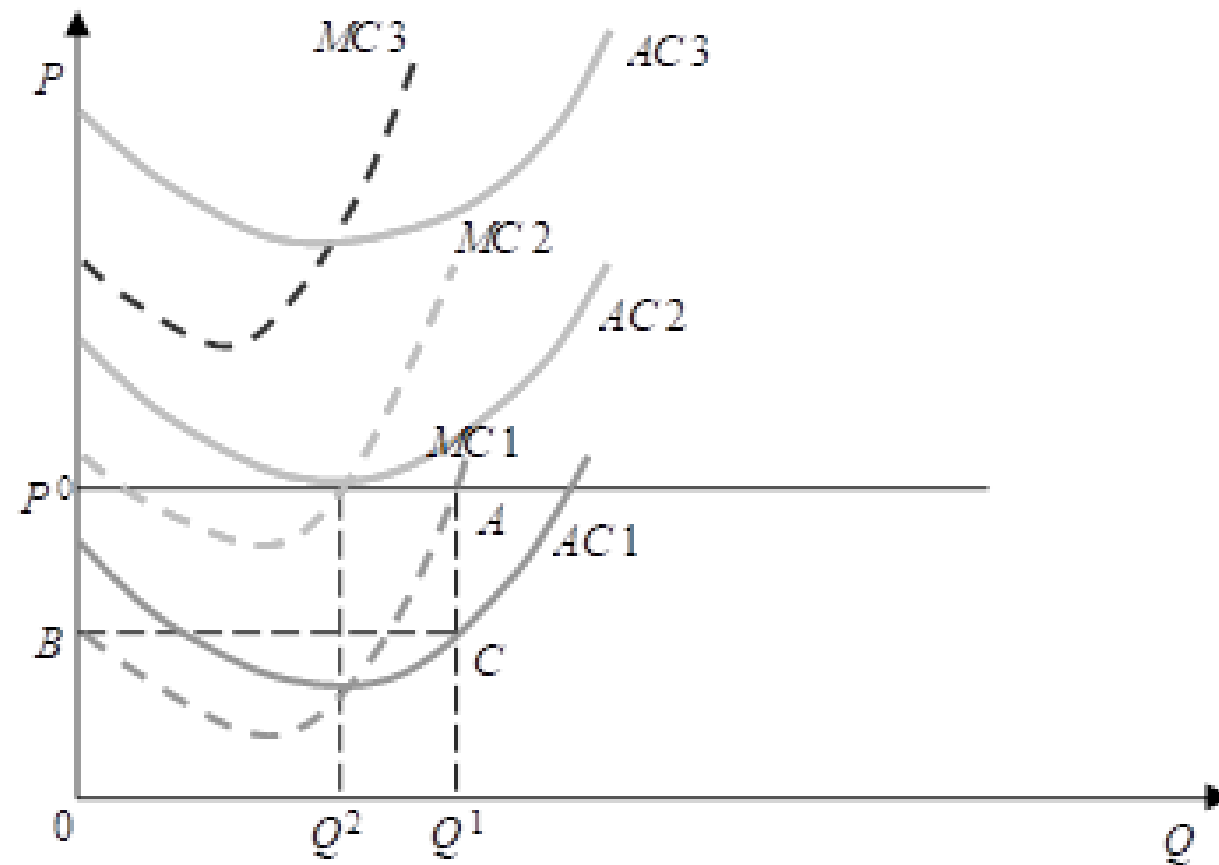
PS: If input prices grow with the growth of production, if inputs are scarce, demand comes back to play a role in determining prices.

# LT Equilibrium and different firms

3 type 1 firms  
4 type 2 firms  
Millions of type 3  
firms

Differentiated profit.

Positive long terms  
profits for...





# LT Equilibrium and different firms

3 type 1 firms  
4 type 2 firms  
Millions of type 3  
firms

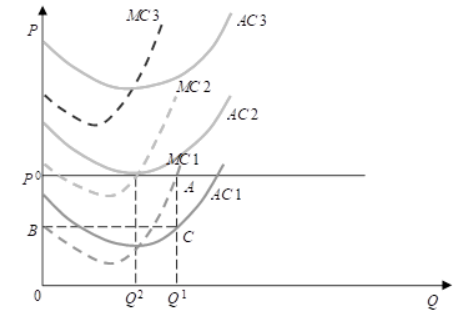
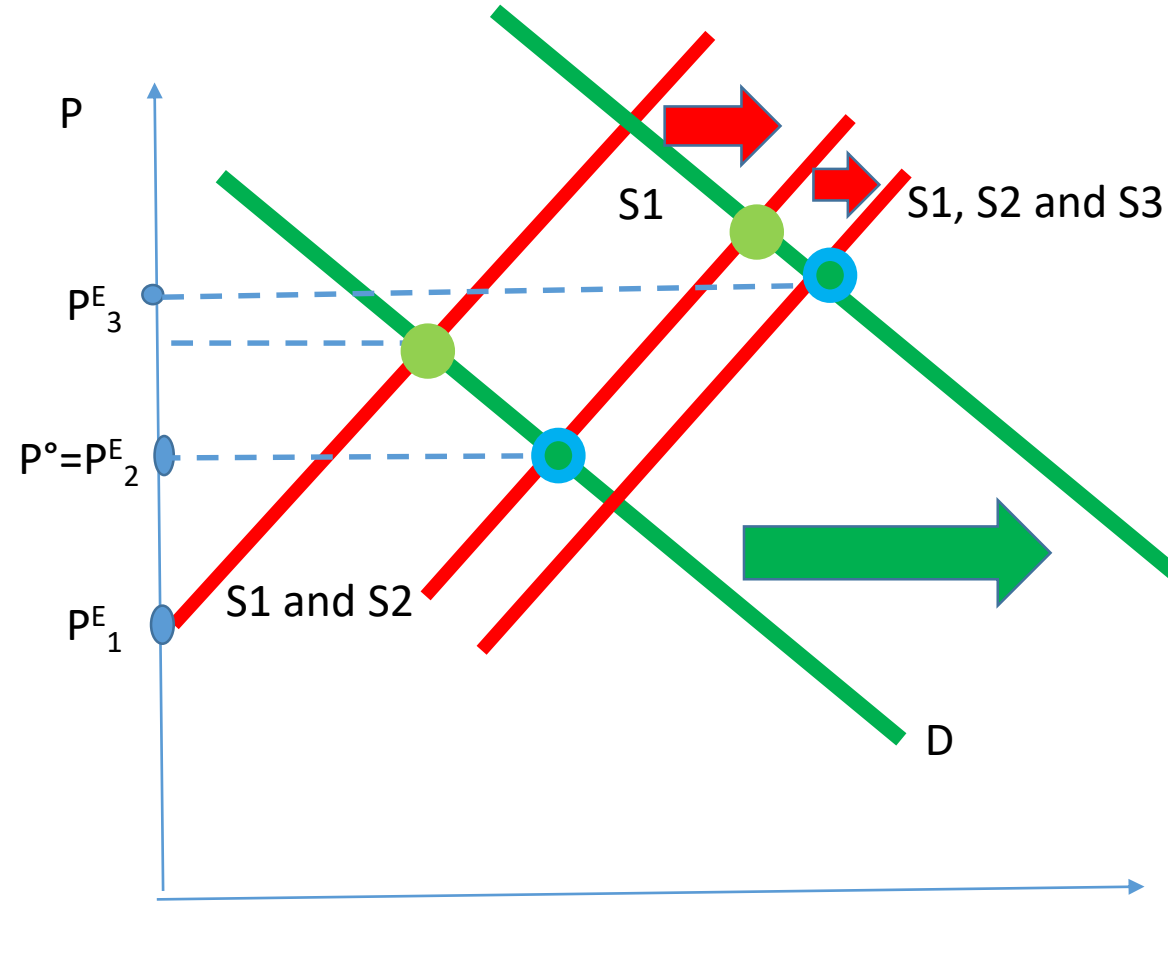
First equilibrium?

Second equilibrium  
with higher demand?

Demand and  
preferences matter in  
the LT again when  
inputs are scarce.

Extra profit?  
Differentiated! Why?

But are we sure that  
manager 1, so good...



## Analogies with PC

- They maximize profits
- They minimize production costs for any quantity
- They exit the market if it is not profitable
- They have no strategic interaction with rivals (because there are none; but beware of contestable monopolies where you have to defend yourself against the entry of rivals)
- Technology and the demand curve are constraints on action

## Differences from PC

- They are not price takers but price makers: if they raise the price, they know they will not lose the entire market
- The elasticity of their demand curve is therefore not infinite and the marginal revenue is not equal to the price: every time they produce and sell more, they know they will have to sell all the quantities they previously sold at a higher price at a lower price.



# Monopolies existe because...

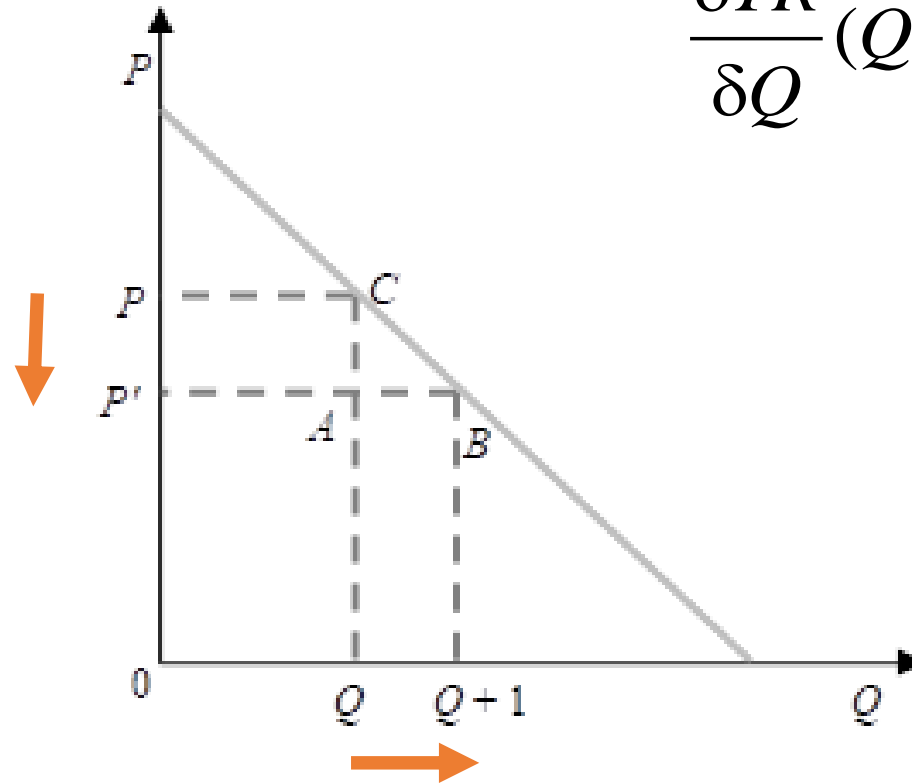
- Legal monopoly established by political decree for reasons of social equity (nationalization of electricity) or security (telephony until liberalization in the 1990s), etc.
- Natural monopoly linked to cost structure
- Strategic barrier to entry
- Gift from politicians to certain entrepreneurs
- To stimulate patents and innovation



## Uniform pricing Monopolist (1 only price)

$$\frac{\delta TR}{\delta Q} = \frac{\delta [P(Q)Q]}{\delta Q} = \frac{\delta P}{\delta Q} P \frac{Q}{P} + P(Q)$$

$$\frac{\delta TR}{\delta Q}(Q) = P(Q) \left[ 1 - \left( \frac{1}{\varepsilon(Q)} \right) \right]$$





# Monopoly pricing

A well-known case is that of the linear inverse demand curve

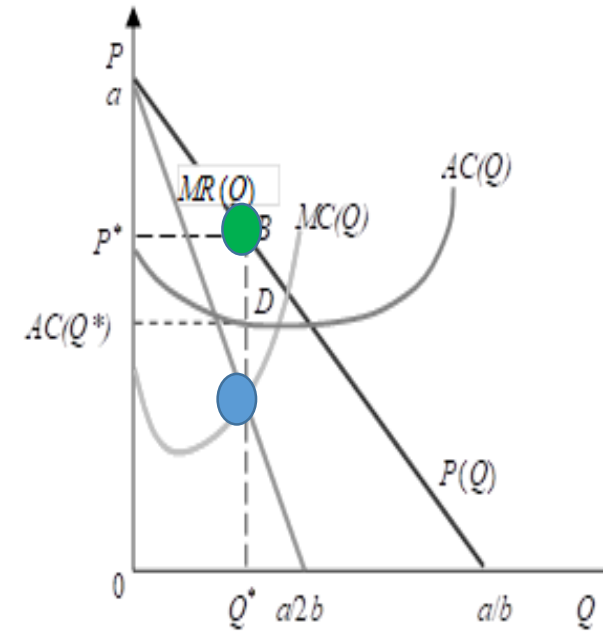
$$P = a - bQ$$

thereby

$$TR(Q) = (a - bQ) \times Q = aQ - bQ^2$$

$$MR(Q) = a - 2bQ$$

$$MC(Q^*) = MR(Q^*) = P \left[ 1 - \frac{1}{\varepsilon} \right] = P \left[ \frac{\varepsilon - 1}{\varepsilon} \right]$$



PS:  
No  
supply  
curve!

$$P^M > MC$$

$$P^{CP} = MC$$



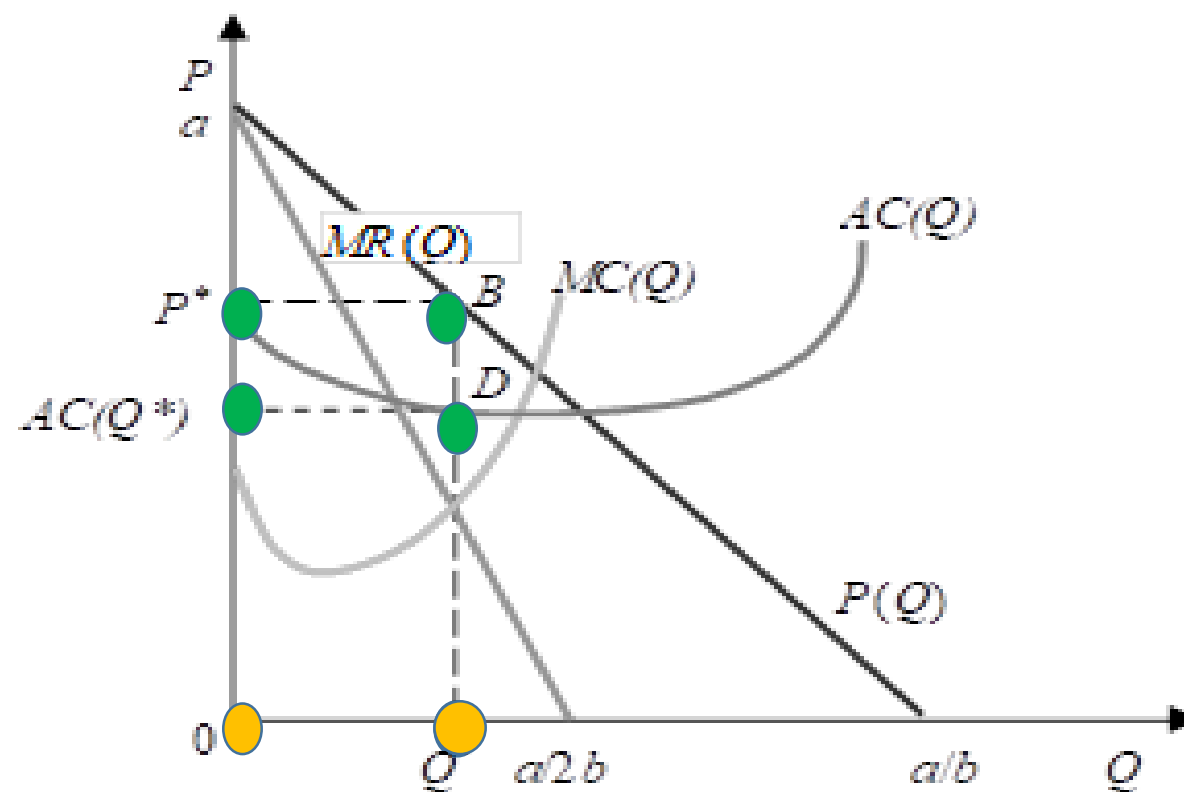
$$Q^M < Q^{CP}$$

$$P^M > P^{CP}$$

$$P = \left[ \frac{\varepsilon}{\varepsilon - 1} \right] MC(Q^*)$$

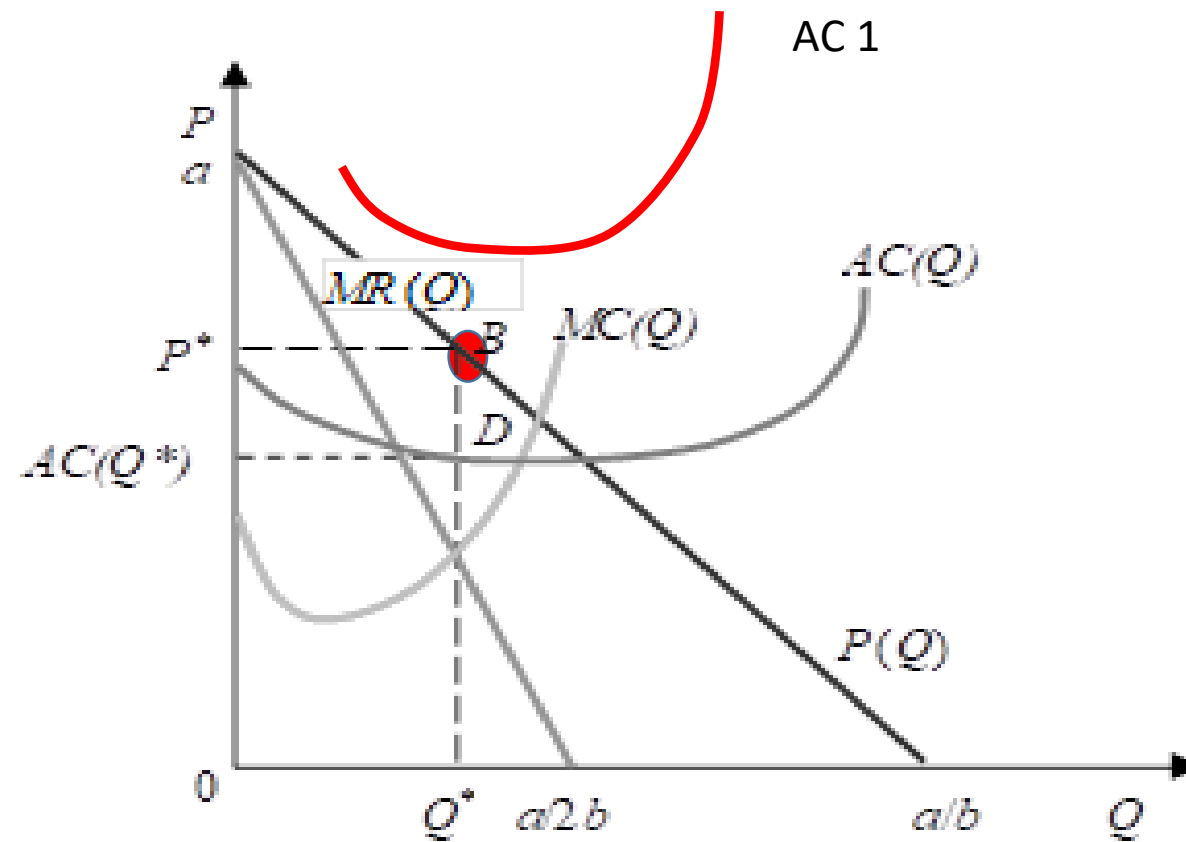


# Monopoly profits



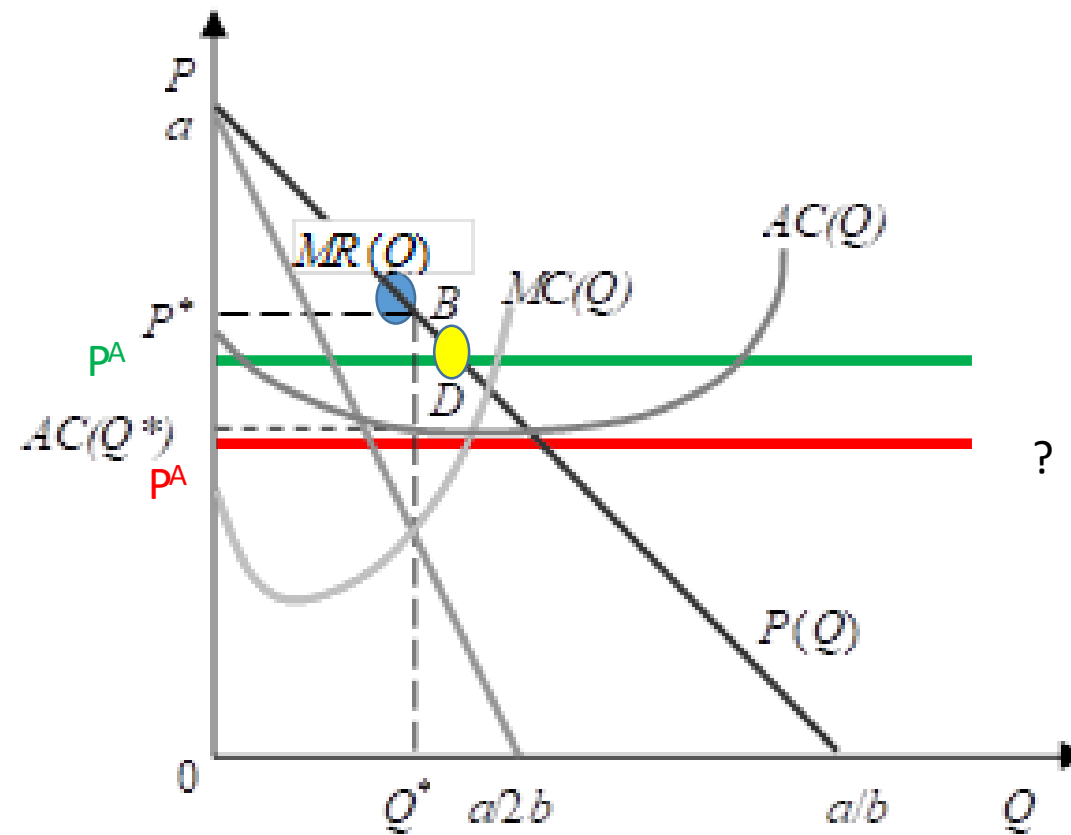


# Monopoly





# Masks and monopoly



"How is the world": "positive" branch of the economy;

"How the world should be": "normative" branch (what is best? What is better?).

What do we mean by "better"?

**Improvement**: a change (of production, of consumption) that is "desirable" starting from an initial situation, on the basis of a certain, intuitive and not too controversial, criterion.

We will say that a situation B is **superior**, *according to the criterion adopted*, to a situation A, if passing from A to B represents an **improvement**, *according to the criterion adopted*. Instead, we will say that A is **efficient**, *according to this criterion*, if there is no way of obtaining an improvement by abandoning A.

One example of criterion: **output efficiency** in production. Given some input use, maximum output is obtained. Going from a situation in which we produce with **5 inputs** an amount equal to 3 output units [(5;3)] to the non maximum obtainable amount of 6 output units [(5;6)] represents an output improvement ("according to this criterion"), and therefore the production technique A (5; 6) is output-superior to technique B (5; 3). If C (5; 7) is the maximum output we can obtain with 5 inputs, C is an output-efficient technique in the sense that we cannot produce more than 7, given the use of 5 inputs, and therefore it cannot be improved given the use of 5 of the input. B and A are **output-inefficient** because both can be improved.

Similar arguments apply for example to "technologically efficient" production techniques that minimize the use of an input to reach a specific output. However, remember that there is no way to compare **various output or technologically efficient** points in production, as they are not improvements: just think of the decreasing trait of the isoquant.

# Efficiency in Consumption

«Let us make two counterparts meet».

The 2 only individuals populating the earth, Federica (f) and George (g).

They inherited from their parents the **endowments** of the only consumer goods available on earth, Apples and Mangos. In our case it will not be possible to expand these endowments through production.

We will call  $X_f = (x_{fm}; x_{fa})$  any **consumption basket** of Federica made of mangos ( $x_{fm}$ ) and apples ( $x_{fa}$ ) and we will call  $X_g = (x_{gm}; x_{ga})$  any consumption basket of George also made of mangos ( $x_{gm}$ ) and apples ( $x_{ga}$ ).

A possible and specific basket that could be consumed by our two friends is the one they are endowed with, the so-called “**initial endowment**” noted as  $W_f = (w_{fm}; w_{fa})$  for Federica and  $W_g = (w_{gm}; w_{ga})$  for George.

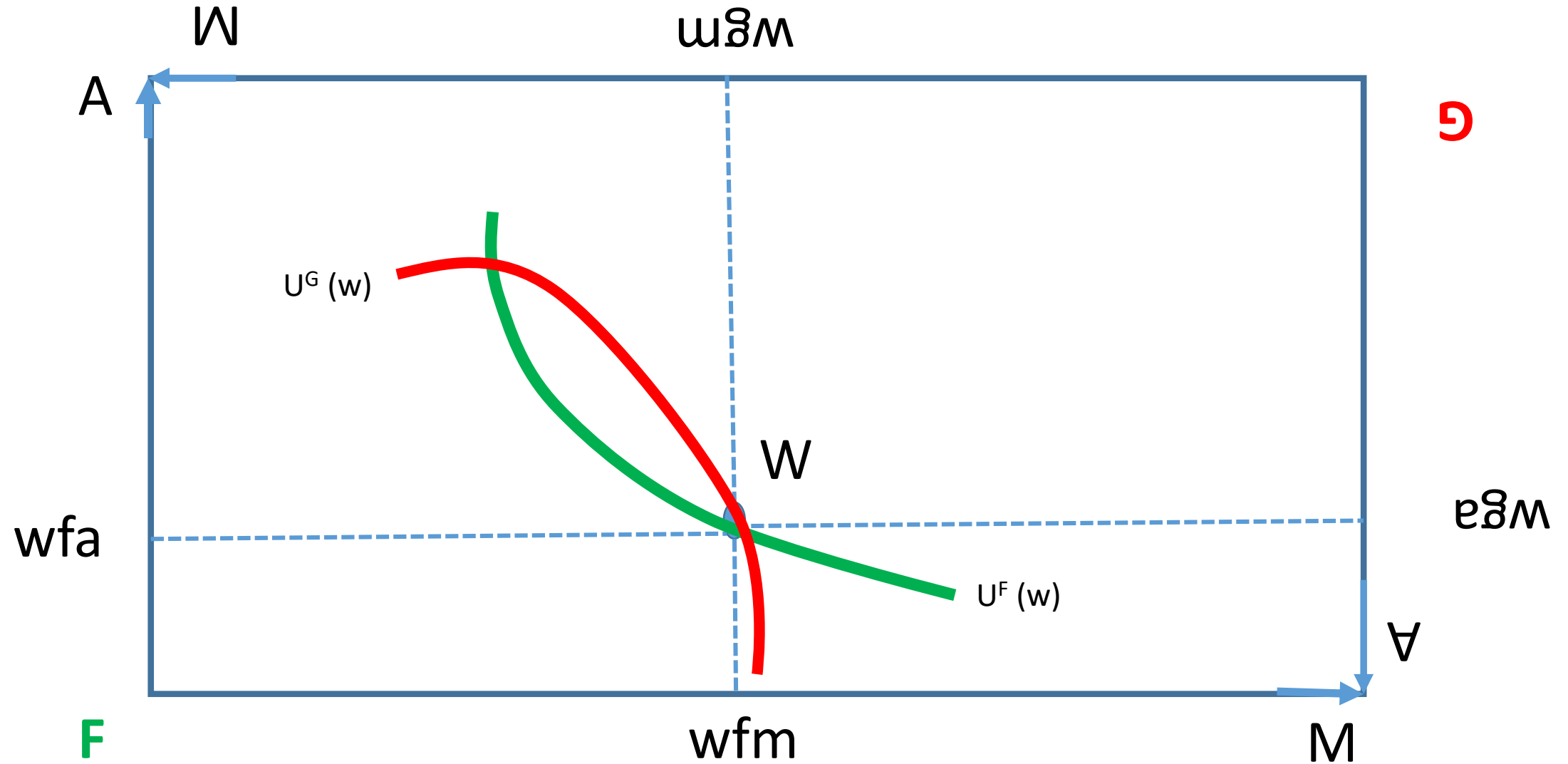
An **allocation** of goods, made of any couple of baskets (one for Federica and one for George), is said to be **feasible** when the total quantity consumed of a good by G and F is **lower or equal** to the total amount available for that good. Among the feasible allocations we will study (why?) only those that consume all available resources/endowments i.e. those such that:

$$x_{gm} + x_{fm} = w_{gm} + w_{fm}$$

$$x_{ga} + x_{fa} = w_{ga} + w_{fa}$$

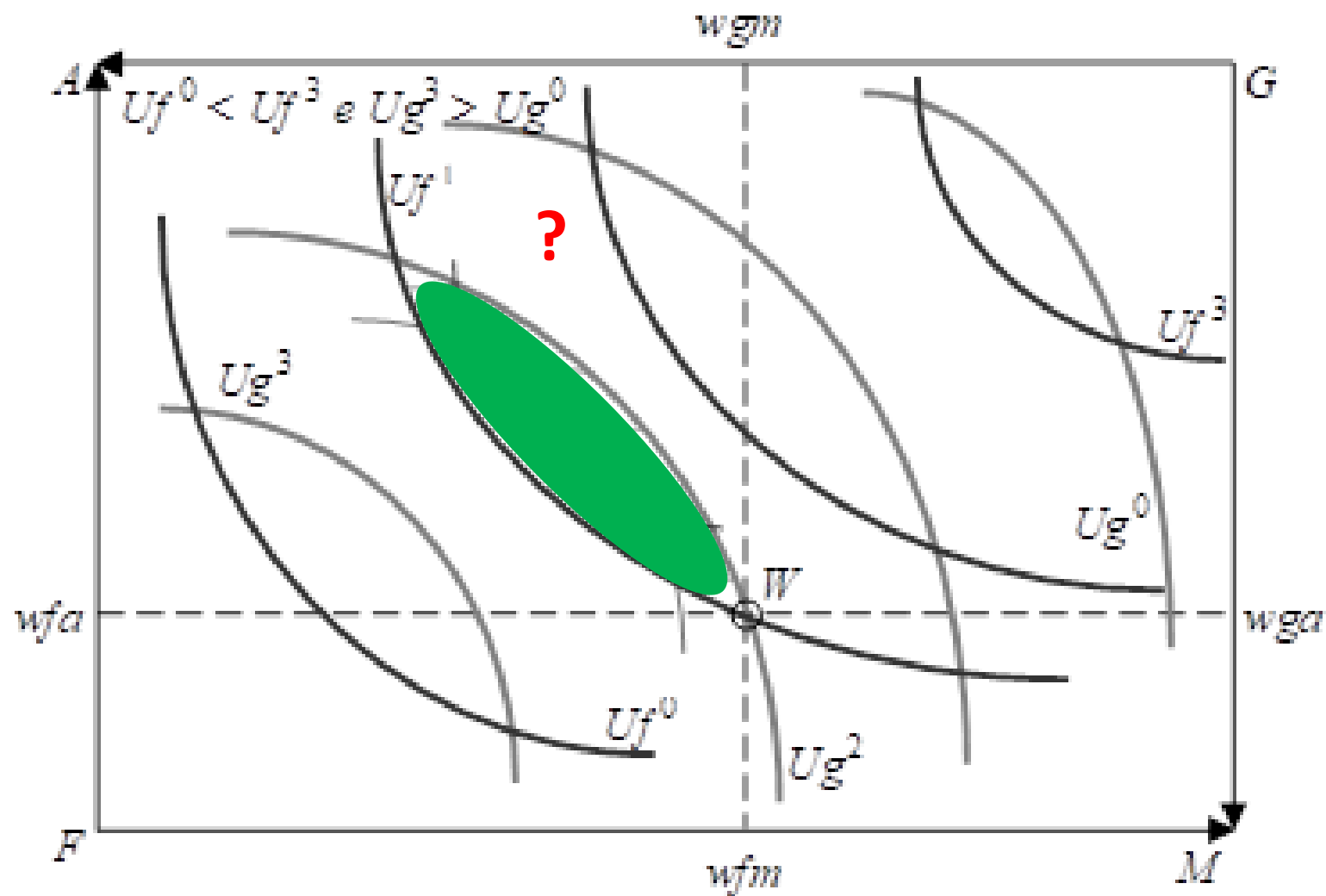


# The Edgeworth Box





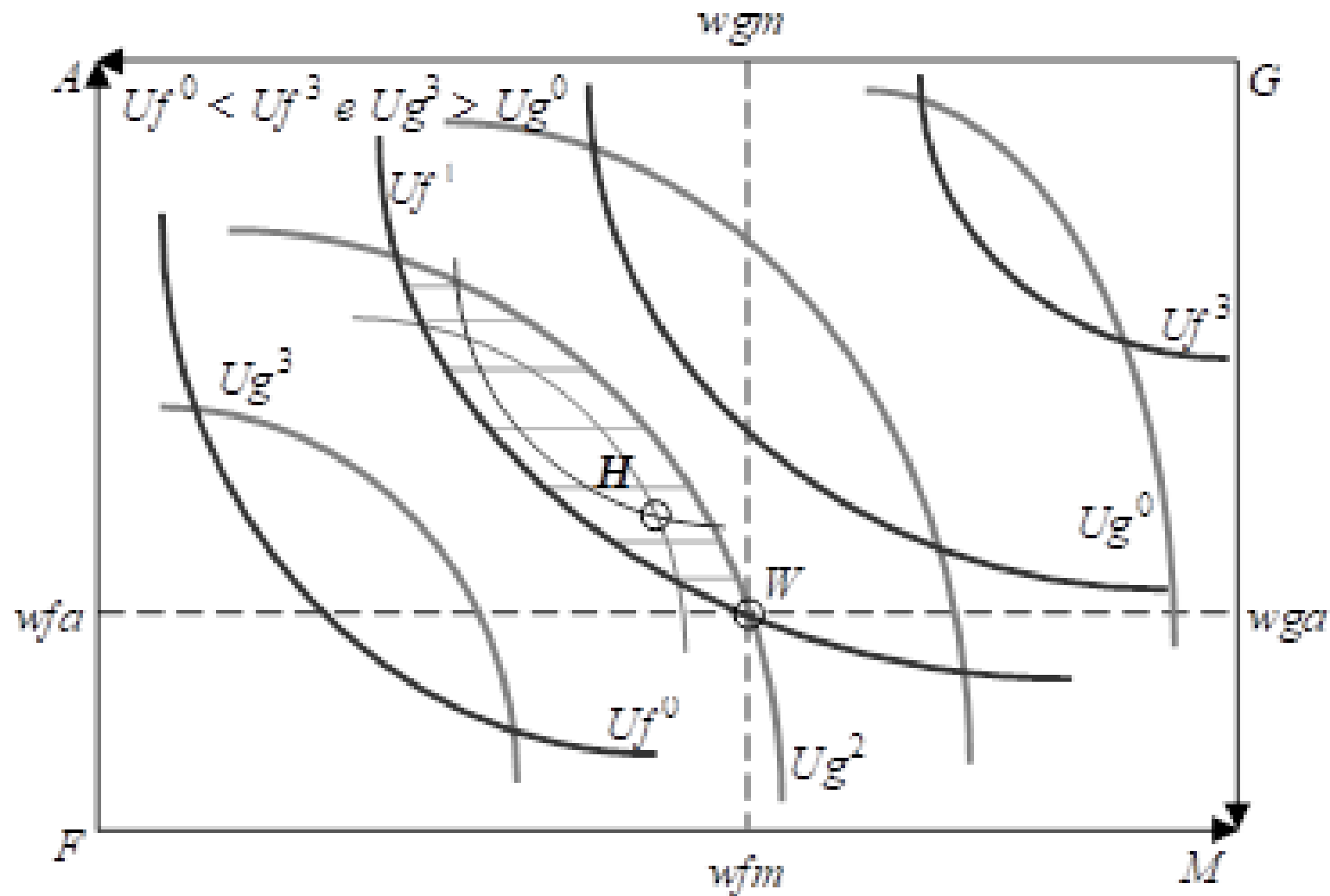
# Voluntary Exchange





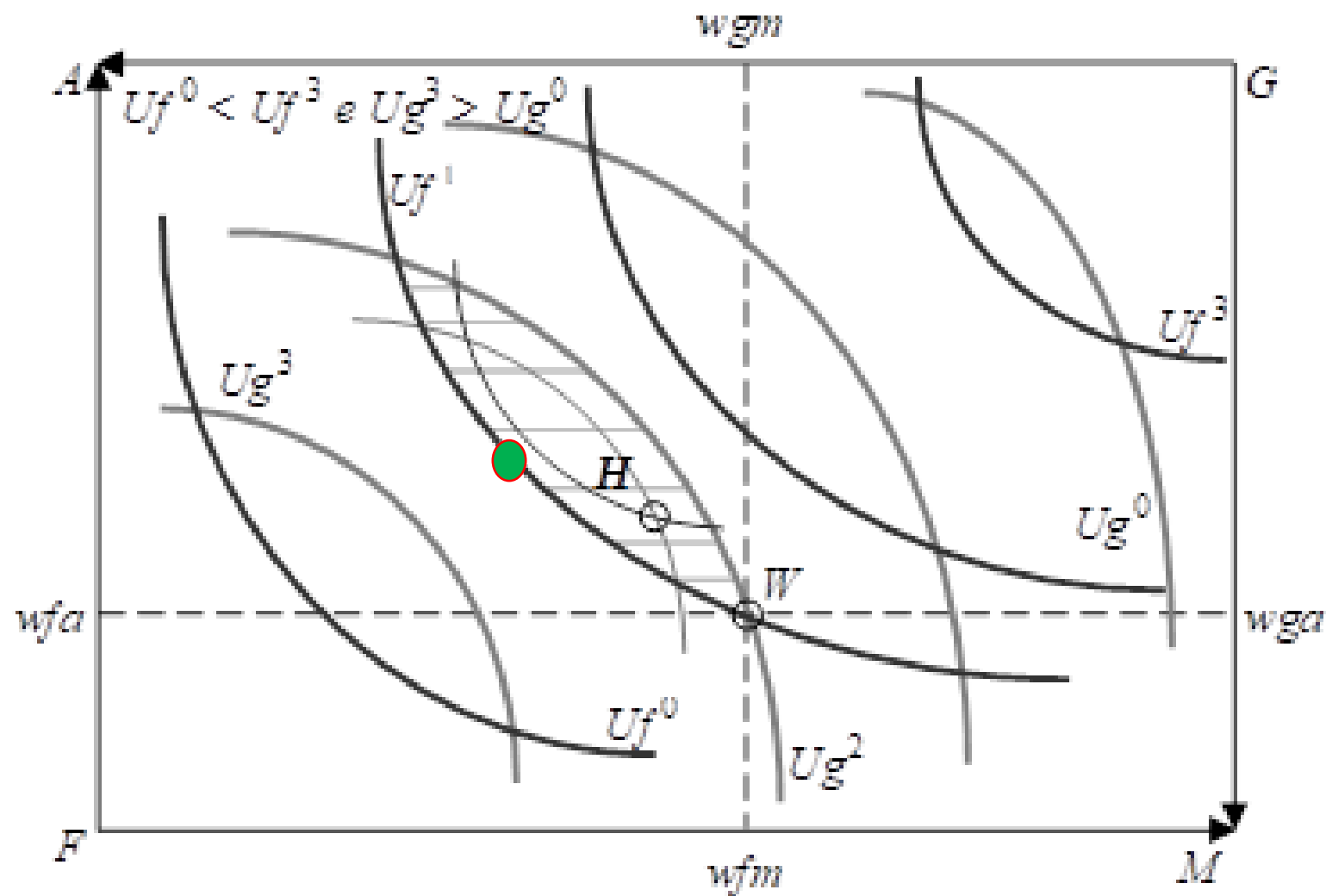
# An improvement

H? A social improvement with respect to W.



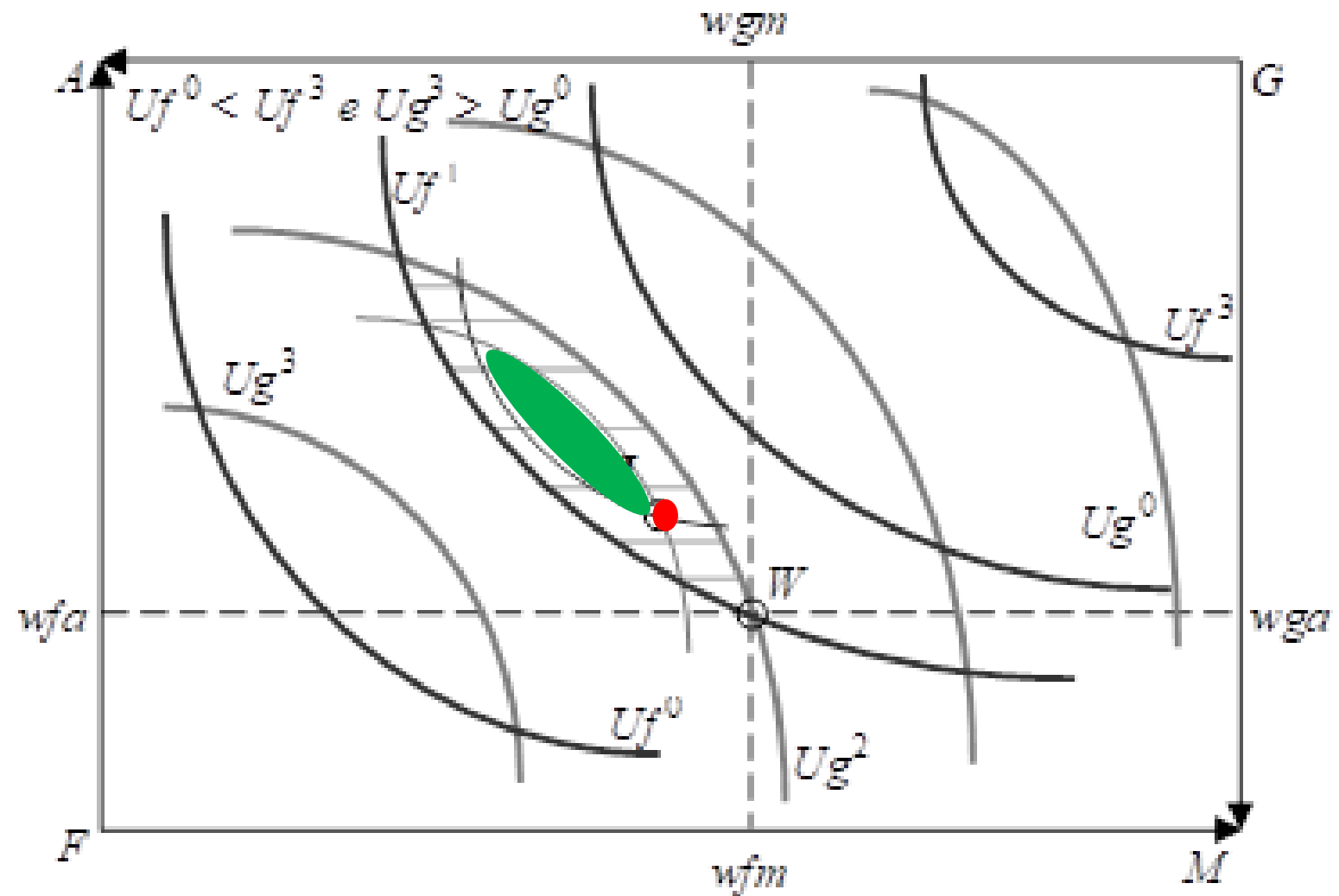


# Bargaining Power of....?





# Inefficiency

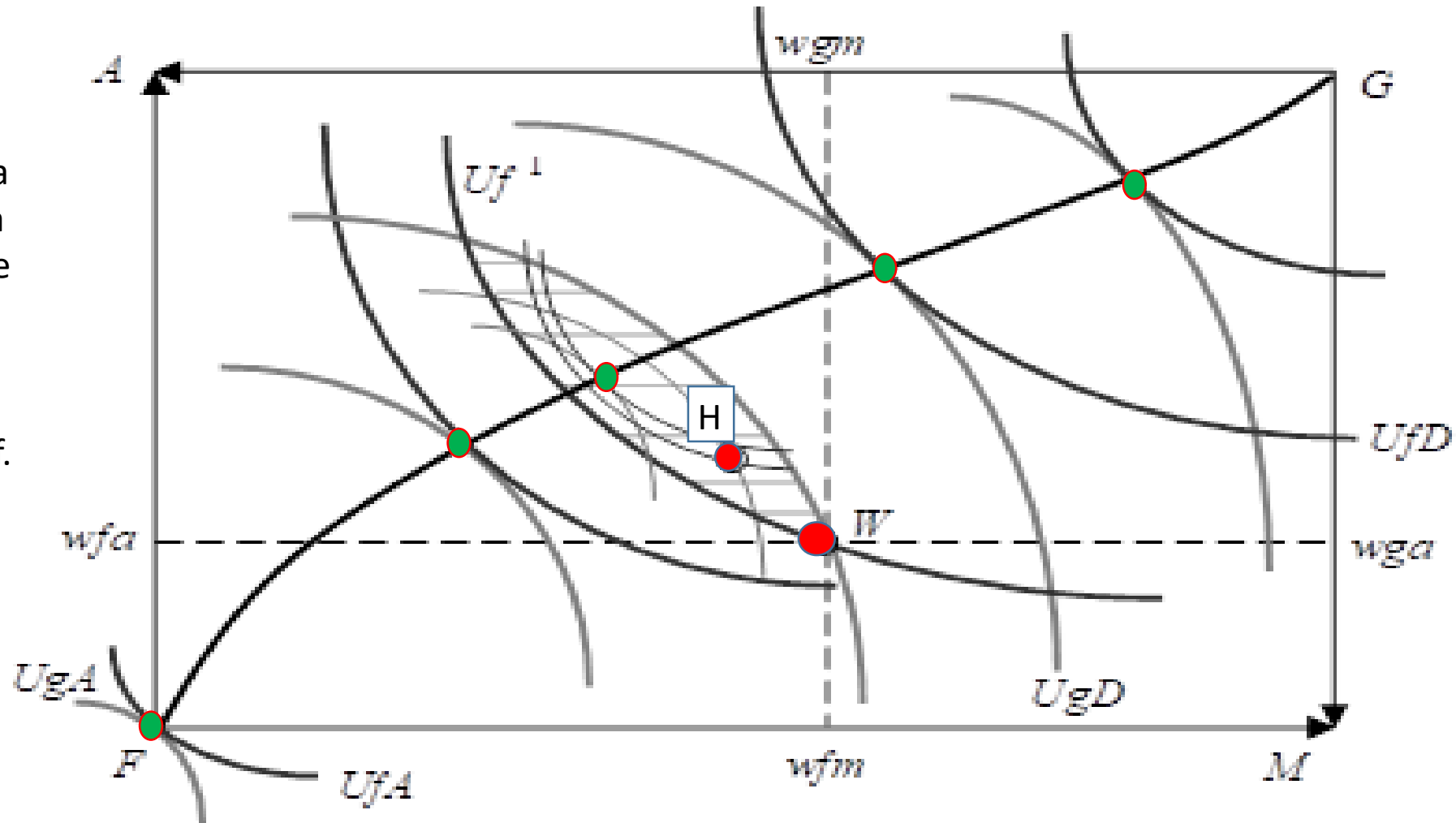




# Efficiency and Pareto-optimum

We will call  
**Pareto improvement** a  
movement to a  
situation where  
at least one  
person is  
better-off and  
none worse-off.

So **Pareto-  
efficiency** is ...





# Pareto efficiency

A **Pareto-efficient** consumption allocation answers (partially) our need to find a criterion to judge as to whether a social (2-people) situation is to be preferred to another one.

A consumption allocation (and, more generally, a situation) is **Pareto-efficient** if:

- given the utility reached by one individual, the other one maximizes her utility, or
- it is not possible to make mutually advantageous exchanges, i.e. so called **Pareto improvements**.

A point that is **Pareto-inefficient** has a point **Pareto-superior** to it, i.e. it is a point from which you can move away with a Pareto improvement.

The set of all Pareto-efficient points in the Edgeworth box is named the “**contract curve**”



# Efficiency and Pareto optima: the contract curve

From W to G?

A Pareto improvement.

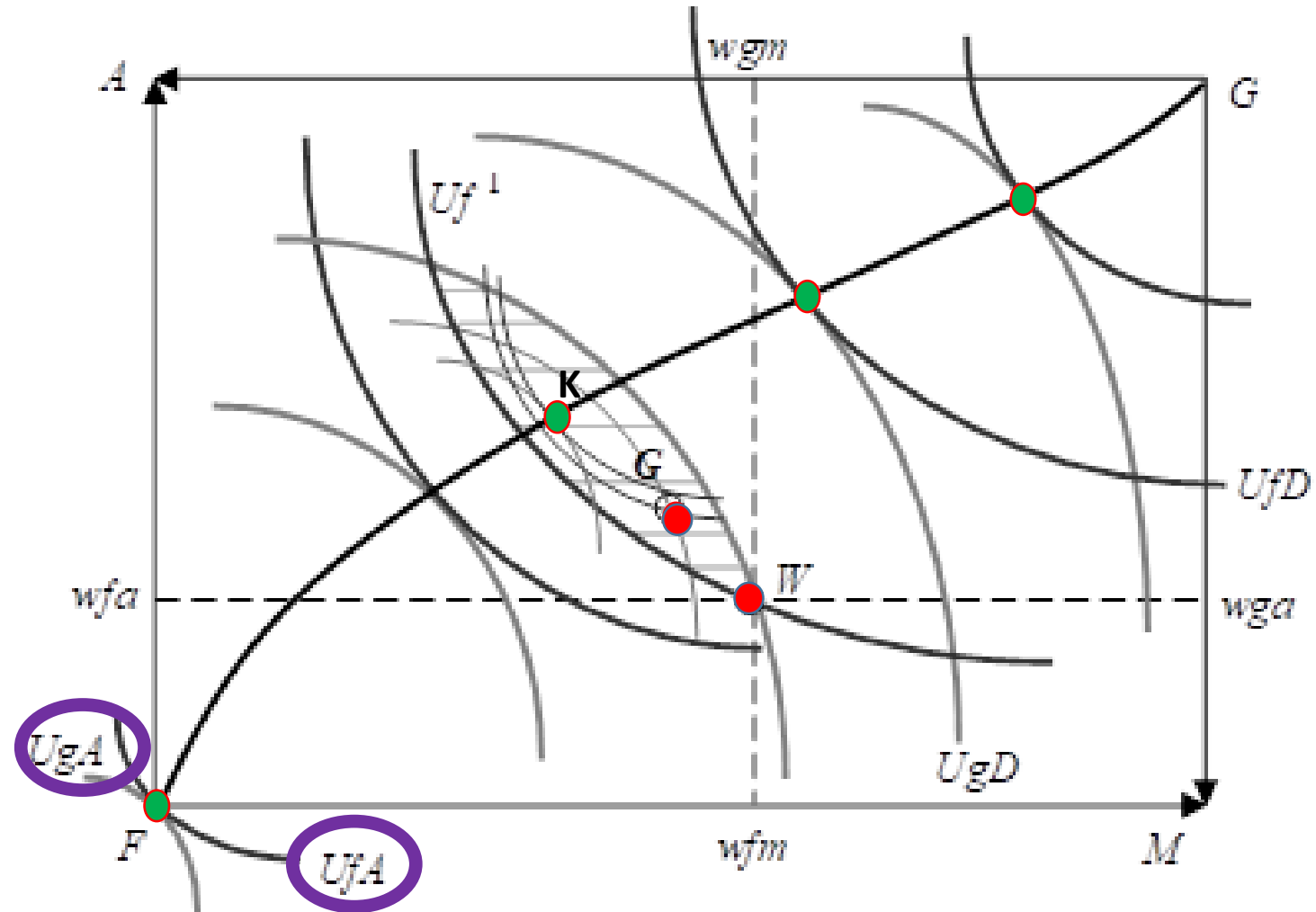
W is ...

Pareto-inefficient.

like...

G, since ...  
from G to K we  
have a Pareto  
improvement.

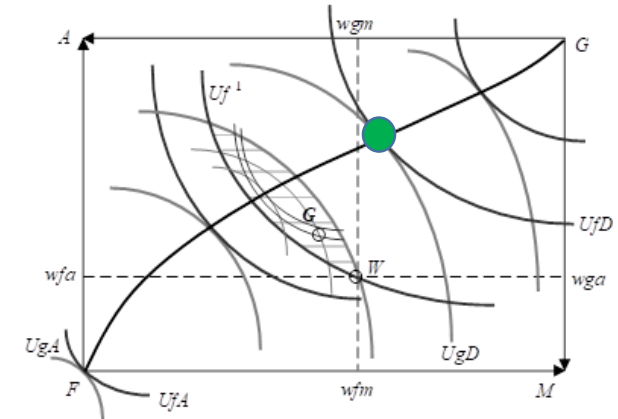
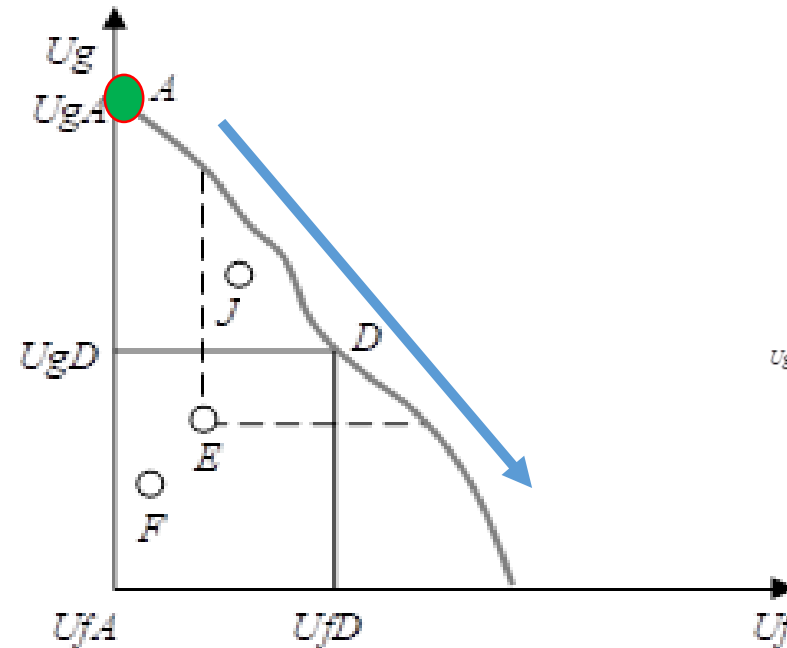
K is ...  
Pareto-efficient,  
like ...  
F!



# Utility–possibility set and frontier

From E to D?  
A Pareto improvement.  
D is Pareto superior to ...  
E.  
From F to E?  
Idem. E is Pareto superior to F.  
A movement from E to A?  
Not a Pareto-improvement even if A is Pareto-efficient.  
Is A Pareto-superior to E?  
No.

*The frontier that separates feasible utilities from non-realizable ones is called the utility–possibility frontier. On it we read, given a certain amount of goods available overall in the economy, the utilities related to Pareto-efficient points.*

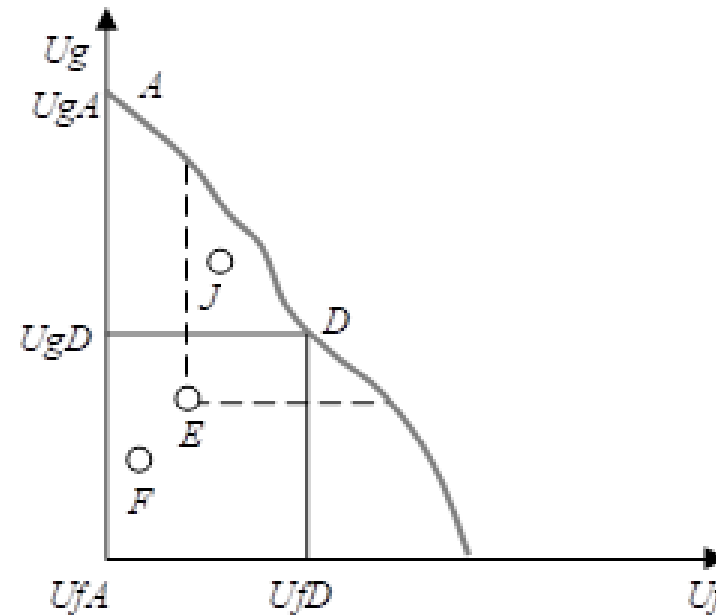


If a point is not Pareto-efficient it does not mean that it is Pareto-inferior to all Pareto-efficient points. It simply means that there will be at least one allocation Pareto-superior to it. For example, all achievable allocations lying **north-east of E** constitute Pareto-superior allocations to E: note that A is not part of these allocations (A is not Pareto-superior to E), while there are inefficient allocations (in the sense of Pareto), such as J, that Pareto dominate E.



# The problem of the Pareto criterion

It tells us nothing regarding those changes which do not represent a Pareto improvement, such as moving for example from A to E or from J to D or, more importantly, from A to D.



Pareto criterion? Excellent, but of limited use! Why, Pareto?

Now examine changes in the allocations in society, such that these dissatisfy some and make other individuals happier: **not** an improvement in the sense of Pareto. How to choose?

Ask those who are made **worse off** after the change "what amount of money would they need to feel as well off as they were before the change in the social situation" and those who are made **better off** by the change "what amount of money would they be willing to give up in order to remain in the new social situation ".

After that, Marshall said, add up losses needed to recuperate (- sign) and gains willing to be given up (+ sign) and call the total balance the **net sum**, which will be positive (negative) if the sum that those who are better off are willing to pay to remain in the new situation is higher (lower) than that those who are worse overall require to accept the new situation.



# Marshallian improvement

We will call an **improvement in the Marshall sense**, a shift from one situation to another in which this net sum is **positive**, i.e. where **potentially** those who are better off can give part of their income to those who are worse off so as to make them at least indifferent and still benefit from the new situation.

Note that the Marshallian criterion does not require that such transfers be made: only that there is room to carry them out for the benefit of all. **Marshall-efficient** is a situation from which one cannot move away from with a Marshallian improvement.

**Example:** based on consumer and producer surpluses. A certain social change will be called a **Marshallian improvement** if the change of surplus into positive for the entrepreneur or the consumer exceeds the change of surplus into negative for the other actor.

**Example:** Fast-food city center of Rome?

## Criticisms to Marshall

When we compare monetary values taking into account the income we have to give up, we do not take into account that the “utility” of this income can be very different from person to person.

If, according to Marshall, we move to a social situation in which a rich man is willing to pay a maximum of 100 euro to get it and a poor man requires 90 euro to accept it and not be worse, we are almost all sure that those 100 euro are worth a lot less , in terms of happiness, for the rich compared to what 90 euro are worth, in terms of utility, for the poor.

It is therefore probable that in terms of "global happiness" the world is much worse with this Marshallian improvement, unless we are exclusively interested in the well-being of the rich individual, a criterion which however clashes with evident principles of equity.

Marshall: true, but in many real cases, these extreme situations do not happen; often social proposals for changes in allocations concern large composite groups of individuals: tobacco producers and consumers, retailers in the historic center and inhabitants of the historic center, etc.



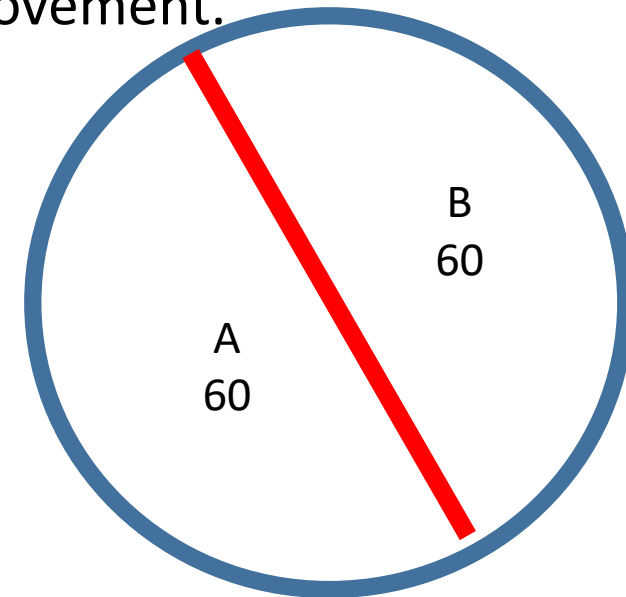
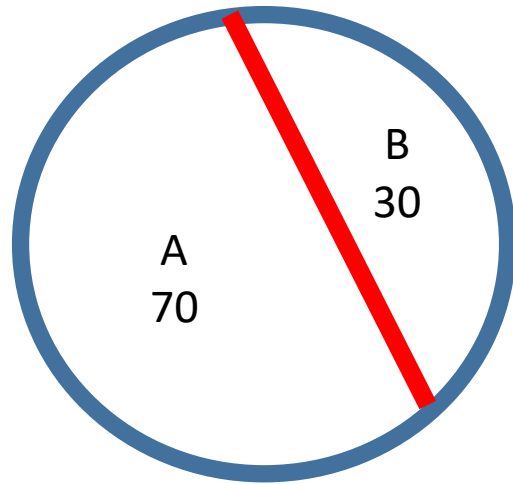
# Pareto vs Marshall

A Pareto-improvement is a Marshallian improvement?

It is a Marshallian-improvement.

A Marshallian-improvement?

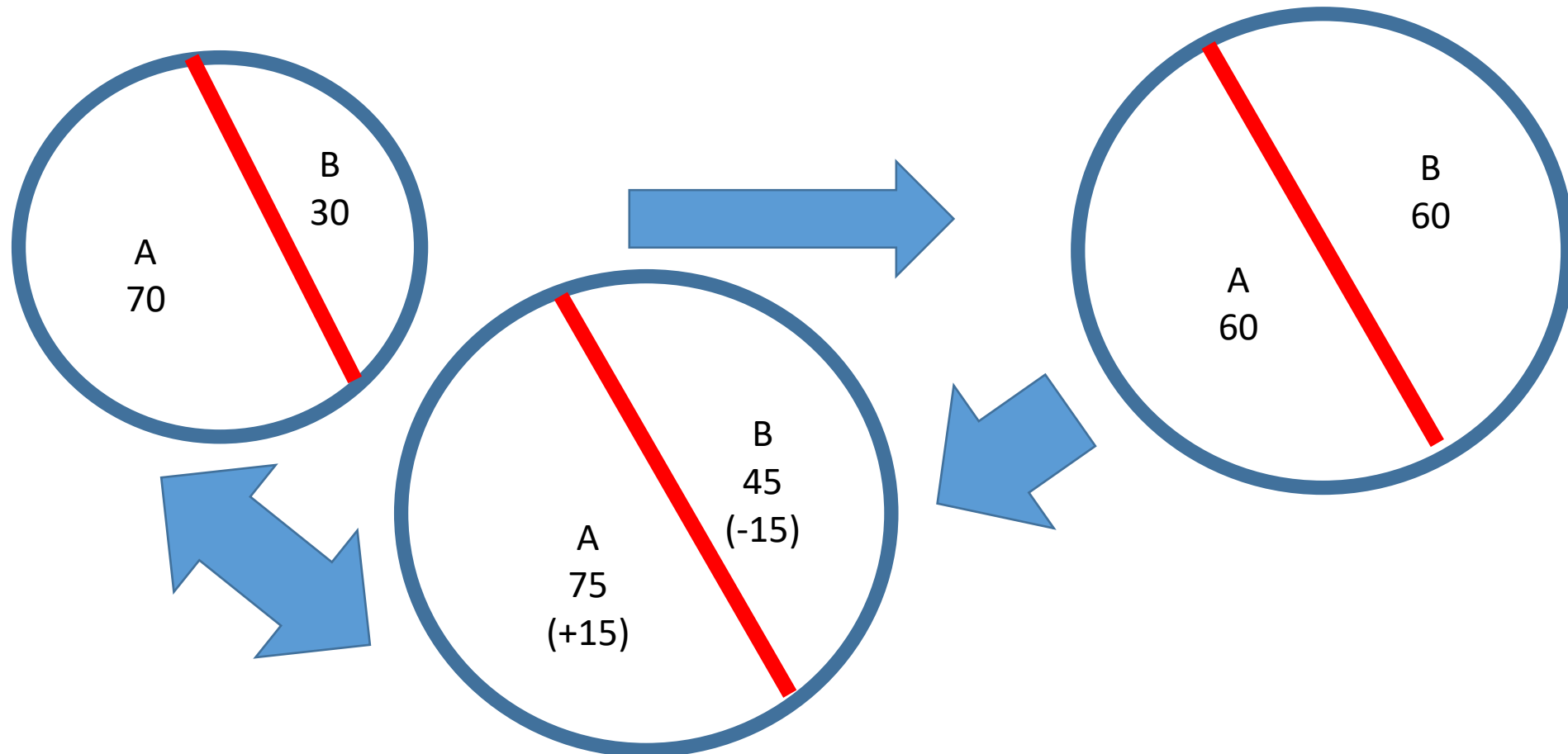
Non necessarily a Paretian-improvement.





# Pareto vs Marshall

**A Marshallian improvement combined with an appropriate transfer of resources: a Pareto-improvement!**



**Can one improve on perfect competition?**

$$(P^* = MC^i(Q_i^*) = MRS^j(Q_j^*) = \text{Min } AVC^i)?$$

- produce the same total quantity  $Q^*$  ( $Q^d = Q^s = Q^*$ ) but allocate it in a different way among consumers?
- produce the same total quantity  $Q^*$ , allocate it in the same way among consumers, but modifying the way of producing it?
- produce a different quantity from  $Q^*$ ?

# The efficiency of perfect competition

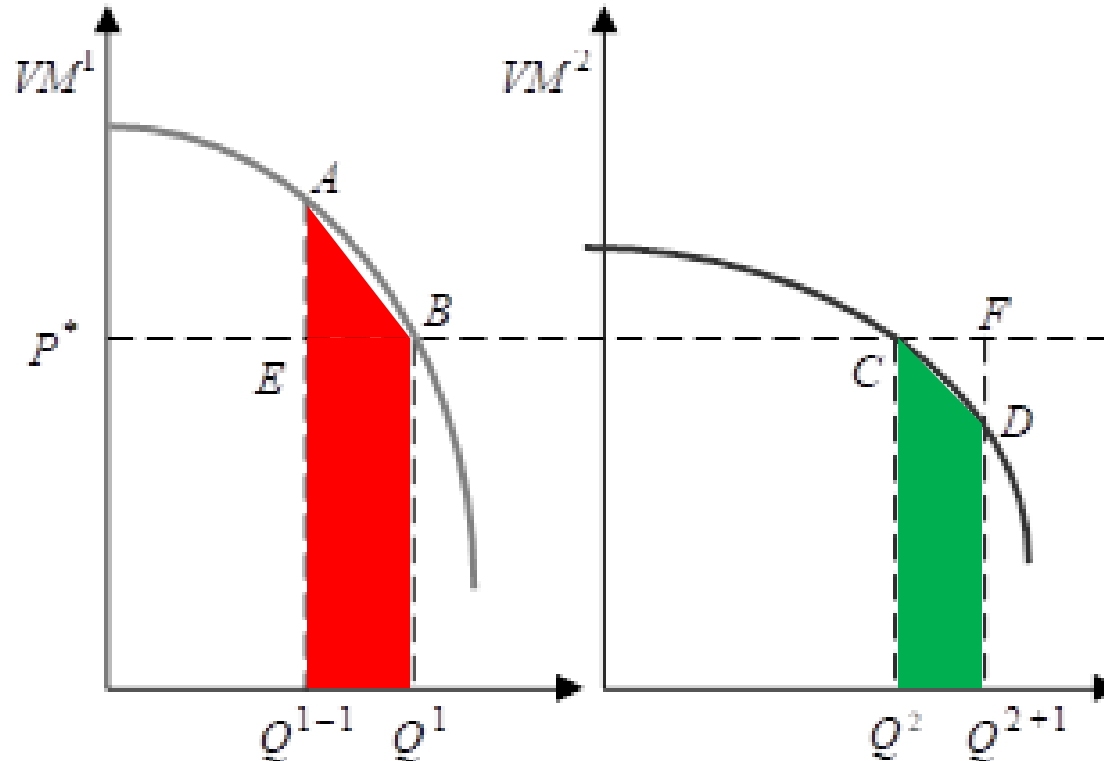
**Produce the same total quantity  $Q^*$  but allocate it in a different way among consumers 1 and 2?**

At the perfect competition equilibrium price  $P^*$ , total  $Q^*$  demanded is equal to  $Q_1 + Q_2$ .

Reduce by one unit the consumption of consumer 1 and give it to consumer 2.

Leaving (for the moment) 1 and 2 to continue paying  $P^*Q_1$  and  $P^*Q_2$ .

Pareto?



Marshall?

# The efficiency of perfect competition

**Produce the same total quantity  $Q^*$  but allocate it in a different way among consumers?**

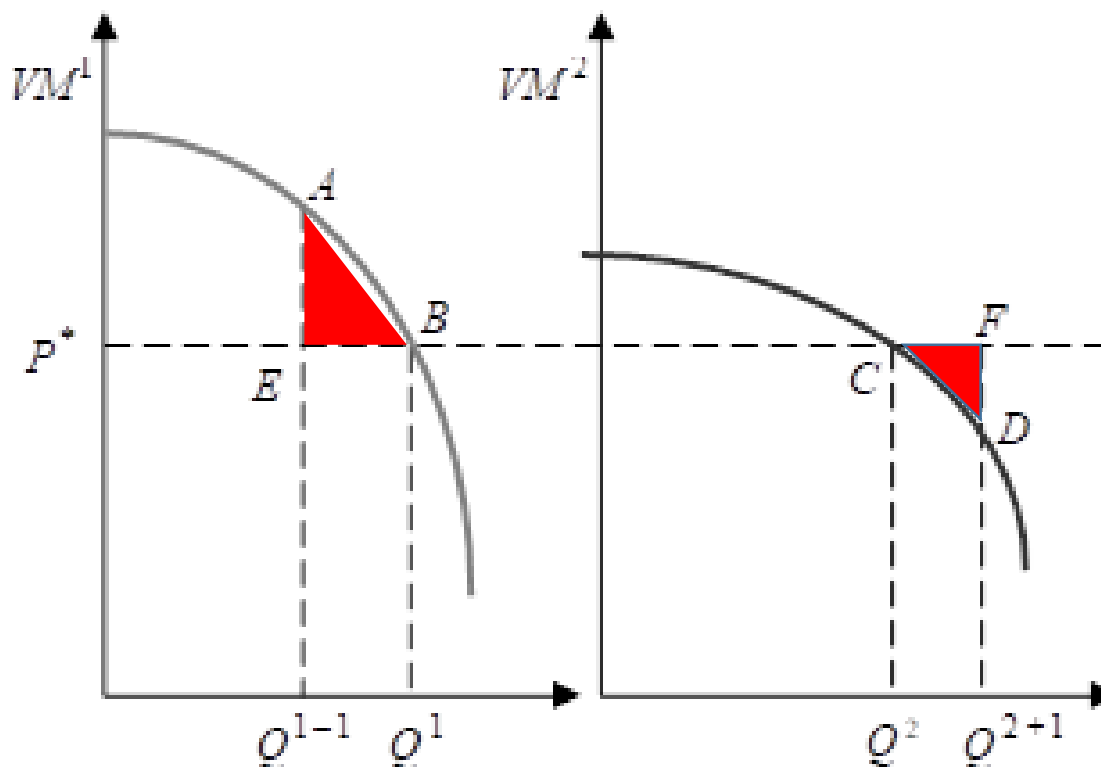
Same result would have ensued if we had reimbursed  $P^*$  to consumer 1 asking consumer 2 to pay  $P^*$  for that additional unit.

Marshall?

$AEB + CED = ? < 0$

Equal to....

$(CQ^2Q^{2+1}D) - (AQ^{1-1}Q^1B)$



# The efficiency of perfect competition

**Produce the same total quantity  $Q^*$ , allocate in the same way among consumers, but modifying the way to produce it?**

There are two ways to improve the production of a given level of output: **produce it at a lower cost** or change the **division of production** between the different companies in the industry.

If only a firm in perfect competition were to produce its share of the total quantity  $Q^*$  not at the minimum cost, a central planner could have increased the firm's surplus without decreasing the consumer surplus, obtaining a Marshallian improvement.

BUT: the assumption that companies maximize profit implies that each company is economically efficient, i.e. that it minimizes the cost of producing any quantity. If this were not the case, the company would not maximize the profits deriving from producing any quantity.



# The efficiency of perfect competition

**Produce the same total quantity  $Q^*$ , allocate in the same way among consumers, but modifying the way to produce it?**

Change the division of production between the different companies in the perfectly competitive industry?

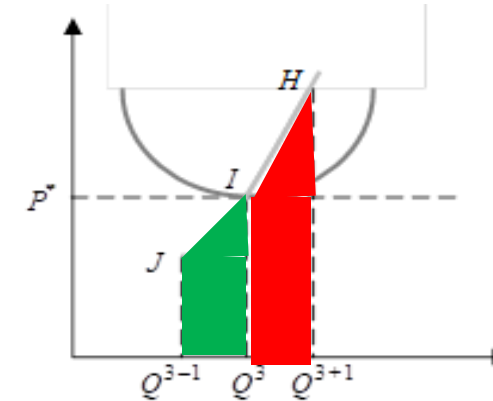
Let's try to close a company and ask each one of the others remaining to produce a share of that production (of the company that closed its doors) so as to always produce the same quantity  $Q^*$  at the industry level. Or we let a new company enter and existing companies reduce their production by just enough to keep production constant at  $Q^*$ .

But every company already produces at minimum average costs: any production change, either more or less, requires that each company no longer produces at minimum average costs. The overall cost of producing a certain quantity cannot therefore be reduced by changing the way it is produced.

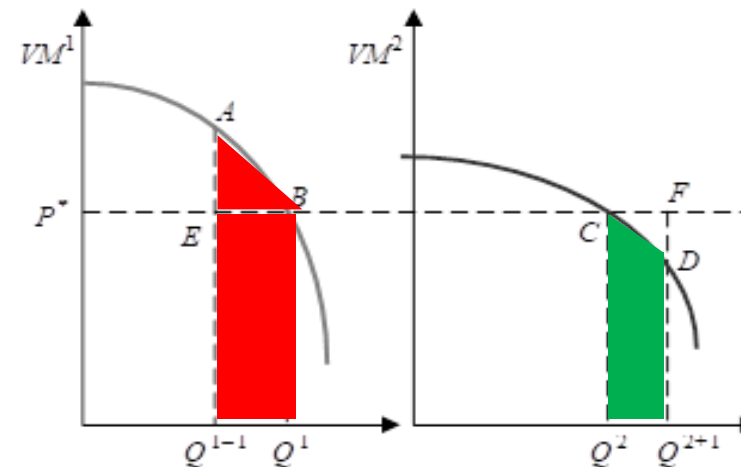
# The efficiency of perfect competition

## Produce a quantity different from $Q^*$ ?

One more unit? Assign *for free* an additional unit produced by a firm to consumer 2 (Pareto?). Passing from  $Q^3$  to  $Q^{3+1}$ :  
greater cost for the firm.  
Consumer 2 gains.  
Less than the firm loses.



One less unit? Reduce by one unit the sales to consumer 1, without reducing the revenues of the firm (Pareto?).  
 $Q^3$  a  $Q^{3-1}$ :  
lower cost.  
Consumer 1 loses.  
More than what the firm gains.



We cannot get any Marshallian improvement producing a different quantity from the perfectly competitive equilibrium one.



# The efficiency of perfect competition

## Producing a different quantity from $Q^*$ ?

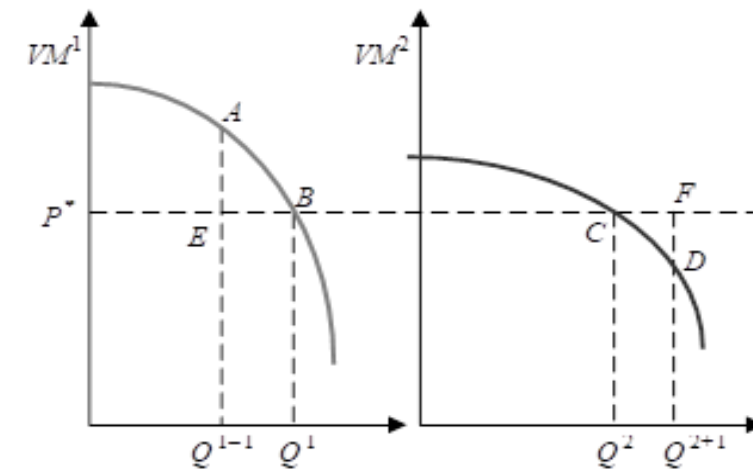
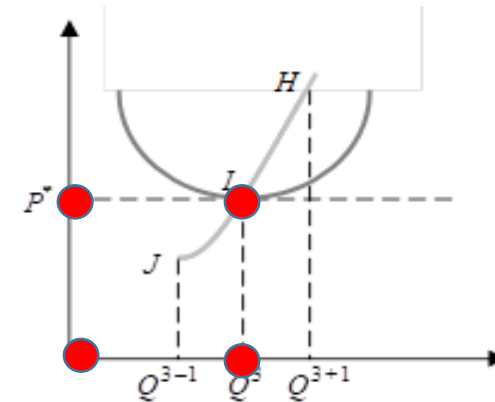
Let us assume to have a new firm that produces  $Q_3$  additional units at the total minimum average cost  $ATC(Q_3) = P^*$  (production thus rising from  $n \times Q_3$  to  $(n + 1) \times Q_3$  where  $n$  is the number of initial firms).

The additional cost of this production is equal to  $P^*Q_3$ , i.e. also the minimum amount of euro that this new firm must obtain to expand production (obtaining 0 extra-profits).

However consumers will value this additional production at a value less than  $P^*Q_3$  (why?) and will therefore be willing to give up less than  $P^*Q_3$  to consume it.

Again, no Marshallian improvement leaving perfect competition!

**Perfect Competition is MARSHALL EFFICIENT!**



## Can one improve on monopoly?

- produce the same total quantity  $Q_M^*$  but allocate it in a different way among consumers?
- produce the same total quantity  $Q_M^*$ , allocate it in the same way among consumers, but modify the way to produce it?
- produce a different quantity from  $Q_M^*$ ?

## Can one improve on monopoly?

- produce the same total quantity  $Q_M^*$  but allocate it in a different way among consumers?
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- produce a different quantity from  $Q_M^*$ ?

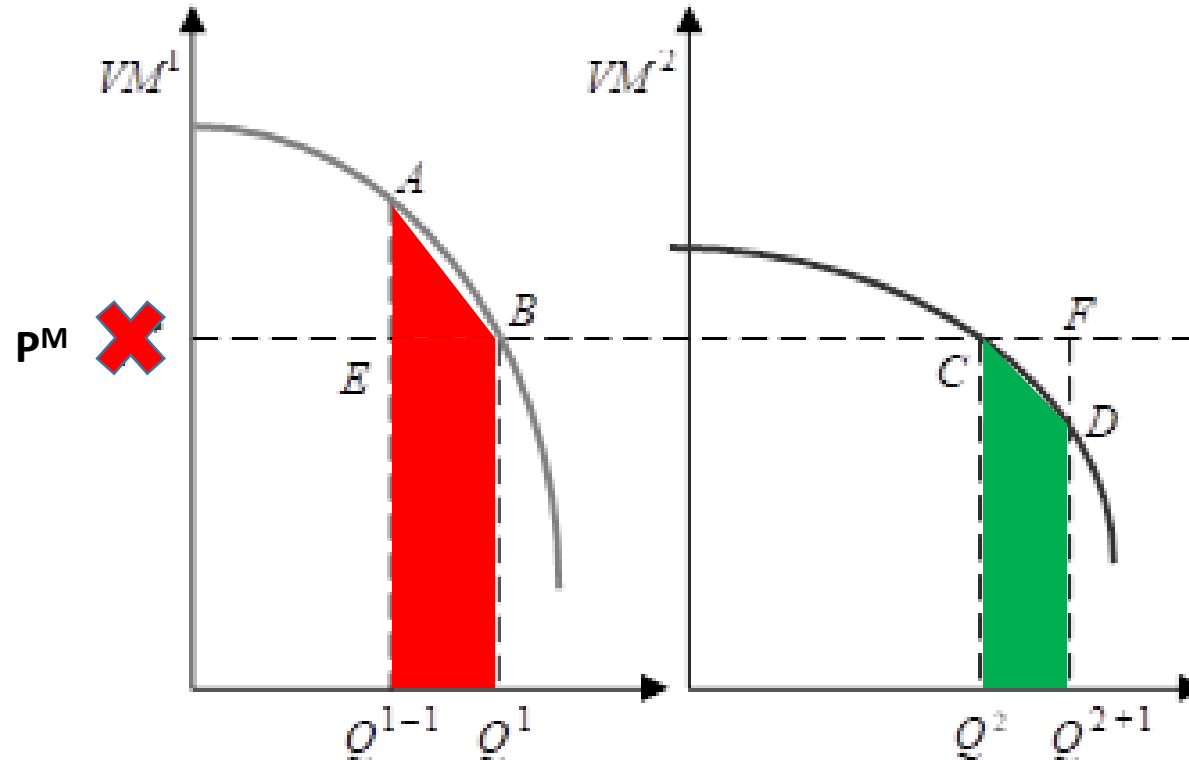
# The efficiency of monopoly

**Produce the same total quantity  $Q^M = Q_1 + Q_2$  but allocate it in a different way among consumers?**

Reduce by one unit the consumption of consumer 1 and give it to consumer 2.  
Leaving 1 and 2 to continue paying the same.

$mP \cdot Q_1$  and  $mP \cdot Q_2$ .

Pareto?



Marshall?

# The efficiency of monopoly

**Produce the same total quantity  $Q^M$ , allocate it in the same way among consumers, but modifying the way to produce it?**

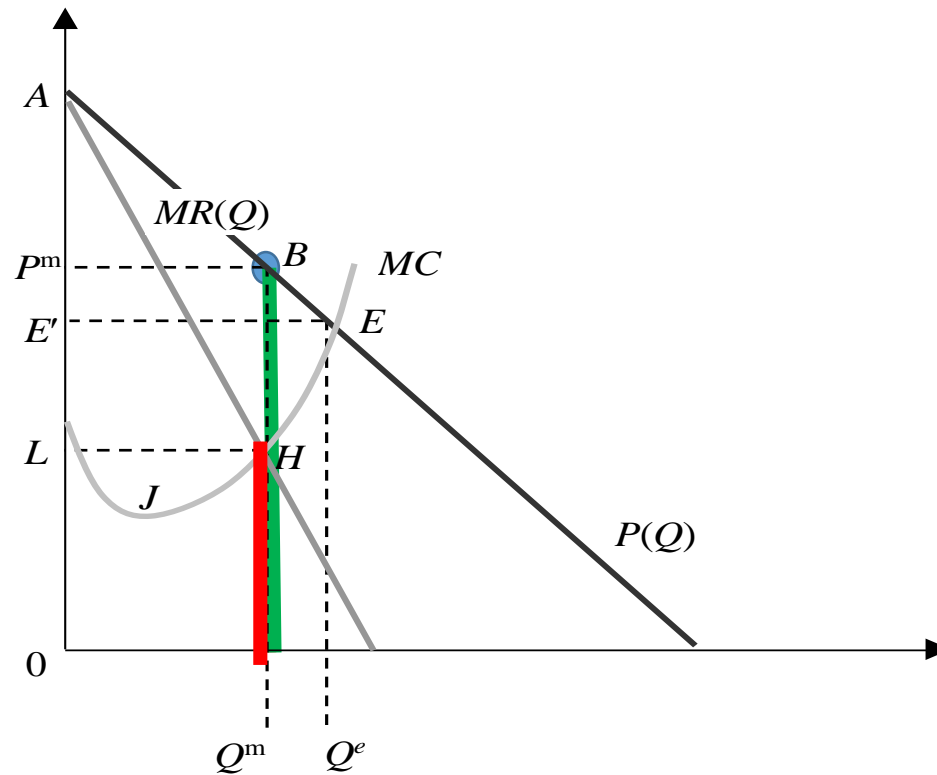
There are ~~two~~ ways to improve the production of a given level of output: **produce it at a lower cost** ~~or change the division of production between the different companies in the industry.~~

The assumption that the monopolist maximizes profit implies that it is economically efficient, i.e. that it minimizes the cost of producing any quantity. If this were not the case, the company would not maximize the profits deriving from producing any quantity.



# The efficiency of monopoly

Produce a different quantity?  $Q^m+1$ ?



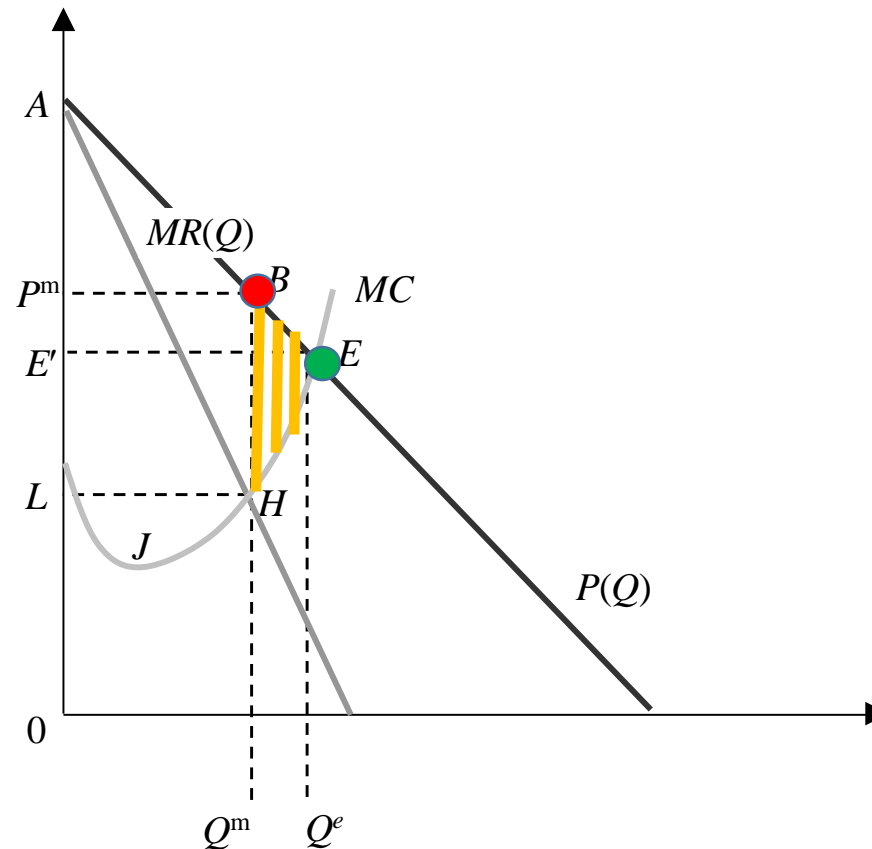


# The inefficiency of monopoly

Produce a different quantity?  $Q^e$  ?

The BHE area measures this net loss of potential well-being that could have been achieved, and represents a measure in euro of the loss that society must bear, due to the fact that the monopolist produces  $Q^m$  rather than  $Q^e$ . It is defined as the **net loss of monopoly**.

Note that  $Q^e$  could have been chosen by the monopolist!





# From Monopoly to Perfect Competition ( $MC=p$ )

Firm:

-C

+A

<0

Consumer:

+C

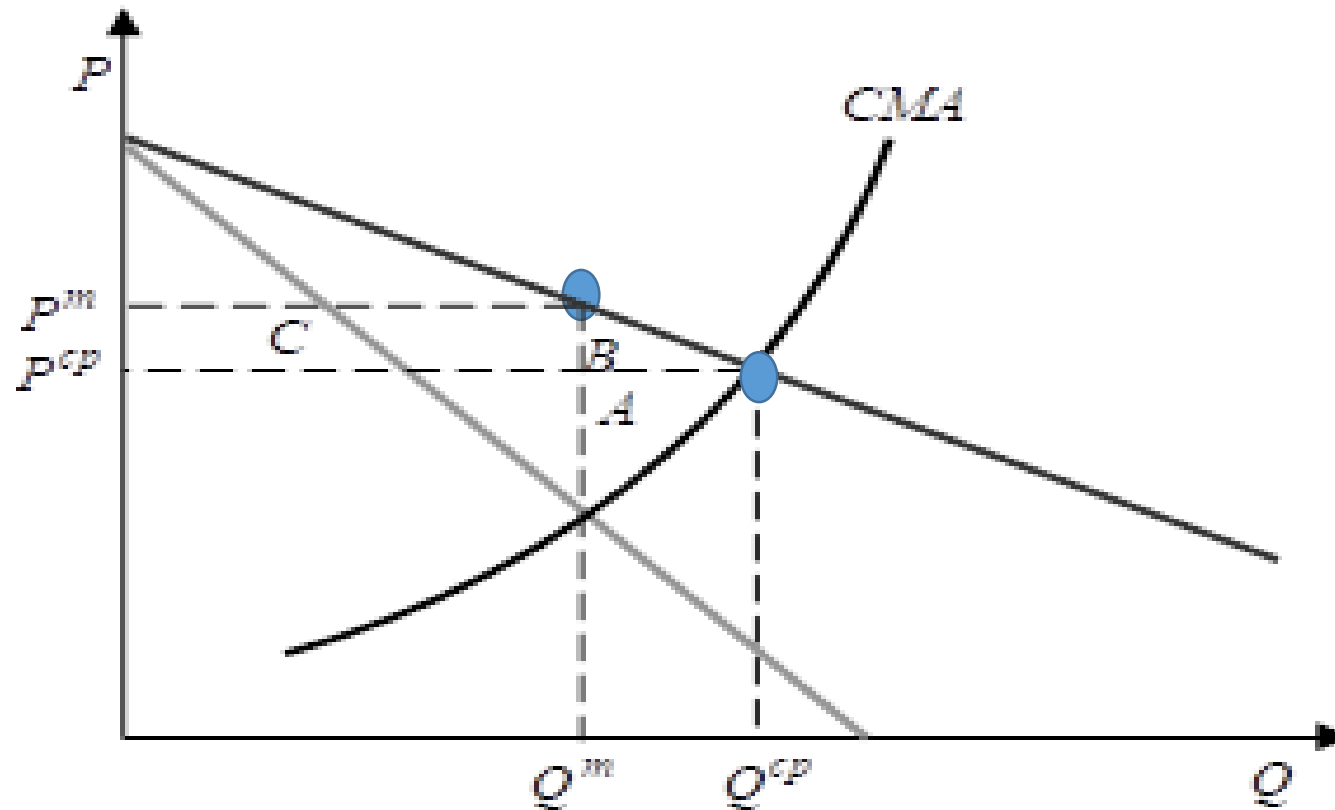
+B

>0

Pareto?

Society:

+A+B!

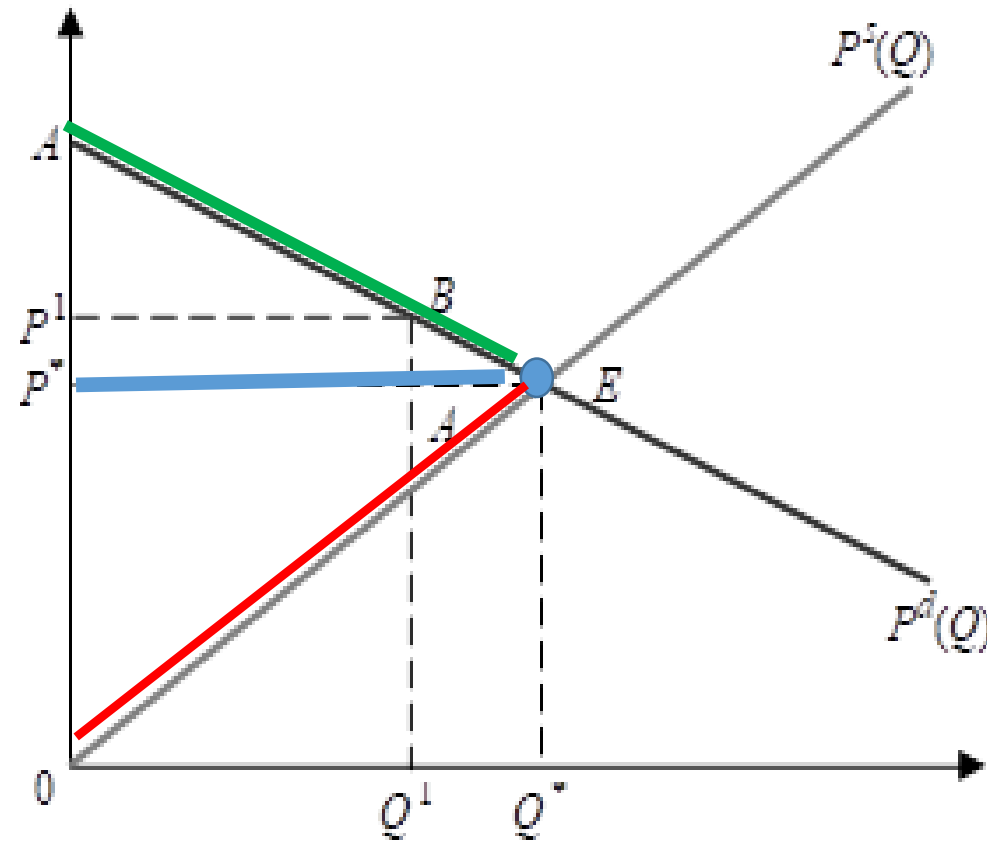


In competition, the last unit produced costs what "is worth" for consumers.

The monopolist, on the other hand, takes into account the fact that the increase in the quantity produced generates a price decrease that affects all the infra-marginal units: he would be willing to sell 1 more unit at a lower price if and only if he did not also have to sell the other units at a lower price. The monopoly price is therefore too high not because the monopolist "cannot maximize profits" but because he knows too well how to do it.

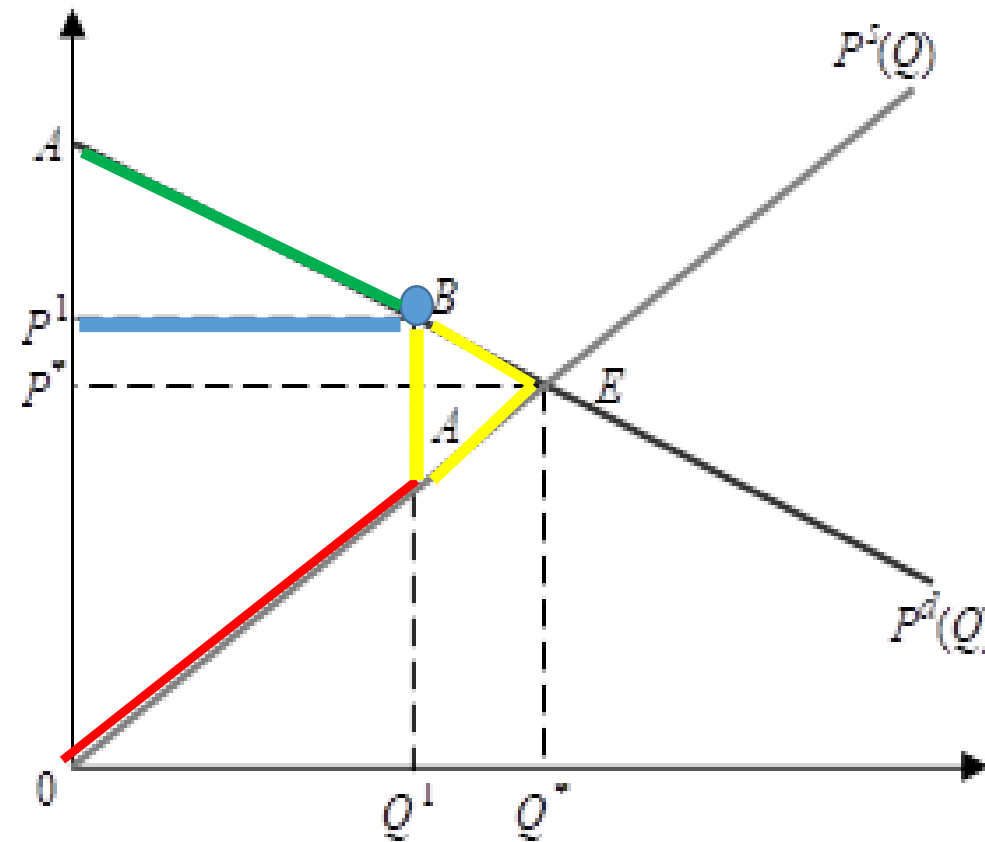
# The socially optimum price: PC

Perfect competition



# The socially optimum price: not PC?

The absence of  
perfect competition

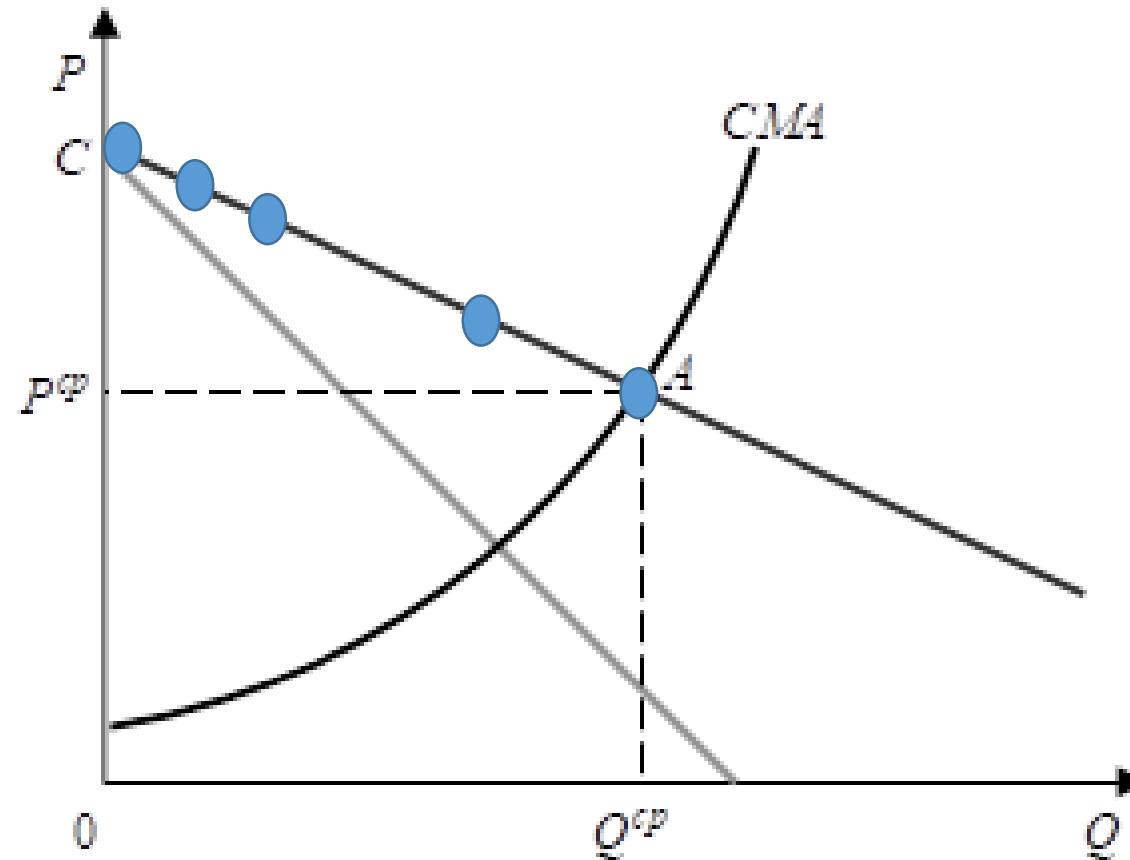




# The perfectly discriminating monopolist

The psychologist  
monopolist.

Her surplus?



$P=MC$  for the last unit

Marshall?

# The monopoly, lobbying, studying

The surplus generated by a uniform-price monopolist, and even more so the greater surplus generated by a discriminating monopoly, are extremely attractive.

How many resources would you be willing to spend to get the right to become one? How much lobbying for the license? How much will you study to win the competition for it?

If there is competition between lobbyists or between potential psychologists, we will end up exhausting all the extra profit present in the monopoly sector!

But with different implications.

Lobbying: no benefit for consumers who get the same product with or without lobbying.

There is therefore a waste of resources, represented by the free time of the lobbyists, which could be made available to the community in producing new products or works of charity.

Waste of resources is additional to the net monopoly loss.

On the other hand, the problem is less serious in the case of those goods in which competition to obtain a monopoly leads to an improvement in the characteristics of the product of the monopoly. For example, in the case of the psychologist, his study to win the license entails accumulation of knowledge that can lead to better consumer service and therefore greater consumer surplus for consumers.

“There are other reasons for the increase in market power. Digital platforms glean and process information that gives them a competitive advantage over other firms, and the larger platforms may be able to glean more information than smaller platforms. Profits can be generated not by being more productive or selling more relevant products but by being better able to exploit consumers through sophisticated means of price discrimination. For instance, platforms figure out which consumers will pay more and charge them a higher price for the same product.

*This undermines the principle underlying the efficiency of the market economy, where all individuals and firms face the same price...*

**The high price leads to a transfer of income from ordinary people to the monopolist, creating more inequality”**



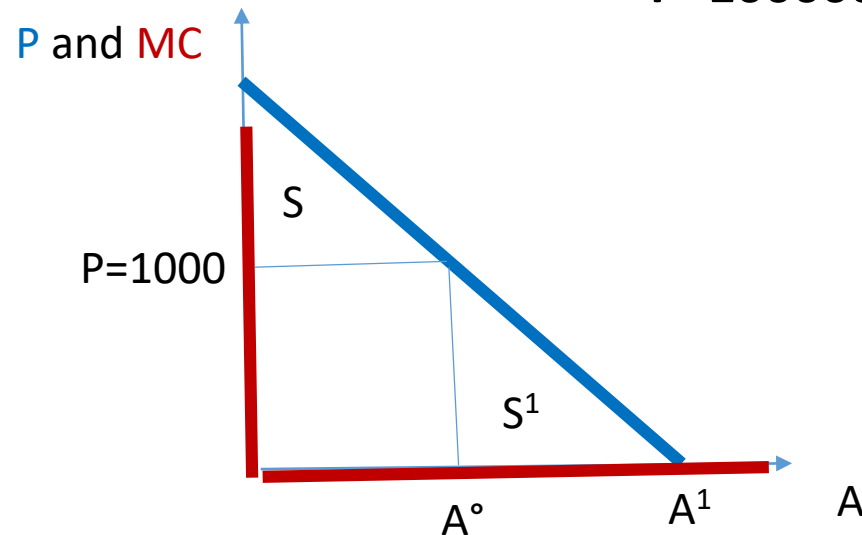
The transition to monopoly does not always constitute a loss for the community in the Marshall sense, even if it maintains a price higher than the marginal cost.

Consider conferring a 20-year patent on an inventor for the invention of a machine capable of detecting, in airports, the presence of imperceptible bombs that machines currently in use don't.

Each airport using this equipment will have to pay (price) 1,000,000 euro to the inventor. Smaller airports thus will not demand it. But how much does it cost this inventor, once the machine is invented, to sell one more unit?

The marginal cost for the inventor once invented is 0! And therefore we have the usual monopoly result:

$$P=1000000 > MC=0$$







Socially optimal would thus be to price at 0 ( $p=MC$ ) and then all airports, even the small ones, would demand the machine. That implies giving out for free the results of the invention.

But the end result for society cannot be compared to that of the uniform price monopoly, despite the similarities. What if the price was set at zero? Inventor, what would you be doing?

Not invent! Sometimes moving from nothing to a monopoly constitutes a Marshallian (and sometimes Pareto) improvement for society.

But again....



«Does or should owing a patent on a critical drug give me the right to charge as much as I want? The US and Europe differ in their answers. In the US, if my monopoly power is legitimately acquired, I can charge whatever price I want. In Europe, abuses of monopoly power are not allowed... It's not because America generates better outcomes. It's because the powerful, and in particular the powerful drug companies, hold greater sway in setting the rules. Looking at matters through the eyes of someone accustomed to European norms, the huge excess profits of American drug companies using their monopoly power have **no moral legitimacy**. Society has every right to take back those excess profits. This is not hypothetical. American drug companies charge some ten times more for insulin than those in Europe do because of the exercise of this monopoly power, part of the US property rights system.»