Monopoly pricing

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

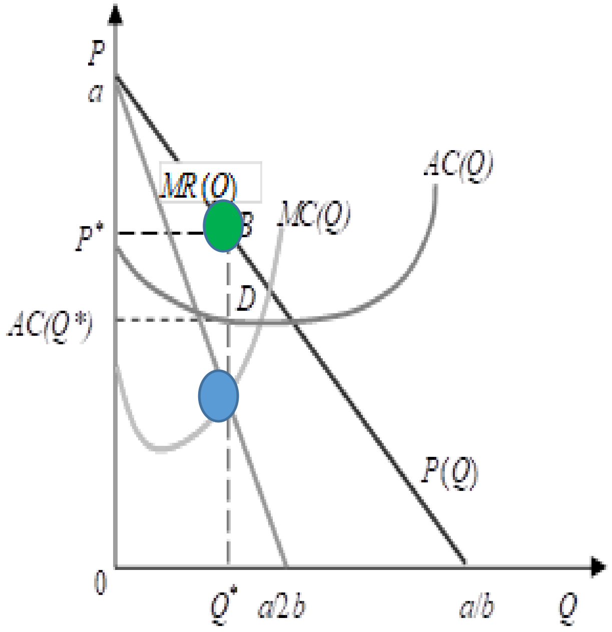
$$P = a - b\,Q$$

thereby

$$TR(Q) = (a - bQ)\ x\ Q = a\,Q - bQ^2$$

$$MR(Q) = a - 2b\,Q$$

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



PS:
No
supply
curve!

P^M > MC
P^{CP} = MC

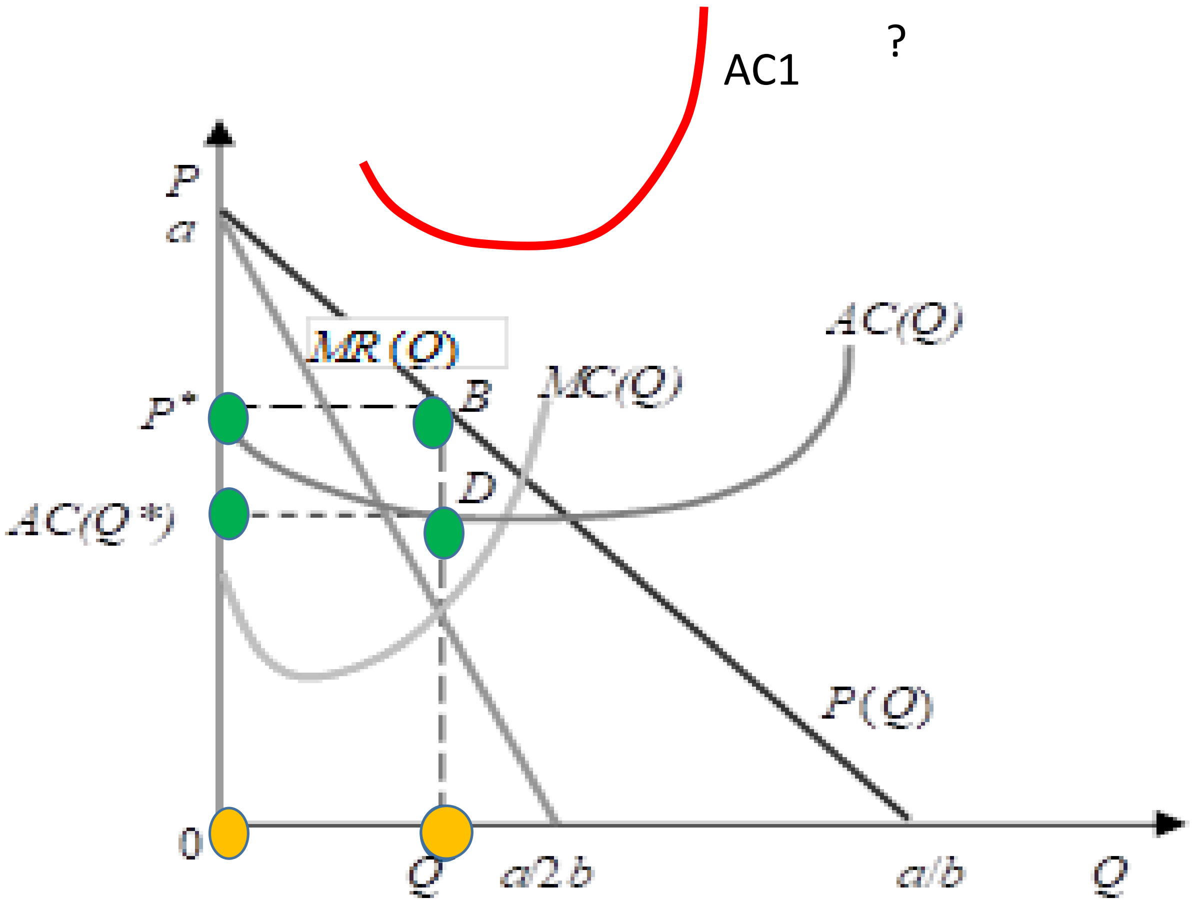
☺?

$Q^M < Q^{CP}$

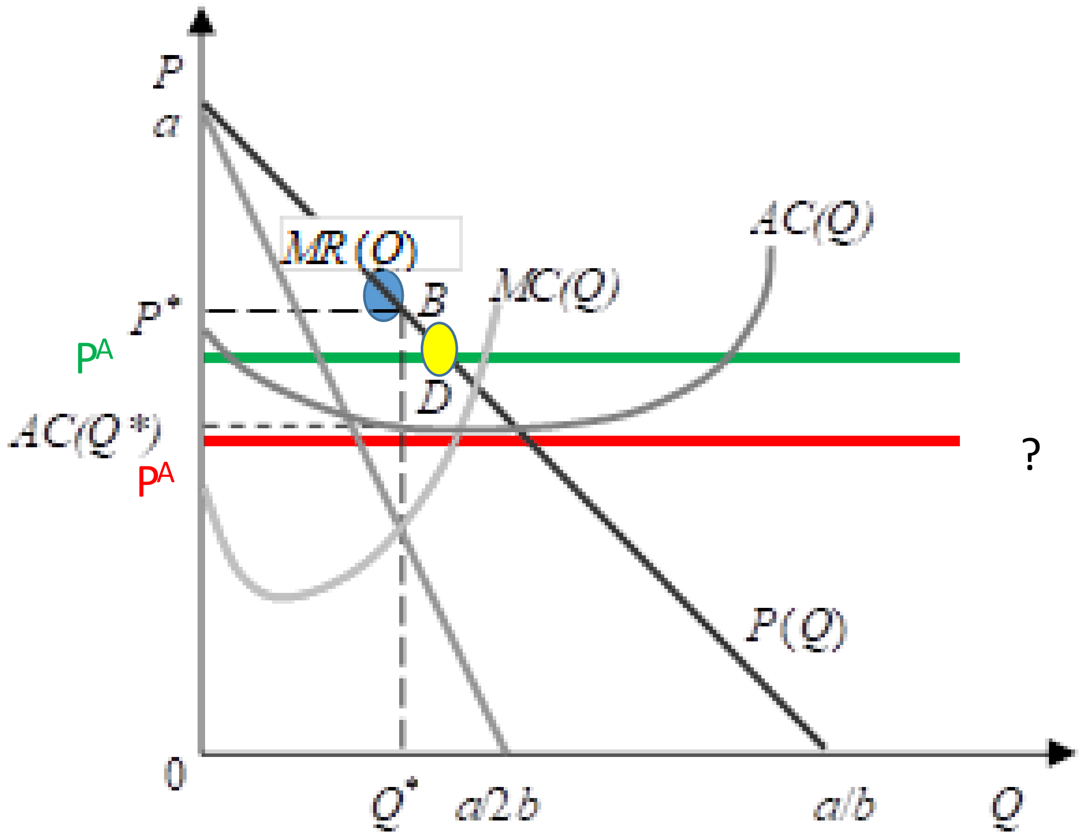
$P^M > P^{CP}$

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

Monopoly profits



Masks and monopoly



Efficiency

"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.

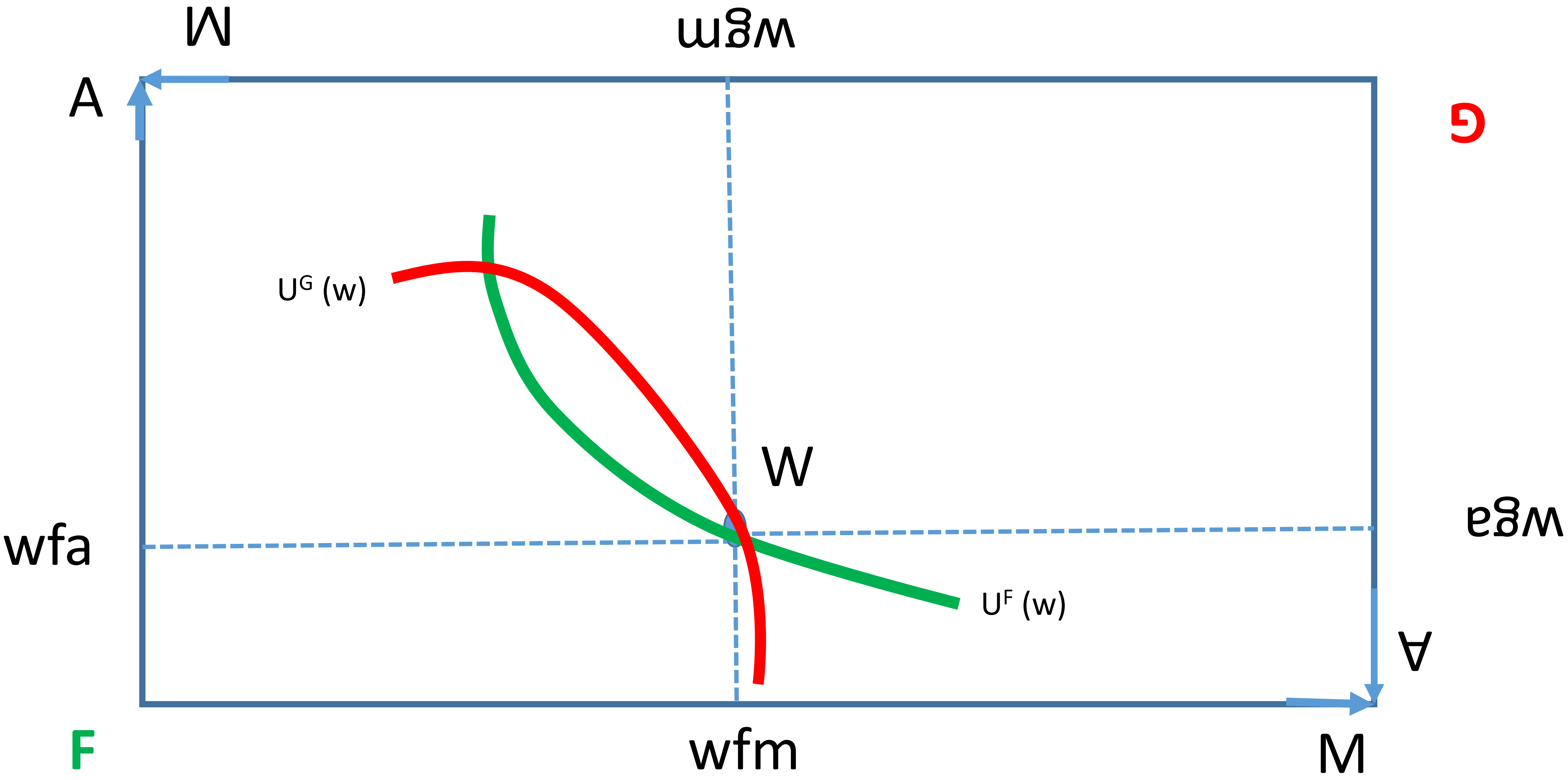
We will call Xf = (xfm; xfa) any **consumption basket** of Federica made of mangos (xfm) and apples (xfa) and we will call Xg = (xgm; xga) any consumption basket of George also made of mangos (xgm) and apples (xga).

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 Wf = (wfm; wfa) for Federica and Wg = (wgm; wga) for George.

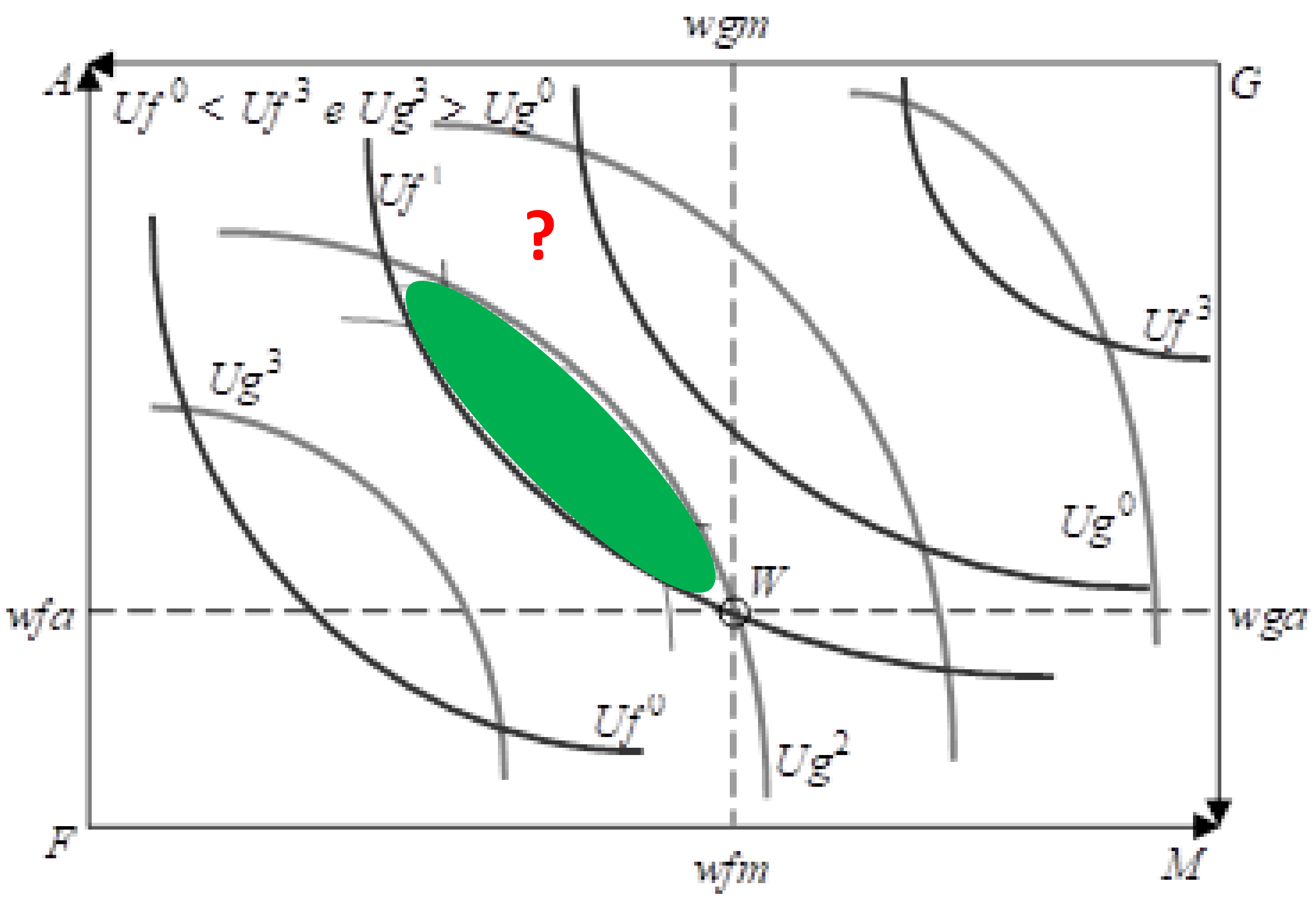
An **allocation** of goods, made of any couple of baskets (one for Federica and one for George), is said to be **feasible** when the total quantity consumed of a good by G and F is **lower or equal** to the total amount available for that good. Among the feasible allocations we will study (why?) only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

$$xgm + xfm = wgm + wfm$$
$$xga + xfa = wga + wfa$$

The Edgeworth Box

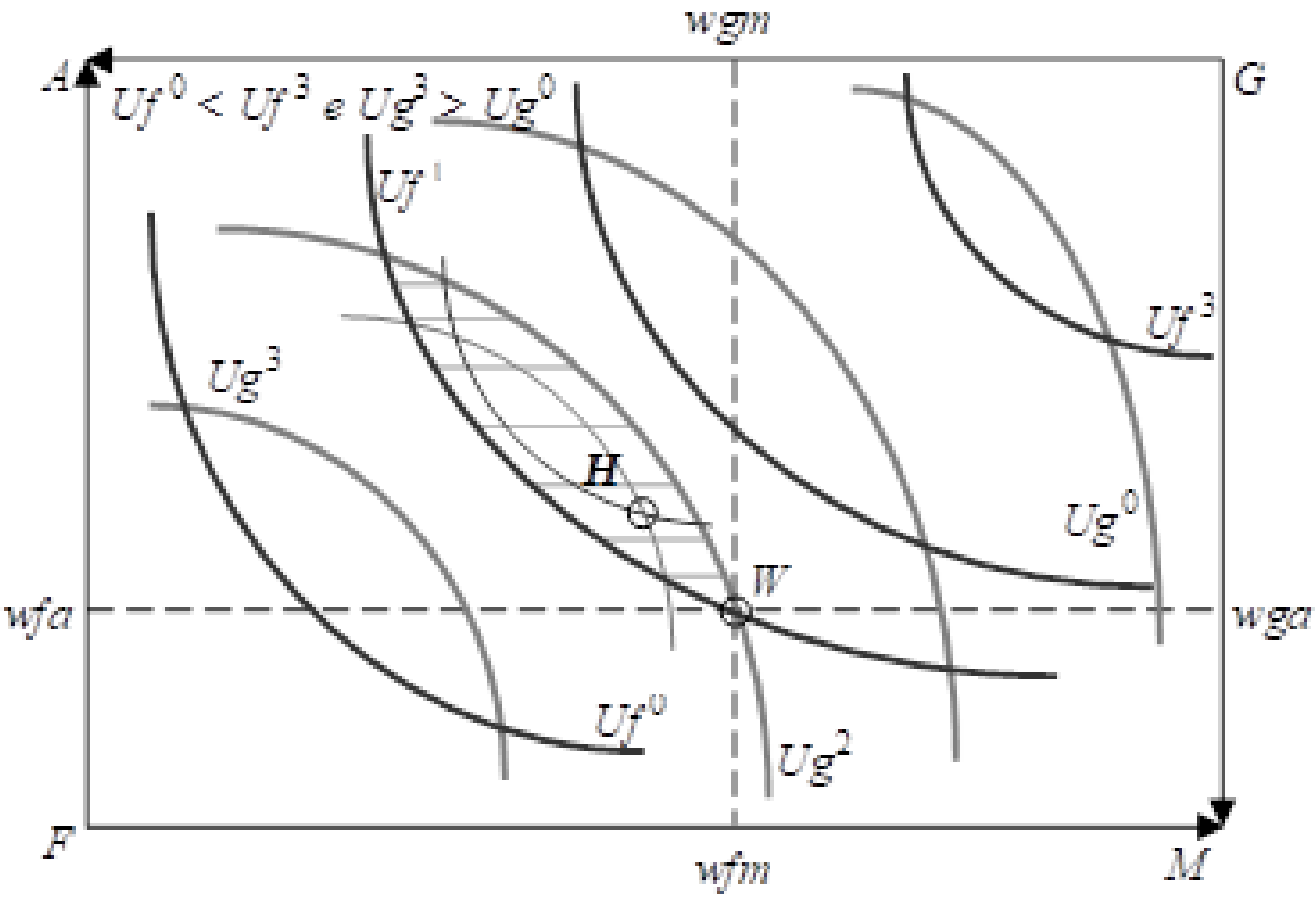


Voluntary Exchange

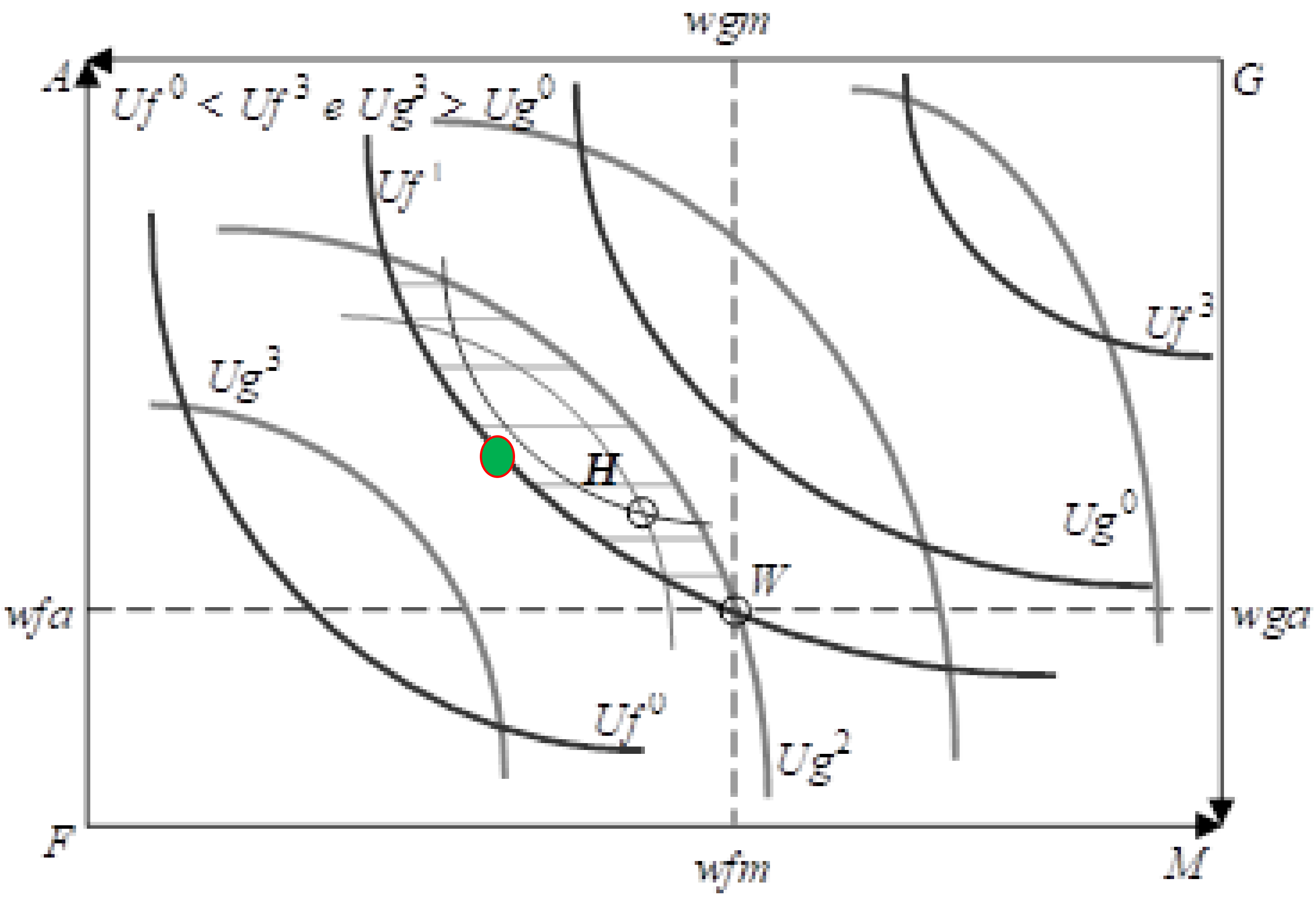


An improvement

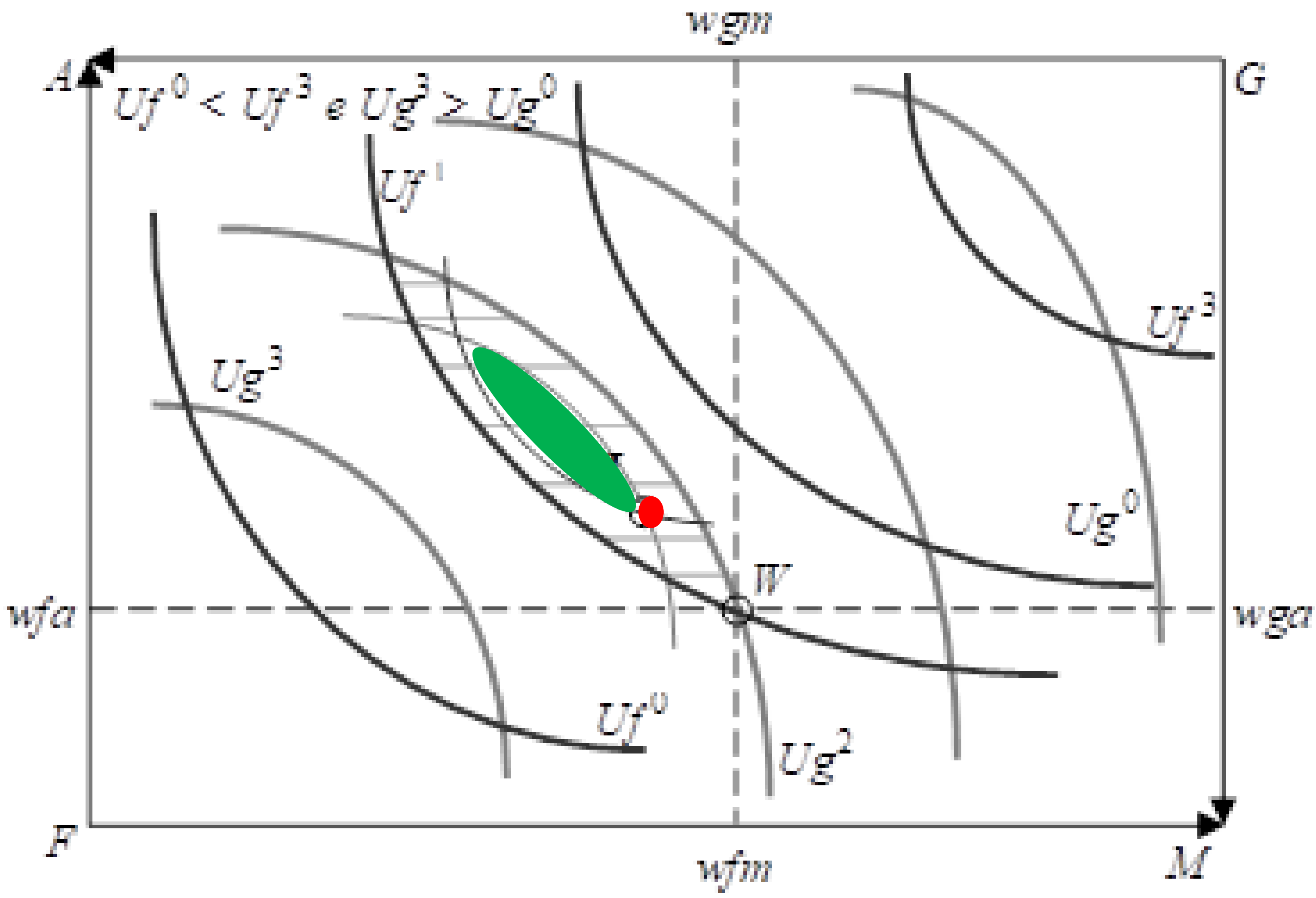
H? A social improvement with respect to W.



Bargaining Power



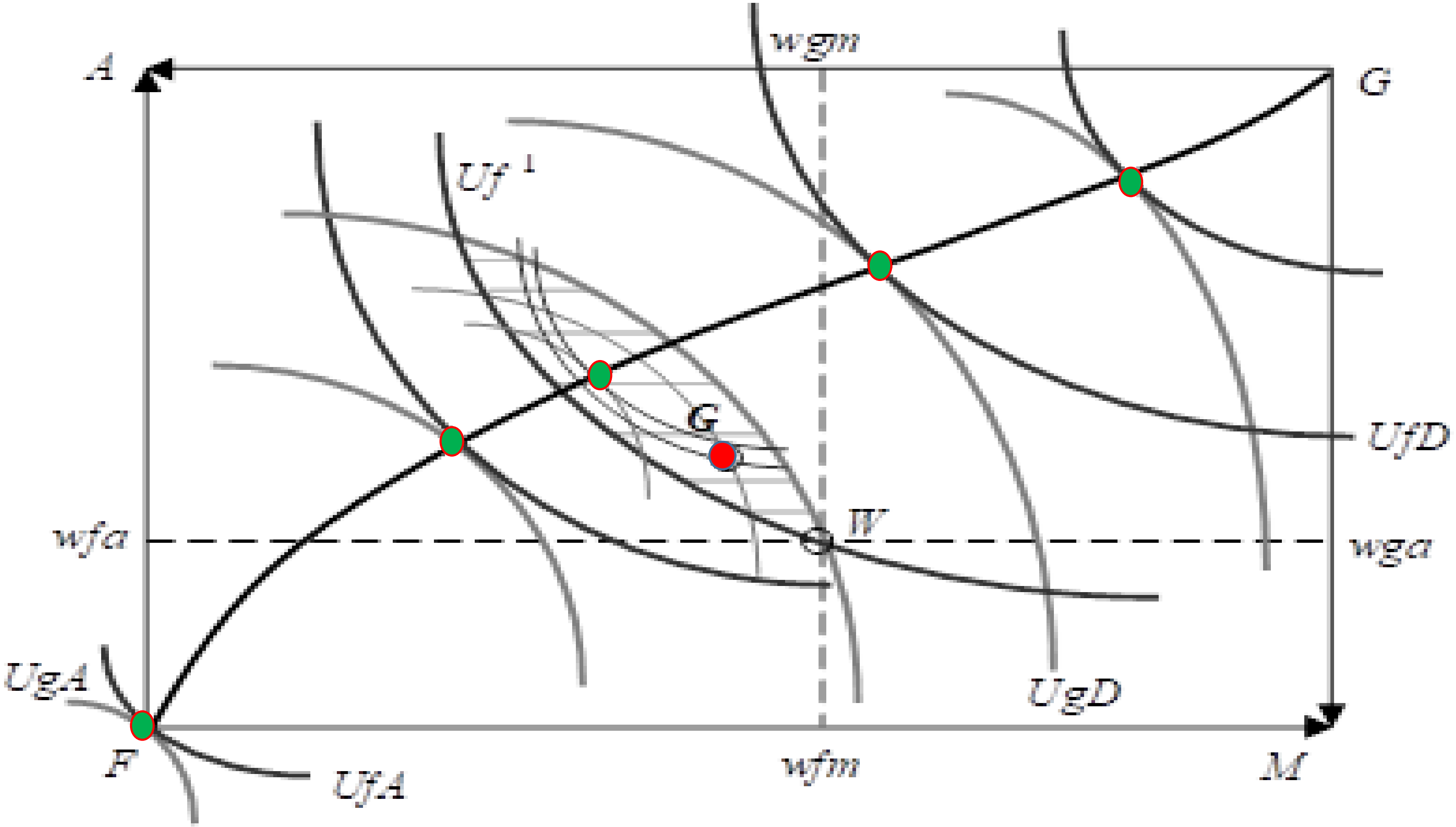
Inefficiency



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.

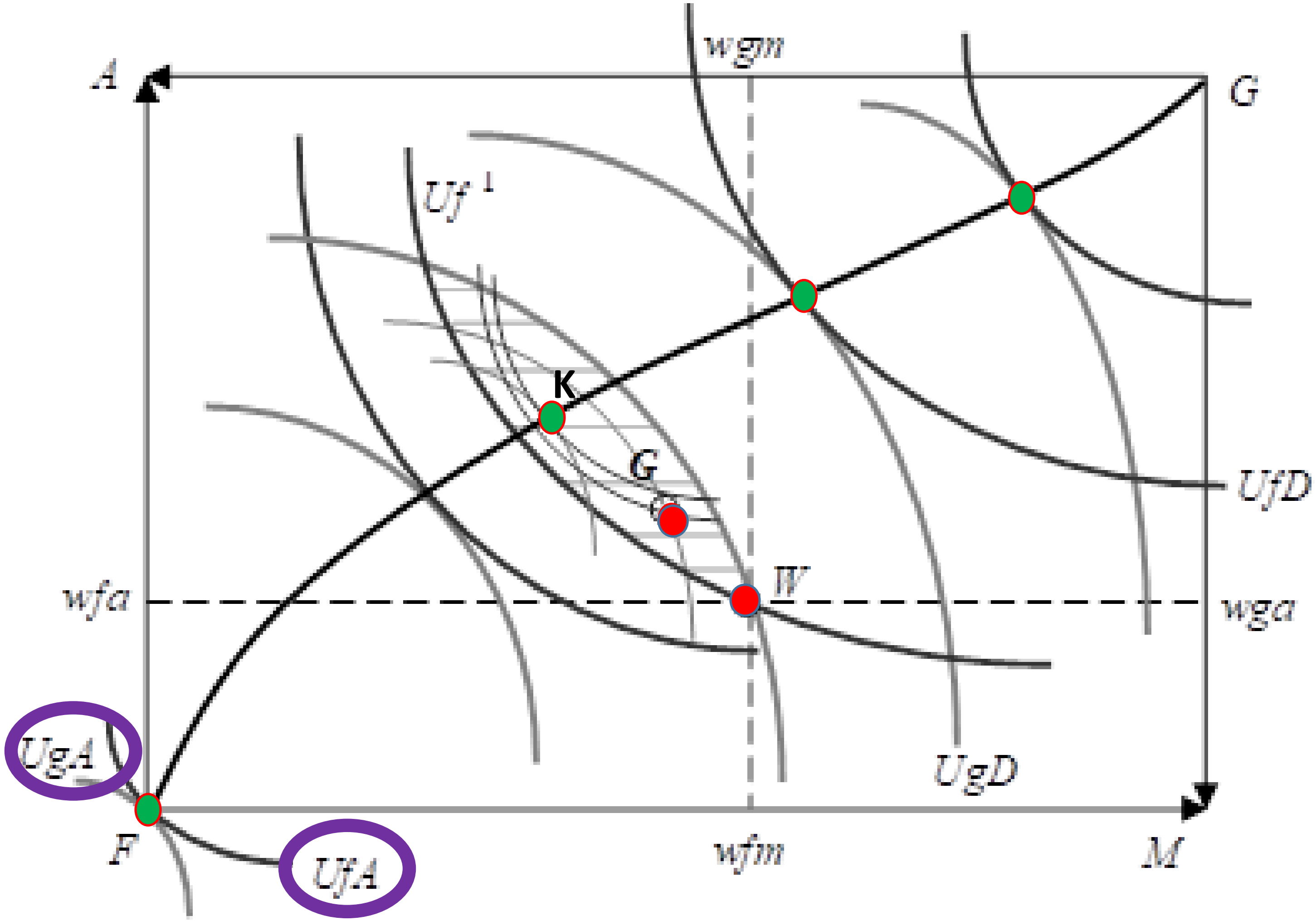
W is …

Pareto-inefficient.

like…

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

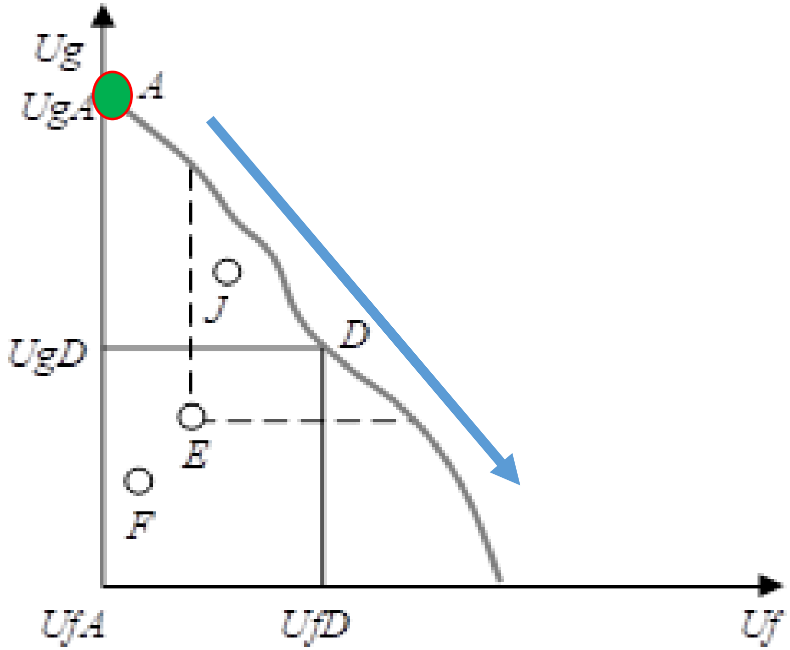
K is …
Pareto-efficient,
like …
F!



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.

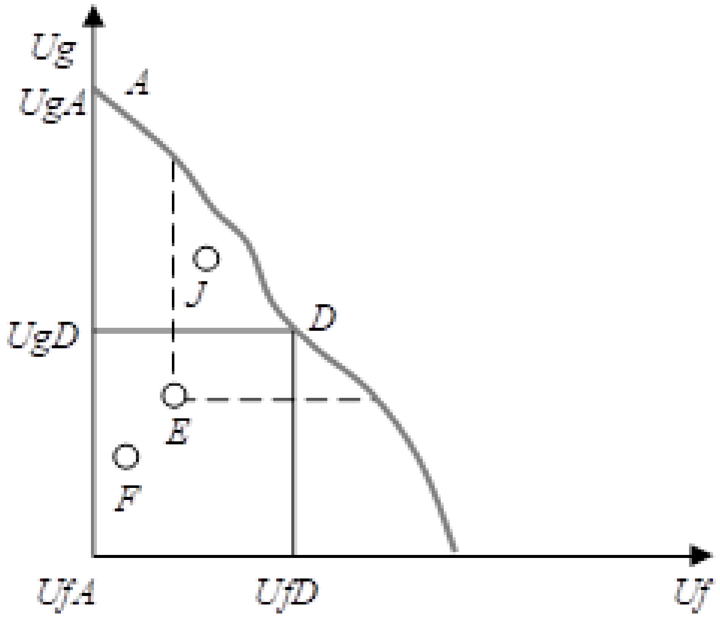
The frontier that separates feasible utilities from non-realizable ones is called the utility–possibility frontier. On it we read, given a certain amount of goods available overall in the economy, the utilities related to Pareto-efficient points.



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.



The Marshall criterion

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.

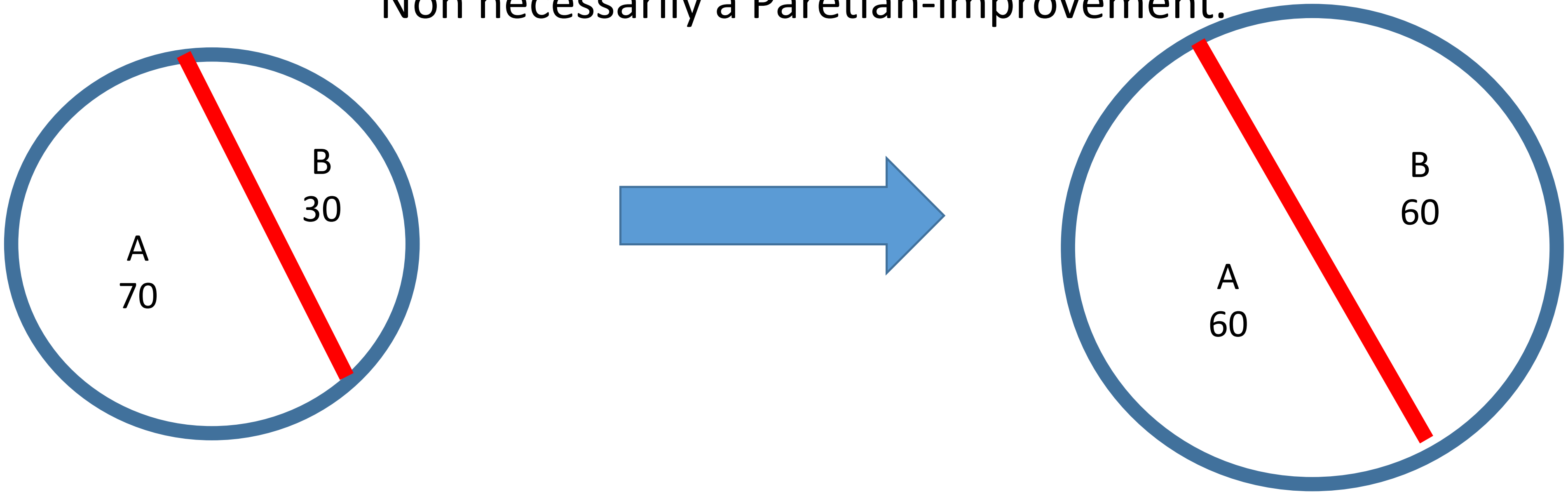
Pareto vs Marshall

A Pareto-improvement is a Marshallian improvement?

It is a Marshallian-improvement.

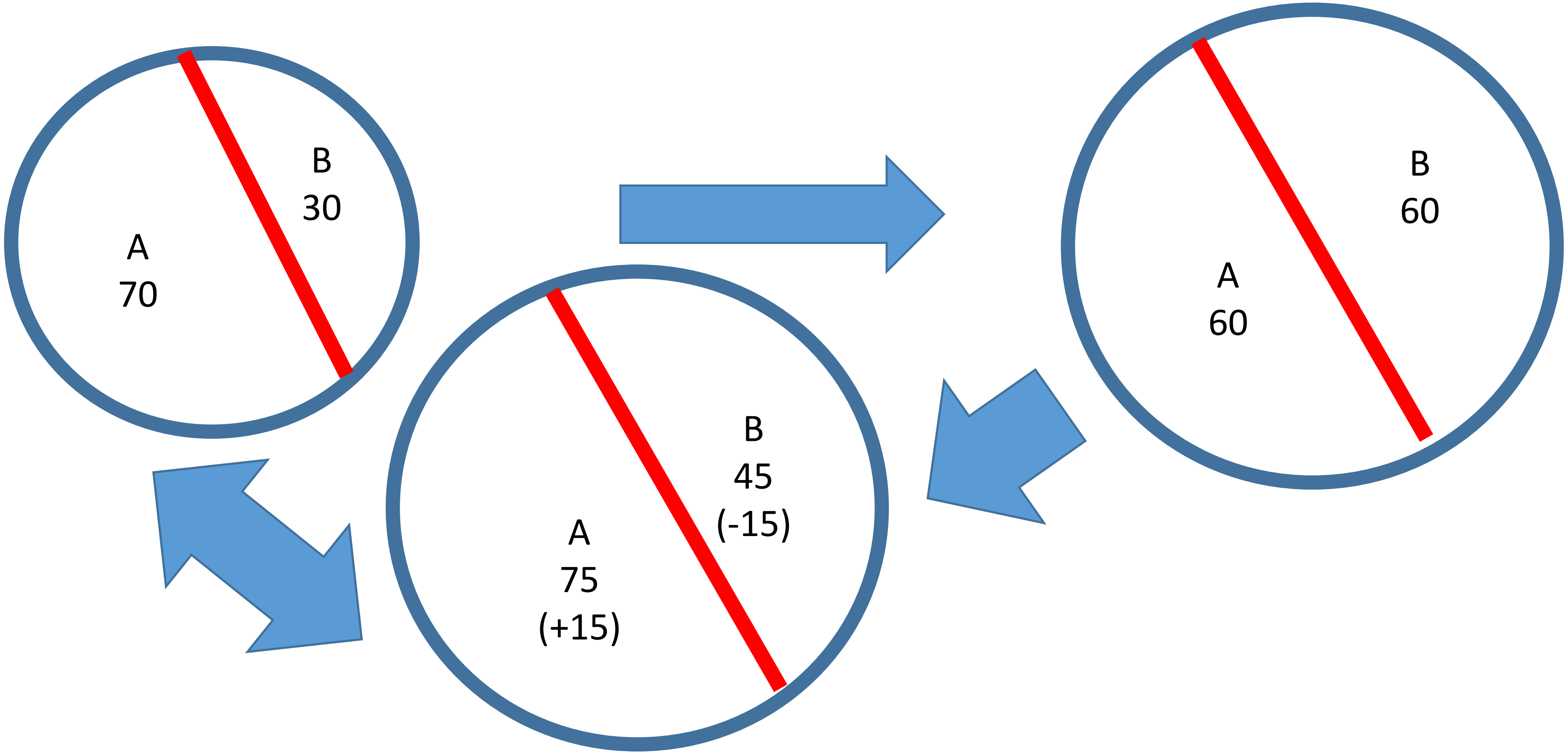
A Marshallian-improvement?

Non necessarily a Paretian-improvement.



Pareto vs Marshall

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



The efficiency of the perfect competition regime

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*?

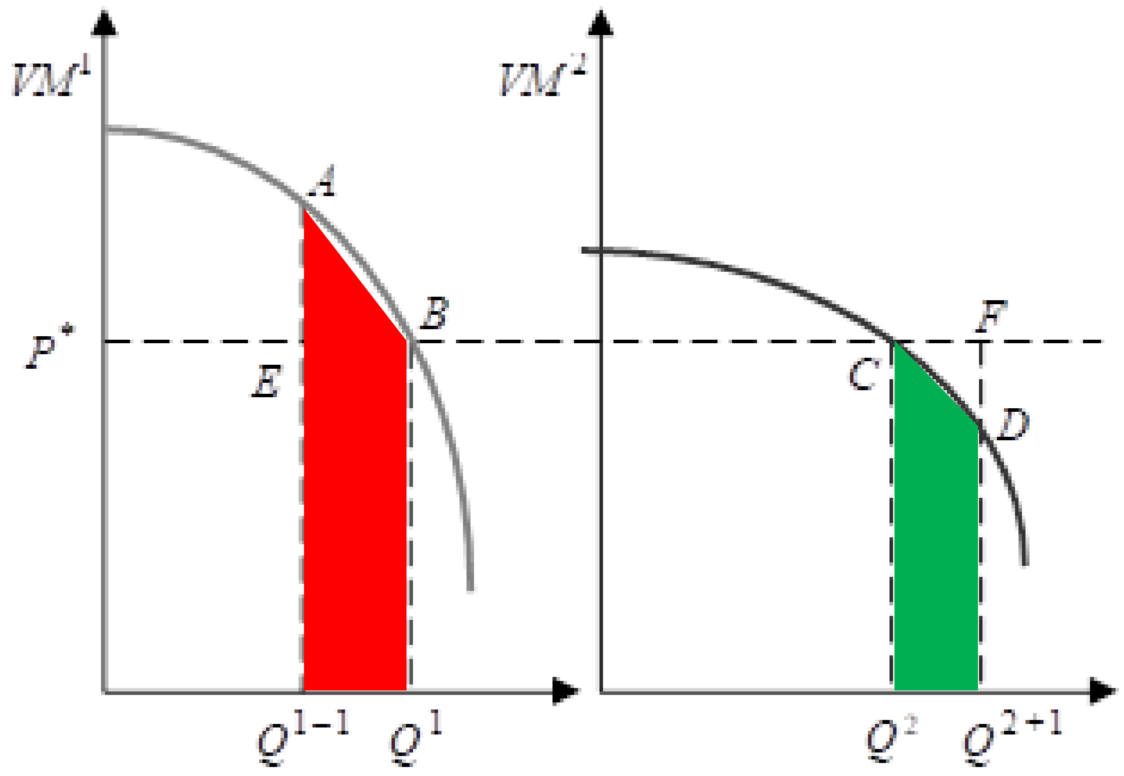
The efficiency of perfect competition

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 Q1 + Q2.

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

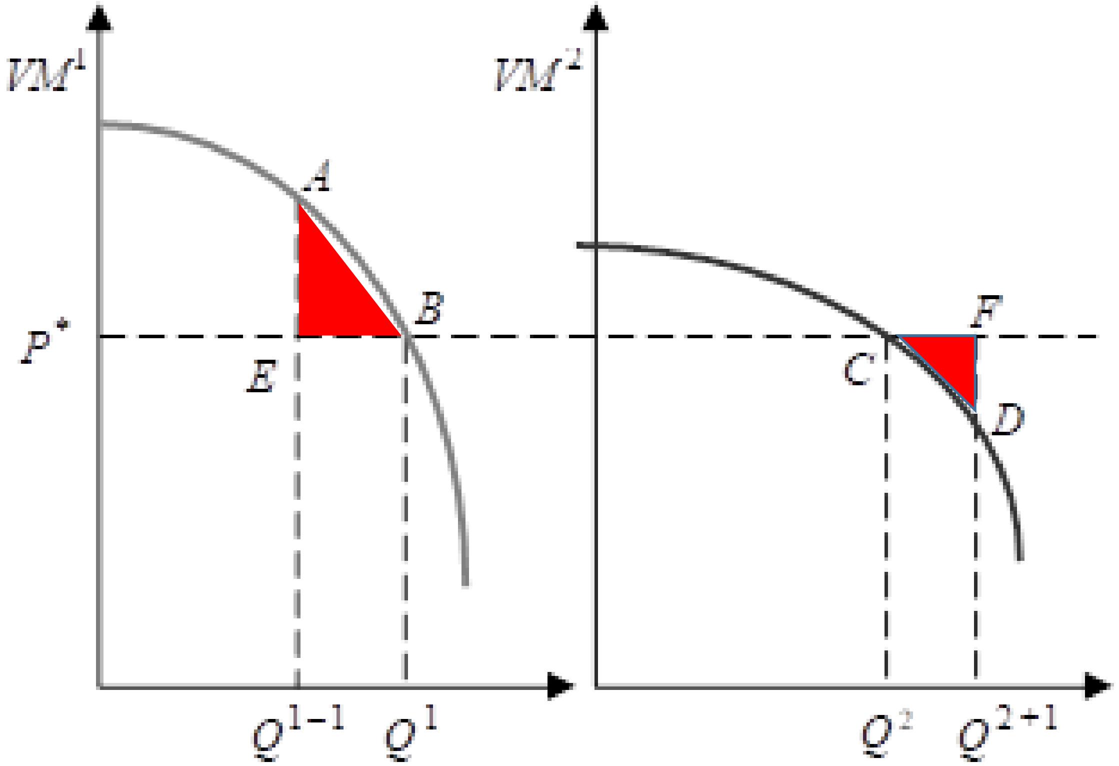
Produce the same total quantity Q* but allocate it in a different way among consumers?

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….

$(CQ^2Q^2{+}_1D)-(AQ^1{-}_1Q^1B)$



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?

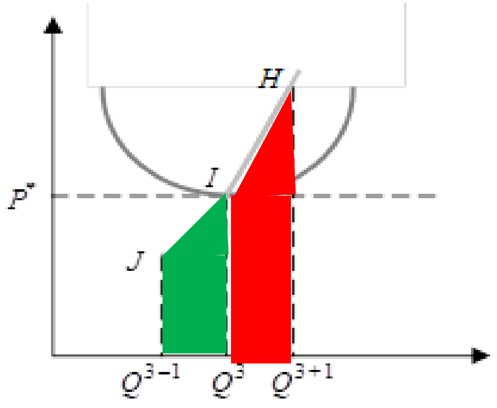
Let’s try to close a company and ask each one of the others remaining to produce a share of that production (of the company that closed its doors) so as to always produce the same quantity Q* at the industry level. Or we let a new company enter and existing companies reduce their production by just enough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

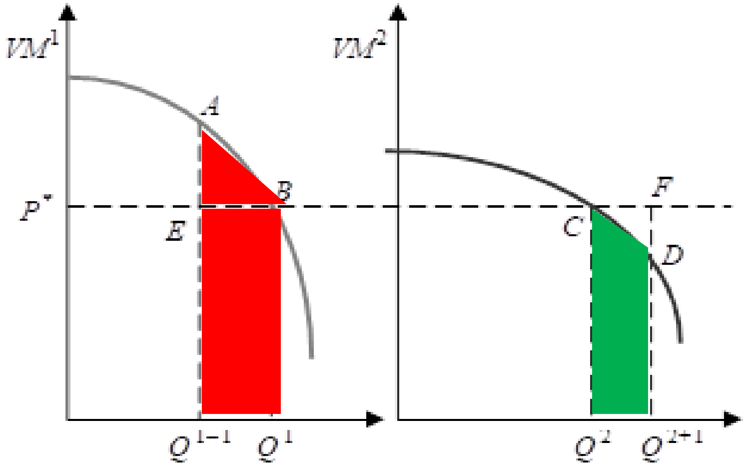
The efficiency of perfect competition

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*?

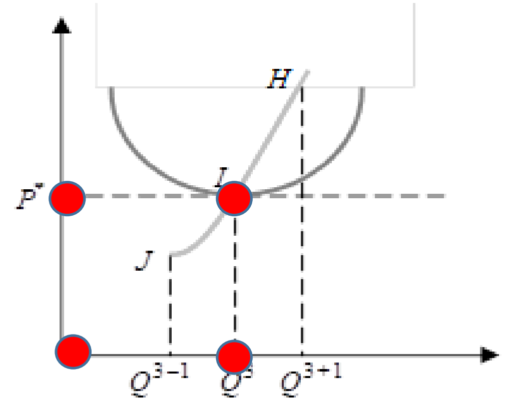
Let us assume to have a new firm that produces Q3 additional units at the total minimum average cost ATC(Q3) = P * (production thus rising from nxQ3 to (n + 1) x Q3 where n is the number of initial firms).

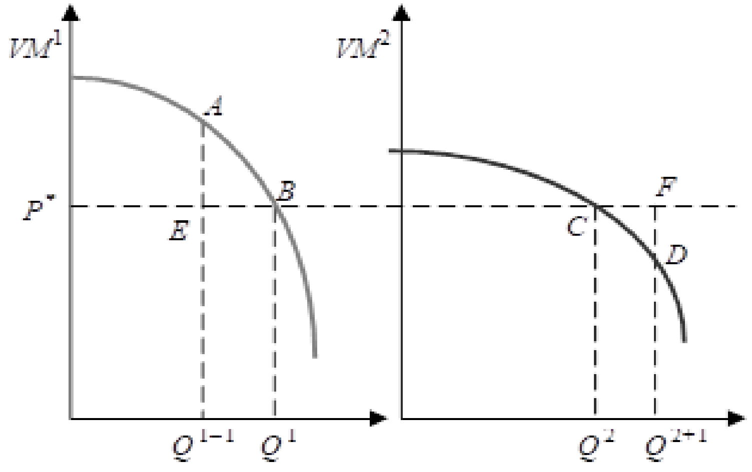
The additional cost of this production is equal to P*Q3, i.e. also the minimum amount of euro that this new firm must obtain to expand production (obtaining 0 extra-profits).

However consumers will value this additional production at a value less than P*Q3 (why?) and will therefore be willing to give up less than P*Q3 to consume it.

Again, no Marshallian improvement leaving perfect competition!

Perfect Competition is MARSHALL EFFICIENT!





The efficiency of monopoly

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*?