The Theory of Externalities: Pigouvian Theorem vs Coase Theorem

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Defining Externalities

Externality: An effect of a market transaction that affect someone other than those involved in the transaction. industrial pollution that affects a local community.

Negative Externality: Negative impacts of a market transaction that affect those not involved in the transaction. Second-hand smoking, Industrial Pollution.

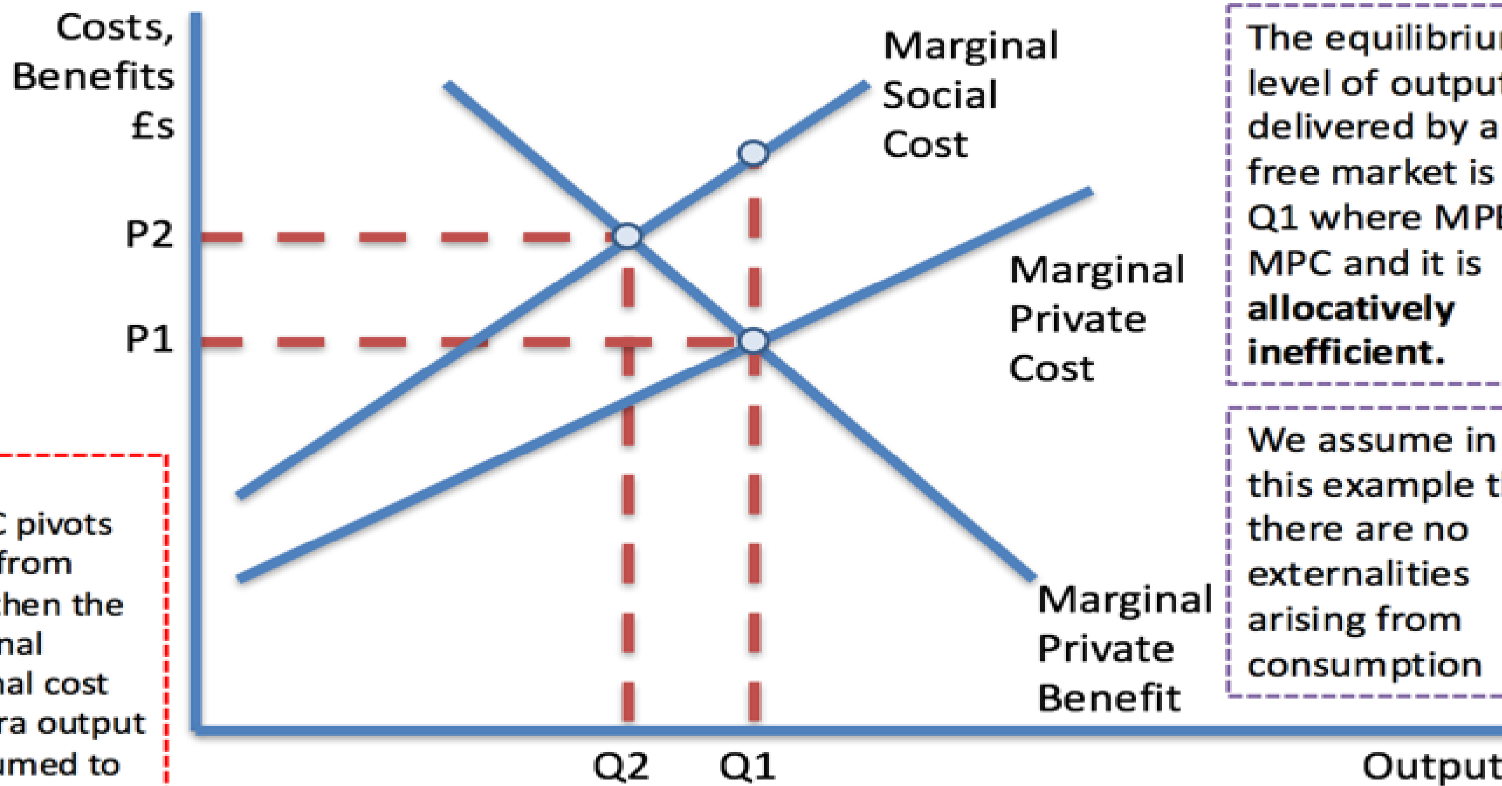
Positive Externality: Positive impacts of a market transaction that affect those not involved in the transaction. Education , Plantation of tree

EFFICIENCY MARKET AND EXTERNALITY

- An Efficient market is a market in which value of goods produced is equal to the opportunity cost.
- The prices in an efficient market reflect the full costs or benefits of producing a good.
- Externalities bring inefficiencies in the market

Negative Externalities in Production – Market Failure

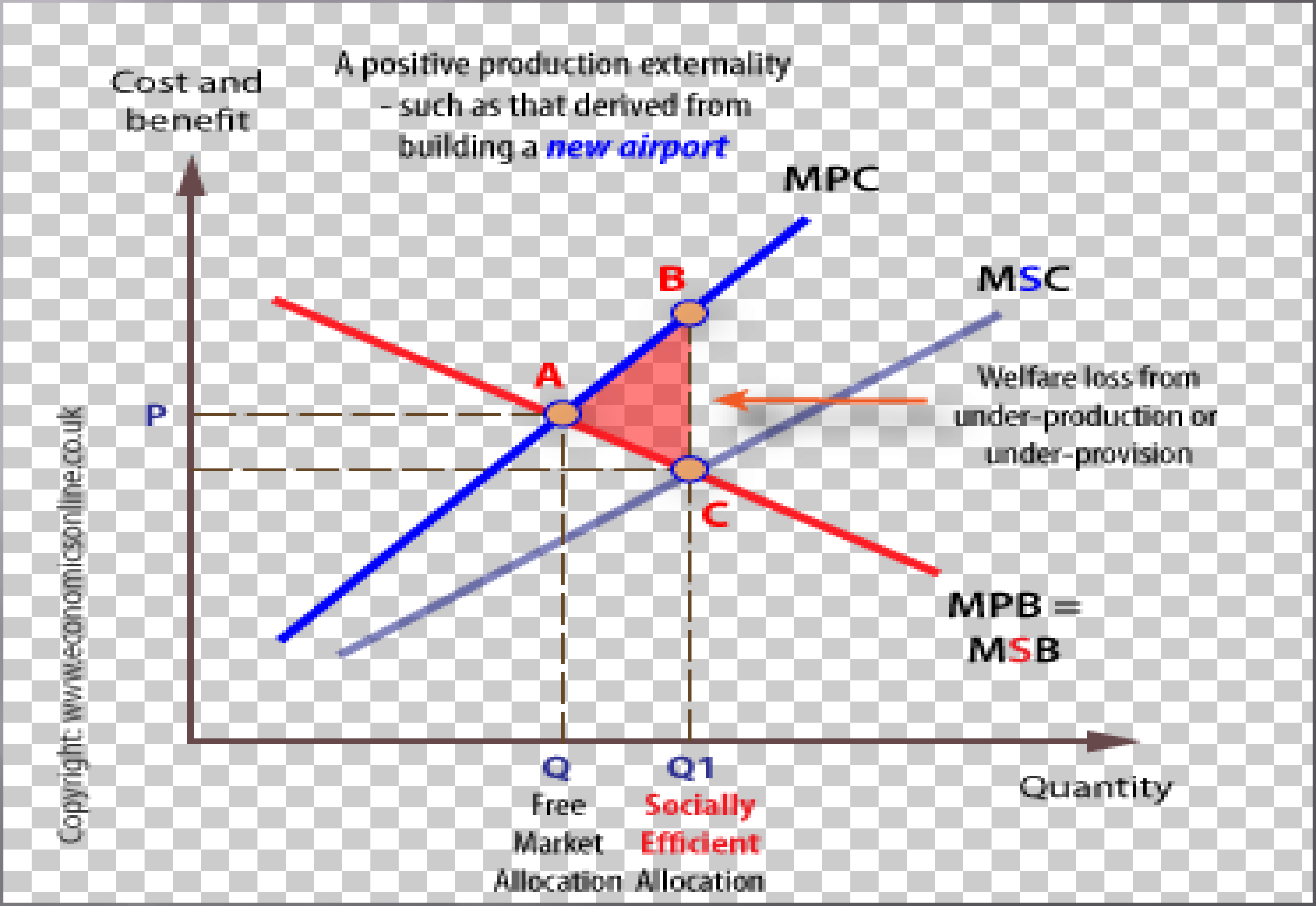
Negative externalities causes social cost > private cost



The equilibrium level of output delivered by a free market is at Q1 where MPB = MPC and it is **allocatively inefficient.**

We assume in this example that there are no externalities arising from consumption

Note
If MSC pivots away from MPC then the marginal external cost of extra output is assumed to be increasing



A positive production externality
- such as that derived from
building a *new airport*
Cost and
benefit
MPC
MSC
B
A
P
C
Welfare loss from
under-production or
under-provision
MPB =
MSB
Q
Free
Market
Allocation
Q1
Socially
Efficient
Allocation
Quantity
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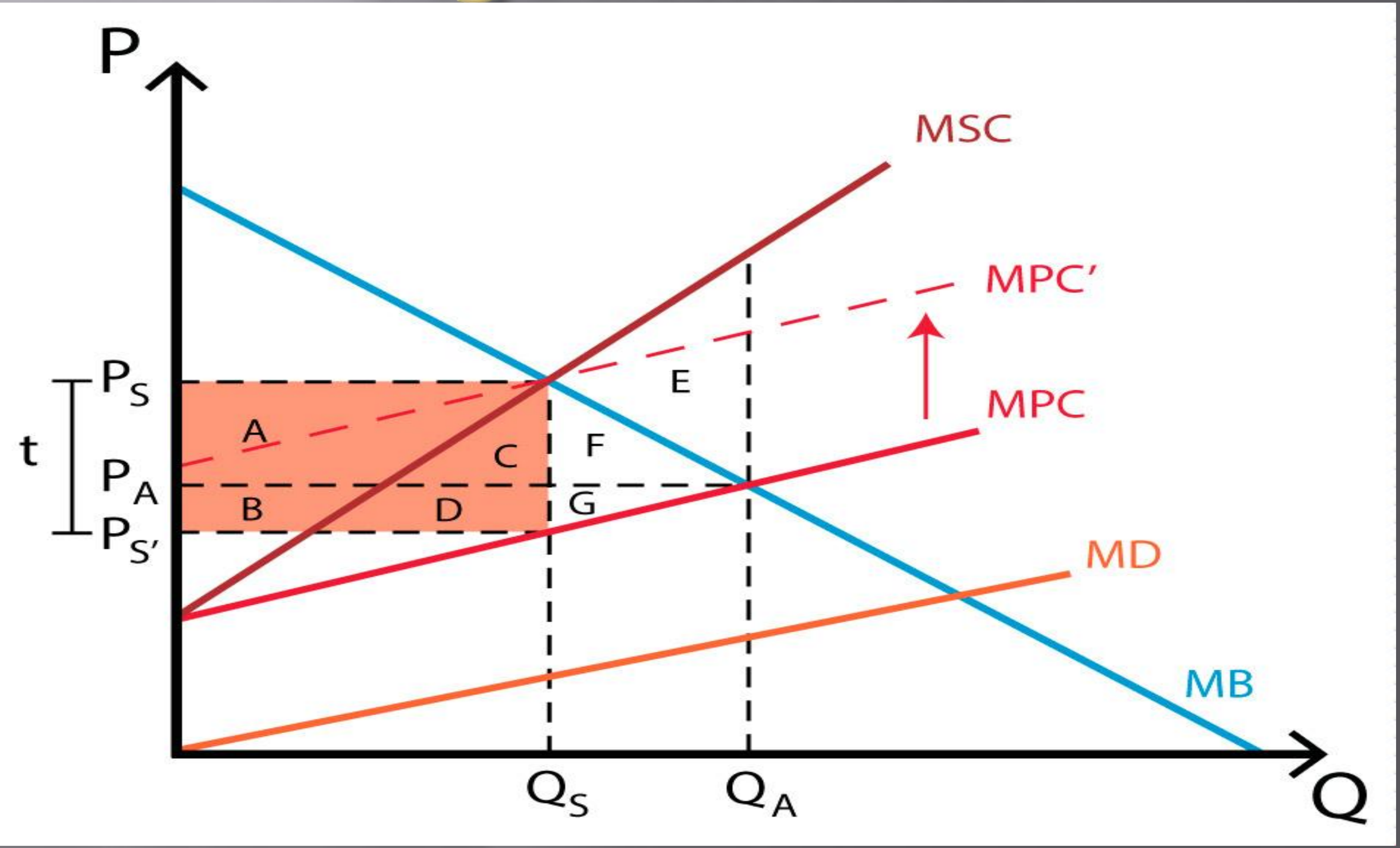
Questions Confronting the economists

- How Should we deal with externalities.
- What theories have been constructed to deal with externalities.
- Externalities have to be internalized of paid for some how.

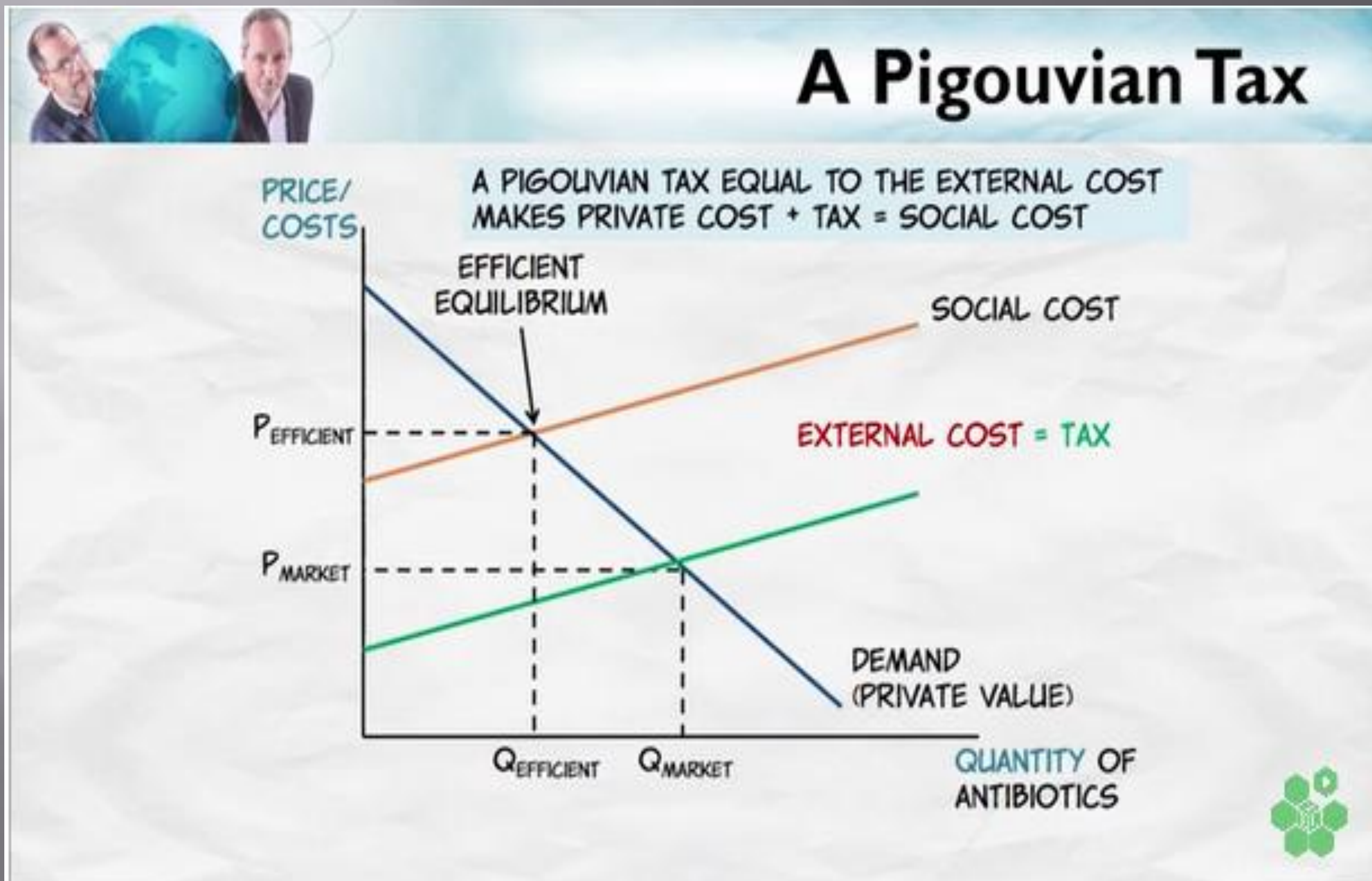
Pigouvian Theory and Taxes

- A Pigouvian tax is a tax that is levied to correct the negative externalities of a market activity.
- When this tax is levied, producers have an incentive to reduce their output to the socially optimal level.

Negative Externality and Pigouvian Tax



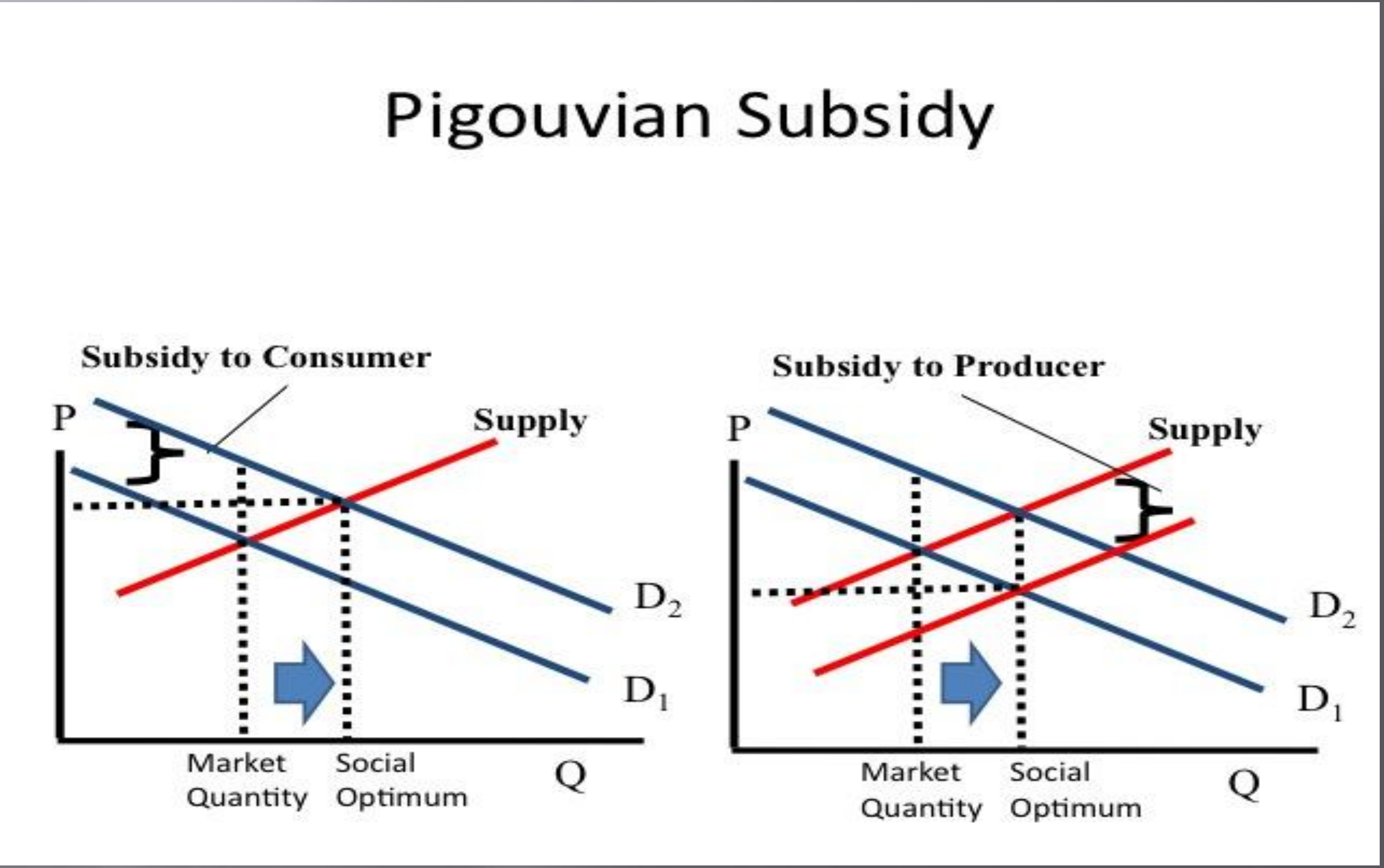
Negative Externality and Pigouvian Tax



Pigouvian Theory and Subsidies

- Pigouvian subsidies are also an option. They install a benefit for positive externalities, like donating to non-profits or installing solar panels to avoid pollution.
- The positive externalities are then accounted for.
- Firms will produce more of the positive externality since they are receiving a beneficial Pigouvian subsidy.

POSITIVE EXTERNALITY AND PIGOUVIAN SUBSIDY



PROBLEMS WITH THE PIGOUVIAN SOLUTION

- Calculating a tax or subsidy can be hard if not impossible.
- Question: Is there any way to measure with money how second hand smoke affects the people around you on a large national scale?
- Government calculates the tax, leaving tax levels open to corruption, poor policy makers and special interest group lobbying.

Continued….

- If the tax or subsidy increases the purchasing power of consumers, they might spend their extra money on things that produce negative externalities, defeating the cycle.
- Example: Buying expensive cars that pollute more, for example

- Ronald Coase, a Nobel Prize –winning economist who discussed Property rights and externalities in his article "The Problem of Social Cost", (1960), *Journal of Law and Economics*.

Coase Theorem

- The Coase theorem state that if property rights are well defined, and there are no transaction costs, an efficient outcome(allocation of resources) will result even if there are externalities.
- Property right refers to a bundle of entitlements defining the owner's rights, privileges and limitation for the use of the resource.
- Transaction costs are costs involved in reaching and implementing an agreement.

Continued

- Government should restrict its role in correcting for externalities.
- People will make agreements and the government's job is simply to enforce them.
- Mutual agreements that are self-formed will be more beneficial.

- This requires:
- Property rights to be well defined
- People to act rationally
- Transaction costs to be minimal or zero

Example-1

- For example, if company A pollutes company B's stream, we punish company A.
- But who says that we should inflict harm on A? What if A has beneficial services that are hindered by this punishment?
- The specific legal rights, according to Coase, are also irrelevant as long as they are defined. Private negotiations are what matter.

Example-2

- Firms pollute a river enjoyed by individuals. If firms ignore individuals, there is too much pollution.
- 1) Individuals owners: If river is owned by individuals then individuals can charge firms for polluting the river. They will charge firms the marginal damage (MD) per unit of pollution.
- Why price pollution at MD? Because this is the equilibrium efficient price in the newly created pollution market.
- 2) Firms owners: If river is owned by firms then firm can charge individuals for polluting less. They will also charge individuals the MD per unit of pollution.
- Final level of pollution will be the same in 1) and 2)
- Negotiation between two parties will bring efficient solution

THE PROBLEMS WITH THE COASIAN SOLUTIONS

- **The assignment problem:** In cases where externalities affect many agents (e.g. global warming), assigning property rights is difficult ⇒ Coasian solutions are likely to be more effective for small, localized externalities than for larger, more global externalities involving large number of people and firms.
- **The holdout problem:** The ability of a single entity to hinder a multiparty agreement by making disproportionate demands.(because joint owners have to all agree to the Coasian solution)
- As with the assignment problem, the holdout problem would be amplified with an externality involving many parties.

THE PROBLEMS WITH THE COASIAN SOLUTIONS

- **The Free Rider Problem:** When an investment has a personal cost but a common benefit, individuals will under invest (example: a single country is better off walking out of Kyoto protocol for carbon emission controls)
- **Transaction Costs and Negotiating Problems:** The Coasian approach ignores the fundamental problem that it is hard to negotiate when there are large numbers of individuals on one or both sides of the negotiation.
- Property rights are not as strictly defined as Coase theory requires

Thank You