Externalities

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Definition of Externalities

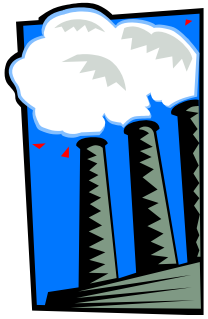
- The cost or benefit that affects a party who did not choose to incur that cost or benefit

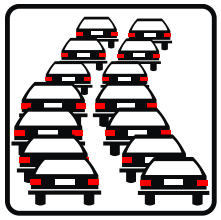
- The effects of a decision by consumers and producers that has an impact on a third party

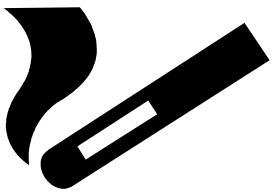
Positive and Negative Externalities

– **Positive Externalities** – beneficial effects on third parties

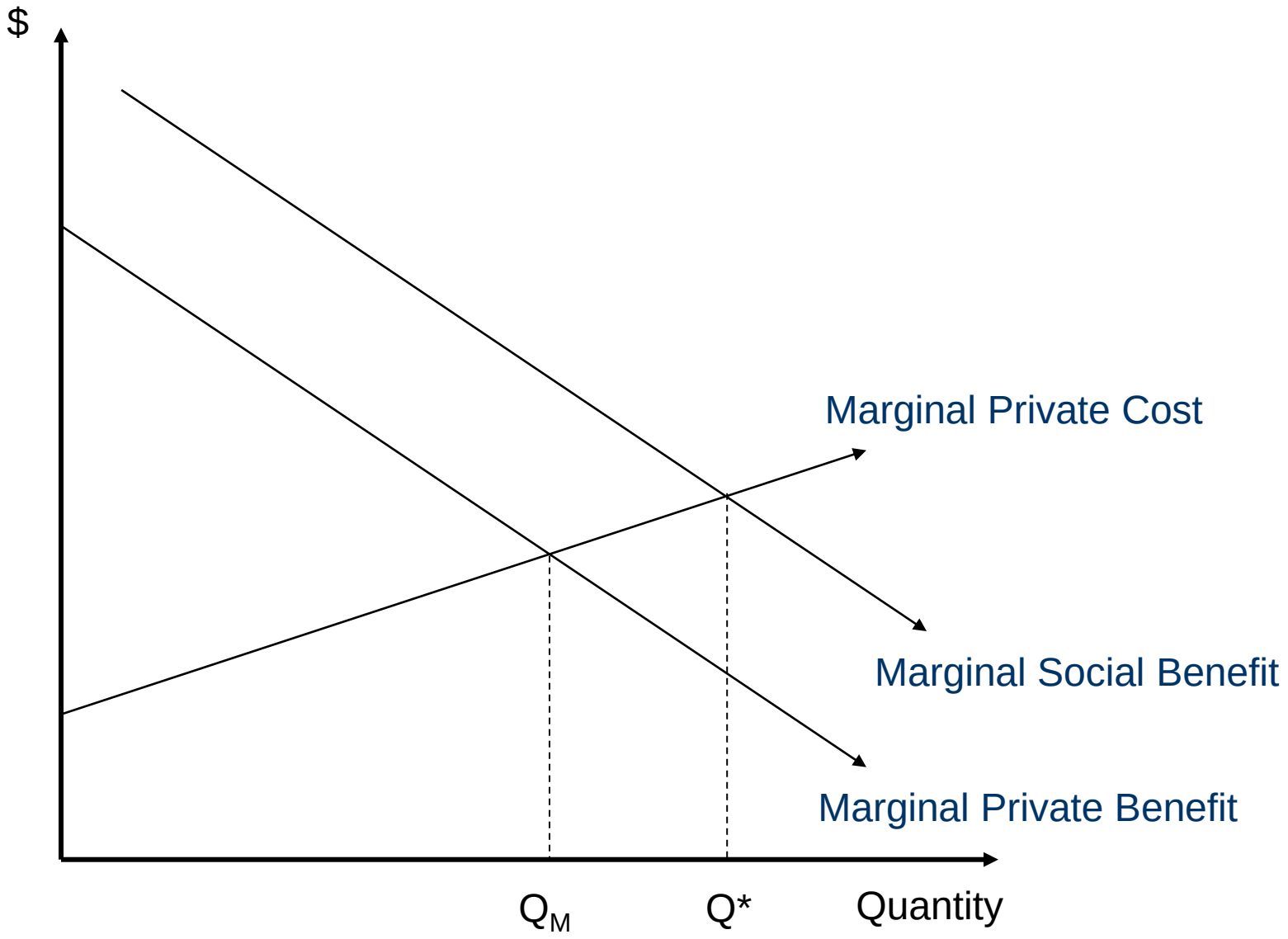
– **Negative Externalities** – costs incurred by third parties



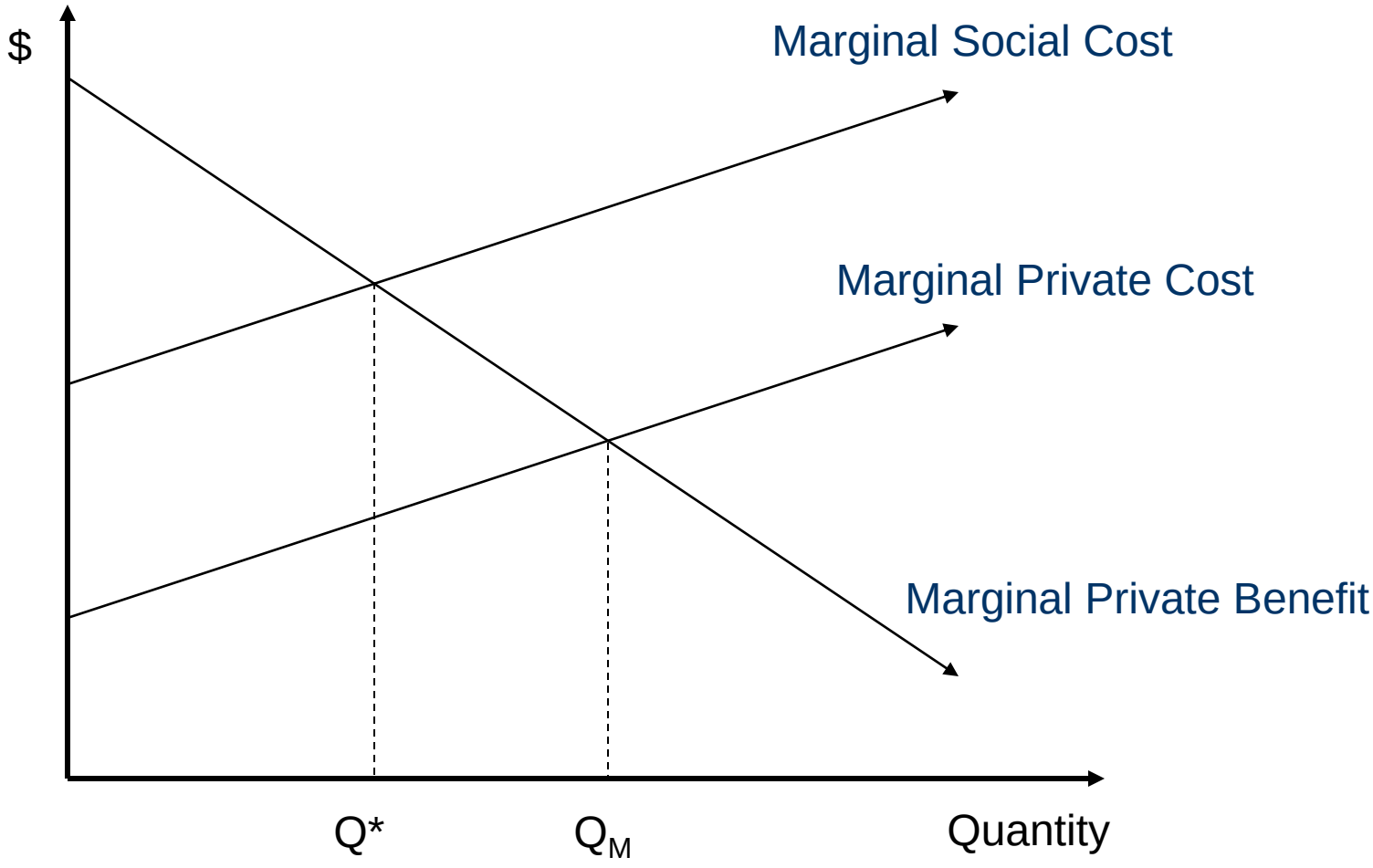




Positive Externalities



Negative Externalities



Positive and Negative Externalities

Costs and benefits in production:

- External costs in production –

  where Marginal Social Cost > Marginal Private Cost

  – e.g. air and water pollution, congestion, housing development on green belt areas, destruction of hedgerows and wildlife, noise, pollution, anti-social behaviour, crime

- External benefits in production –

  where MSC < MPC

  – e.g. human resource development, research and development in industry

Positive and Negative Externalities

Costs and benefits in consumption:

- External costs in consumption –
  where MSB < MPB
  - e.g. passive smoking, litter, noise, anti-social behaviour

- External benefits in consumption –
  where MSB > MPB
  - e.g. preventative health care – vaccinations, public transport, attractive gardens, bathing regularly!

Positive and Negative Externalities

- **External costs**

  – socially efficient output is less than current output

- **External benefits**

  – socially efficient output is greater than current output

Socially efficient output satisfies **MSC = MSB.**

Pigouvian Taxes

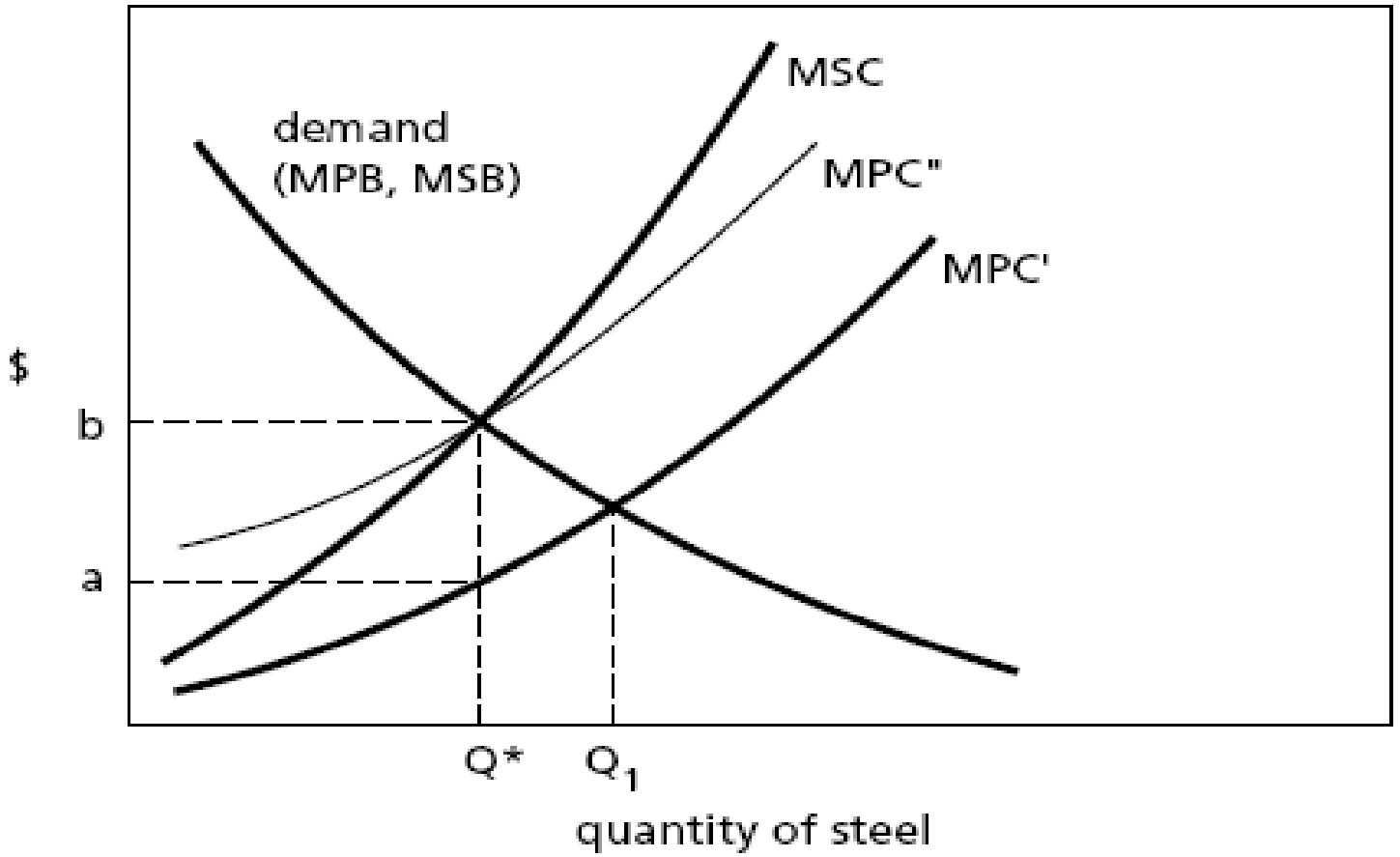
- A.C. Pigou (1938) argued that an externality cannot be mitigated by contractual negotiation between the affected parties.

- Pigou argued that direct coercion by the government or judicious use of taxes should be used against the offending party.

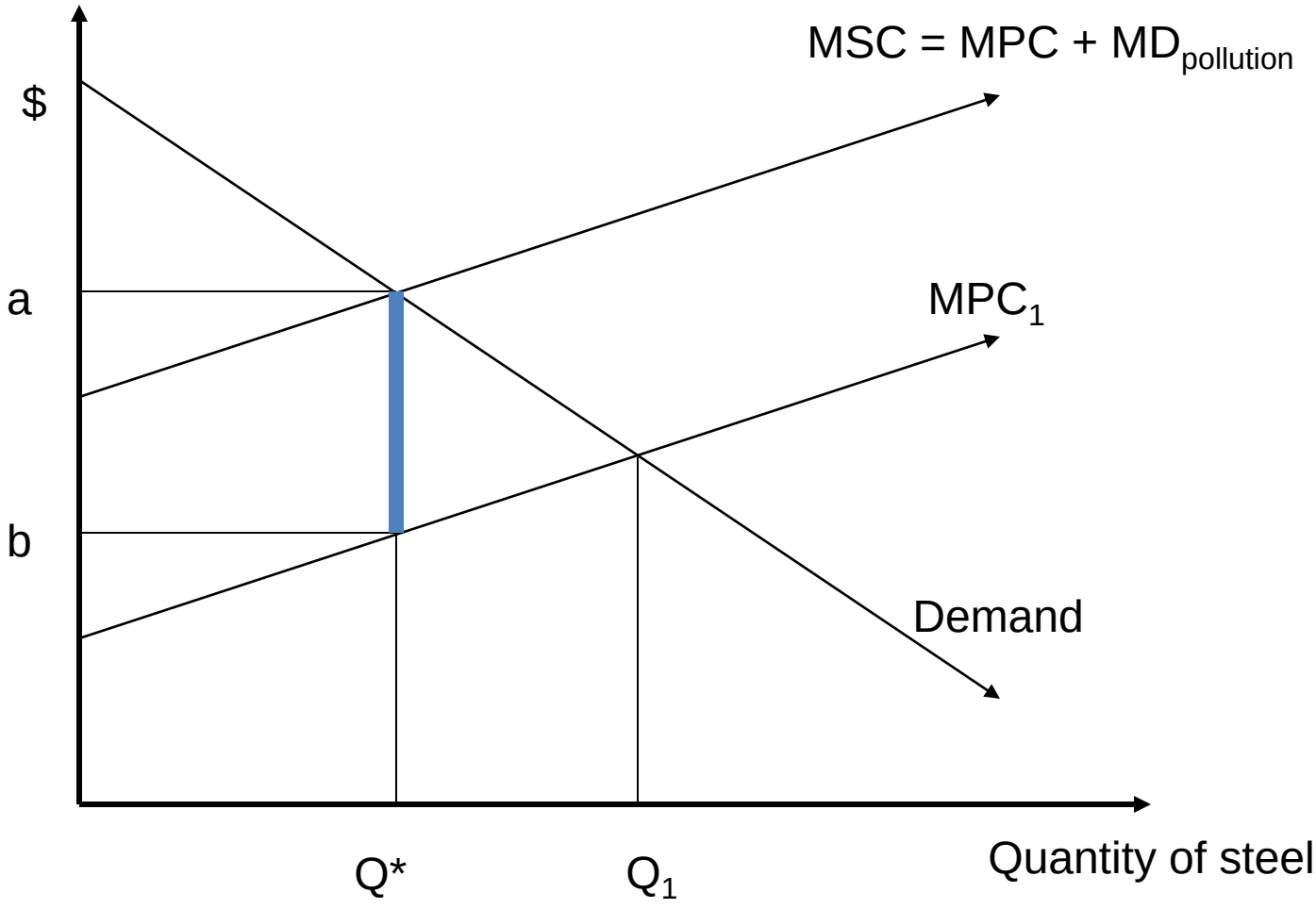
Pigouvian Taxes

- The basic principle behind the use of externality taxes is that the tax eliminates the divergence between the Marginal Private Cost (MPC) and the Marginal Social Cost (MSC).
- Q_1 represents the market equilibrium (where MPC=MPB), and
- Q* represents the optimal level of output (where MSC=MSB).

An Externality Tax on Output



An Externality Tax on Output



Pigouvian Taxes

- An externalities tax equal to the divergence between MPC and MSC would raise the steel firms' private costs.
- The tax would shift the MPC curve by an amount equal to the distance from *a* to *b*.
- The market would arrive at an optimal equilibrium of Q*.
- This is known as **internalizing an externality.**

Coase Theorem

- Ronald Coase (1960) argued that not only is a tax unnecessary, it is often undesirable.
- Coase argued:

  The market will automatically generate the optimal level of the externality.

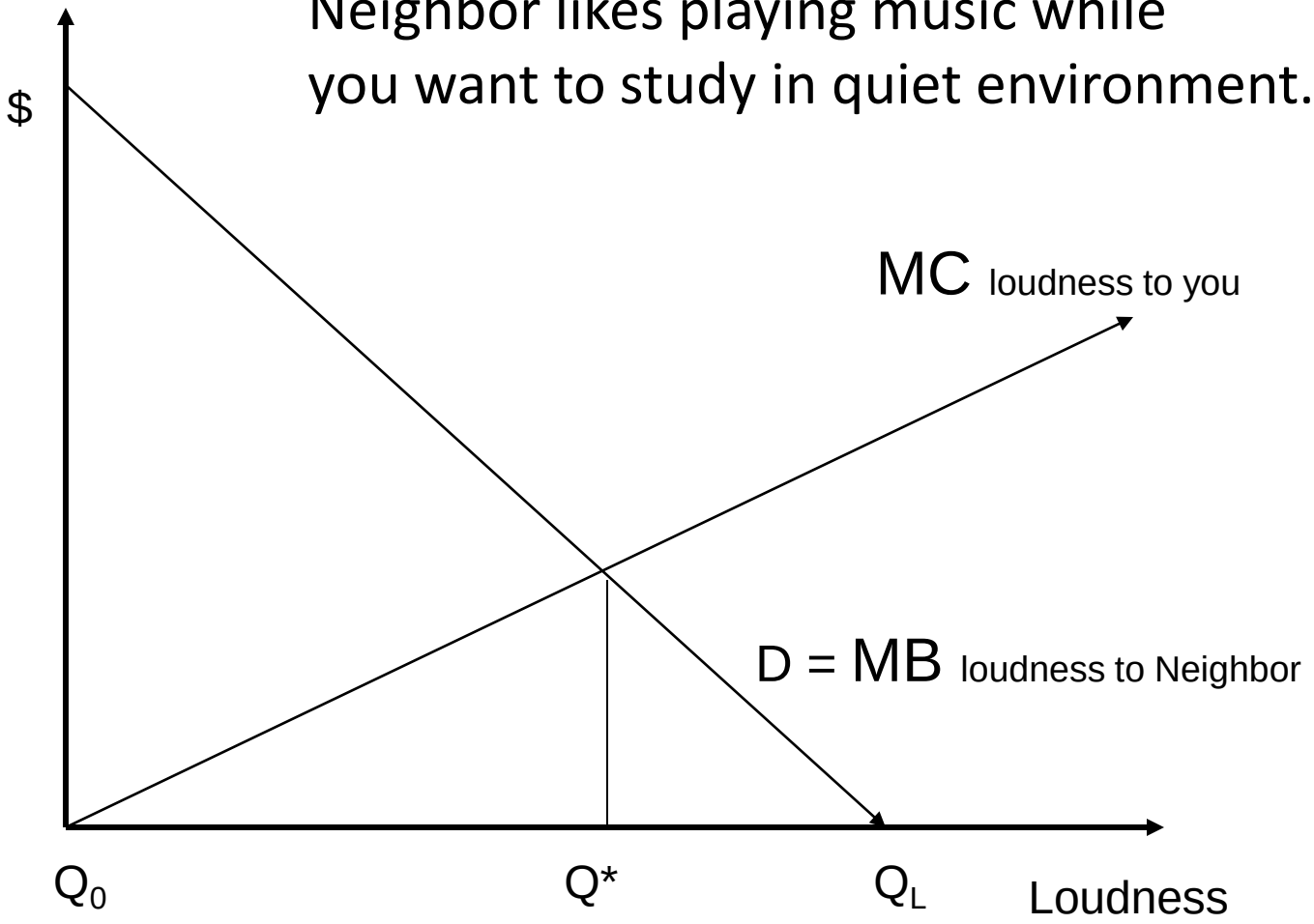
  This optimal level of the externality will be generated regardless of the initial allocation of property rights.

Coase Theorem

- One example to illustrate his theory is based on the interaction of a cattle rancher and a crop farmer.
- Cattle occasionally leave rancher's property and damage farmer's crop.
- Coase argued that the farmer and rancher will reach an agreement that will make them both better off.
- Either the rancher will accept payment to reduce the size of the herd or farmer will accept payment to cover cost of crops lost.
- And this will happen without government intervention.

Example: Dorm room stereos and studying

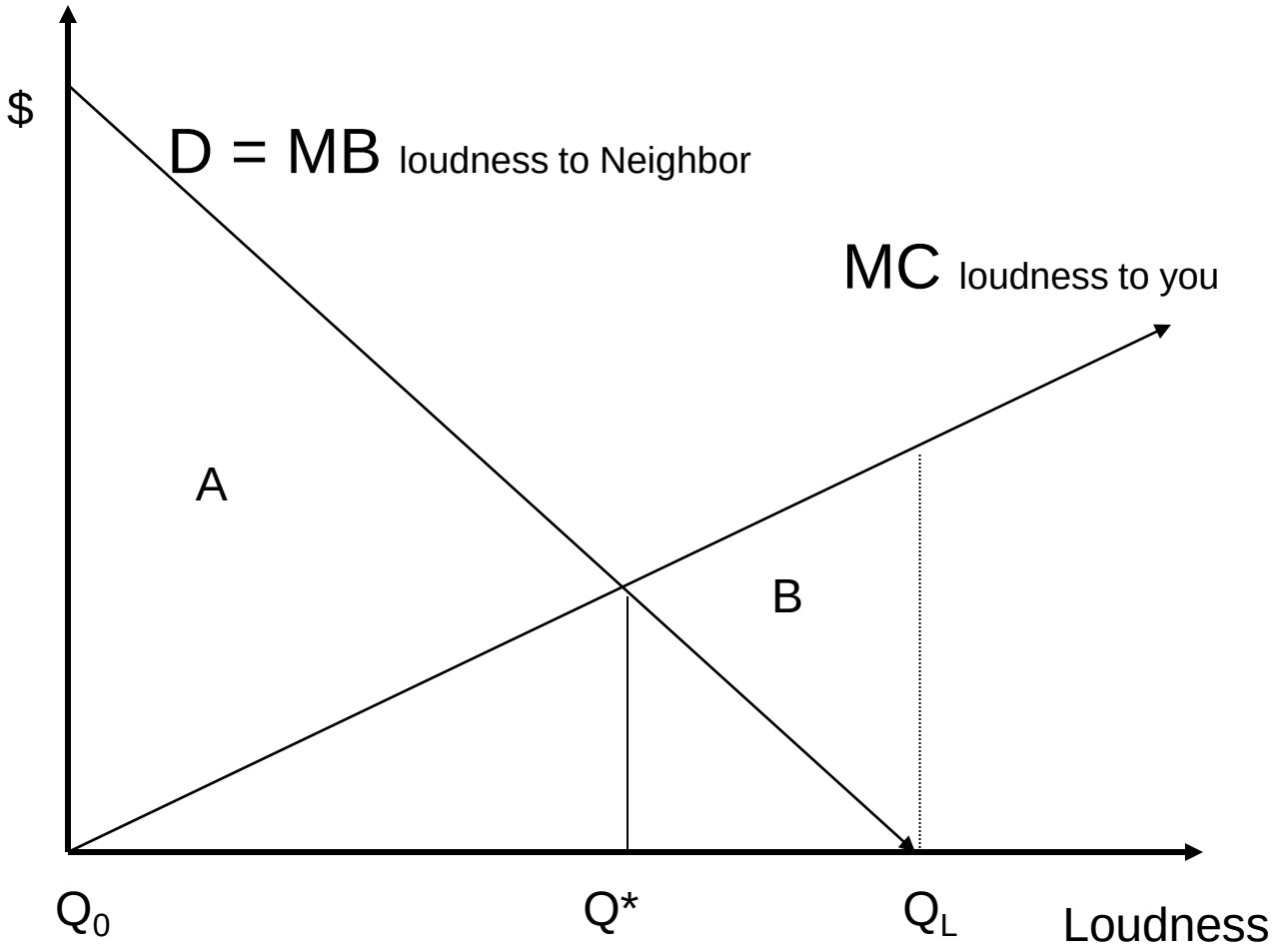
Neighbor likes playing music while
you want to study in quiet environment.



Dorm room stereos and studying

- If property rights belong to Neighbor, where is initial noise level? It is Q_L.
- But there are gains from trade until move back to Q*.
- If property rights belong to you, where is initial noise level? It is Q_0.
- Again, gains from trade until get to Q*.
- Gains to be split between two parties are denoted “A” and “B” in diagram.

Example: Dorm room stereos and studying



Coase Theorem

- If there are no transaction costs and property rights are well defined, then voluntary transactions will eliminate any distortions in resource allocation stemming from an externality and the outcome is independent of the property rights.

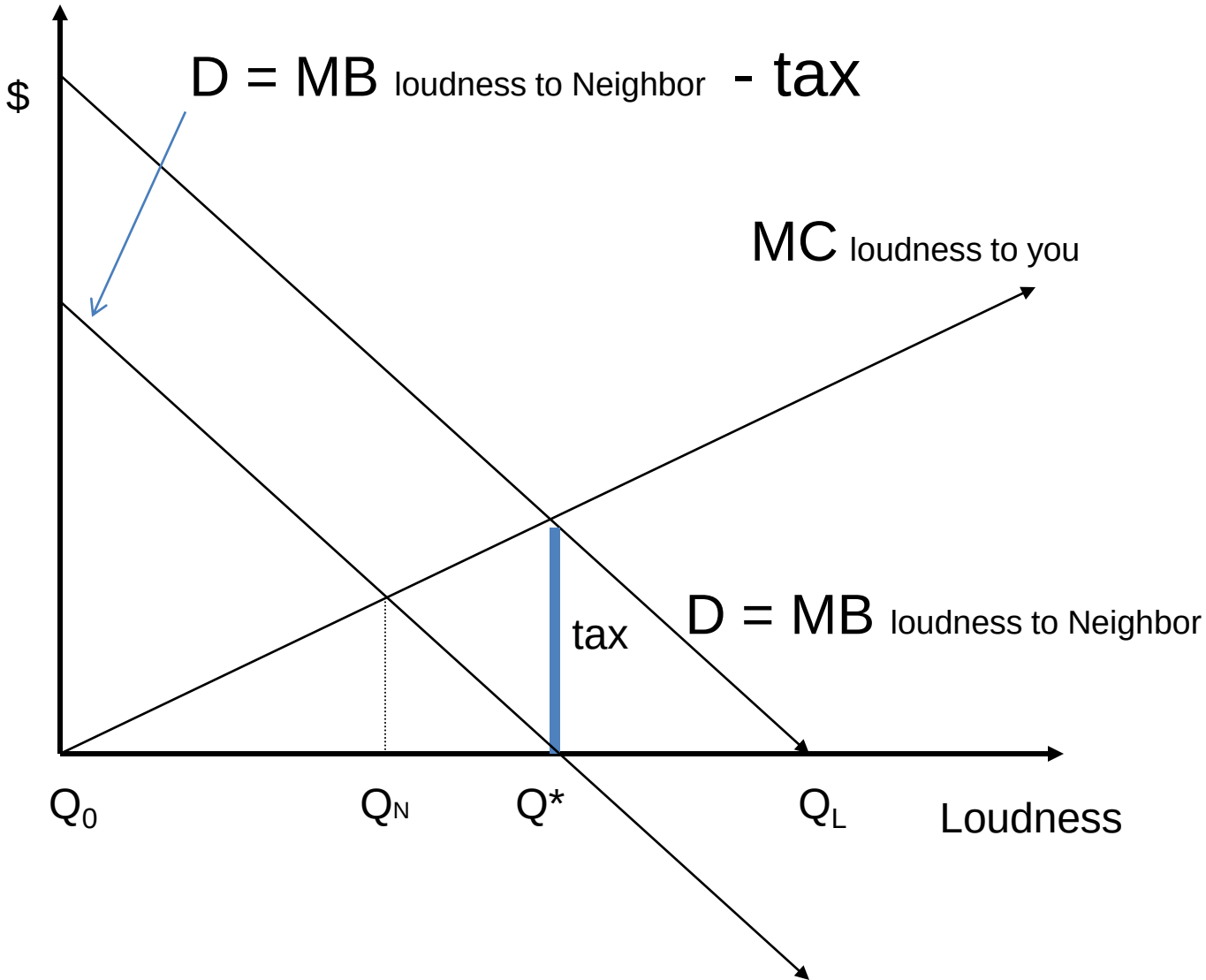
- This version of the "theorem" is from Baumol and Oates text "The Theory of Environmental Policy."

- Emphasizes private behavior and importance of transaction costs.

Coase Theorem

- What happens if impose a Pigouvian tax on the generator of the externality, would this result in an efficient outcome?
- Set a tax equal to marginal damage at the optimal to shift the demand for loudness.
- After the tax, are there still gains from trade?
- Would tax be a good idea?
- This is basis for Coase's argument that government intervention could make things worse.

Coase with a tax per unit of Loudness



Criticisms: Coase Theorem

- Two important assumptions: transactions costs are insignificant, and property rights are well defined.

- Transactions costs are costs associated with arriving at an agreement (the costs of negotiation).

- These may be small for a 2 party agreement but would be very large for an externality such as sulfur dioxide emissions across North America.

Coase Theorem

- The number of participants makes transactions costs important.
- One way to reduce transactions costs is to appoint an agent who acts on behalf of a large number of people.
- The use of agents is associated with its own problems:
  - Free riders – don't share in cost, but share benefits.
  - Often it is difficult for individuals to identify the agent that will best represent their view point.

Coase Theorem

- Another problem associated with the Coase example can occur when the allocation of property rights would signal entry and exit in response to those rights.

- If ranchers have the right to let their cattle roam without worrying about paying damages, then there can be an increase in the number of ranchers, and more damage.

Bottom Line on Coase arguments

- Probably are cases where private negotiations can be effective.
- In those cases, government should stay out.
- But, probably plenty of cases where transaction costs and other issues lead to need for intervention.

Types of Government Intervention

- There are five broad classes of government intervention:
  - Moral suasion
  - Direct production of environmental quality
  - Pollution prevention
  - Command and control regulations
  - Economic incentives

- Each of these represents a different philosophy toward the role of government in society.