4

THE ECONOMICS OF THE PUBLIC SECTOR

10

Externalities

- Recall: Adam Smith's "invisible hand" of the marketplace leads self-interested buyers and sellers in a market to maximize the total benefit that society can derive from a market.

But market failures can still happen.

EXTERNALITIES AND MARKET INEFFICIENCY

- An *externality* refers to the uncompensated impact of one person's actions on the well-being of a bystander.
- Externalities cause markets to be inefficient, and thus fail to maximize total surplus.

EXTERNALITIES AND MARKET INEFFICIENCY

- An externality arises...

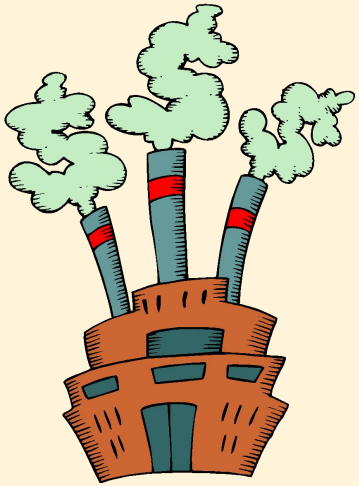
  . . . when a person engages in an activity that influences the well-being of a bystander and yet neither pays nor receives any compensation for that effect.

EXTERNALITIES AND MARKET INEFFICIENCY

- When the impact on the bystander is adverse, the externality is called a negative externality.
- When the impact on the bystander is beneficial, the externality is called a positive externality.

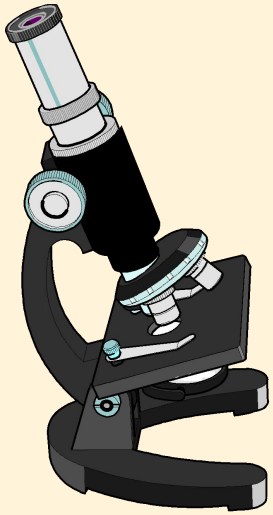
EXTERNALITIES AND MARKET INEFFICIENCY

- Negative Externalities
  - Automobile exhaust
  - Cigarette smoking
  - Barking dogs (loud pets)
  - Loud stereos in an apartment building



EXTERNALITIES AND MARKET INEFFICIENCY

- Positive Externalities
  - Immunizations
  - Restored historic buildings
  - Research into new technologies



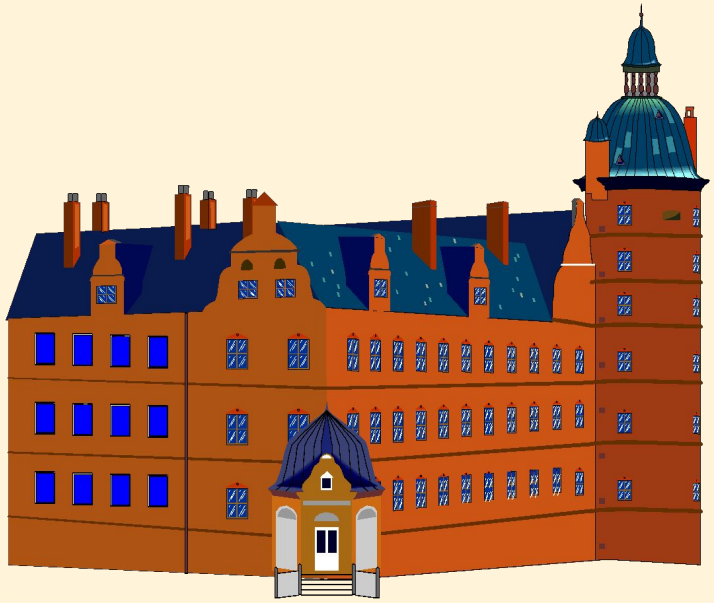
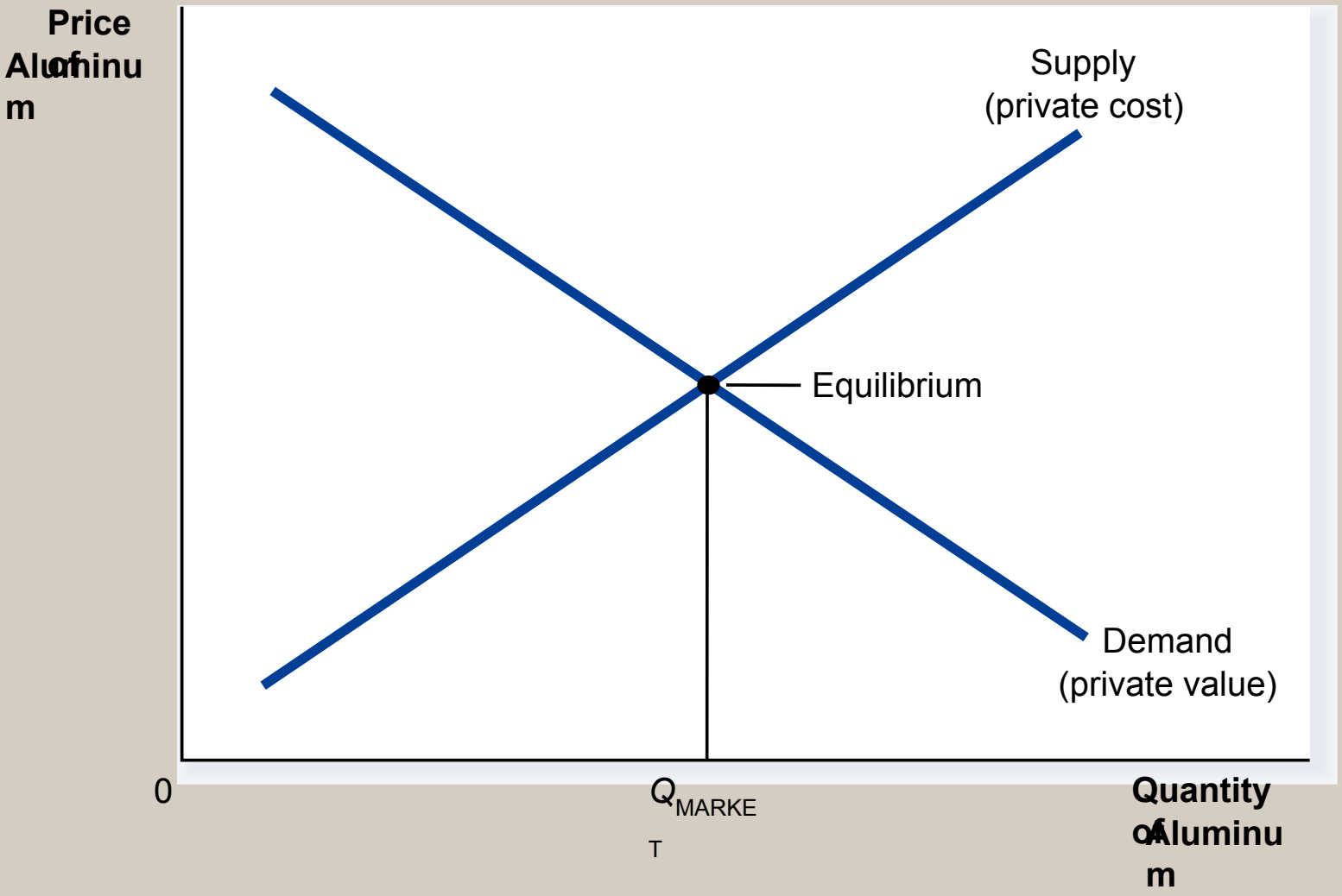


Figure 1 The Market for Aluminum



EXTERNALITIES AND MARKET INEFFICIENCY

- Negative externalities lead markets to produce a larger quantity than is socially desirable.
- Positive externalities lead markets to produce a smaller quantity than is socially desirable.

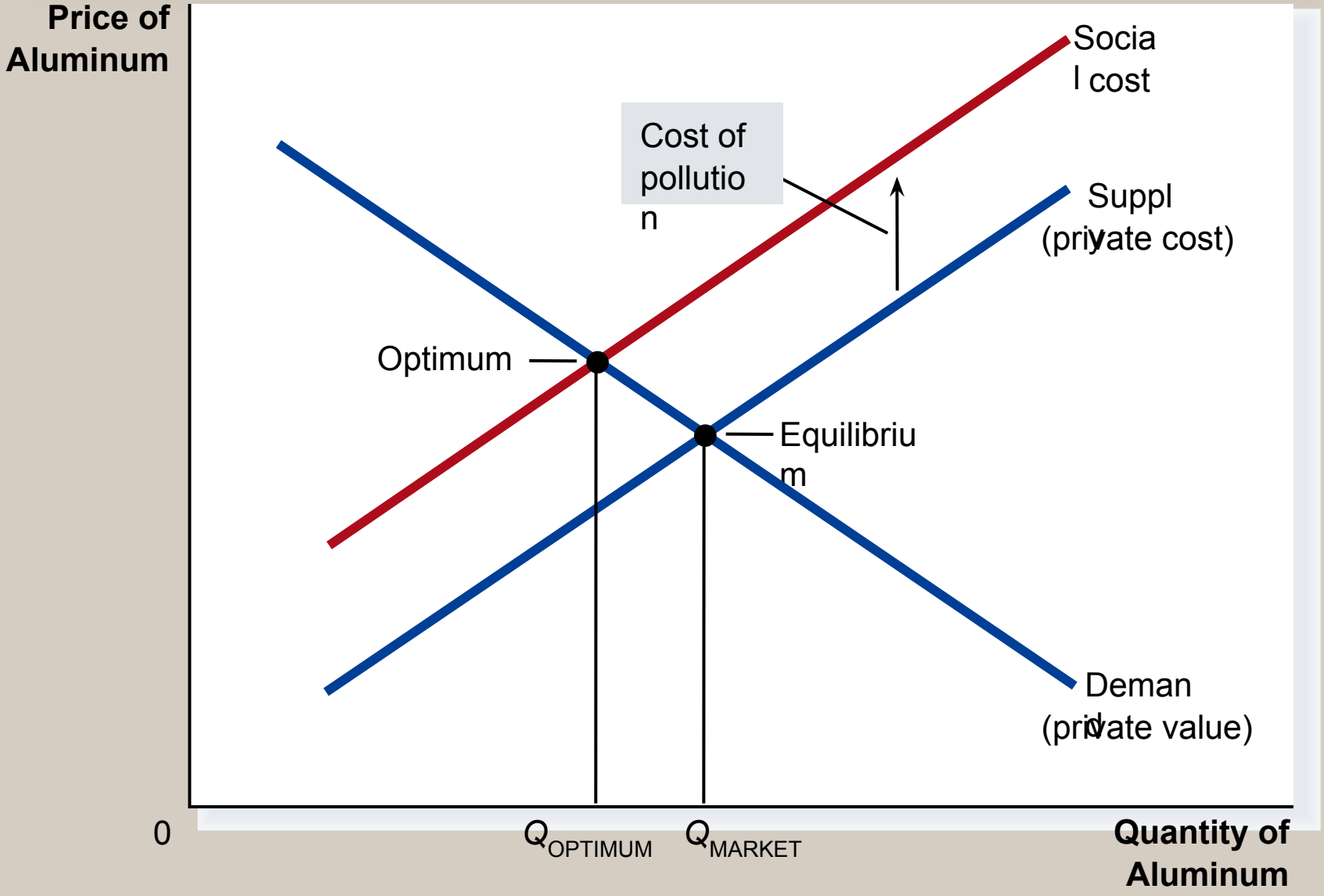
Welfare Economics: A Recap

- The Market for Aluminum
  - The quantity produced and consumed in the market equilibrium is efficient in the sense that it maximizes the sum of producer and consumer surplus.
  - If the aluminum factories emit pollution (a negative externality), then the cost to society of producing aluminum is larger than the cost to aluminum producers.

Welfare Economics: A Recap

- The Market for Aluminum
  - For each unit of aluminum produced, the *social cost* includes the private costs of the producers plus the cost to those bystanders adversely affected by the pollution.

Figure 2 Pollution and the Social Optimum



Negative Externalities

- The intersection of the demand curve and the social-cost curve determines the optimal output level.
  - The socially optimal output level *is less than* the market equilibrium quantity.

Negative Externalities

- *Internalizing an externality* involves altering incentives so that people take account of the external effects of their actions.

Negative Externalities

- Achieving the Socially Optimal Output
- The government can internalize an externality by imposing a tax on the producer to reduce the equilibrium quantity to the socially desirable quantity.

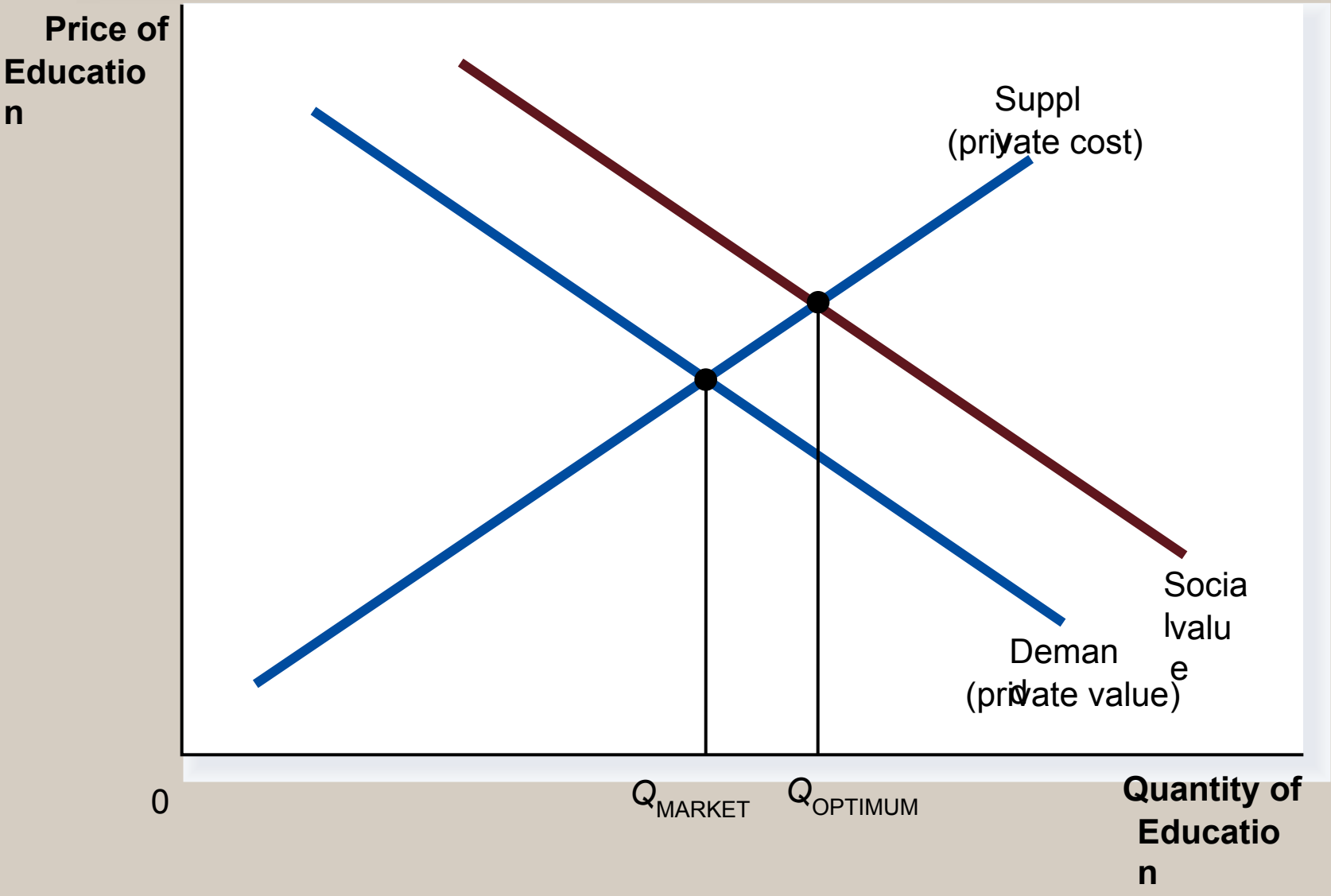
Positive Externalities

- When an externality *benefits* the bystanders, a positive externality exists.
  - The social value of the good exceeds the private value.

Positive Externalities

- A technology spillover is a type of positive externality that exists when a firm's innovation or design not only benefits the firm, but enters society's pool of technological knowledge and benefits society as a whole.

Figure 3 Education and the Social Optimum



Positive Externalities

- The intersection of the supply curve and the social-value curve determines the optimal output level.
  - The optimal output level is more than the equilibrium quantity.
  - The market produces a smaller quantity than is socially desirable.
  - The social value of the good exceeds the private value of the good.

Positive Externalities

- Internalizing Externalities: Subsidies
  - Used as the primary method for attempting to internalize positive externalities.
- Industrial Policy
  - Government intervention in the economy that aims to promote technology-enhancing industries
    - *Patent laws* are a form of technology policy that give the individual (or firm) with patent protection a *property right* over its invention.
    - The patent is then said to *internalize* the externality.

PRIVATE SOLUTIONS TO EXTERNALITIES

- Government action is not always needed to solve the problem of externalities.

PRIVATE SOLUTIONS TO EXTERNALITIES

- Moral codes and social sanctions
- Charitable organizations
- Integrating different types of businesses
- Contracting between parties

The Coase Theorem

- The *Coase Theorem* is a proposition that if private parties can bargain without cost over the allocation of resources, they can solve the problem of externalities on their own.
- Transactions Costs
  - *Transaction costs* are the costs that parties incur in the process of agreeing to and following through on a bargain.

Why Private Solutions Do Not Always Work

- Sometimes the private solution approach fails because transaction costs can be so high that private agreement is not possible.

PUBLIC POLICY TOWARD EXTERNALITIES

- When externalities are significant and private solutions are not found, government may attempt to solve the problem through . . .
  - command-and-control policies.
  - market-based policies.

PUBLIC POLICY TOWARD EXTERNALITIES

- Command-and-Control Policies
  - Usually take the form of regulations:
    - Forbid certain behaviors.
    - Require certain behaviors.
  - Examples:
    - Requirements that all students be immunized.
    - Stipulations on pollution emission levels set by the Environmental Protection Agency (EPA).

PUBLIC POLICY TOWARD EXTERNALITIES

- Market-Based Policies
  - Government uses taxes and subsidies to align private incentives with social efficiency.
  - *Pigovian taxes* are taxes enacted to correct the effects of a negative externality.

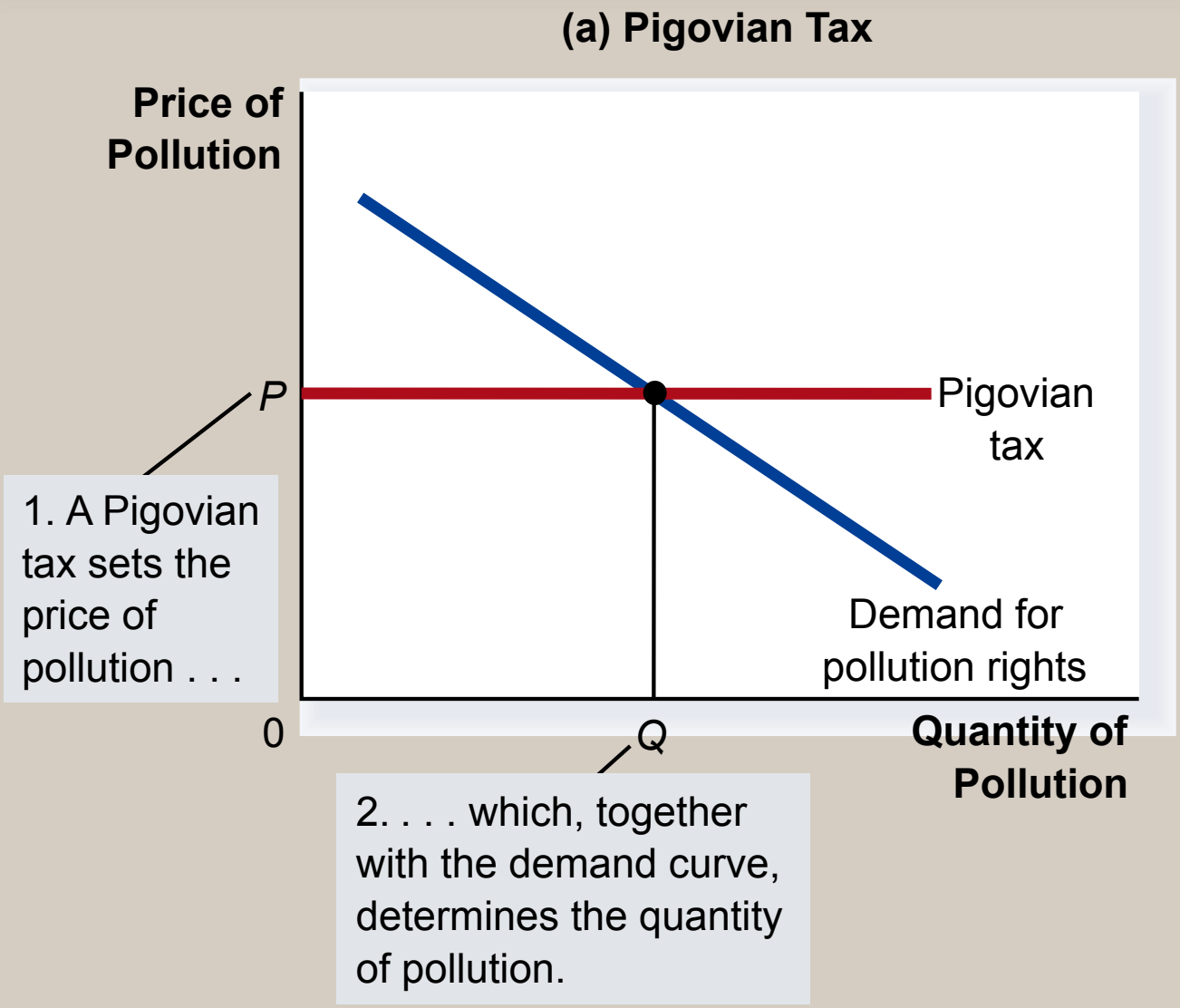
PUBLIC POLICY TOWARD EXTERNALITIES

- Examples of Regulation versus Pigovian Tax
  - If the EPA decides it wants to reduce the amount of pollution coming from a specific plant. The EPA could…
  - tell the firm to reduce its pollution by a specific amount (i.e. regulation).
  - levy a tax of a given amount for each unit of pollution the firm emits (i.e. Pigovian tax).

PUBLIC POLICY TOWARD EXTERNALITIES

- Market-Based Policies
- Tradable pollution permits allow the voluntary transfer of the right to pollute from one firm to another.
  - A market for these permits will eventually develop.
  - A firm that can reduce pollution at a low cost may prefer to sell its permit to a firm that can reduce pollution only at a high cost.

Figure 4 The Equivalence of Pigovian Taxes and Pollution Permits



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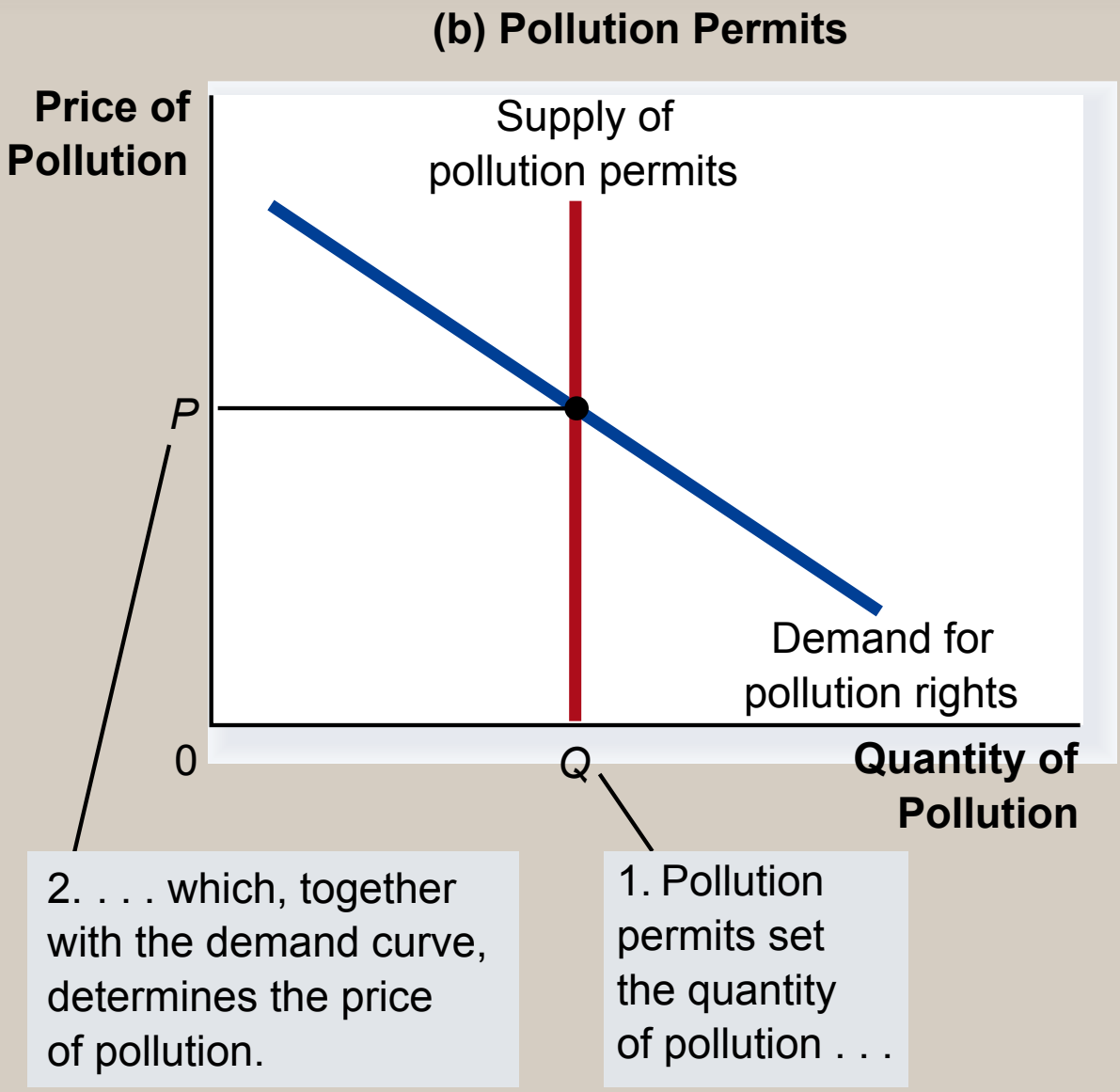

Summary

- When a transaction between a buyer and a seller directly affects a third party, the effect is called an externality.
- Negative externalities cause the socially optimal quantity in a market to be less than the equilibrium quantity.
- Positive externalities cause the socially optimal quantity in a market to be greater than the equilibrium quantity.

Summary

- Those affected by externalities can sometimes solve the problem privately.
- The Coase theorem states that if people can bargain without a cost, then they can always reach an agreement in which resources are allocated efficiently.

Summary

- When private parties cannot adequately deal with externalities, then the government steps in.
- The government can either regulate behavior or internalize the externality by using Pigovian taxes or by issuing pollution permits.