ECO5002 Introduction to Economics

Lecture 3: Markets and Welfare

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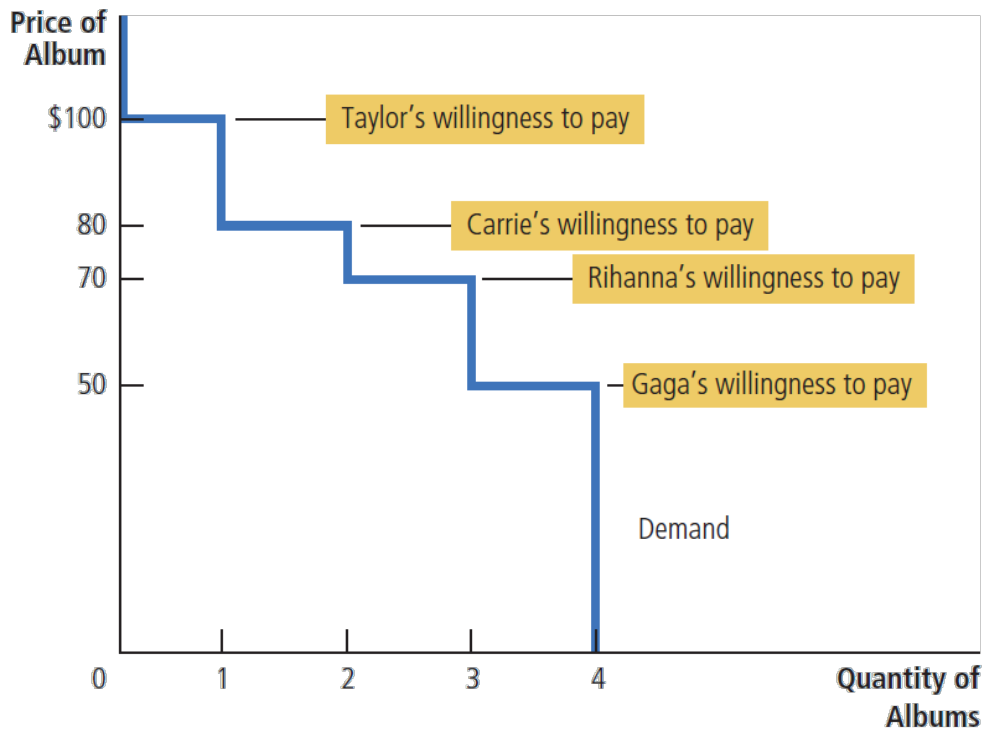
I. Consumer and Producer Surplus

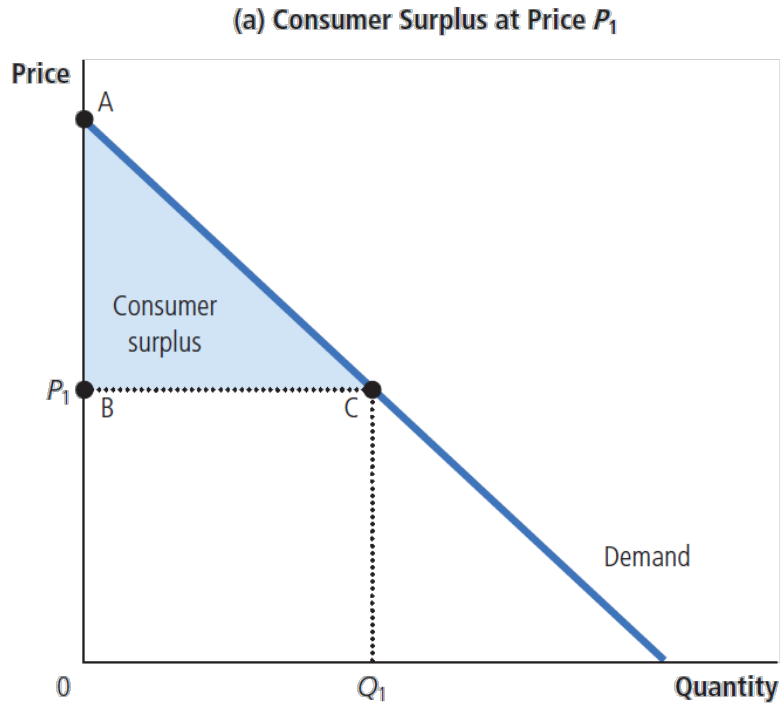
Welfare economics is the study of how the allocation of resources affects economic well-being.

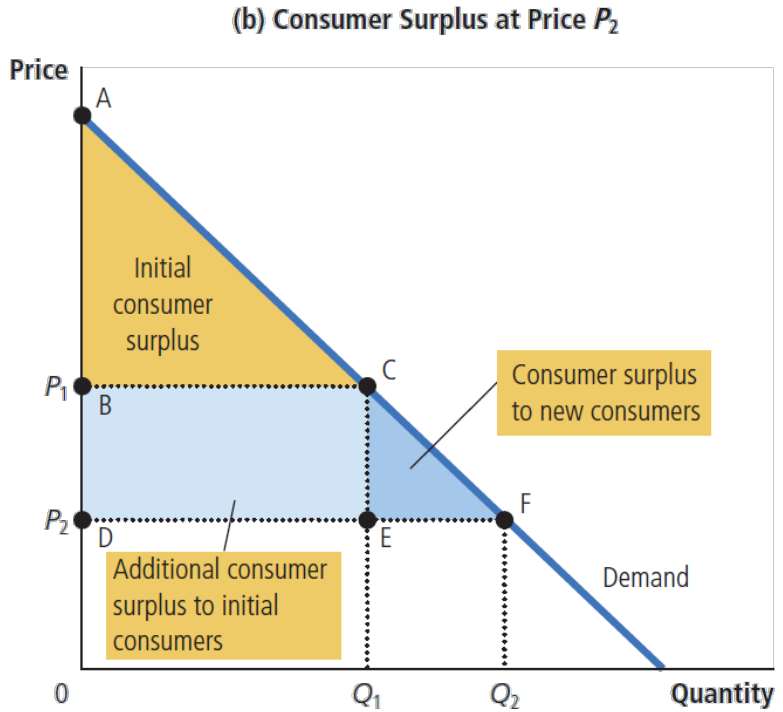
- **Consumer Surplus** is the amount a buyer is willing to pay for a good minus the amount the buyer actually pays for it.
  - willingness to pay: the maximum amount that a buyer will pay for a good.
  - benefit buyers receive from a good as the buyers themselves perceive it.



I. Consumer and Producer Surplus

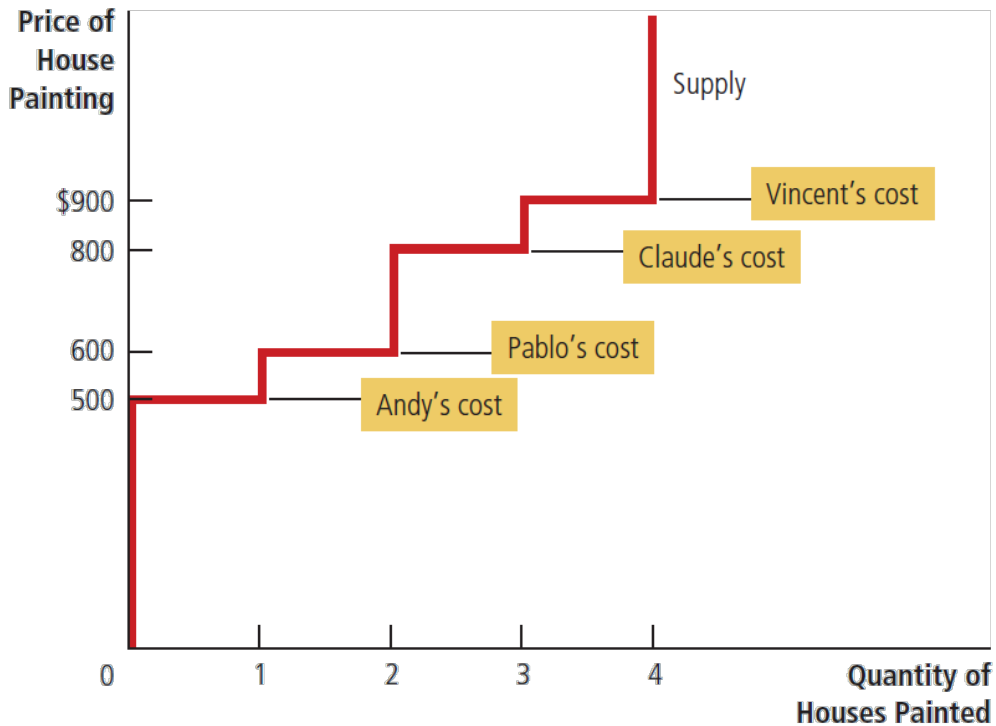
From discrete to continuous:





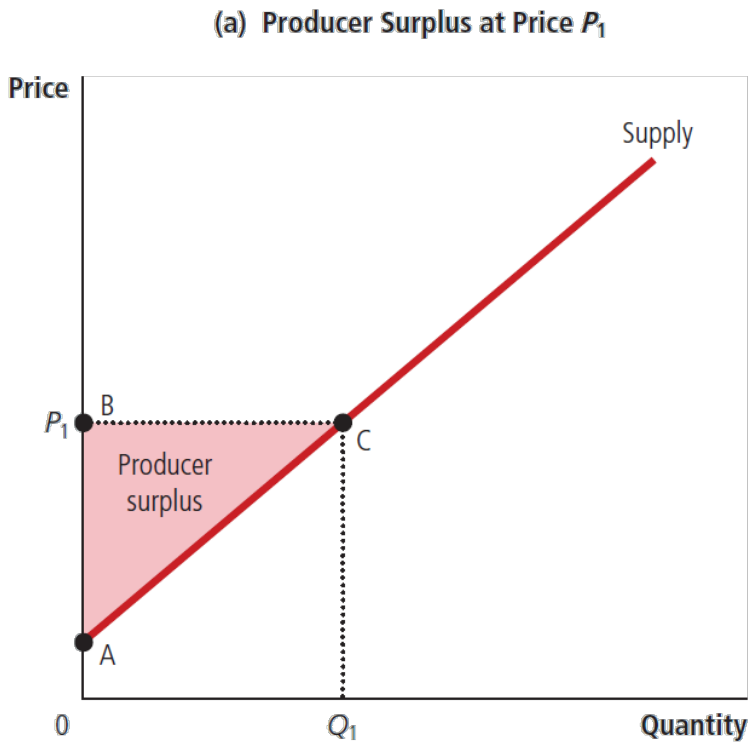
I. Consumer and Producer Surplus

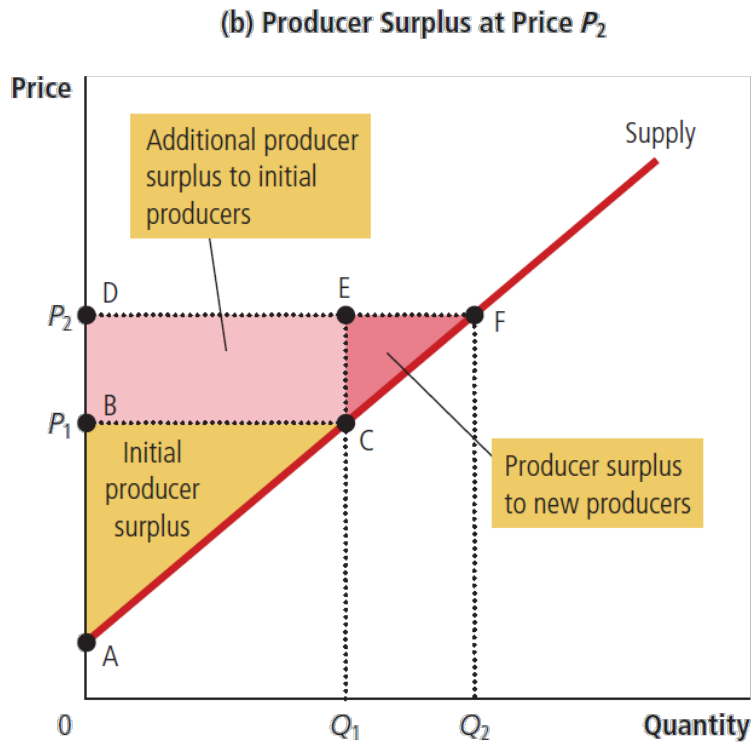
- **Producer Surplus** the amount a seller is paid for a good minus the seller's cost of providing it.
  - cost: the value of everything a seller must give up to produce a good.



I. Consumer and Producer Surplus

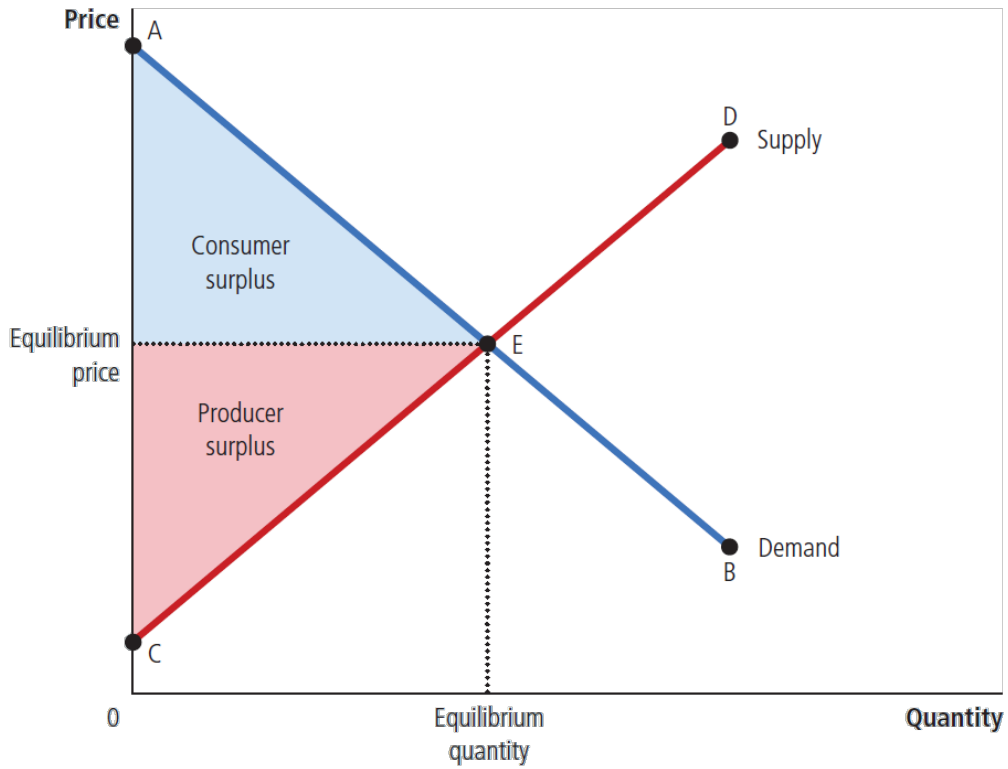
From discrete to continuous:





II. Market Efficiency

- Total surplus = Consumer Surplus + Producer Surplus
- If an allocation of resources maximizes total surplus, we say that the allocation exhibits **efficiency**.

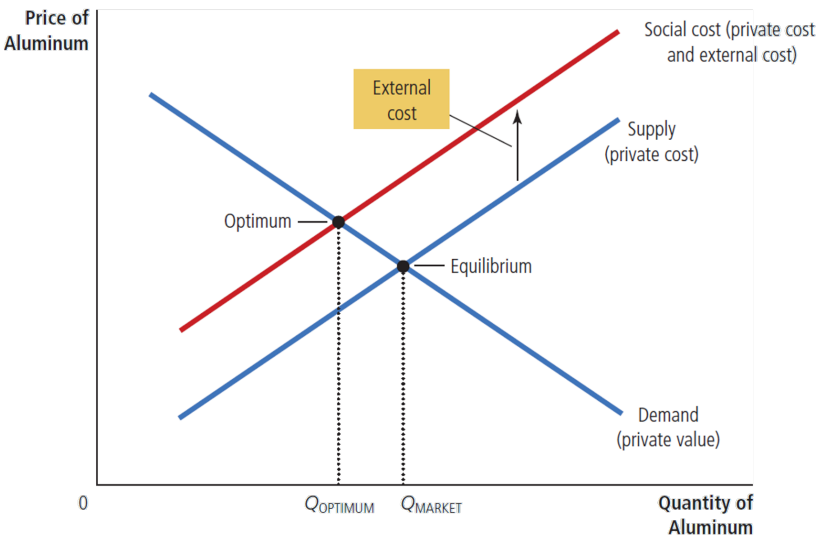


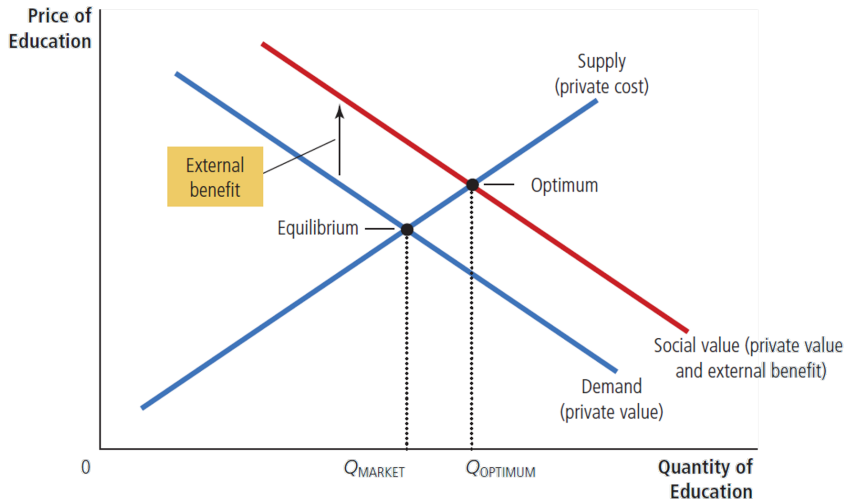
II. Market Efficiency

- Free markets produce the quantity of goods that maximizes the sum of consumer and producer surplus.
  - free markets allocate the supply of goods to the buyers who value them most highly, as measured by their willingness to pay.
  - free markets allocate the demand for goods to the sellers who can produce them at the lowest cost.
- **Pareto efficiency**
  - if we can find a way to make some people better off without making anybody else worse off, we have a Pareto improvement.
  - if an allocation is such that no Pareto improvements are possible, it is called Pareto efficient (optimal).
- Proof by contradiction to show that competitive equilibrium reaches the Pareto efficiency. (Suppose $Q < Q^*$ and $Q > Q^*$)
- In general, markets may not be efficient due to
  - market power, e.g., monopoly, or oligopoly.
  - externality, e.g., pollution, or noise.
  - .....

II. Market Efficiency

- **Externality** is the uncompensated impact of one person's actions on the well-being of a bystander.
  - negative externality: pollution, ...
  - positive externality: education, ...
- How to achieve the optimum? Internalizing the externality.
  - altering incentives so that people take into account the external effects of their actions, e.g., tax or subsidy.

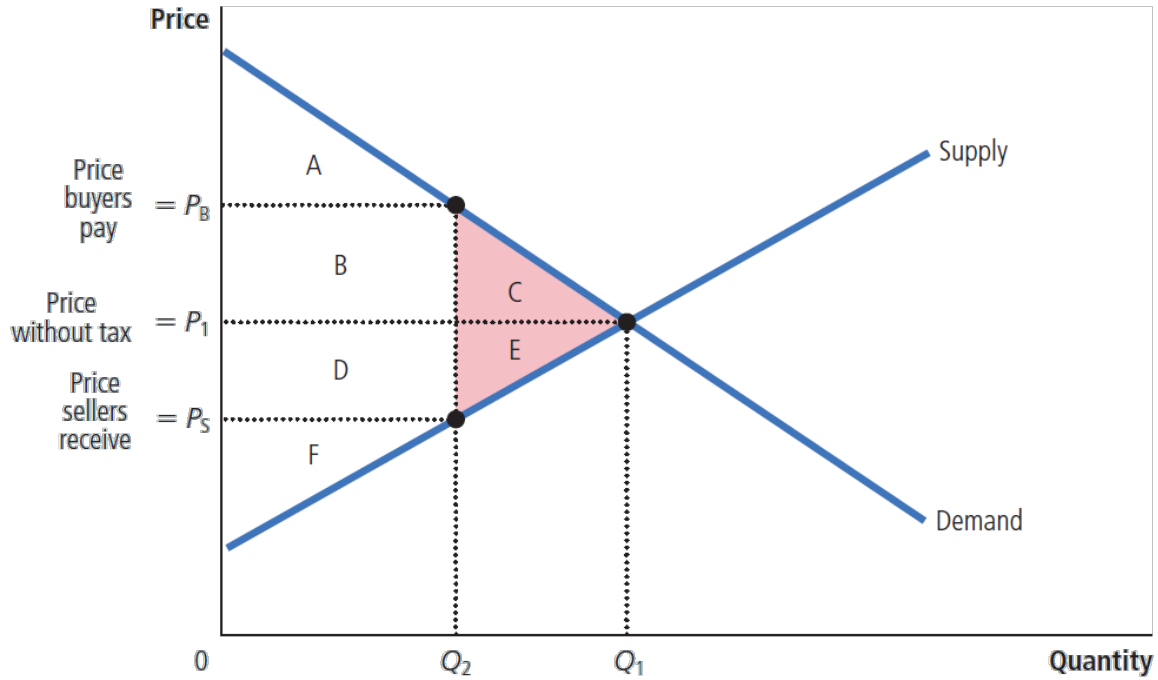




II. Market Efficiency

- The **Coase theorem** says that if private parties can bargain without cost over the allocation of resources, they can solve the problem of externalities on their own.
- Suppose A has the legal right to keep a barking dog.
  - example 1: A has a dog (500), but B suffers from the barking (-800). solution: B offers A 600 to get rid of the dog. (A+100, B+200)
  - example 2: A has a dog (1000), but B suffers from the barking (-800). solution: A keeps the dog, and nothing to do.
- What about B has the legal right to peace and quiet?
  - example 1: A has a dog (500), but B suffers from the barking (-800). solution: B keeps the quietness, and nothing to do.
  - example 2: A has a dog (1000), but B suffers from the barking (-800). solution: A offers B 900. (A+100, B+100)
- Transaction costs
  - the costs that parties incur during the process of agreeing to and following through on a bargain.

III. Application 1 - The Costs of Taxation



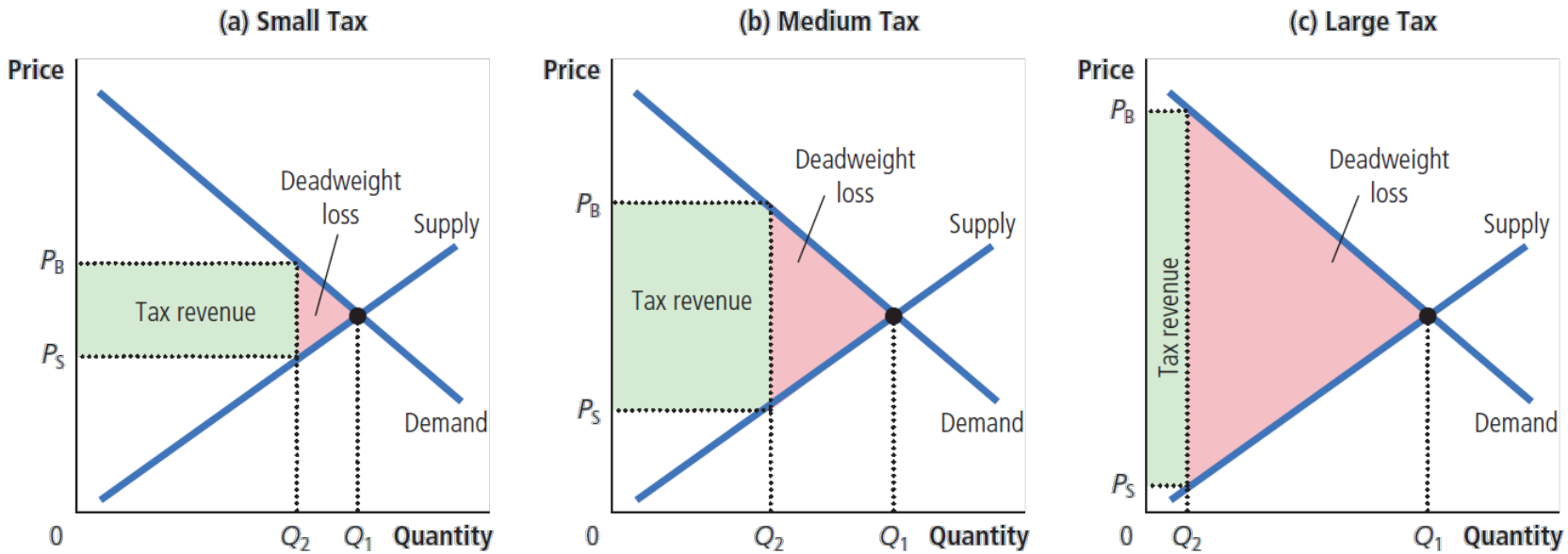
- Without tax:
  - CS = A + B + C; PS = D + E + F
  - TS = A + B + C + D + E + F
- With tax:
  - CS = A; PS = F; Tax revenue = B + D
  - TS = A + B + D + F
- **Dead-weight loss** = C + E.

III. Application 1 - The Costs of Taxation

- **Dead-weight loss** is the fall in total surplus that results from a market distortion, such as a tax.
- A tax has a dead-weight loss because it induces buyers and sellers to change their behavior.
  - if the supply (or the demand) is inelastic, then the dead-weight loss of a tax is small since sellers (or buyers) don't change their behavior much.
  - if the supply (or the demand) is elastic, then the dead-weight loss of a tax is large since sellers (or buyers) do change their behavior much.

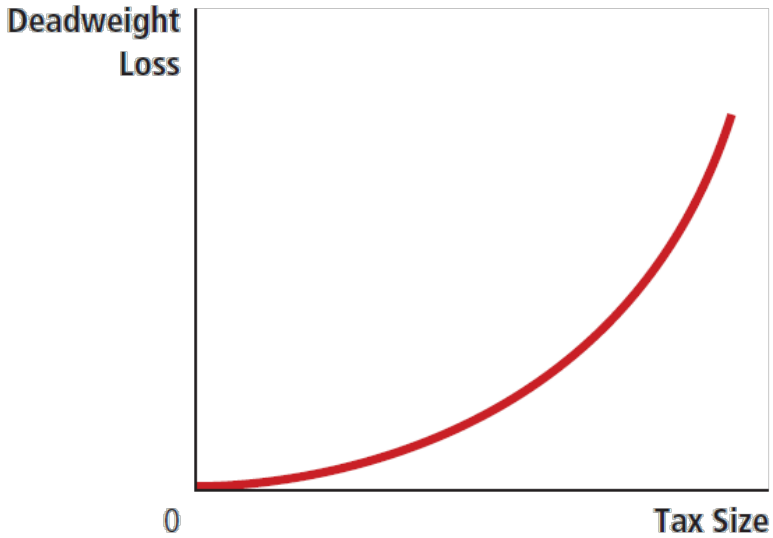
III. Application 1 - The Costs of Taxation

- How dead-weight loss and tax revenue vary with the tax size?

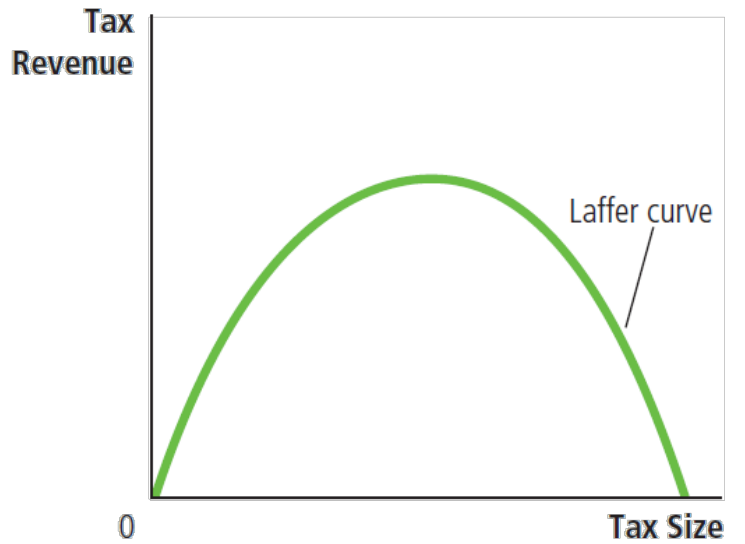


III. Application 1 - The Costs of Taxation

(d) From panel (a) to panel (c), deadweight loss continually increases.

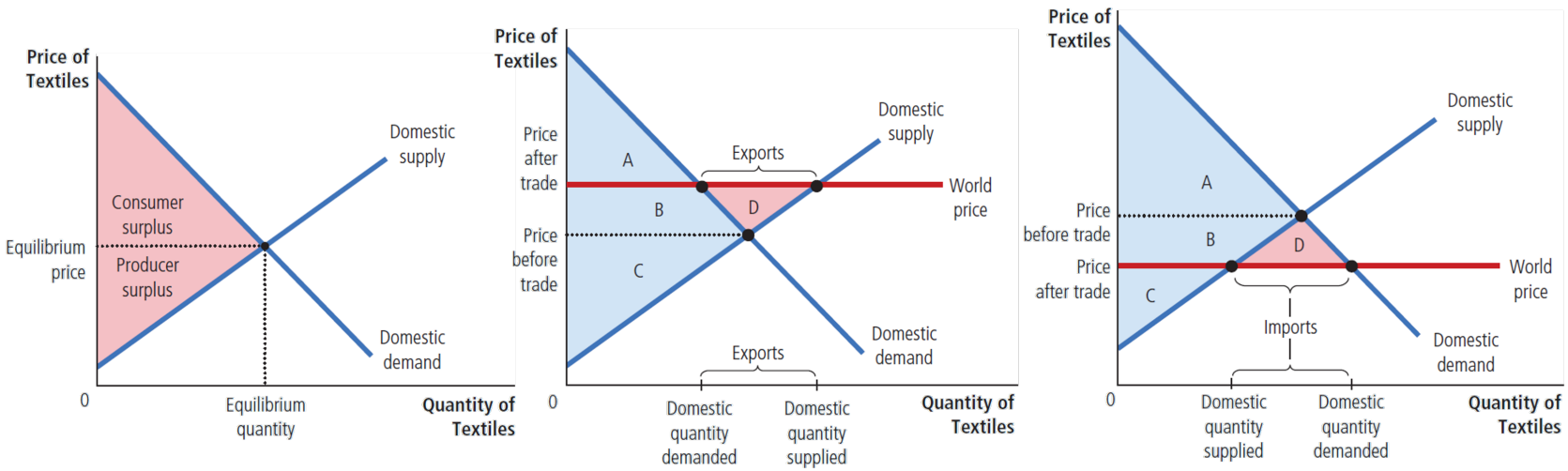


(e) From panel (a) to panel (c), tax revenue first increases, then decreases.



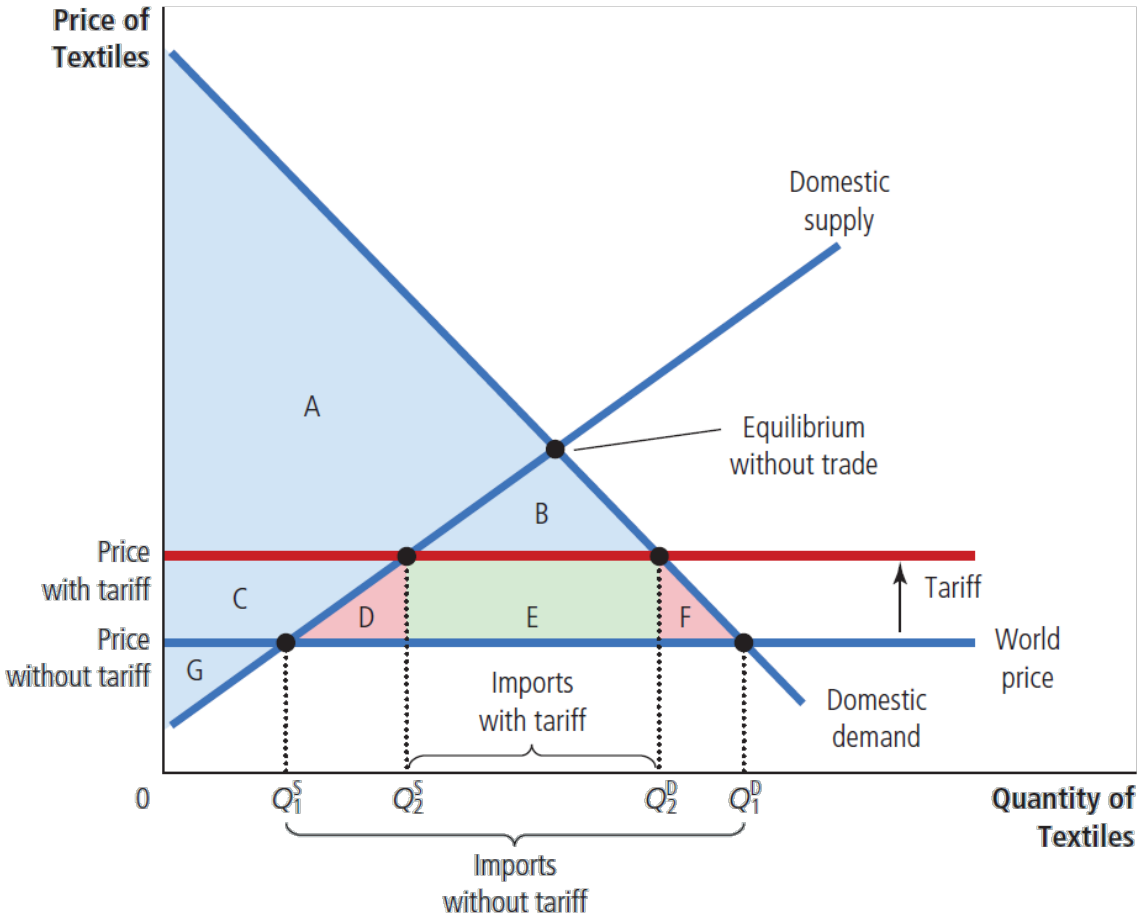
III. Application 2 - International Trade

- Consider two markets for textiles: domestic and world.
  - Without trade: TS $=$ A $+$ B $+$ C
  - With trade: TS $=$ A $+$ B $+$ C $+$ D
  - when exporting: CS $\downarrow$, but PS $\uparrow$.
  - when importing: CS $\uparrow$, but PS $\downarrow$.
- International trade increases the total welfare in general, but meanwhile reduces the equality.



III. Application 2 - International Trade

- The effects of a tariff:
  - tariff: a tax on goods produced abroad and sold domestically.
  - tariff will result in a dead-weight loss = D + F.
  - protect domestic producers: G → G + C



III. Application 2 - International Trade

- Other benefits of international trade
  - increased variety of goods.
  - lower costs through economies of scale.
  - increased competition.
  - enhanced flow of ideas.
- Arguments for restricting trade
  - trade destroys domestic jobs.
  - protect industries that are vital to national security.
  - protect infant industries.
  - trade induces unfair competition.
  - .....

Reading

- Chapter 7 $\sim$ 10, *Principles of Economics* by Mankiw.