Taxation-Incidence
(Chapter 19)

Taxation-Incidence

- Who bears the burden of a tax?
  - Is it the party that sends the check to the government?
  - Not necessarily.

Taxation-Incidence

- Three rules of tax incidence
  - **The statutory burden of a tax does not describe who really bears the tax**
    - **Statutory incidence:** the burden of a tax borne by the party that sends the check to the government
    - **Economic incidence:** the burden of taxation measured by the change in the resources available to any economic agent as a result of taxation

Taxation-Incidence

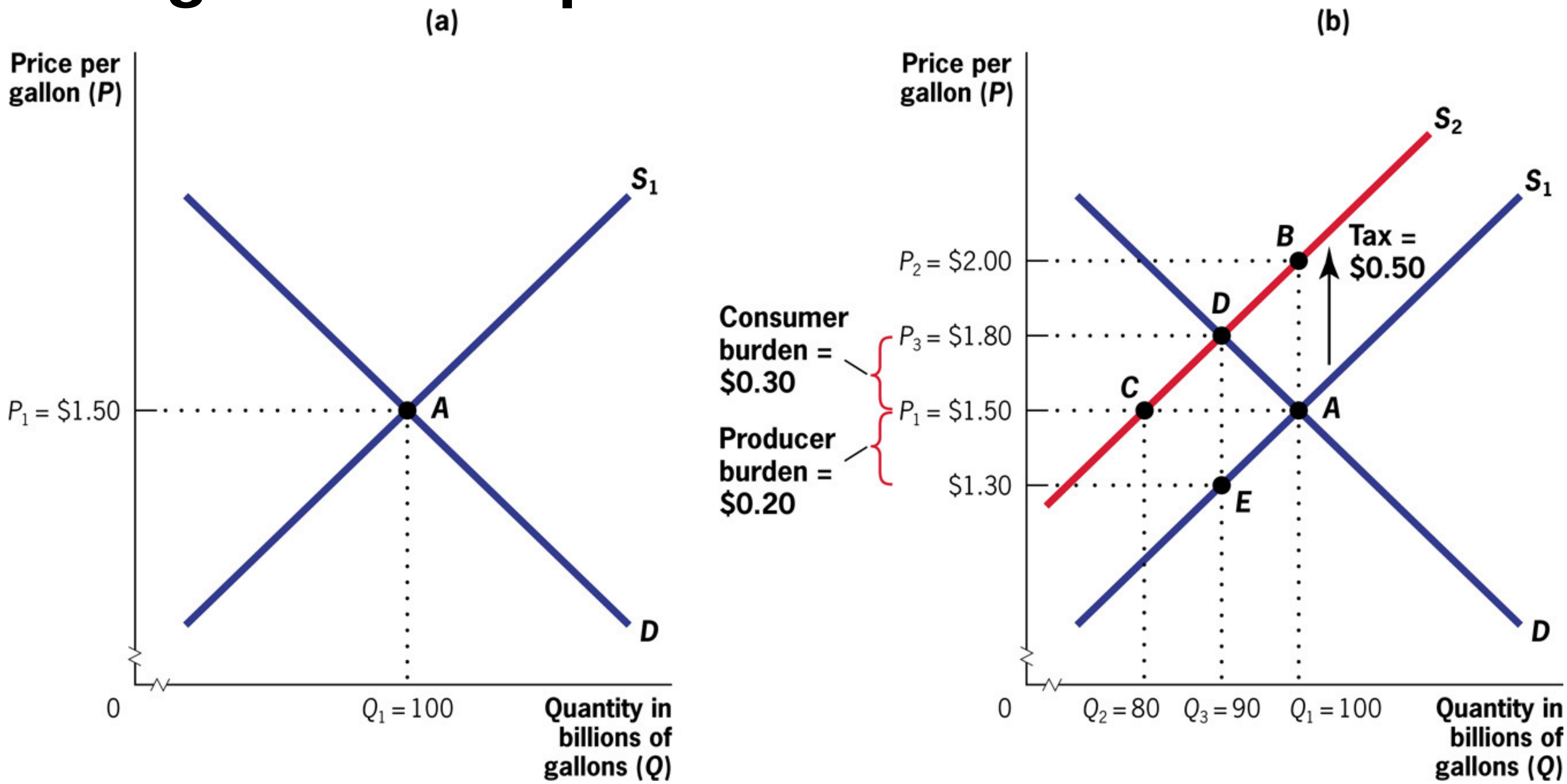
- Three rules of tax incidence
  - **The statutory burden of a tax does not describe who really bears the tax**

Consumer tax burden = (Post-tax price – Pre-tax price) +Per-unit tax payments by the consumer

Producer tax burden = (Pre-tax price – Post-tax price) +Per-unit tax payments by the producer

Taxation-Incidence

- Three rules of tax incidence
  - **Example: 50 cent/per gallon tax on gasoline on producer**



Taxation-Incidence

- Three rules of tax incidence
  - **The statutory burden of a tax does not describe who really bears the tax**

Consumer tax burden = (Post-tax price – Pre-tax price)

+Per-unit tax payments by the consumer

Consumer tax burden = ($1.80 – $1.50) + $0

= $0.30

Taxation-Incidence

- Three rules of tax incidence
  - **The statutory burden of a tax does not describe who really bears the tax**

Producer tax burden = (Pre-tax price – Post-tax price)

+Per-unit tax payments by the producer

Producer tax burden = ($1.50 – $1.80) + $0.50 = $0.20

Taxation-Incidence

- Three rules of tax incidence
  - **The statutory burden of a tax does not describe who really bears the tax**

    - **Tax wedge:** The difference between what consumers pay and what producers receive (net of tax) from a transaction.

Taxation-Incidence

- Three rules of tax incidence
  - **The side of the market on which the tax is imposed is irrelevant to the distribution of the tax burdens**
    - **Example: 50 cent/per gallon tax on gasoline on consumer**

Taxation-Incidence

- Three rules of tax incidence
  - **The side of the market on which the tax is imposed is irrelevant to the distribution of the tax burdens**

Taxation-Incidence

- Three rules of tax incidence
  - **The side of the market on which the tax is imposed is irrelevant to the distribution of the tax burdens**
    - **Gross price:** The price paid by or received by the party not paying the tax to the government (market price)
    - **After-tax price:** The price paid by or received by the party that is paying the tax to the government
      - Either lower by the tax if producers pay the tax
      - Or higher by the tax if consumers pay the tax

Taxation-Incidence

- Three rules of tax incidence
  - **Parties with inelastic supply or demand bear taxes; parties with elastic supply or demand avoid them**
    - **Example: 50 cents of tax on gasoline on producers assuming perfectly inelastic demand**
    - Assume that consumers do not have any other alternatives but to drive to work.

Taxation-Incidence

- Three rules of tax incidence
  - **Parties with inelastic supply or demand bear taxes; parties with elastic supply or demand avoid them**

Taxation-Incidence

- Three rules of tax incidence
  - **Parties with inelastic supply or demand bear taxes; parties with elastic supply or demand avoid them**

    Consumer tax burden = (\$2 – \$1.50) + \$0

    = \$0.50

    Producer tax burden = (\$1.50 - \$2) + \$0.50

    = \$0

    - **Full shifting** of the tax burden from the producers to the consumers

Taxation-Incidence

- Three rules of tax incidence
  - **Parties with inelastic supply or demand bear taxes; parties with elastic supply or demand avoid them**
    - **Example: 50 cents of tax on gasoline on producers assuming perfectly elastic demand**
    - Assume that consumers can easily substitute ‘driving’ with public transportation.

Taxation-Incidence

- Three rules of tax incidence
  - **Parties with inelastic supply or demand bear taxes; parties with elastic supply or demand avoid them**

Taxation-Incidence

- Three rules of tax incidence
  - **Parties with inelastic supply or demand bear taxes; parties with elastic supply or demand avoid them**

Consumer tax burden = ($1.50 – $1.50) + $0

= $0

Producer tax burden = ($1.50 - $1.50) + $0.50

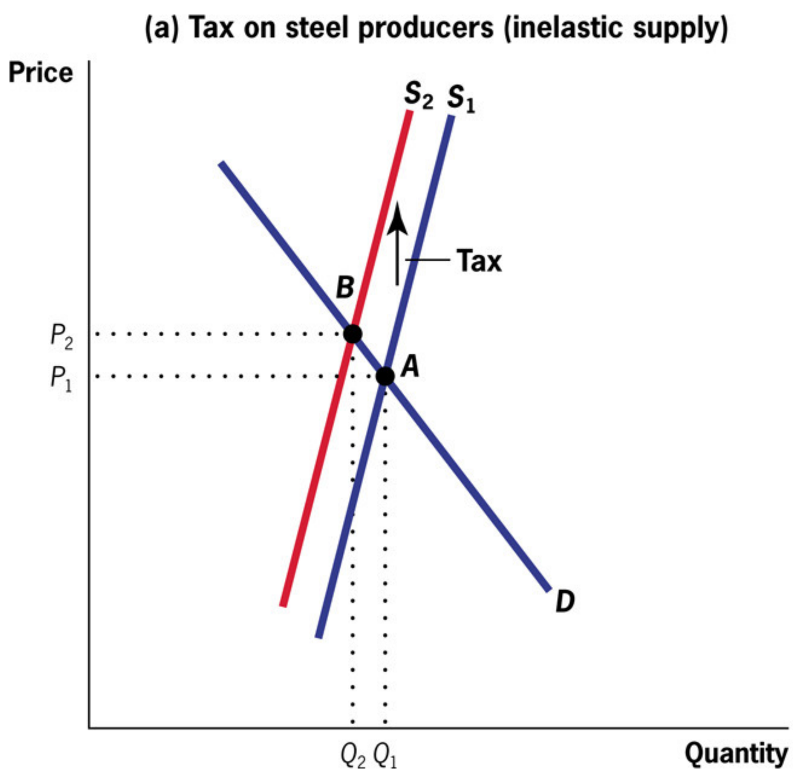
= $0.50

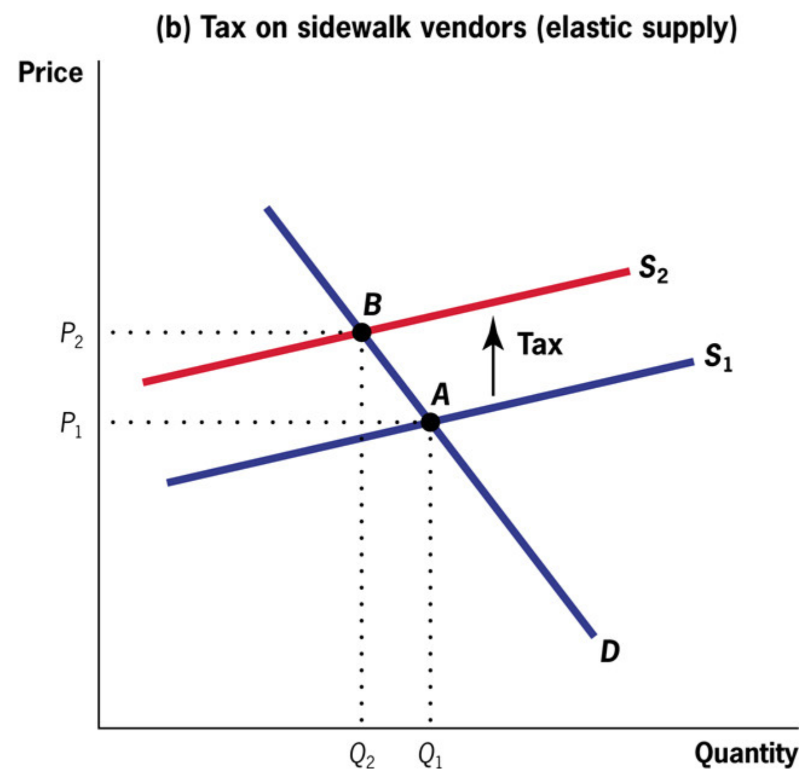
Taxation-Incidence

- Three rules of tax incidence
  - **Parties with inelastic supply or demand bear taxes; parties with elastic supply or demand avoid them**
    - **Supply elasticities**
      - Steel plant owners versus street vendors

Taxation-Incidence

- Three rules of tax incidence
  - **Parties with inelastic supply or demand bear taxes; parties with elastic supply or demand avoid them**





Taxation-Incidence

- Math behind the figures
  - Consider the case where consumers pay the tax
    - Change in price for consumers:

$$\text{Total price change} = \Delta P + \tau$$

    - Elasticity of demand:

$$\eta_d = \Delta Q / (\Delta P + \tau) \times (P / Q)$$

$$\eta_s = \Delta Q / \Delta P \times (P / Q)$$

    - Solve for $\Delta Q / Q$

Taxation-Incidence

- Math behind the figures
  - Consider the case where consumers pay the tax

$$\eta_d = \Delta Q / Q = \eta_d \text{ x } ((\Delta P + \tau) / P)$$

$$= \eta_s \text{ x } (\Delta P / P)$$

$$\Rightarrow \eta_d \text{ x } ((\Delta P + \tau) / P) = \eta_s \text{ x } (\Delta P / P)$$

$$\Rightarrow \boldsymbol{\Delta P = [\eta_d / (\eta_s - \eta_d)] \text{ x } \tau}$$

  - If demand is inelastic ($\eta_d = 0$), then $\Delta P = 0$.
  - If demand is perfectly elastic ($\eta_d = \infty$), then $\Delta P = -\boldsymbol{\tau}$.

Taxation-Incidence

- Math behind the figures
  - Similarly, when producers pay the tax
    - Change in price for producers:

$$\text{Total price change} = \Delta P + \tau$$

$$\mathbf{\Delta P = [\eta_s / (\eta_d - \eta_s)] \times \tau}$$

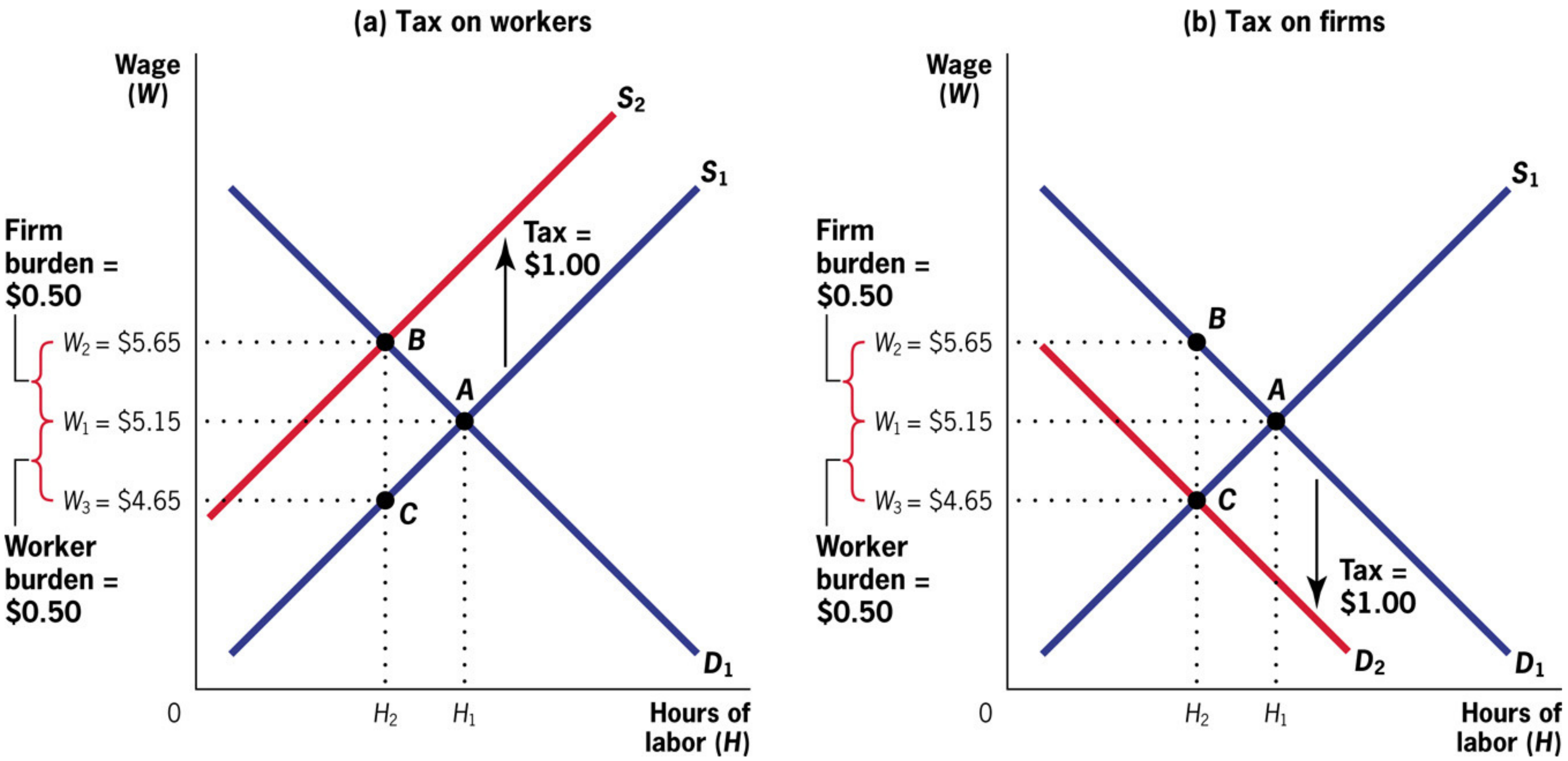
  - If supply is inelastic ($\eta_s = 0$), then $\Delta P = 0$
  - If supply is perfectly elastic ($\eta_s = \infty$), then $\Delta P = \mathbf{-\tau}$

Taxation-Incidence

- Tax Incidence – Extensions
  - **Tax incidence in factor markets**
    - Example: labor market where the consumers of the factors (labor) are the firms and the producers of the factors are individuals (workers).
    - Consider a case where the government imposes a tax of $1/hour on all workers.

Taxation-Incidence

- Tax Incidence – Extensions
  - **Tax incidence in factor markets**



Taxation-Incidence

- Tax Incidence – Extensions
  - **Tax incidence in factor markets**
    - Consider a case where the government imposes a tax of $1/hour on all workers.

Firm tax burden = ($5.65 – $5.15) + $0

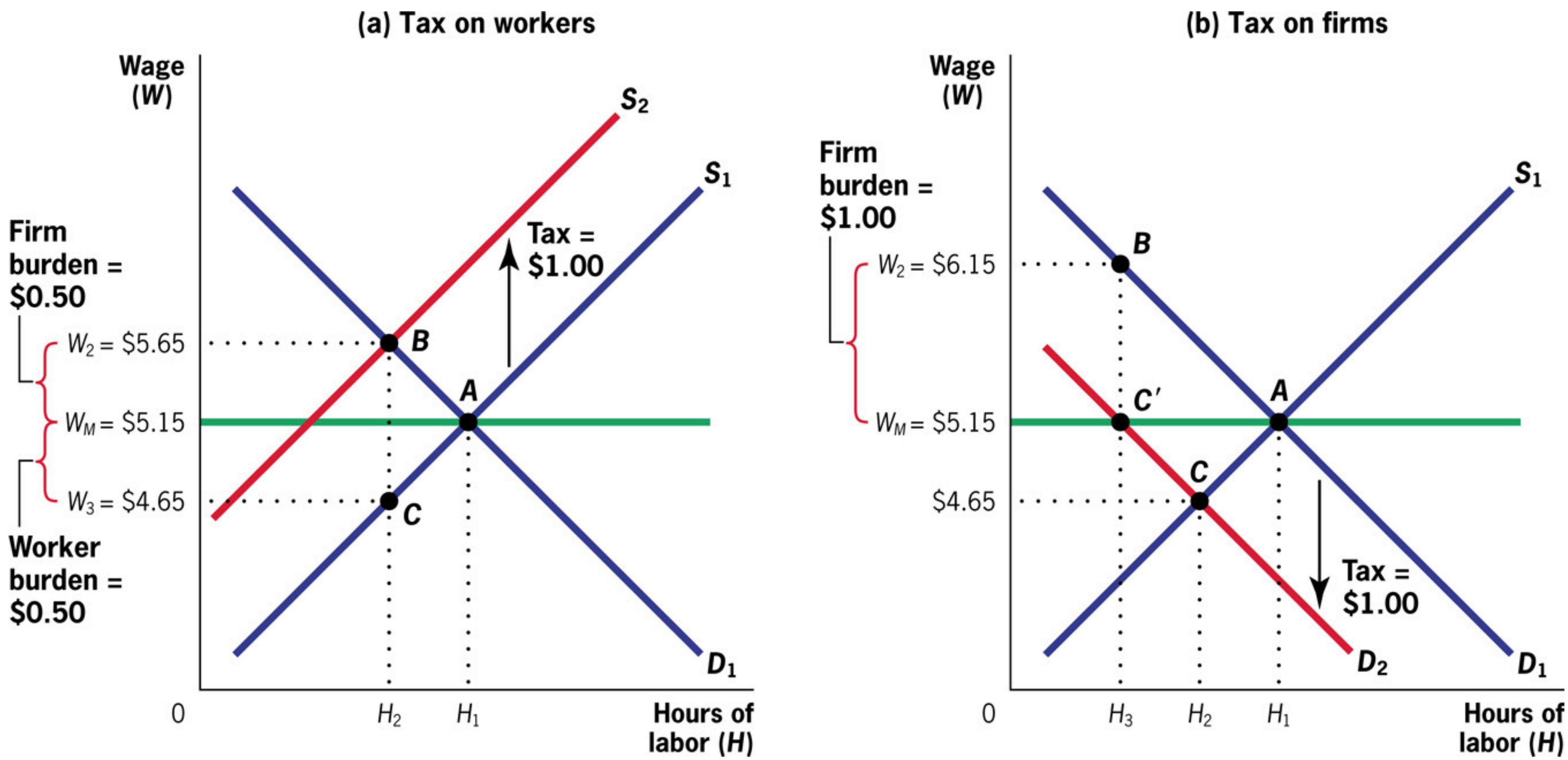
= $0.50

Worker tax burden = ($5.15 - $5.65) + $1

= $0.50

Taxation-Incidence

- Tax Incidence – Extensions
  - **Tax incidence in factor markets**
    - Impediments to wage adjustment: **minimum wage**



Taxation-Incidence

- Tax Incidence – Extensions
  - **Tax incidence in factor markets**
    - Case 1: tax on workers

Firm tax burden = (\$5.65 – \$5.15) + \$0

= \$0.50

Worker tax burden = (\$5.15 - \$5.65) + \$1

= \$0.50

Taxation-Incidence

- Tax Incidence – Extensions
  - **Tax incidence in factor markets**
    - Case 2: tax on firms

Firm tax burden = (\$5.15 – \$5.15) + \$1

= \$1

Worker tax burden = (\$5.15 - \$5.15) + \$0

= \$0

Taxation-Incidence

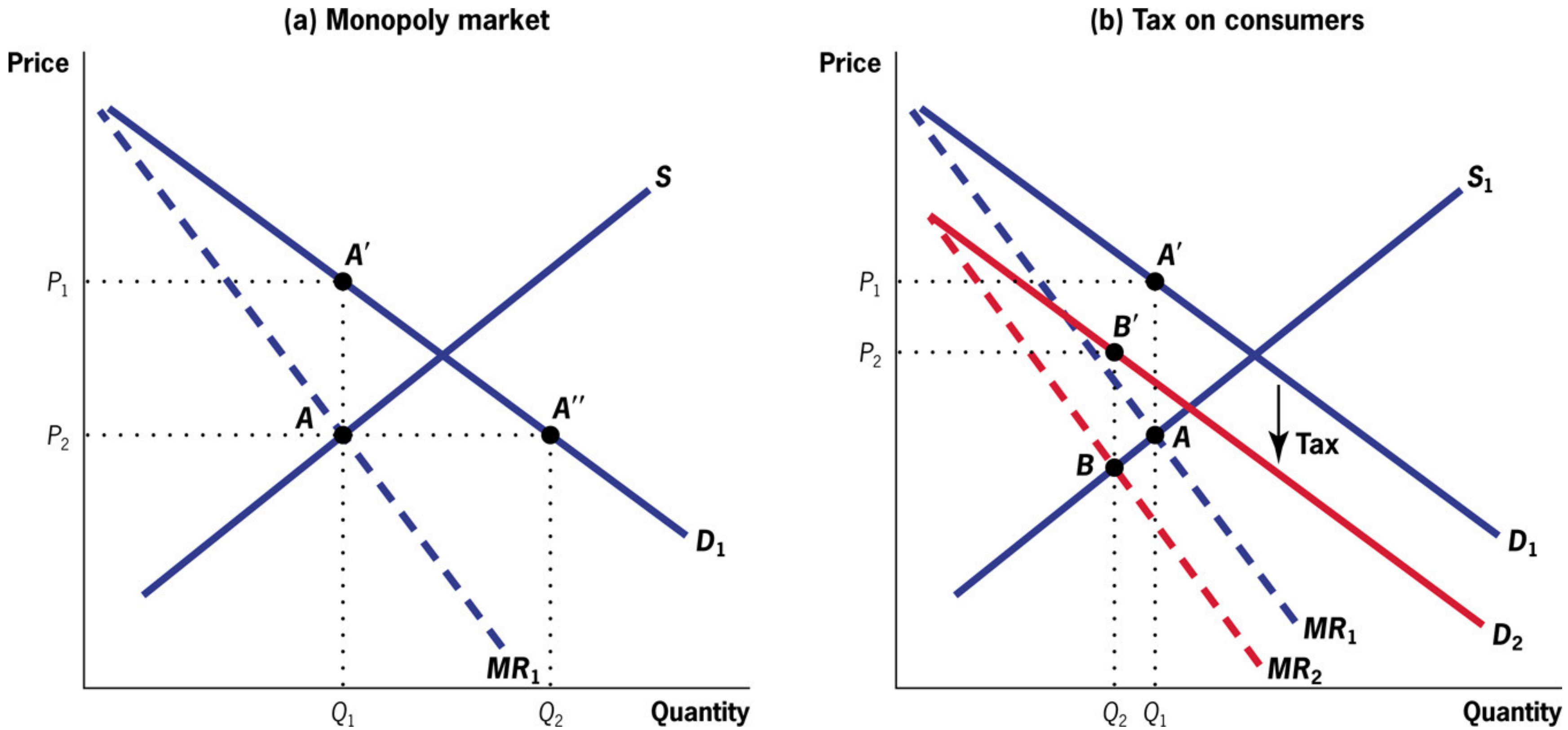
- Tax Incidence – Extensions
  - **Tax incidence in monopolies**
    - Monopolies are ‘**price-makers**’ rather than ‘**price-takers**’.
    - Monopoly maximizes

      total profit = total revenue – total cost

      with respect to quantity ⇨ MR = MC
    - The main difference here is that the monopoly can set any price it wishes.

Taxation-Incidence

- Tax Incidence – Extensions
  - **Tax incidence in monopolies**



Taxation-Incidence

- Tax Incidence – Extensions
  - **Tax incidence in monopolies**
    - Even though monopolies have complete market power, they can not avoid the tax burden, since their revenues depend on the market demand, which changes with taxes.

Taxation-Incidence

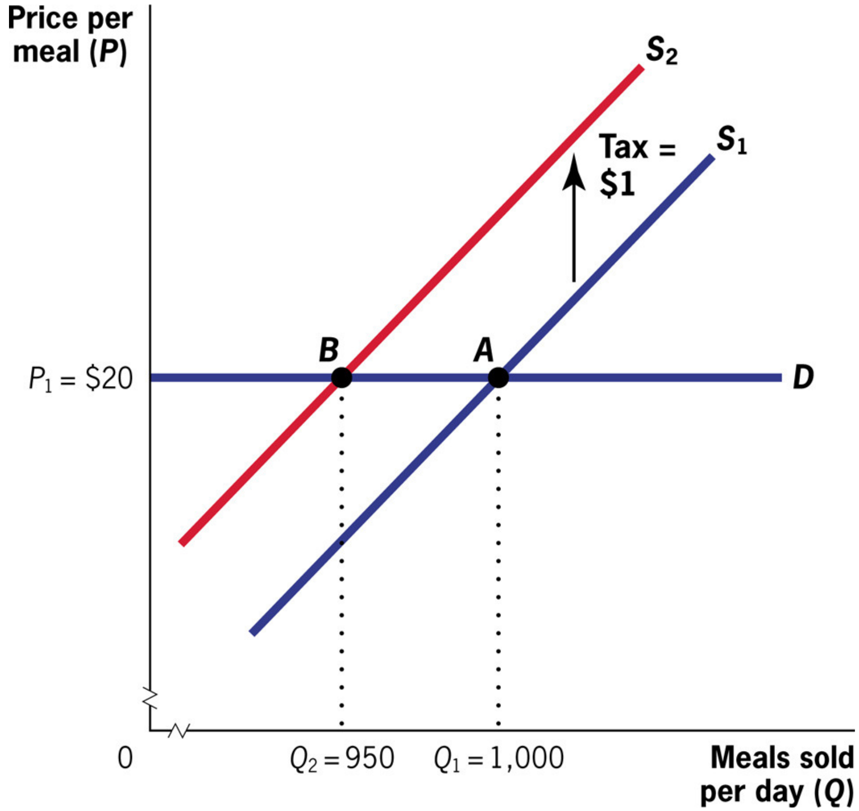
- Tax Incidence – Extensions
  - **Balanced budget tax incidence**
    - So far, when we calculated the tax burdens, we ignored the fact that the government might be using the revenues for the benefit of the firms and the consumers
    - **Balanced budget incidence:** analysis that accounts for both the tax and the benefit it brings.

Taxation-Incidence

- General equilibrium tax incidence
  - So far, we only looked at the impact of the taxation in **partial equilibrium,** which considers only the ‘taxed market’ in isolation.
  - However, it is possible that taxation on one market might have spillovers in other markets as well **(general equilibrium models).**

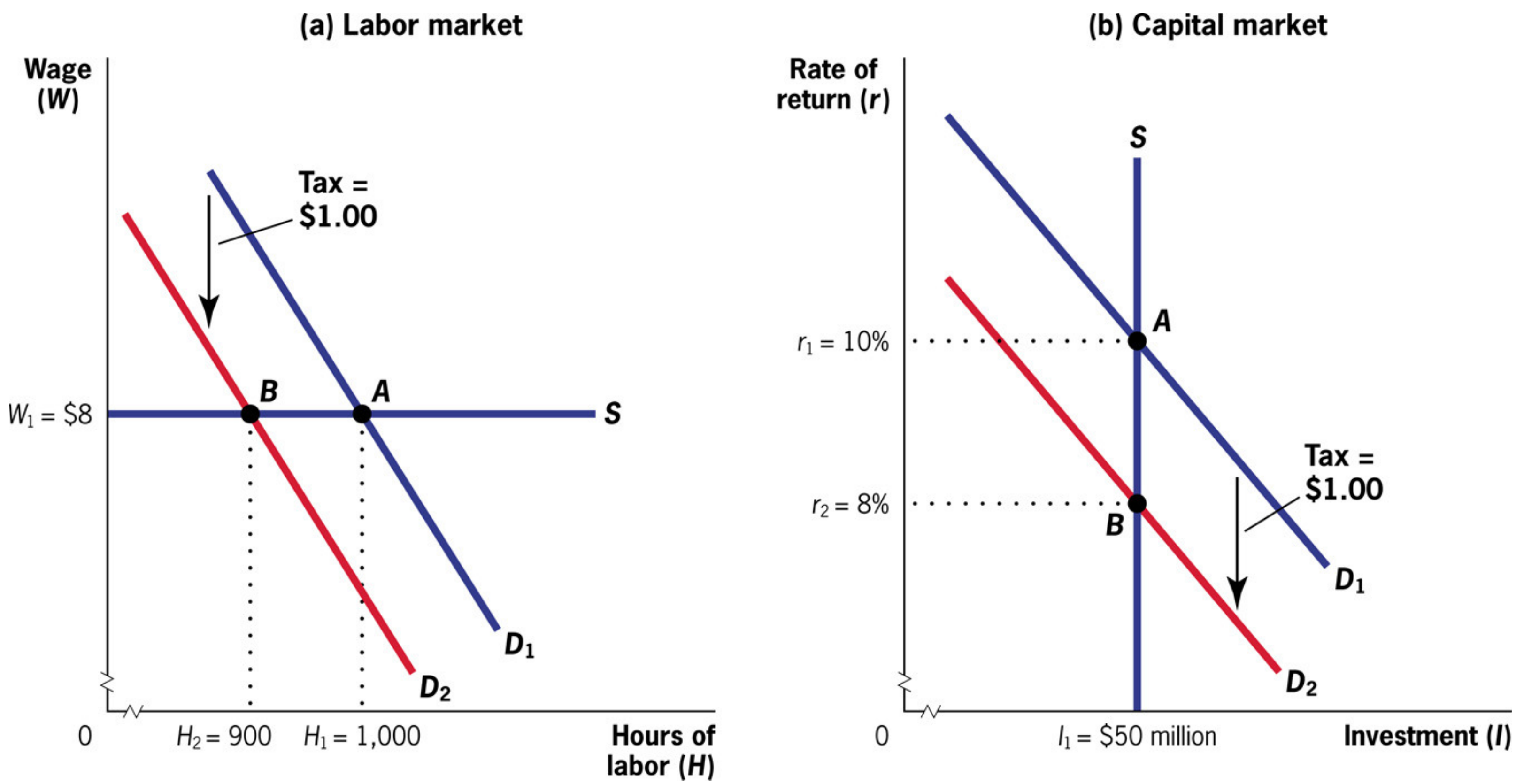
Taxation-Incidence

- General equilibrium tax incidence
  - **Example:** effects of a restaurant tax
    - (1) On meals sold per day



Taxation-Incidence

- General equilibrium tax incidence
  - **Example:** effects of a restaurant tax
    - (2) On labor and capital markets



Taxation-Incidence

- General equilibrium tax incidence
  - **Issues to consider in general equilibrium analysis**
    - Short-run versus long-run
      - In the long-run, capital market might be more elastic, since property owners might move their investments elsewhere in the long-run (except land-owners).
      - In that case, capital owners, in the long-run, will not bear as much tax burden.

Taxation-Incidence

- General equilibrium tax incidence
  - **Issues to consider in general equilibrium analysis**
    - Effects of tax scope
      - If the tax is implemented in a larger geographical area,
        - » Meals demanded can not be as elastic
        - » Labor supply cannot be as elastic
      - The tax burden will be larger on consumers and workers.

Taxation-Incidence

- General equilibrium tax incidence
  - **Issues to consider in general equilibrium analysis**
    - Spillovers between product markets: consider the impact of a meal tax:
      - Consumers have less income and hence will spend less on all goods (income effect)
      - Consumers might substitute away from outside meals to other activities (substitution effect)
      - Consumers might reduce their consumption of goods that are complements to ‘outside meals’ (complementary effect)

Taxation-Incidence

- General equilibrium tax incidence
  - **A complete general equilibrium analysis follows the burden of a tax in one market across all other markets.**