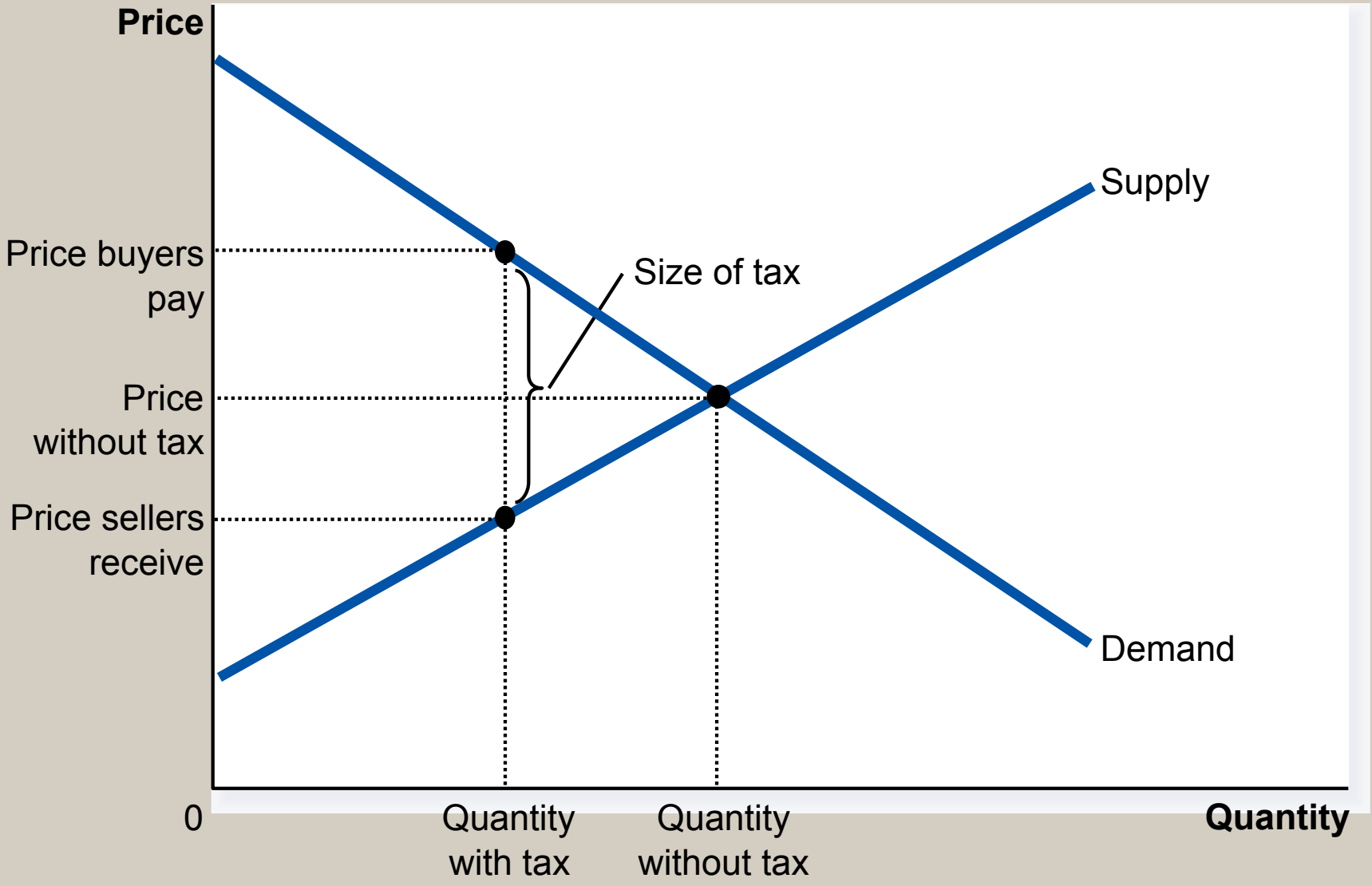
Application: The Costs of Taxation

5

THE DEADWEIGHT LOSS OF TAXATION

- How do taxes affect the economic well-being of market participants?

Figure 1 The Effects of a Tax



How a Tax Affects Market Participants

- A tax places a *wedge* between the price buyers pay and the price sellers receive.
- Because of this tax wedge, the quantity sold falls below the level that would be sold without a tax.
- The size of the market for that good shrinks.

How a Tax Affects Market Participants

- Tax Revenue
  - **T = the size of the tax**
  - **Q = the quantity of the good sold**

$T \times Q$ = the government's tax revenue

Figure 2 Tax Revenue

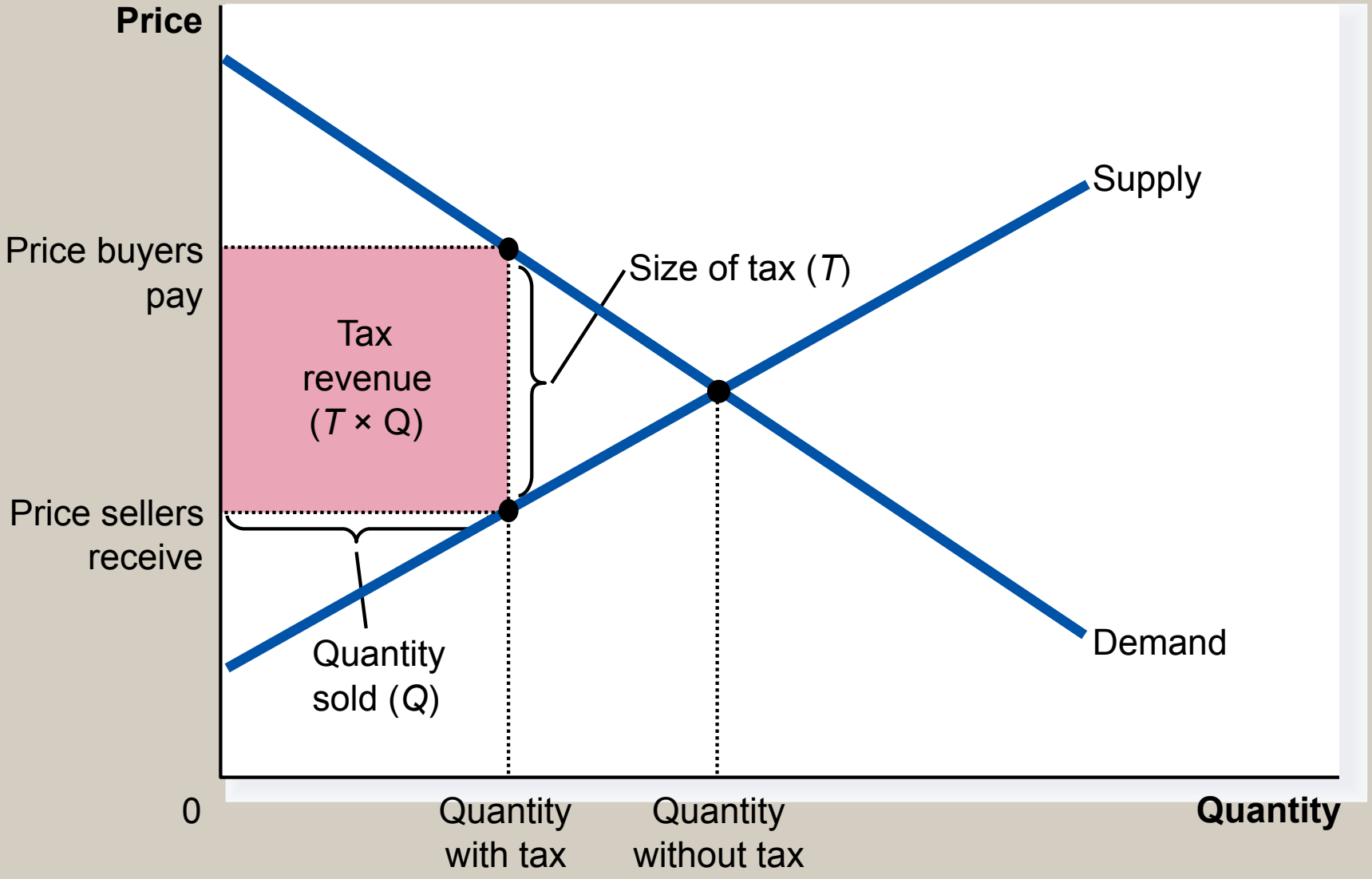
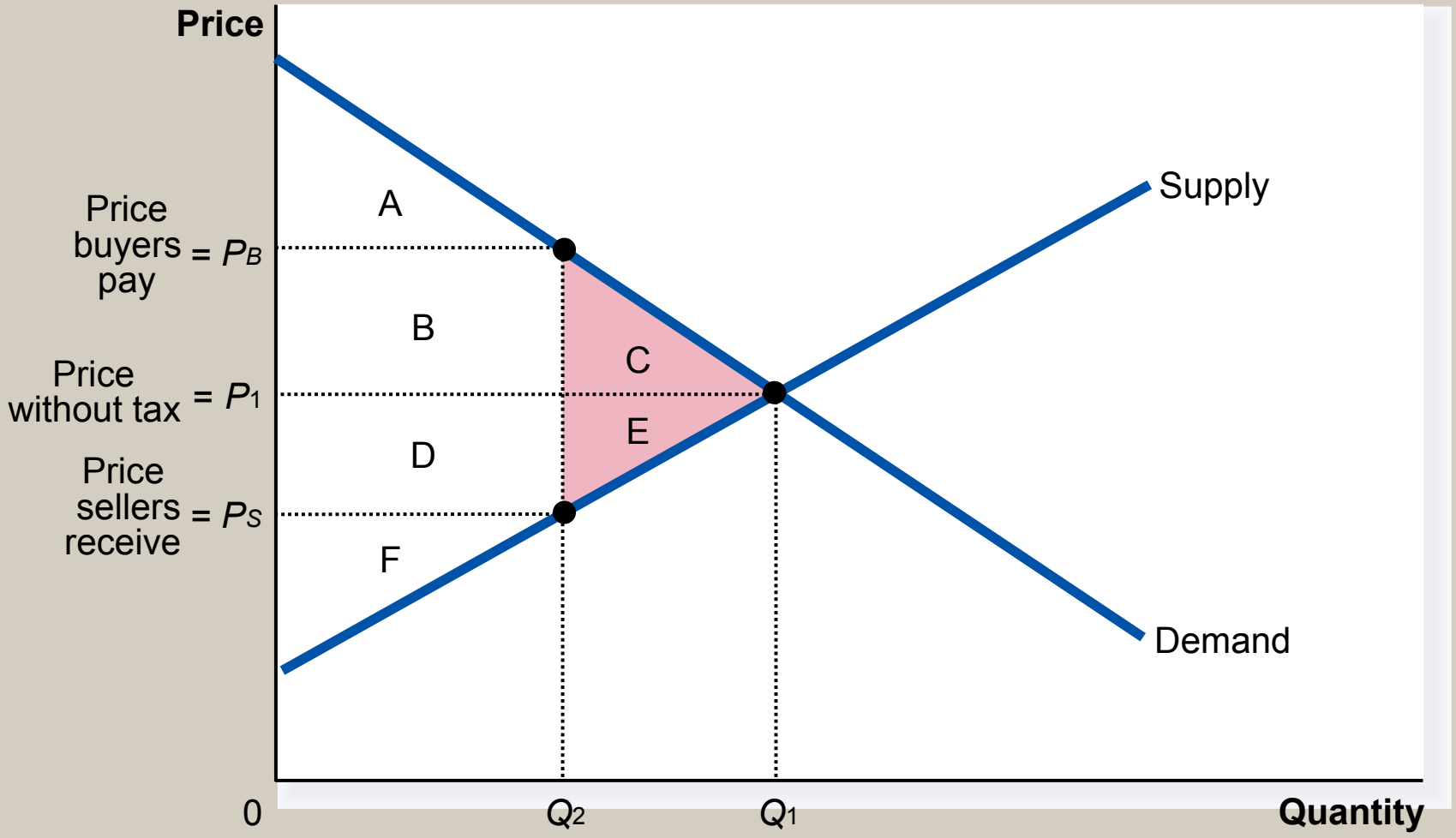


Figure 3 How a Tax Effects Welfare



How a Tax Affects Market Participants

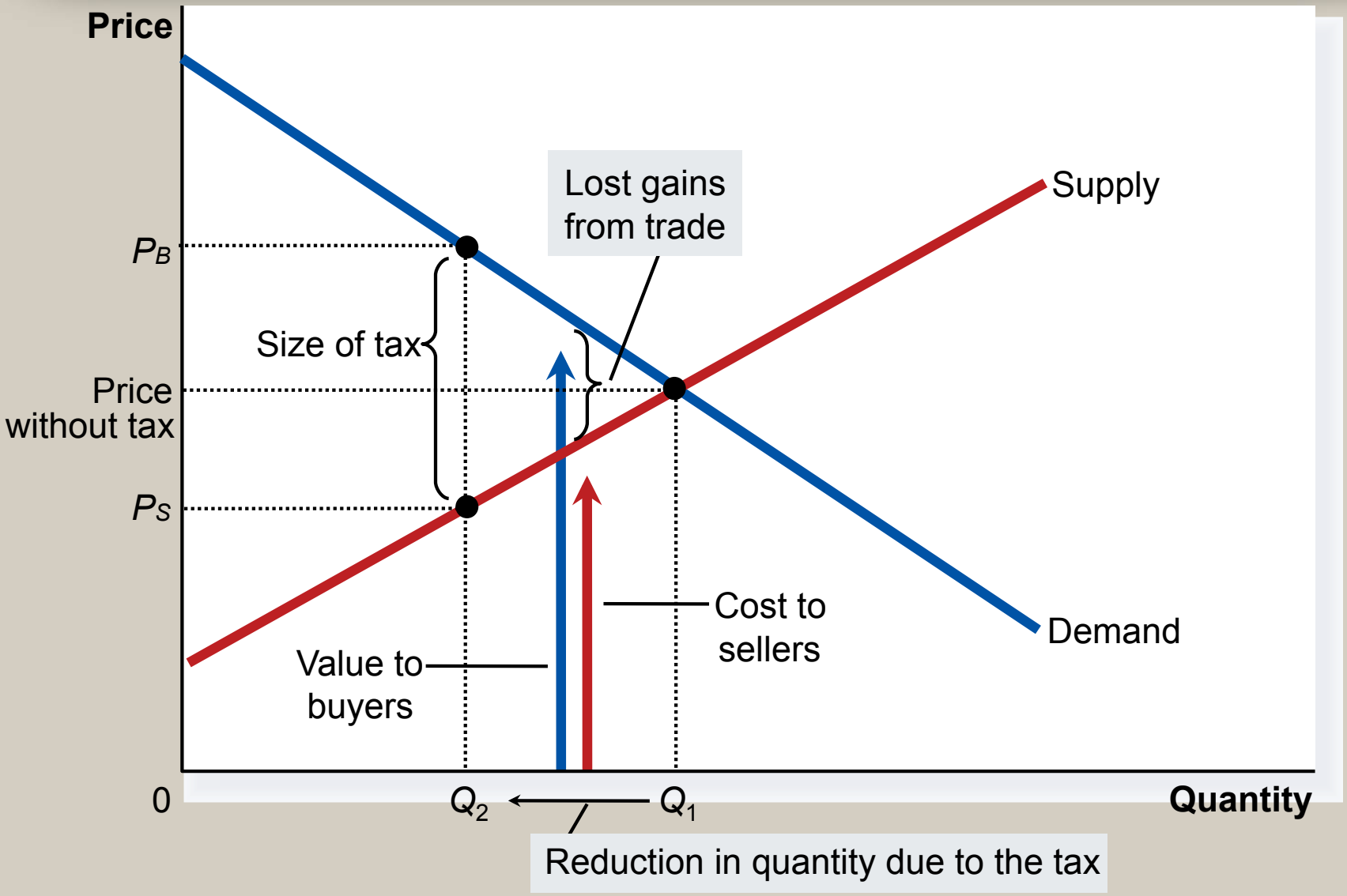
- Changes in Welfare
  - A *deadweight loss* is the fall in total surplus that results from a market distortion, such as a tax.

How a Tax Affects Welfare

	Without Tax	With Tax	Change
Consumer Surplus	A + B + C	A	−(B + C)
Producer Surplus	D + E + F	F	−(D + E)
Tax Revenue	None	B + D	+(B + D)
Total Surplus	A + B + C + D + E + F	A + B + D + F	−(C + E)

The area C + E shows the fall in total surplus and is the deadweight loss of the tax.

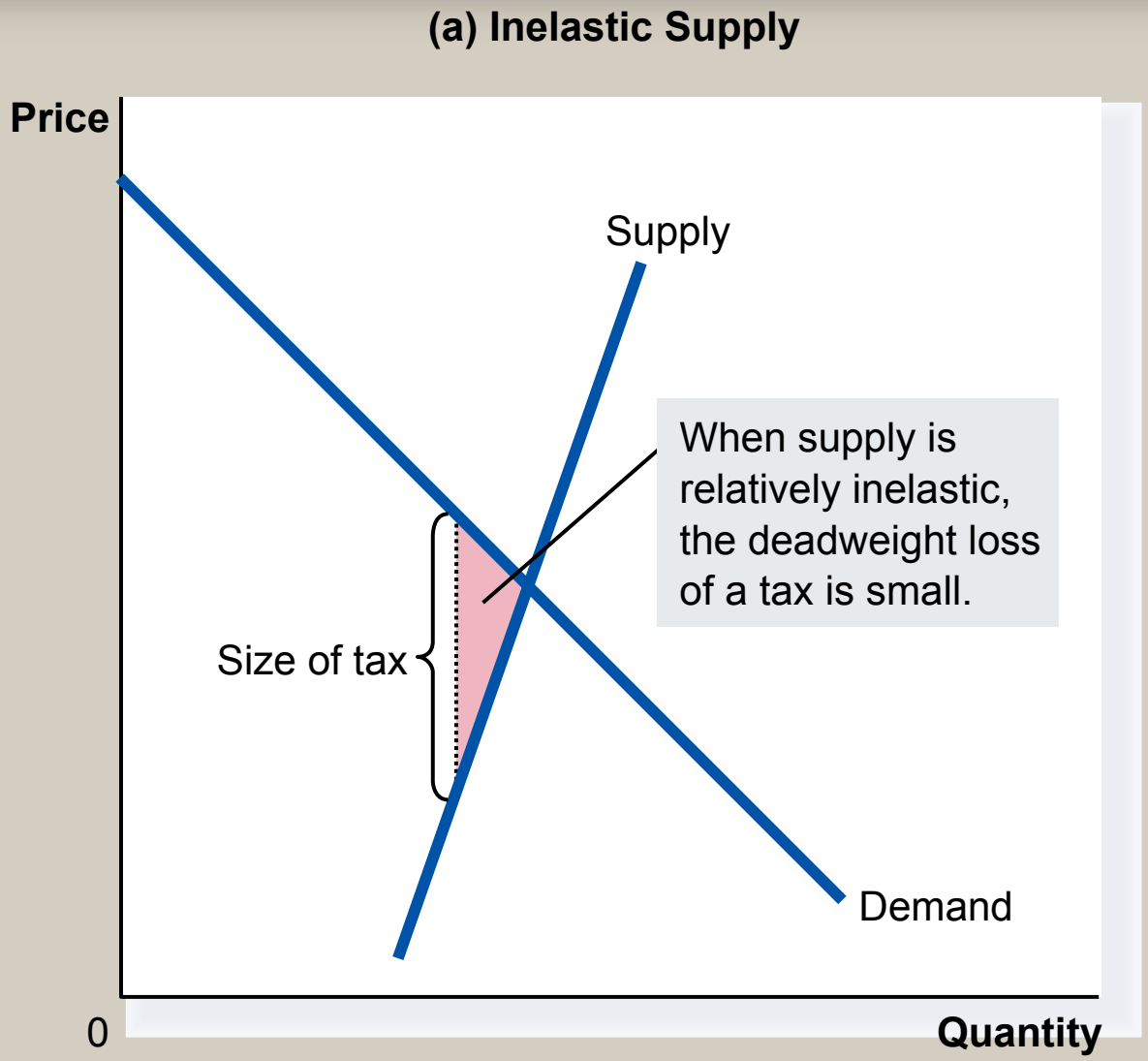
Figure 4 The Deadweight Loss



DETERMINANTS OF THE DEADWEIGHT LOSS

- What determines whether the deadweight loss from a tax is large or small?
  - The magnitude of the deadweight loss depends on how much the quantity supplied and quantity demanded respond to changes in the price.
  - That, in turn, depends on the price elasticities of supply and demand.

Figure 5 Tax Distortions and Elasticities



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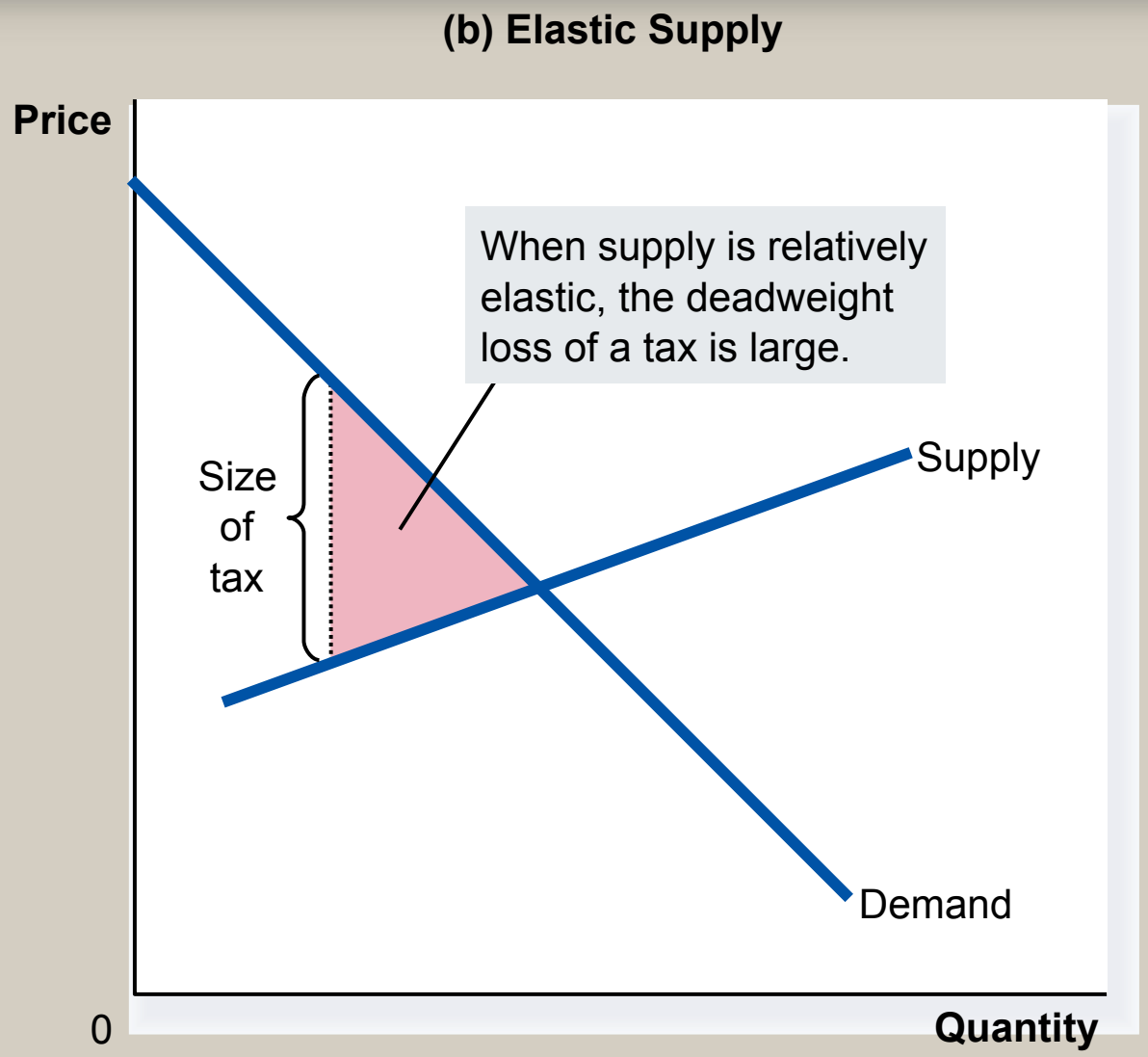

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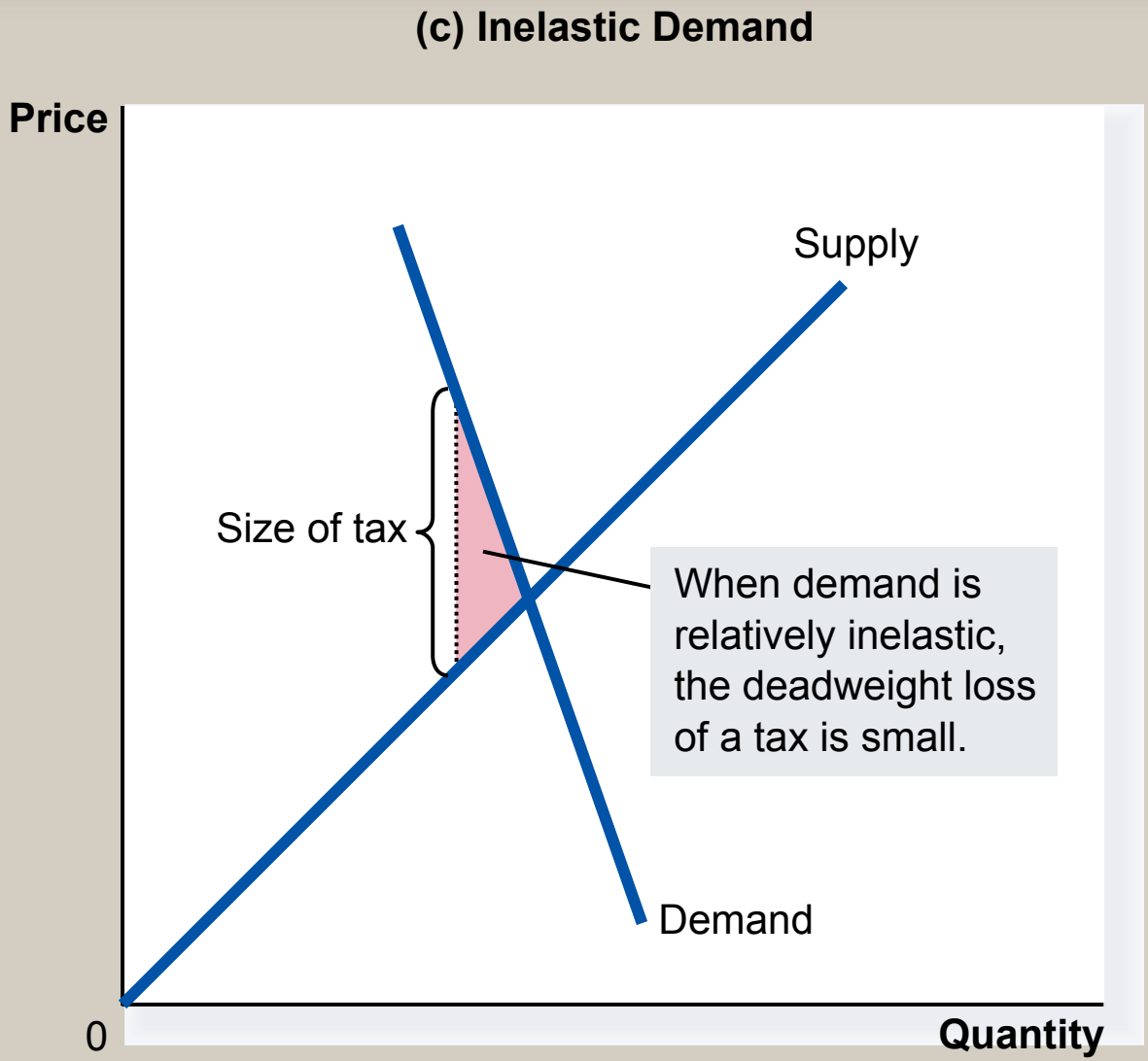

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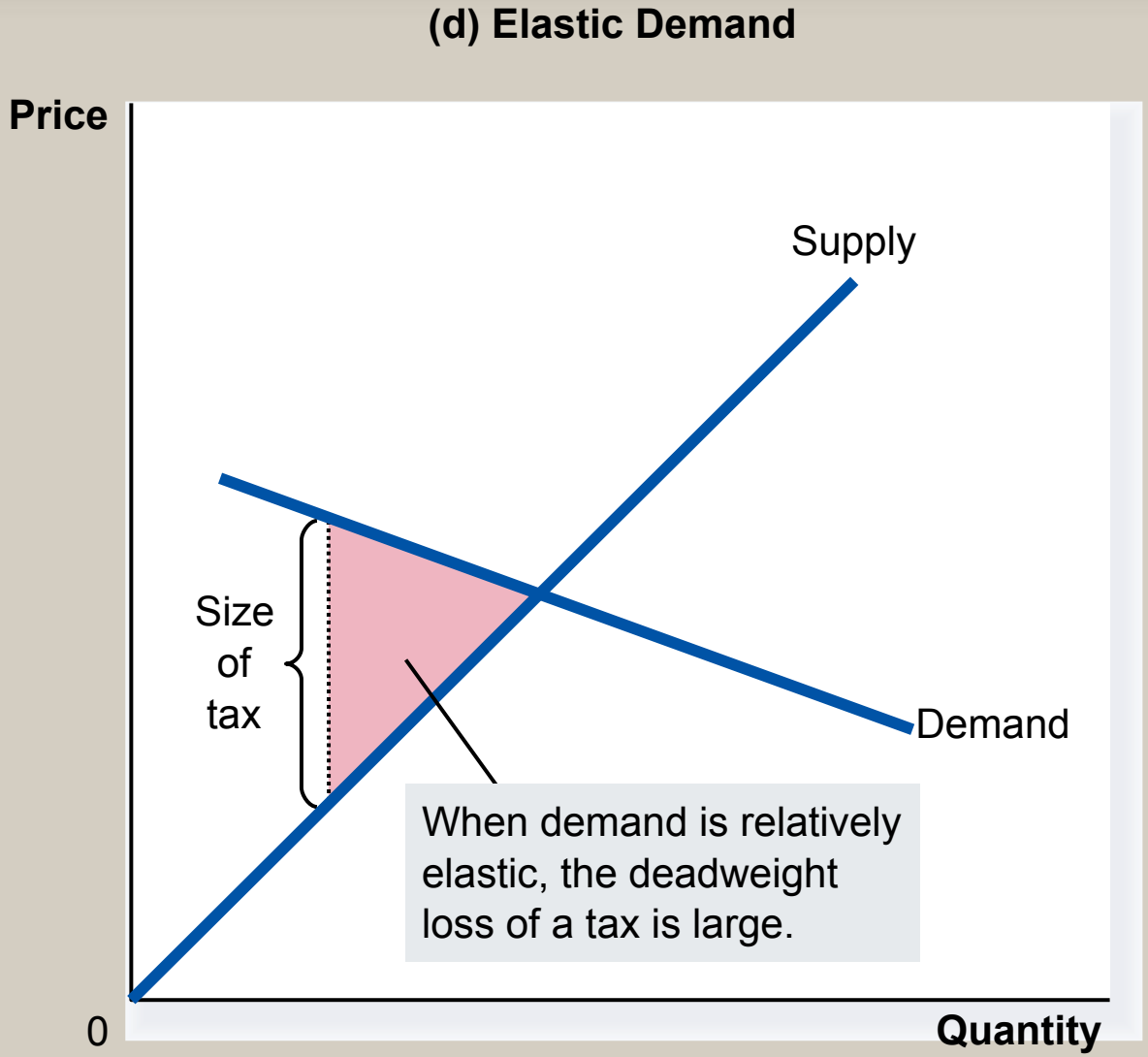


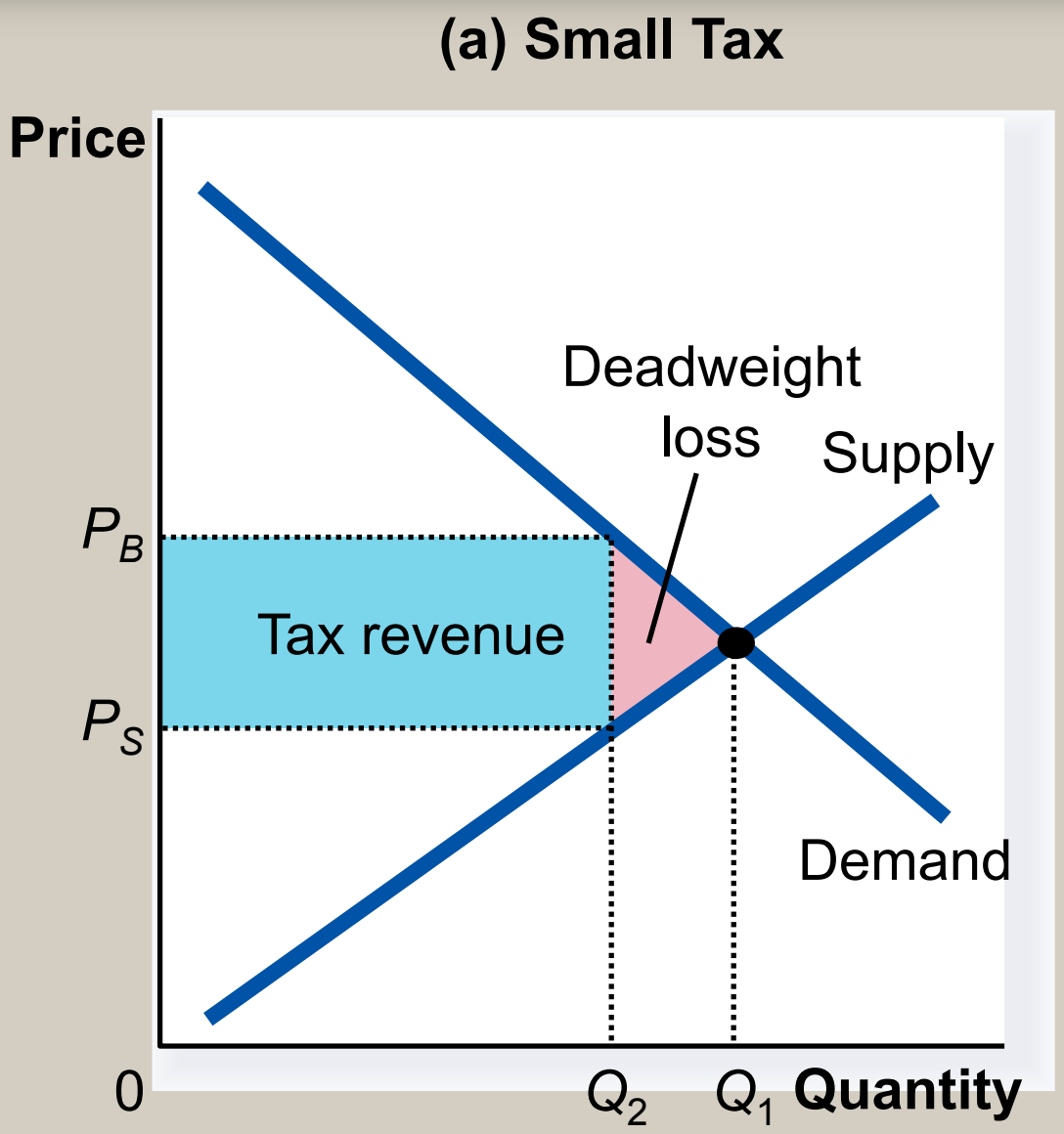
DETERMINANTS OF THE DEADWEIGHT LOSS

- The greater the elasticities of demand and supply:
  - the larger will be the decline in equilibrium quantity and,
  - the greater the deadweight loss of a tax.

DEADWEIGHT LOSS AND TAX REVENUE AS TAXES VARY

- With each increase in the tax rate, the deadweight loss of the tax rises even more rapidly than the size of the tax.

Figure 6 Deadweight Loss and Tax Revenue from Three Taxes of Different Sizes



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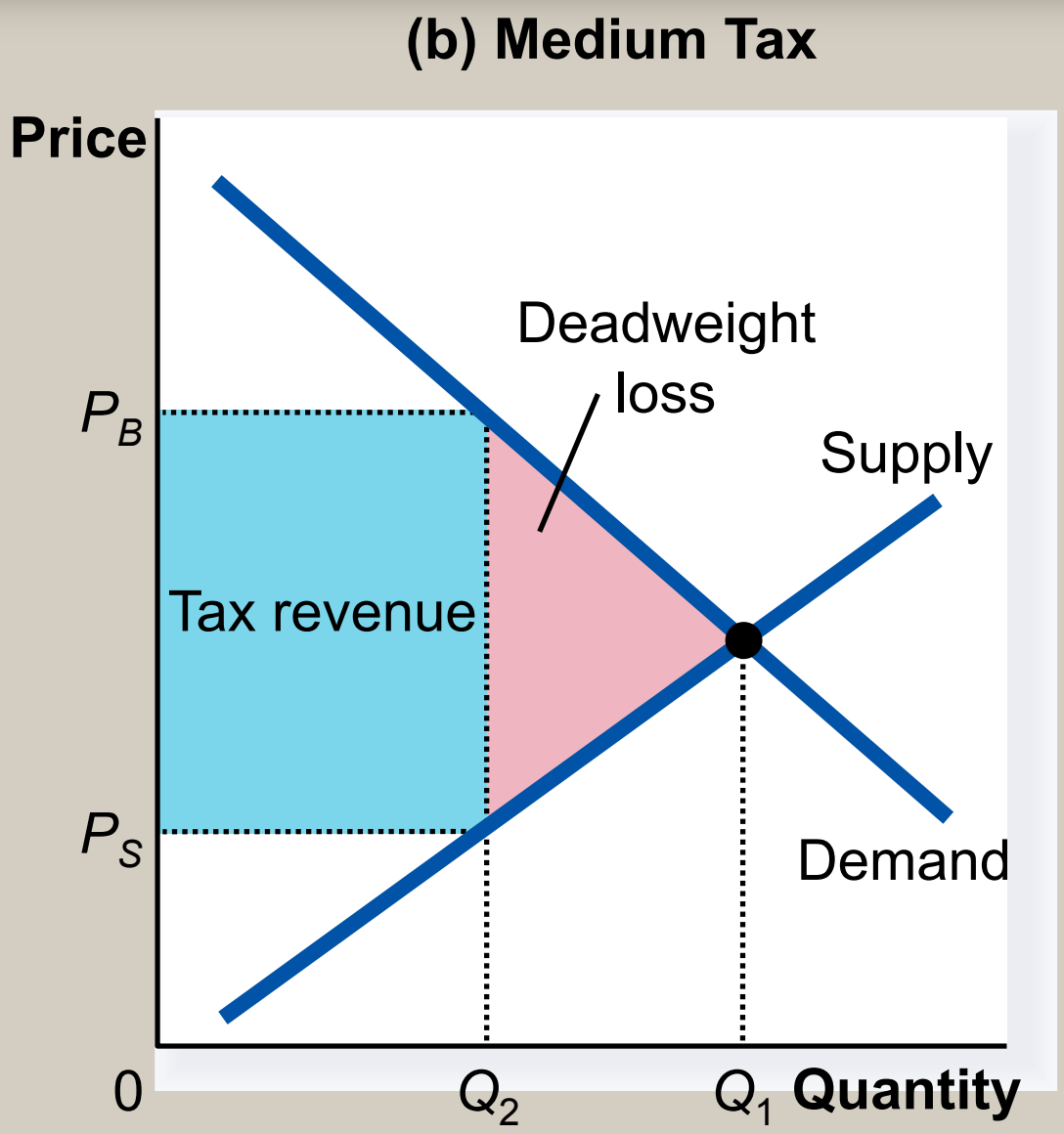

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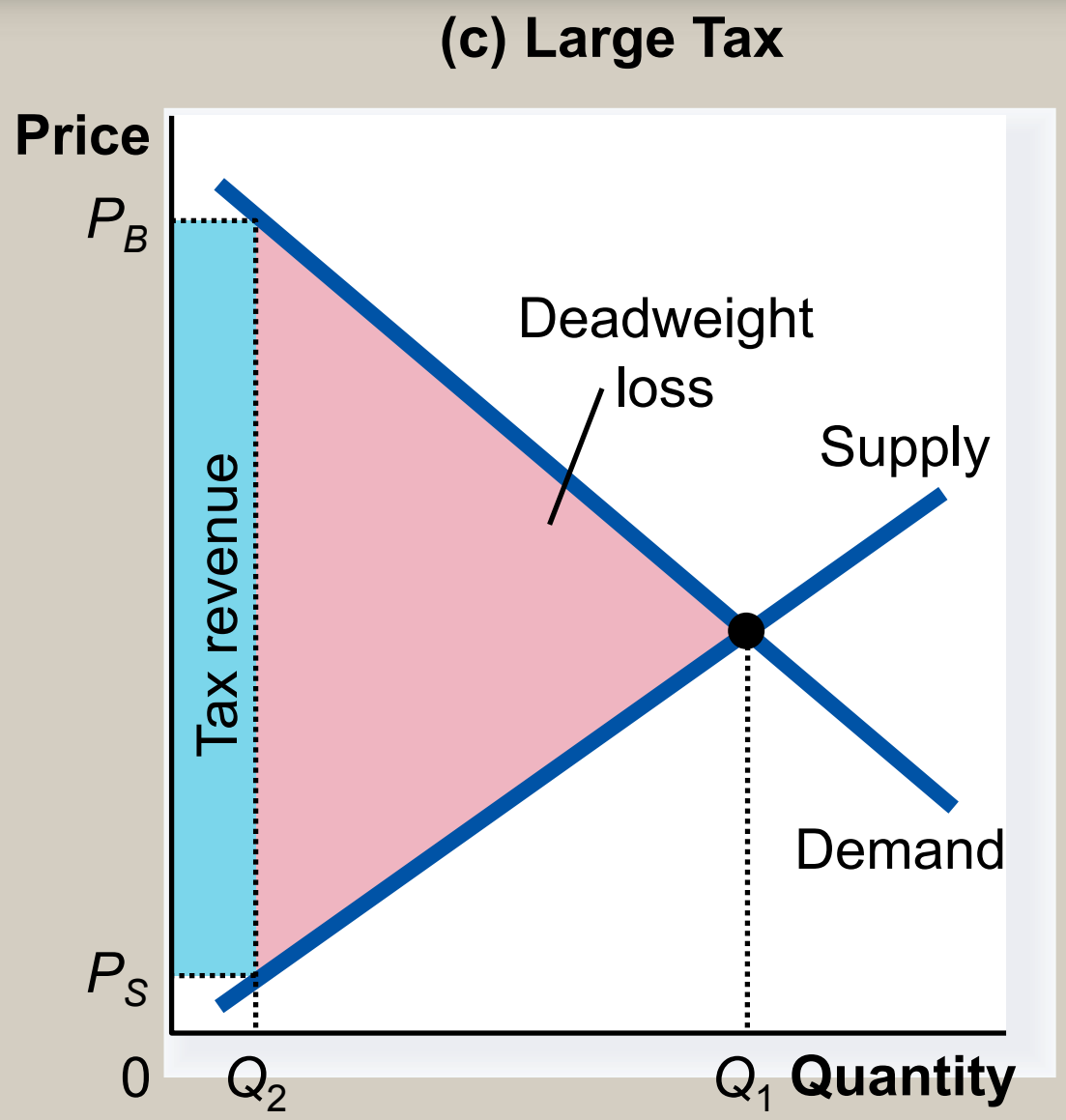
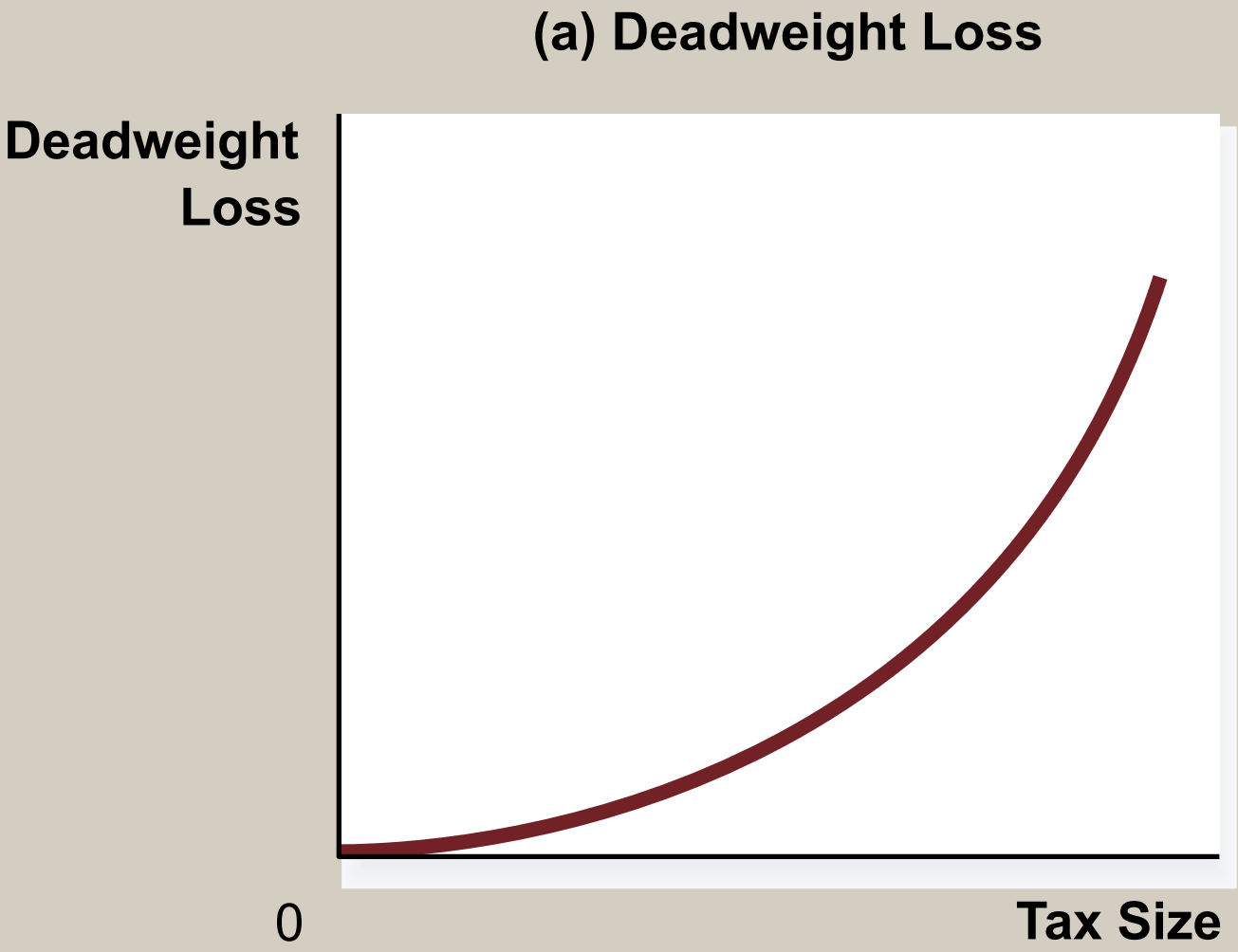


DEADWEIGHT LOSS AND TAX REVENUE AS TAXES VARY

- For the small tax, tax revenue is small.
- As the size of the tax rises, tax revenue grows.
- But as the size of the tax continues to rise, tax revenue falls because the higher tax reduces the size of the market.

Figure 7 How Deadweight Loss and Tax Revenue Vary with the Size of a Tax



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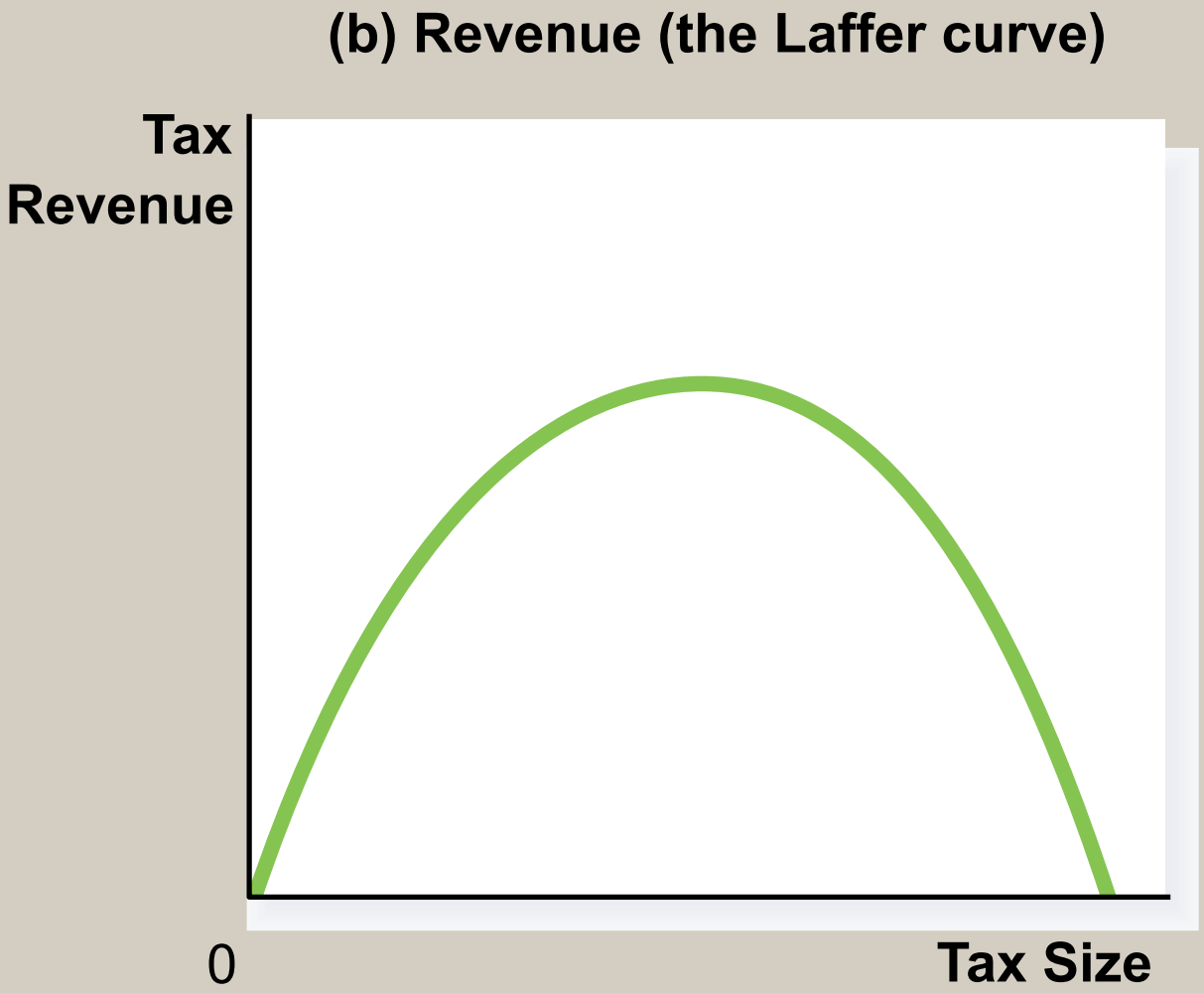

CASE STUDY: The Laffer Curve and Supply-side Economics

- The *Laffer curve* depicts the relationship between tax rates and tax revenue.
- *Supply-side economics* refers to the views of Reagan and Laffer who proposed that a tax cut would induce more people to work and thereby have the potential to increase tax revenues.