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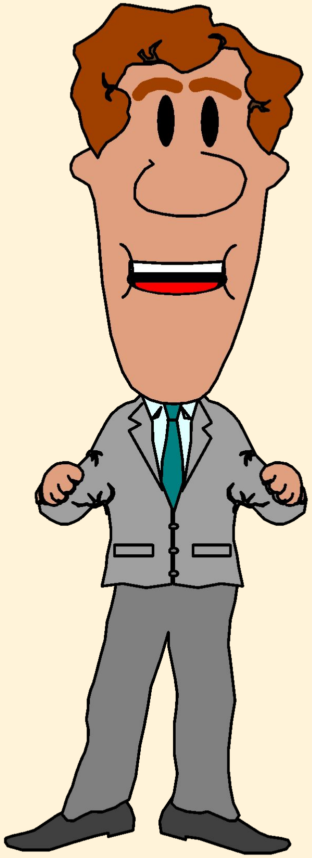
Application: The Costs of Taxation

Application: The Costs of Taxation

- Welfare economics is the study of how the allocation of resources affects economic well-being.
  - Buyers and sellers receive benefits from taking part in the market.
  - The equilibrium in a market maximizes the total welfare of buyers and sellers.

THE DEADWEIGHT LOSS OF TAXATION

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



THE DEADWEIGHT LOSS OF TAXATION

- It does not matter whether a tax on a good is levied on buyers or sellers of the good . . . the price paid by buyers rises, and the price received by sellers falls.

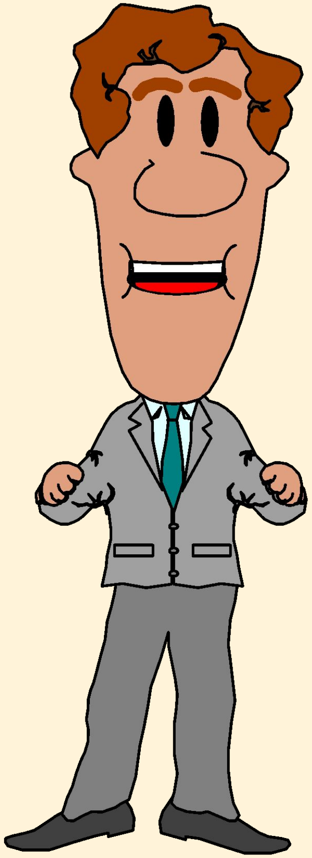
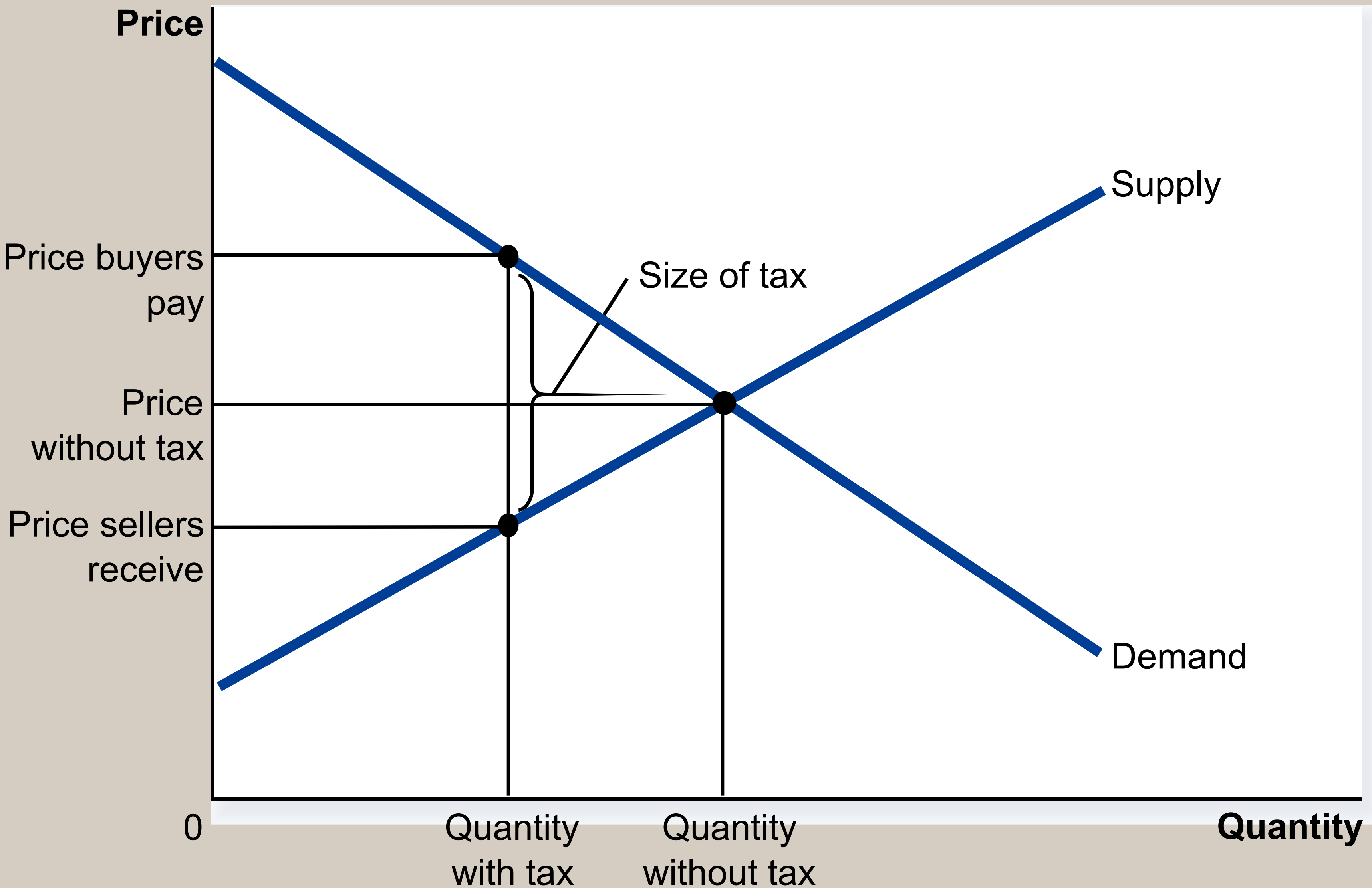


Figure 1 The Effects of a Tax



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

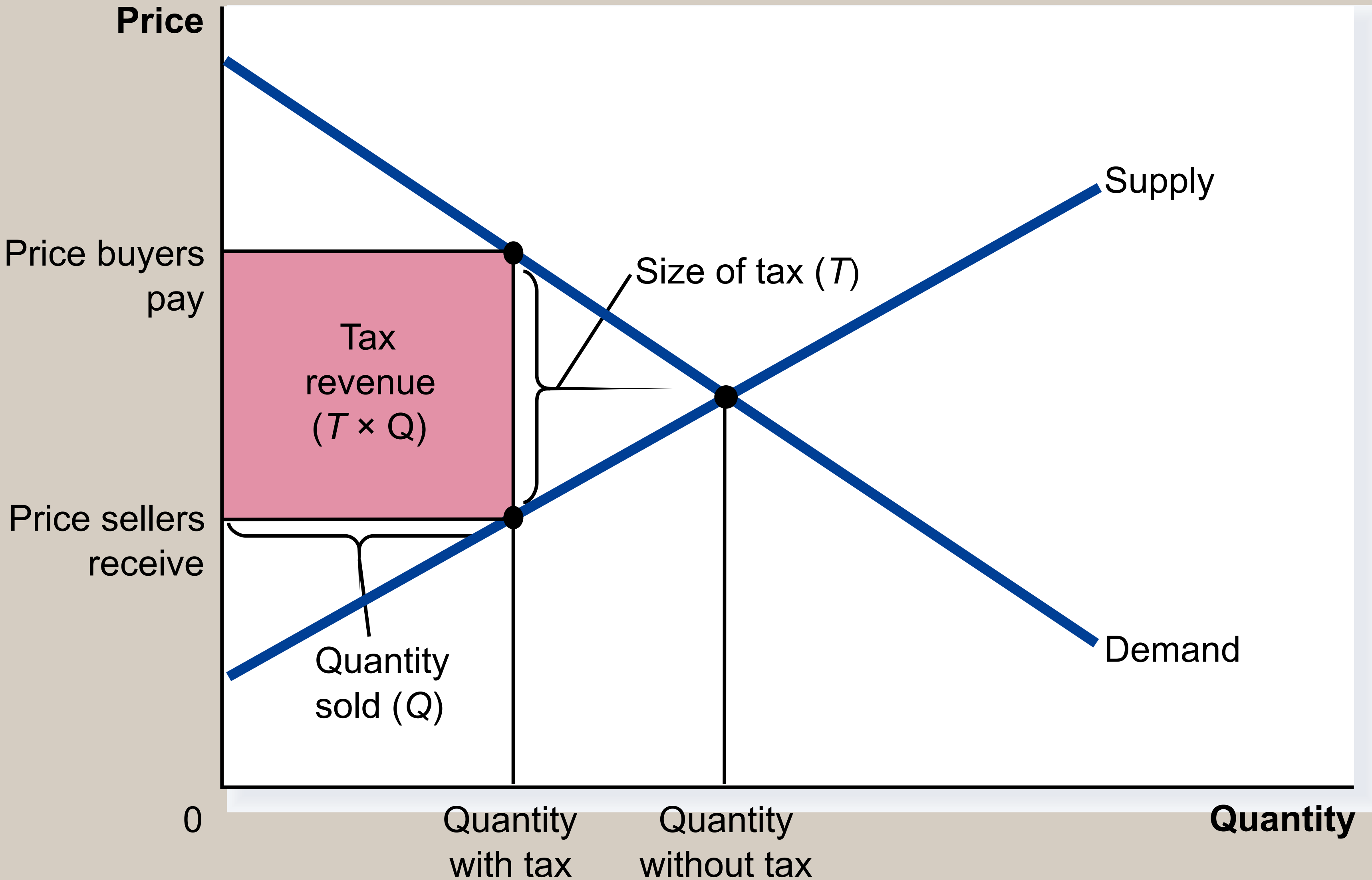
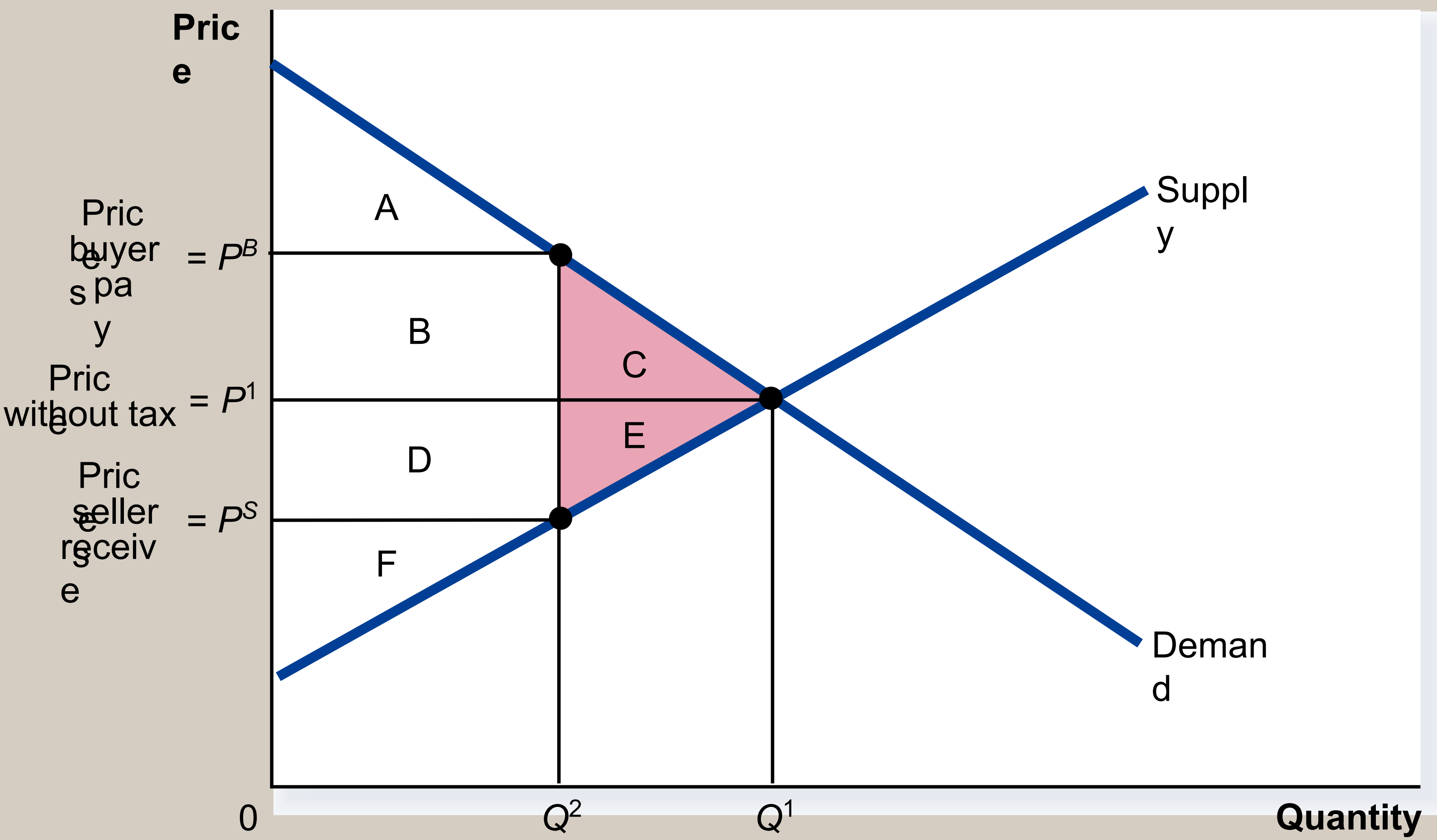


Figure 3 How a Tax Effects Welfare



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.

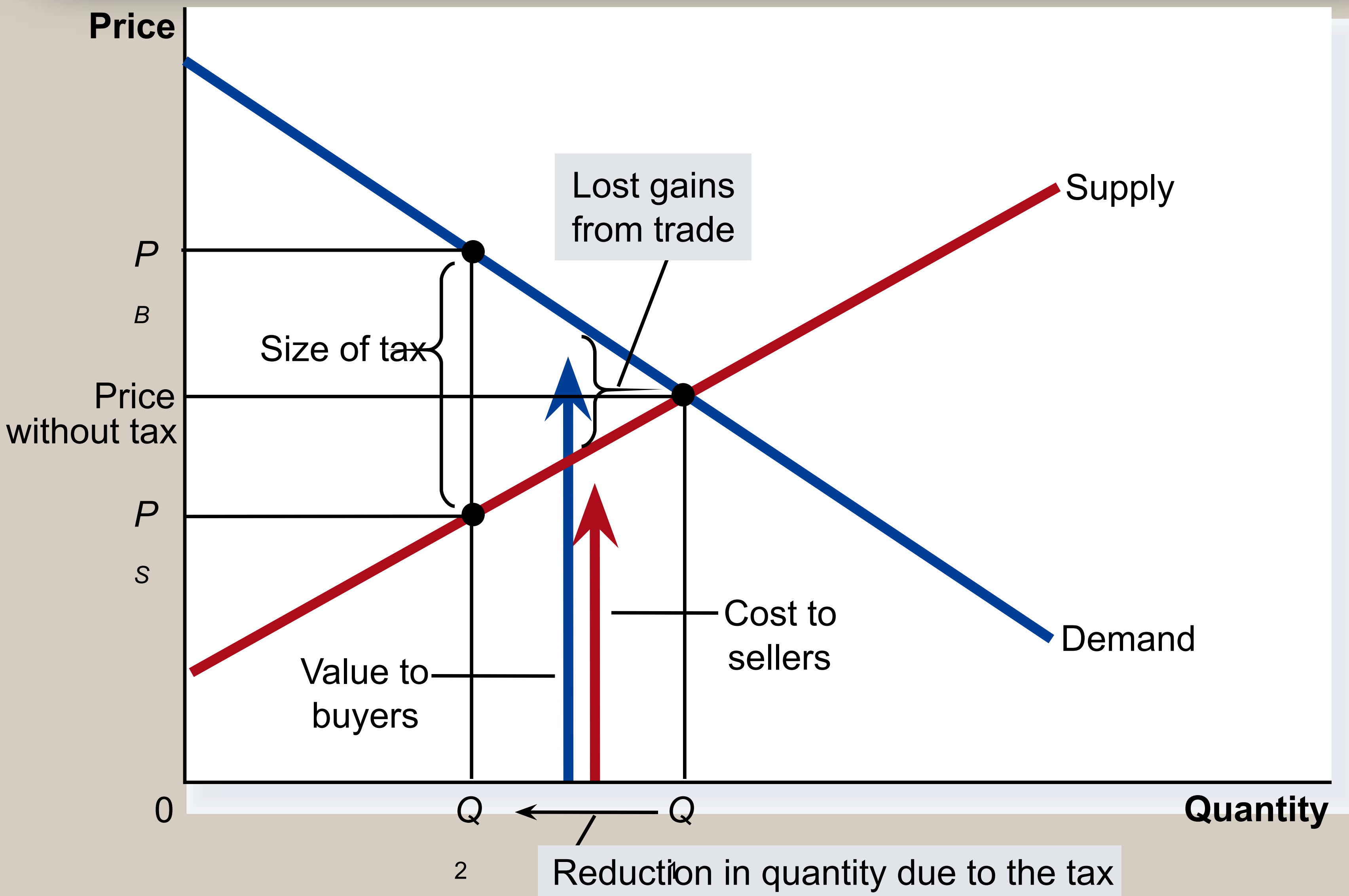
How a Tax Affects Market Participants

- The change in total welfare includes:
  - The change in consumer surplus,
  - The change in producer surplus, and
  - The change in tax revenue.
  - The losses to buyers and sellers exceed the revenue raised by the government.
  - This fall in total surplus is called the *deadweight loss.*

Deadweight Losses and the Gains from Trade

- Taxes cause deadweight losses because they prevent buyers and sellers from realizing some of the gains from trade.

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

(a) Inelastic Supply

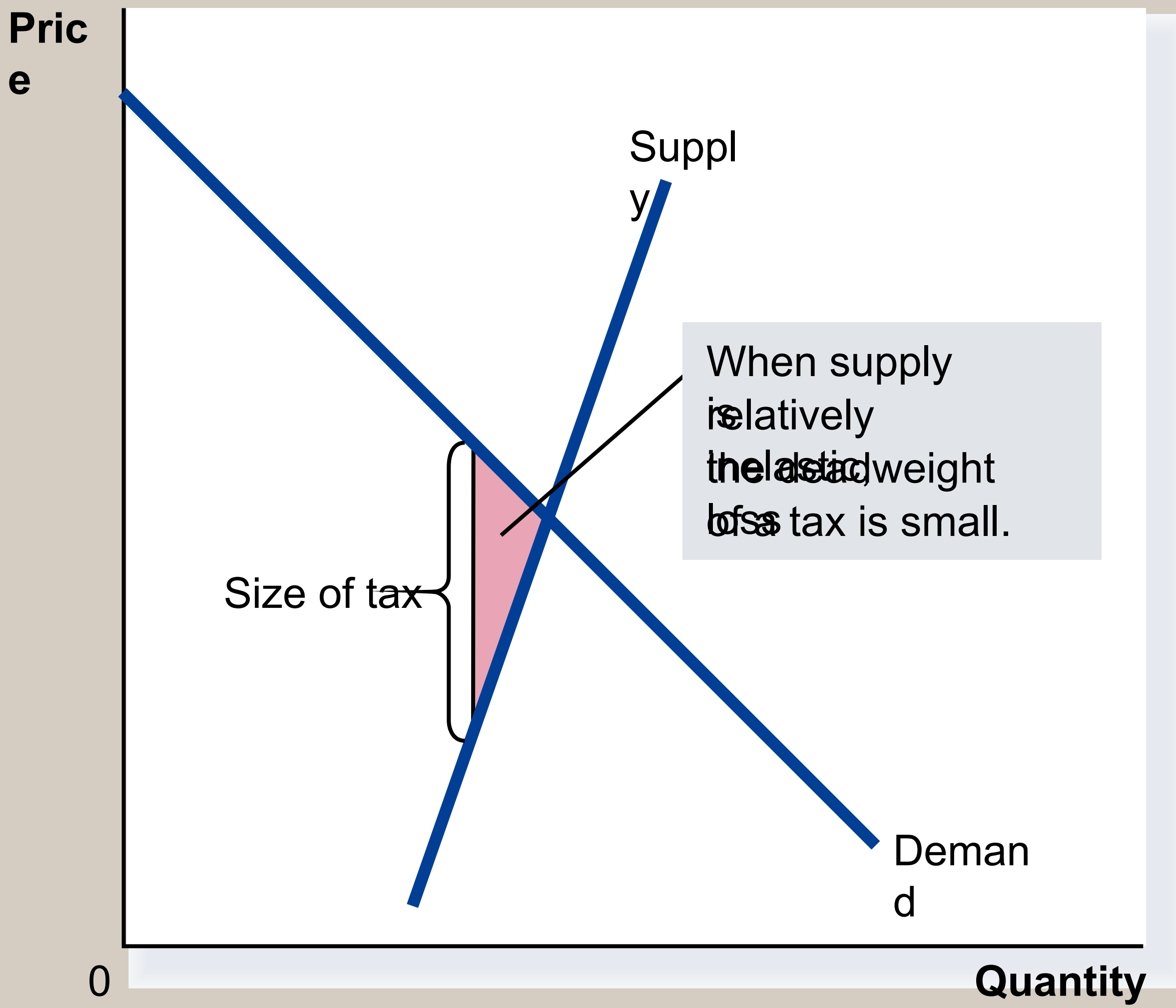


Figure 5 Tax Distortions and Elasticities

(b) Elastic Supply

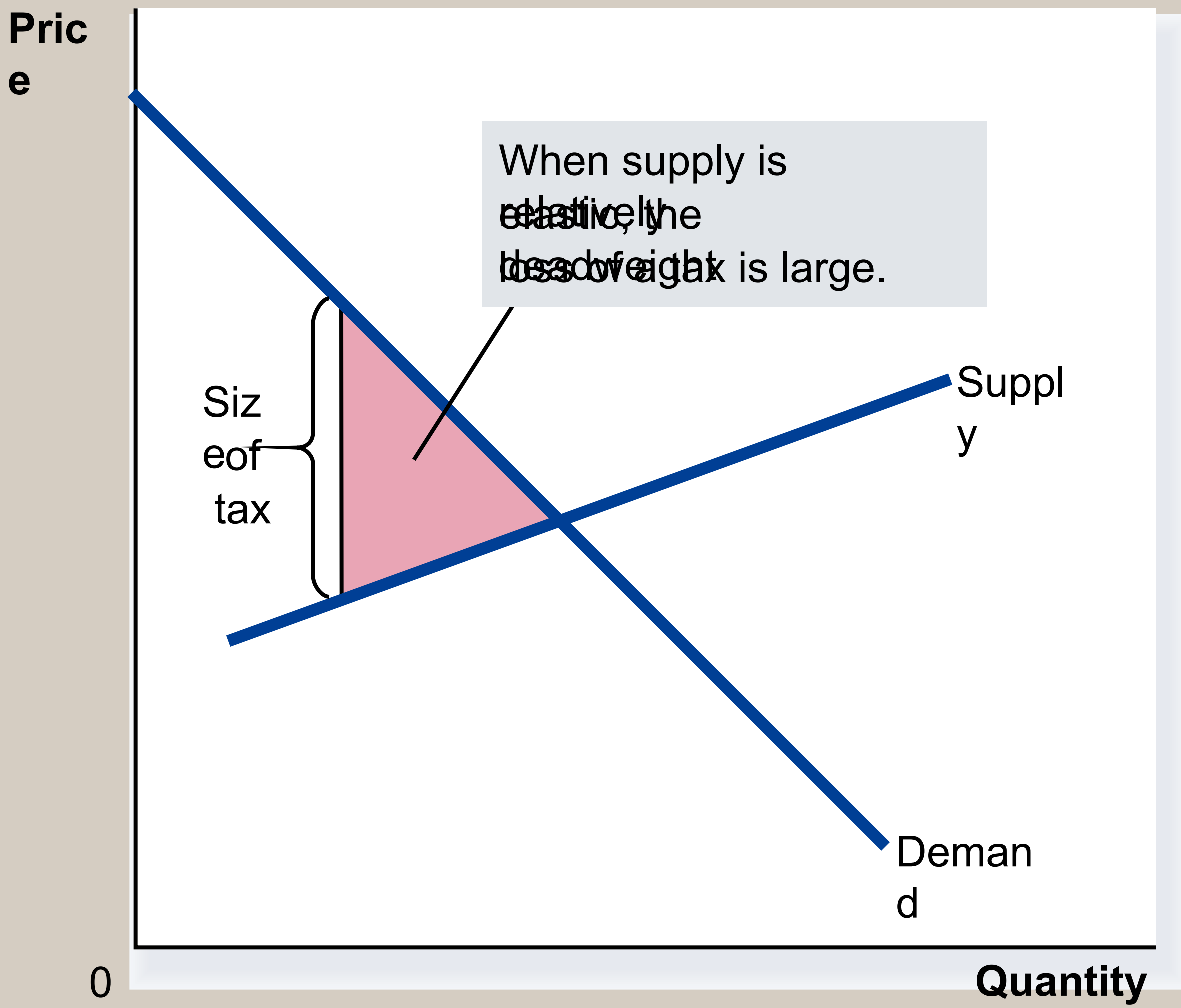


Figure 5 Tax Distortions and Elasticities

(c) Inelastic Demand

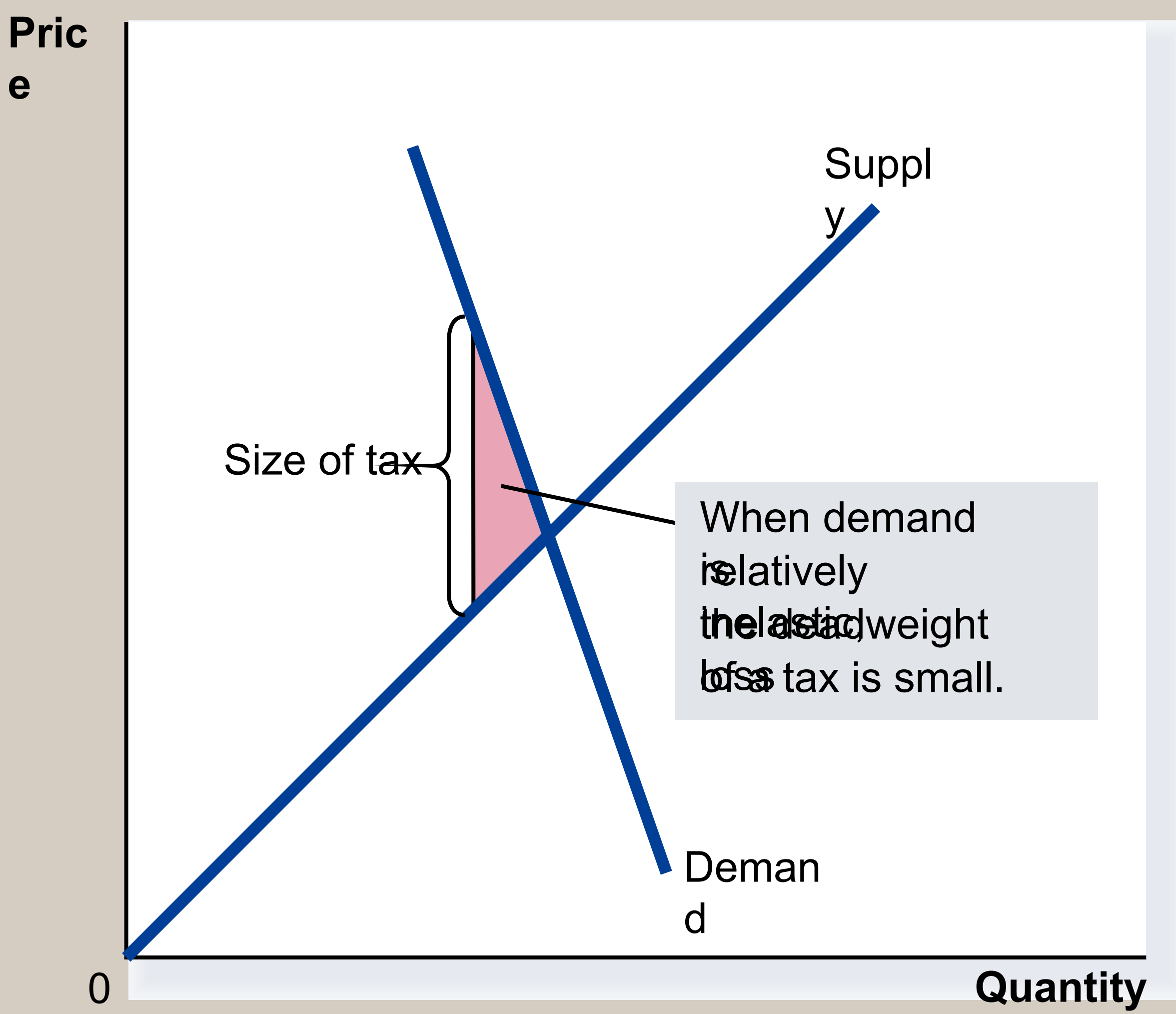
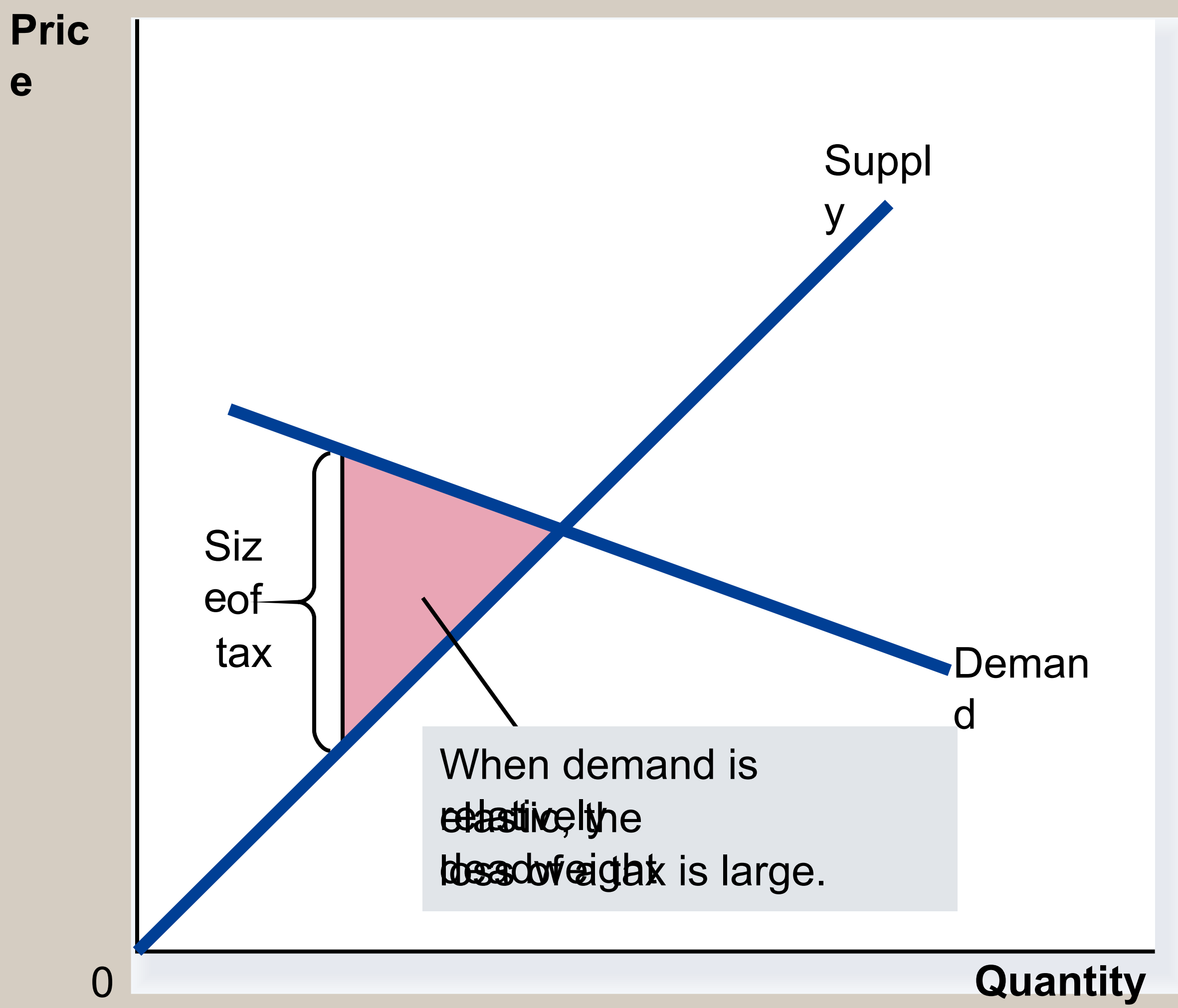


Figure 5 Tax Distortions and Elasticities

(d) Elastic Demand



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.

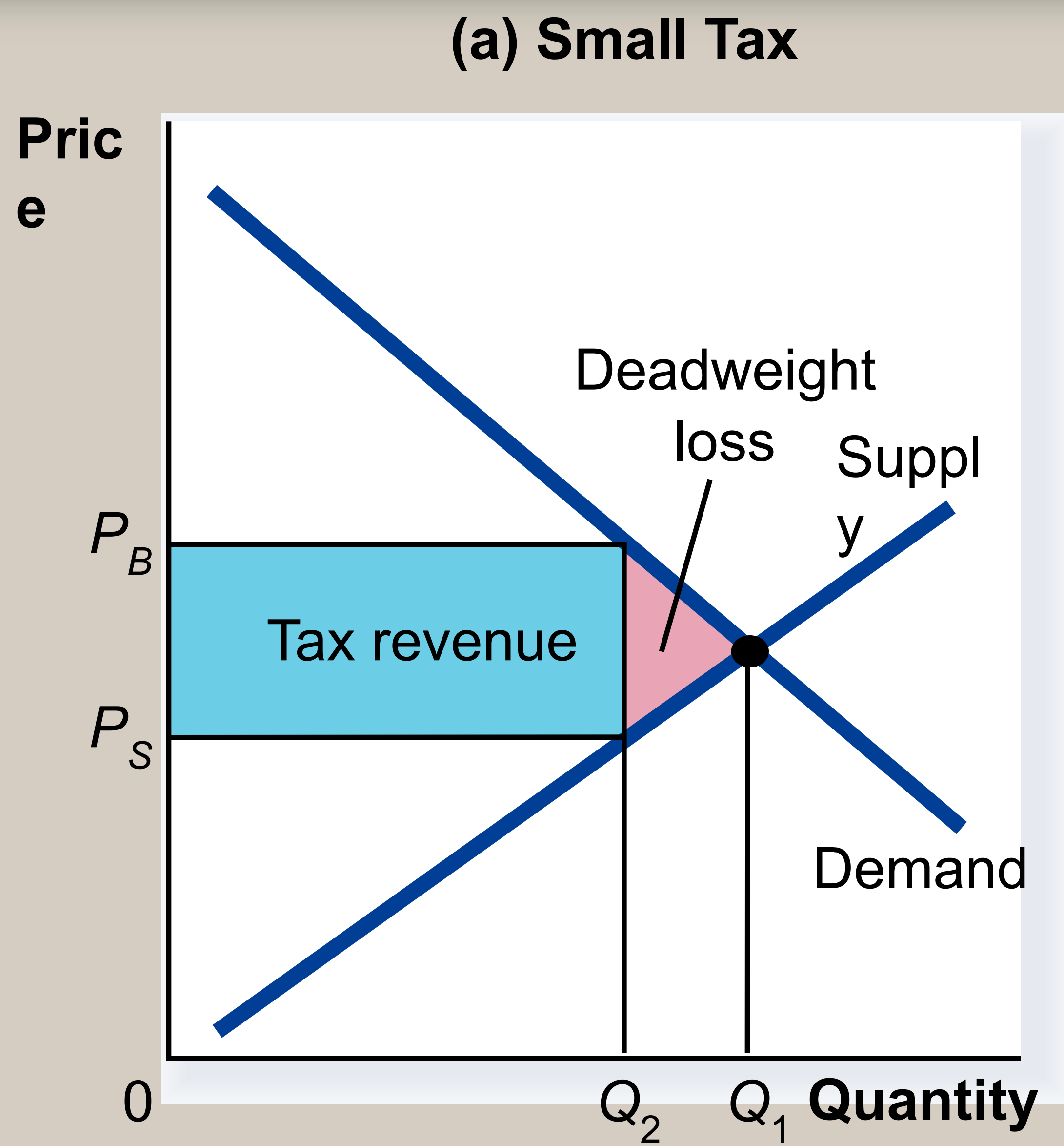
DEADWEIGHT LOSS AND TAX REVENUE AS TAXES VARY

- The Deadweight Loss Debate
  - Some economists argue that labor taxes are highly distorting and believe that labor supply is more elastic.
  - Some examples of workers who may respond more to incentives:
    - Workers who can adjust the number of hours they work
    - Families with second earners
    - Elderly who can choose when to retire
    - Workers in the underground economy (i.e., those engaging in illegal activity)

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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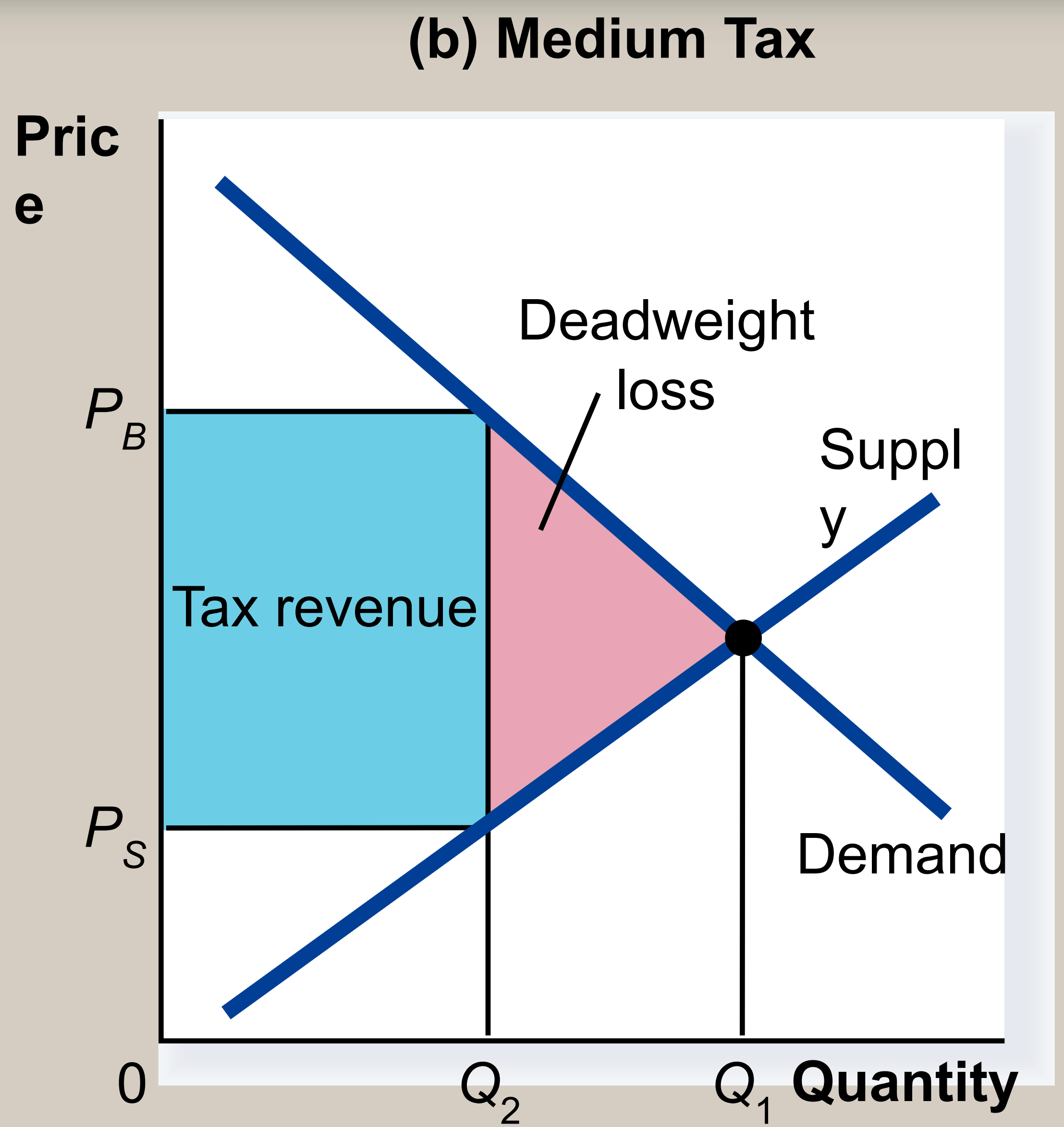

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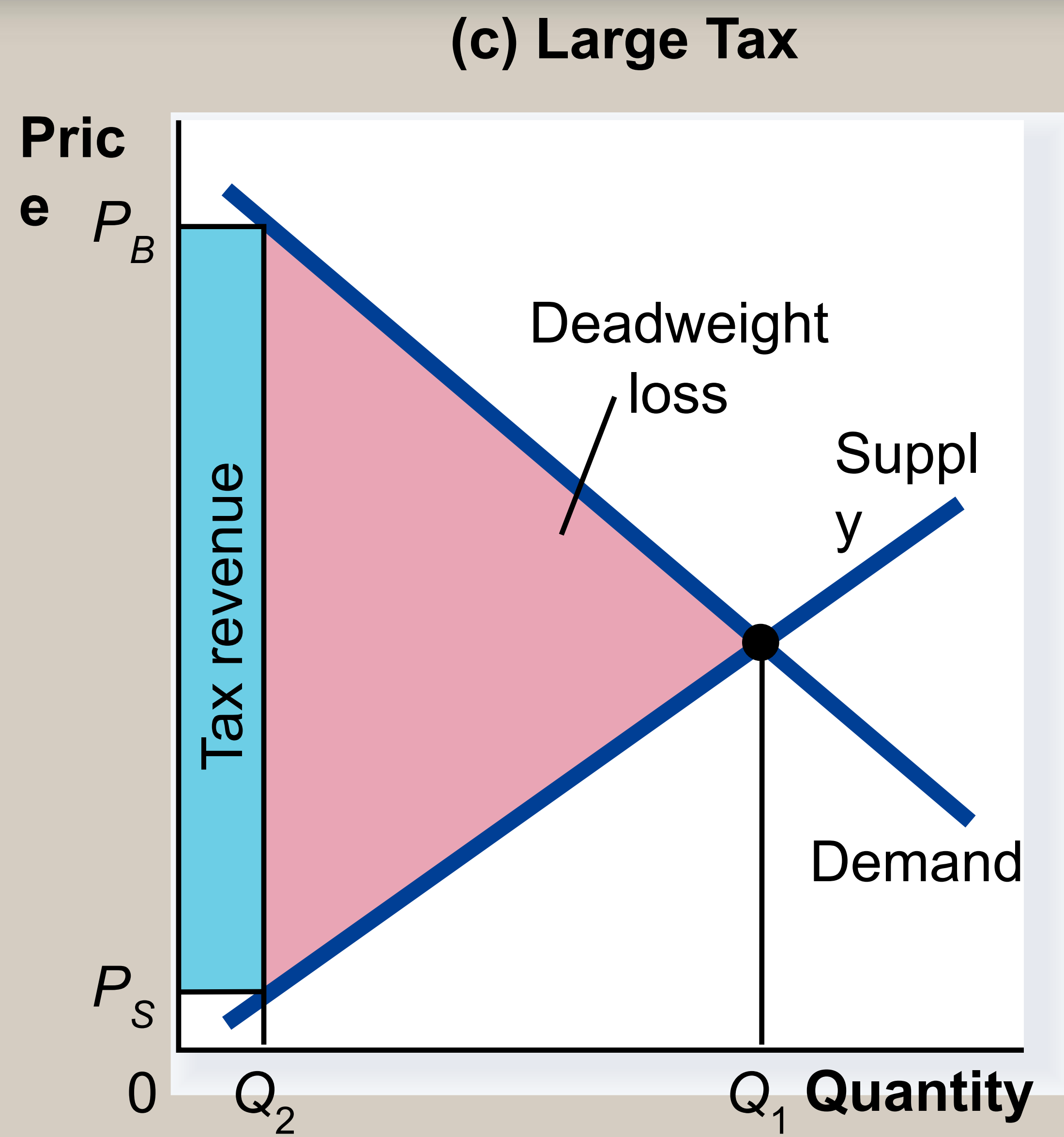
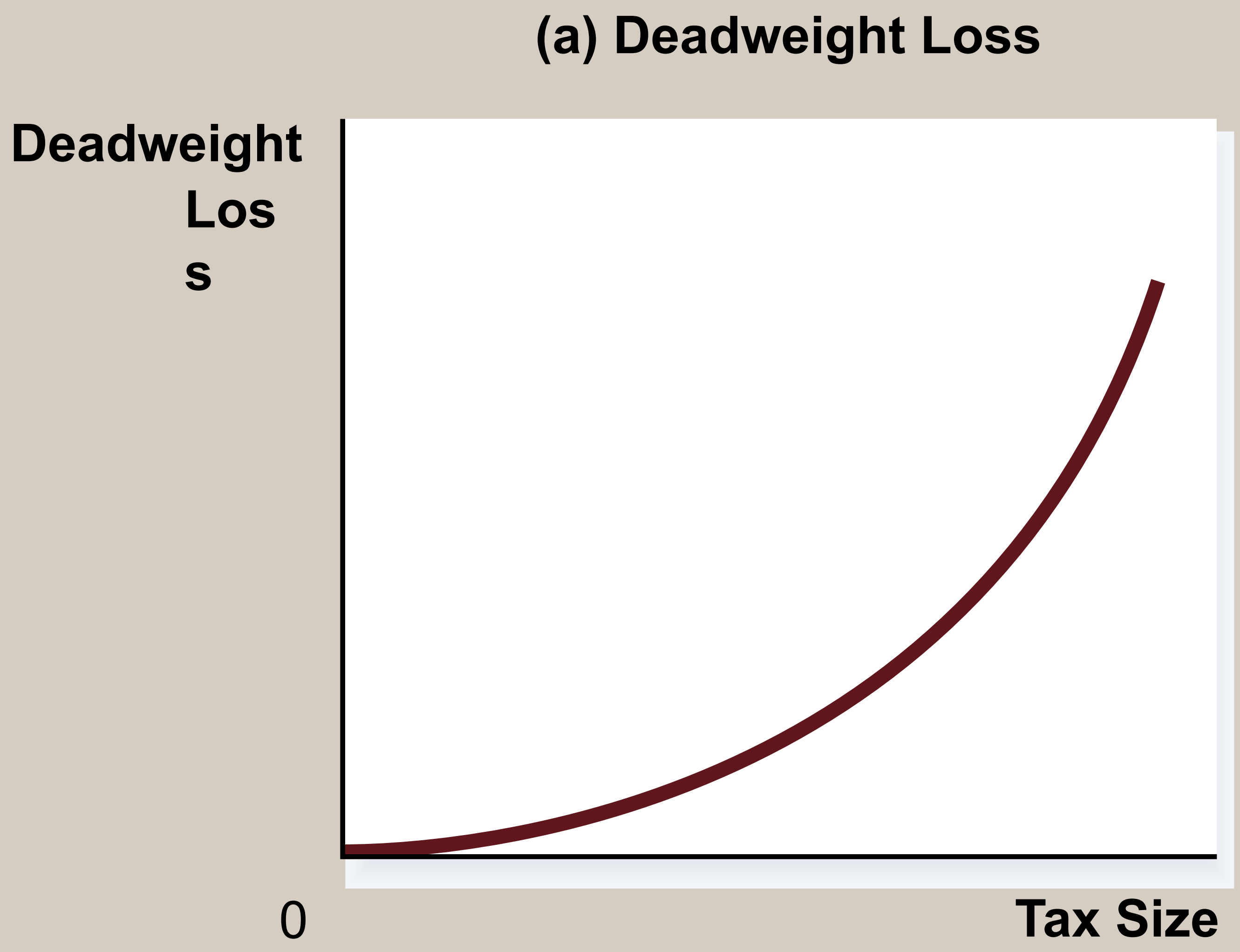


DEADWEIGHT LOSS AND TAX REVENUE AS TAXES VARY

- 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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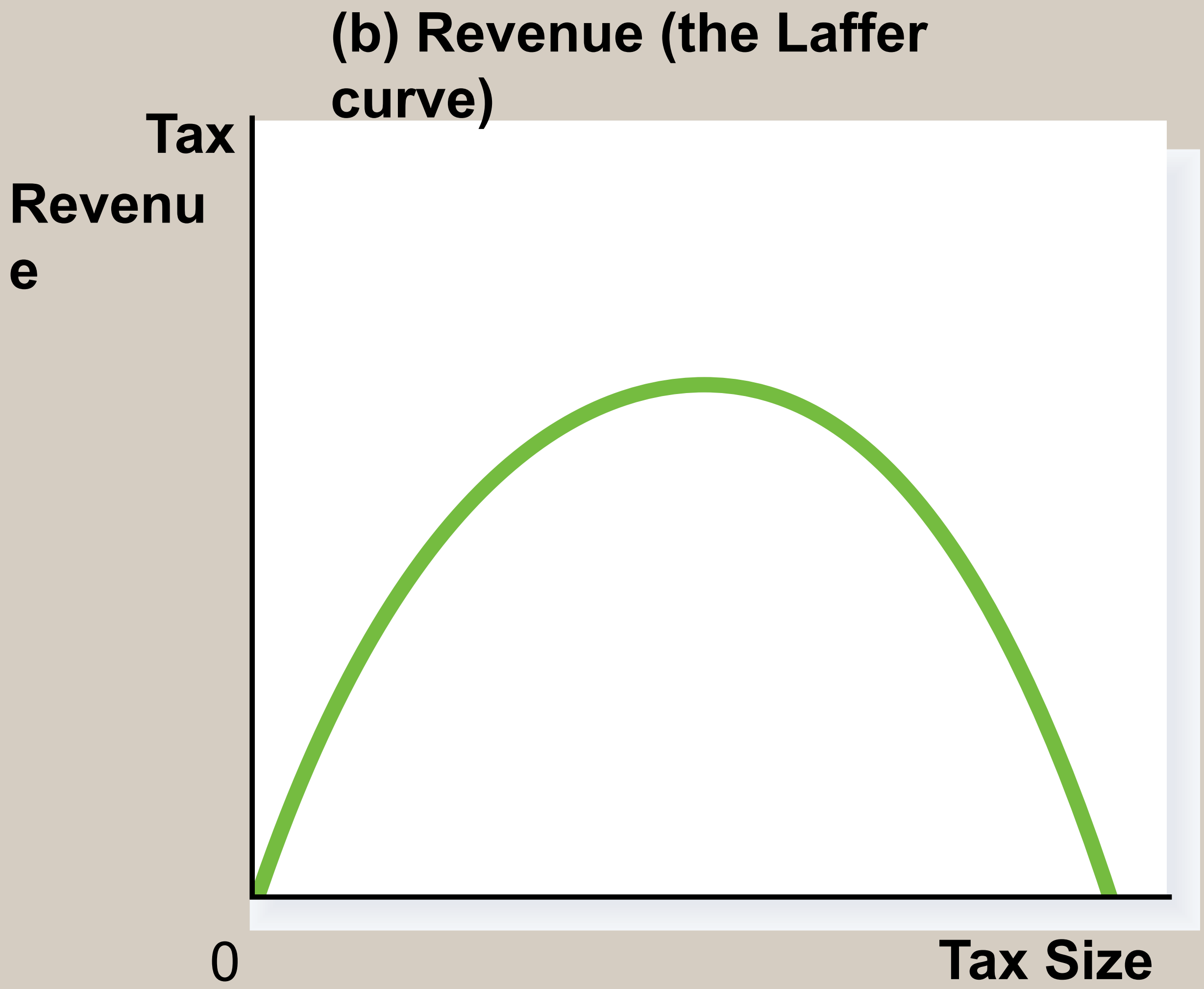

DEADWEIGHT LOSS AND TAX REVENUE AS TAXES VARY

- As the size of a tax increases, its deadweight loss quickly gets larger.
- By contrast, tax revenue first rises with the size of a tax, but then, as the tax gets larger, the market shrinks so much that tax revenue starts to fall.

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.

Summary

- A tax on a good reduces the welfare of buyers and sellers of the good, and the reduction in consumer and producer surplus usually exceeds the revenues raised by the government.
- The fall in total surplus—the sum of consumer surplus, producer surplus, and tax revenue — is called the deadweight loss of the tax.

Summary

- Taxes have a deadweight loss because they cause buyers to consume less and sellers to produce less.
- This change in behavior shrinks the size of the market below the level that maximizes total surplus.

Summary

- As a tax grows larger, it distorts incentives more, and its deadweight loss grows larger.
- Tax revenue first rises with the size of a tax.
- Eventually, however, a larger tax reduces tax revenue because it reduces the size of the market.