Welfare: Taxes

ECON201 - Winter, '24

Tom Boesche

UMD

9 January 2024

This Lecture

- Our focus has been on positive theories about the economy and its institutions.
- Now we investigate the welfare implications of our simple model of demand and supply.
- The basic concepts of welfare economics are consumer surplus and producer surplus.
- We will learn how to apply these concepts to policy, in particular, taxation.

Outline

1. Consumer Surplus

2. Producer Surplus

3. Market Efficiency

4. Taxation

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1. Consumer Surplus
2. Producer Surplus
3. Market Efficiency
4. Taxation

1. Willingness to Pay
2. Geometry
3. Well-Being?

Willingness to Pay

- A consumer's *willingness to pay* is the maximum amount that they are willing to pay for a good.

- The *consumer surplus* at a given price P is the difference between the willingness to pay and the price P.

- The consumer surplus *in a market* is the sum of all buyers' consumer surpluses.

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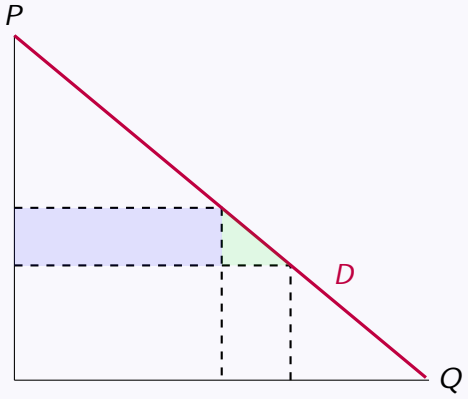
Demand and Consumer Surplus

- The demand curve represents the willingness to pay.
- Consumer surplus is measured by area between a given price and the demand curve.
- In a market with multiple buyer, the *marginal buyer*'s WoP is equal to the price.
- **Blue:** Extra surplus from units which would have been bought at higher price,

  Green: Surplus from units which are only bought at the lower price.



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Do We Care About Consumer Surplus?

Argument in favour:

- Based on willingness to pay = reflects buyers' own preferences.
- Welfare implications of price changes may be inferred from estimates of own-price elasticity of demand (use slope to calculate integral).

Arguments against:

- Buyers' own preferences may be misguided or not consider social costs (e.g. alcohol)
- Willingness to pay also reflect access to resources (remember: *able and willing*). Unless society is egalitarian, consumer surplus is plutocratic.

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1. Willingness to Sell

2. Geometry

Willingness to Sell

- We assume producers are willing to sell as long as price exceeds cost of production.

- The *producer surplus* is the amount the seller receives minus their cost of production.

- The *producer surplus in a market* is the sum of all sellers' producer surpluses.

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1. Willingness to Sell
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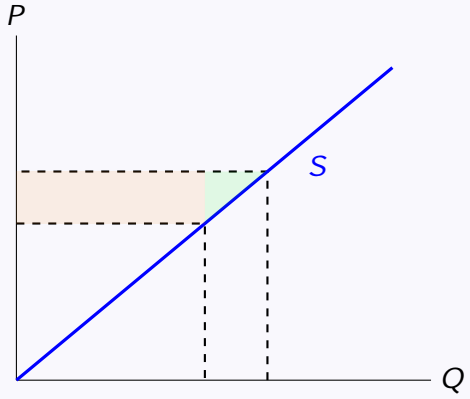
Supply and Producer Surplus

- The supply curve represents the cost of production/willingness to sell.
- Producer surplus is measured by area between a given price and the supply curve.
- In a market with multiple sellers, the *marginal seller*'s cost is equal to the price.
- **Orange:** Extra surplus from units which would have been sold at the higher price,

  Green: Surplus from new units which are only sold at lower price.



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1. Social Planner
2. Welfare Analysis

Total Surplus

What would a benevolent social planner care about?

$$\text{Total Surplus} = \text{Value to Buyers} - \text{Cost to Sellers}$$

Suppose we try to implement this by a market: The planner does not care which prices are paid, as long as total surplus is maximized.

$$\text{Total Surplus} = (\text{Value to Buyers} - \text{Price Paid}) + (\text{Price Received} - \text{Cost of Sellers}),$$

$$\text{Total Surplus} = \underbrace{(\text{Value to Buyers} - \text{Price Paid})}_{\text{Consumer Surplus}} + \underbrace{(\text{Price Received} - \text{Cost of Sellers})}_{\text{Producer Surplus}},$$

where Price Paid = Price Received. Thus,

$$\text{Total Surplus} = \text{Consumer Surplus} + \text{Producer Surplus}.$$

An allocation which maximized total surplus is called *socially efficient*. Othe objectives may matter.

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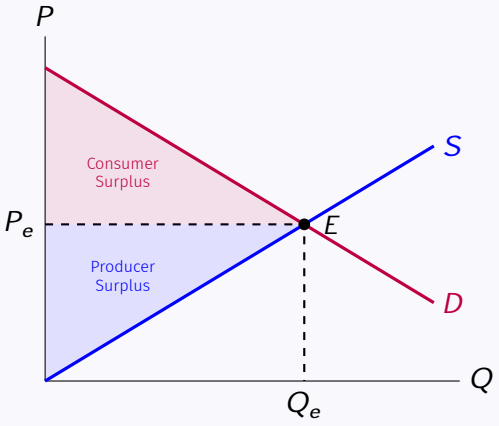
1. Social Planner

2. Welfare Analysis

Welfare of Market Equilibrium

a. The market allocates the supply of goods to the buyers with the highest willingness to pay.
b. The market allocates demand for goods to sellers who can produce at the lowest cost.
c. The market produces the quantity of goods that maximizes total surplus.

→ *laissez-faire* policy achieves social efficiency, given perfectly competitive markets.



Shortcomings

- Market failure: Market power or externalities.
- Other potential welfare considerations, e.g.:
  i. Equality,
  ii. equity, and
  iii. diversity.

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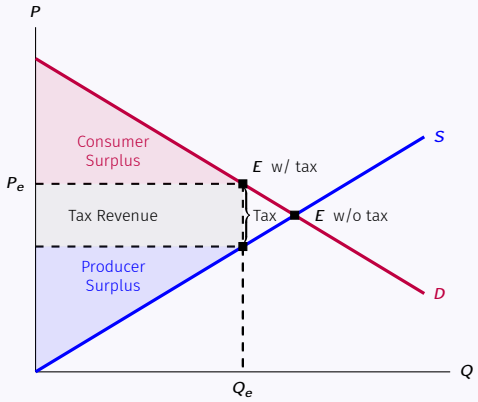
1. Effects of Taxes
2. Deadweight Loss
3. Size of Loss and Laffer Curve

Effects of Taxes

Taxes affect welfare in three ways:

a. Consumer surplus,
b. producer surplus, and
c. government revenue.



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1. Consumer Surplus
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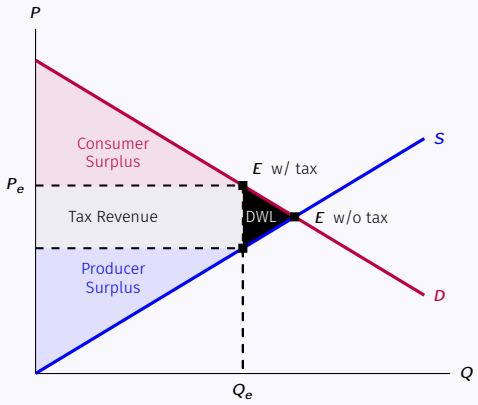
   1. Effects of Taxes
   2. Deadweight Loss
   3. Size of Loss and Laffer Curve

Deadweight Loss

- Buyers and sellers lose more surplus than the government gains.
- The excess loss of total surplus is called *deadweight loss*.
- Deadweight loss is due to loss of gains from trade:
  Some consumers whose value exceeds cost of production are excluded.
- Allocation with tax is socially inefficient.



Elasticity

- The greater the elasticity of demand and supply, the greater the deadweight loss of a tax.

- **Example:**
  The size of deadweight loss of payroll taxes.

- Reasons why labor supply may be elastic:
  i. Workers with flexible hours,
  ii. Labor force participation (retirement, discouraged workers),
  iii. Illegal alternatives?

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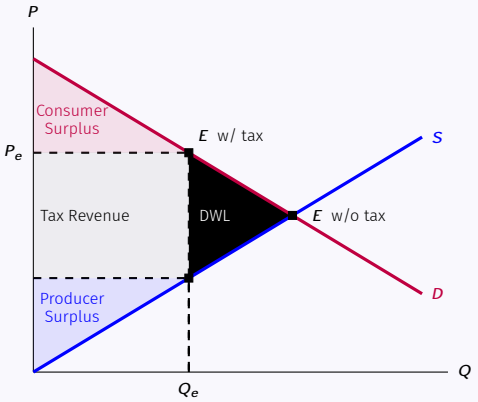
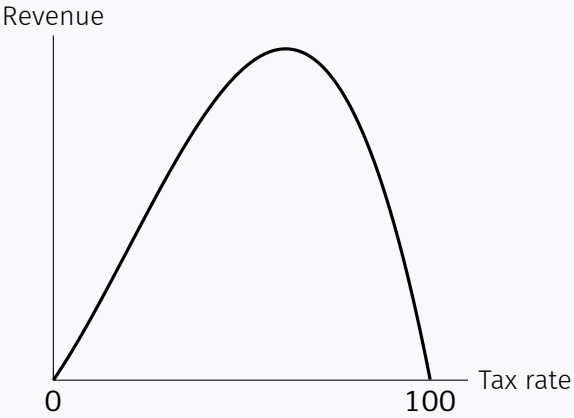
Change of Deadweight Loss

Size of deadweight loss increases faster than revenue:



Laffer Curve

- Beyond a certain point, tax increases no longer increase revenue but rather decrease it.
- Thus, in principle, if a tax are high enough, a tax cut could actually increase tax revenue.
- Most economists do not believe that this applies to any tax in the United States.



Conclusion

- Consumer surplus is the difference between willingness to pay and price.
- Producer surplus is the difference between cost and price.
- Total surplus is the sum of consumer and producer surplus. Under perfect competition, the market equilibrium maximizes total surplus.
- Taxes cause a deadweight loss, which implies a socially inefficient allocation.
- **Next:** Financial markets and how they connect savings with investment.