Lecture 12: Taxes

Session ID: DDEE

Clicker Question
Summary of DWL from Price Controls

- When the distribution of income is very unequal, WTP is not a good measure of consumer value.
  - Then CS and SS isn't a great measure of efficiency.
- But suppose the distribution of income is equitable and WTP is a good measure of consumer value.
  - SS = WTP - MC

- Raising or lowering the price with price controls, causes a fall in the quantity sold from $Q^*$ to $Q_C$ (see graph, p25, last lecture)
  - This reduces social surplus by the DWL (the area of the triangle between $Q^*$ and $Q_C$).
- If price controls reduce the price, then there is excess demand and nonprice rationing.
  - If the goods are obtained by those with the highest WTP, the only DWL is the area of the triangle.
  - But if the goods are obtained by those with a lower WTP, there will be more DWL, and social surplus is reduced even more (see graph, p26, last lecture).

Americans Hate Taxes

- 241 years ago, in 1775, Americans rebelled against the British, because Americans didn’t want to pay British taxes.
- Then in 1791, farmers rebelled when the US Federal Government tried to collect Whiskey Taxes.
Most American voters are still opposed to taxes--we prefer other kinds of government intervention.

When Americans were asked, “What is the best way to increase the energy-efficiency of cars?” this is how they responded.

The current American view of taxes is undoubtedly the result of bad teaching by economics professors like me.

The Purpose of Taxes

Governments tax goods and services for a number of reasons:

- to finance government activities,
- to discourage the consumption of certain goods and services,
- to increase equity,
- or to correct for negative externalities [more on that later…].
The Effect of Taxes on Markets

An excise tax is a tax of a fixed size applied to each unit of a good sold, e.g.

- a tax of $2 on each pack of cigarettes
- a tax of $.60 on each gallon of gasoline

We will analyze how excise taxes affect markets.

Excise Taxes

Suppose there is a $2 excise tax per pack of cigarettes,…

…and you buy a pack for $5.

- The seller hands you the pack.

- You hand the seller 5 dollar bills.
- But just then, the government reaches out and snatches 2 of the bills away.

- The seller receives only 3 dollar bills.
**IMPORTANT:** The buyer pays $2 more than the seller receives.

- The price paid by the **buyer** ($5) is called the **demand-price**.
- The price received by the **seller** ($3) is called the **supply-price**.

Suppose the tax collector isn’t at the store.

Then, who transfers the money to the government, the seller or the buyer?

**It doesn’t matter!!!** The effect is exactly the same.

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**A New Tax**

What happens *in competitive equilibrium* when a new tax is imposed on a product.

- If the seller has to pay the tax, then in order to keep most of her customers,…
- … the seller will have to reduce her price before the tax is added to it.
- If the buyer has to pay the tax, the seller will still have to reduce her price by the same amount before the sale takes place.
- Either way, the buyer will pay the same amount more than before,…
- and the seller will receive the same amount less than before.
Taxes and Market Equilibrium

- The demand curve is graphed using demand-price.
- The supply curve is graphed using supply-price.
- Suppose there is a $2 tax.
- Let $P_D$ be the equilibrium demand price.
- Let $P_S$ be the equilibrium supply price.
- Then $P_D - P_S = $2
- Let $Q_T$ be the equilibrium quantity.
- In equilibrium there is no excess demand, $Q_T = Q_S = Q_D$.
- How do we find $Q_T$, $P_D$, $P_S$?
- After sliding the “tax wedge,” $Q_T$, $P_D$ and $P_S$ are determined.
**Tax and No-Tax Comparisons**

- As compared with the no-tax price $P^*$, the tax creates a higher $P_D$, and lower $P_S$.
- Which pushes $Q_T$ below the surplus-maximizing level $Q^*$.
- This creates a DWL, and reduces consumer and producer surplus.
- The remaining surplus takes the form of taxes collected.
- Although taxes create DWL, the government may use tax revenues to provide public services and increase equity.

**Taxes and the Size of the DWL**

- If supply (or demand) is very inelastic,…
- Then when a tax is imposed,…
- The quantity transacted doesn't change much.
- Therefore, the dead-weight loss will be small.
Can taxes increase social surplus?

- Although taxes reduce social surplus in most markets,…

- …taxes on goods with negative externalities (which impose costs on other people) can increase total surplus in the economy.
  
  **Example:** Gasoline has externalities (congestion and environmental damage),…

  - and so do cigarettes,…

  - so taxes on gasoline or cigarettes would increase total economic surplus [explained in a future lecture].
Tax Incidence

- The tax incidence is the relative amount of the taxes that originate from the buyer and from the seller.

- The tax incidence depends on the elasticities of supply and of demand.

- If the elasticity of demand is very large, the sellers will have to absorb the tax,…

- because if they try to pass it on to buyers, they will lose many of their customers.

- The opposite happens if the elasticity of supply is very large.

- Tax incidence is unrelated to whether the seller or the buyer hands the money to the government.

Tax Incidence with Elastic Demand

- Here we have a very elastic demand curve,…

- and an ordinary supply curve.

- After a tax is imposed,…

- the equilibrium quantity, demand price and supply price all change.

- The taxes from the buyer…

- are small compared with the taxes from the seller.

- Why does the red shaded area represent taxes from the buyer? the yellow, taxes from the seller?
Tax Incidence with Elastic Supply

- Here we have a very elastic supply curve,…
- and an ordinary demand curve.
- After a tax is imposed,…
- the equilibrium quantity, demand price and supply price all change.
- The taxes from the seller…
- are small compared with the taxes from the buyer.

Tax Incidence in General

- In general, the larger the elasticity of demand,
  - the greater the share of taxes that comes from the seller,
  - and the smaller the share from the buyer.
- The larger the elasticity of supply,
  - the greater the share of taxes that comes from the buyer,
  - and the smaller the share from the seller.
- Here’s why…
**Taxes on Goods and Services**

- Like other kinds of government intervention in markets for goods and services, taxes tend to reduce social surplus.
- But in general, economists prefer taxes to other kinds of intervention,…
- …because taxes lead to market-clearing* prices (*no excess demand or supply),…
- …and do not result in nonprice rationing.
- Therefore people with lower WTP do not get the goods and DWL is small.
Why are taxes useful?

- Although taxes normally reduce surplus, they have very important uses.
  - Taxes allow government to supply public goods, like police protection and clean streets—not easily supplied by private markets. [To be explained later]
  - When there are negative externalities (social costs not included in the price—e.g. gasoline), taxes can increase surplus. [To be explained later]
  - And taxes can increase equity, important to many societies.

- Many US politicians argue that US taxes are too high…

But some policy makers believe that US taxes are too low.

- Taxes in most other wealthy countries are higher than in the United States.
Consider a subsidy of $b$ per unit. The government pays $b$ each time a unit is sold.

- Subsidies are the opposite of taxes.
- Buyer pays less than seller receives, ...

so in equilibrium, $P_S - P_D = b$

- The quantity produced $Q_b > Q^*$.
- But Total Surplus = $CS_b + PS_b - Subsidy$
  $= CS^* + PS^* - DWL$
End of File