Consumer and Producer Surplus

February 6, 2007

Reading: Chapter 6

Consumer and Producer Surplus

- Introduction
- Consumer surplus
- Producer surplus
- Efficiency and the gains from trade
- Applications

Introduction

Connections to:

- Opportunity costs to consumers and producers
- Marginal Decisions: to obtain supply and demand curves and gains to buyers and sellers
- Supply and Demand: to examine markets
- Gains from Trade: What is the gain from trade due to markets
- Efficiency: How markets promote efficiency
- Government interventions: How to measure efficiency losses?
- Elasticity: How does elasticity affect efficiency losses

Consumer Surplus

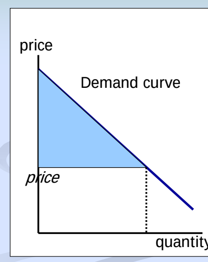
Definition

Potential buyer's **willingness to pay** is the maximum amount he/she will pay for a good

Individual consumer surplus is the net gain to an individual buyer from the purchase of a good. It is equal to the difference between the buyer's willingness to pay and the price paid.

Total consumer surplus in a market is the sum of the individual consumer surpluses of all the buyers of a good.

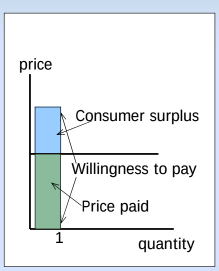
We will see that the total consumer surplus is the **area under the demand curve above the market price**



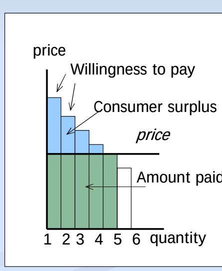
Consumer Surplus

Individual consumer surplus

Purchase of one unit

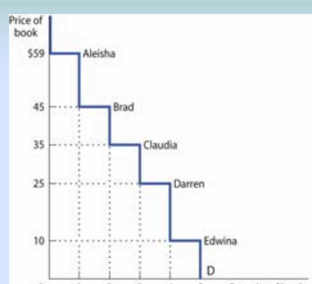


Purchase of several units



Consumer Surplus

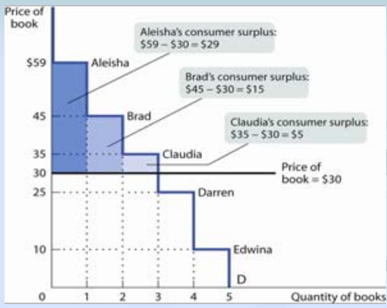
Willingness to pay and demand curve



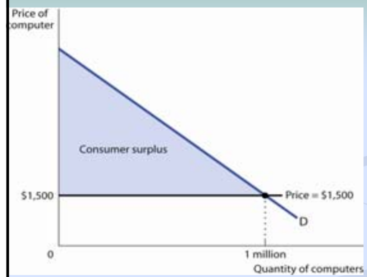
Potential buyers	Willingness to pay
Aleisha	$59
Brad	45
Claudia	35
Darren	25
Edwina	10

One unit for each consumer

Consumer Surplus
Willingness to pay and total consumer surplus



Consumer Surplus
Total consumer surplus

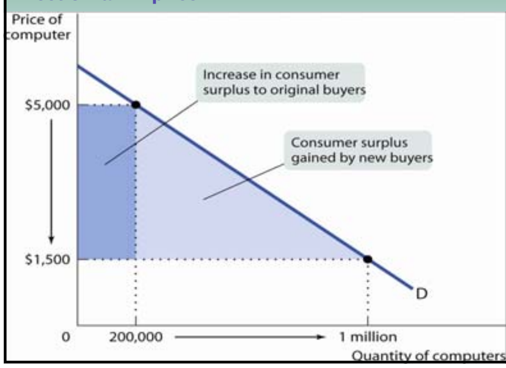


Valid for each consumer buying one unit or each buying several units.

With many consumers the curve is smooth.

The total consumer surplus generated by purchases of a good at a given price is equal to the area below the demand curve but above that price.

Consumer Surplus
Effect of fall in price



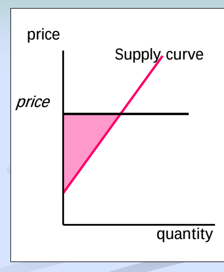
Producer Surplus
Definition

A potential seller's **cost** is the lowest price at which he or she is willing to sell a good.

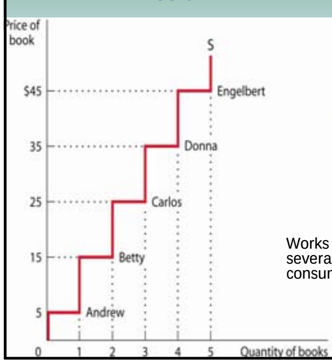
Individual producer surplus is the net gain to a seller from selling a good. It is equal to the difference between the price received and the seller's cost.

Total producer surplus in a market is the sum of the individual producer surpluses of all the sellers of a good.

We will see that the total producer surplus is the **area under the market price above the supply curve**



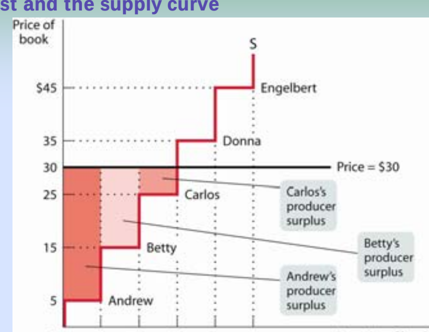
Producer Surplus
Cost and the Supply Curve



Potential sellers	Cost
Andrew	$5
Betty	15
Carlos	25
Donna	35
Engelbert	45

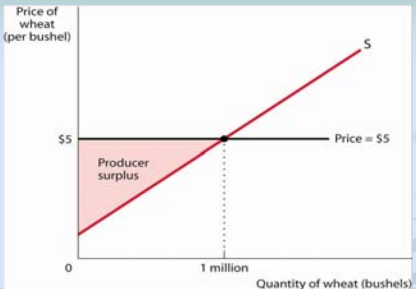
Works for each seller producing several units (as in the case of the consumer)

Producer Surplus
Cost and the supply curve



Producer Surplus

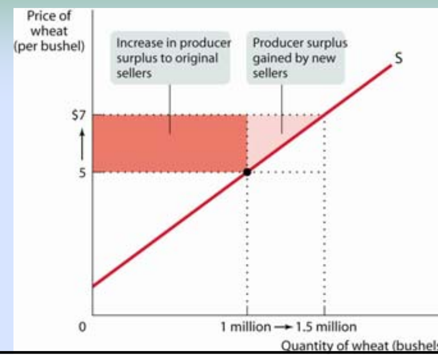
Total producer surplus



The total producer surplus from sales of a good at a given price is the area above the supply curve but below that price.

Producer Surplus

Effect of a rise in price



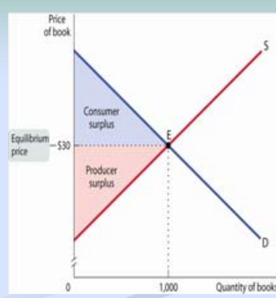
Efficiency and the Gains from Trade

Total surplus

The **total surplus** generated in a market is the total net gain to consumers and producers from trading in the market.

Total surplus = consumer surplus + producer surplus

Both consumers and producers are better off by trading in the market – there are gains from trade



Efficiency and the Gains from Trade

Efficiency of Markets

The maximum possible total surplus is achieved at market equilibrium.

In market equilibrium there is no way to make some people better off without making others worse off → market equilibrium is efficient.

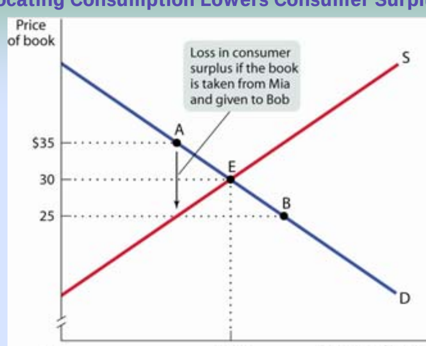
Hypothetically possible to increase efficiency by:

- Reallocating consumption among consumers
- Reallocating sales among sellers
- Changing the quantity traded

None of these will increase the surplus but instead reduce it.

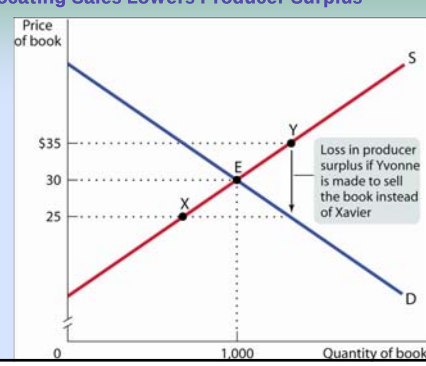
Efficiency and the Gains from trade

Reallocating Consumption Lowers Consumer Surplus

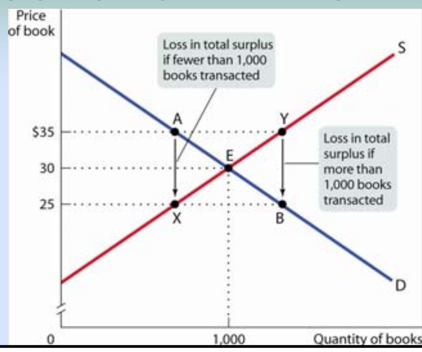


Efficiency and the Gains from Trade

Reallocating Sales Lowers Producer Surplus



Efficiency and the Gains from Trade
Changing the Quantity Lowers Total Surplus



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Efficiency and the Gains from Trade
Four functions of the Market which maximize surplus

1. Allocates consumption of the good to potential buyers who value it the most (in terms of their willingness to pay).

2. Allocates sales to potential sellers who most value the right to sell the good (in terms of cost).

3. Ensures that every consumer who makes a purchase values the good more than every seller who makes a sale.

4. Ensures that every potential buyer who doesn't make a purchase values the good less than every potential seller who doesn't make a sale.

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Efficiency and the Gains from Trade
Caveats

- Market outcome is not the best for each person.
- Distribution is not taken into account – more willingness to pay may be due to having more income, not stronger preference.
- Market failures. Examples:
  - Monopoly
  - Externalities
  - Imperfect information
  - Public goods

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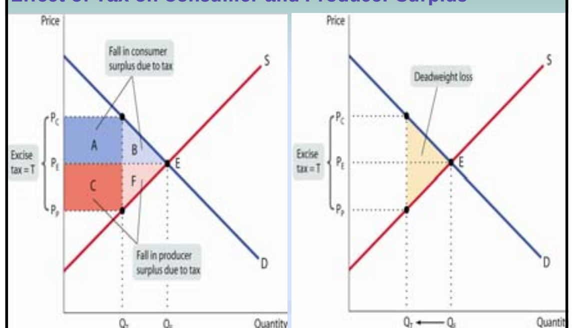
Application
Effect of Tax on Consumer and Producer Surplus



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Application
Deadweight Loss and Elasticities

Deadweight loss measures loss in total surplus due to tax.

What kinds of market produce a lower deadweight loss when tax is imposed?

For a tax imposed when demand or supply, or both, is inelastic will cause a relatively small decrease in quantity transacted and a small deadweight loss.

If objective is to reduce quantity, then better to have higher elasticity.

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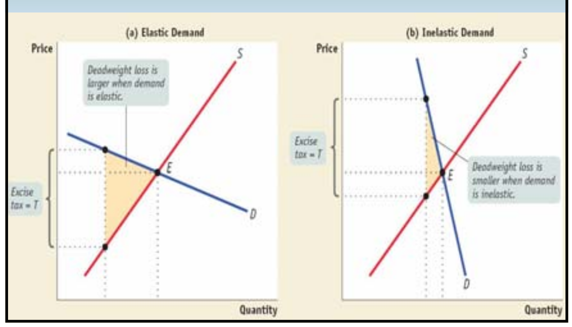
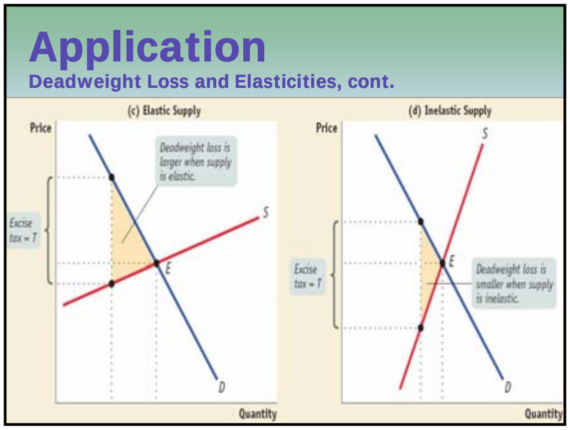
Application
Deadweight Loss and Elasticities, cont.




Application
Deadweight Loss and Elasticities, cont.
(c) Elastic Supply
Price
Deadweight loss is larger when supply is elastic.
Excise tax = T
S
E
D
Quantity
(d) Inelastic Supply
Price
S
Excise tax = T
E
Deadweight loss is smaller when supply is inelastic.
D
Quantity