Welfare analysis within Demand and Supply framework

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Consumer surplus

Consumer Surplus

- Welfare economics
  - How the allocation of resources affects economic well-being
  - economic well-being can be captured by both Consumer Surplus and Producer Surplus
- Willingness to pay
  - Maximum amount that a buyer will pay for a good

Consumer Surplus

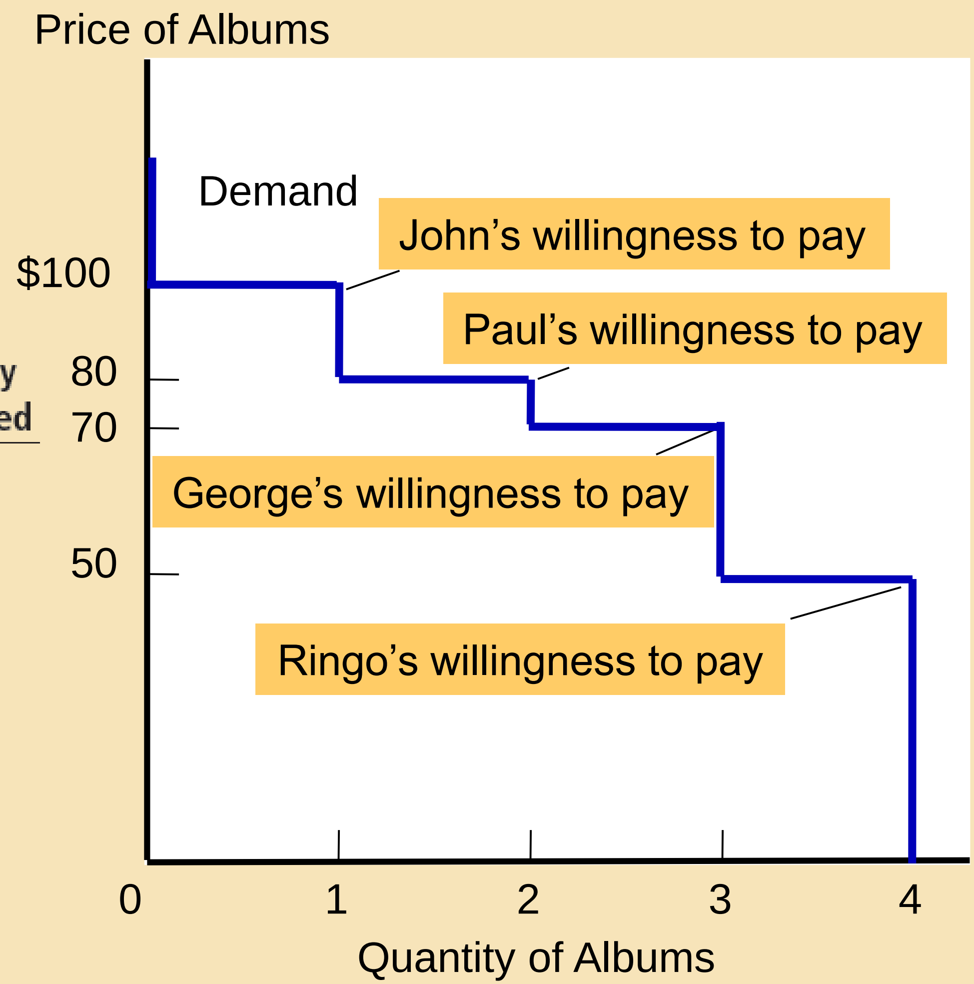
- Consumer surplus
  - Amount a buyer is willing to pay for a good
    - Minus amount the buyer actually pays for it
  - Measures the **benefit** buyers receive from participating in a market
  - Closely related to the demand curve
- Demand schedule
  - Derived from the willingness to pay of the possible buyers

Four Possible Buyers' Willingness to Pay

Buyer	Willingness to Pay
John	$100
Paul	80
George	70
Ringo	50

The Demand Schedule and the Demand Curve

Price	Buyers	Quantity Demanded
More than $100	None	0
$80 to $100	John	1
$70 to $80	John, Paul	2
$50 to $70	John, Paul, George	3
$50 or less	John, Paul, George, Ringo	4

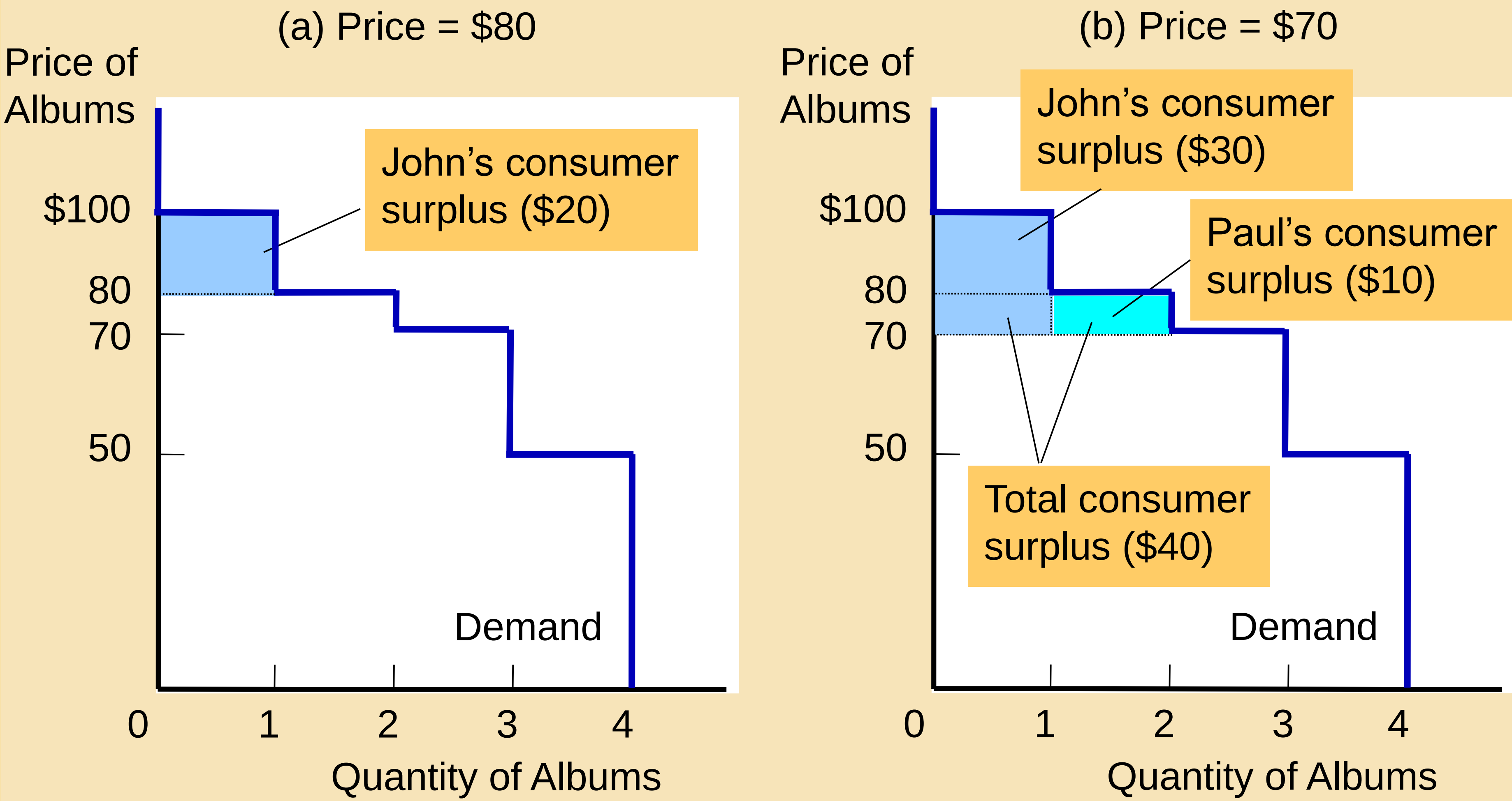


The table shows the demand schedule for the buyers in Table 1. The graph shows the corresponding demand curve. Note that the height of the demand curve reflects buyers' willingness to pay.

Consumer Surplus

- At any quantity
  - Price given by the demand curve
    - Willingness to pay of the **marginal** buyer
- Demand curve
  - Reflects buyers' willingness to pay
  - Measure consumer surplus
- Consumer surplus in a market
  - Area below the demand curve and above the price

Measuring Consumer Surplus with the Demand Curve



In panel (a), the price of the good is $80, and the consumer surplus is $20. In panel (b), the price of the good is $70, and the consumer surplus is $40.

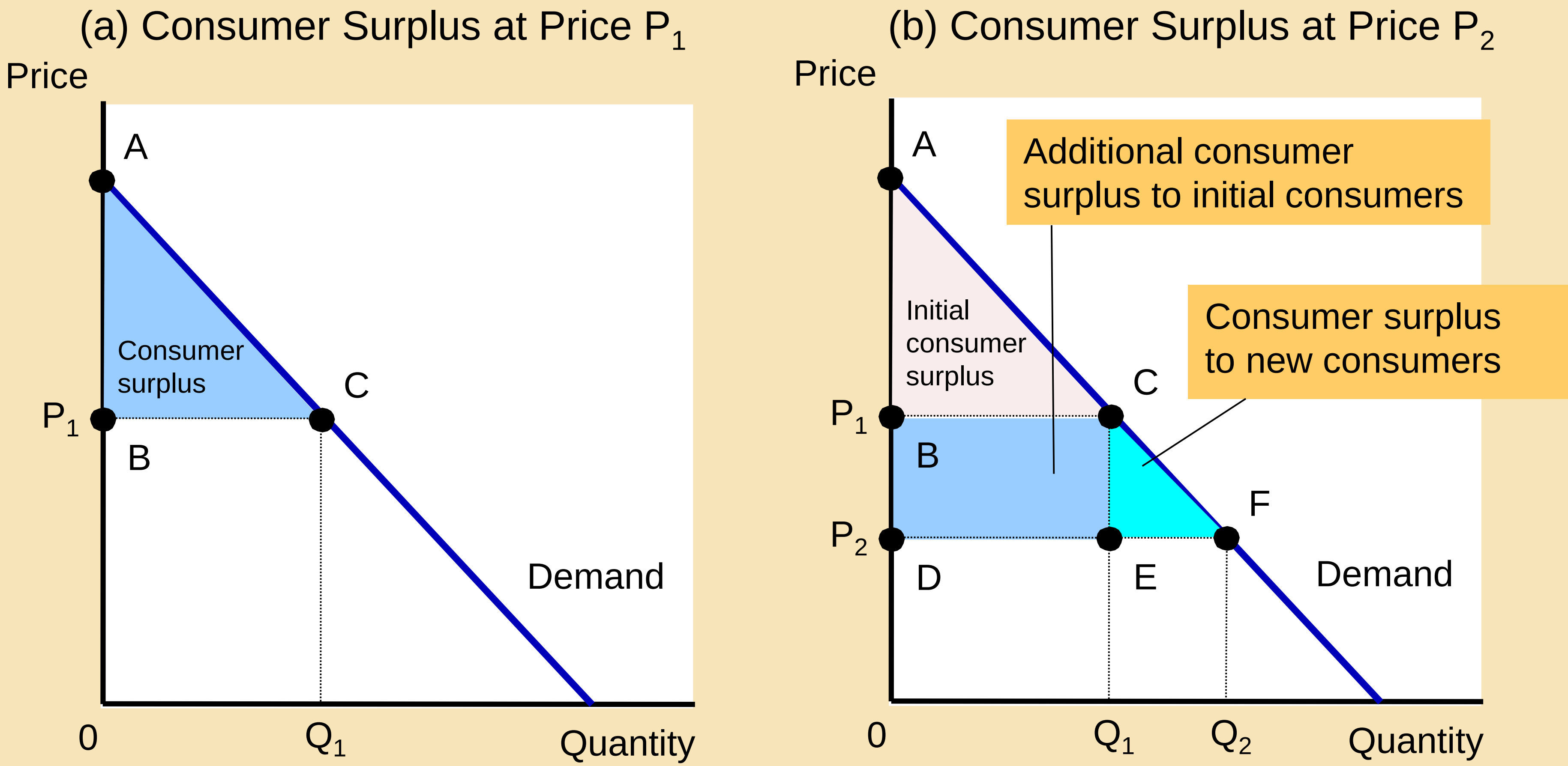
Consumer Surplus

- A lower price raises consumer surplus
  - Buyers - always want to pay less
  - Initial price, P_1
    - Quantity demanded Q_1
    - Consumer surplus: area ABC

Consumer Surplus

- A lower price raises consumer surplus
  - New, lower price, P_2
    - Greater quantity demanded, Q_2
      - New buyers
    - Increase in consumer surplus from area ABC
      - From initial buyers, add area BCDE
      - From new buyers, add area CEF

How the Price Affects Consumer Surplus



In panel (a), the price is P_1, the quantity demanded is Q_1, and consumer surplus equals the area of the triangle ABC. When the price falls from P_1 to P_2, as in panel (b), the quantity demanded rises from Q_1 to Q_2, and the consumer surplus rises to the area of the triangle ADF. The increase in consumer surplus (area BCFD) occurs in part because existing consumers now pay less (area BCED) and in part because new consumers enter the market at the lower price (area CEF).

Consumer surplus

- Consumer surplus
  - Benefit that buyers receive from a good
    - As the buyers themselves perceive it
  - Good measure of economic well-being
  - Exception: Illegal drugs
    - Drug addicts
      - Willing to pay a high price for heroin
    - Society’s standpoint
      - Drug addicts don’t get a large benefit from being able to buy heroin at a low price

02 Producer surplus

Producer Surplus

- Cost
  - Value of everything a seller must give up to produce a good
  - Measure of willingness to sell
- Producer surplus
  - Amount a seller is paid for a good minus the seller's cost of providing it

Producer Surplus

- Producer surplus
  - Closely related to the supply curve
- Supply schedule
  - Derived from the costs of the suppliers
- At any quantity
  - Price given by the supply curve shows the cost of the marginal seller

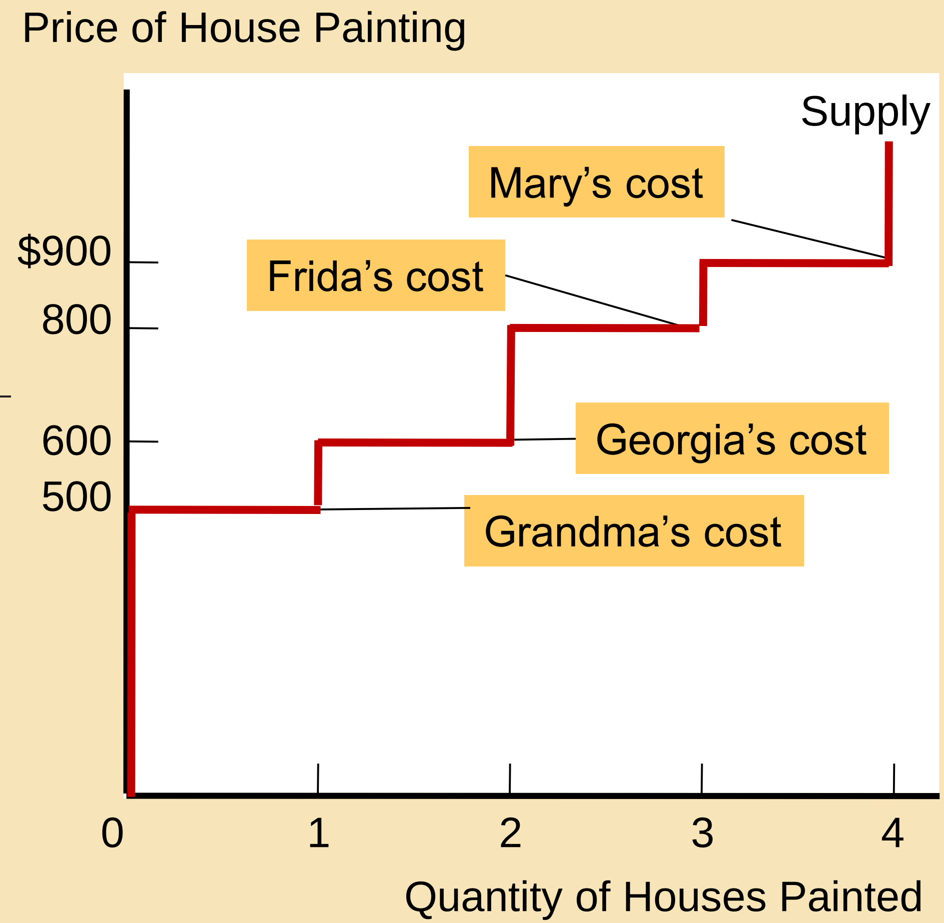
The Costs of Four Possible Sellers

Table 2

Seller	Cost
Mary	$900
Frida	800
Georgia	600
Grandma	500

The Supply Schedule and the Supply Curve

Price	Sellers	Quantity Supplied
$900 or more	Mary, Frida, Georgia, Grandma	4
$800 to $900	Frida, Georgia, Grandma	3
$600 to $800	Georgia, Grandma	2
$500 to $600	Grandma	1
Less than $500	None	0

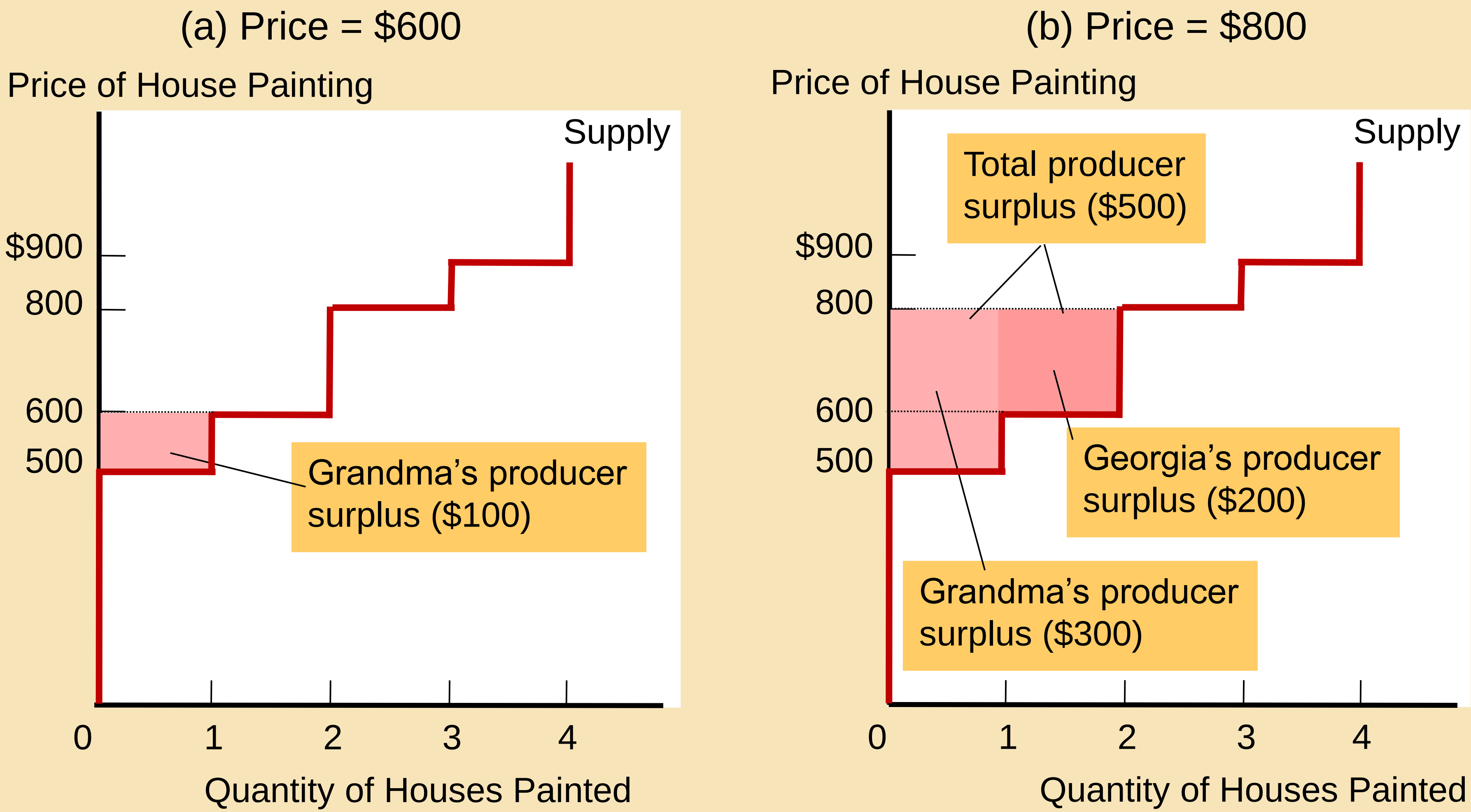


The table shows the supply schedule for the sellers in Table 2. The graph shows the corresponding supply curve. Note that the height of the supply curve reflects sellers' costs.

Producer Surplus

- Supply curve
  - Reflects sellers’ (marginal) costs
  - Measure producer surplus
- Producer surplus in a market
  - Area below the price and above the supply curve

Measuring Producer Surplus with the Supply Curve



In panel (a), the price of the good is $600, and the producer surplus is $100. In panel (b), the price of the good is $800, and the producer surplus is $500.

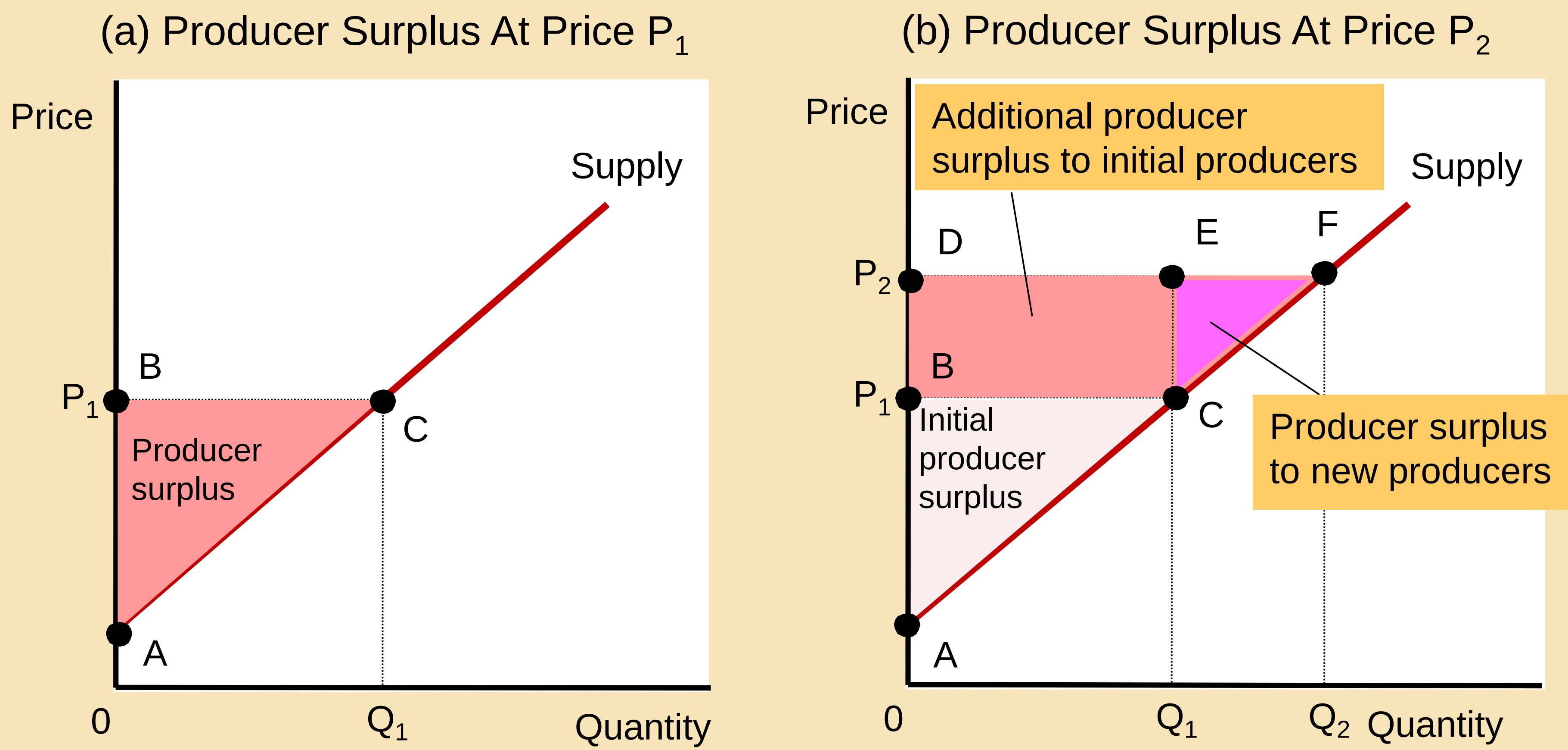
Producer Surplus

- A higher price raises producer surplus
- Sellers - want to receive a higher price
- Initial price, P1
  - Quantity supplied, Q1
  - Producer surplus, area ABC

Producer Surplus

- A higher price raises producer surplus
  - New, higher price, P2
    - Greater quantity supplied, Q2
      - New producers
    - Increase in producer surplus from area ABC
      - From initial suppliers, add area BCDE
      - From new suppliers, add area CEF

How the Price Affects Producer Surplus



In panel (a), the price is P_1, the quantity supplied is Q1, and producer surplus equals the area of the triangle ABC. When the price rises from P_1 to P_2, as in panel (b), the quantity supplied rises from Q_1 to Q_2, and the producer surplus rises to the area of the triangle ADF. The increase in producer surplus (area BCFD) occurs in part because existing producers now receive more(area BCED) and in part because new producers enter the market at the higher price (area CEF).

Market efficiency

- The benevolent social planner
  - All-knowing, all-powerful, well-intentioned dictator
  - Wants to maximize the economic well-being of everyone in society
- Economic well-being of a society
  - Total surplus = Sum of consumer and producer surplus

Market efficiency

- Total surplus = Consumer surplus + Producer surplus
  - Consumer surplus = Value to buyers – Amount paid by buyers
  - Producer surplus = Amount received by sellers – Cost to sellers
  - Amount paid by buyers = Amount received by sellers
- Total surplus = Value to buyers – Cost to sellers

Market efficiency

- Efficiency
  - Property of a resource allocation
  - Maximizing the total surplus received by all members of society
- Equality
  - Property of distributing economic prosperity uniformly among the members of society

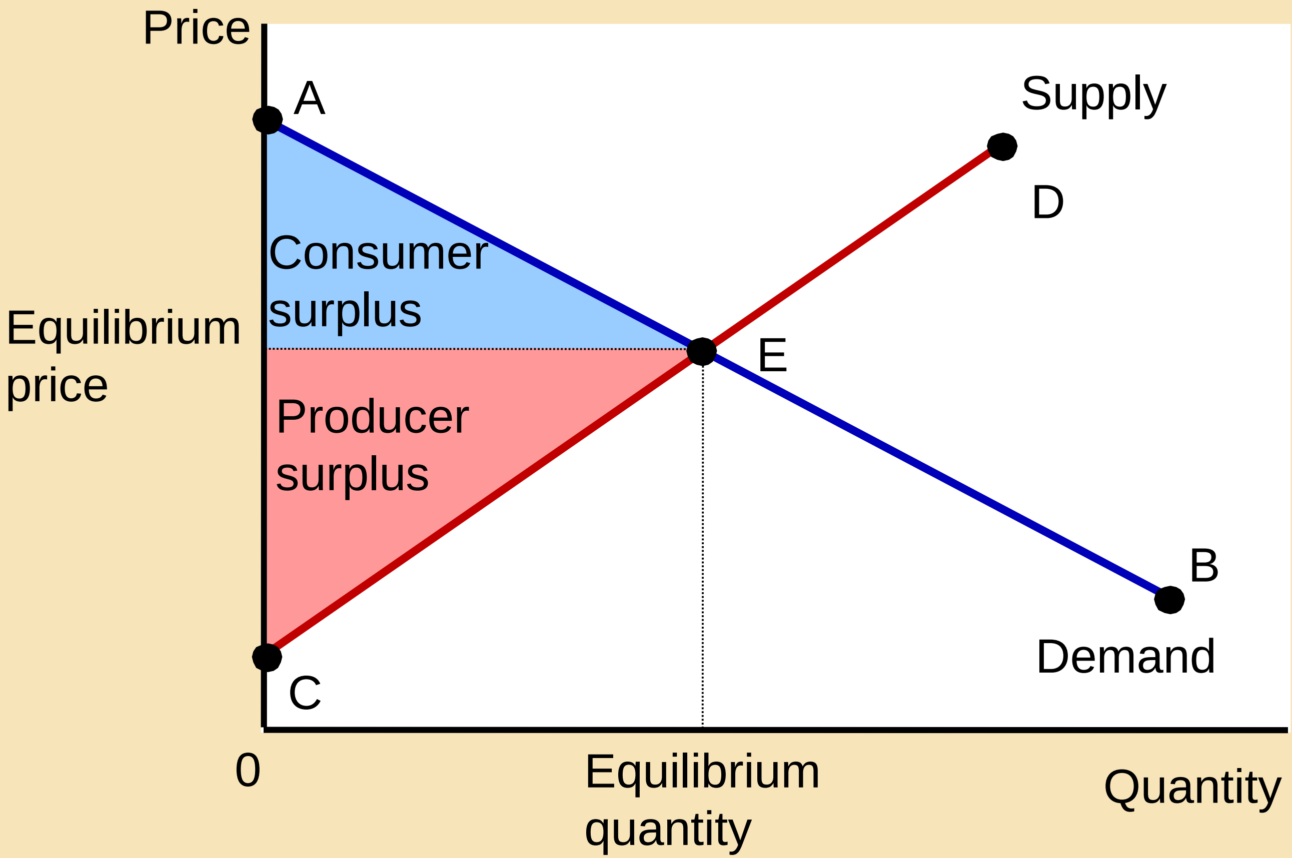
Market Efficiency

- Gains from trade in a market
  - Like a pie to be shared among the market participants
- The question of efficiency
  - Whether the pie is as big as possible
- The question of equality
  - How the pie is sliced
  - How the portions are distributed among members of society

Market efficiency

- Market outcomes
  1. Free markets allocate the supply of goods to the buyers who value them most highly
     - Measured by their willingness to pay
  2. Free markets allocate the demand for goods to the sellers who can produce them at the least cost

Consumer and Producer Surplus in the Market Equilibrium

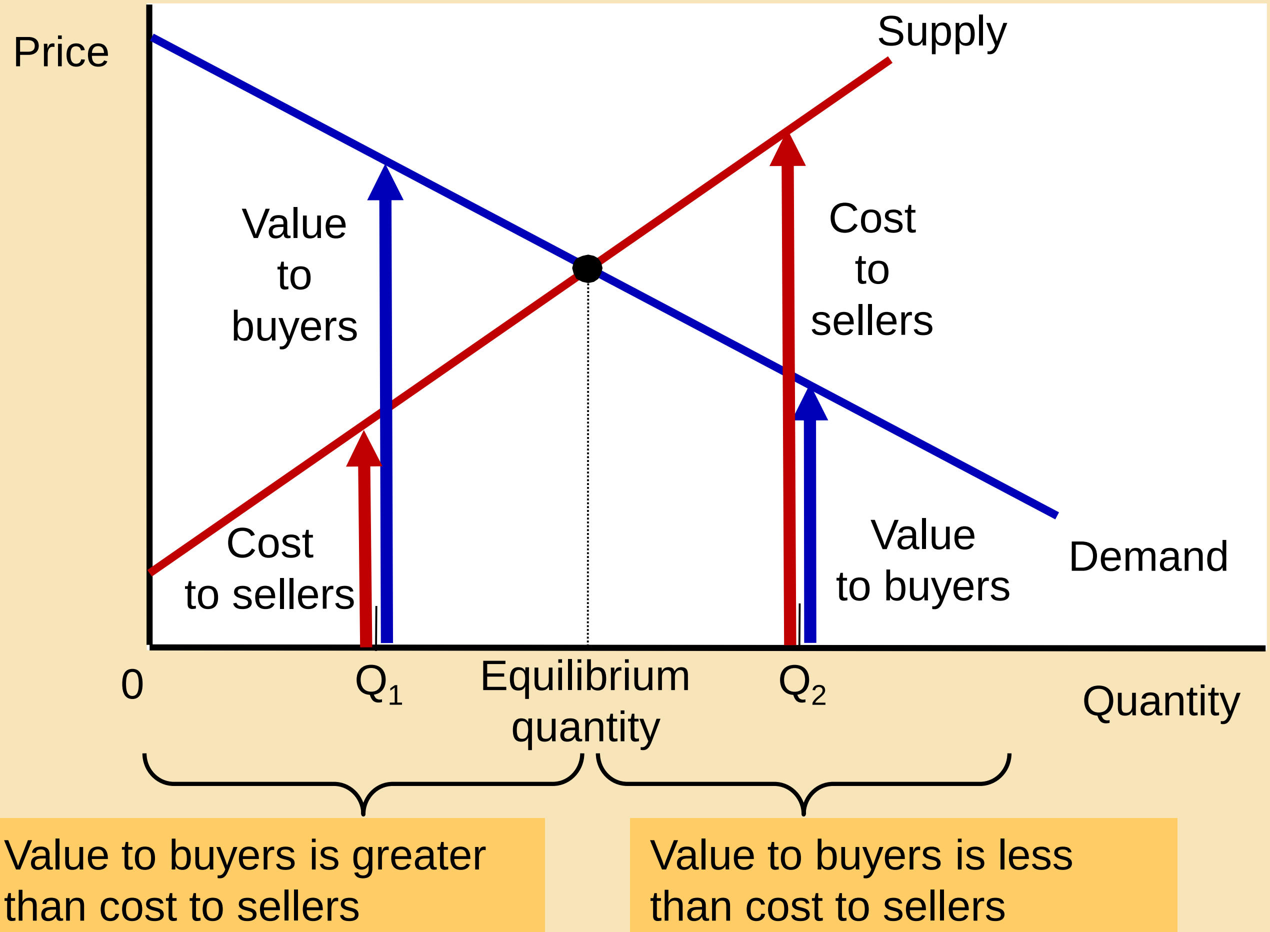


Total surplus—the sum of consumer and producer surplus—is the area between the supply and demand curves up to the equilibrium quantity

Market efficiency

- Market outcomes
  - Social planner
    - Cannot increase economic well-being by
      - Changing the allocation of consumption among buyers
      - Changing the allocation of production among sellers
    - Cannot rise total economic well-being by
      - Increasing or decreasing the quantity of the good

The Efficiency of the Equilibrium Quantity



At quantities less than the equilibrium quantity, such as Q_1, the value to buyers exceeds the cost to sellers. At quantities greater than the equilibrium quantity, such as Q_2, the cost to sellers exceeds the value to buyers. Therefore, the market equilibrium maximizes the sum of producer and consumer surplus.

Market efficiency

- Market outcomes
   3. Free markets produce the quantity of goods that maximizes the sum of consumer and producer surplus
- Market equilibrium
   - Efficient allocation of resources
- The benevolent social planner
   - “Laissez faire” = “allow them to do”

Market efficiency

- Adam Smith’s invisible hand
  - Takes all the information about buyers and sellers into account
  - Guides everyone in the market to the best outcome
  - Economic efficiency
- Free markets = best way to organize economic activity

Market efficiency

- Forces of supply and demand
  - Allocate resources efficiently
- Several assumptions about how markets work
  1. Markets are perfectly competitive
  2. Outcome in a market matters only to the buyers and sellers in that market

Market efficiency and failure

- When these assumptions do not hold
  - “Market equilibrium is efficient” may no longer be true
- In the world, competition is far from perfect
  - Market power
    - A single buyer or seller (small group)
    - Control market prices
    - Markets are inefficient

Market Efficiency & Failure

- Market failure
  - E.g.: market power and externalities
  - The inability of some unregulated markets to allocate resources efficiently
  - Public policy
    - Can potentially remedy the problem and increase economic efficiency

谢谢！

THANK YOU!