Economics 3030

Chapter 2
Market Forces: Demand and Supply

Overview

I. Market Demand Curve
- The Demand Function
- Determinants of Demand
- Consumer Surplus

II. Market Supply Curve
- The Supply Function
- Determinants of Supply
- Producer Surplus

III. Market Equilibrium

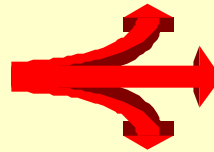IV. Price Restrictions

V. Comparative Statics

Market Demand Curve

- Shows the amount of a good that will be purchased at alternative prices.
- *Law of Demand*
  - The demand curve is downward sloping.
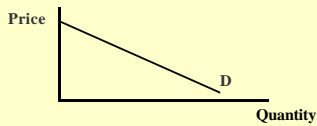
Determinants of Demand

- Price of the product
- Income
- Prices of substitutes
- Prices of complements
- Tastes (Advertising?)
- Population
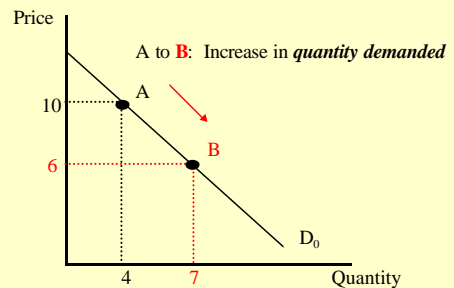- Consumer expectations

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The Demand Function

- An equation representing the demand curve

$$Q_x^d = f(P_x , P_Y , M, H,)$$

- Q_x^d = quantity demand of good X.
- P_x = price of good X.
- P_Y = price of a substitute good Y.
- M = income.
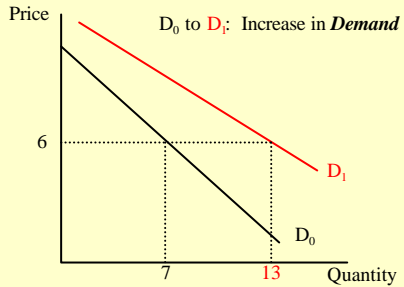- H = any other variable affecting demand

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Change in Quantity Demanded

A to **B**: Increase in *quantity demanded*

Change in Demand

Price

D_0 to D_1: Increase in **Demand**

6

D_1

D_0

7   13   Quantity

7

Remember:

- Changing the price of the product leads to a change in quantity demanded (i.e., movement along D curve)
- Changing anything else leads to a change in demand (i.e., a shift of the D curve)

8

Consumer Surplus:

- The value consumers get from a good but do not have to pay for.

9

I got a great deal!

- That company offers a lot of bang for the buck!
- They're practically giving them away.
- Total value greatly exceeds total amount paid.
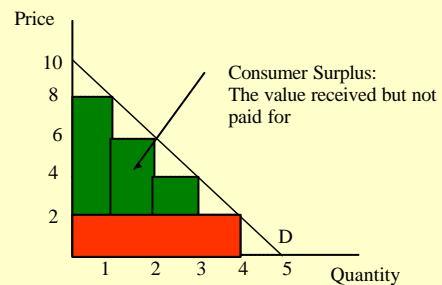- Consumer surplus is large.

10

I got a lousy deal!

- That car dealer drives a hard bargain!
- I almost decided not to buy it!
- They tried to squeeze the very last cent from me!
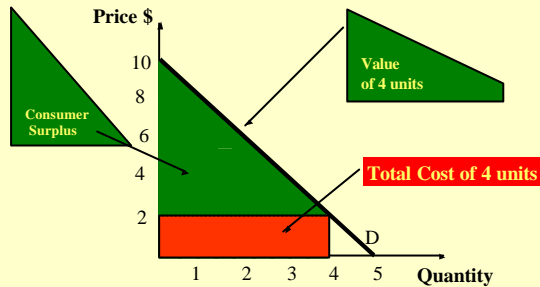- Total amount paid is close to total value.
- Consumer surplus is low.

11

Consumer Surplus: The Discrete Case

Price

10

8

6

4

2

Consumer Surplus: The value received but not paid for

1   2   3   4   5   Quantity

D

12

Consumer Surplus: The Continuous Case

Price $

10
8
6
4
2

Consumer Surplus

Value of 4 units

Total Cost of 4 units
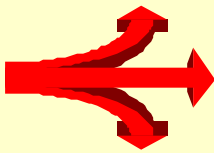
D

1 2 3 4 5   Quantity

13

Market Supply Curve

- The supply curve shows the amount of a good that will be produced at alternative prices.
- *Law of Supply*
  - The supply curve is upward sloping

Price

S_0

Quantity
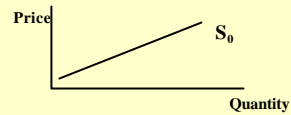
14

Determinants of Supply

- Price of the product
- Input prices (i.e., costs)
- Technology or government regulations
- Number of firms
- Substitutes in production
- Taxes & subsidies
- Producer expectations
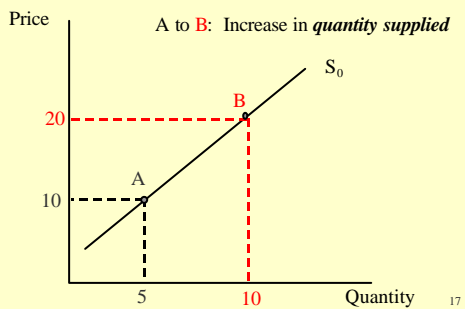
15

The Supply Function

- An equation representing the supply curve:

$$Q_x^S = f(P_x, P_R, W, H,)$$

- Q_x^S = quantity supplied of good X.
- P_x = price of good X.
- P_R = price of a related good
- W = price of inputs (e.g., wages)
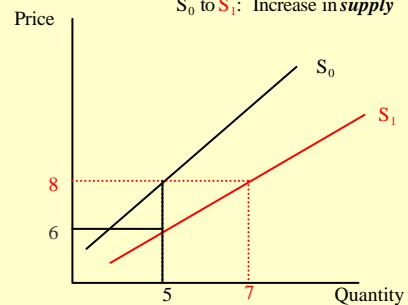- H = other variables affecting supply

16

Change in Quantity Supplied

Price

A to B: Increase in *quantity supplied*

S_0

B

20

A

10

5   10   Quantity

17

Change in Supply

Price

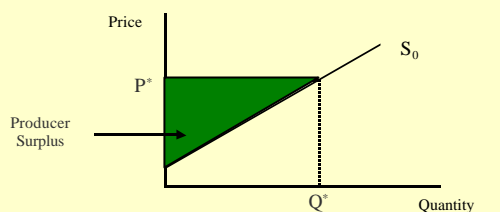S_0 to S_1: Increase in *supply*

S_0

S_1

8

6

5   7   Quantity

18

Remember:

- Changing the price of the product leads to a change in quantity supplied (i.e., movement along S curve)
- Changing anything else leads to a change in supply (i.e., a shift of the S curve)

19

Producer Surplus

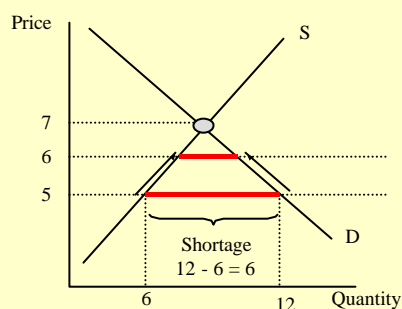- The amount producers receive in excess of the amount necessary to induce them to produce the good.

20

Market Equilibrium

- Balancing supply and demand
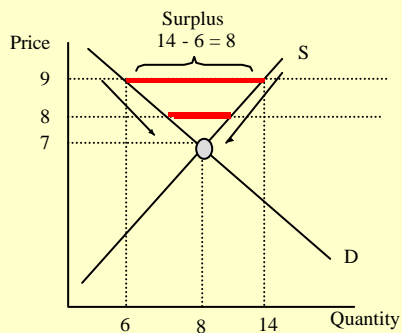 - $Q_x^S = Q_x^d$
- Steady-state or equilibrium

21

If price is too low…

22

## If price is too high…

23

Price Restrictions

- Price Ceilings
  - The *maximum* legal price that can be charged
  - Examples:
    - Gasoline prices in the 1970s
    - Housing in New York City
    - Proposed restrictions on ATM fees
- Price Floors
  - The *minimum* legal price that can be charged.
  - Examples:
    - Minimum wage
    - Agricultural price supports

24

Impact of a Price Ceiling

Price

P^F

P^*

Ceiling
Price

Shortage

S

D

Quantity

Q_s Q^* Q_d
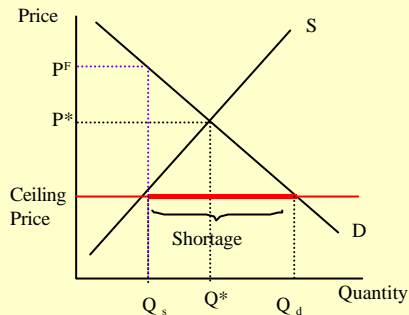
25

Full Economic Price

- The dollar amount paid to a firm under a price ceiling, plus the nonpecuniary price.

$$P^F = P^c + (P^F - P^C)$$

- P^F = full economic price
- P^C = price ceiling
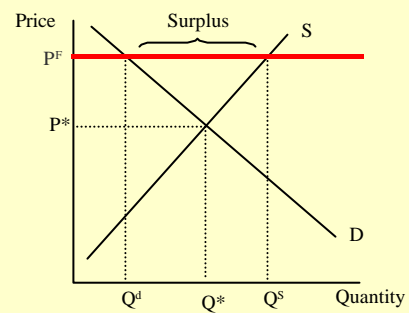- $P^F - P^C$ = nonpecuniary price (opportunity cost)

26

An Example from the 1970s

- Ceiling price of gasoline - $1
- 3 hours in line to buy 15 gallons of gasoline
  - Opportunity cost: $5/hr
  - Total value of time spent in line: 3 × $5 = $15
  - Non-pecuniary price per gallon: $15/15=$1
- Full economic price of a gallon of gasoline: $1+$1 = $2

27

Impact of a Price Floor

Price   Surplus   S

P^F

P^*

D

Q^d Q^* Q^S Quantity

28

Comparative Static Analysis

- How do the equilibrium price and quantity change when a determinant of supply and/or demand change?

?

29

Applications of Demand and Supply Analysis

- Event: The *WSJ* reports that the prices of PC components are expected to fall by 5-8 per cent over the next six months.
- Scenario 1: You manage a small firm that manufactures PCs.
- Scenario 2: You manage a small software company.

30

Use Comparative Static Analysis to see the Big Picture!

- *Comparative static analysis* shows how the equilibrium price and quantity will change when a determinant of supply or demand changes.
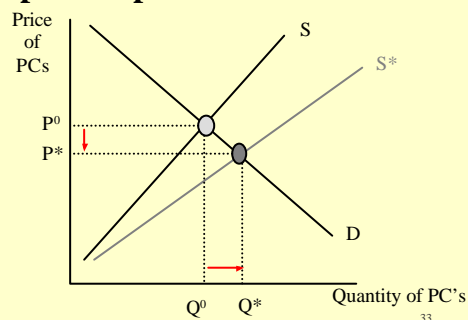
31

Scenario 1: Implications for a Small PC Maker

- Step 1: Look for the "Big Picture"
- Step 2: Organize an action plan (worry about details)

32

Big Picture: Impact of decline in component prices on PC market

33

- So, the Big Picture is:
  - PC prices are likely to fall, and more computers will be sold
- Use this to organize an action plan
  - contracts/suppliers?
  - inventories?
  - human resources?
  - marketing?
  - do I need quantitative estimates?
  - etc.
- All of these need to be planned!!!!

34

Scenario 2: Software Maker

- More complicated chain of reasoning to arrive at the "Big Picture"
- Step 1: Use analysis like that in Scenario 1 to deduce that lower component prices will lead to
  - a lower equilibrium price for computers
  - a greater number of computers sold.
- Step 2: How will these changes affect the "Big Picture" in the software market?

35

Big Picture: Impact of lower PC prices on the software market
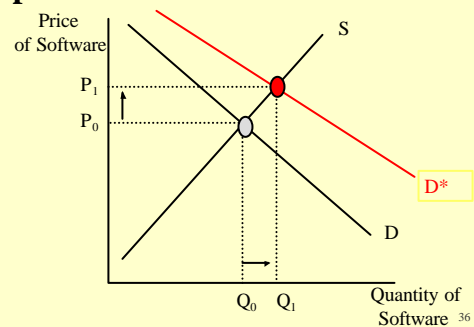
36

- The "big picture" for the software maker:
  - Software prices are likely to rise, and more software will be sold
- Use this to organize an action plan

Summary

- Use supply and demand analysis to
  - clarify the "big picture" (the general impact of a current event on equilibrium prices and quantities)
  - organize an action plan (needed changes in production, inventories, raw materials, human resources, marketing plans, etc.)