HSS-01: Economics

Lesson: 03

Individual & Market Demand

Individual Demand, Income Effect, Substitution Effect, Market Demand, Consumer Surplus

The Demand for Wheat

The demand for wheat produced in U.S. varies with changes in price of wheat.

- Domestic demand for wheat: $Q_{DD} = 1430 - 55P$
- International demand for wheat: $Q_{DI} = 1470 - 70P$
- P and Q represent price and quantity respectively

- What is the price elasticity of demand for wheat?
- What is the income elasticity of demand for wheat? (Any guess?)

4.1. INDIVIDUAL DEMAND

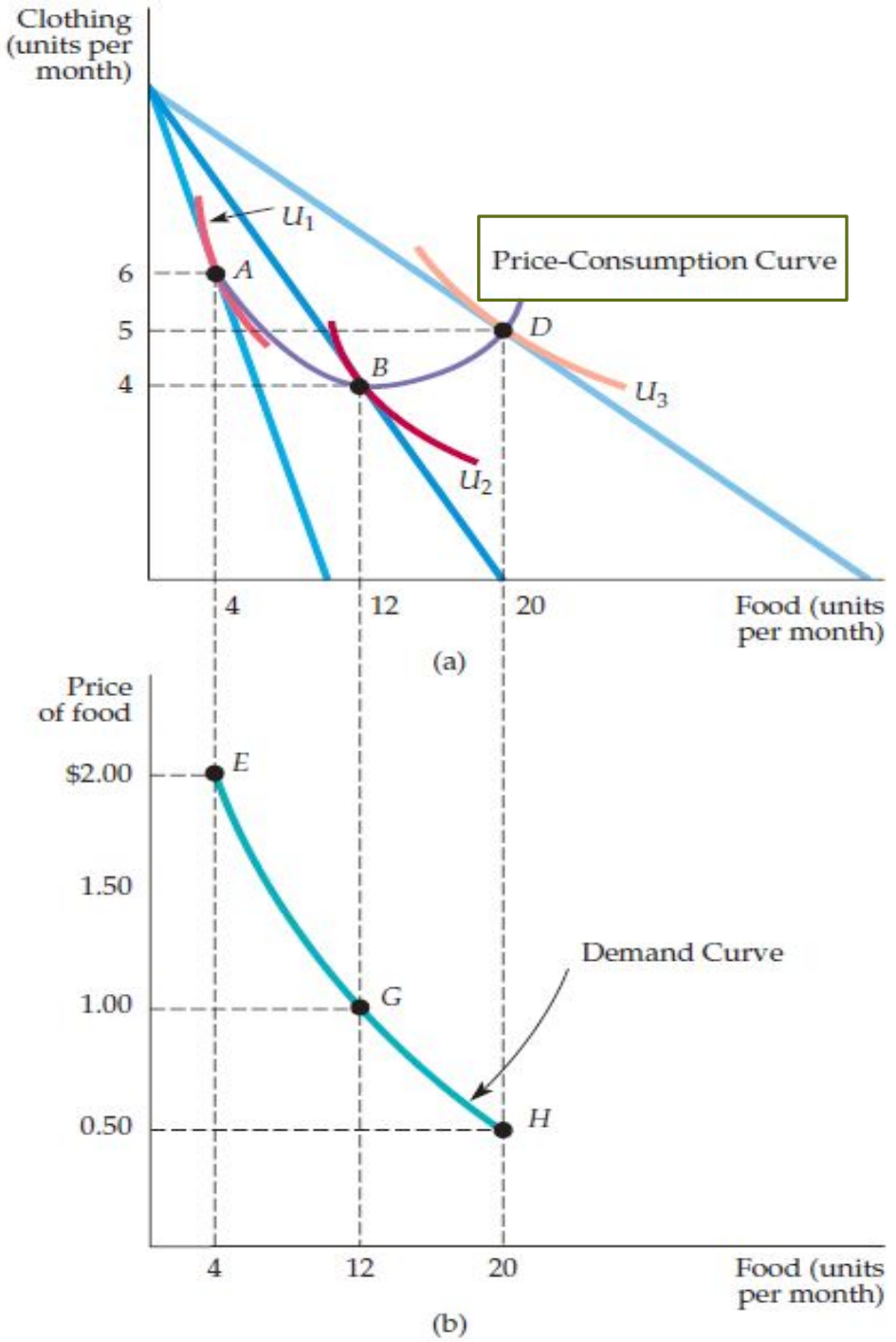
Individual Demand Curve

Curve relating the quantity of a good that a single (or a particular) consumer will buy to its price.

- *Assume a basket of clothes and food.*
  - The level of utility that can be attained changes as we move along the demand curve.
  - At every point on the demand curve, the consumer is maximizing utility by satisfying the condition that the marginal rate of substitution (MRS) of food for clothing equals the ratio of the prices of food and clothing.

Effect of Price Changes

A reduction in the price of food, with income and the price of clothing fixed, causes this consumer to choose a different market basket. In **(a)**, the baskets that maximize utility for various prices of food (point *A*, $2; *B*, $1; *D*, $0.50) trace out the price-consumption curve. Part **(b)** gives the demand curve, which relates the price of food to the quantity demanded. (Points *E*, *G*, and *H* correspond to points *A*, *B*, and *D*, respectively).

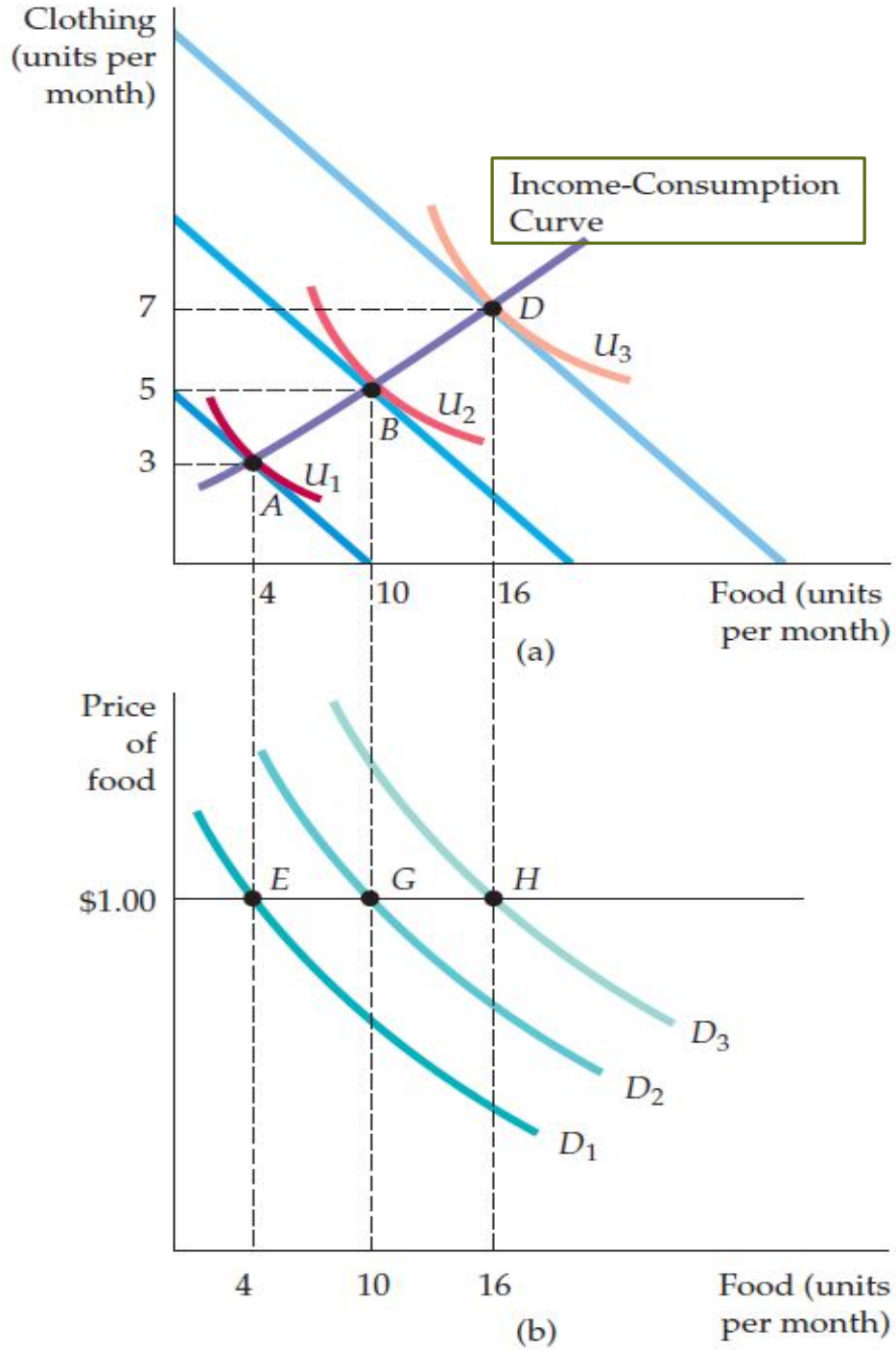


"NORMAL" GOOD

Note that changes happen along the demand curve

Effect of Income Changes

An increase in income, with the prices of all goods fixed, causes consumers to alter their choice of market baskets. In part **(a)**, the baskets that maximize consumer satisfaction for various incomes (point *A*, $10; *B*, $20; *D*, $30) trace out the income-consumption curve. The shift to the right of the demand curve in response to the increases in income is shown in part **(b)**. (Points *E*, *G*, and *H* correspond to points *A*, *B*, and *D*, respectively.)



"NORMAL" GOOD

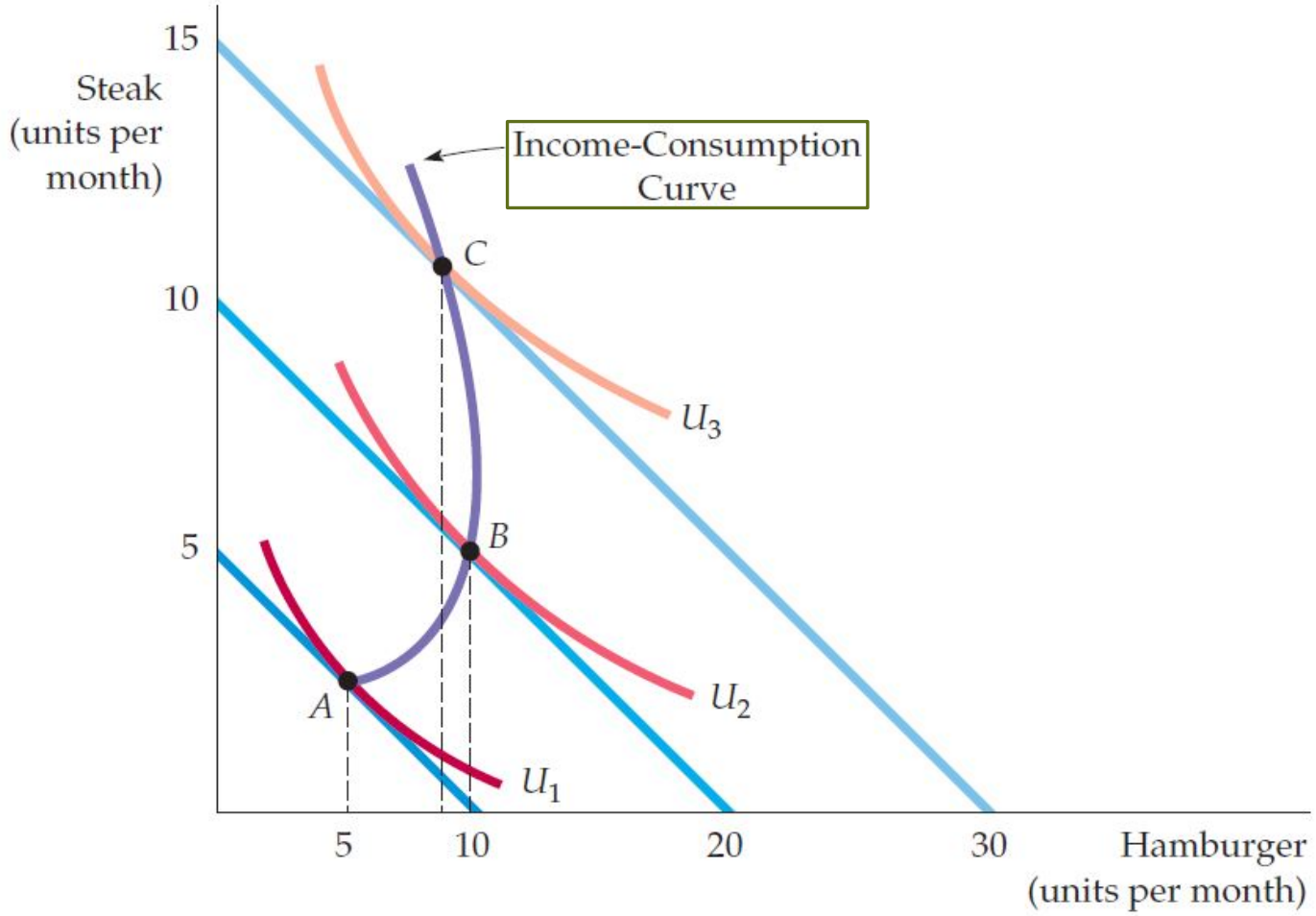
Note that the demand curve shifts

INFERIOR GOOD

Effect of Income Changes for **Inferior Goods**

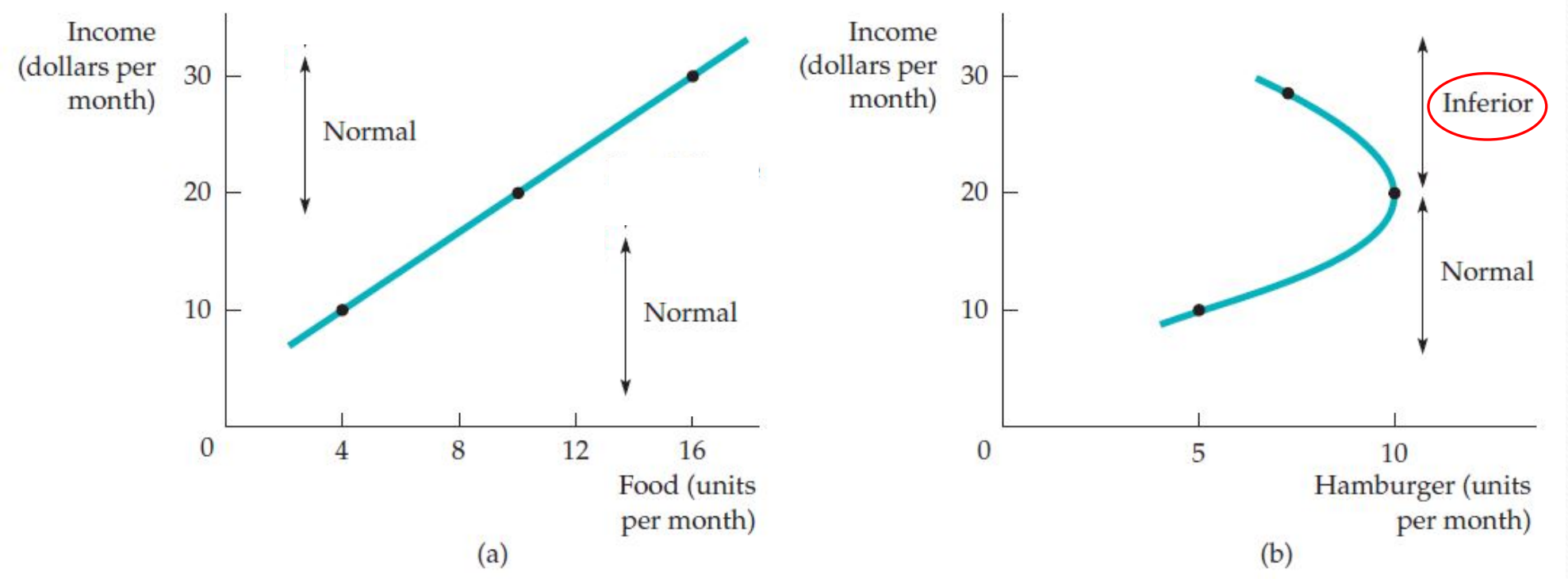
quantity demanded *falls* as *income* increases (~ price fall)

An increase in a person's income can lead to less consumption of one of the two goods being purchased. Here, hamburger, though a normal good between *A* and *B*, becomes an inferior good when the income-consumption curve bends backward between *B* and *C*.



Engel Curves

Curve relating the **quantity** of a good consumed to **income**



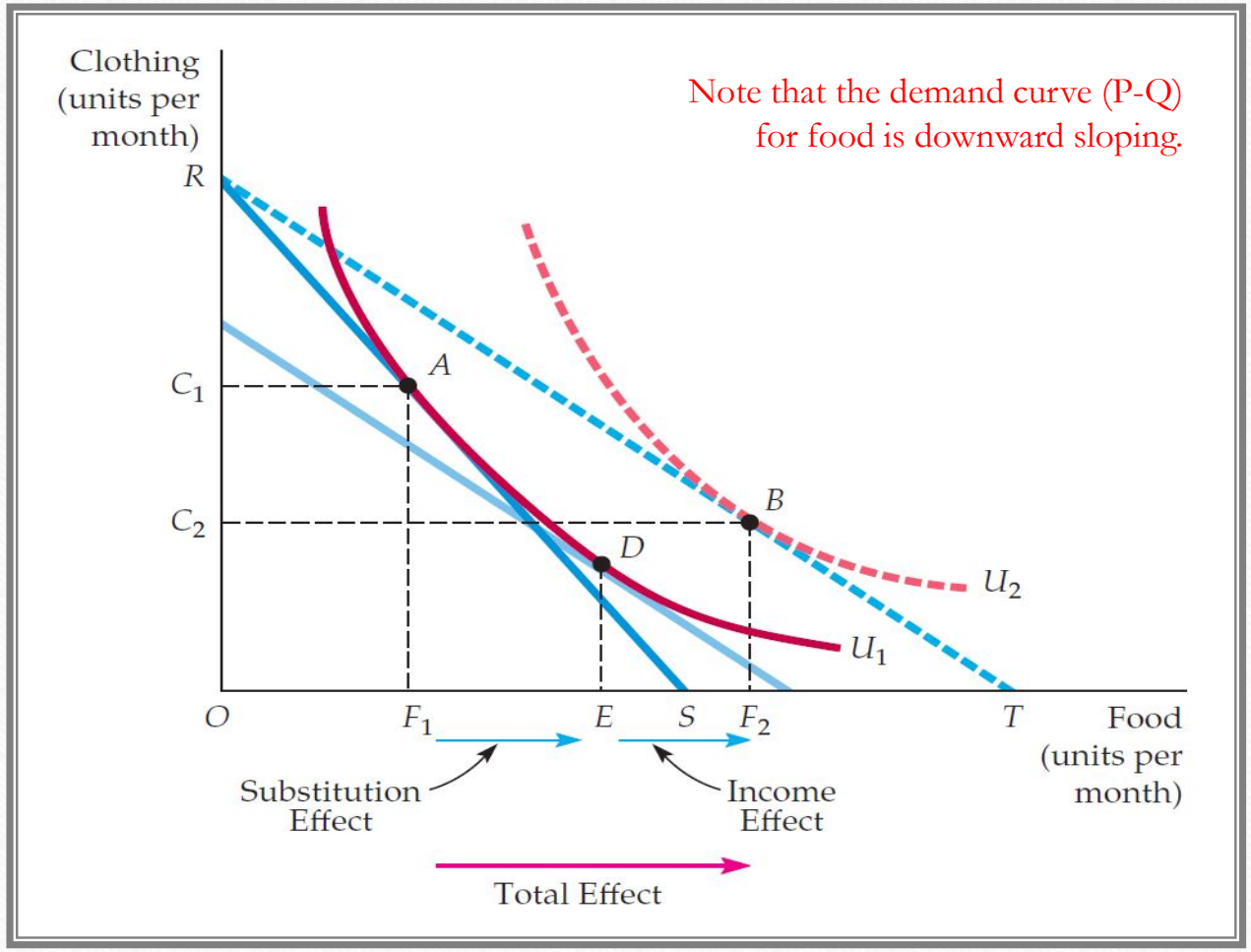
4.2. INCOME & SUBSTITUTION EFFECTS

Decomposition of individual demand into two underlying components

Income and Substitution Effects

Effect of a price change can be seen as having two underlying mechanisms.

- A *fall in the price* of a good has two (simultaneous) effects:
  - ***SUBSTITUTION EFFECT:*** **Holding utility level fixed,** consumers will tend to buy more of the good that has become cheaper and less of those goods that are now relatively more expensive.
  - ***INCOME EFFECT:*** **Relative prices held constant,** because one of the goods is now cheaper, consumers enjoy an increase in real purchasing power. So they will buy more of all goods.



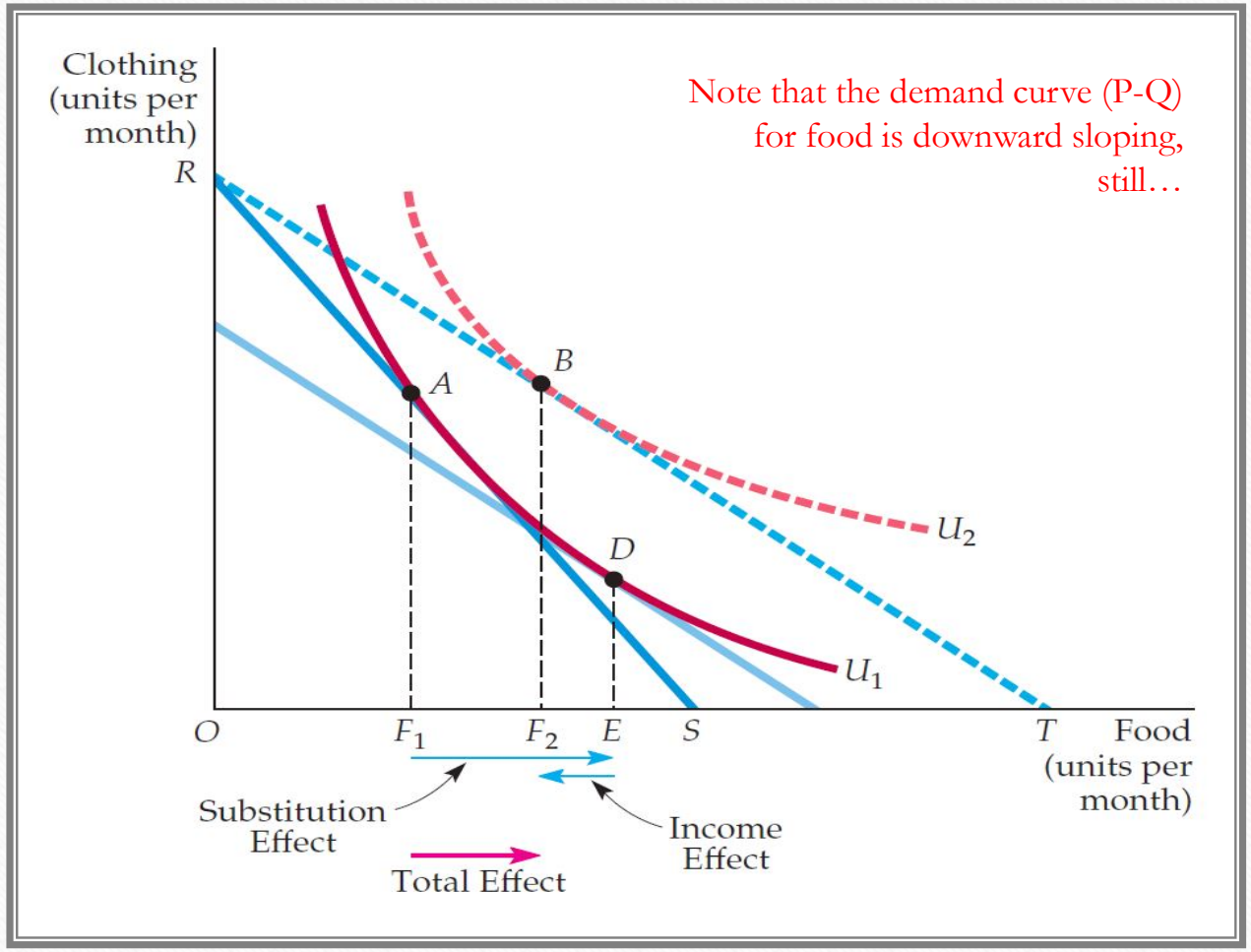
Note that the demand curve (P-Q) for food is downward sloping.

Income and Substitution Effects

NORMAL GOOD

A decrease in the price of food has both an income effect and a substitution effect. The consumer is initially at *A*, on budget line *RS*. When the price of food falls, consumption increases by F_1F_2 as the consumer moves to *B*. The substitution effect F_1E (associated with a move from *A* to *D*) changes the relative prices of food and clothing but keeps real income (satisfaction) constant. The income effect EF_2 (associated with a move from *D* to *B*) keeps relative prices constant but increases purchasing power. Food is a normal good because the income effect EF_2 is positive.

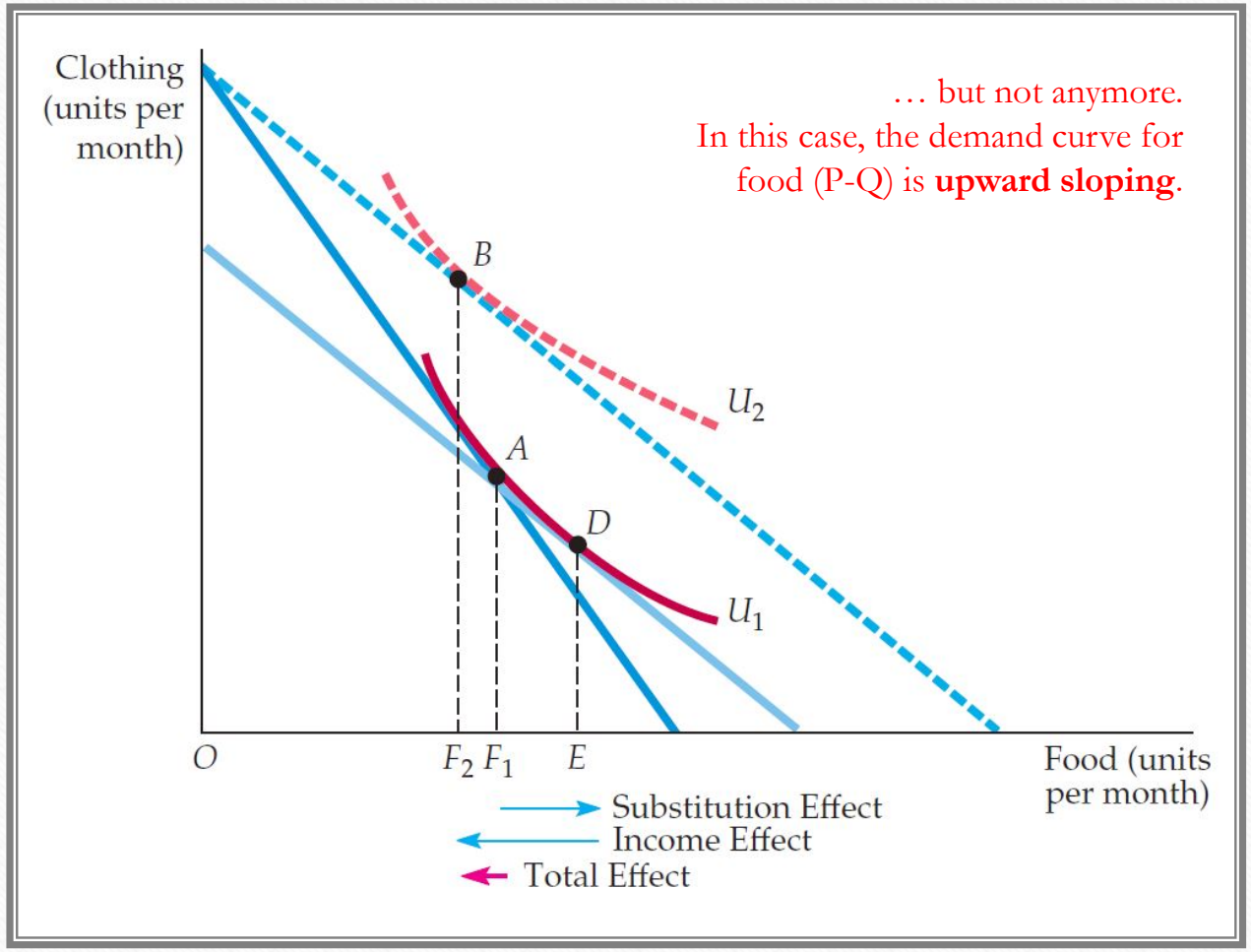
Income and Substitution Effects



INFERIOR GOOD

The consumer is initially at *A* on budget line *RS*. With a decrease in the price of food, the consumer moves to *B*. The resulting change in food purchased can be broken down into a substitution effect, F_1E (associated with a move from *A* to *D*), and an income effect, EF_2 (associated with a move from *D* to *B*). In this case, food is an inferior good because the income effect is negative.

However, because the substitution effect exceeds the income effect, the decrease in the price of food leads to an increase in the quantity of food demanded.



Income and Substitution Effects

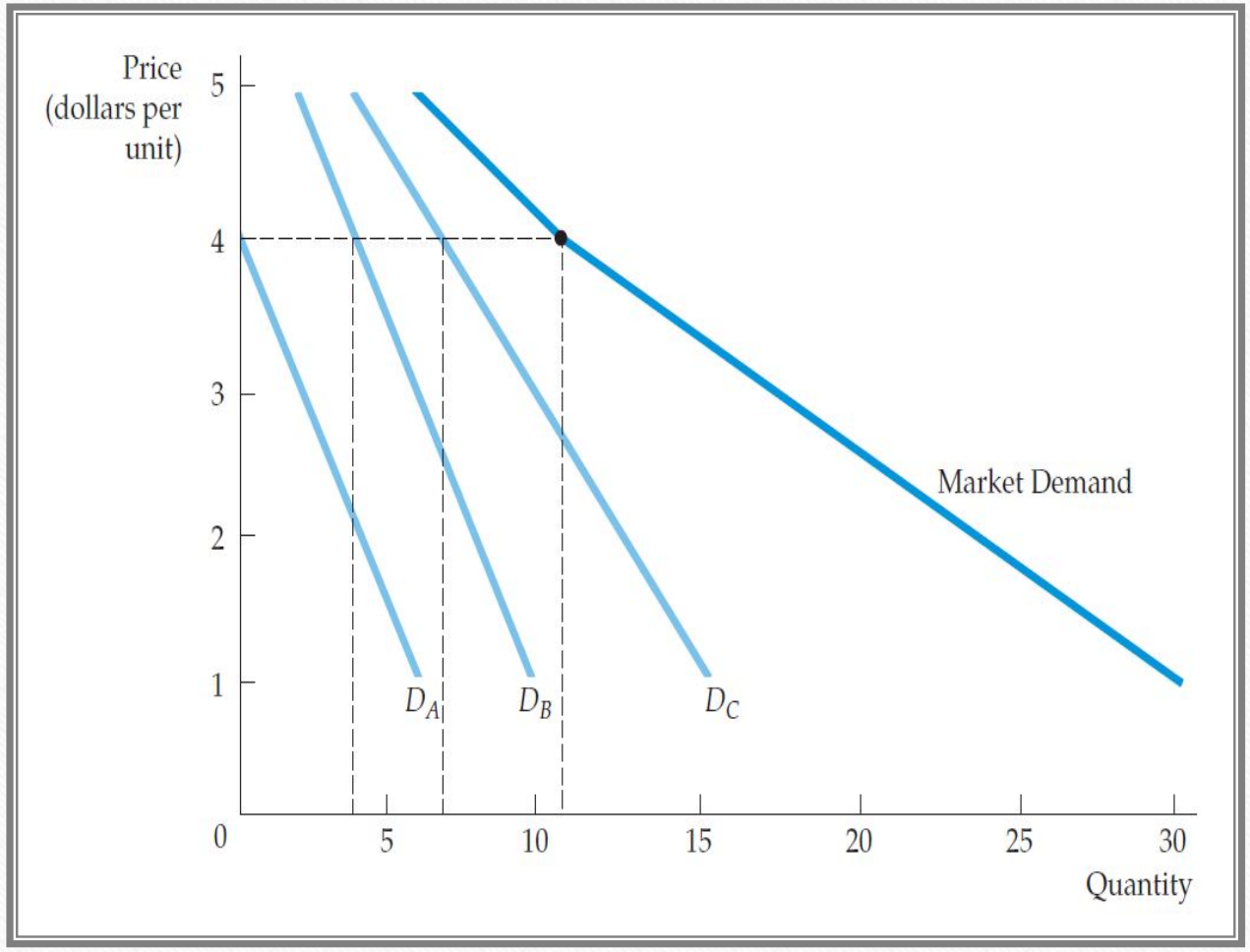
GIFFEN GOOD

When food is an inferior good, **and when the income effect is large enough to dominate the substitution effect**, the demand curve will be upward-sloping.

The consumer is initially at point *A*, but, after the price of food falls, moves to *B* and consumes less food.

Because the income effect EF_2 is larger than the substitution effect F_1E, the decrease in the price of food leads to a lower quantity of food demanded.

4.3. MARKET DEMAND



From Individual to Market Demand

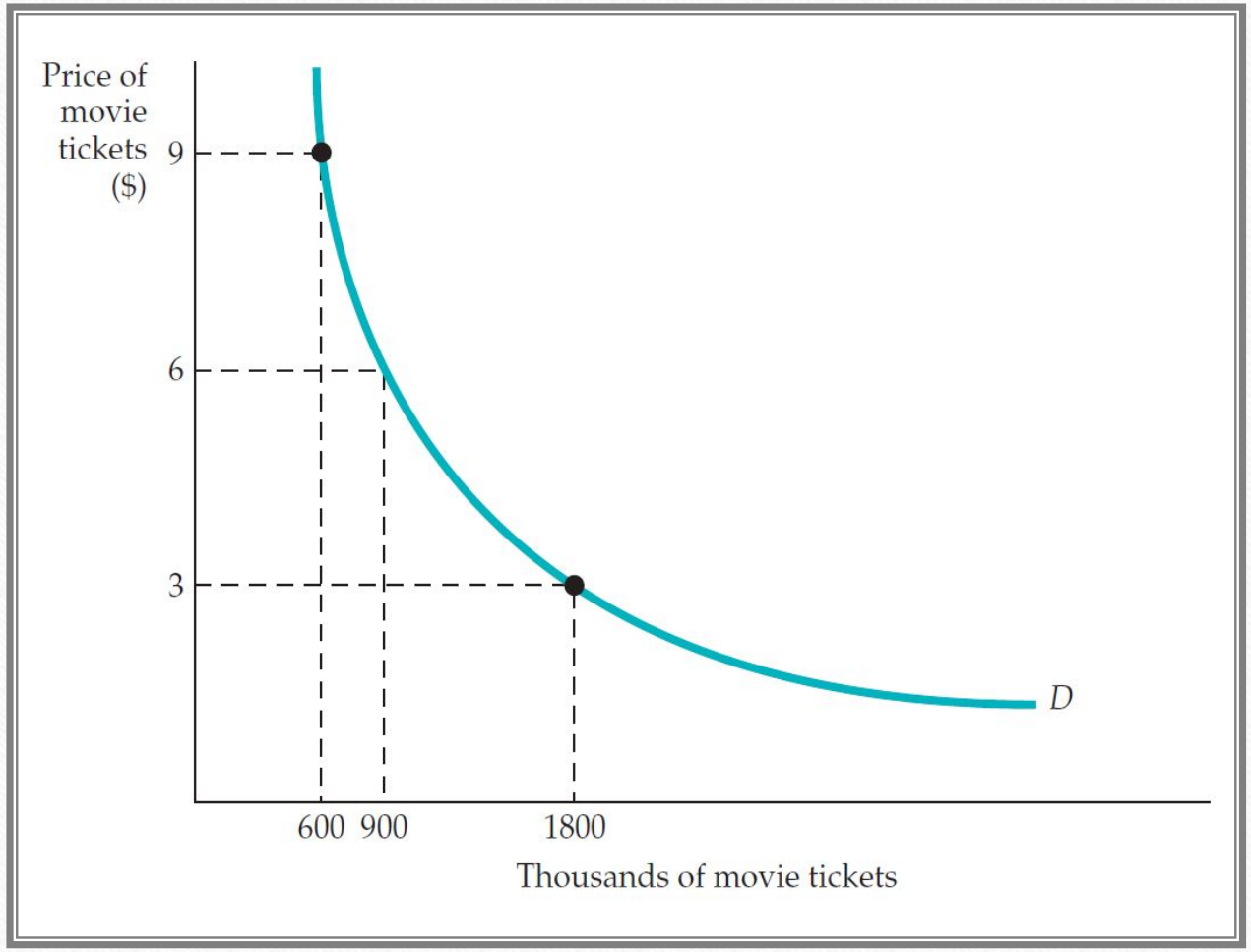
The market demand curve is obtained by **summing** our three **consumers' demand curves** *DA, DB*, and *DC*.

At each price, the quantity of coffee demanded by the market is the sum of the quantities demanded by each consumer.

At a price of $4, for example, the quantity demanded by the market (11 units) is the sum of the quantity demanded by *A* (no units), *B* (4 units), and *C* (7 units).

Notes on Market Demand

- The market demand curve will shift to the right as more consumers enter the market.
- Factors that influence the demands of many consumers will also affect market demand.



Isoelastic Demand Curve

Demand curve with a constant price elasticity

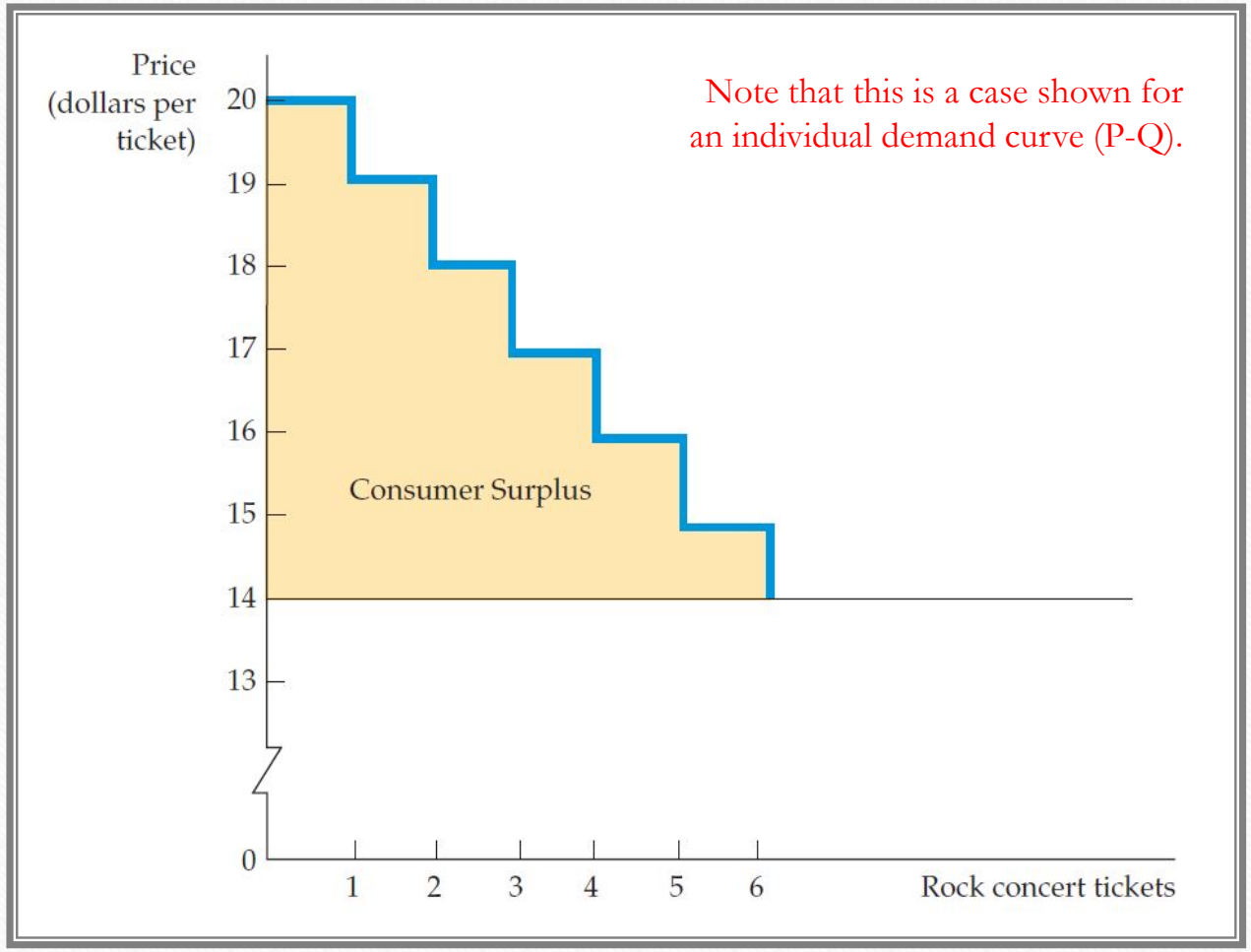
The figure shows a unit-elastic demand curve.

When the price elasticity of demand is -1.0 at every price, the total expenditure is constant along the demand curve *D*.

Price Elasticity and Consumer Expenditures

DEMAND	IF PRICE INCREASES, EXPENDITURES	IF PRICE DECREASES, EXPENDITURES
Inelastic	Increase	Decrease
Unit elastic	Are unchanged	Are unchanged
Elastic	Decrease	Increase

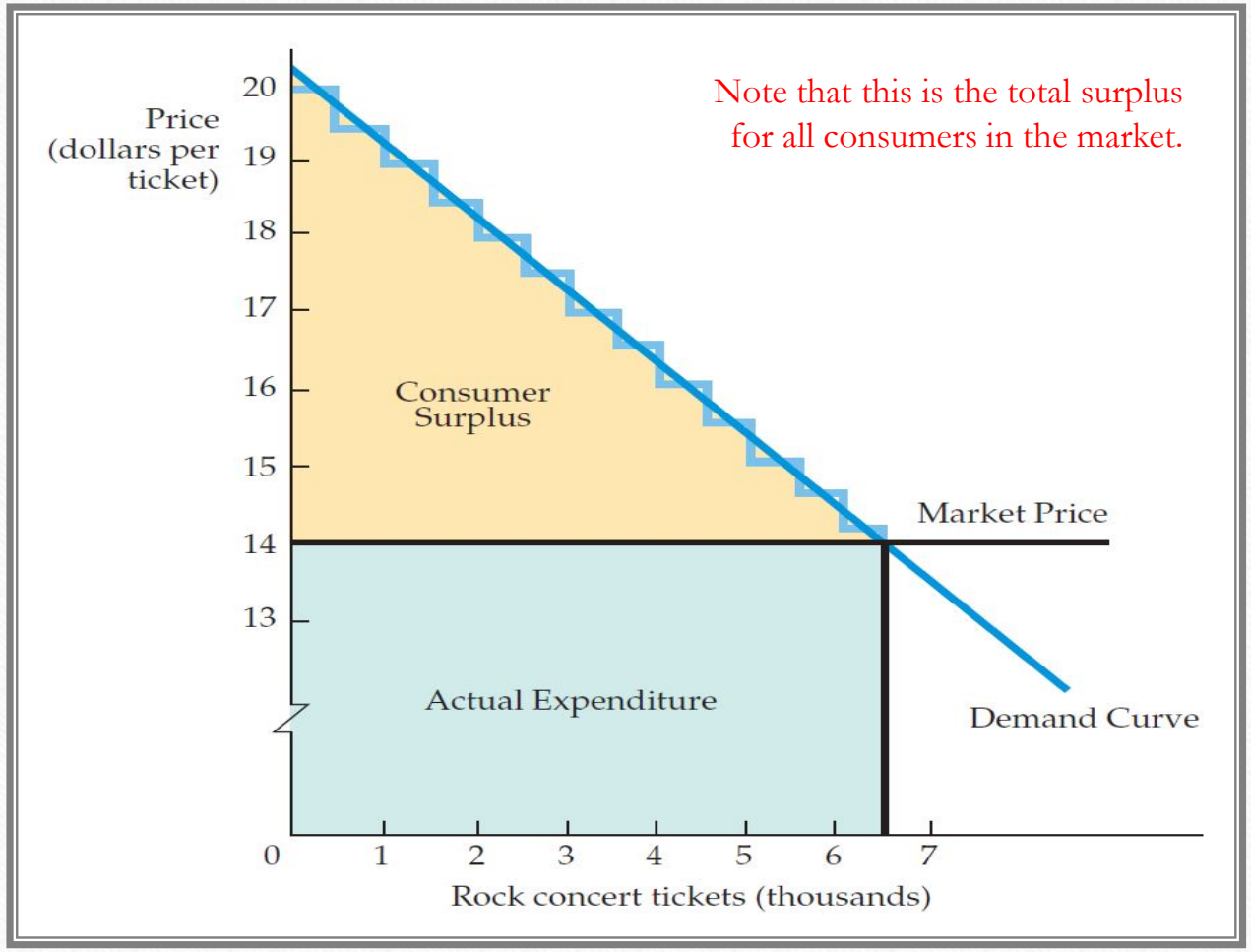
4.4. CONSUMER SURPLUS



Consumer Surplus

Difference between what a consumer is willing to pay for a good and the amount actually paid (market price)

Here, the consumer surplus associated with six concert tickets (purchased at $14 per ticket) is given by the yellow-shaded area.



Consumer Surplus Generalized

For the market as a whole, consumer surplus is measured by the area under the demand curve and above the line representing the purchase price of the good.

Here, the consumer surplus is given by the yellow-shaded triangle and is equal to 1/2 * ($20 - $14) * 6500 = $19,500.