LECTURE 3: SUPPLY AND DEMAND

Today's Topics

1. **Markets and competition.**

2. **Demand:** determinants, ceteris paribus, individual choice, schedule and curve, individual and market, shifts in demand curve.

3. **Supply:** determinants, schedule and curve, individual and market, shifts in supply curve.

4. **Supply and Demand:** equilibrium price & quantity, analysing changes in equilibrium.

MARKETS & COMPETITION

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How do buyers and sellers interact in a competitive market? The forces of supply and demand determine the quantity sold and its price.

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Commodity markets are usually perfectly competitive.

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Monopolistic competition: **many sellers, each selling slightly differentiated goods or services.**
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Monopolistic competition: **many sellers, each selling slightly differentiated goods or services.**
Examples: Soaps, teas, shampoos, soft drinks.

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2. **Income. Higher income can increase quantity demanded (***normal goods***), or reduce it (***inferior goods***).**

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5.   **Expectations.** Expect your income to rise? Expect the price of an asset to rise?
     Examples:

6.   **Other possibilities**, such as the weather, or previous purchases, or numbers of buyers.

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   Examples:

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   Examples: How?

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Examples:

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INDIVIDUAL DEMAND

Assume: individuals want to maximise their satisfaction (or utility), subject to the constraints of prices and income.

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Joe has an income of $10/week and spends it all on bananas ($2.99/kg) and oranges (10¢ each).

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Joe has an income of $10/week and spends it all on bananas ($2.99/kg) and oranges (10¢ each).

Model Joe's preferences for the fruits as a contour of utility (or *Indifference Curve*): combinations of the two goods which give him equal utility.

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JOE'S PREFERENCES FOR THE FRUIT
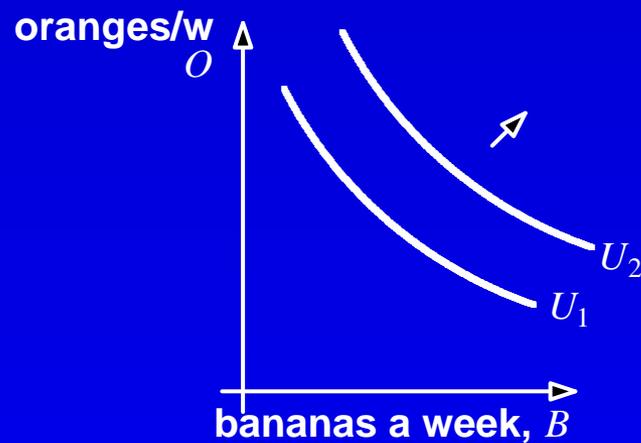
oranges/w
O

U_2

U_1

bananas a week, B

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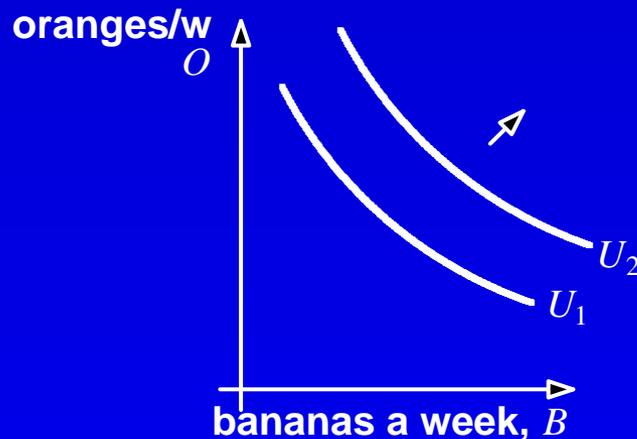
Joe's utility increases to the NE: more of both fruit as he climbs the hill of utility ($U_2 > U_1$).

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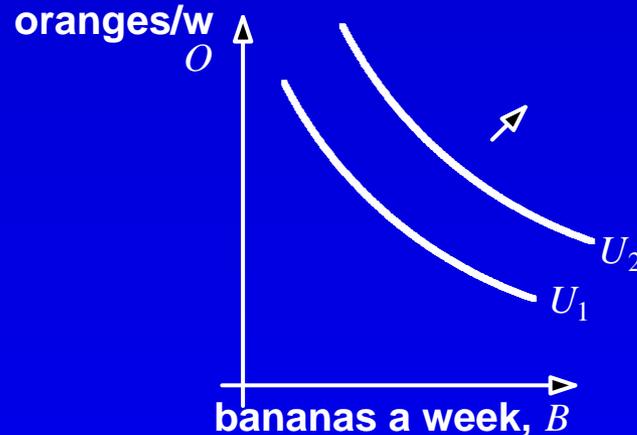
Joe's utility increases to the NE: more of both fruit as he climbs the hill of utility ($U_2 > U_1$).

Joe views bananas and oranges as substitutes: along any Indifference Curve, give him more bananas (to the SE) and we must take away some oranges to maintain his utility.

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He could spend all on bananas (B = 3.34 kg), or on oranges (O = 100); but he would prefer a mixture.

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GRAPHICAL SOLUTION

Plot the Budget Line:

$$10 = 2.99\, B + 0.1\, O \text{ or}$$

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to get Joe's best choice (B_1, O_1):

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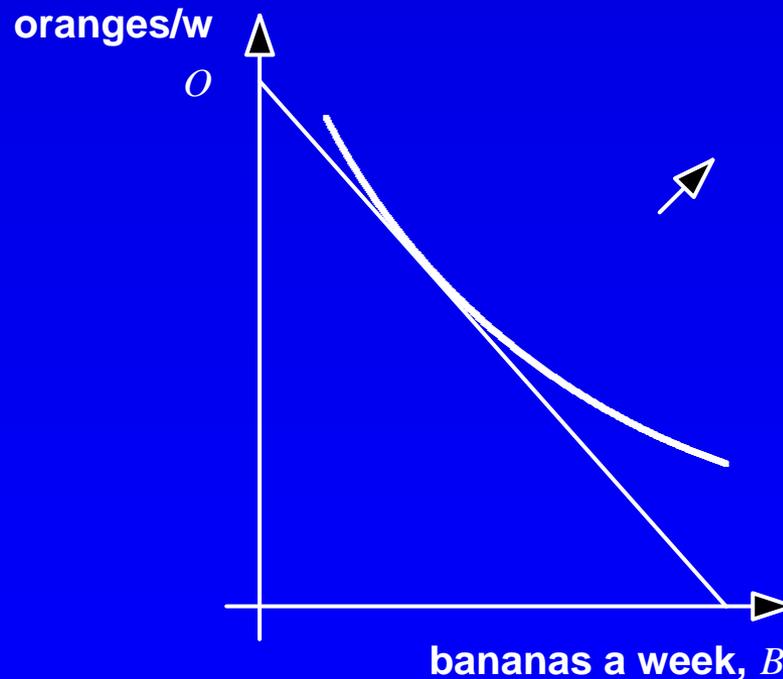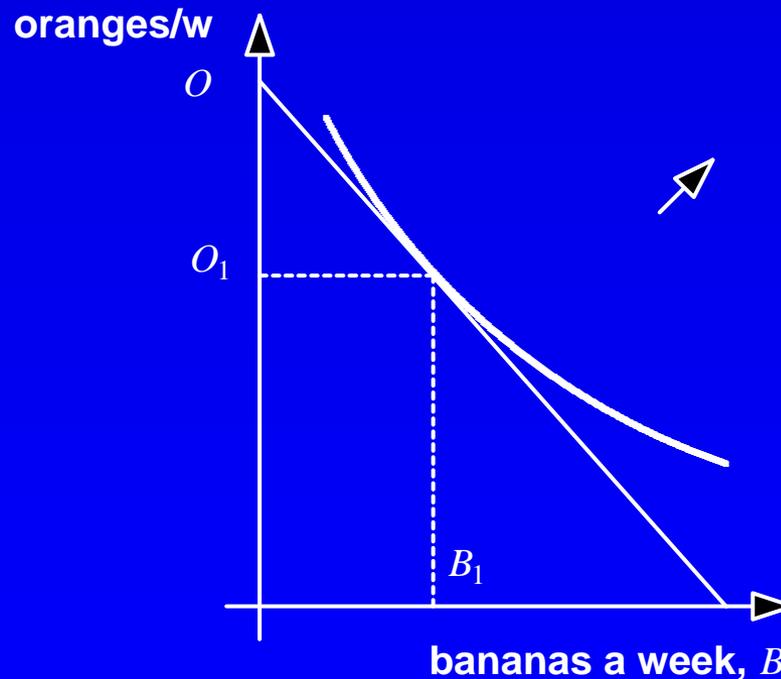
CHANGING DEMAND

A frost increases the price of oranges to 13¢ each; the Budget Line rotates down the Orange axis, and Joe is worse off. His optimal bundle changes.
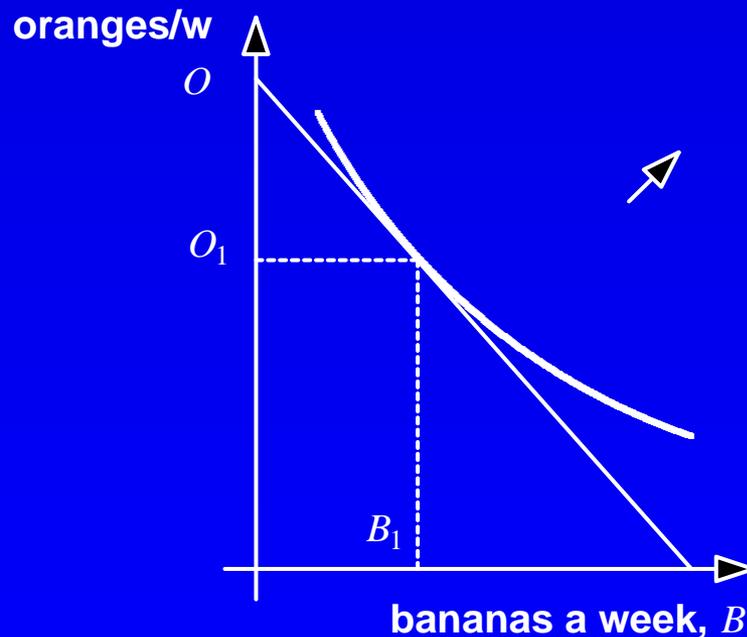
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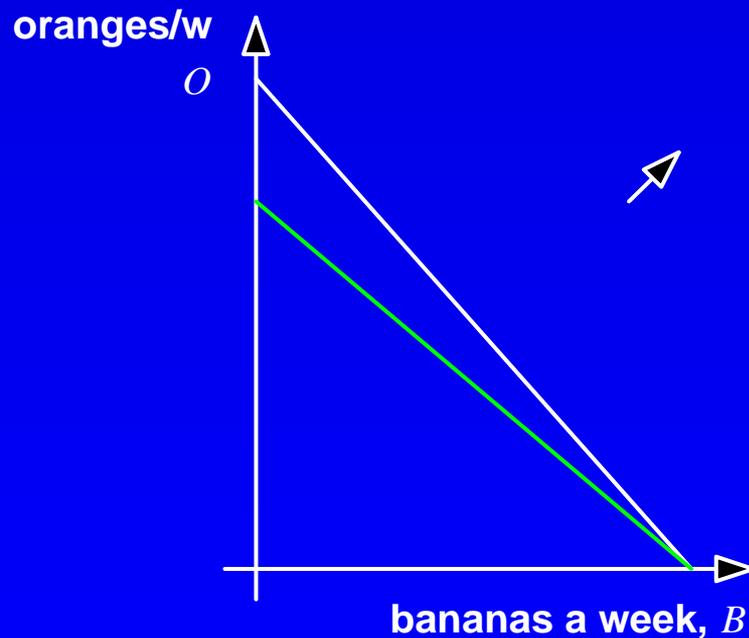**(B_2, O_2): more bananas, fewer oranges.**

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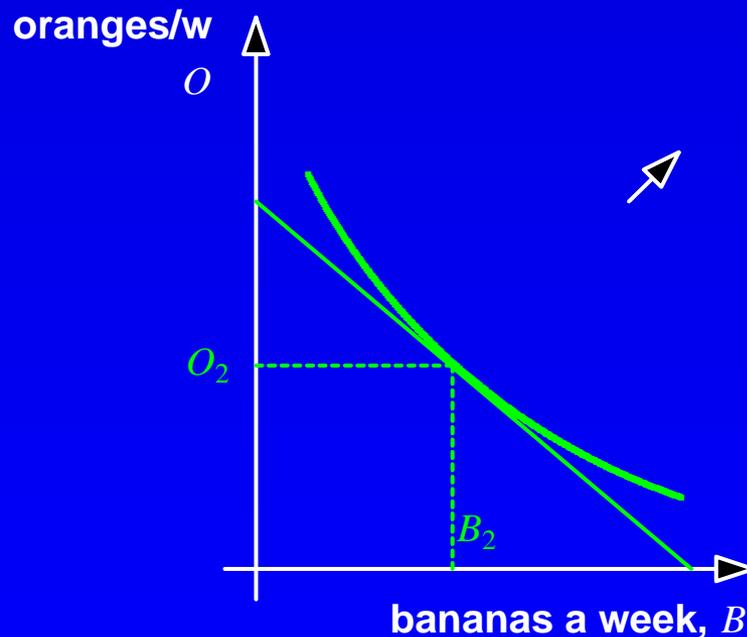**A frost increases the price of oranges to 13¢ each; the Budget Line rotates down the Orange axis, and Joe is worse off. His optimal bundle changes. (B_2, O_2): more bananas, fewer oranges.**

oranges/w

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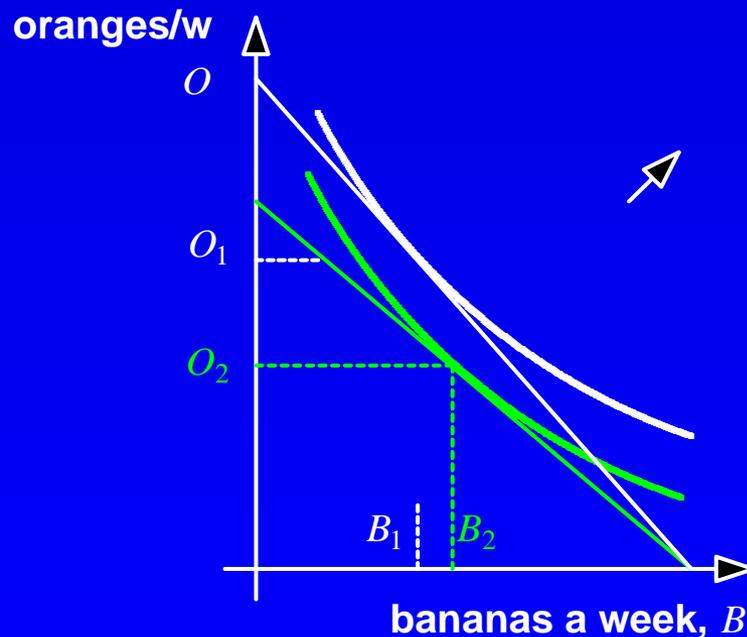**A frost increases the price of oranges to 13¢ each; the Budget Line rotates down the Orange axis, and Joe is worse off. His optimal bundle changes. (B_2, O_2): more bananas, fewer oranges.**

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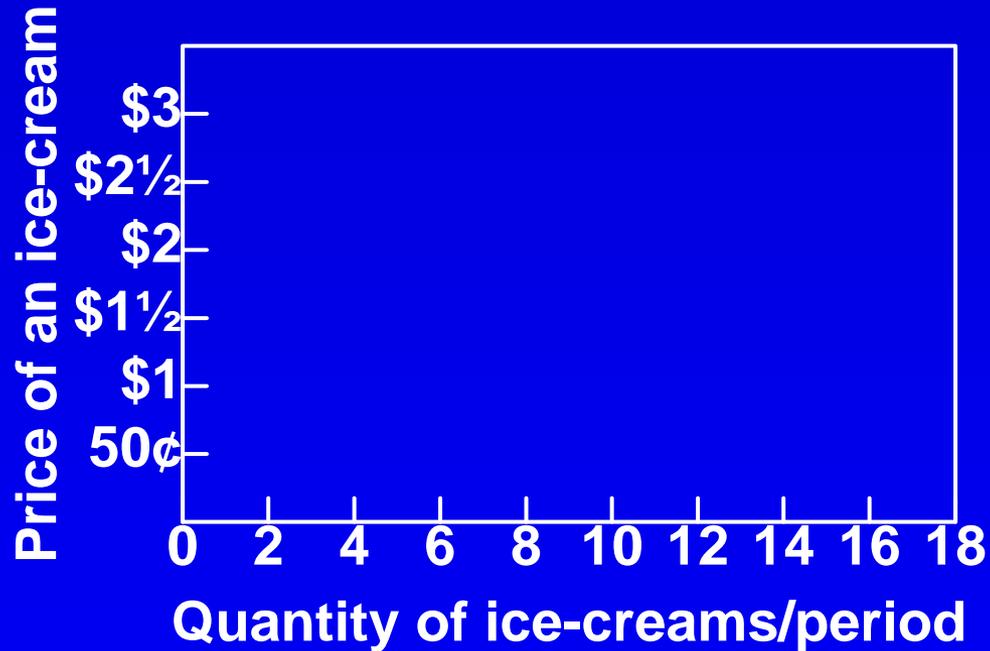**(B_2, O_2): more bananas, fewer oranges.**

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oranges/w

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THE DEMAND SCHEDULE

Shows the relationship between the price of a good and the maximum quantity demanded per period. (Can also use demand curves and demand functions.)
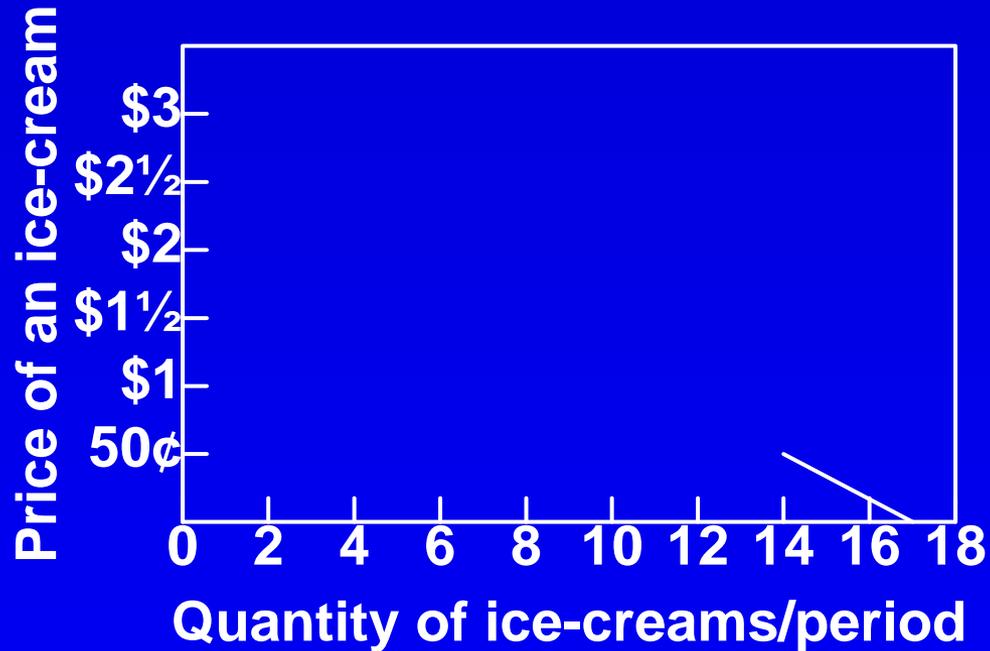
Ice-cream price	Quantity demanded by Cate/period
$0.00	17
0.50	14
1.00	10
1.50	6
2.00	3
2.50	1
3.00	0

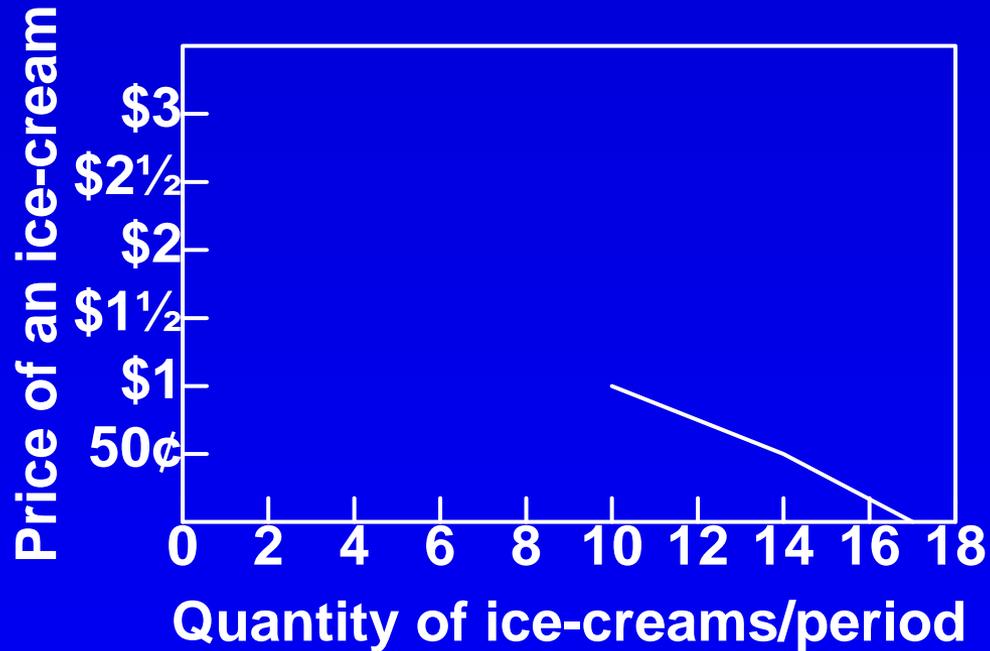**Cate always wants more ice-creams (up to *satiation* at 17/period). At lower prices she can afford more.**
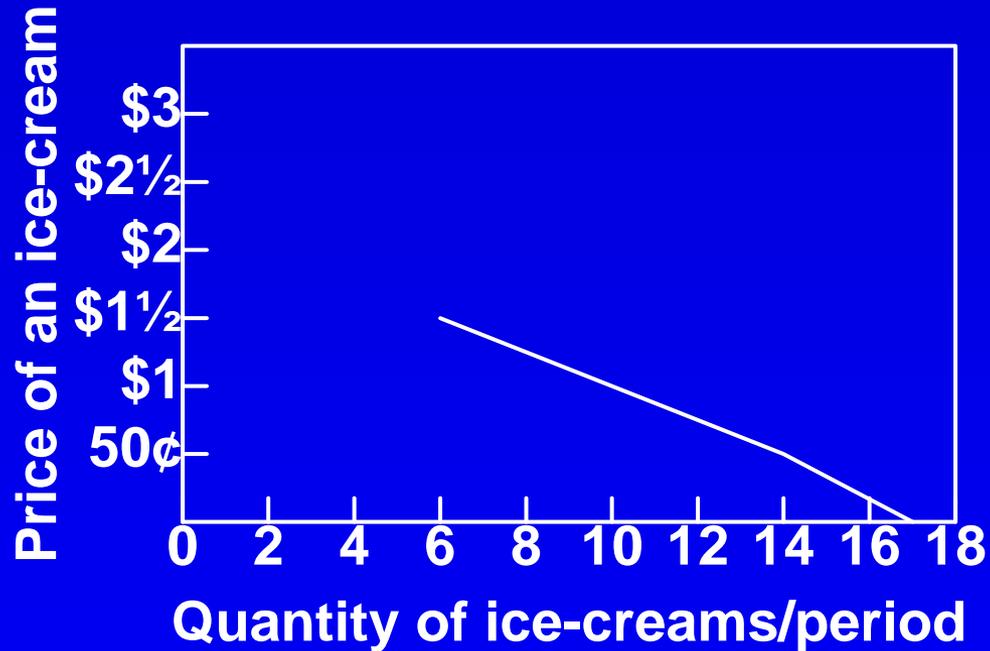
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THE INDIVIDUAL DEMAND CURVE

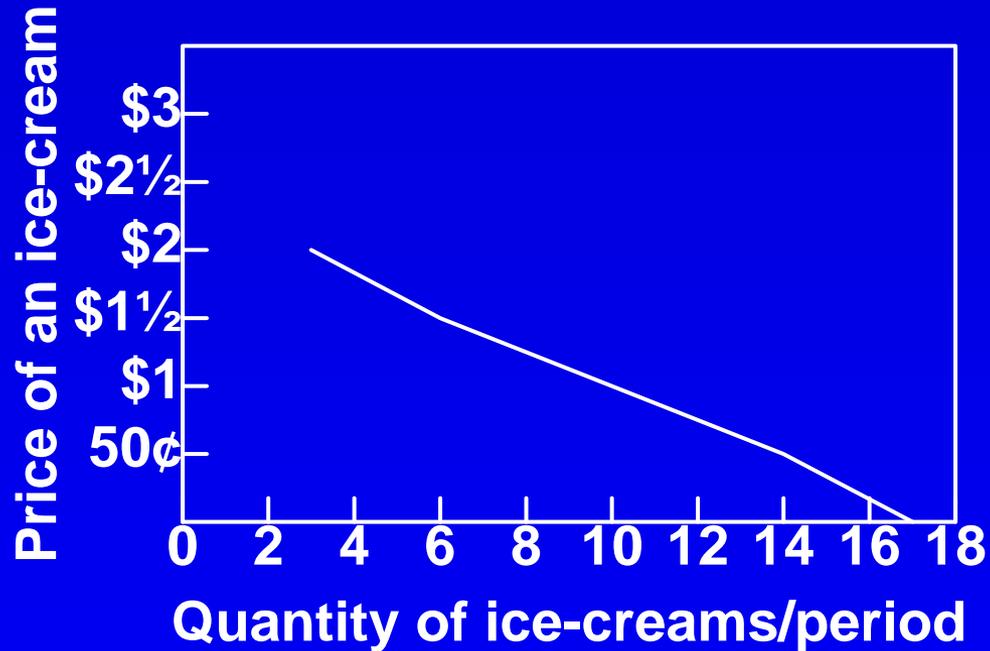**Price of an ice-cream** (y-axis): $3, $2½, $2, $1½, $1, 50¢

Quantity of ice-creams/period (x-axis): 0, 2, 4, 6, 8, 10, 12, 14, 16, 18

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THE INDIVIDUAL DEMAND CURVE

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Price of an ice-cream

$3
$2½
$2
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50¢

0   2   4   6   8   10 12 14 16 18

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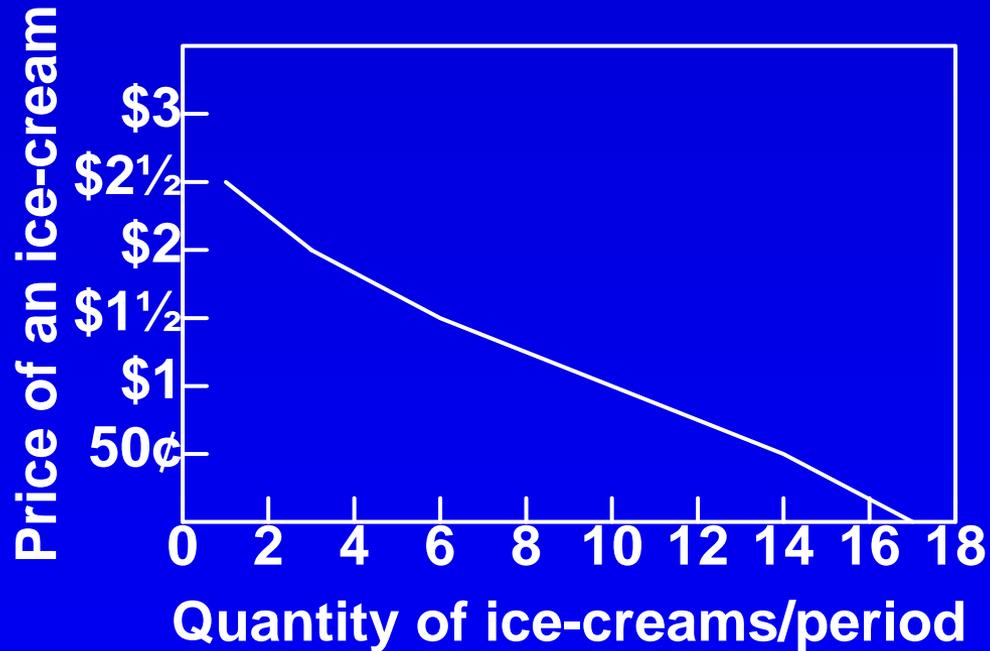

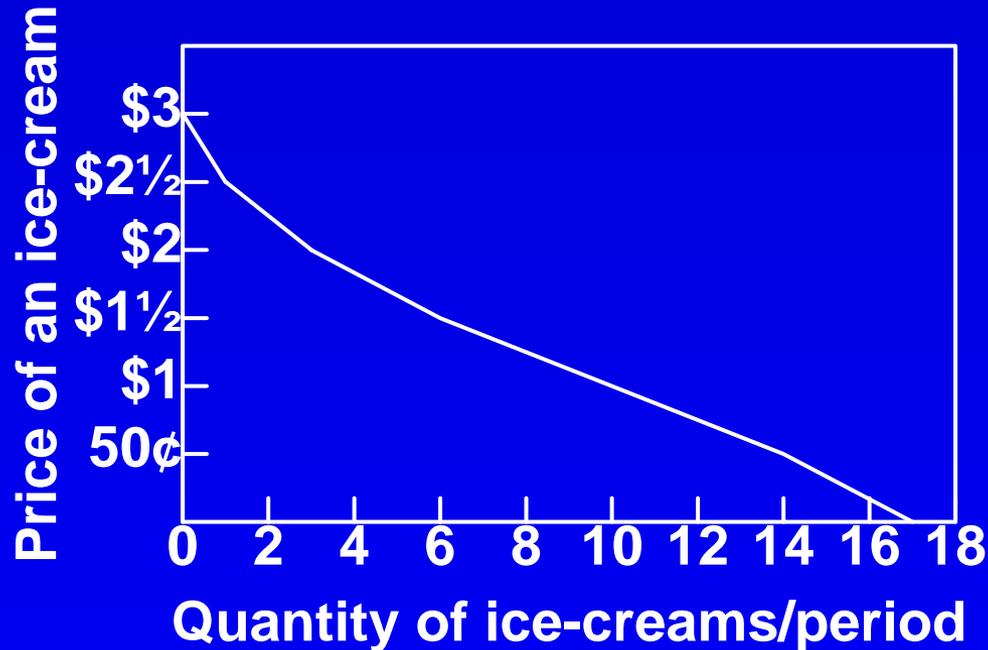< >

THE INDIVIDUAL DEMAND CURVE

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THE INDIVIDUAL DEMAND CURVE

Cate's *demand curve*, cet. par.

Cate's *choke price* is $3/ice-cream $\rightarrow$ zero demand.

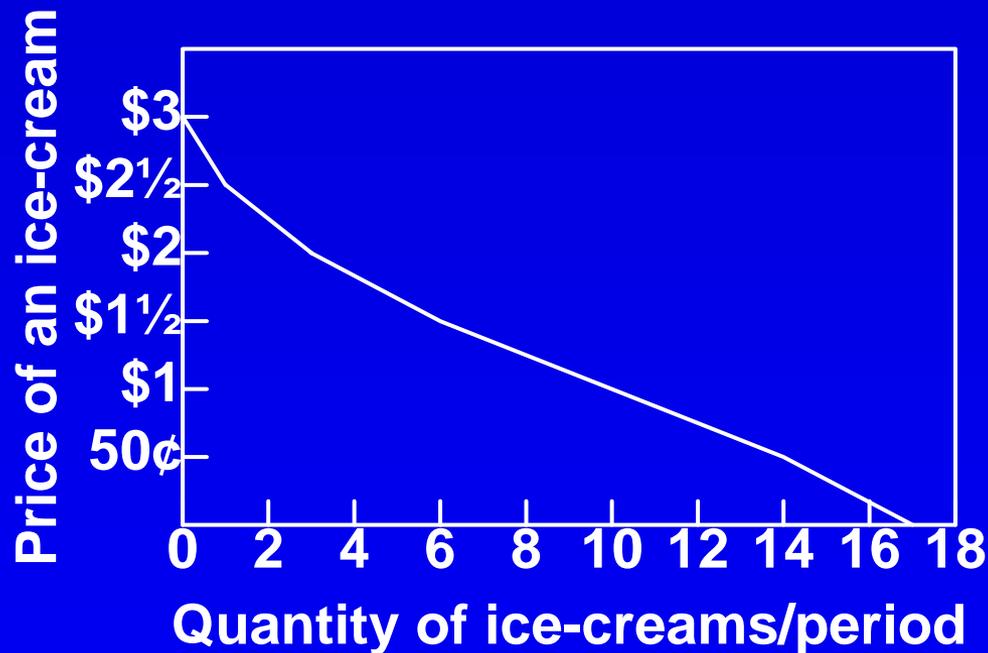# THE INDIVIDUAL DEMAND CURVE

Cate's *demand curve*, cet. par.

Cate's *choke price* is \$3/ice-cream → zero demand.

Note: the independent variable (price) is on the vertical axis.

MARKET DEMAND

Obtained by horizontally summing individual demands: at each price, what is the maximum that Cate and Nick demand per period?

Price	Cate		Nick		Market
$0.00	17	+	7	=	24
0.50	14		6		20
1.00	10		5		15
1.50	6		4		10
2.00	3		3		6
2.50	1		2		3
3.00	0		1		1

(There is no reason why the demand curves should be straight lines.)
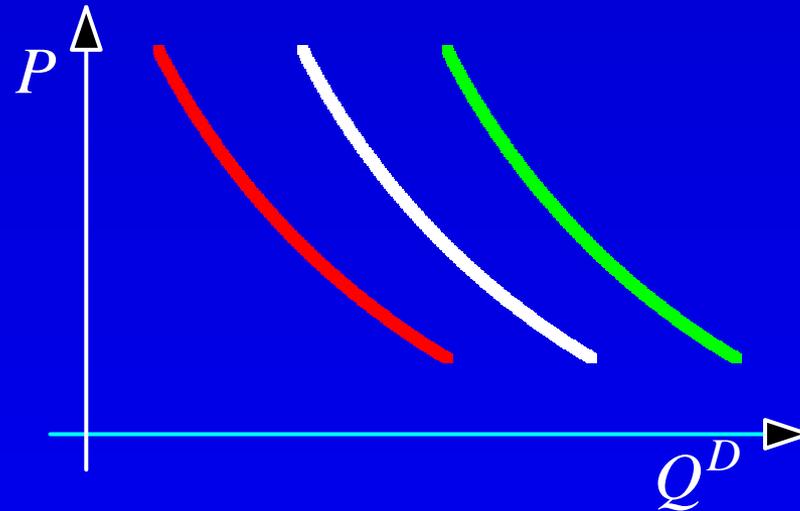
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SHIFTS IN DEMAND
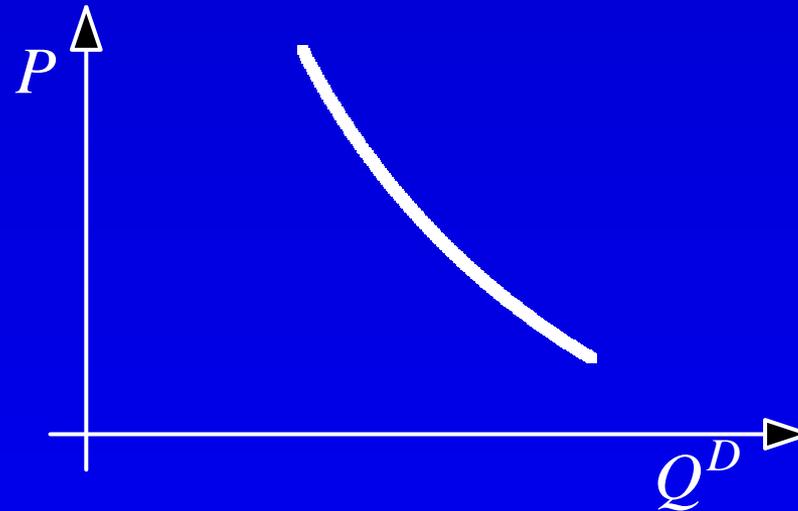
Distinguish between:

- **movement *along* the demand curve as price changes, cet. par.**

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SHIFTS IN DEMAND

Distinguish between:

- **movement *along* the demand curve as price changes, cet. par. and**

- ***shifts* (contractions ← or expansions →) in the demand curve as changes occur in other determinants.**

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SHIFTS OF THE DEMAND CURVE

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expansion: price of "substitute" P_Y rises

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contraction: price of "complement" P_Y rises

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— **the price of related goods:**
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   contraction: price of "complement" P_Y **rises**

— **tastes**

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— disposable incomes:
expansion of demand for a normal good when income rises or

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— expectations of price, availability

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SUPPLY

The *quantity supplied* is the amount that sellers are willing and able to sell.

Determinants of Supply

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2.　**Input Prices.** Higher input prices contract supply.

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3. **Technology. Cost-reducing technology will expand supply.**

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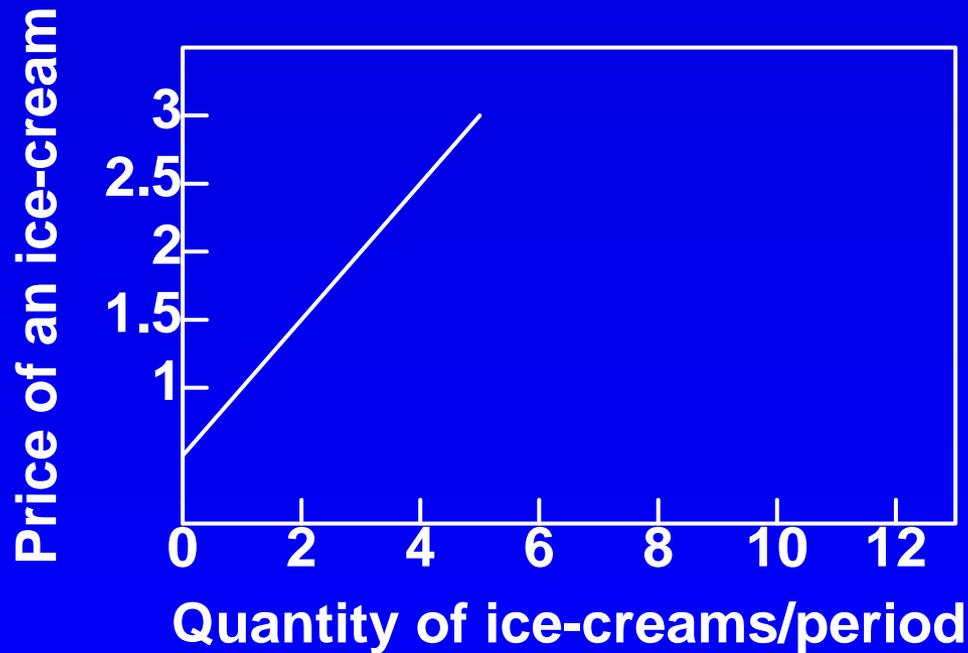
5. **Numbers of sellers.**

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THE SUPPLY SCHEDULE

— A table that shows the relationship between the price of a good and the maximum quantity supplied per period.

Price	Quantity supplied/period
$0.00	0
0.50	0
1.00	1
1.50	2
2.00	3
2.50	4
3.00	5

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THE SUPPLY CURVE

— A graph of the relationship between the price of a good and the quantity supplied per period.

MARKET SUPPLY

Again, horizontal sum of the individual supply curves:

Price	Tony		Mick		Market
$0.00	**0**	+	**0**	=	**0**
0.50	**0**		**0**		**0**
1.00	**1**		**0**		**1**
1.50	**2**		**2**		**4**
2.00	**3**		**4**		**7**
2.50	**4**		**6**		**10**
3.00	**5**		**8**		**13**

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0.50	0		0		0
1.00	1		0		1
1.50	2		2		4
2.00	3		4		7
2.50	4		6		10
3.00	5		8		13

Although usually upwards sloping (increased price leads to increased quantity supplied), there is no law of supply: supply curves can bend backwards.

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Again, horizontal sum of the individual supply curves:

Price	Tony		Mick		Market
$0.00	0	+	0	=	0
0.50	0		0		0
1.00	1		0		1
1.50	2		2		4
2.00	3		4		7
2.50	4		6		10
3.00	5		8		13

Although usually upwards sloping (increased price leads to increased quantity supplied), there is no law of supply: supply curves can bend backwards.
What does a vertical supply curve model?

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A change in expectations can $\rightarrow$ an expansion in supply ($\rightarrow$) or a contraction in supply ($\leftarrow$), depending.

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SUPPLY & DEMAND

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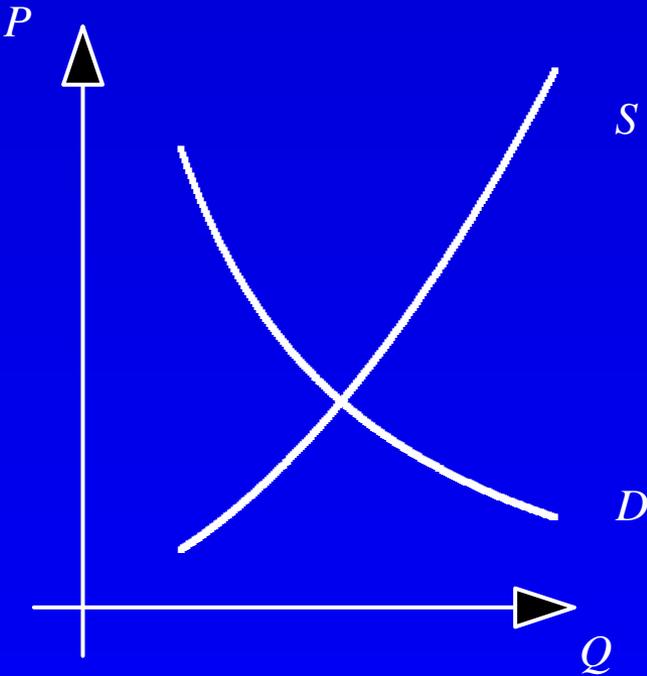
SUPPLY & DEMAND
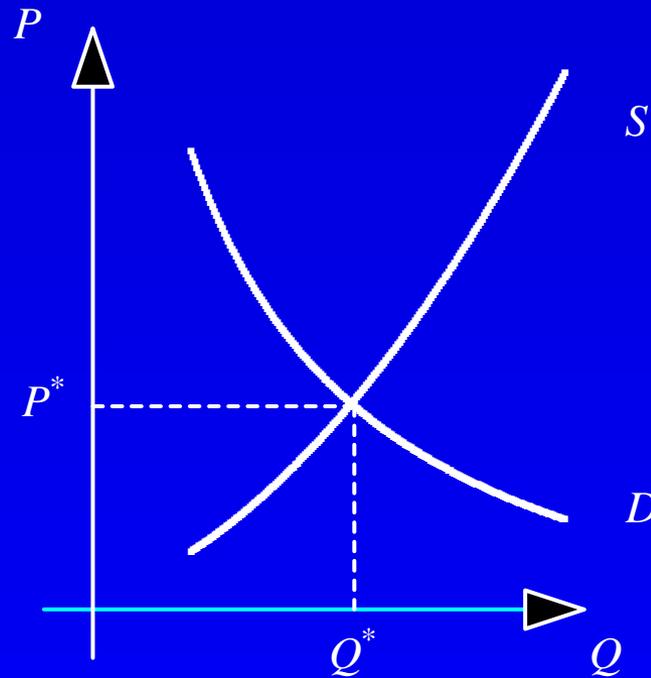
When $S = D$**, market-clearing equilibrium, at** P^***,** Q^***.**

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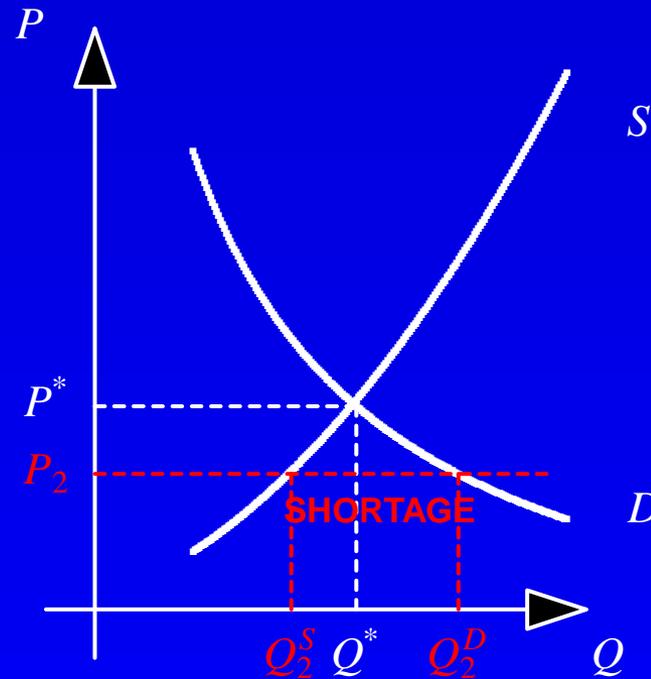# SUPPLY & DEMAND
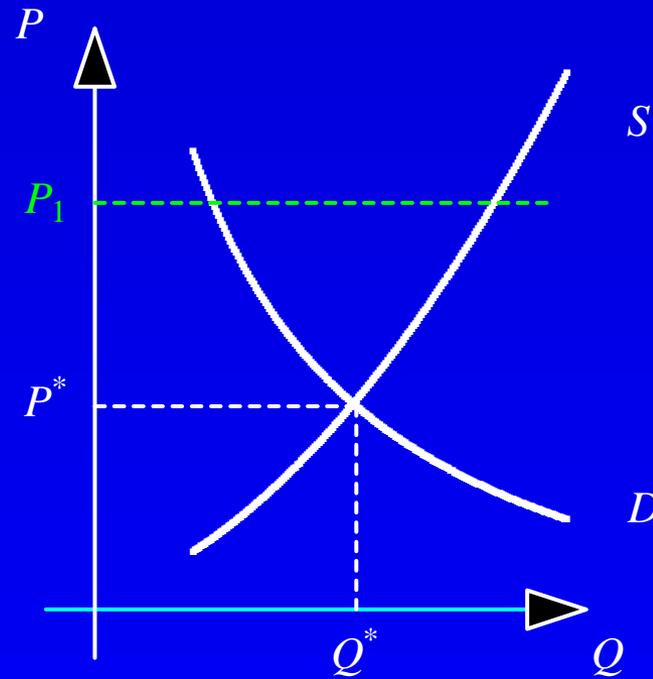
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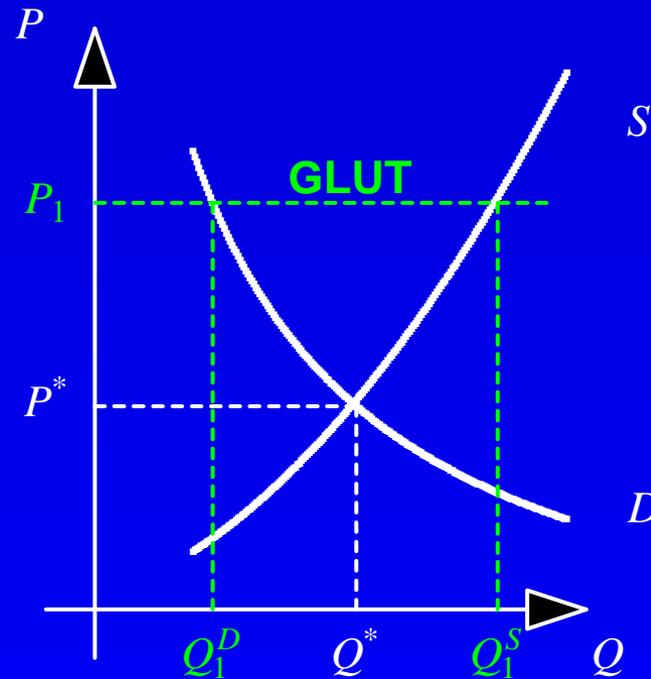
When $S = D$, market-clearing equilibrium, at P^*, Q^*.

When $S > D$, a buyers' market and glut.
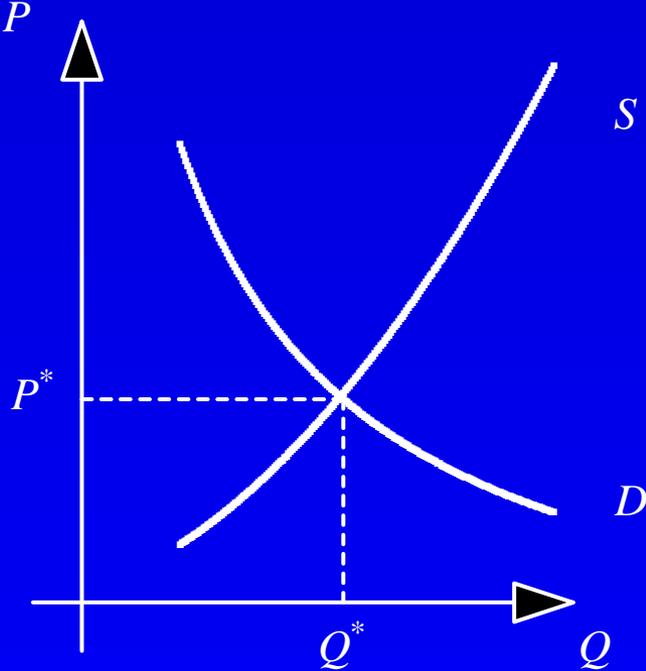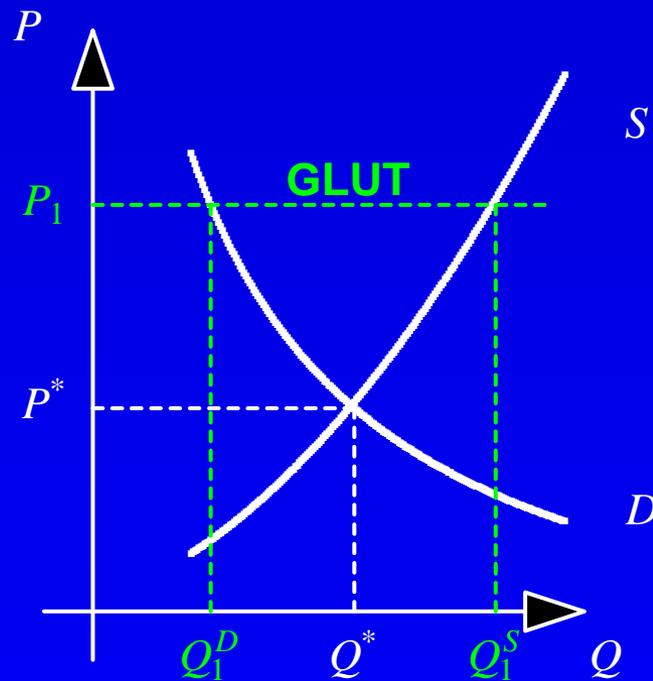
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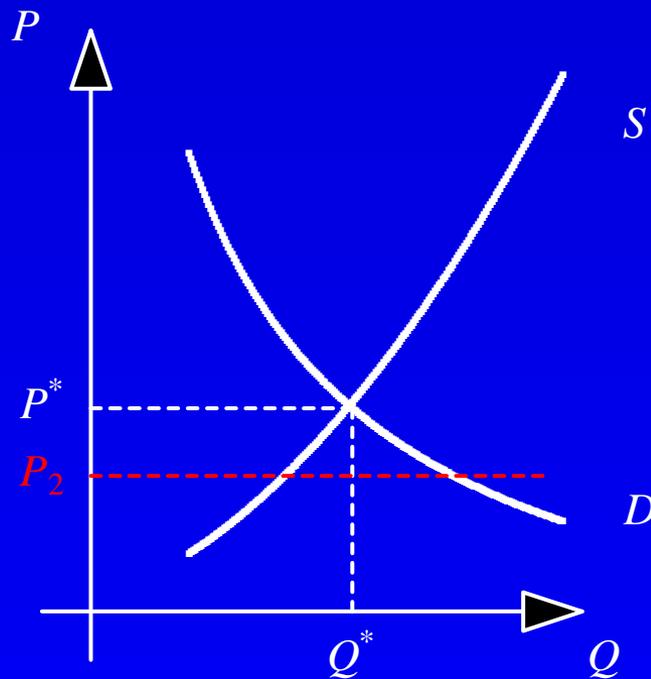
SUPPLY & DEMAND

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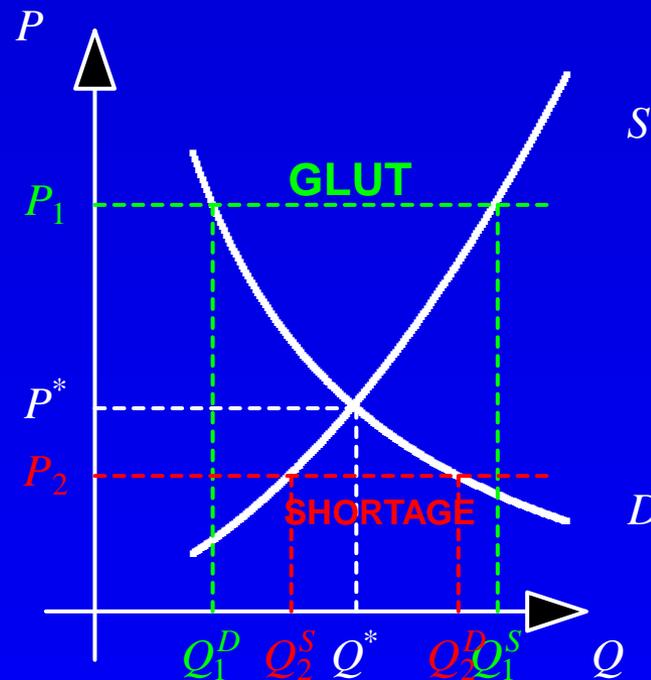When $D > S$, a sellers' market and shortage.

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When $S = D$, market-clearing equilibrium, at P^*, Q^*.

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When $D > S$, a sellers' market and shortage.

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ANALYSING CHANGES IN EQUILIBRIUM

1. **Has the supply or the demand curve shifted (or both)?**

2. **Left or right?**

3. **Use the diagram to see how the shift changes the equilibrium price and quantity.**

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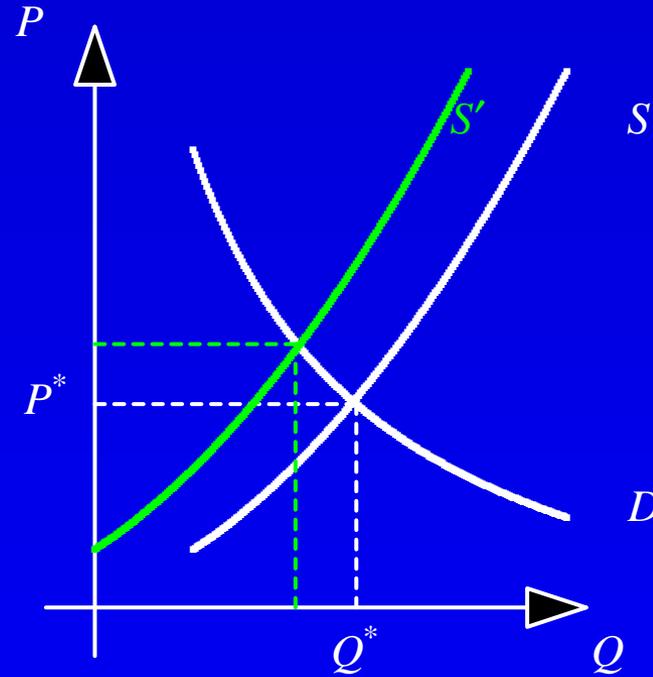
Demand-side policies have the effect of reducing the quantity of drugs demanded at any price: the demand curve contracts to the left. Prices fall.

If there is a mixture of both policies, then both curves contract to the left: prices may rise or fall, depending on the relative shifts.
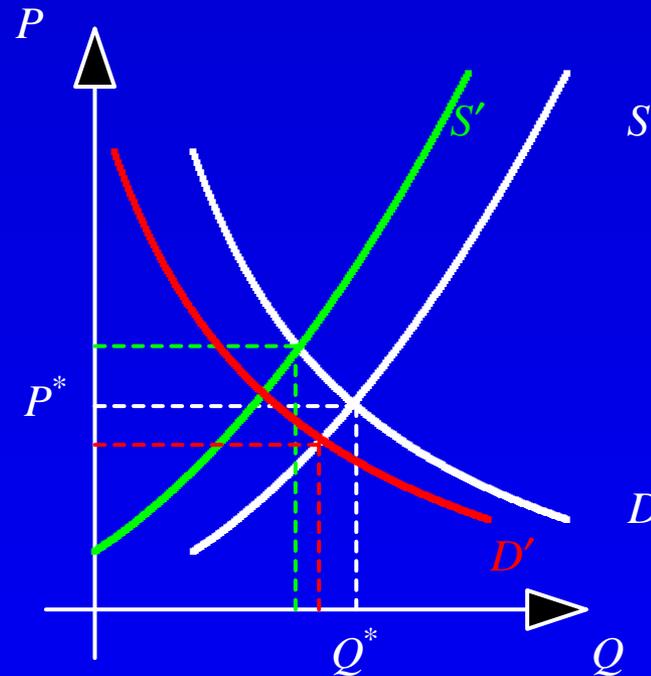
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MODELLING THE BLACK MARKET
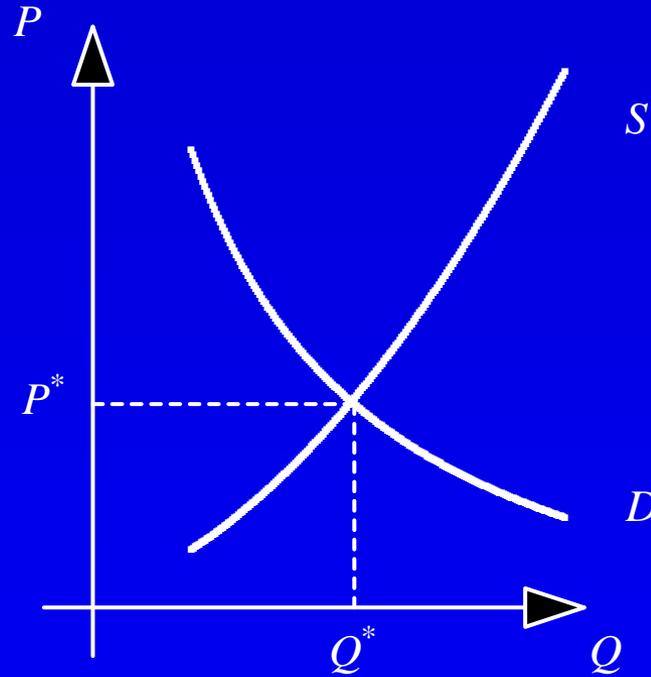
MODELLING THE BLACK MARKET

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The **green contracted** supply curve S' models supply-side policy: equilibrium quantity is reduced but price is up. The **red contracted** demand curve D' models demand-side policy: both equilibrium quantity and price are reduced.