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

A *market*: a group of buyers and sellers of a good or service.

Can be more or less organised.

A *competitive market*: many buyers and sellers so none has a significant impact on the price.

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

COMPETITION

***Perfectly competitive* markets:**

- **the services or goods being offered for sale are identical; and**
- **single buyers and sellers cannot influence the market price: they are *price takers*.**

Commodity markets are usually perfectly competitive.

IMPERFECTLY COMPETITIVE MARKETS

***Monopoly*: a single seller in a market; has market power to influence the price.**
Examples: Microsoft.

***Oligopoly*: a market with few sellers, such as many *branded* goods and services.**
Examples: Cars, airlines, newspapers, telcos, Coke & Pepsi.

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

DEMAND

***Quantity demanded*: the amount of a good the buyers are willing and able to buy.**

Six Determinants of Demand

1. **Own Price. A higher price will never lead to higher quantity demanded — *The Law of Demand.***
2. **Income. Higher income can increase quantity demanded (*normal goods*), or reduce it (*inferior goods*).**
   Examples:

3. **Tastes or preferences. A change in tastes can change quantity demanded.**
   Examples:
4. **Prices of related goods. A reduction in the price of a related good can reduce quantity demanded (*substitutes*) or increase it (*complements*).**
   Examples:
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.**
   Examples: How?

CETERIS PARIBUS

Ceteris paribus: the Latin for "holding all else equal" — our analysis requires this, as we change one determinant at a time.

The definitions above assume ceteris paribus.

Often, faulty analysis occurs because "ceteris ain't paribus" — other determinants are also changing.

Examples:

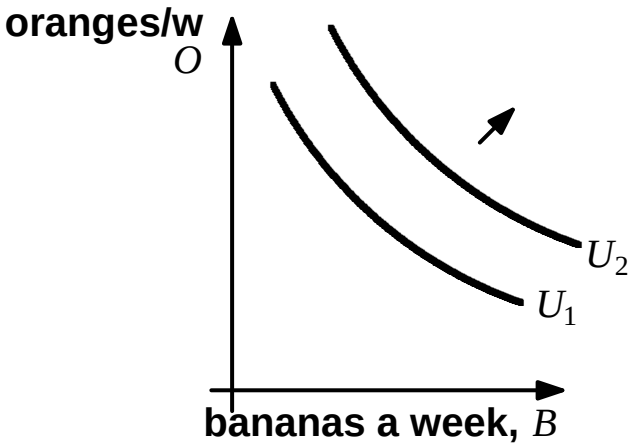
INDIVIDUAL DEMAND

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

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.

JOE'S PREFERENCES FOR THE FRUIT



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.

JOE'S OPTIMAL BUNDLE

Now let's constrain Joe with his income and the two prices. What's the highest utility Joe can attain?

Joe is constrained by his budget:

Income = Spending on bananas + Spending on oranges

$$\$10 = B \times \$2.99 + O \times \$0.10$$

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

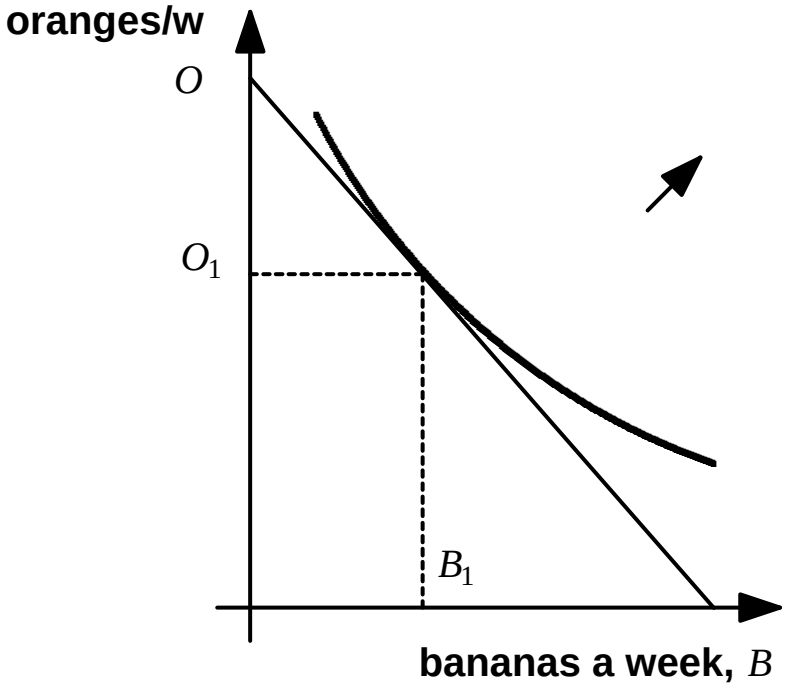
GRAPHICAL SOLUTION

Plot the Budget Line:

$$10 = 2.99B + 0.1O \quad \textbf{or}$$

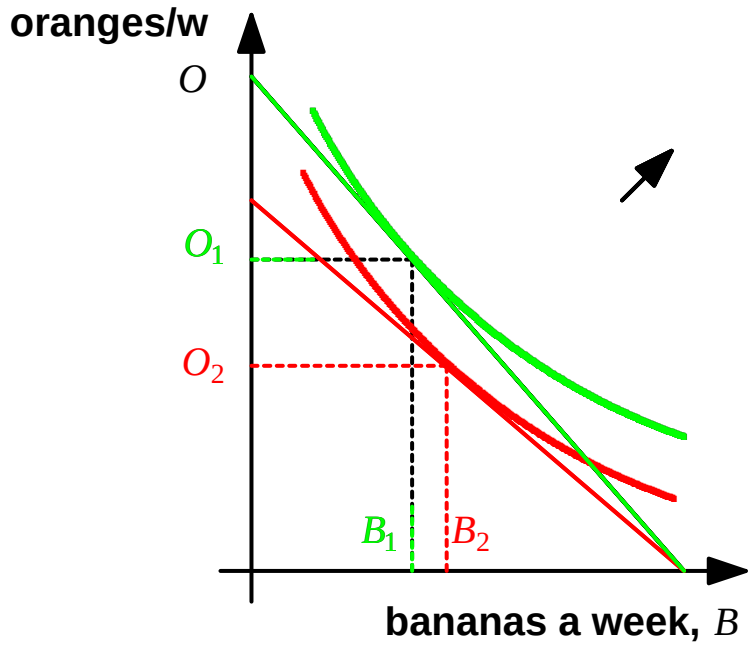
$$O = 100 - 29.9B$$

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



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



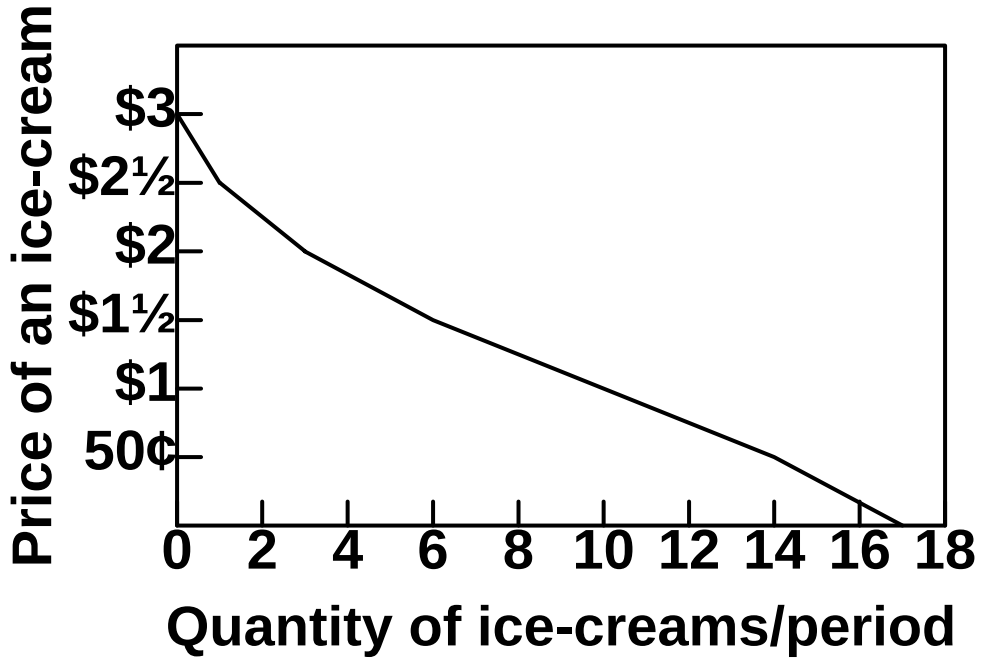
THE DEMAND SCHEDULE

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.

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.

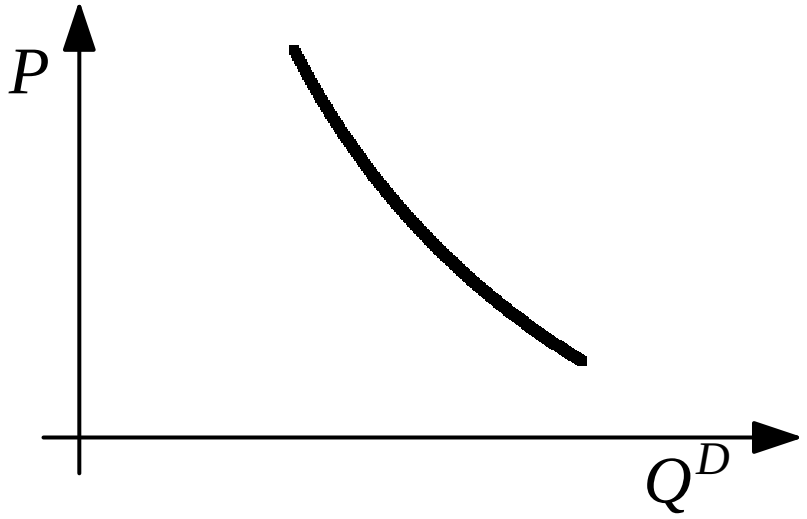
MARKET DEMAND

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

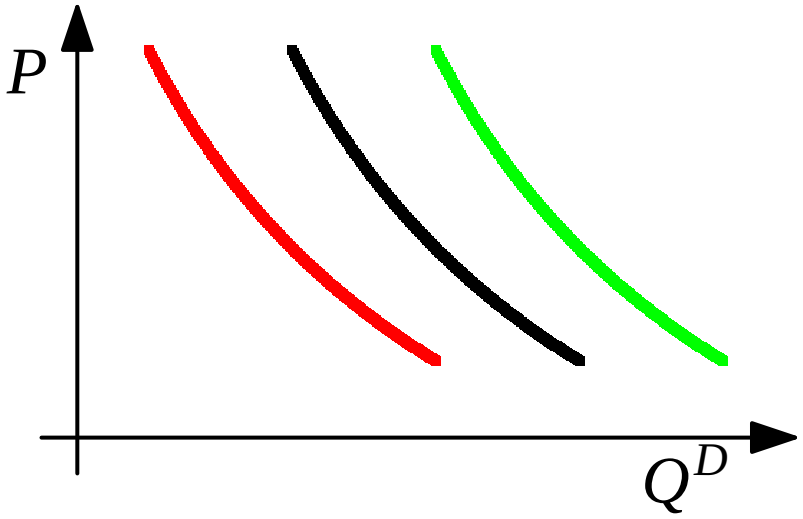
(There is no reason why the demand curves should be straight lines.)

SHIFTS IN DEMAND



Distinguish between:

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



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.**

SHIFTS OF THE DEMAND CURVE

Shifts **(contractions ← or expansions→) in the demand curve as changes occur in other determinants:**

- **the price of related goods:**
  expansion: price of "substitute" P_Y **rises**
  contraction: price of "complement" P_Y **rises**
- **tastes**
- **disposable incomes:**
  expansion of demand for a normal good when income rises or for an inferior good when income falls
- **expectations of price, availability**

SUPPLY

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

Determinants of Supply

1. **Own Price. Usually, but not always, a higher price will result in higher quantity supplied.**
2. **Input Prices. Higher input prices contract supply.**
3. **Technology. Cost-reducing technology will expand supply.**
4. **Expectations.**
5. **Numbers of sellers.**

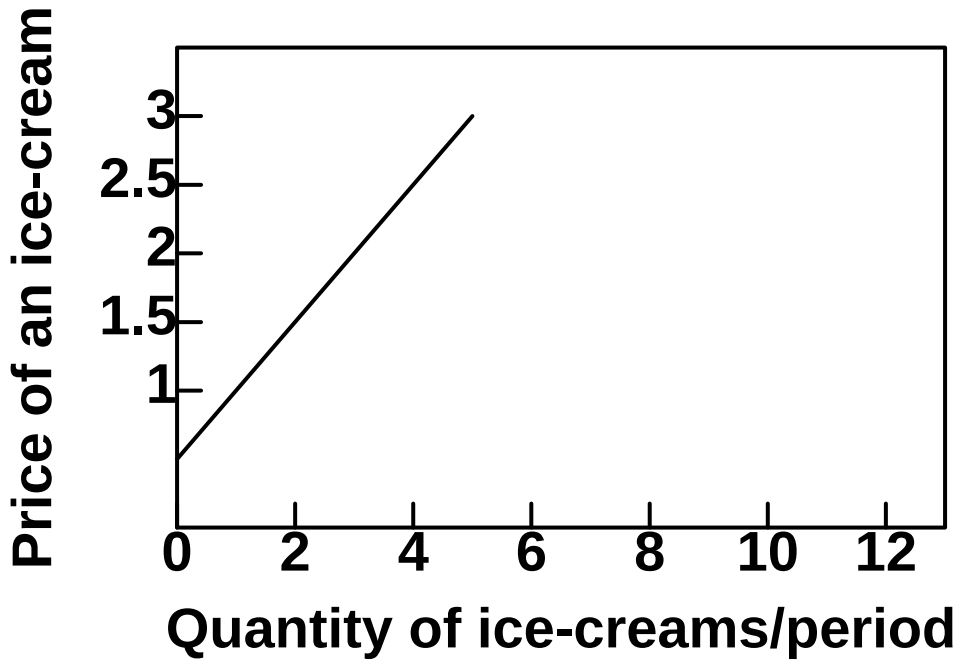
THE SUPPLY SCHEDULE

— 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

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

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?

SHIFTS IN THE SUPPLY CURVE

A change in the price → a movement along the (unshifting) supply curve.

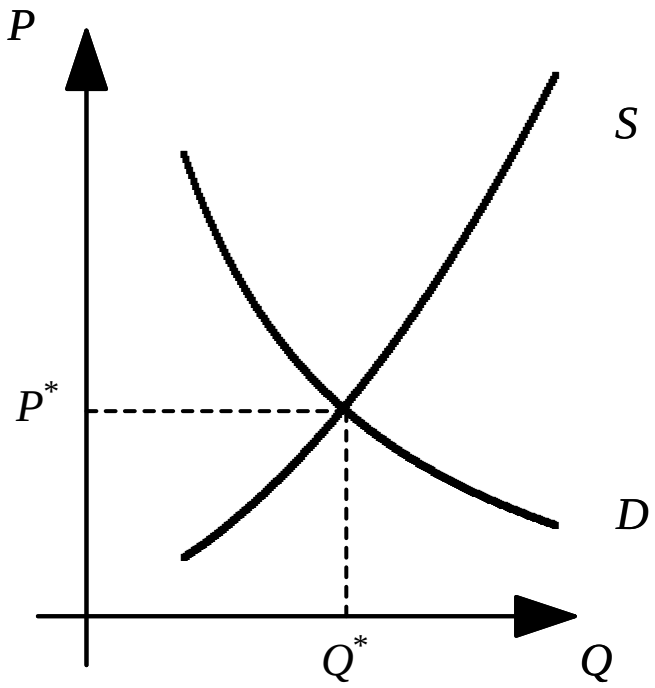
A fall in input prices will shift the curve to the right (at any price, the producer will be prepared to sell more): supply expands.

Ditto an improvement in technology.

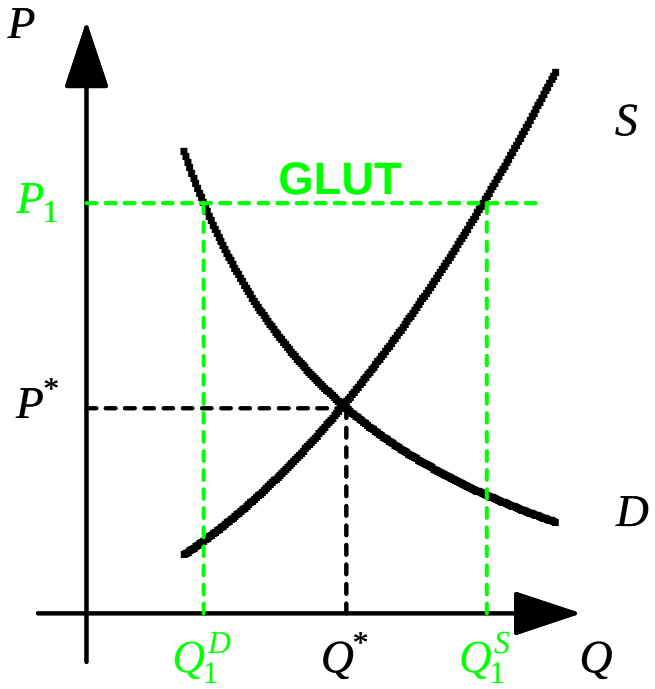
And an increase in the number of sellers.

A change in expectations can → an expansion in supply (→) or a contraction in supply (←), depending.

SUPPLY & DEMAND

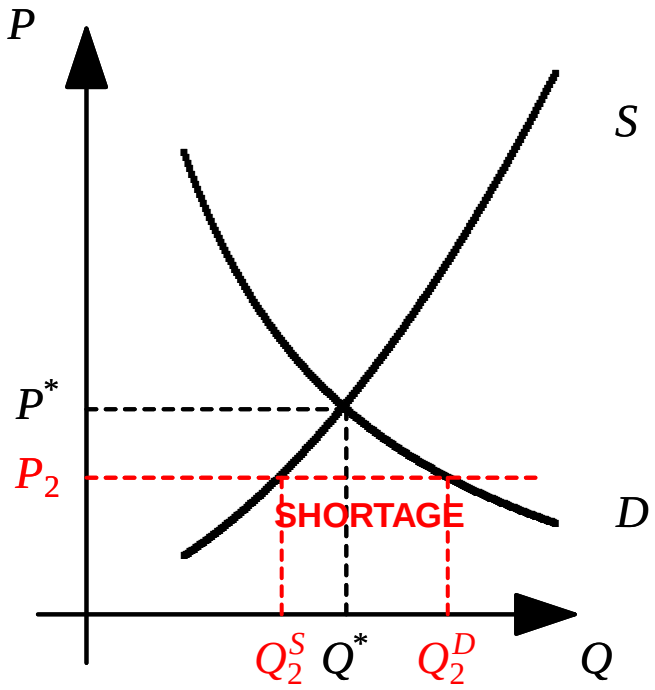


$S = D$, market-clearing equilibrium,



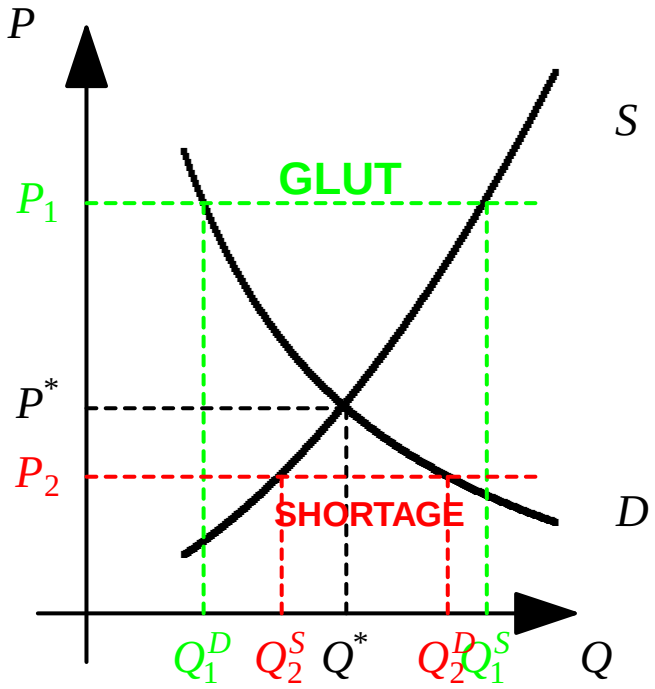
$S = D$, **market-clearing equilibrium,**

$S > D$, **a buyers' market and glut.**



$S = D$, market-clearing equilibrium

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



$S = D$, market-clearing equilibrium

$S > D$, a buyers' market and glut.

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

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.**

ILLICIT-DRUG POLICIES

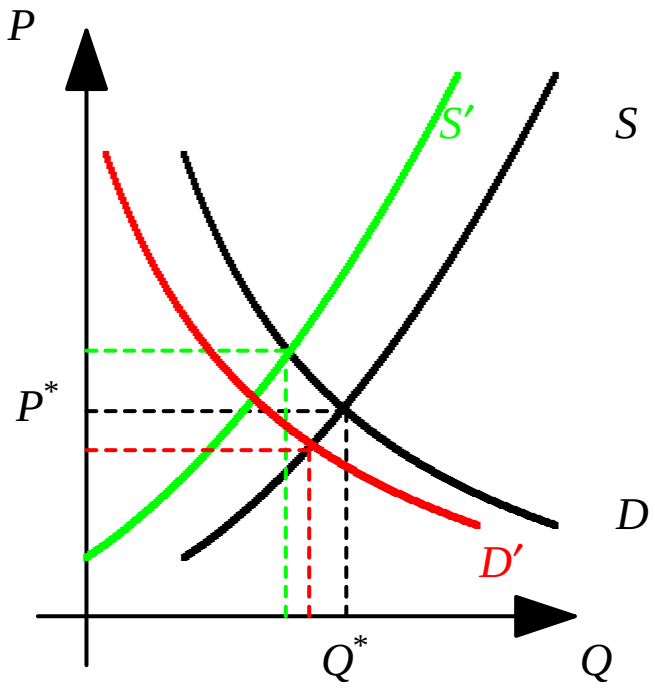
Supply-side policy **targets the drug pushers and the upstream suppliers.** ***Demand-side policy*** **attempts to rehabilitate or to deter drug users. How to they differ in our analysis?**

Supply-side policies have the effect of reducing the amount of drugs on offer at any price: the supply curve contracts to the left. Prices rise.

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.

MODELLING THE BLACK MARKET



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.