Market economy and pubic policy 4

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Today

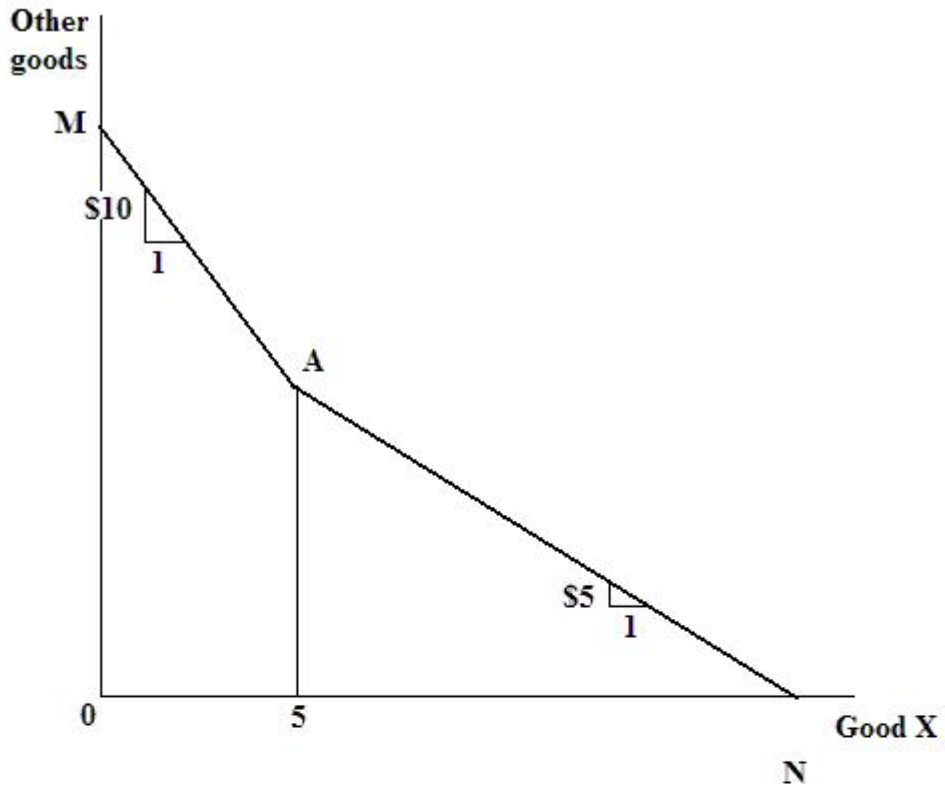
- Homework from last week
- Monica's indifference curve and price
- From utility function to demand curve in math.
- Introduction of Market Intervention by government

Homework 2
Translate to Ukrainian language

- Price Elasticity of Demand
- (Demand Elasticity)
- Price Elasticity of Supply
- (Supply Elasticity)
- Marginal rate of substitution

Homework *

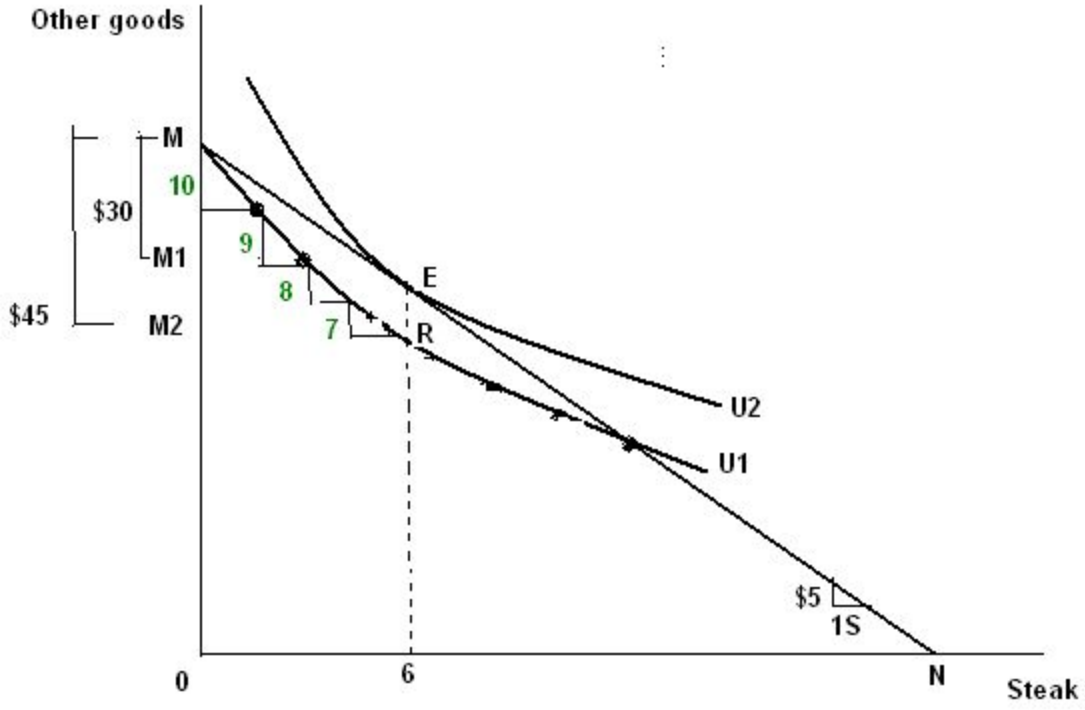
- A consumer must pay $10 per unit of good X for the first 5 units, but only $5 per unit for each unit in excess of 5 units. How does the budget line look like?


Other
goods
M
S10
1
A
S5
1
0
5
Good X
N

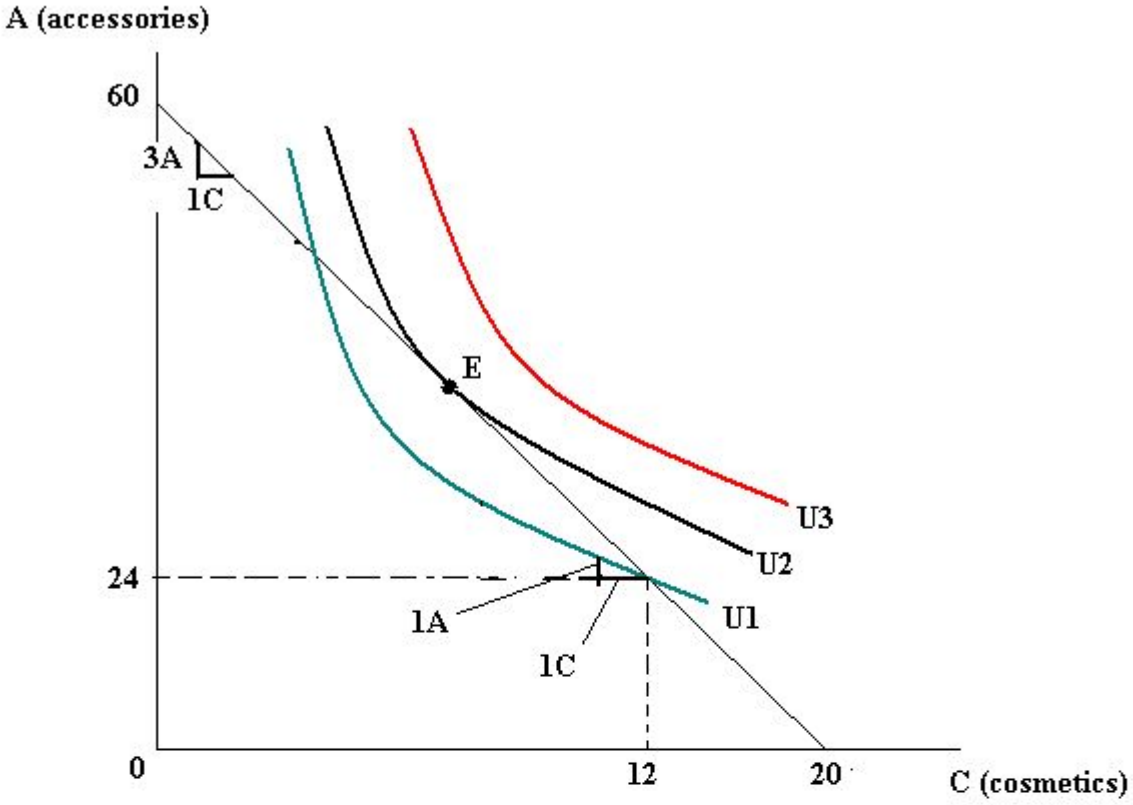
Homework

- Monica spends her entire monthly income of $600 on cosmetics and accessories.
- The price of cosmetic is $30, and the price of accessory is $10.
- If she consumes 12 cosmetics and 24 accessories, her MRS is 1A/1C. Is she in equilibrium at this point on her budget line?
- Show the result in a picture.

Marginal rate of substitution (MRS)



MRS: Other goods/Steak


A (accessories)
60
3A
1C
E
U3
U2
24
1A
U1
1C
0
12
20
C (cosmetics)

Condition for the Maximum Utility

$$I = \sum_{i=1}^{n} P_{x_i} X_i \quad \text{.....(1)}$$

$$L = U(X_1, X_2, X_3, \ldots X_n) + \lambda(I - \sum_{i=1}^{n} P_{x_i} X_i) \quad \text{.....(2)}$$

$$\partial L / \partial X_i = \partial U / \partial X_i - \lambda P_{x_i} = 0 \quad \text{.....(3)}$$

$$\partial L / \partial \lambda = I - \sum_{i=1}^{n} P_{x_i} X_i = 0 \quad \text{.....(4)}$$

$$\frac{\partial U / \partial X_i}{\partial U / \partial X_j} = \frac{P_{X_i}}{P_{X_j}} \quad \text{.....(5)}$$

where, $i \neq j$.

2. Non-linear model (Cobb-Douglas function [1]):

$$U = \prod_{i=1}^{n} X_i^{C_i} \quad \text{.....(17)}$$

where,

$$\sum_{i=1}^{n} C_i = 1 \quad \text{.....(28)}$$

$$X_i = \frac{I}{P_{X_i}} \frac{C_i}{\sum_{j=1}^{n} C_j} \quad \text{.....(18)}$$

$$\frac{C_i}{\sum_{j=1}^{n} C_j} = \beta_i \quad \text{.....(29)}$$

Cobb-Douglas 2 dimensional case

$$U = F^{\alpha} C^{1-\alpha}$$

$$I = FP_F + CP_c$$

$$L = F^{\alpha} C^{1-\alpha} + \lambda(I - FP_F - CP_C)$$

$$\partial L / \partial F = \alpha F^{\alpha-1} C^{1-\alpha} - \lambda P_F = 0$$

$$\partial L / \partial C = (1-\alpha) F^{\alpha} C^{(1-\alpha)-1} - \lambda P_C = 0$$

$$\partial L / \partial \lambda = I - FP_F - CP_C = 0$$

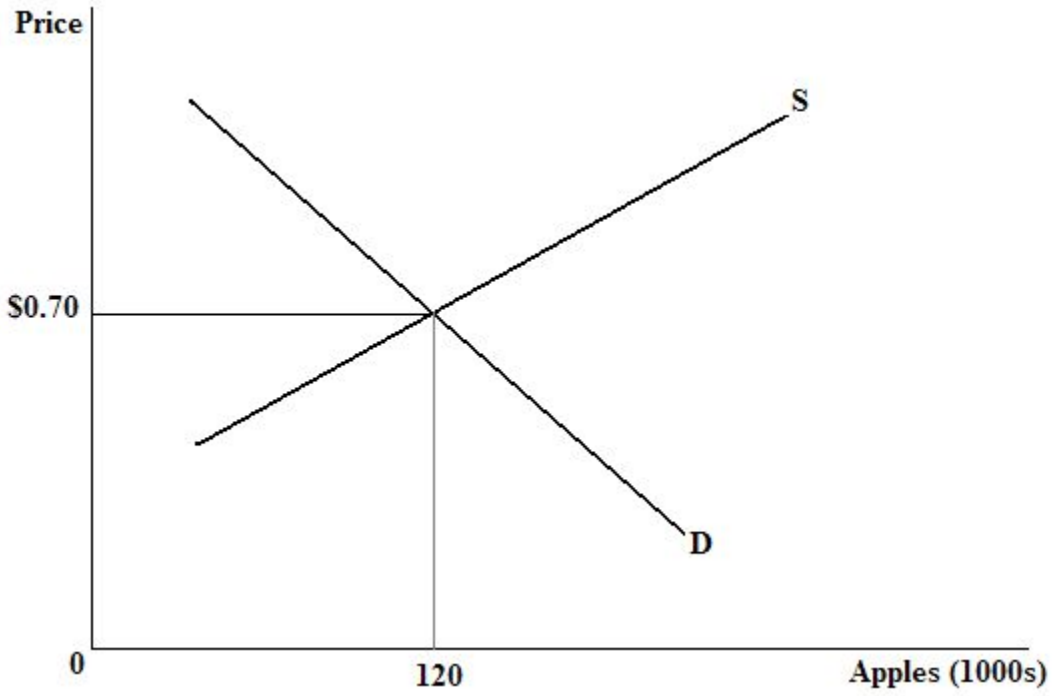
$$F = \alpha I / P_F \qquad C = (1-\alpha) I / P_c$$

Price setting by government

How to respond to shortage?

- Divide?
- Non price rationing
  - First come, first serve
  - Waiting line = cost to consumer
- Quality deterioration
  - Show the product less attractive
  - Open fewer hours per day or fewer days per week
  - Self-service pumping
  - Eliminate special services, such as wiping windows
- Black market
  - With Q2, consumer could pay $1.50
  - Penalties
- In a long run…

Governmental purchase apple case



The supply and demand for apples

Demand

Price for pound	Quantity demanded per Year
$0.90	100000
0.80	110000
0.70	120000
0.60	135000

Supply

Price per pound	Quantity supplied per year
$0.60	100000
0.70	120000
0.80	140000
0.90	150000

What is the market equilibrium price and quantity?

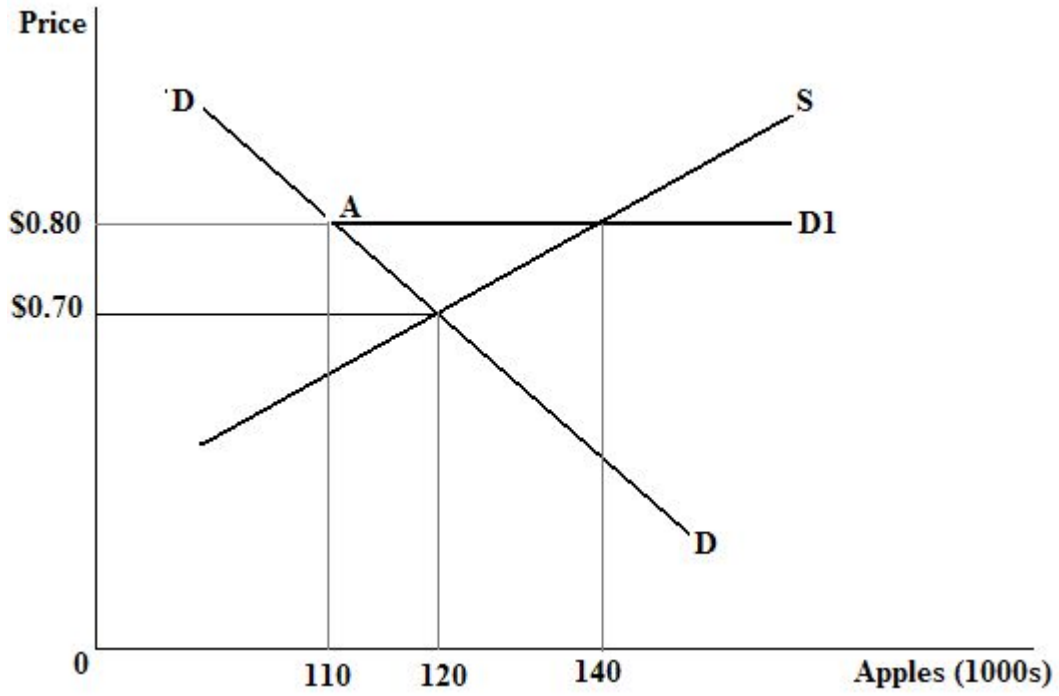
Questions

- The government agrees to purchase as many pounds of apples as growers will sell to it at a price of $0.80.

  a. How much will the government purchase,

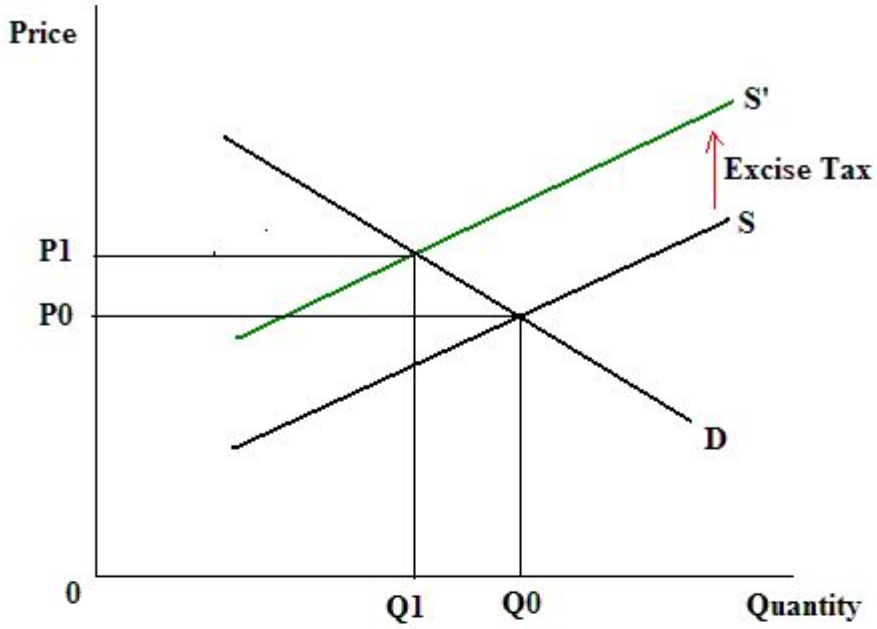
  b. how much will consumers purchase, and

  c. how much will be produced?

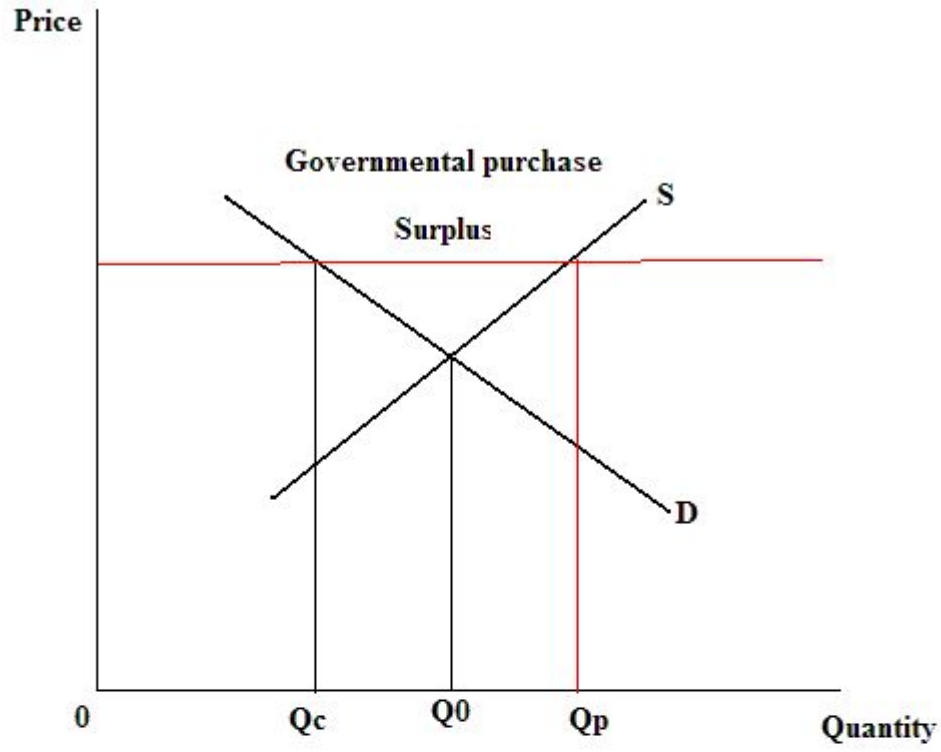


a. Governmental purchase = 140 000 – 110 000 = 30 000
b. Consumer purchase = 110 000
c. Produced apples = 140 000

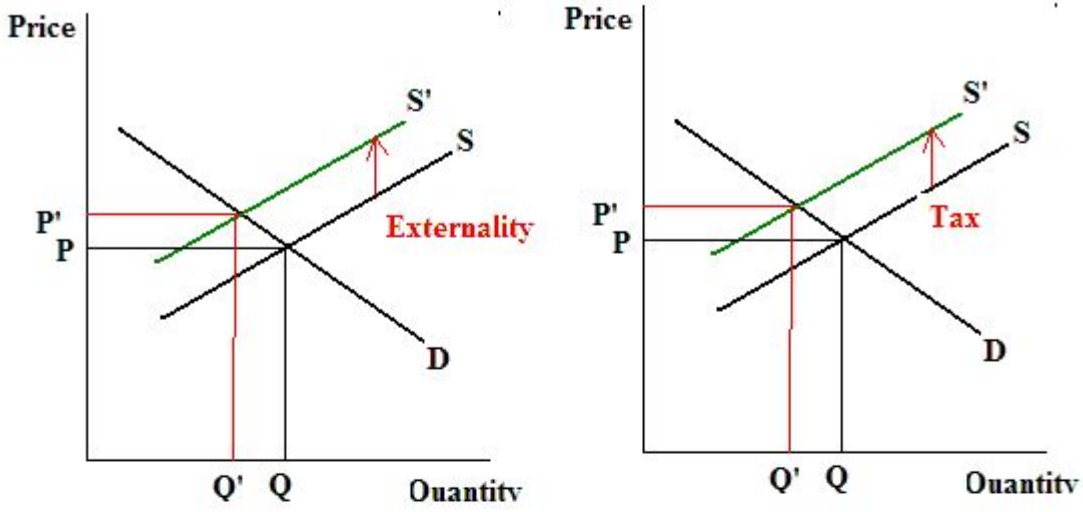
Intervention by government
Tax



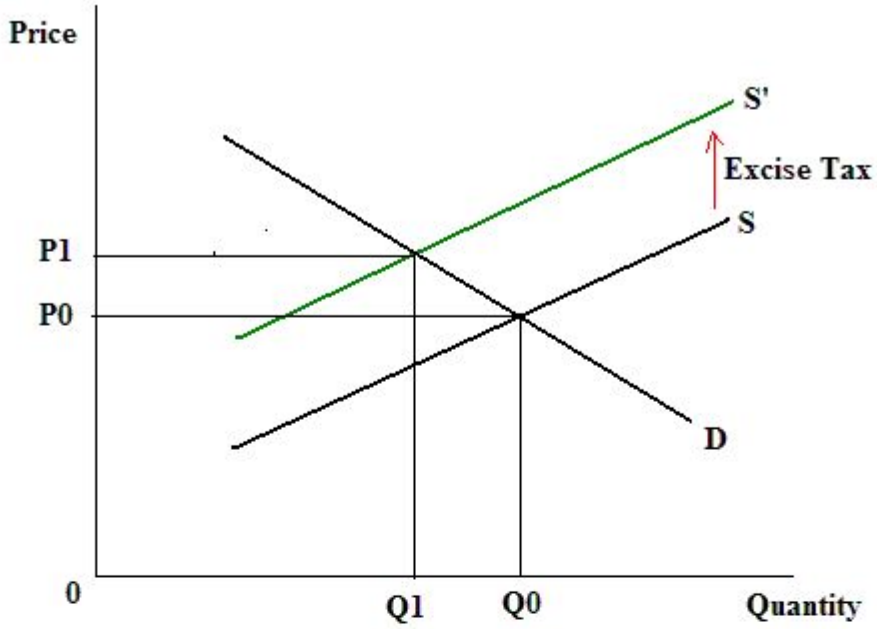
Government purchase



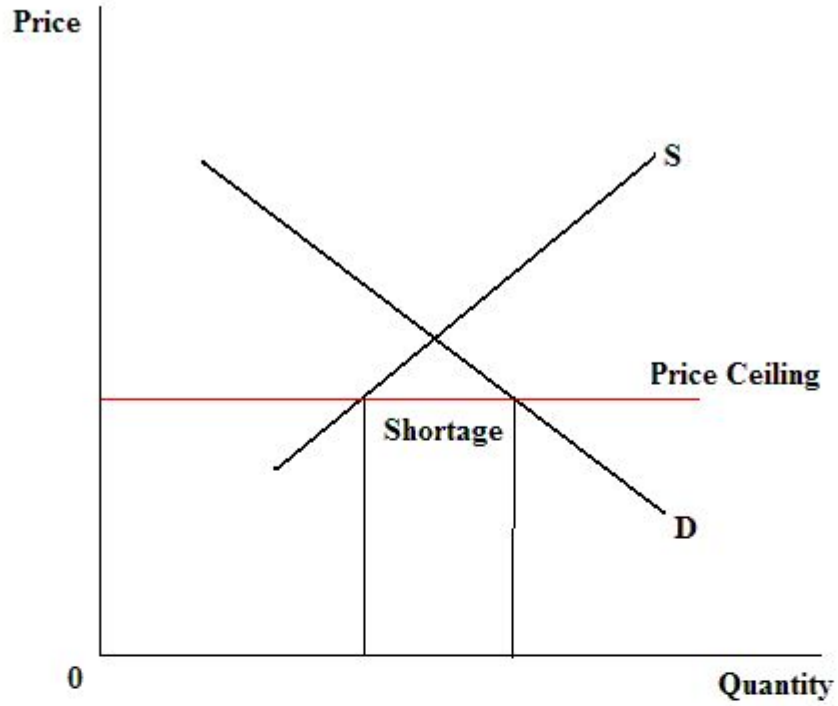
Emission trade ?



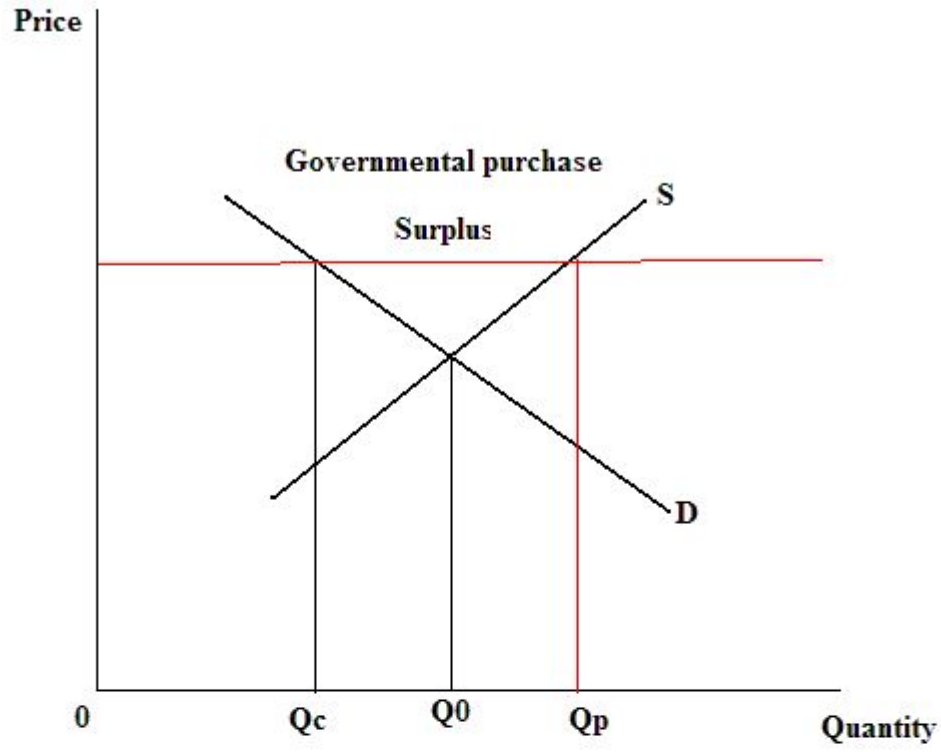
Intervention by government (1) Tax



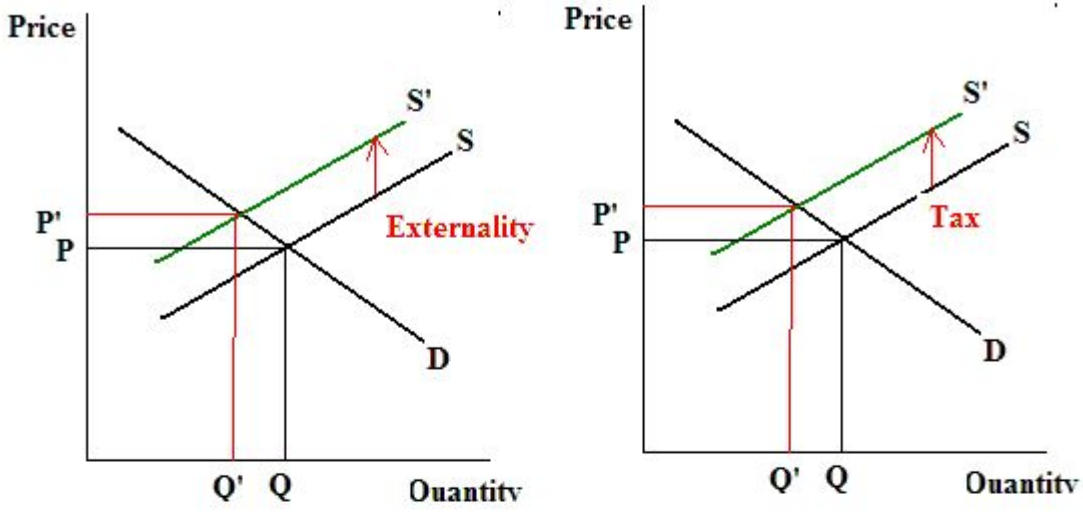
Price Ceiling



Government purchase

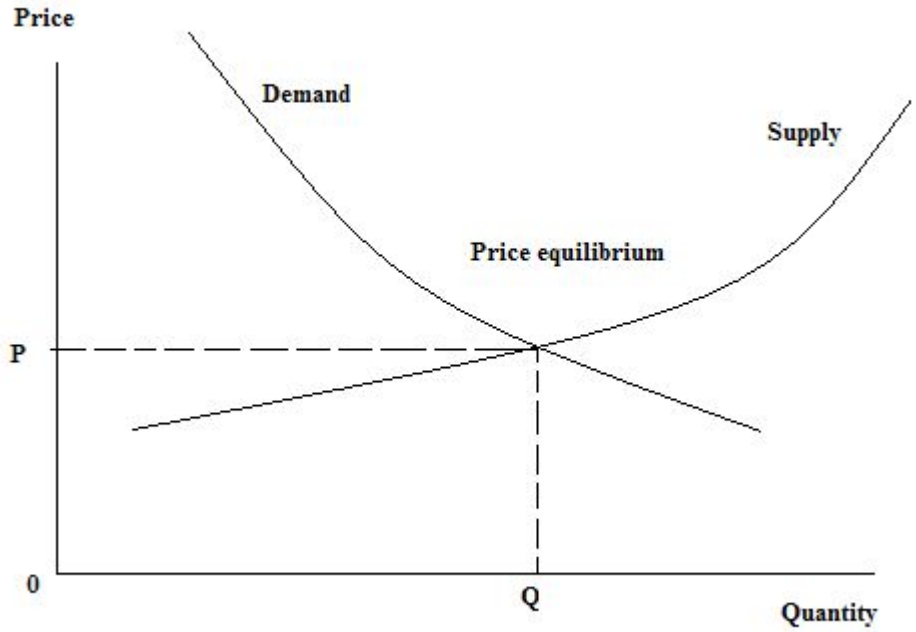


Emission trade ?

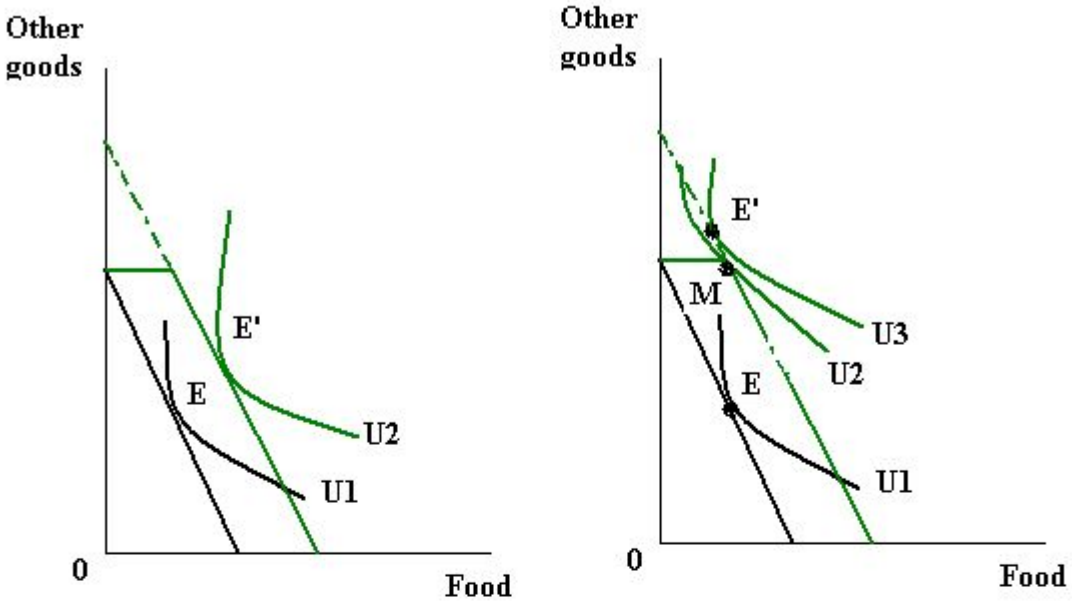


How is price made? Why it is changed?

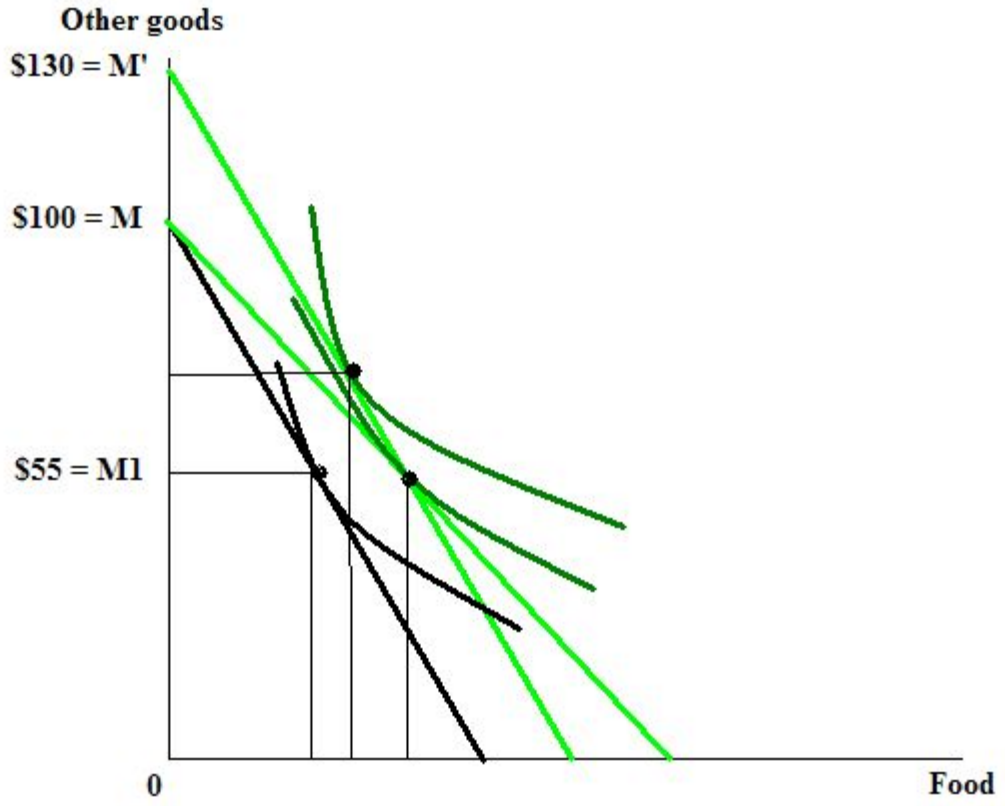
- In competitive market



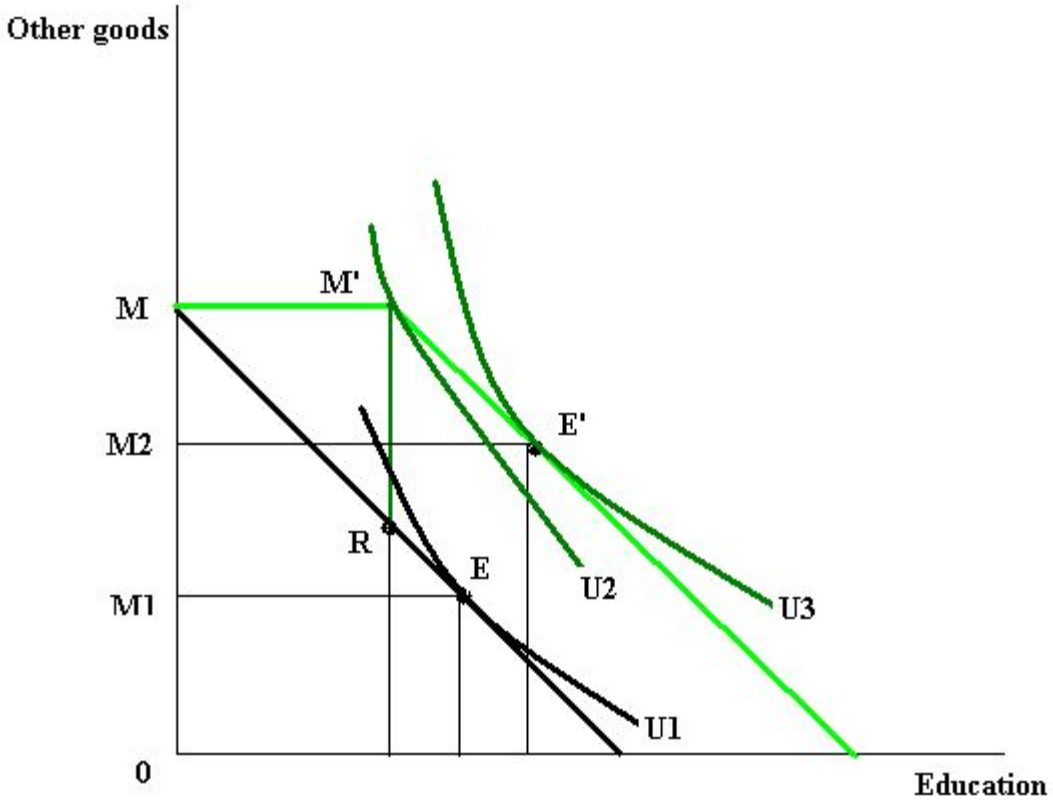
Effect of food stamp program on



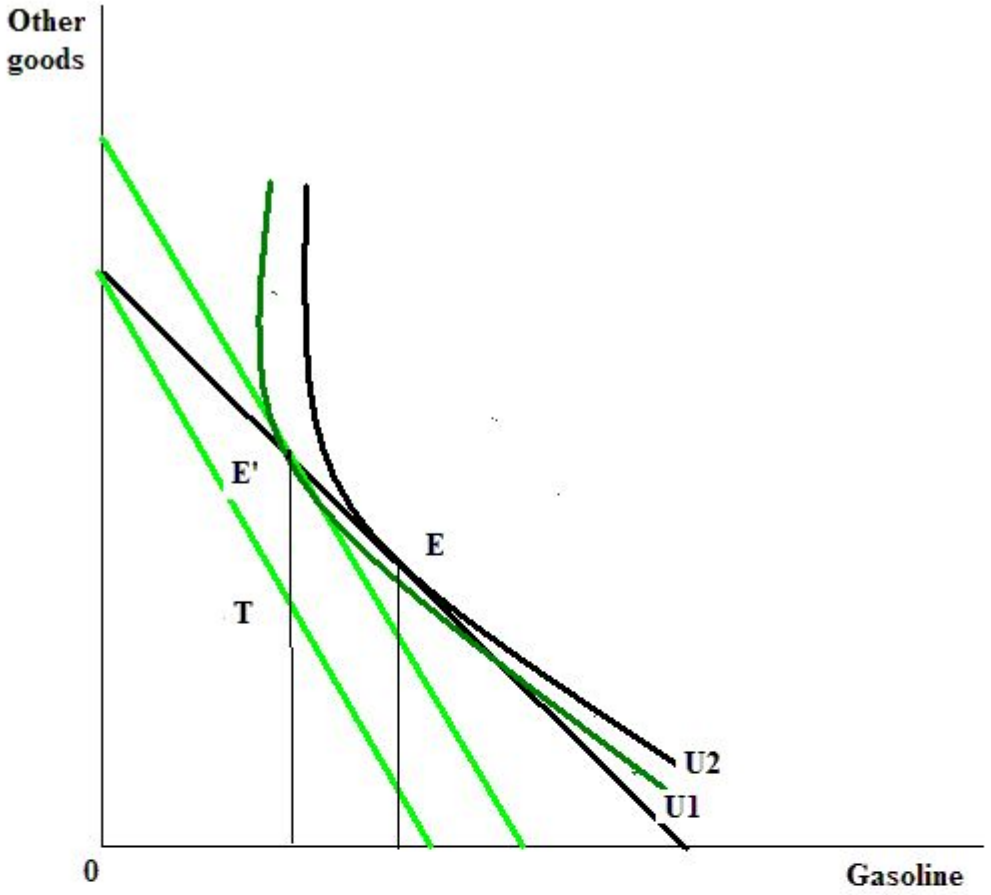
Excise subsidy vs. Lump-sum subsidy



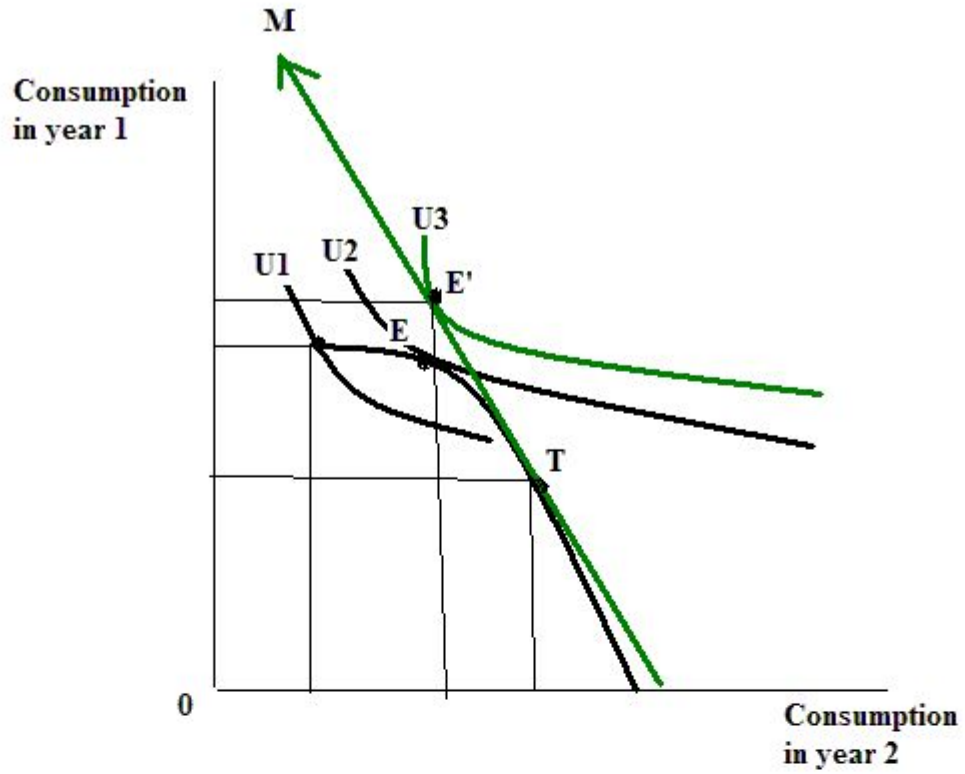
Fixed-quantity subsidy: Education



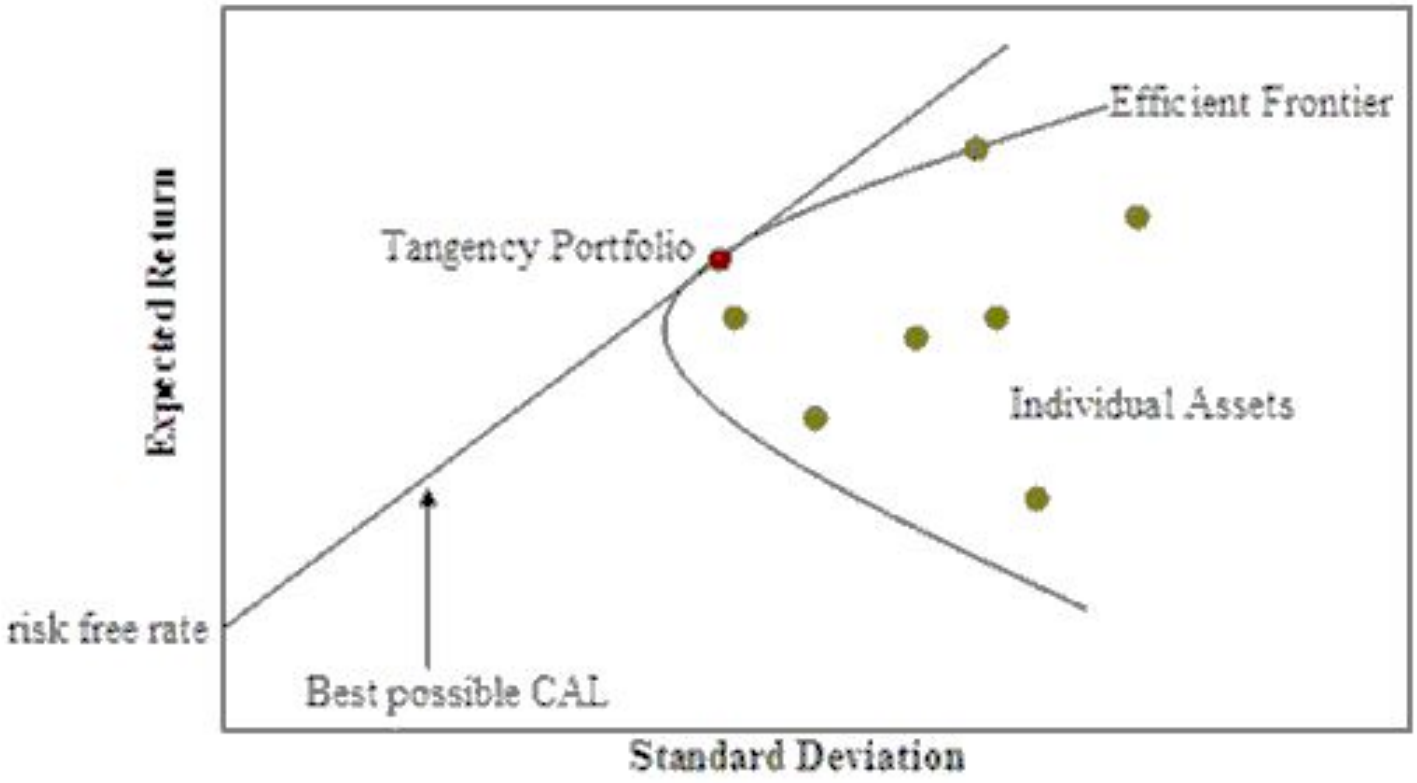
Tax and Rebate Program



Investment in education and borrowing



Investment risk



Homework 1

- Suppose the government policy of purchasing apples remains in effect, but consumer demand increases by 10 percent (consumers will purchases 10 percent more at each price than they did before).
- What will be the effects on
  a. total apple output,
  b. purchases by consumers,
  c. purchases by government, and
  d. the price of apples?

Homework 2

- Find the demand curves for each of 3 variables.

$$U = F^{\alpha} C^{\beta} S^{\gamma}$$

$$\alpha + \beta + \gamma = 1$$

Homework 3
Translate to Ukrainian language

- Governmental intervention
- Price ceiling
- Black market
- Rationing, Non price rationing
- Shortage
- Surplus