THEORY OF CONSUMER BEHAVIOUR

Budget line

THEORY OF CONSUMER BEHAVIOUR
Budget line

STRUCTURE OF PRESENTATION

- 1. Budget constraint
- 2. Budget line
- 3. Marginal rate of substitution in exchange (MRSE)
- 4. Changes of the budget line

1. Budget constraint

- **BUDGET CONSTRAINT =** what the consumer can afford given his **income** and the **prices** of different goods or services.
(The consumer spends all his income.)

$$I = TE$$

$$TE = \sum_{i=1}^{n} TE_i, \ i=1,2,...,N$$

$$TE = \sum_{i=1}^{n} (P_i . Q_i), \ i=1,2,...,N$$

I – consumer´s income,
TE – consumer´s total expenditures,
TE_i – consumer´s expenditures on good i,
P_i – price of good i,
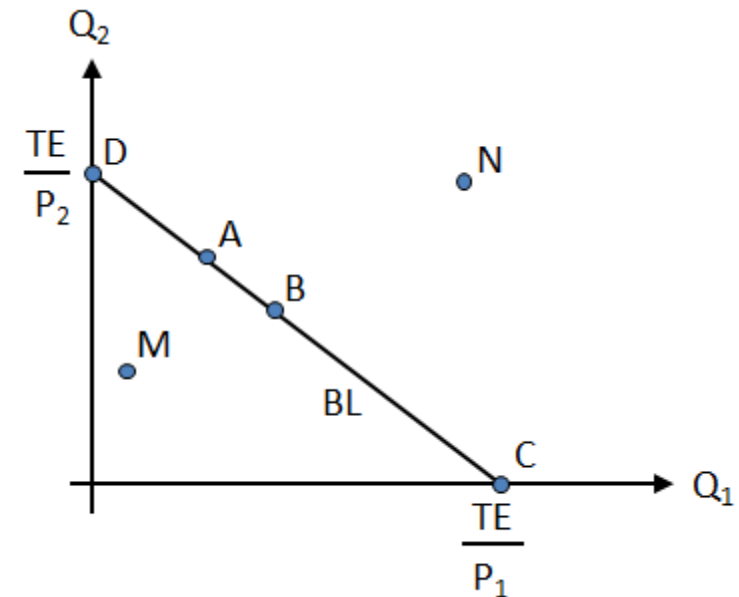Q_i – quantity of good i,
i – good.

2. Budget line

➡ **BUDGET LINE** shows **various combinations of goods 1** and **2** that a consumer can **purchase by spending all income** (points A, B, C, D). The consumer spends **all income** on **one good only** = points, where **budget line intercepts** the **axes**.

$I = TE$

$TE = TE_1 + TE_2$

$TE = P_1 \cdot Q_1 + P_2 \cdot Q_2$

$Q_2 = \dfrac{TE}{P_2} - \dfrac{P_1}{Q_2} \cdot Q_1$

3. Marginal rate of substitution in exchange (MRSE)

<u>**MARGINAL RATE OF SUBSTITUTION IN EXCHANGE (MRSE)**</u> **= absolute slope** of the budget line.

MRSE$_{1,2}$ is the **amount of good 2** that the individual has **to exchange per unit of good 1** while remaining the **same level of total expenditures**.

Equitation of budget line:

$$Q_2 = \frac{TE}{P_2} - \frac{P_1}{Q_2} \cdot Q_1$$

Slope of budget line:

$$-\frac{P_1}{P_2} \left(\frac{\Delta Q_2}{\Delta Q_1} = -\frac{P_1}{P_2} \right)$$
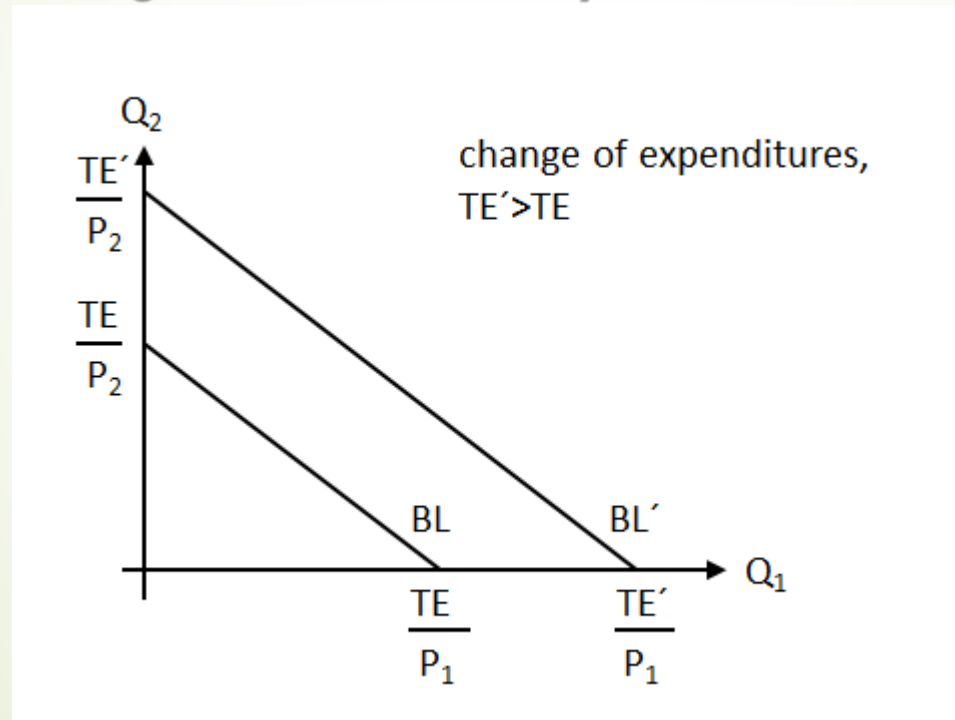
Marginal rate of substitution in exchange

$$MRSE = \left| \frac{\partial Q2}{\partial Q1} \right| = \left| -\frac{P_1}{P_2} \right|$$
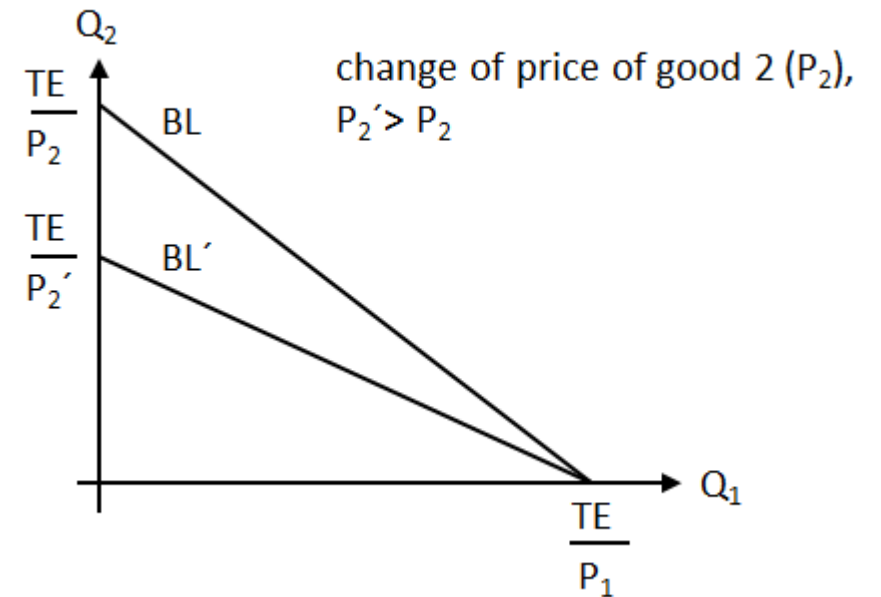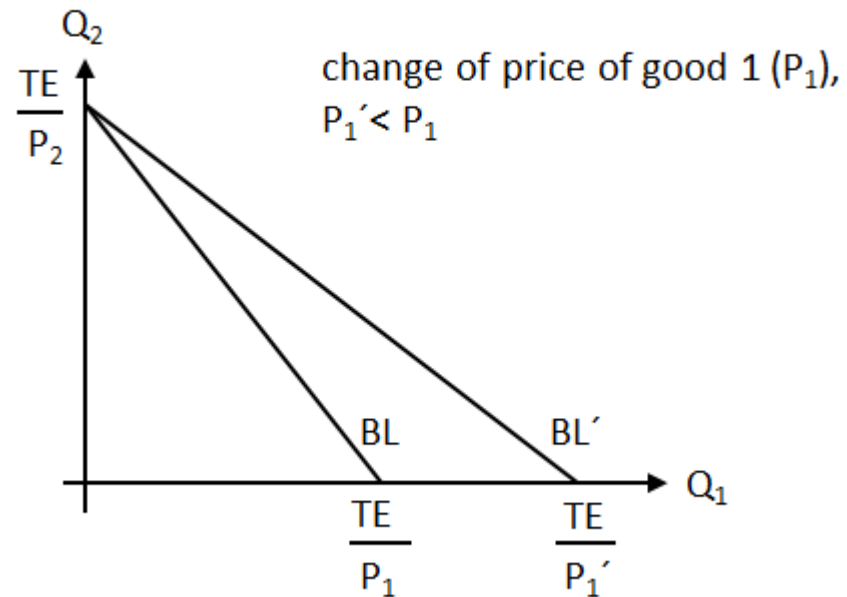
$$\mathbf{MRSE = \frac{P_1}{P_2}}$$

- **CHANGES OF THE CONSUMER`S EXPENDITURES**
  (prices of goods are constant)

➡ **CHANGES OF PRICES OF GOODS**

(expenditures are constant)

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Next lesson

- **THEORY OF CONSUMER BEHAVIOUR**

    1. The effects in changes of income and price

    2. Individual and market demand

THEORY OF CONSUMER BEHAVIOUR

The effects in changes of income and price

**Individual and market demand**

THEORY OF CONSUMER BEHAVIOUR
The effects of changes in income and price

STRUCTURE OF PRESENTATION

- 1. The effects of changes in income
- 2. The effects of changes in price
- 3. Individual and market demand

1. The effects of changes in income (1/5)

- **income** is changeable, but **preferences** and (relative) **prices** of goods are constant

- due to this change the budget line shifts paralell to itself

- **consumer´s optimum** = the point where the new budget line is tangent to the highest possible indifference curve
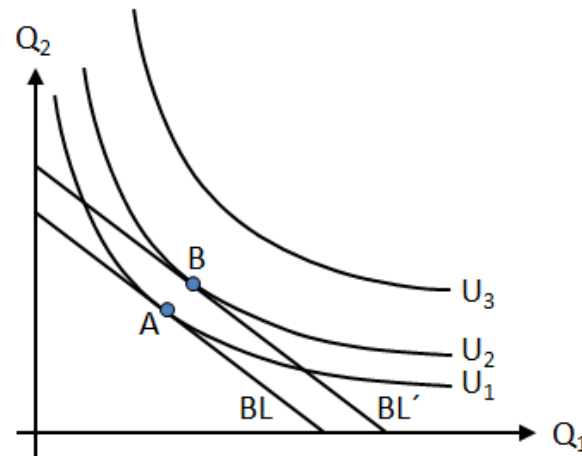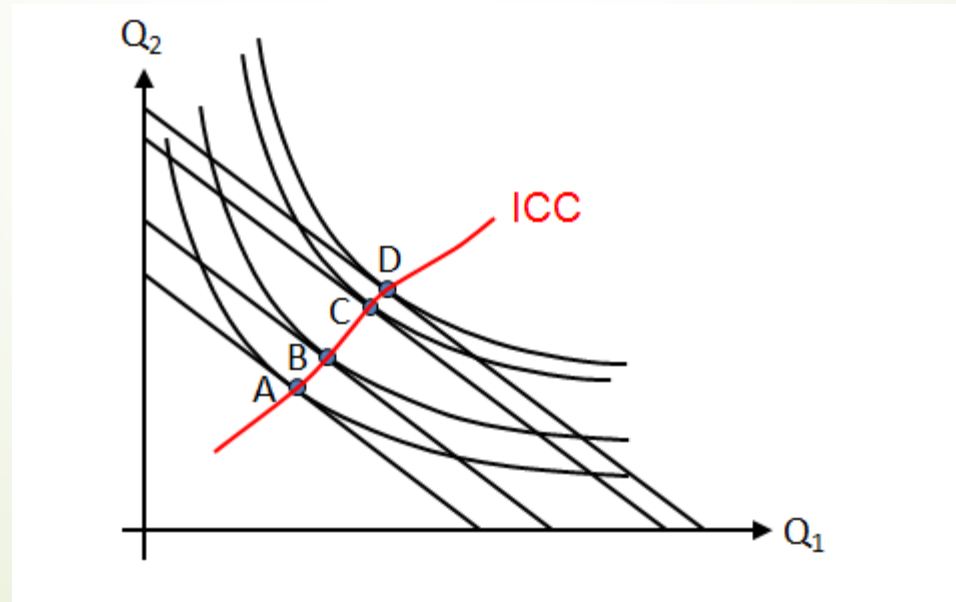
- **Income consumption curve (ICC) = the set of optimal bundles traced on an indifference map as income varies.**

axis x = Q_1; axis y = Q_2

Shows optimal consumption bundles at various levels of income.

As income increases, the budget constraint moves outward.

1. The effects of changes in income

- **Engel curve = the relationship between income and the quantity consumed of a good.**
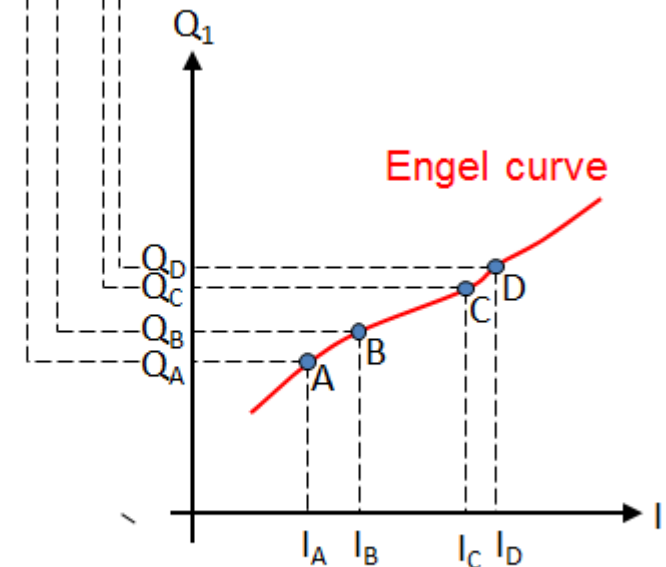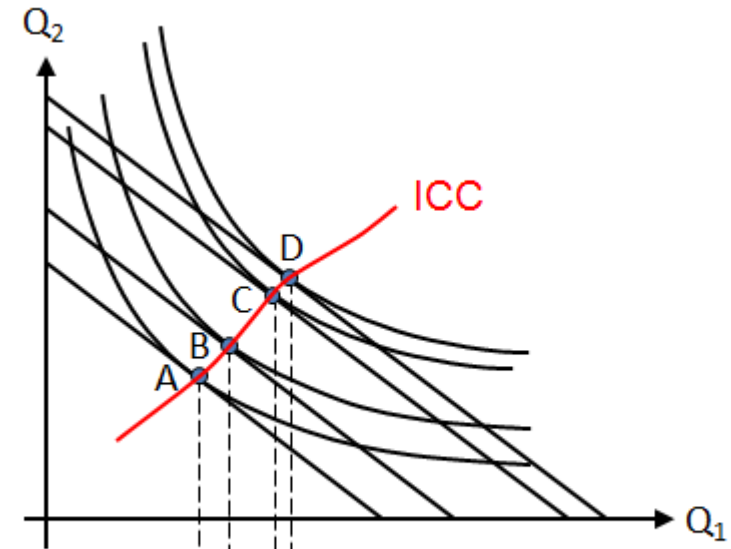
  It shows how the quantity demanded varies with income.

  axis x = I, axis y = Q_1

1. The effects of changes in income (4/5)

Income consumption curve (ICC) and Engel curve for superior good

Superior goods = the quantity demanded rises as the income rises.

ICC and Engel curve are up-ward sloping.

1. The effects of changes in income (5/5)

Income consumption curve (ICC) and Engel curve for inferior good

**Inferior goods** = quantity demanded falls as income rises.
ICC and Engel curve are down-ward sloping.
 They have strongly preferred but more expensive substitutes. The consumer will switch to these substitutes as soon as he can afford them.
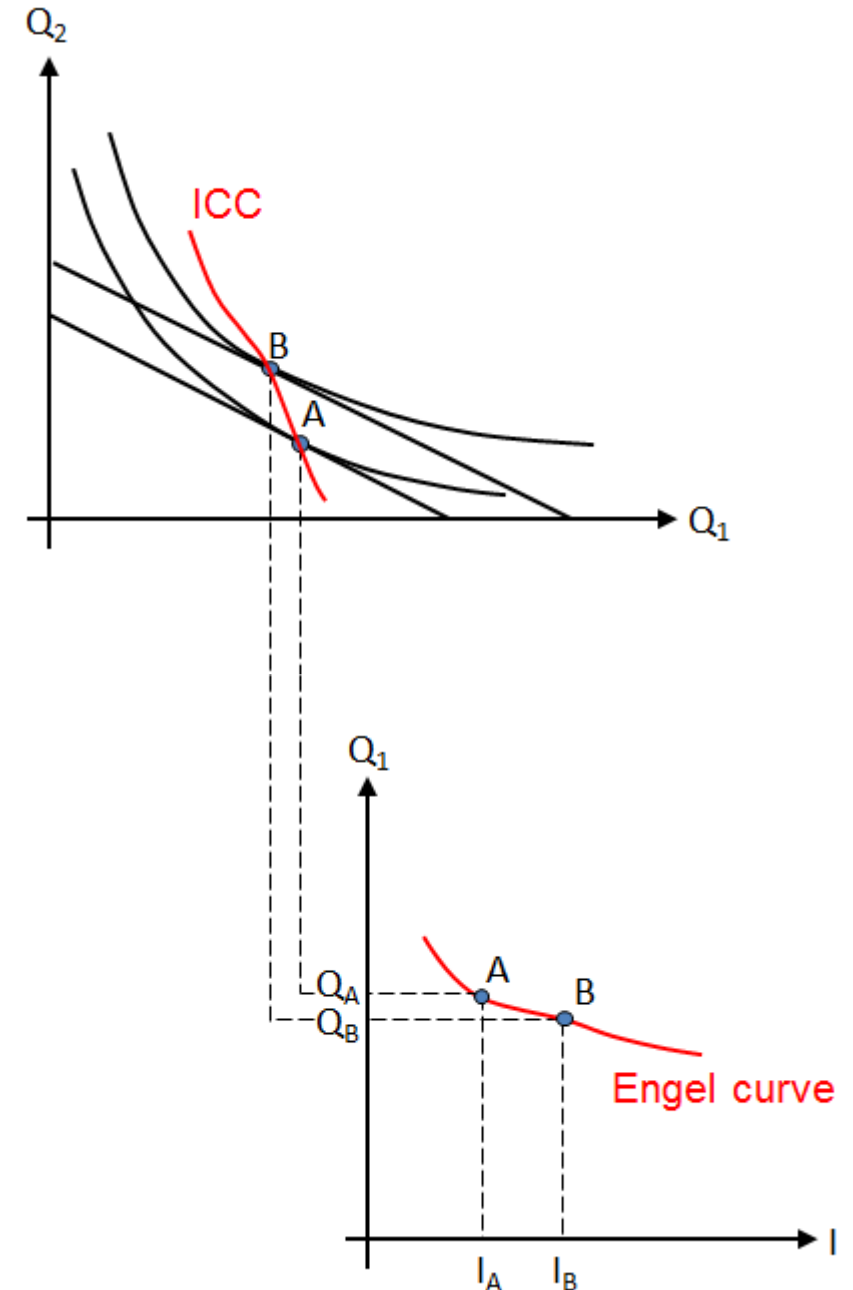
2. The effects of changes in price (1/5)

- **price of good 1** is changeable, but **preferences, holding income** and **prices** of all other goods are constant.

- consumer´s income and the price of good 2 are unchanged, the vertical intercept of the consumer's budget line stays the same when the price of good 1 changes.

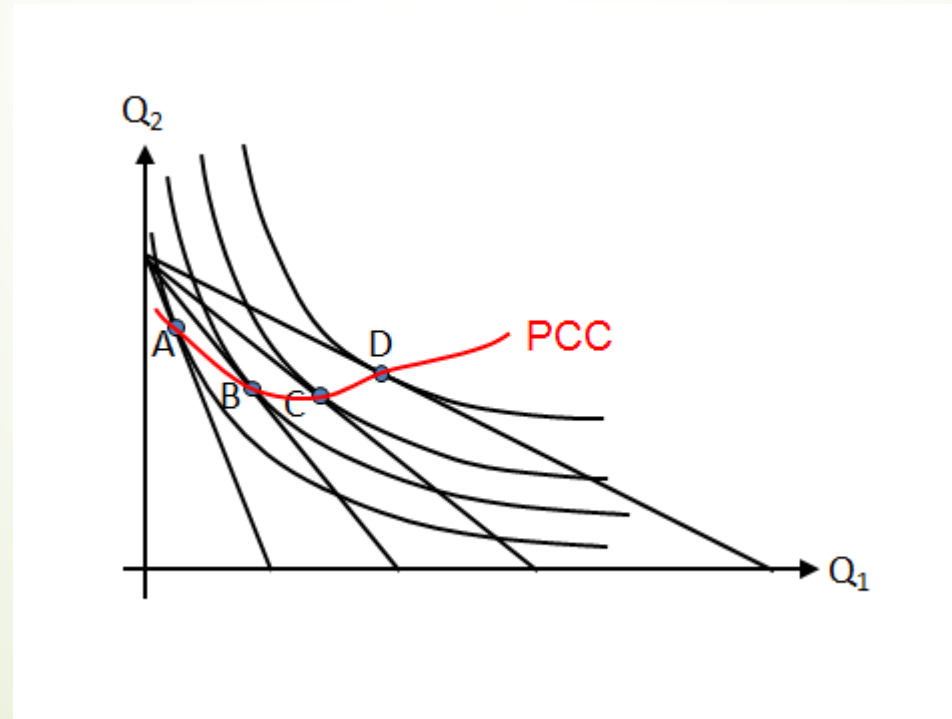- **the best affordable bundle** = the point where the new budget line is tangent to the highest indifference curve
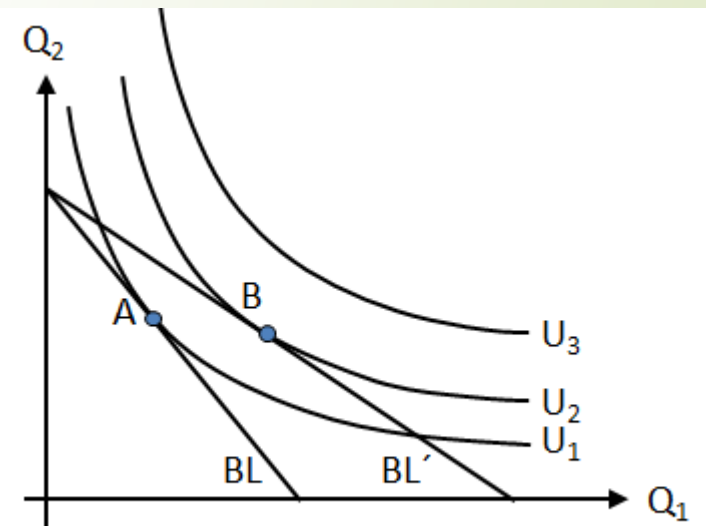
2. The effects of changes in price

- **Price consumption curve (PCC)** = the set of optimal bundles traced on an indifference map as the price of good 1 varies.

  axis x = Q_1; axis y = Q_2

  Shows optimal consumption bundles at various levels of income.

- **Individual consumer´s demand curve = which quantities the consumer will buy at various prices.**

  Is derived from PCC:

  1. record the relevant price-quantity combinations from the PCC

  2. plot the price quantity pairs, with the quantity of good 1 on the horizontal axis and its price on the vertical axis

  3. use sufficiently many price-quantity pairs

2. The effects of changes in price (4/5)

Price consumption curve (PCC) and demand curve

PCC: axis x = Q_1; axis y = Q_2

D: axis x = Q_1; axis y = P_1

$I=TE$
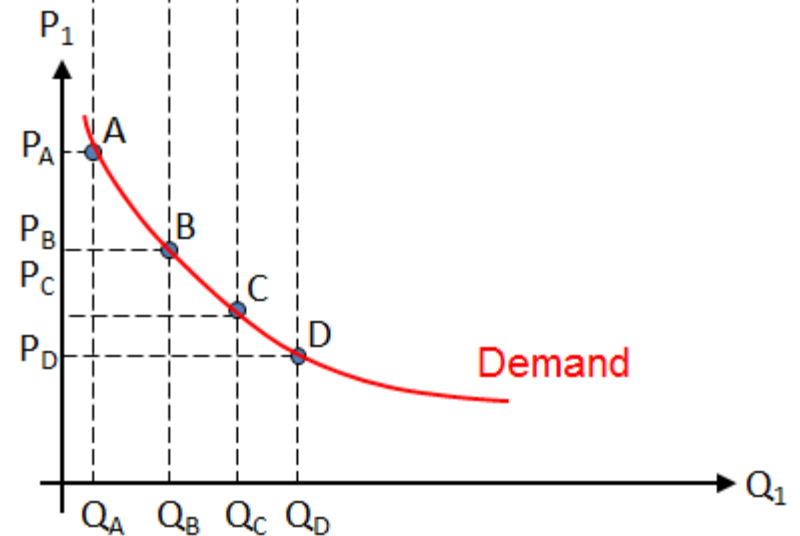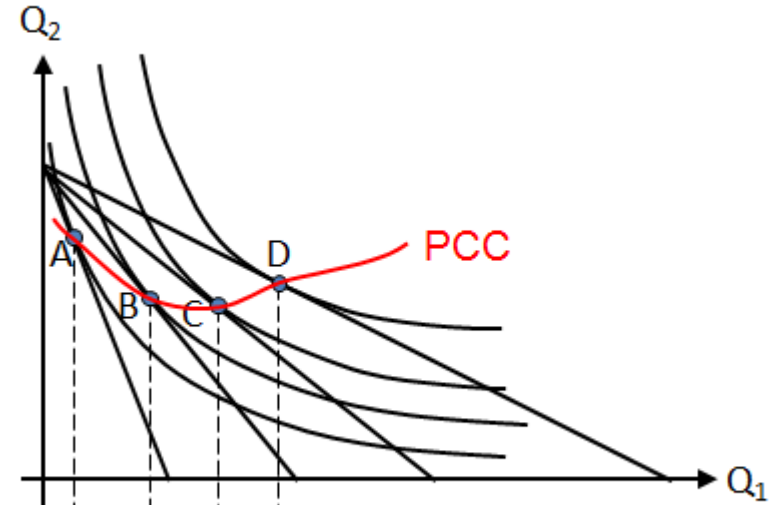
$TE=TE_1+TE_2$

$TE=\downarrow P_1 \cdot Q_1 + P_2 \cdot Q_2$

$TE=\downarrow P_1 \cdot \uparrow Q_1 + P_2 \cdot Q_2$

How do expenditures on good 1 change? What will happen to good 2?

1.

$TE=\downarrow P_1 \cdot \uparrow Q_1 + P_2 \cdot Q_2$

$TE=\uparrow TE_1 + TE_2$

$TE=\uparrow TE_1 + \downarrow TE_2$

$TE=P_1 \cdot Q_1 + P_2 \cdot \downarrow Q_2$

$TE=\downarrow P_1 \cdot \uparrow Q_1 + P_2 \cdot \downarrow Q_2$

2.

$TE=\downarrow P_1 \cdot \uparrow Q_1 + P_2 \cdot Q_2$

$TE=\downarrow TE_1 + TE_2$

$TE=\downarrow TE_1 + \uparrow TE_2$

$TE=P_1 \cdot Q_1 + P_2 \cdot \uparrow Q_2$

$TE=\downarrow P_1 \cdot \uparrow Q_1 + P_2 \cdot \uparrow Q_2$

3. Individual and market demand (1/3)

- **Individual consumer`s demand curve** = the result of consumer´s reactions to different prices of a particular good and it presents the quantities the consumer will buy at various prices.

- **Market demand curve** = the quantities demanded by each consumer at each price.

- If the quantity of good X demanded in the market is denoted by Q_X, we get it by adding quantities (not prices!) demanded by all consumers:

  $$Q_X = Q^A_X + Q^B_X \qquad \text{or} \qquad Q_X = \sum_{i=1}^{N} Q^i x, \; i = 1, 2, \ldots, N$$

  Q_X – quantity of good X demanded in the market,

  Q_X^A – quantity of good X demanded by consumer A,

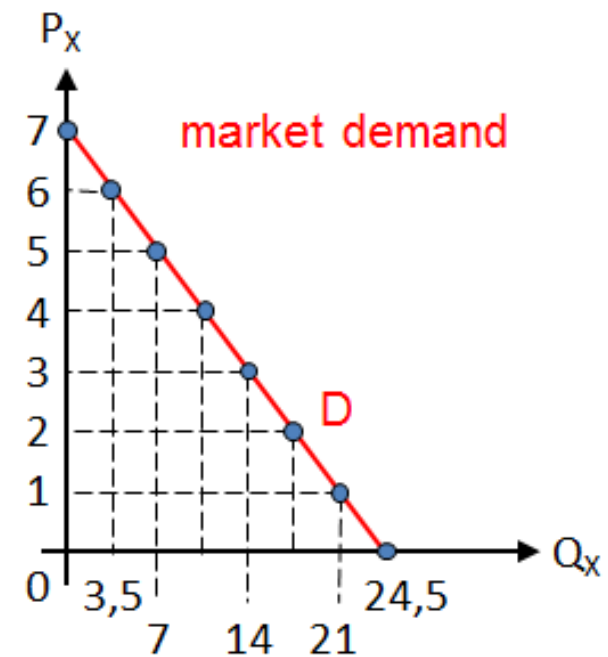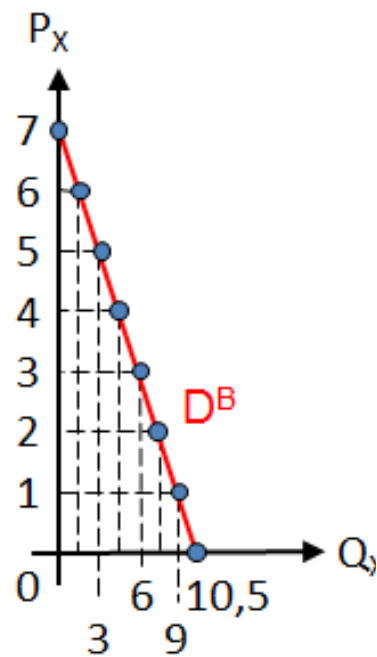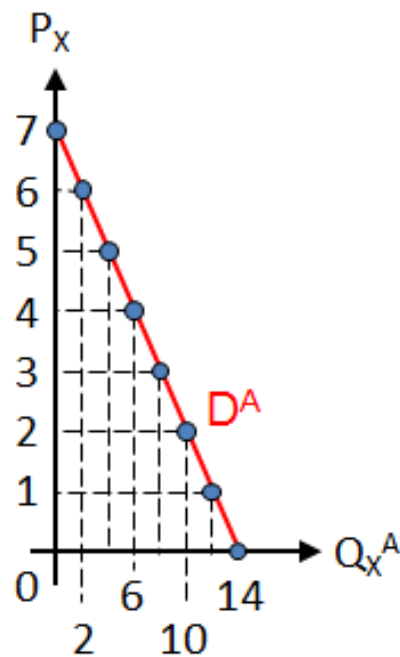 Q_X^B – quantity of good X demanded by consumer B,

  Q_X^i – quantity of good X demanded by consumer i,

  i – consumer.

3. Individual and market demand (2/3)

consumer A		consumer B			market demand	
Px	Qx^A	Px	Qx^B		Px	Qx $(Qx=Qx^A+Qx^B)$
7	0	7	0		7	0
6	2	6	1,5		6	3,5
5	4	5	3		5	7
4	6	4	4,5		4	10,5
3	8	3	6		3	14
2	10	2	7,5		2	17,5
1	12	1	9		1	21
0	14	0	10,5		0	24,5

3. Individual and market demand (3/3)

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Next lesson

➡ **THEORY OF THE FIRM PRODUCTION**

    1. Optimum Technology Selection

    2. Short Run Production Function

THANK YOU FOR YOUR ATTENTION!