

# Economics I

## Factor Markets

The aim of the first lecture is to explain the concept of production factors and explain the formation of prices of production factors.

Explain the company's demand for factors of production and supply of production factors, explain and graphically illustrate the transfer earnings and economic rent, to familiarize students with the choice of production techniques and technical substitution.

The second lecture is going to explain the specifics market factors of production, the nature of the labor market and capital as a production factor, characterizing labor demand, labor supply and the labor markets in the perfect and imperfect competition explain the substitution and income effects, distinguish market and individual labor supply.

Clarify the labor market in conditions of imperfect competition, monopsony characterize and influence of trade unions in the labor market.

Illustrate basic concepts: capital, capital goods, investments, depreciation, interest rates, explain market demand and supply of capital for the capital market.

Characterize the short-term and long-term capital market equilibrium.

## **Content:**

### Introduction

1. Production factors
2. Formation of market prices of factors of production
  - Demand for production factors,
  - Supply of production factors,
  - Market production factor,
  - The price of production factor.
3. Transfer earnings and economic rent
4. Demand of a firm production factor
5. Demand of a firm input in imperfect competition

## **Content:**

### 6. Labour market in conditions of perfect competition

- Demand for labor,
- Labor supply

### 7. The labor market in conditions of imperfect competition

- Monopsony,
- Trade unions in the labor market,
- Bilateral monopoly.

### 8. Capital Market

- Demand on the capital market,
- Supply on the capital market.

## Conclusion

## References and further reading:

1. MACÁKOVÁ, L. aj. *Mikroekonomie – základní kurs*. 10. vyd. Praha: Melandrium Slaný, 2007. ISBN 978-80-86175-56-0. s. 12-45.
2. SIRŮČEK, P., NEČADOVÁ, M. *Mikroekonomická teorie 1 – cvičebnice*. 1. vyd. Praha: Melandrium Slaný, 2001. ISBN 80-86175-17-0. s. 11-62.
3. BRADLEY, R. SCHILLER. *Mikroekonomie*. Brno: Computer Press, 2004. ISBN 80-251-0109-6.
4. HOLMAN, R. *Mikroekonomie – středně pokročilý kurz*. 1. vyd. Praha: C. H. Beck, 2002. ISBN 80-7179-737-5.
5. HOLMAN, R. *Ekonomie*. 3. vyd. Praha: C. H. Beck, 2002. ISBN 80-7179-681-6.
6. TULEJA, P., NEZVAL, P., MAJEROVÁ, I. *Základy mikroekonomie* (Učebnice pro ekonomické a obchodně podnikatelské fakulty). 1. vyd. Brno: Nakladatelství CP Books, a. s., 2005. ISBN 80-251-0603-9.

# INTRODUCTION

- there are two key elements on the product factor market - supply and demand of production factor,
- opposite products and services market (households offering PF and the company demanded PF)
- products and services market- households demanded goods in order to maximize their profit,
- production factors market - companies demanded a such combination of inputs, which allows them to maximize profits.

# 1.

## PRODUCTION FACTORS



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## LAND

- Product of nature,
- It is not a free good (because of limitations on quantity)
- Different fertility
- Convenience - the disadvantageous position
- Agriculture - non-agricultural use
- Natural resources (minerals, precious metals, fuels, trees)
- Revenue from land - land rent

# WORK

- Human activity with its specifics
- Is limited to non-economic:
  - The amount of (physical and mental characteristics, the number of people willing to work)
  - Quality (physical and mental characteristics)
- Income arising from work - wage

## CAPITAL

- Result of previous production
- May be tangible or intangible nature
- Result of its applying is the profit or interest

## Technology:

- Special form of capital
- Neither in the form of material goods (the idea, the original procedure)

# 2

## MARKET PRICES FORMATION

Market of production factors has some of the same patterns as the market of products and services market. It has the same shape of the curves of supply and demand, the principle of law of decreasing demand and increasing supply.

## **Production factors demand**

Is derived from the demand for goods whose production is the production factor used (demand for the reporters depends on the demand for newspapers).

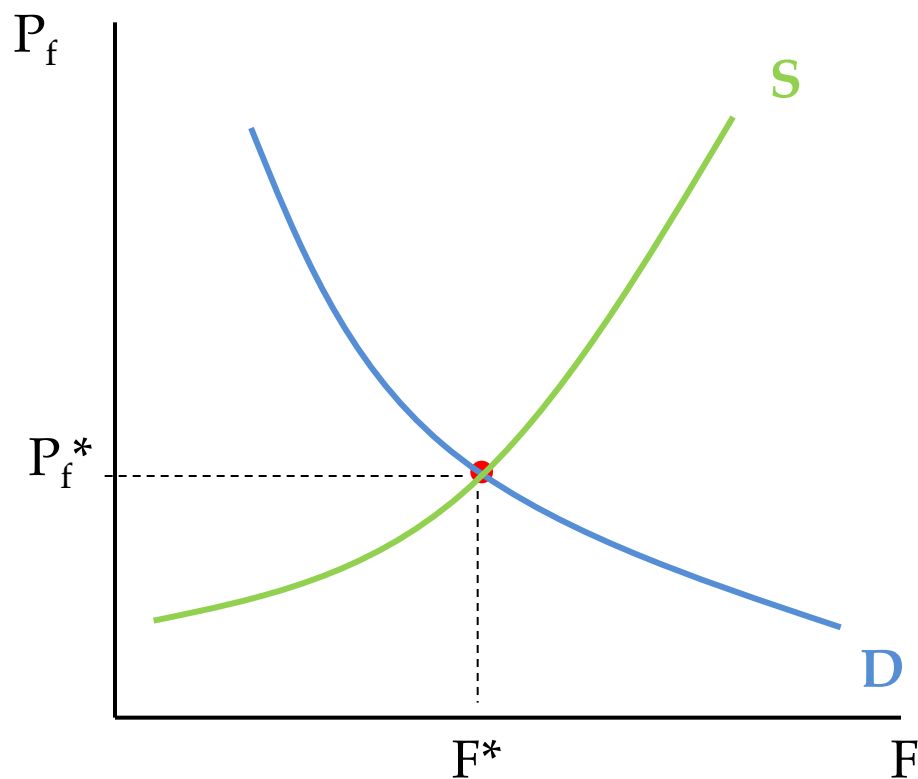
## Production factors supply

Their owners are households who are trying to maximize their profit. It is necessary to distinguish between supply factor throughout the economy and supply factor individual enterprise. The owners' decisions are based on marginal costs. Supply curve is increasing.

## Price elasticity of the supply curve depends on:

- Possibilities of increase the disposable number of factors
- Alternative use of that factor:
  - Universal
  - Unique
  - Special

# Production factor market



## Production factor price

Price is connected with the service of this factor (with its lease).

- In the case of **labor**, paid for its service wages and the price of this service is the **wage rent**
- In the case of **land**, paid rents and the price is the **rate of land rent**
- In the case of **capital**, paid interest and the price is the **interest rate**

The length of time and the conditions of competition (perfect, imperfect) are the main factors influencing production factors markets.

3

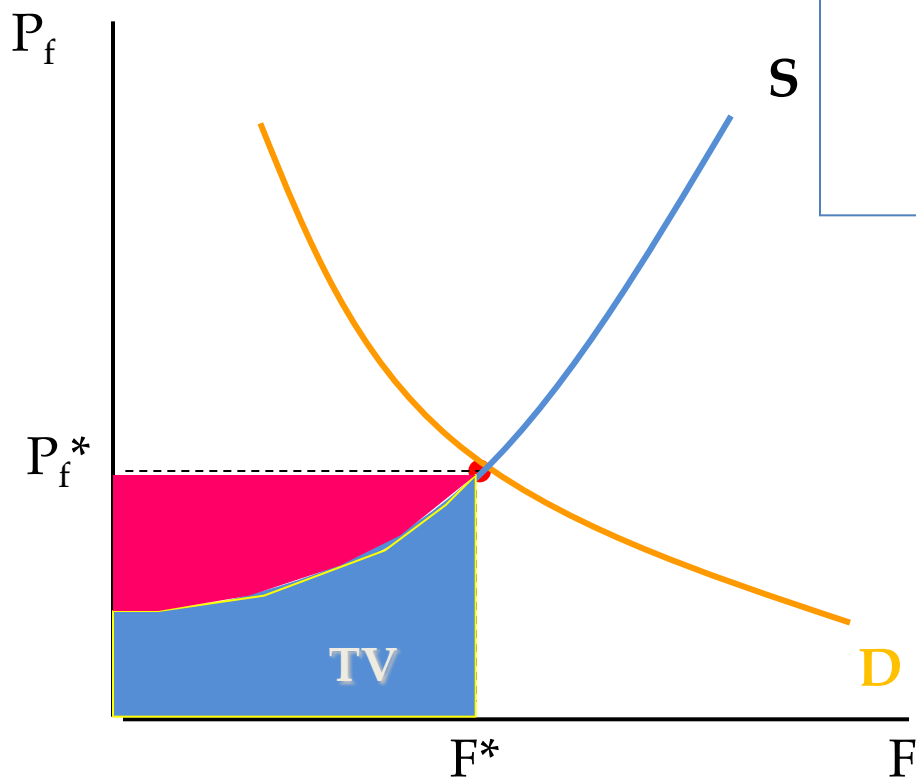
# TRANSFER EARNING AND ECONOMIC RENT

**Transfer earning** – is the earning, in which the given input would obtain at its best alternative use. It is thus the amount that must be acquired in order to move its service to another use.

**Economic rent** - part of the earnings of the input that exceeds the transfer earnings.

**Pure economic rent** – is an income paid for a service of the production factor with fixed supply (for example the income of the people with special abilities such as scientists, actors, athletes ...)

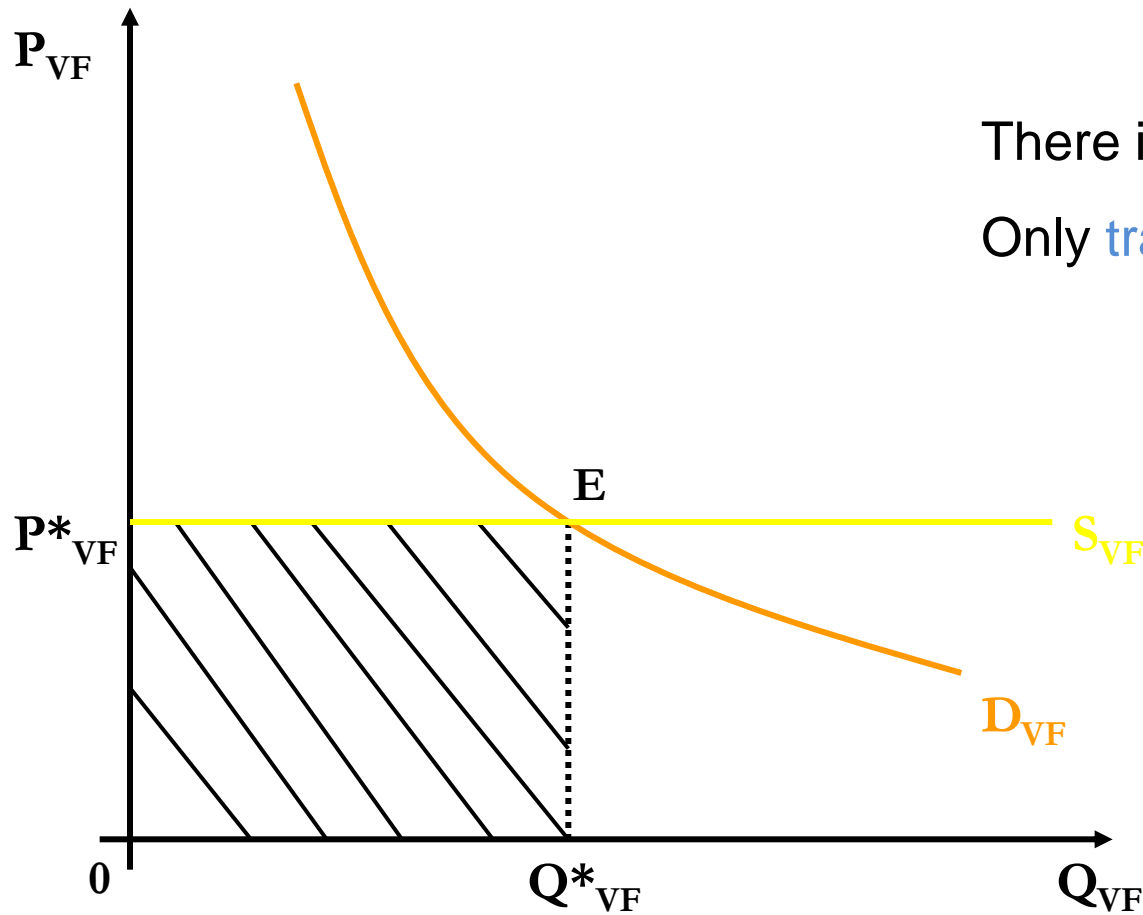
# TRANSFER EARNING AND ECONOMIC RENT



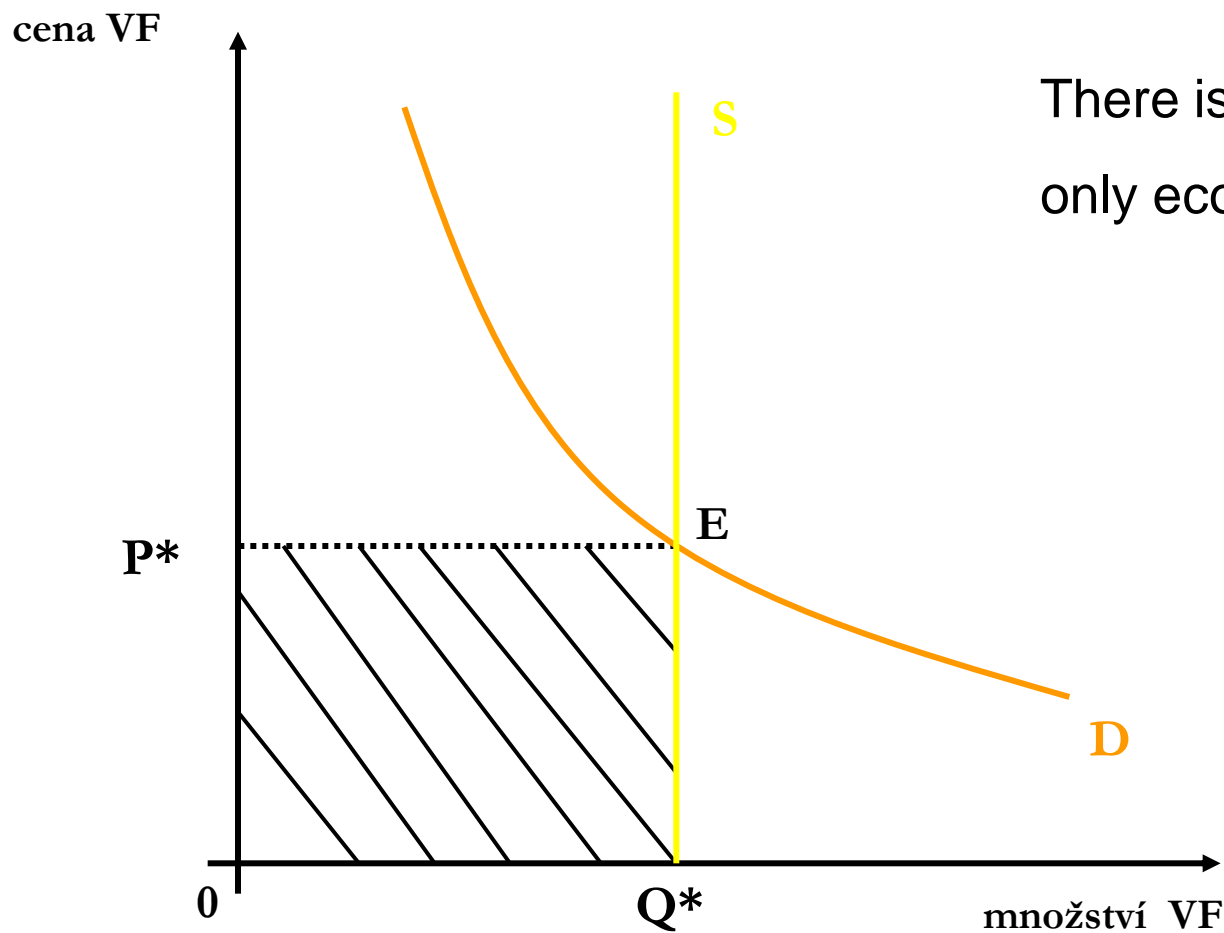
Transfer earning

Economic rent

# Absolutely elastic supply



# Absolutly nonelastic supply



There is no transfer earning  
only economic rent exists.

**Land rent** - rental price of land.

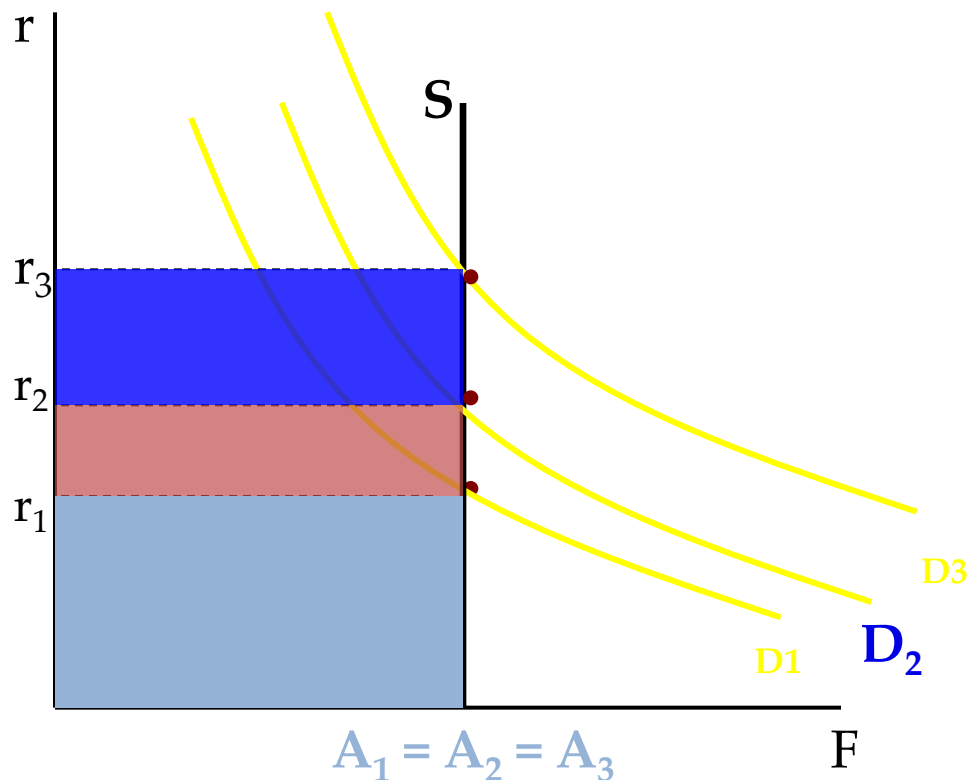
Certain land uses provides land rent.

If the total supply of land is fixed (perfectly inelastic) and there is no other possibility of its use.

Land rent may arise when:

- particular crop
- extraction of raw materials
- building plot

# Land market and land rent



# 4.

## FIRM DEMAND FOR PRODUCTION FACTORS

Company decides on the factor market what inputs and in what quantities to demand.

This decision is determined by the company's aim to maximize the profit = produce with the highest revenues and at the same time at the lowest costs.

### **Demand depends on:**

- What is the revenue of production factor
- Cost on the given factor

# Marginal revenue product (MRP)

- is additional income that a company receives by selling products created by involving an additional unit of input into production, while other inputs remain constant.
- It expresses the change in total revenue when using additional unit of input.
- In conditions of perfect competition in the market for products and services market the company can not affect the market price of its product. The price at which their goods are sold is constant.
- MRP change responses only to changes in marginal physical product.

- each additional unit of input can bring an additional income
- amount of revenue determines:
  - Increase of the product created by an additional unit
  - Increase of the revenue that the company gains from the sale of this product

In conditions of perfect competition in the product market and services is the income increase same as the price.

- This means that each additional unit of input can bring the company additional income. Its amount is determined by:

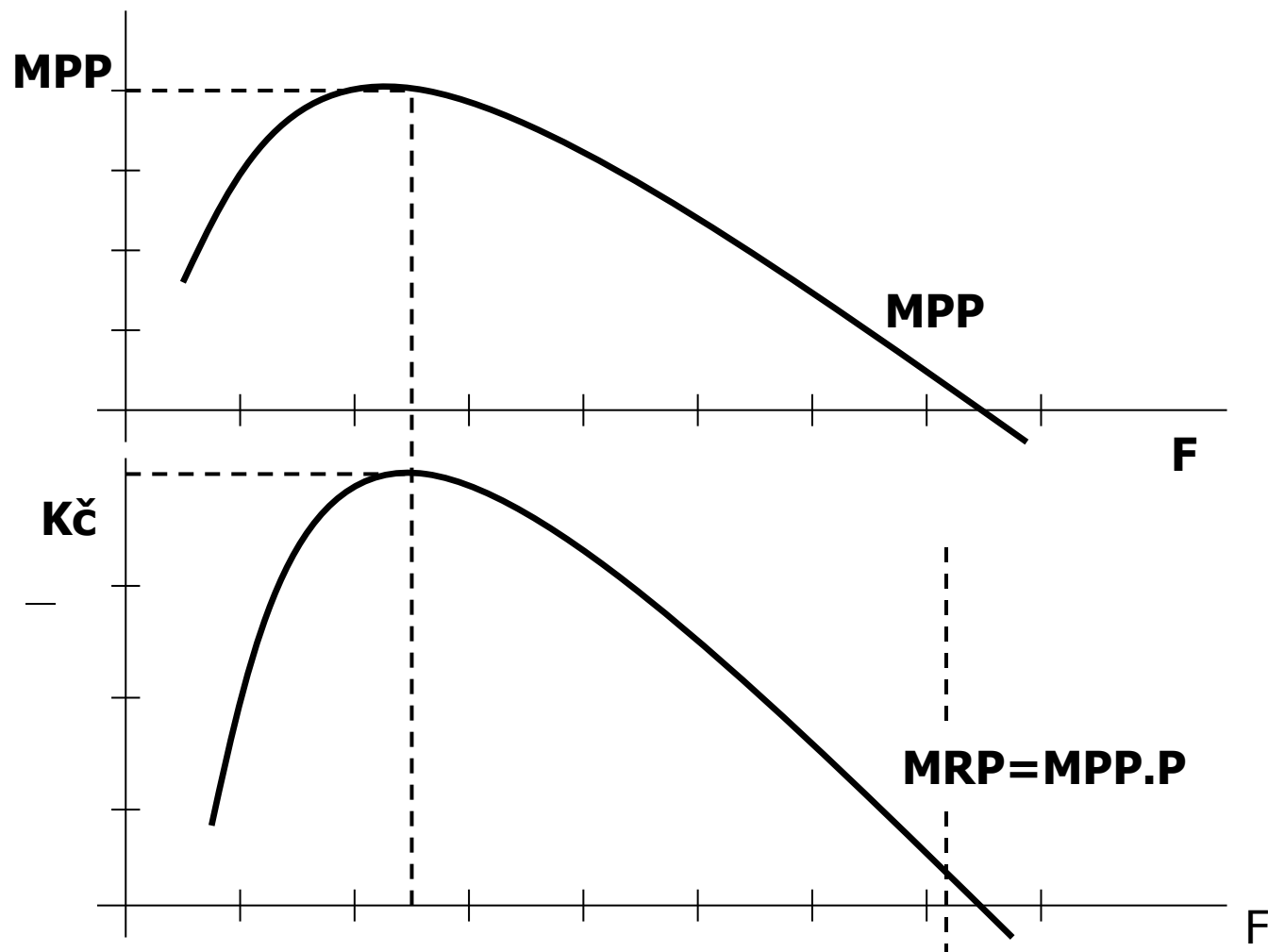
- Marginal physical product

- The price of the product

- This increase is called the marginal revenue product

$$\text{MRP} = \text{MPP (marginal product)} * P \text{ (price)}$$

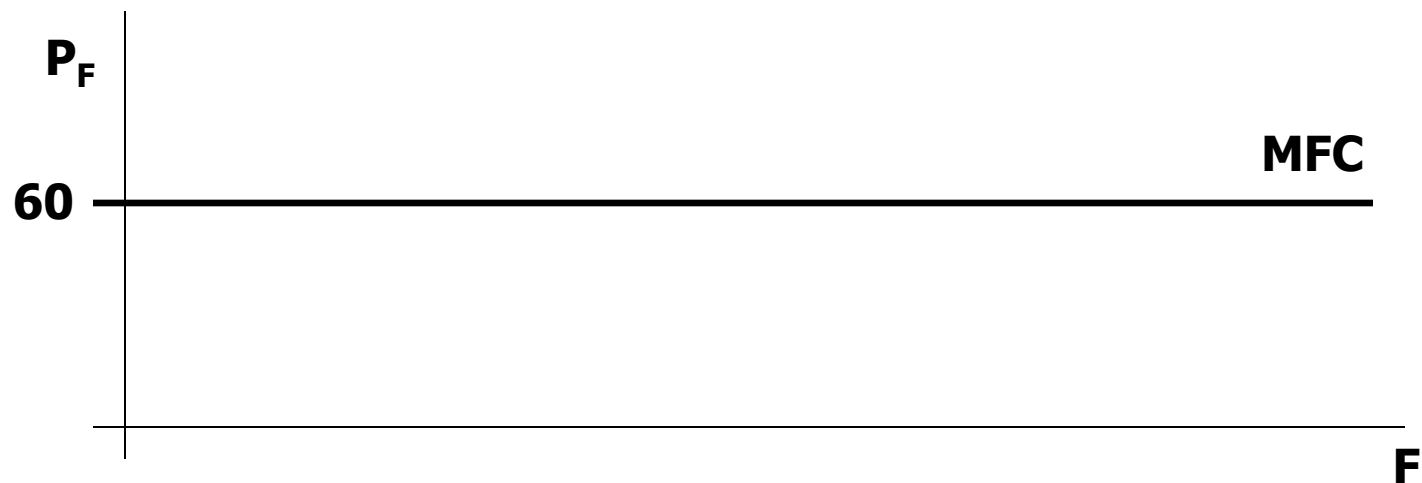
# Marginal revenue product



## Marginal cost of production factor (MFC)

- The amount of production factor, which the firm hires depends not only on the revenues but also on costs.
- MFC - are additional costs that arise when the company hires additional unit of production factor.
- In a perfect market competition firm hires inputs at prices determined by the market - the firm accepts the market price.
- The company is hiring so small share of the input that its activities can not affect its price.
- The curve presenting the development of the marginal cost of production factor depends on the number of factors. Therefore it is a horizontal line.

# Marginal factor costs



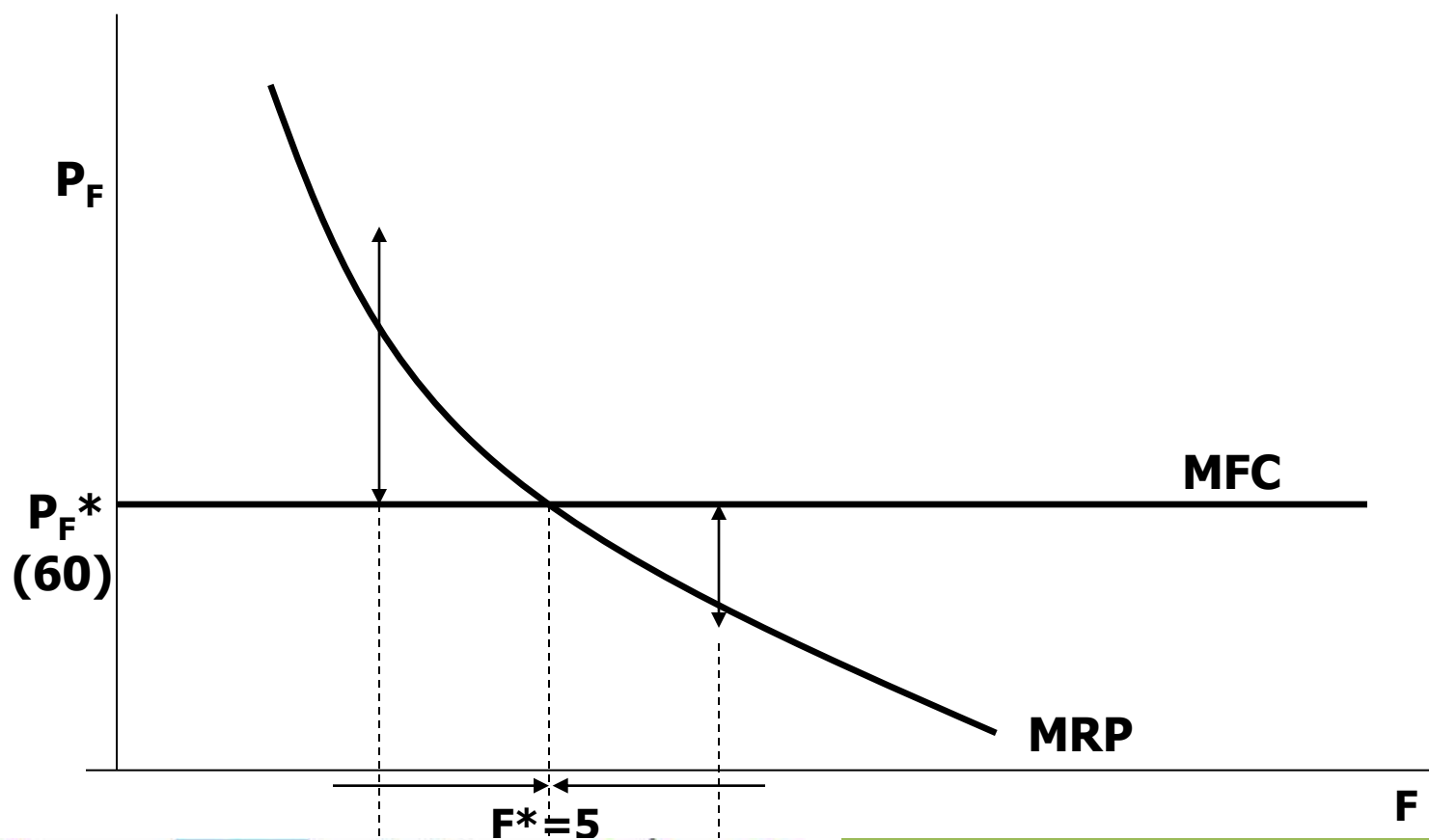
## **Optimum (equilibrium) of perfectly competitive firm**

The company is in optimum if the income of the marginal product of factor coincides with the marginal cost of production factor –

$$\text{MRP} = \text{MFC}$$

**MRP (marginal revenue product) = (MFC marginal cost of production factor) = PF (price of production factor)**

# Firm equilibrium



If **MRP > MFC**, firm hires additional unit of the production factor and expands the production to the level at which marginal revenue product falls to the marginal cost of production factor.

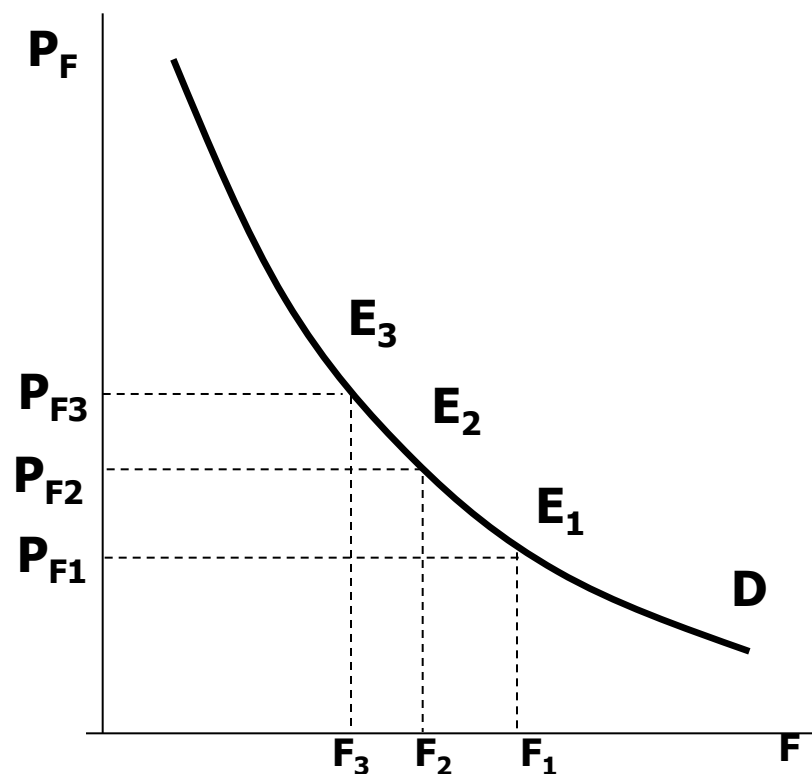
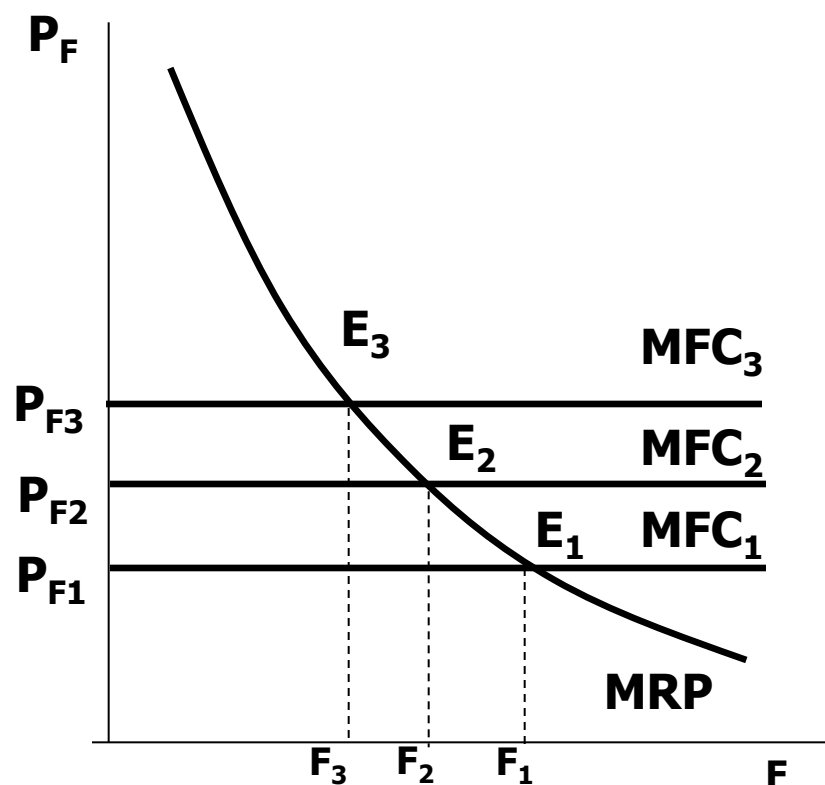
If  $MRP < MFC$ , the company reduces the rent of production factor and reduces production. MRP rises to the level of marginal cost for a given factor.

MRP (marginal revenue product) of land = rate of land rent,

MRP (marginal revenue product) = wage rate,

MRP capital (income from marginal product) = interest rate.

# Demand curve of production factors derivation



## Change in demand for production factors

At each level of the production factor prices will be hired certain amount of this factor. This change can be caused by three factors:

- changes in demand for final output
- number of other inputs
- changes in technology

# 5.

## FIRMS DEMAND FOR INPUT IN IMPERFECT COMPETITION

- Is determined by MRP
- Size MRP of the input depends on the conditions of competition
- MRP of the production factor is the multiple of MPP and MR, obtained through the sale of additional units of goods

$$\text{MRP} = \text{MPP} \cdot \text{MR}$$

# 6. LABOUR MARKET IN CONDITIONS OF PERFECT COMPETITION

## Perfect competition assumptions:

- a lot of inquiring and offering subjects
- no company can influence the price of labor (Wages)
- perfect mobility, perfect information
- firms maximize profits, households maximize utility
- labor is homogeneous
- marginal cost of labor factor is equal to the wage rate -  $MFCL = w$
- the average cost of labor factor is equal to the wage rate -  $AFCL = w$
- individual labor supply curve is horizontal at the level of wage ratesa

## Labor demand

is determined by the amount of work hired at different levels of wage rates. Company demands the amount of labor in which MRPL equals to MFCL (wages).

Demand thus greatly affects labor productivity (which is influenced by the qualifications, quality and quantity of co-operating factors, technologies and management).

$$MRP_L = MFC_L = w$$

Marginal revenue of the product of labor (MRPL) is a multiple of the marginal physical product of labor (MPPL) and prices (P). Labor demand curve is derived from the MRPL curve.

$$MRP_L = MPP_L \cdot P$$

## Labor supply

Labor supply means the number of worked hours in different companies. Labor is the factor of production whose bearer is the man.

The goal is to maximize consumer benefits.

## ***Substitution effect***

At a higher wage for each hour of work brings higher earnings, which the consumer can use to obtain a larger number of products and services. This leads to a tendency to work longer at the expense of the free time.

It is a replacement of the free time by work.

## ***Income effect***

Higher wages leads to the substitution of work by leisure time. And because the consumer already has sufficient income, he wants more free time.

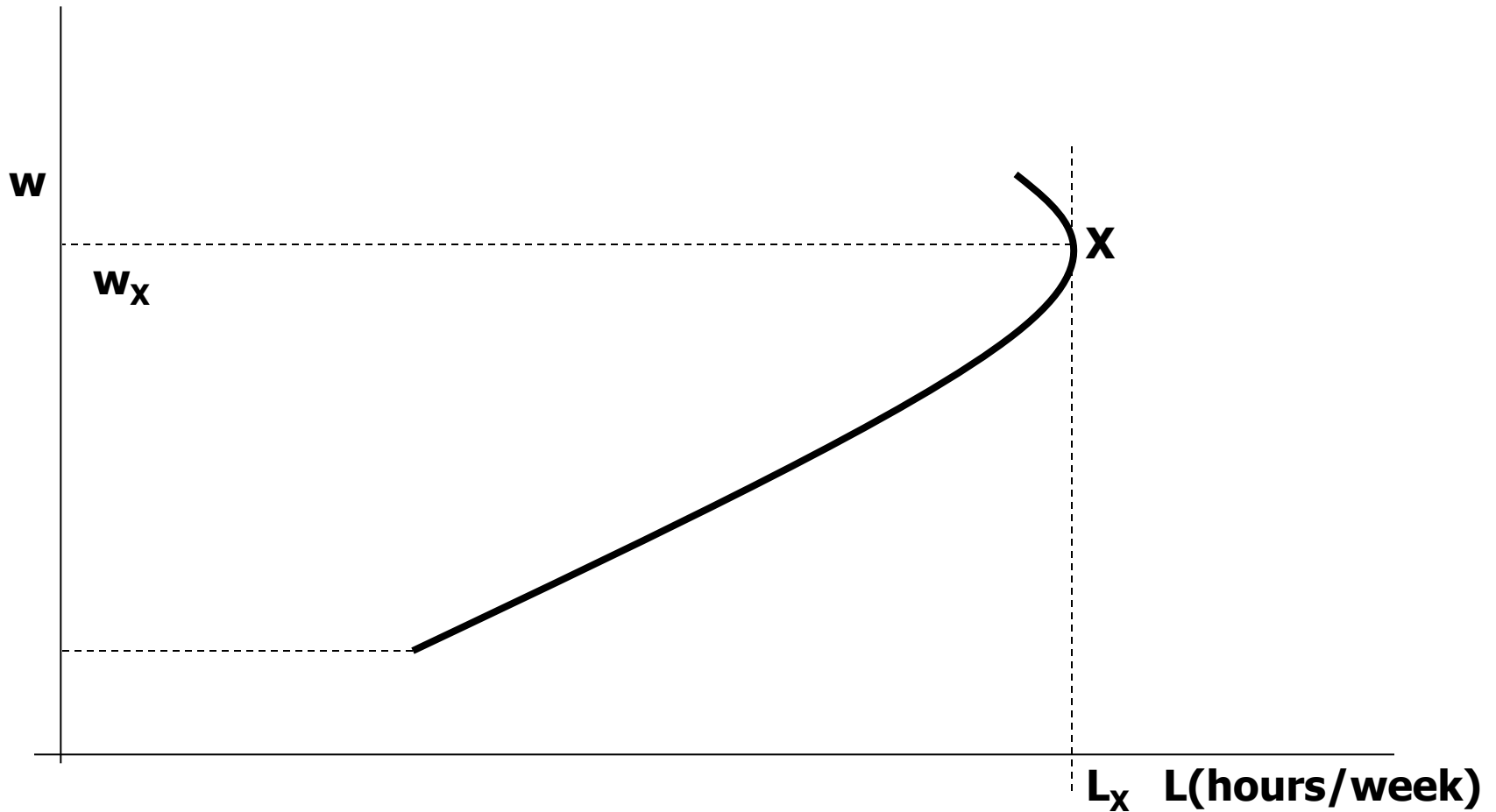
## Individual labor supply curve

is in its certain parts recurved back.

This is caused by the income effect.

Worker at a higher salary initially prefer to work prior to free time, but if his salary exceeds a certain level worker tries to work for fewer hours.

# Individual labor supply curve



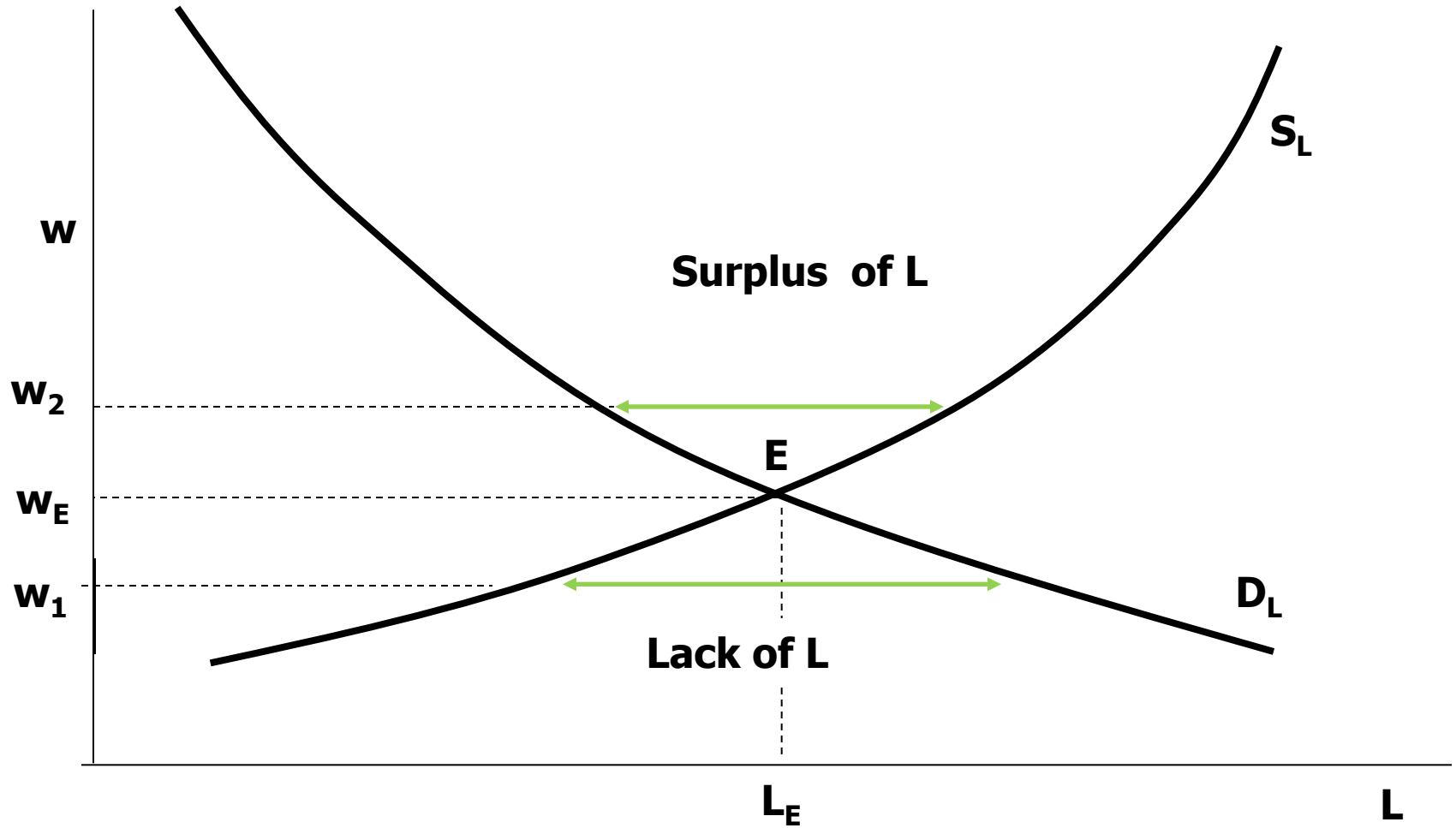
**Equilibrium in the labor market** is formed during balancing supply and demand. Equilibrium wage is determined by the intersection of the market demand curve and the market supply curve.

**The market demand curve** is the horizontal sum of the individual curves of all firms in the market.

**The market supply curve** is no longer curved back because of:

- for each individual curves are backward curvature at different points. The sum will compensate it.
- increasing wage attract new workers with higher transfer earnings.

# Labor market equilibrium



## **Wage differences between different groups of workers**

There are wage differences between different groups of workers. We can distinguish:

- nonequilibrium differences - reflecting changes in the development of various industries.
- equilibrium differences - are explained by the lack of mobility of resources and market segmentation, differences in the length and cost of preparation for employment, differences in non-monetary benefit of a certain job or differences in the quality of work.

# 7.

## LABOUR MARKET IN THE IMPERFECT COMPETITION

## The basic imperfections in the labor market include:

- wage rigidity,
- wage tariffs of firms
- restrictions caused by collective agreements, labor-law legislation and market influences.

The main symptoms of imperfect competition are monopsony and operation of trade unions.

# Monopsony

is a monopoly on the side of demand - companies in the labor market.

This monopoly occurs when there is a single dominant firm employing working-age population in the area. Firm may affect wage rates.

$$MFC_L > w$$

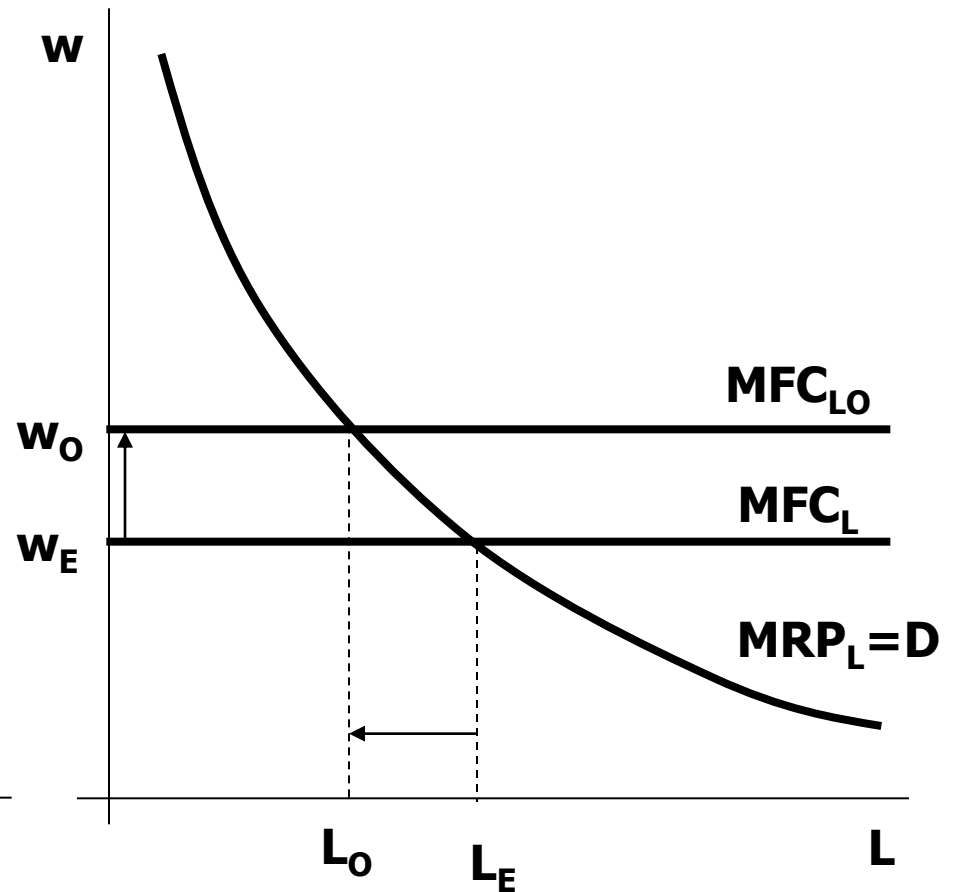
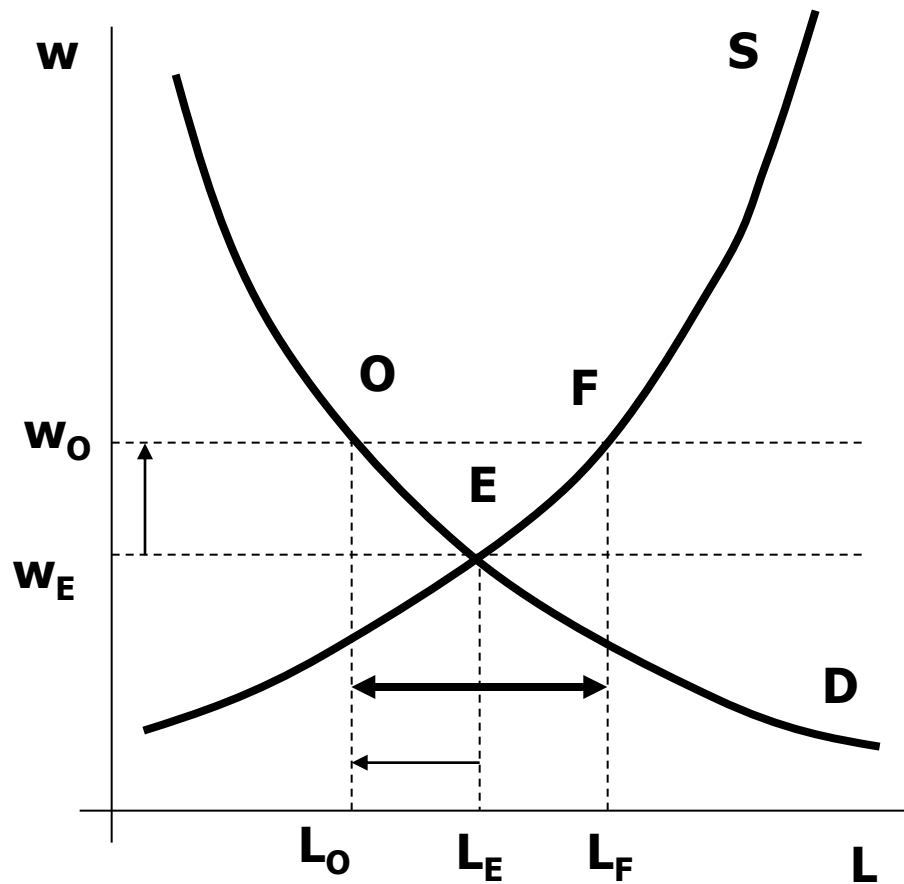
# Trade unions in the labor market

The effect of trade unions is monopoly power on the part of the supply - workers.

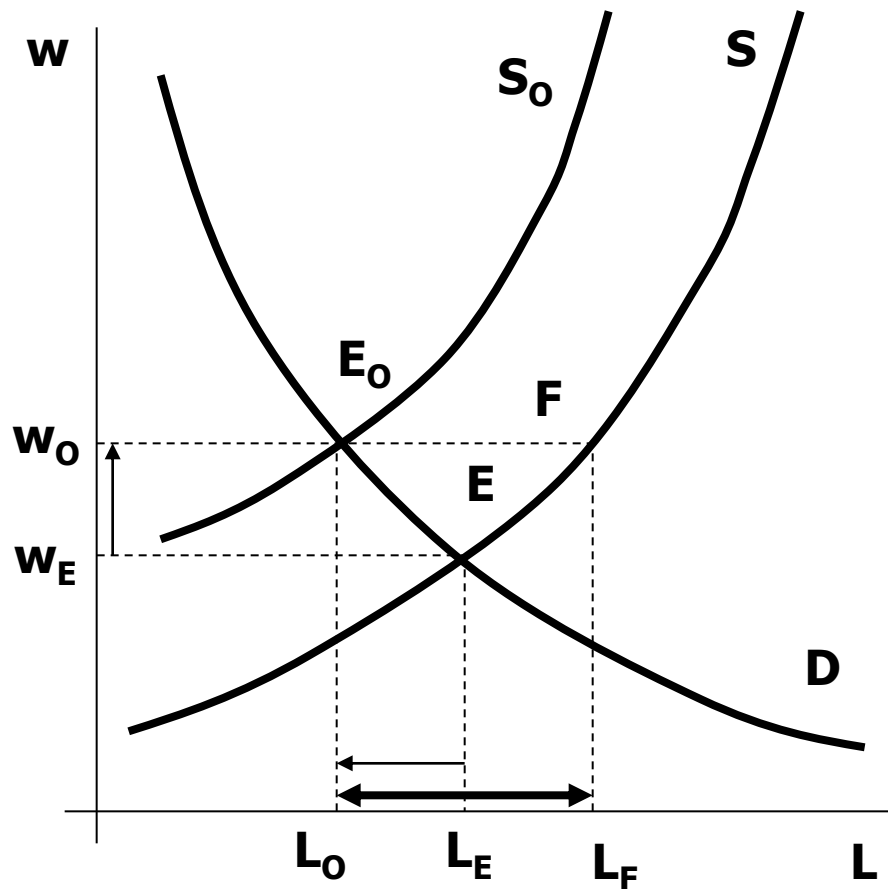
Trade unions are associations of workers seeking higher wage rates and better working conditions for its members. There are ways in which unions seek wage increases and these are as follows:

- **Increased standard wage rates (wage threshold)**
- **Labor supply restrictions**
- **Increased labor demand**

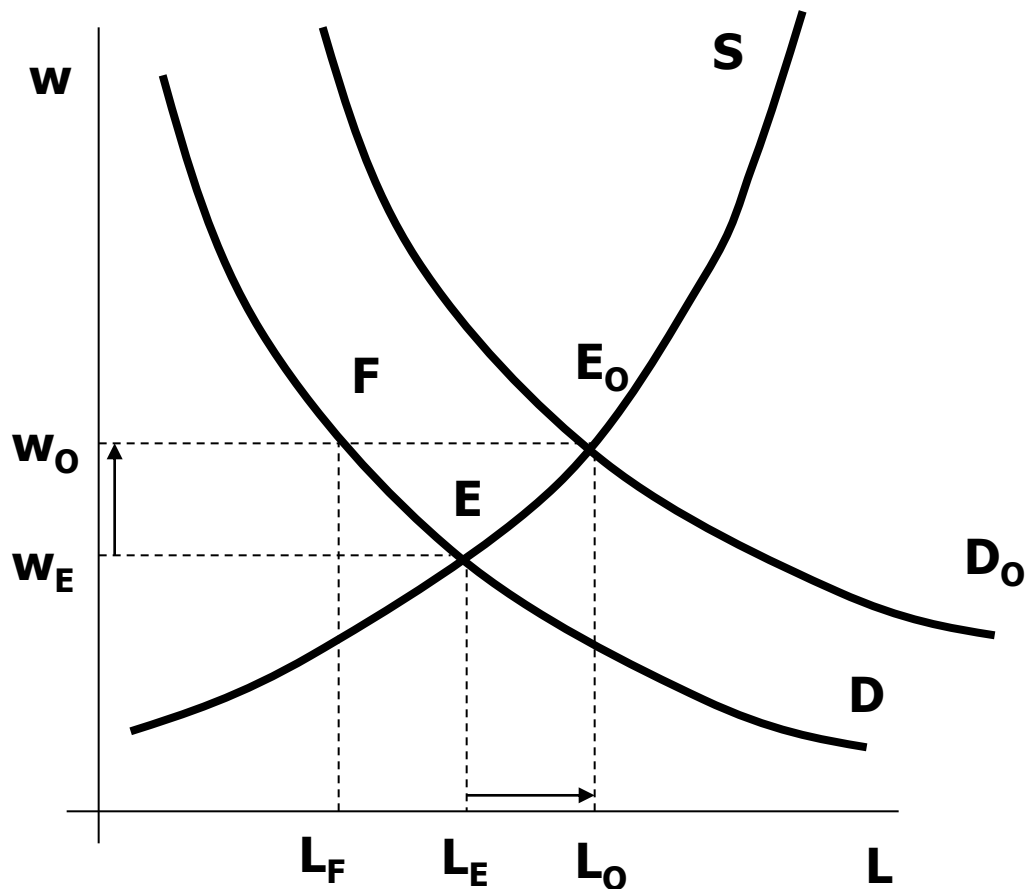
# Wage threshold effect



# Labor supply restrictions



# Increased labor demand



## Bilateral monopoly

arises when there is monopoly power on the part of labor supply and demand.

Interests of both parties are opposing and so it is very difficult to predict the real wage rate.

It depends on the bargaining power of both parties.

# 8.

## CAPITAL MARKET



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Capital consists of manufactured goods, which are again used as production inputs for further production.

The basic feature of capital is that it is both input and output.

There are three main categories of capital goods:

- buildings,
- equipment,
- supplies.

Capital goods are not consumed in the production process at one time, but operate over a longer period.

## Capital market demand

Companies goal is to achieve the maximal profit -  $MRP = MFC$ .

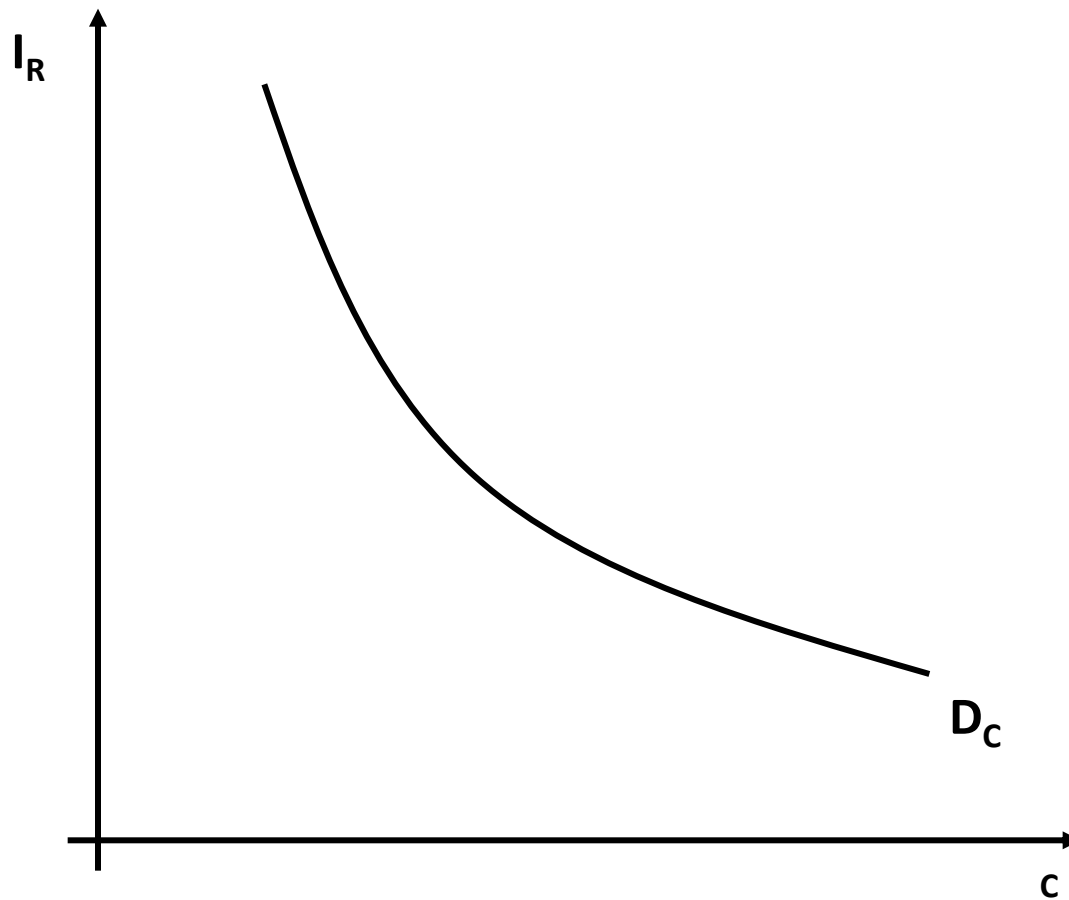
In a perfectly competitive market MFCC equal to the interest rate.

Demand curve is determined by the curve of the marginal revenue product, which is a multiple of the marginal revenue (here the interest rate) and marginal physical product of capital.

Demand is a decreasing function of the interest rate and is determined by MRPC.

Demand is derived from the demand for final goods, which are manufactured using the capital.

# Capital market demand



# Capital market supply

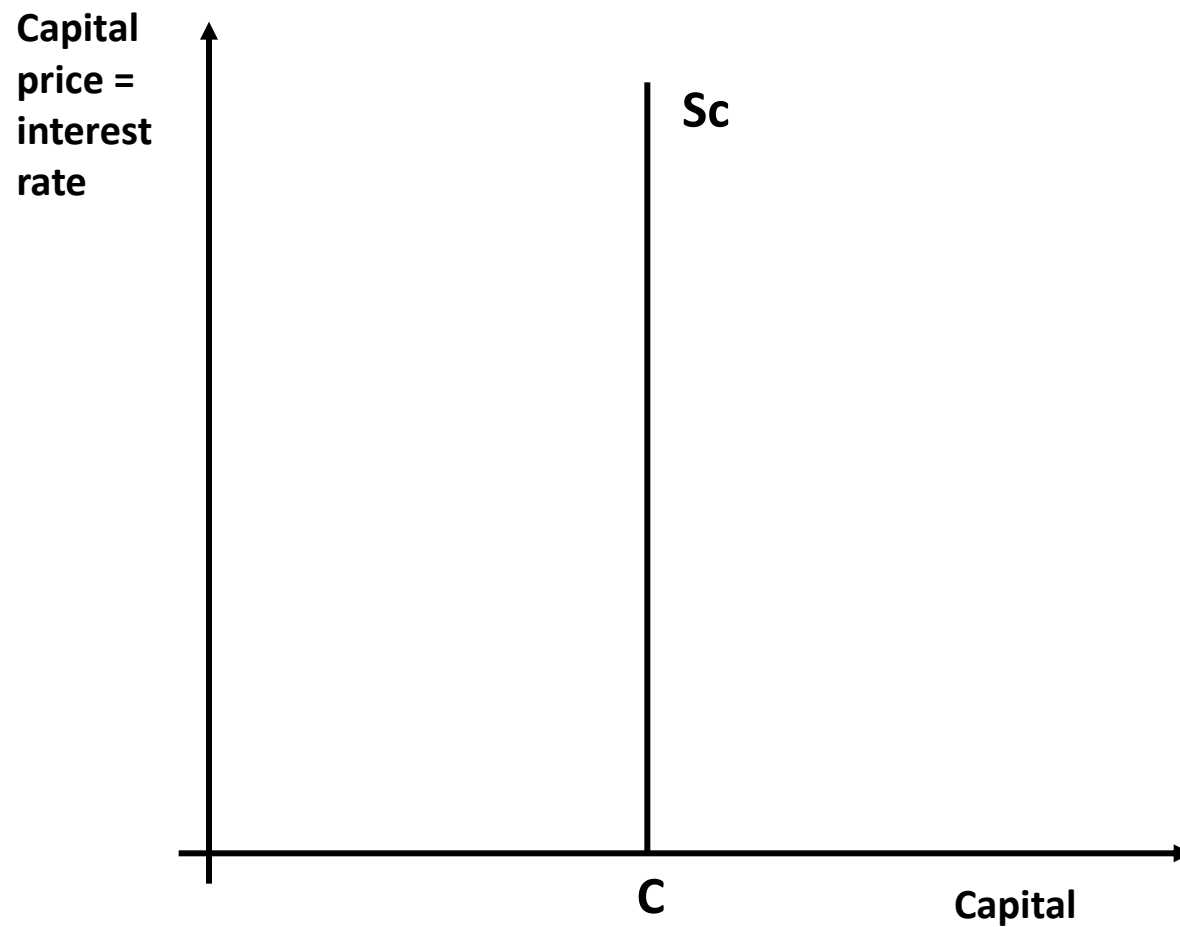
Is determined by savings.

Savings represent the part of households' disposable income, which was not spent on consumption and was offered in the capital market to firms to purchase capital goods.

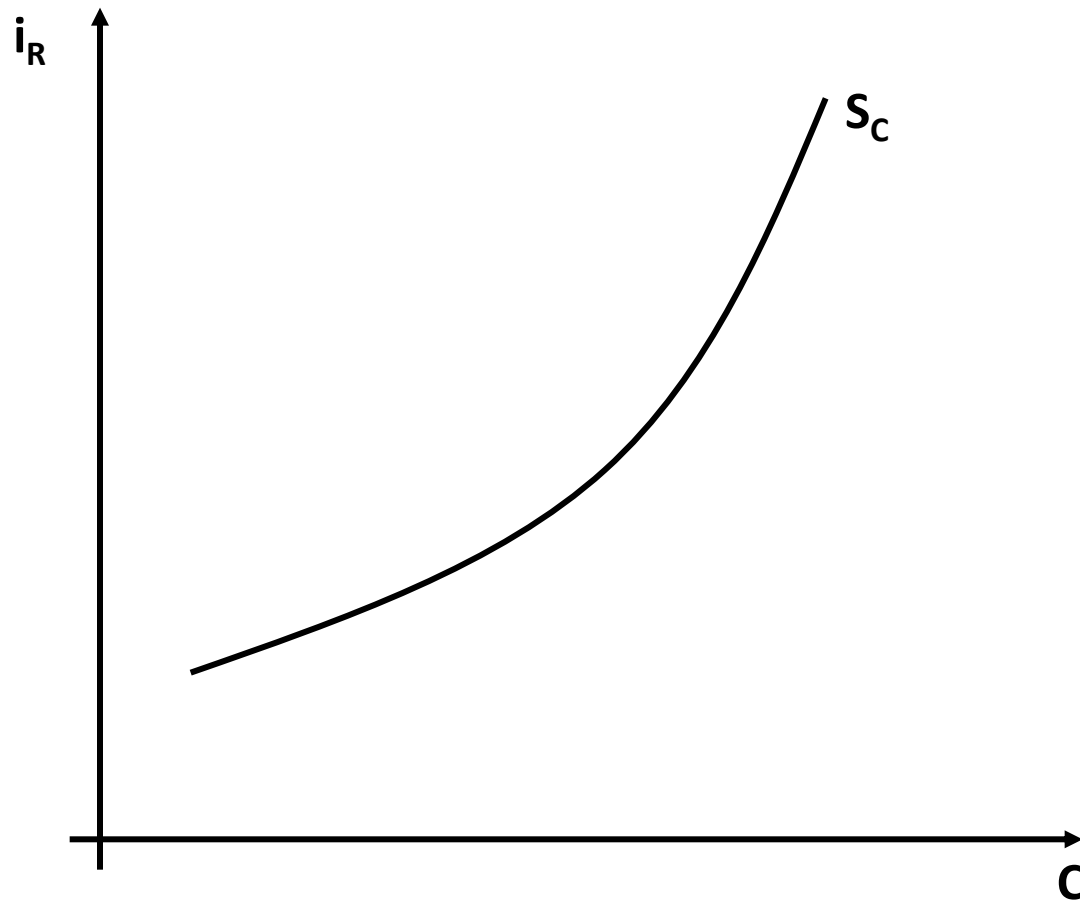
The supply of capital is different in two aspects:

- in the short run – is given the exact amount of savings due to the households offer. Because of the constant savings the capital supply curve is vertical.
- in the long run - households already respond to changes in the interest rates and the levels of savings are different.

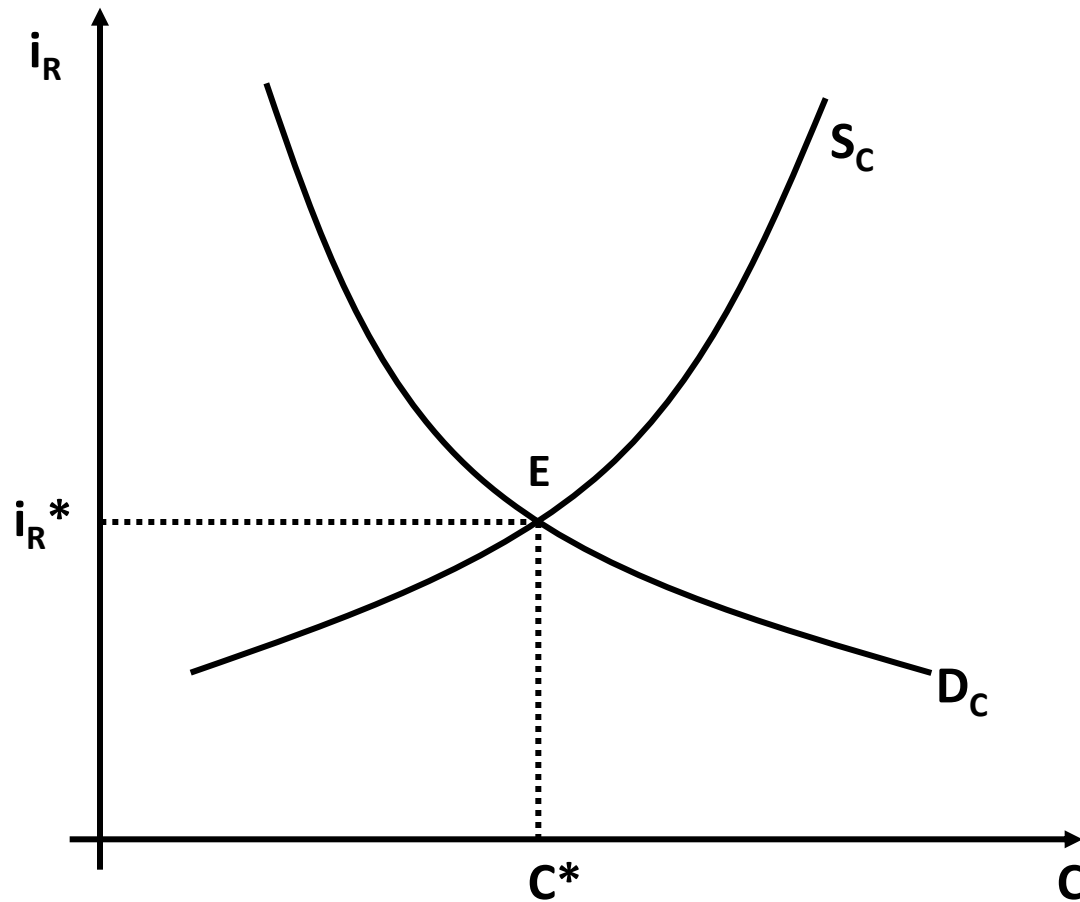
# Capital market supply (SR)



# Capital market supply (LR)



# Capital market equilibrium (LR)



# Questions?

## Thank you for your attention



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