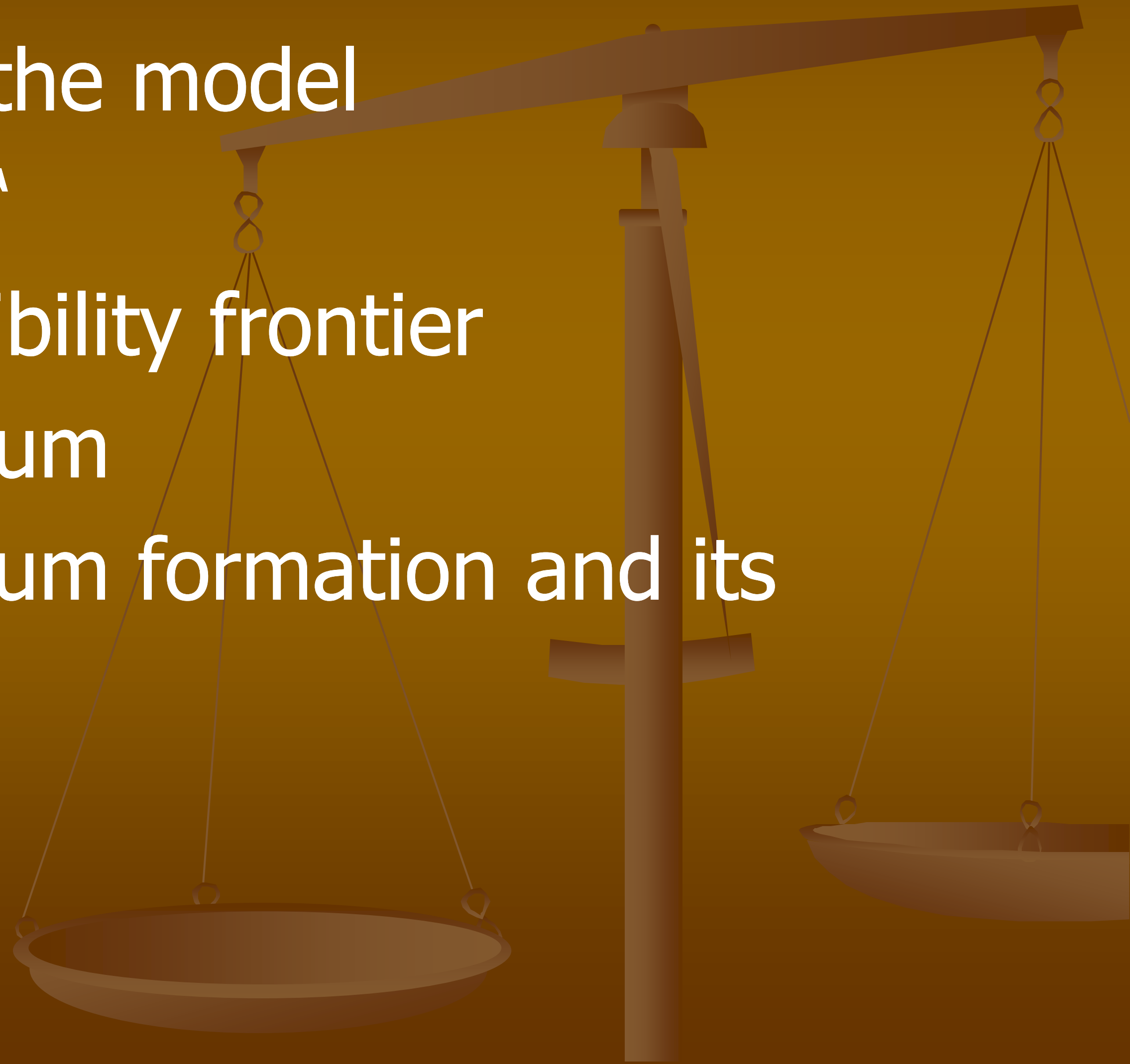
12. General equilibrium

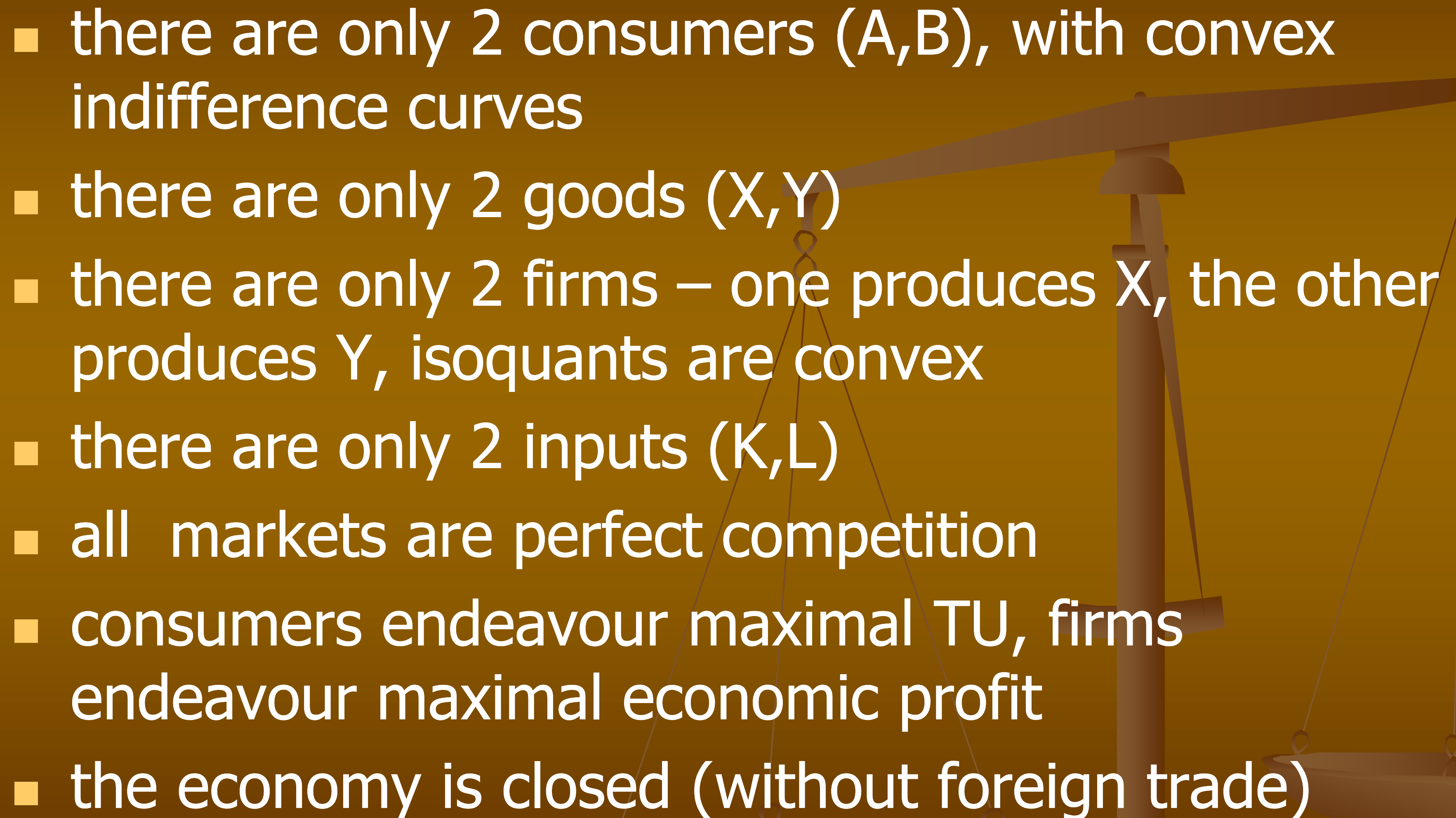
Contents

- assumptions of the model
- term „efficiency“
- production possibility frontier
- general equilibrium
- general equilibrium formation and its change



Assumptions of the model

- there are only 2 consumers (A,B), with convex indifference curves
- there are only 2 goods (X,Y)
- there are only 2 firms – one produces X, the other produces Y, isoquants are convex
- there are only 2 inputs (K,L)
- all markets are perfect competition
- consumers endeavour maximal TU, firms endeavour maximal economic profit
- the economy is closed (without foreign trade)



Efficiency

Upon general equilibrium there must be fulfilled productive efficiency, exchange efficiency, and productive-exchange efficiency

Productive efficiency = such allocation of inputs when eventual reallocation would not lead to the bigger total economy´s output

Exchange efficiency = such allocation of the goods, when eventual reallocation would not lead to the bigger level of economy´s total utility

Productive-exchange efficiency = such structure of production when its eventual change would not lead to the bigger level of economy´s total utility

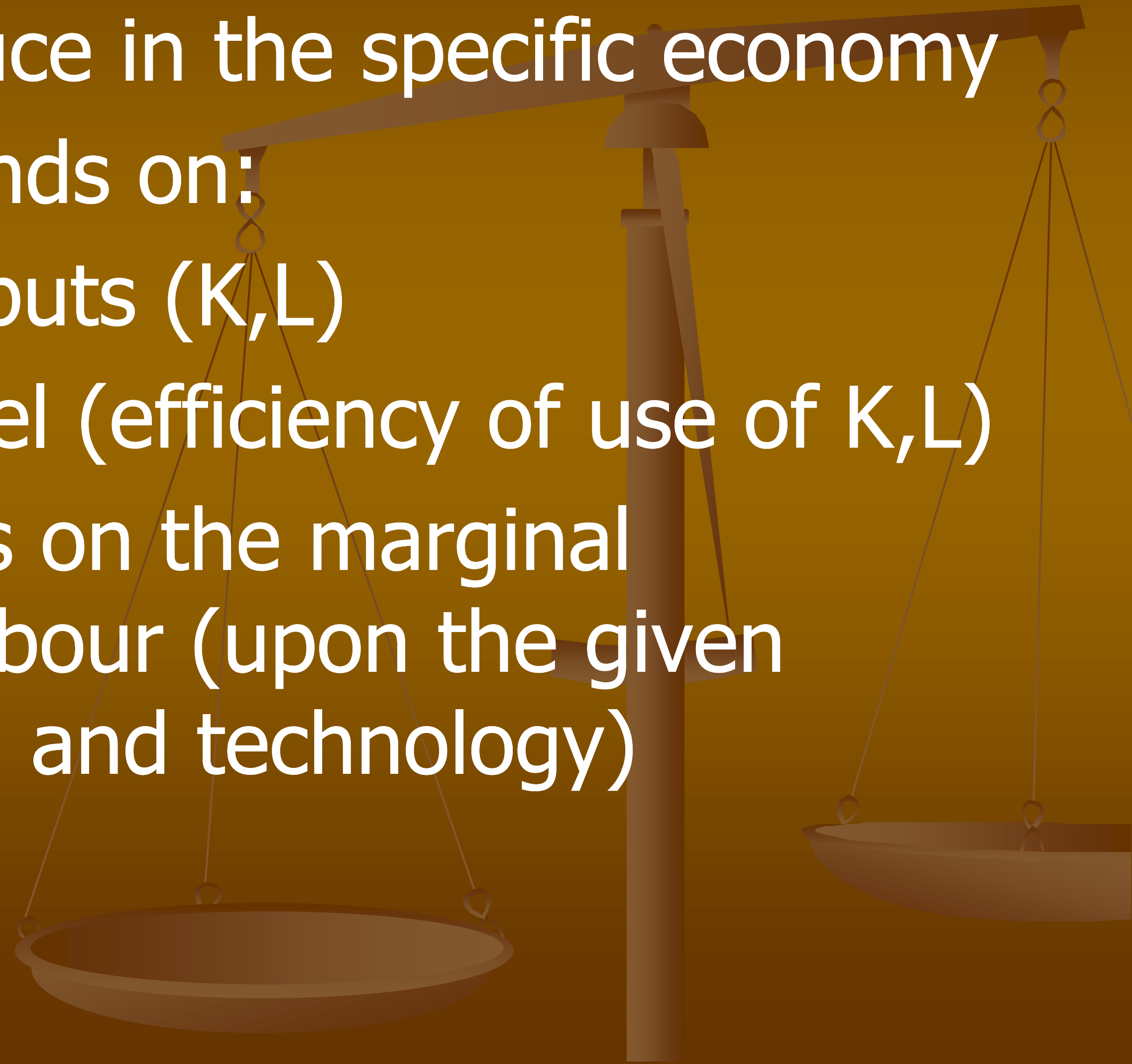
Pareto efficiency

Production possibility frontier

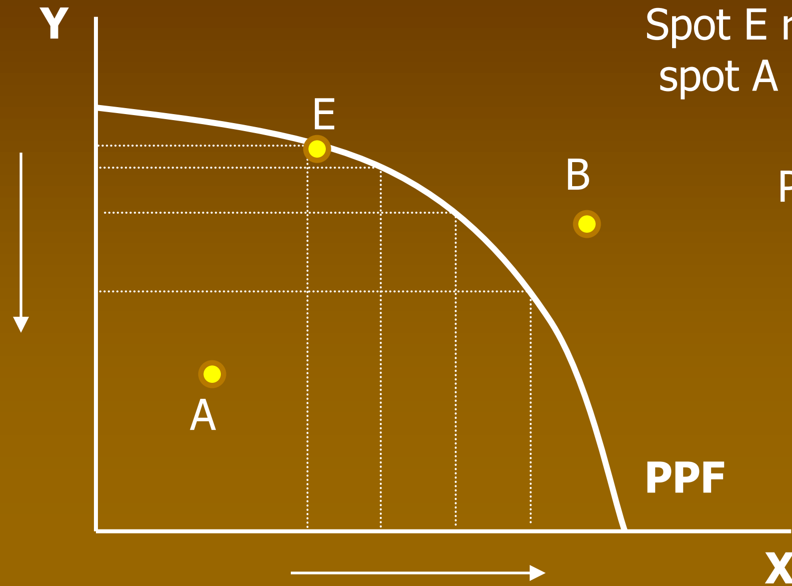
- PPF = set of different combinations of goods possible to produce in the specific economy
- its position depends on:

  the volume of inputs (K,L)

  technological level (efficiency of use of K,L)
- its slope depends on the marginal productivity of labour (upon the given volume of capital and technology)



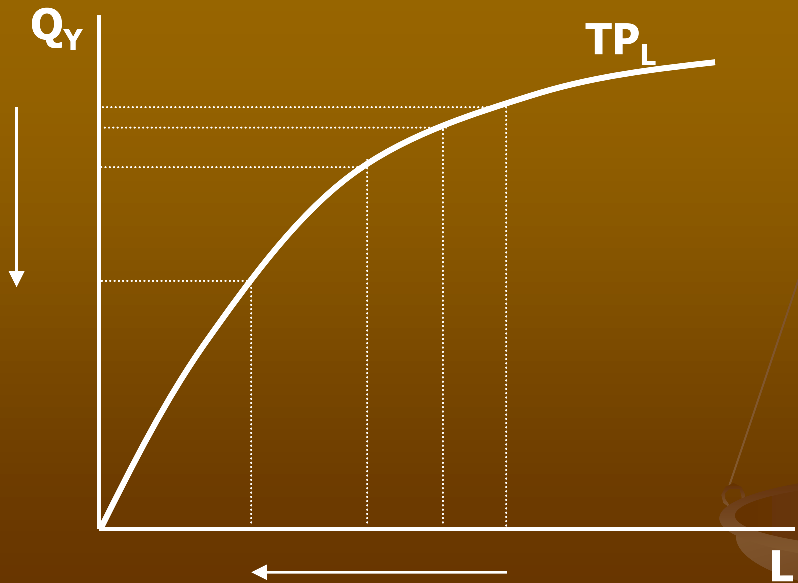
PPF upon decreasing MP_L

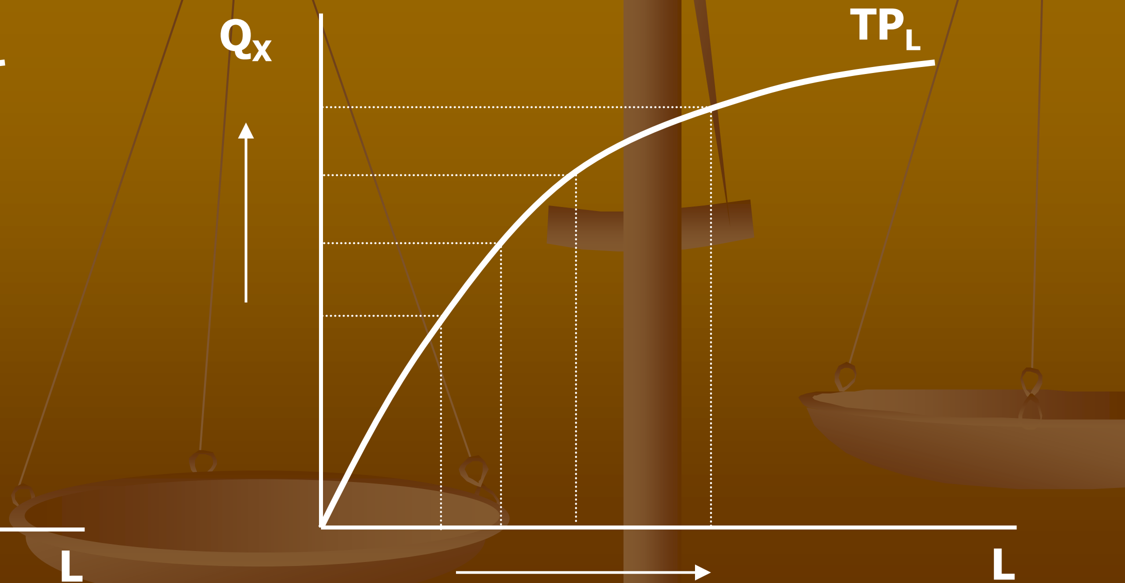


Spot E represents productive efficient combination of X and Y, spot A is accessible but not efficient, spot B is not accessible

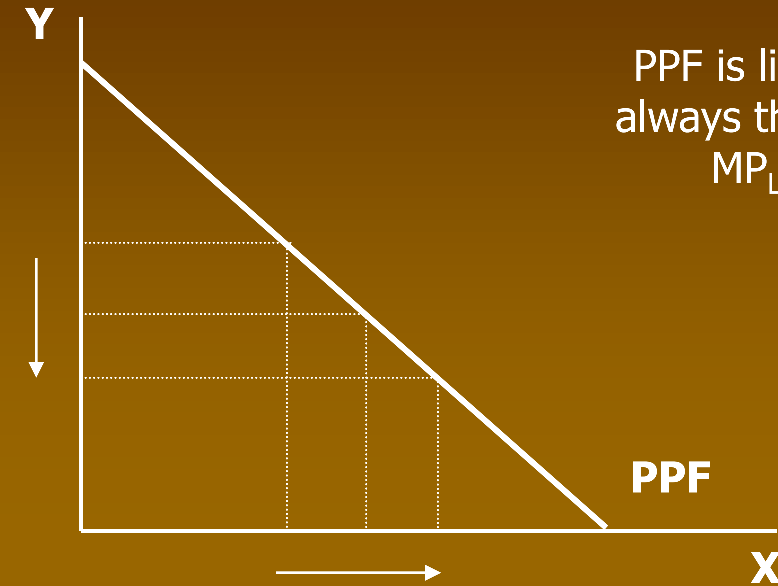
PPF is concave – for each additional unit of X, we have to sacrifice more units of Y, because in production of X the MP_L is decreasing

slope of PPF: MRPT (marginal rate of product transformation) – ratio of substitution one good with the other in the production – changing alongsied the PPF



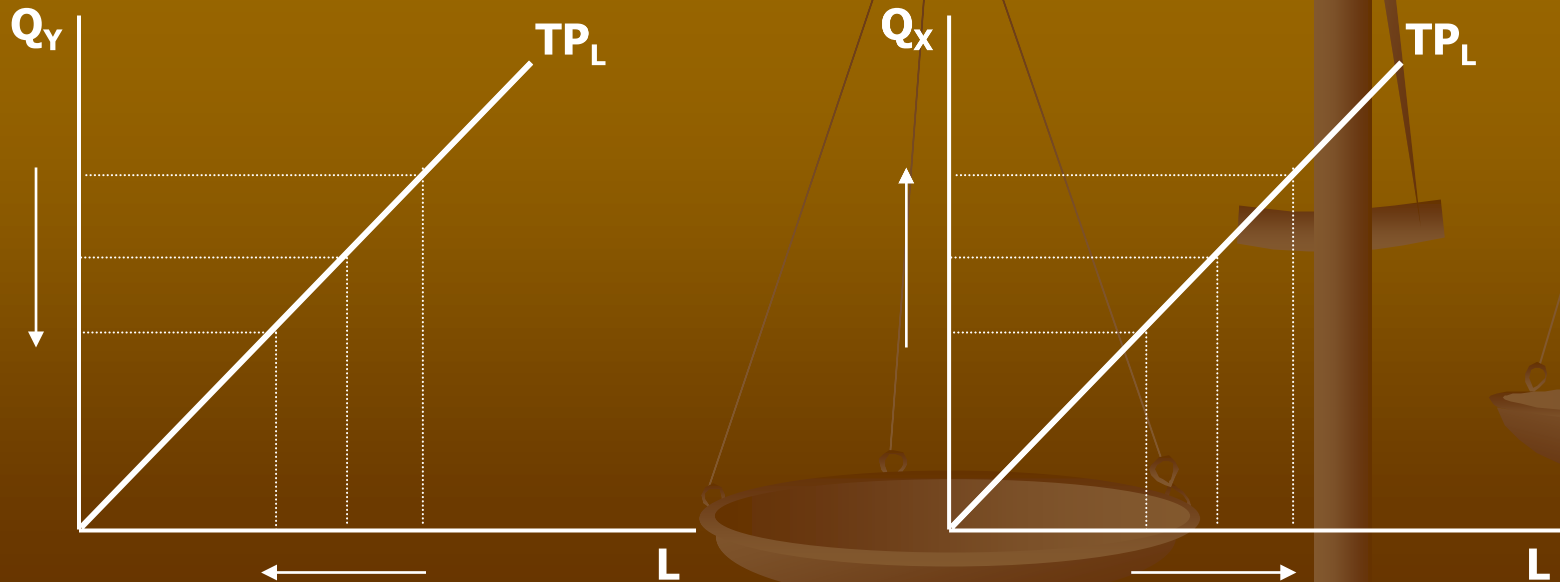


PPF upon constant MP_L

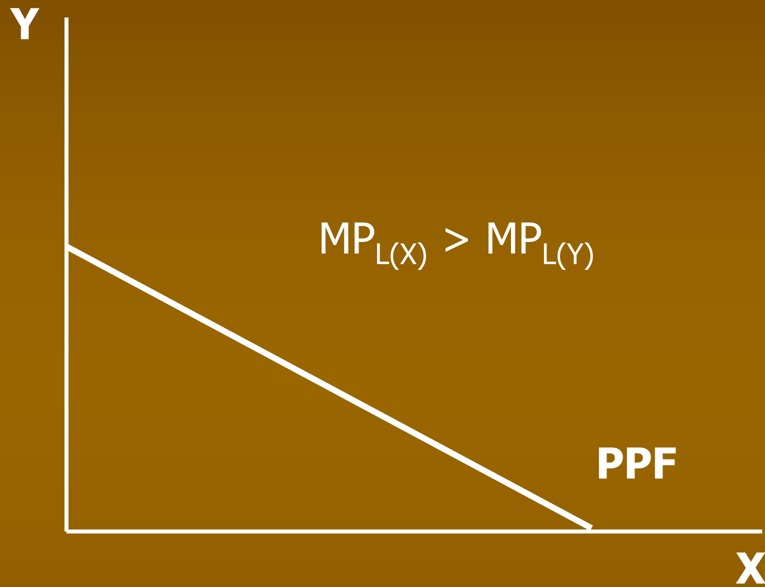


PPF is linear – to an additional unit of X we sacrifice always the same volume of Y and vice versa, because MP_L is constant in production of both goods

MRPT is constant alongside the linear PPF



PPF upon constant but different MP_L



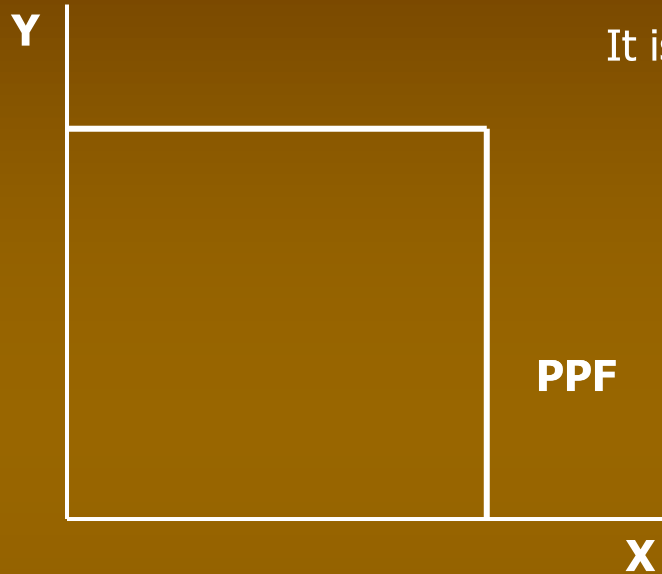
Y

$MP_{L(X)} < MP_{L(Y)}$

PPF

X

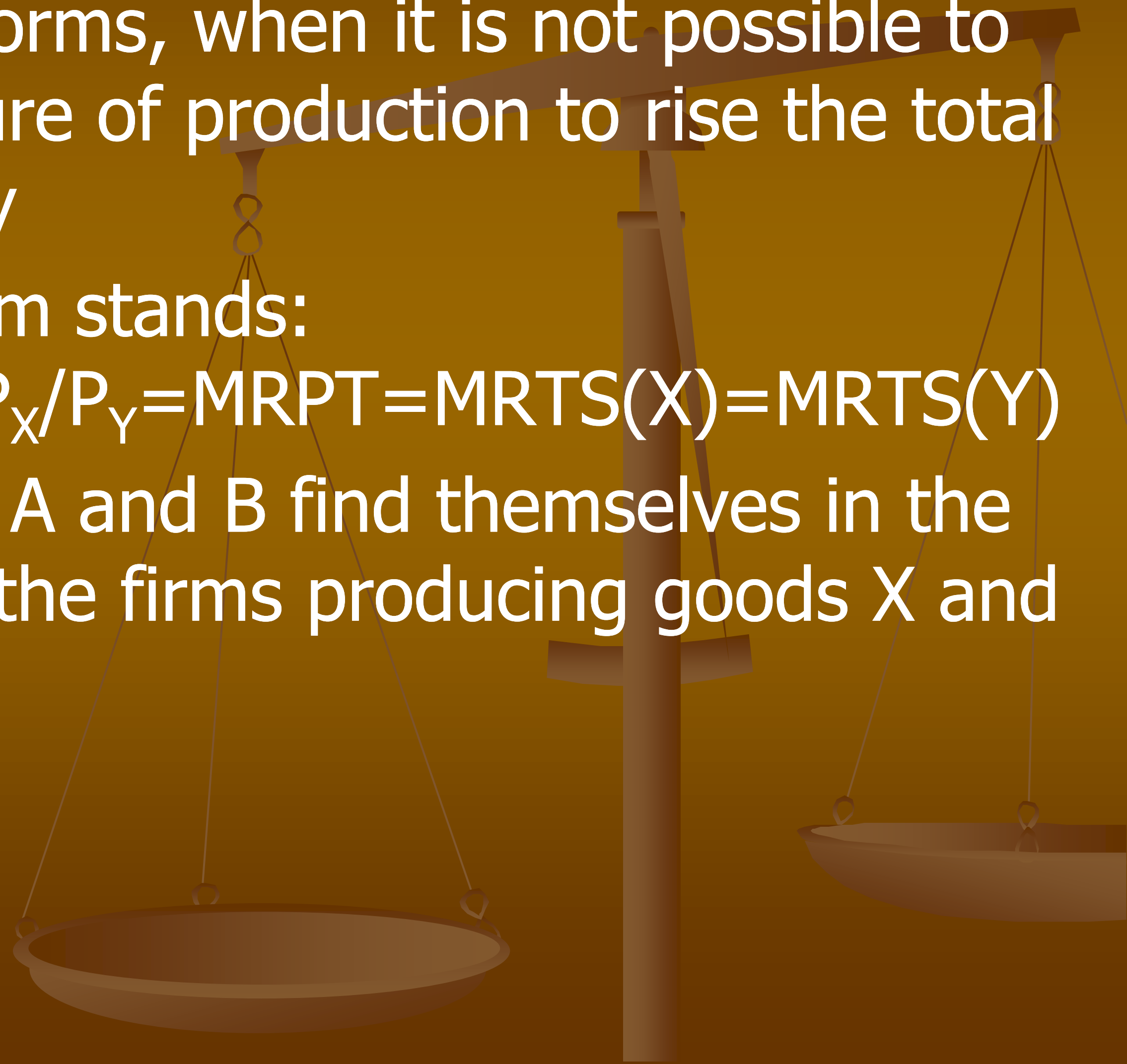
PPF upon fixed proportion of production



It is impossible to change the structure of production

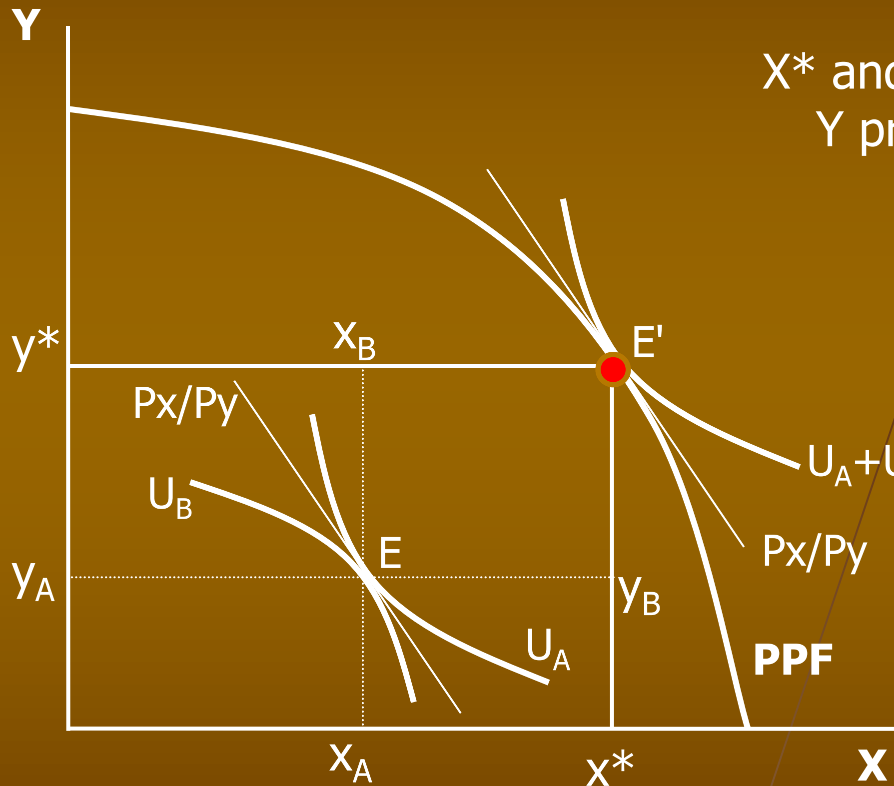
How does the general equilibrium form?

- general equilibrium forms, when it is not possible to rearrange the structure of production to rise the total utility in the economy
- for general equilibrium stands: $MRS_C(A)=MRS_C(B)=P_X/P_Y=MRPT=MRTS(X)=MRTS(Y)$
- ... if both consumers A and B find themselves in the equilibrium and also the firms producing goods X and Y



General euqilibrium

...lies in spot E�much, upon the consumers´ equilibrium in spot E

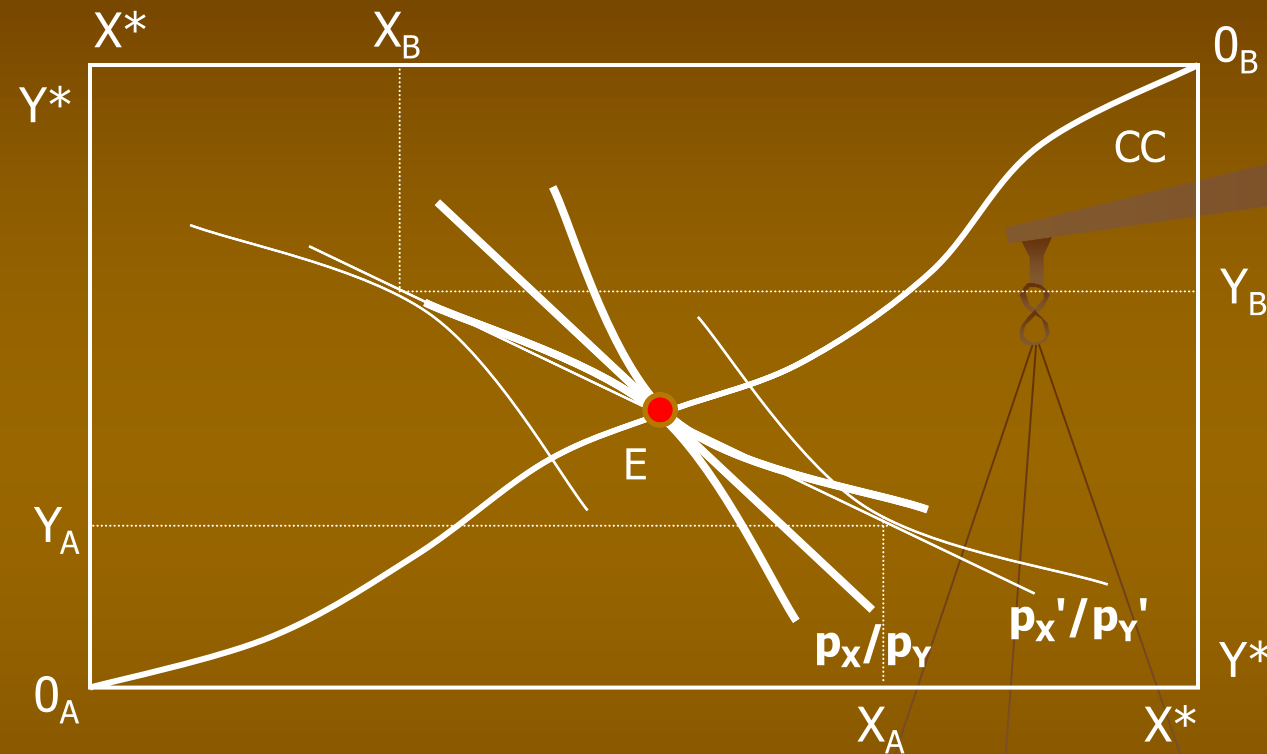


X* and Y* represent the total volume of X and Y produced upon the general equilibrium

Consumer A consumes X_A and Y_A , consumer B consumes X_B and Y_B

Formation of the general equilibrium

price mechanism assures the equilibrium stage



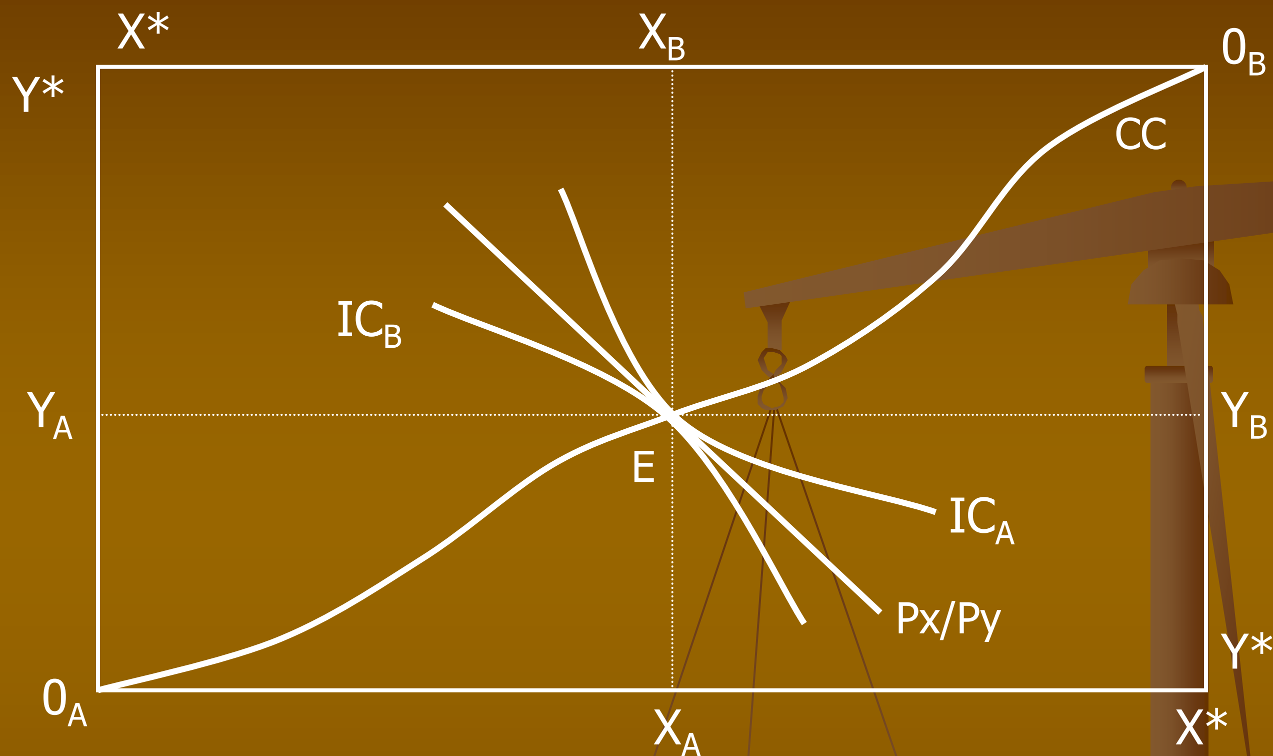
Initial relative price ratio: p_X'/p_Y,...

... but there is an overhang of demand on X market (X_A+X_B□X^*) and an overhang of supply on Y market (Y_A+Y_B□Y^*)

On the X market the price increases, on the Y market the price decreases

Budget line rotates clock-wise because of the change of the relative price ratio – the new ratio of prices: p_X/p_Y. Consumers (and the entire economy) aims to the equilibrium in spot E

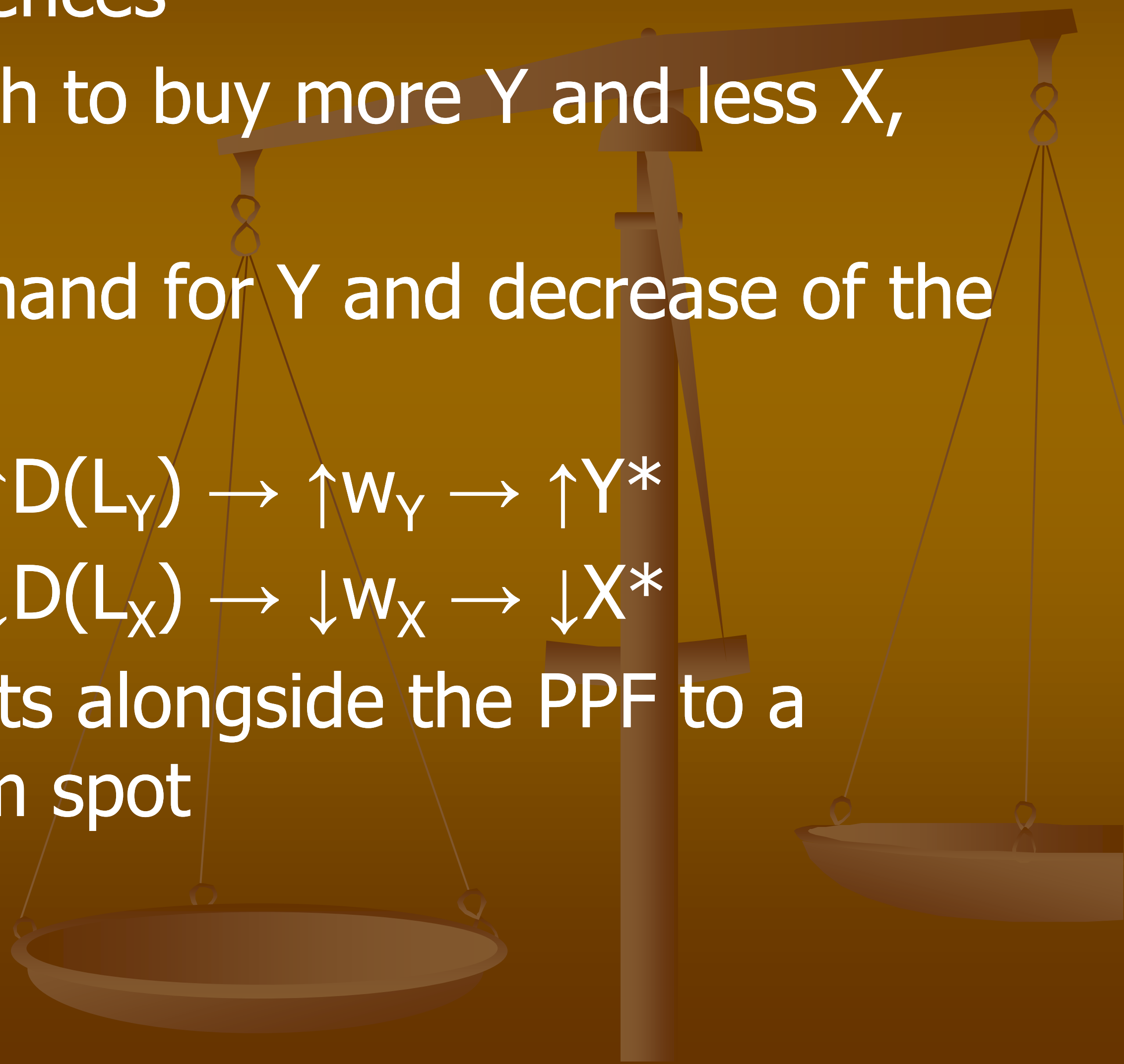
Exchange equilibrium



Consumers are heading to the CC (Contract Curve), that represents the set of Pareto effective combinations of X and Y allocated between te consumers

How the general equilibrium rearranges?

- the impulse to change is the change of consumers´ preferences
- i.e.: consumers wish to buy more Y and less X, that leads to the:
- increase of the demand for Y and decrease of the demand for X
- $\uparrow D(Y) \rightarrow \uparrow P(Y) \rightarrow \uparrow D(L_Y) \rightarrow \uparrow w_Y \rightarrow \uparrow Y^*$
- $\downarrow D(X) \rightarrow \downarrow P(X) \rightarrow \downarrow D(L_X) \rightarrow \downarrow w_X \rightarrow \downarrow X^*$
- the equilibrium shifts alongside the PPF to a different equilibrium spot



Initial and the new equilibrium