

Seminar 13.

Task 1. Robinson Crusoe and Friday live on the island and consume only fish and coconuts. Robinson can catch 10 fish or collect 20 coconuts in one day, and Friday can 6 fish and 16 coconuts. Should Robinson and Friday open the trade between them?

Task 2. Robinson Crusoe works 450 hours a month picking bananas (production function $X = \sqrt{L_x}$) and fish ($Y = \sqrt{L_y}$). Robinson Crusoe utility function $U(X, Y) = XY$. Find the optimal time distribution between banana and fish production if Robinson is out of touch with the world economy. If Robinson can buy and sell bananas on the world market for \$ 0.5 and fish for \$ 1.5 per kg, will he benefit from international trade?

Task 3. Microland and Macroland produce two types of goods, the data of which are given in the table:

Parameter	Microland	Macroland
Number of employees	15000	64000
The production function of goods A	$Q_{1,A} = \frac{L_A}{100}$	$Q_{2,A} = \frac{L_A}{200}$
The production function of goods B	$Q_{1,B} = \frac{L_B}{300}$	$Q_{2,B} = \frac{L_B}{250}$
Utility function	$U_1 = (Q_{1,A} + 55)(Q_{1,B} + 10)$	$U_2 = (Q_{2,A} + 30)(Q_{2,B} + 15)$

a) Determine the Pareto-optimal structure of output for each country in the absence of trade between them.

b) Determine the optimal ratio of commodity prices in trade between countries.

Task 4. The demand function for a particular product in Microland $D = 2150 - 10p$, supply function $S = 5p$. Macroland can sell any quantity of goods at a price $p = 110$. To protect the domestic economy, the Microland authorities are imposing a duty $w = 15$. Determine the effect of protection of domestic production, the effect of

consumption, the effect of foreign trade, the effect on the balance of payments, the effect of customs duties, the effect of redistribution, and the effect of economic losses.

Task 14.5. Microland exports to the world market 2 goods (A and B) at prices of 342 and 613 USD, respectively, and imports good C at 290 USD. Supply functions are $Q_{S,C} = 0$ and $Q_{D,C} = 700 - 2p_C$, demand for goods within the Microland: $Q_{S,B} = 74p_B$, $Q_{D,A} = 2400 - 11p_A$, $Q_{S,A} = 9p_A$. $Q_{D,B} = 35000 - 26p_B$. Determine the equilibrium exchange rate.