

Monopolistic Competition Problem

Consider the Monopolistic Competition Model studied in class for the following parameter values:

Fixed costs in labor units: $F = 2$,

Marginal cost in labor units: $c = 1/2$

Utility Function Parameter $\alpha = 1/2$.

Notice that in this case the utility function is:

$$u(q_1, q_2, \dots) = \sum_{i=1}^{\infty} q_i^{1/2}.$$

(1) Calculate the autarky equilibrium for a country that has 10 agents with 8 units of labor each (i.e., the labor endowment is $L=80$ and the number of consumers/agents is 10).

(2) **Free trade** between two identical countries (Home and Foreign)

Calculate the free trade equilibrium when each country looks like the country in question (1).

(3) Show that a consumer (from either country) is happier in free trade than he/she was in autarky (you need to compare the home consumer's utility level in both situations).

(4) Growth in the foreign country.

Assume now that the **foreign** country *has now 20 agents and therefore labor endowment has doubled* (i.e. the total labor endowment in foreign is 160). Everything else is unchanged and the two countries are **trading freely**.

Show how this change affects the level of happiness of the consumer in the **home** country (you need to compare the utility level of the home consumer in free trade before and after the change).