Exam Econ 4415 International Trade - Fall 2023

November 2023

This exam tells the story of a family dinner you had a couple of days ago, and your answers in the exam are your interventions during the dinner. The last question is when you got back home and got to do some math. The dinner was very enthusiastic and full of conversation about Economics. Your family knows you are studying Economics and asked you for your opinion. You feel lucky because the content you studied for your exam of International Trade fitted excellently in the conversation.

1 A trip to France - 40 points

- *Your aunt just came back to Norway from a trip to France. She tells how much she liked cheese there, and that she was amazed by the amount of varieties available at supermarkets in France. She says she wishes she would have such amount of varieties in her local supermarket in Oslo.*

  At this moment you intervene, what do you say?

  The candidate should talk about monopolistic competition and the need to pay fixed costs. If France has a larger country size, everything else equal, would lead to more varieties in France. Additionally the candidate could mention that lower fixed cost or lower elasticity of substitution in France would also lead to more varieties.

- *The conversation continues and your aunt says that she noticed also that French people each cheese all the time. They even have cheese-based dishes as raclette and fondue. Given this, she is surprised that France is a net exporter of cheese.*

At this moment you intervene, what do you say?

The candidate should explain the home market effect.

- *Another cousin comes into the conversation and wonders why it is France that produces cheese and exports it, and not for example Norway. He notices that Norway is very good at producing and exporting salmon, even if Norwegians do not really eat much more salmon per capita than in other countries like France.*

  Your cousin is young, and you are not really sure about his statement that Norwegians do not consume more salmon per capita. Irrespective of that statement, you realize you can think of other theories that explain which industries are exporters and which are importers, and you intervene talking about that. [Help: this is about inter-industry trade, not about monopolistic competition nor economic geography]

  The candidate should refer to the theory of comparative advantage and its sources: differences in technologies and/or differences in endowments. The explanation should be such that it supports the fact that France exports cheese and Norway exports salmon.

- *Your cousin seems doubtful about this theory and pushes a bit.*

  You give an example in which there was a shift from no trade to open to trade, and then what was imported and exported to help convince your cousin. [Help: if you don't remember an example, mention what you would need to know from the data in order to test the theory.]

  The candidate could mention the example of Japan going from almost autarky to trade in the 1850s. Irrespective of the example, the candidate should mention that across country differences in relative prices of goods in autarky predicts which goods would export each country when opening to trade. Goods that are relatively cheaper in one country (e.g. silk in Japan) would be exported by that country, while goods relatively more expensive (e.g. sugar in Japan) would be imported. The candidate could additionally explain prediction of change in prices after opening to trade (e.g. price of silk in Japan would go up, price of sugar would go down).

- *Now your uncle, who went with his sister to France, mentions that he really liked touring France. He really liked all the little medieval villages that he found spread around the country. He compares that experience with when they drove coast-to-coast the Route 66 in the US where they could spend hours in the highway without passing by any single village or city. He says that in France every now and then he would see a little village. He wonders why there is such a big difference with the US.*

  At this moment you intervene, what do you say? You recall in class you heard something about reduction in transport cost over time.

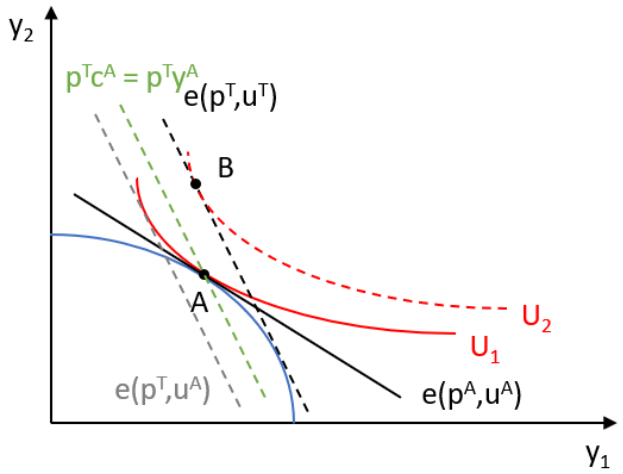
  The candidate should explain that trade costs affect the location of economic activity, as studied in Krugman 1991 "Increasing returns and economic geography" where manufacturing workers are mobile. With high trade costs of medieval France, manufacturing workers would choose to spread in multiple cities. With lower (but still positive) trade cost the stable equilibrium is one of concentration. The candidate should provide intuition on why this happens.

2 Why are we doing international trade? - 25 points

- *Later on another cousin of yours, who is a member of the trade union of salt workers of Norway, says that trade is not good for Norway, that as consequence of trade many jobs in the salt industry are disappearing.*

  You disagree with your cousin. You remember from class that there could be changes in allocation of production when a country opens to trade, but that trade benefits consumers. You think you can talk about the subject as if you where in a neoclassical world with 2 goods. You take a napkin (piece of paper) and a pen, draw a plot and explain it to your cousin. [Help: the plot shows utility function, consumption and production point before/after opening to trade, relative prices]

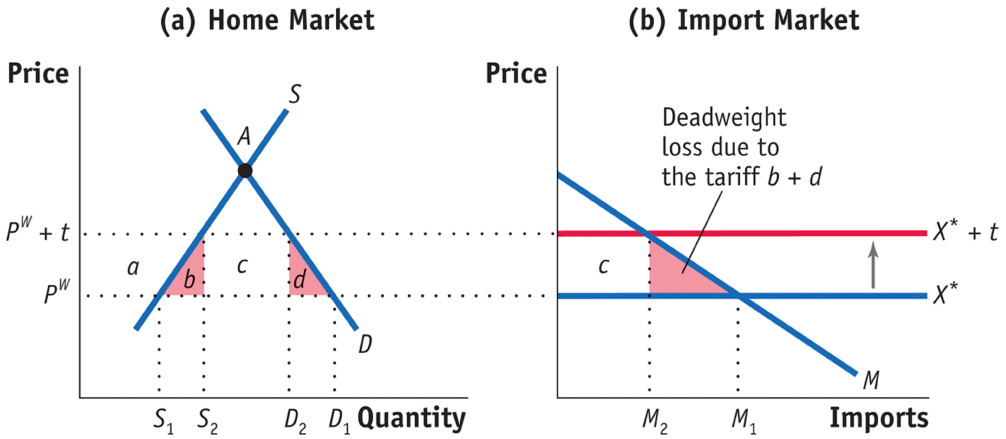
  The candidate should draw and explain the plot below.



- *Another uncle of yours, who is retired and was previously member of the same trade union, says that he is not convinced and he argues that the government should put import tariffs in order to increase domestic production.*

  While you respect your older uncle, you do not agree with him and you think you have a point. You know Norway is a small country and the world wide market of salt is perfectly competitive. You think you can explain this thinking of a world with 1 good. You turn around the napkin and make another plot showing the welfare effects of a tariff on imports of salt and explain it to your uncle.

  The candidate should draw and explain the plot below.



3 Migration - 15 points

- *At some point during dinner they start talking about the large immigration of people that happened during the 2000s and 2010s. They ask you whether you would know about the short term and long term effects of immigration, and why they would be different.*

  You take another napkin, draw some plots and explain.

  Short term: The candidate should refer to the Ricardo-Viner with graphically illustration of the bath tub diagram, showing how the diagram changes when there is an inflow of workers. Should explain that in the country receiving migrants wages go down, returns to capital go up and more so in the most labor intensive sector.

  Long term: The candidate should refer to the H-O model and the Rybzcynski theorem. Should point out that the result is explained by the Rybzcynski theorem, explain the reallocation process that follows after the short run adjustments due to differences in returns to capital across sectors, and illustrate graphically. In equilibrium, no impact on wages and capital returns, but structural change towards the most labor intensive sector. The candidate should explain that the long run effects differ from short run effects due to the fact that in the long run reallocation of resources (say capital) is possible.

- *Your mum remembers that there were some groups that argued in favor of a restriction of immigration, while other groups argued in favor of a liberal immigration policy.*

  You explain which groups you would expect to be in favor of each policy and why.

  The candidate should explain that in the short run there are winners and losers. Native workers will lose and therefore be negative to a liberal immigration policy. Owners of the other factors (typically the capital owners) will gain and hence would be expected to be in favor of a lax immigration regime.

4 A bit of math - 20 points

- *The dinner is over and you go back home. You kept thinking about what you answered to your aunt on why there are so many varieties of cheese in France. You are a bit anxious about it so you decide to get to your desk and do the math.*

  Set up the maximization problem in a closed economy with monopolistic competition and homogeneous firms, derive consumer's demand, optimal price of the firm and the equilibrium number of varieties. Explain how and why the elasticity of substitution affects the number of varieties in equilibrium.

  Answer below:

  Set up consumer's maximization problem:

$$\max_{q_j} U = \left[\sum_{j=1}^{N} q_j^{\frac{\sigma-1}{\sigma}} \right]^{\frac{\sigma}{\sigma-1}}$$

$$s.t. \quad \sum_{j=1}^{N} q_j p_j = wL_H \equiv E$$

  Solve the consumer's problem to obtain consumer's demand for variety j:

$$q_j = \frac{p_j^{-\sigma}}{P^{1-\sigma}} E$$

  Having consumer's demand, set up firm j's optimization problem:

$$\max_{p_j} \pi_j = p_j q_j - b q_j w - wf$$

$$s.t. \quad q_j = \frac{p_j^{-\sigma}}{P^{1-\sigma}} wL_H.$$

  Obtain optimal price of firm j:

$$p_j = \frac{\sigma}{\sigma - 1} bw$$

  Use free entry condition $p_j q_j - b q_j w - wf = 0$ and symmetry across firms to obtain the quantity sold by each firm in equilibrium $q_j = q = \frac{(\sigma-1)f}{b}$. Using either labor

market clearing or goods market clearing, obtain the equilibrium amount of varieties in the market.

$$N = \frac{L}{\sigma f}$$

The candidate should explain that higher elasticity of substitution leads to lower mark up charged by firms, hence firms need to sell more units in order to cover fixed costs. This leads to less varieties available in the market.