

Problem 1

The student can analyze the problem using the tools reviewed in Lecture 11.

a) Productivity growth is $\hat{A} = L_A/\mu = \gamma_A L/\mu$. Then, GDP per capita growth is also $\gamma_A L/\mu$. If the share of R&D workers is the same in the large and small country, the large country will grow faster.

b) The steady state rate of growth will be the same in the small and large country, see slide 22. However, the level of GDP per capita will be lower in the small country, because they have fewer R&D workers (if the share of R&D workers is the same in both countries).

c) Policymakers can try to affect the cost of R&D (or the cost of imitation) (μ) or the number of R&D workers (γ_A).

d) The fishing out effect and decreasing returns to scale in R&D are two factors which are omitted from the model (slide 39).

Problem 2

a) The student should present the monopolistic competition model from Lecture 8, explain the CC and PP curve, and why there is an equilibrium in this model. Prices will be higher in Norway than Germany because the CC curve will be flatter for Germany than Norway (the slope coefficient for the CC curve is F/S , where S is market size).

b) With free trade, market size is $S^{Norway} + S^{Germany}$. So the CC curve will become even flatter. Prices are now the same in both countries (and lower than autarky prices in both countries). Bonus points if the candidate shows that the global number of firms is higher than n^{Norway} and $n^{Germany}$, but lower than $n^{Norway} + n^{Germany}$, i.e. some firms go out of business.