

Problem 1

a) $p_E/p_O = 1$ in Norway and $p_E/p_O = 2$ in EU. These are the horizontal segments of the RS curve.

The vertical segment (under complete specialization) is $q_E/q_O = \frac{(L/3)/2}{L/2} = 1/3$.

b) The relative demand curve is $q_E p_E = \frac{1}{2} q_O p_O$ or $p_E/p_O = \frac{1}{2} q_O/q_E$.
The world market price is then $p_E/p_O = \frac{1}{2} q_O/q_E = \frac{3}{2}$.

c) Yes. The price is reduced from $p_E/p_O = \frac{3}{2}$ to $p_E/p_O = 1$

d) No. Although nominal prices are lower, wages are also lower in autarky relative to trade. One way to show this is by drawing the budget lines for the consumer under free trade and under autarky (Lecture slides 3, p27-28). In a diagram with O on the y-axis, the budget line will shift in on the y-axis and stay constant on the x-axis. The consumer will therefore end up on a lower indifference curve under autarky than under trade.

Budget line: $wL = p_E q_E + q_O q_O$ or $q_O = \frac{wL}{p_O} - \frac{p_E}{p_O} q_E$

In autarky $wL = p_E \frac{(L/3)}{2}$, so we get $q_O = \frac{p_E}{p_O} \frac{(L/3)}{2} - \frac{p_E}{p_O} q_E = \frac{L}{6} - q_E$.

Under free trade, we get $q_O = \frac{3}{2} \frac{(L/3)}{2} - \frac{3}{2} q_E = \frac{L}{4} - \frac{3}{2} q_E$.

I.e. going from free trade to autarky, the slope becomes flatter and the intersection with the y-axis declines (from $L/4$ to $L/6$).

The student should provide some intuition for why higher electricity prices is good for the country.

e) While the country overall gains, there might be distributional consequences that are not part of the Ricardian model.

Problem 2

The student should provide a rigorous analysis of the Stolper Samuleson theorem.

If electricity is capital-intensive, then a fall in the electricity price will lead to an increase in the real wage and a fall in the real return on capital. The student should provide an analysis of the mechanism similar to e.g. Lecture slides 5, p22-23.

Problem 3

Prices are likely to fall, but the magnitude depends on the incidence of the subsidy. The student can show this in e.g. a RS-RD diagram.

Misallocation: The student can e.g. show a diagram similar to Lecture slides 12b, p5. The MPL curve for electricity will shift out and labor will move to the E sector.