Midterm: Proposed TFUs

Economics 27000

Levi Crews

February 5, 2021

Determine whether the following statements are TRUE, FALSE, or UNCERTAIN, and justify your answer in one paragraph. Please be concise.

1. In an endowment economy that opens to free trade and takes world prices as given, a representative consumer with Cobb-Douglas preferences and an interior endowment gains more from trade the more that world prices differ from autarkic prices.

2. In a two-good model, relative demand is always a downward-sloping function of the relative price if demand is homothetic.

3. Suppose that the Chinese population increases by 10%. Then US terms of trade in the Ricardian model increase by at most 10%.

4. In the Ricardian model, wages equalize across sectors in the domestic economy.

5. In the Ricardian model, wages would equalize across countries if we allowed for free migration.

6. A firm exhibits internal scale economies if it has a fixed cost and constant marginal costs.

7. In the Krugman (1979) model, all firms benefit from free trade.

8. In a specific-factors model, owners of capital will be better off if the food sector becomes more productive.

9. In a specific-factors model with Cobb-Douglas preferences $D_C^{1/2} D_F^{1/2}$, an exogenous 10% increase in the relative price of cloth leads to an increase in real wages.

10. In any two-country model of trade, world relative prices must always fall between the pair of autarky relative prices.

11. The representative consumer always gains from trade.

12. The world production possibilities set (i.e., the space between the PPF and the axes) is always a convex set.[1]

Suggested solutions

1. In an endowment economy that opens to free trade and takes world prices as given, a representative consumer with Cobb-Douglas preferences and an interior endowment gains more from trade the more that world prices differ from autarkic prices.

    - **True.** This is a simple revealed-preference argument. Remember that the representative consumer will consume the endowment in autarky; autarkic prices just record his ratio of marginal utilities at the endowment. An immediate corollary is that any point on that budget line yields lower utility than the endowment itself. Now consider an opening to free trade, taking world prices as given. The new budget line will cross through the endowment, allow for some new choices, and eliminate old ones. But all of the eliminated choices have already been revealed to yield lower utility than the endowment, which is still feasible, so their elimination is no loss. Instead, we just care about the new choices, which will yield a better bundle than the endowment. The more that world prices differ from autarkic ones, the larger this set of new choices, and the greater the gains for the consumer.

2. In a two-good model, relative demand is always a downward-sloping function of the relative price if demand is homothetic.

    - **True.** When demand is homothetic, there are no income effects. When the relative price p_C/p_F increases, there is only a substitution effect, which

[1] A set is convex if and only if you can connect any two points in the set with a line that stays entirely inside the set.

means D_C/D_F must fall. (Some of you may have worried about Giffen goods. Notice, though, that with homothetic preferences both goods must be normal; a Giffen good, by contrast, is an inferior good.)

3. Suppose that the Chinese population increases by 10%. Then US terms of trade in the Ricardian model increase by at most 10%.

   - **False.** They can increase by more depending on the elasticity of relative demand (slide 70 of `3_Ricardian_Trade_Models`).

4. In the Ricardian model, wages equalize across sectors in the domestic economy.

   - **Uncertain.** If both goods are produced at home (incomplete specialization), then this is true. Otherwise (complete specialization), this is false, because the wage in the dormant sector would be zero.

5. In the Ricardian model, wages would equalize across countries if we allowed for free migration.

   - **True.** Workers must be indifferent between working in either location, so labor will reallocate until the wages equalize. In particular, more workers would move to the more productive country.

6. A firm exhibits internal scale economies if it has a fixed cost and constant marginal costs.

   - **True.** Average cost is falling.

7. In the Krugman (1979) model, all firms benefit from free trade.

   - **False.** One can show that N falls in equilibrium, so some firms must exit (slide 44 of `4_Increasing_returns`). They go from making positive profits to zero profits, so they're worse off.

8. In a specific-factors model with free trade and world prices taken as given, owners of capital will be better off if the food sector becomes more productive.

   - **False.** We explored a situation like this in Problem Set 3, Exercise 3, question 3. With an increase in the productivity of the food sector, MPL in food production will increase, so wages must rise and labor will shift into food production. Accordingly, labor shifts out of cloth production. With higher wages but fixed commodity prices, it follows that demand for capital will fall, driving down its rental rate. This makes capital owners worse off.

9. In a specific-factors model with Cobb-Douglas preferences $D_C^{1/2} D_F^{1/2}$, an exogenous 10% increase in the relative price of cloth leads to an increase in real wages.

   - **Uncertain.** This is still not enough information. To get full credit, it would be enough to point out that the answer depends on the elasticity of demand for labor in the food sector, too. In particular, if labor demand in the food sector is inelastic enough, then the wage will increase enough to offset the price increase and make real wages increase (slide 32 of `5_Specific_Factors_Model`). The following is not expected of students, but it's helpful: With these preferences, real wages should be measured as $w/(p_C^{1/2} p_F^{1/2})$. An exogenous 10% increase in p_C (with p_F held fixed) must yield at least a 4.9% increase in the nominal wage w for the real wage to increase.

10. In any two-country model of trade, world relative prices must always fall between the pair of autarky relative prices.

    - **False.** With external economies of scale, trade can reduce prices everywhere because the supply curve is forward-falling (slides 20–21 of `4_Increasing_returns`).

11. The representative consumer always gains from trade.

    - **False.** With economies of scale, a country may be worse off by opening up to trade (slides 23–24 of `4_Increasing_returns`).

12. The world production possibilities set (i.e., the space between the PPF and the axes) is always a convex set.[2]

    - **False.** See the PPF from Problem Set 2, Exercise 3, question 2.

[2] A set is convex if and only if you can connect any two points in the set with a line that stays entirely inside the set.