Economics 2 — Professor Christina Romer
Spring 2019 — Professor David Romer

PROBLEM SET 4

DUE AT THE *BEGINNING* OF LECTURE ON TUESDAY, APRIL 2ND

You may work together on the problems, but your answers must be ***in your own words*** and ***handwritten***. You also must ***list the other students with whom you worked***.

For all questions be sure to explain your answers and to use graphs whenever appropriate.

1. In class, we analyzed the effects of a tariff on a good the U.S. imports. This problem asks you to analyze an analogous policy involving a good that we export. Specifically, suppose that politicians introduce a tax on exports of the good, physically collected from foreign buyers. Assume that the tax is not large enough to completely eliminate our exports. And as usual, assume that the actions of any single country (in this case, the U.S.) do not affect the world price of the good.

- **a.** How, if at all, will the tax affect the price at which American firms can sell the good abroad? (Note that foreigners still have the option of buying the good at the world price from other countries, and so not paying the tax.)
- **b.** How will the tax affect the quantity of the good produced in the U.S., the quantity purchased by U.S. consumers, and our exports?
- **c.** Do the welfare accounting. That is, show the impact of the tax on consumer surplus, producer surplus, government revenue, and the total surplus. Does the tax cause a deadweight loss? Are U.S. producers likely to support this policy?

2. Consider a competitive industry where initially, because of prohibitive transport costs, the good cannot be imported or exported. Assume that the industry is in long-run equilibrium. Now suppose that because of innovations in transportation, international trade becomes possible, and that the world price of the good is less than the price that had been prevailing in the U.S.

- **a.** What is the short-run effect of this change on the amount produced and consumed in the U.S.? Does the U.S. import or export the good (or is it not possible to tell)?
- **b.** What is the short-run effect of the change on the amount produced by a typical U.S. firm in the industry? What will be the effect on its profits?
- **c.** What will happen to the industry in the U.S. in the long run? (Hint: the answer may be surprising. But it is also realistic and helps us understand the history of many industries.)

3. Answer the following short questions about macroeconomic data.

- **a.** In 1997 a box of Girl Scout cookies cost $2.50. The consumer price index was 160.5 in 1997 and is 252.7 now. What is the 1997 price of a box of Girl Scout cookies expressed in today's dollars? Since a box of Girl Scout cookies currently costs $5.00, has the price of Girl Scout cookies risen by more or less than the overall price level since 1997?
- **b.** If inflation is falling but still positive, does this imply: (i) that prices are on average falling; (ii) that prices are on average rising but at a slower rate than before; or (iii) because this is only information about inflation and not prices, it does not tell us anything about the behavior of prices? Be sure to explain your answer.

4. The version of the aggregate production function discussed in class is:

$$\frac{Y^*}{POP} = \frac{N^*}{POP} \cdot \frac{Y^*}{N^*}$$

$$= \frac{N^*}{POP} \cdot f\left(\frac{K^*}{N^*}, T\right),$$

where Y is real GDP, POP is population, N is employment, K is capital, and T is technology, and where a “*” denotes the normal value of the variable.

- **a.** In words, what is Y*/N*, and why do we think it is a function of K*/N* and T? In this formulation, what is included in K* and in T?
- **b.** The differences in potential output per person across countries and over time that we are trying to understand are often a factor of 10 or even more. Why do we think that differences in N*/POP account for at most a very small part of those differences?

5. Suppose that in some country, there is a negotiated real wage that is above the level where the supply and demand for labor are equal. Describe how each of the following developments will affect normal employment.

- **a.** The government requires firms to provide employees with a new benefit, such as paid family leave.
- **b.** Improvements in the educational system increase workers’ skills.