Economics 2 Professor Christina Romer
Spring 2018 Professor David Romer

PROBLEM SET 4

DUE AT THE *BEGINNING* OF LECTURE ON TUESDAY, MARCH 20TH

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. Consider the markets for low-skilled and high-skilled labor in the United States. Describe how each of the following is likely to affect the wages of low-skilled workers relative to high-skilled workers.

- **a.** H-1B visas allow highly skilled workers to be employed in the U.S. Suppose the government greatly increases the number of H-1B visas it grants.
- **b.** The aging of the U.S. population increases the demand for services such as home health care, home maintenance, transportation, and packaged food preparation that employ low-skilled workers.

2. The United States just imposed a tariff on aluminum imports.

- **a.** What would you expect this to do to the employment of workers in the American aluminum industry?
- **b.** What would you expect the aluminum tariff to do to the output of the American beverage industry? What does that imply is likely to happen to employment in this industry?
- **c.** American farmers have expressed concern about the effects of the new tariffs on farm exports. How might you explain this?

3. Answer the following short questions about macroeconomic data.

- **a.** In 1996 a good desktop computer cost about $4000. In 2017, one cost about $1000. The consumer price index was 156.85 in 1996 and 245.12 in 2017. What is the cost of a 1996 computer in 2017 dollars? By what percent has the inflation-adjusted price of a computer changed since 1996?
- **b.** In terms of speed, memory, and other features, a 2017 desktop is about 120 times more powerful than a 1996 desktop. By what percent has the inflation- and quality-adjusted price of a computer changed since 1996?
- **c.** If nominal GDP in some country rose by 6% from 2016 to 2017 but real GDP only rose 2%, roughly what was inflation in the country from 2016 to 2017?

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. Explain what the various terms mean. Use the aggregate production function to explain how an increase in the supply of inventive activity will likely affect long-run economic growth.

5. Describe how each of the following developments will affect the investment demand curve.

- **a.** Tax reform reduces many of the subsidies that previously existed for purchases of new machines.
- **b.** The Federal Reserve lowers interest rates.
- **c.** Decreased regulation makes firms believe that the future marginal revenue products of capital will be higher.