Economics 2 Professor Christina Romer
Spring 2018 Professor David Romer

PROBLEM SET 2

DUE AT THE *BEGINNING* OF LECTURE ON TUESDAY, FEBRUARY 13TH

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 a household that buys two things: child care and everything else.

- **a.** What is the condition for the household to be allocating its income in the way that maximizes utility? Explain in words the intuition behind the condition.
- **b.** Suppose the government imposes a per hour tax on child care (physically collected from consumers). If the price of child care were to remain the same, how would the imposition of the tax affect the household's optimization calculation? (Hint: the denominator in each term of the rational spending rule is what the consumer pays for one more unit of the good. When there is a tax collected from consumers, is this amount the same as the price of the good?) How will the household want to change its behavior?
- **c.** How will the tax affect the individual household's demand curve for child care?
- **d.** Show what a tax on child care physically collected from consumers will do to the equilibrium price and quantity in the market for child care.
- **e.** Show how much revenue the government will receive from the tax.
- **f.** What is the deadweight loss associated with the tax?

2. If marginal cost for a typical supplier rises only slowly as more is produced, is the price elasticity of supply for the product likely to be high or low?

3. The market for barbershop haircuts is highly competitive. How would the following developments affect the quantity of haircuts that a typical barbershop wants to supply in the short run?

- **a.** Consumers start to prefer shorter hairstyles (which require more frequent haircuts to look good).
- **b.** The government requires all barbershops to pay a new yearly licensing fee to operate.
- **c.** Because fewer people have been attending barber school, the wage of barbers (the workers in a barbershop) rises.

4. Overfishing in the past has reduced the population of haddock along Scotland's coast. This has forced Scottish fishing companies to travel farther from shore on each trip and to use more labor-intensive fishing techniques.

- **a.** Suppose that the market for haddock began in long-run equilibrium. How would the change described affect the marginal cost of a typical competitive fishing company?
- **b.** What would happen to the equilibrium price and quantity of haddock in the market in the short run? To the output and profits of a typical fishing company?

c. What is likely to happen to the equilibrium quantity of haddock in the market in the long run?

d. Will the typical fishing company earn positive economic profits in the long run?

5. Suppose that to help dairy farmers, the government decides to impose a strict limit on the quantity of milk produced in the country that is below the equilibrium quantity. Such a quantity restriction is called a quota.

a. If the price of milk is then allowed to adjust, what will happen to the market price of milk?

b. Will the revenues of dairy farmers necessarily rise as a result of this policy?

c. Is the quota likely to cause a deadweight loss? Discuss the source(s) (if any) of the deadweight loss.