

# ECON 5332 Government, Taxes, and Business Strategy

Spring 2008

Due Tuesday, January 22, 2008

1. Consider an income guarantee program with an income guarantee of \$3000 and a benefit reduction rate of 50 percent. A person can work up to 2000 hours per year for \$6 per hour. Alice, Bob, Calvin, and Deborah work for 100,  $333 \frac{1}{3}$ , 400, and 600 hours, respectively, under this program.

The government is considering altering the program to improve work incentives. Its proposal has two pieces. First, it will lower the guarantee to \$2000. Second, it will not reduce the benefits for the first \$3000 earned by workers. After this, it will reduce benefits at a reduction rate of 50 percent.

The two goods Alice, Bob, Calvin, and Deborah consume are leisure (L) and a consumption good (C) that represents the aggregation of everything else they like other than leisure. Without loss of generality, let the price of the consumption good be equal to 1. We will then refer to the consumption good as the numeraire.

- (a) Draw the budget constraint facing any worker under the original program.
- (b) Draw the budget constraint facing any worker under the proposed new program.
- (c) Which of the four workers do you expect to work more under the new program? Who do you expect to work less? Are there any workers for whom you cannot tell if they will work more or less?

2. Consider a perfectly competitive market with demand equal to  $Q^d = 1200 - 10P$  and supply equal to  $Q^s = 20P$ .
- How much do consumers want to purchase if  $P = \$10$ ?
  - How much do producers want to sell if  $P = \$10$ ?
  - What is the equilibrium price and quantity in the market?
  - What is the most consumers are willing to pay for the 100th unit?
  - What is the marginal cost of the 400th unit?
  - What is the value of consumer surplus, producer surplus, and total surplus?
  - Suppose the government imposes a \$10 per unit subsidy on the production of the good. What is consumer surplus after the subsidy is implemented? What is producer surplus after the subsidy is implemented? What is total surplus? Why is there a dead-weight loss associated with this subsidy and what is the size of this loss?
3. Dexy has \$3000 to spend on entertainment this year. The price of a day trip ( $T$ ) is \$40 and the price of dinner and a movie ( $M$ ) is \$20. Suppose Dexy's utility function is  $U(T, M) = T^{1/3}M^{2/3}$ . It follows that the marginal utility of a day trip is  $MU_T = (1/3)(M/T)^{2/3}$  and the marginal utility of dinner and a movie is  $MU_M = (2/3)(T/M)^{1/3}$ .
- What is the utility maximizing combination of day trips and dinner-movie dates?
  - Suppose the price of day trips increases to \$50 per trip. How will this change the optimal consumption bundle?