

EXERCISES PART A

EXERCISES

LECTURE I, PART A

26

PART 1 ■ INTRODUCTION AND BACKGROUND

11. The urban African-American community is decidedly split on the subject of school vouchers. Some community leaders strongly support the voucher system and the increased school competition it brings, while others oppose it. Why do you think this split exists?
12. Many states have constitutional requirements that their budgets be in balance (or in surplus) in any given year, but this is not true for the U.S. federal government. Why might it make sense to allow for the federal government to have deficits in some years and surpluses in others?
13. Proper hygiene, such as regular handwashing, can greatly limit the spread of many diseases. How might this suggest a role for public interventions? What kinds of public interventions might be possible? Suggest three distinct types of possible interventions.

+ Exercise given during the lecture
of February 12, 2020

in response to changes in TANF benefits. That is, theoretical models can help point to the likely impacts of policy changes on individual decisions and social welfare, but they cannot tell us the magnitude of those effects. To do so, we have to turn to empirical economics, which we will do in the next chapter.

HIGHLIGHTS

- Policy debates such as that over the appropriate level of Temporary Assistance for Needy Families (TANF) benefits motivate the need for theoretical modeling of individual and firm decision-making behaviors.
- Modeling the impact of policy changes on individual behavior requires the use of utility-maximization models in which individuals maximize their well-being, subject to market prices and their available resources.
- Individual well-being, or utility, is maximized when individuals choose the bundle of goods that equates the rate at which they want to trade off one good for another (the marginal rate of substitution) with the rate at which the market allows them to trade off one good for another (the price ratio).
- TANF-like programs introduce complicated budget constraints with several possible segments, depending on whether a mother is on or off the program.
- Reducing TANF benefits is likely to increase the labor supply of single mothers, but the size of the increase is unclear and depends on the mothers' preferences for leisure and consumption.
- Social welfare is determined by considering both social efficiency (the size of the pie) and equity (the distribution of the pie).
- Social efficiency is maximized at the competitive equilibrium, where demand (which is derived from underlying utility maximization) equals supply (which is derived from underlying profit maximization).
- Social welfare is maximized by using a social welfare function to incorporate both efficiency and society's preferences for redistribution into policy making.
- Because reducing TANF benefits moves the labor market closer to the competitive equilibrium, it raises total social efficiency, but at a cost of lowering the incomes of a particularly needy group. The net impact on social welfare is unclear.

QUESTIONS AND PROBLEMS

1. Assume that the price of a bus trip is \$1, and the price of a gallon of gas is \$2.50. What is the relative price of a gallon of gas, in terms of bus trips? What happens when the price of a bus trip falls to \$1.25?
2. Draw the demand curve $Q = 250 - 10P$. Calculate the price elasticity of demand at prices of \$5, \$10, and \$15 to show how it changes as you move along this linear demand curve.
3. You have \$100 to spend on food and clothing. The price of food is \$4, and the price of clothing is \$10.
 - a. Graph your budget constraint.
 - b. Suppose that the government subsidizes clothing such that each unit of clothing is half-price, up to the first five units of clothing. Graph your budget constraint in this circumstance.
4. Use utility theory to explain why people ever leave all-you-can-eat buffets.
5. Explain why a consumer's optimal choice is the point at which her budget constraint is tangent to an indifference curve.
6. Consider the utilitarian social welfare function and the Rawlsian social welfare function, the two social welfare functions described in this chapter.
 - a. Which one is more consistent with a government that redistributes from rich to poor? Which is more consistent with a government that does not do any redistribution from rich to poor?
 - b. Think about your answer to part (a). Show that government redistribution from rich to poor can still be consistent with either of the two social welfare functions.

7. Because the free market (competitive) equilibrium maximizes social efficiency, why would the government ever intervene in an economy?
8. Consider an income guarantee program with an income guarantee of \$5,000 and a benefit reduction rate of 40%. A person can work up to 2,000 hours per year at \$10 per hour.
- Draw the person's budget constraint with the income guarantee.
 - Suppose that the income guarantee rises to \$7,500 but with a 60% reduction rate. Draw the new budget constraint.
 - Which of these two income guarantee programs is more likely to discourage work? Explain.
 - Draw a system of smooth indifference curves that bend the right way but would lead an agent to work more under the program you chose in part (c) than under the other program.

Describe what seems extreme about these curves that leads to the unusual behavior.

9. A good is called *normal* if a person consumes more of it when her income rises (e.g., she might see movies in theaters more often as her income rises). It is called *inferior* if a person consumes less of it when her income rises (e.g., she might be less inclined to buy a used car as her income rises). Sally eats out at the local burger joint quite frequently. The burger joint suddenly lowers its prices.
- Suppose that, in response to the lower burger prices, Sally goes to the local pizza restaurant less often. Can you tell from this whether or not pizza is an inferior good for Sally?
 - Suppose instead that, in response to the lower burger prices, Sally goes to the burger joint less often. Explain how this could happen in terms of the income and substitution effects by using the concepts of normal and/or inferior goods.

ADVANCED QUESTIONS

10. Consider an income guarantee program with an income guarantee of \$3,000 and a benefit reduction rate of 50%. A person can work up to 2,000 hours per year at \$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 \$2,000. Second, it will not reduce benefits for the first \$3,000 earned by the workers. After this, it will reduce benefits at a reduction rate of 50%.

- Draw the budget constraint facing any worker under the original program.
 - Draw the budget constraint facing any worker under the proposed new program.
 - 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?
11. Consider a free market with demand equal to $Q = 900 - 10P$ and supply equal to $Q = 20P$.
- What is the value of consumer surplus? What is the value of producer surplus?

- Now the government imposes a \$15 per unit subsidy on the production of the good. What is the consumer surplus now? The producer surplus? Why is there a deadweight loss associated with the subsidy, and what is the size of this loss?

12. Governments offer both cash assistance and in-kind benefits such as payments that must be spent on food or housing. Will recipients be indifferent between receiving cash versus in-kind benefits with the same monetary values? Use indifference curve analysis to show the circumstances in which individuals would be indifferent, and situations in which the form in which they received the benefit would make a difference to them.

13. Consider Bill and Ted, the two citizens in the country of Adventureland described in Problem 9 from Chapter 1. Suppose that Bill and Ted have the same utility function $U(Y) = Y^{1/2}$, where Y is consumption (which is equal to net income).

- Rank the three tax policies discussed in Problem 9 from Chapter 1 for a utilitarian social welfare function. Rank the three for a Rawlsian social welfare function.
- How would your answer change if the utility function was instead $U(Y) = Y^{1/5}$?

- c. Suppose that Bill and Ted instead have different utility functions: Bill's utility is given by $U^B(Y) = 1/4Y^{1/2}$, and Ted's is given by $U^T(Y) = Y^{1/2}$. (This might happen for example, because Bill has significant disabilities and therefore needs more income to get the same level of utility.) How would a Rawlsian rank the three tax policies now?

Effects of Redistributive Policies in Adventureland			
	0%	25%	40%
Bill's pretax income	\$1000	\$800	\$400
Bill's taxes	0	200	160
Bill's net income	1000	600	240
Ted's pretax income	120	120	120
Ted's transfer payment	0	200	160
Ted's net income	120	320	280

14. You have \$4,000 to spend on entertainment this year (lucky you!). The price of a day trip (T) is \$40 and the price of a pizza and a movie (M) is \$20. Suppose that your utility function is $U(T,M) = T^{3/4}M^{1/4}$.
- What combination of T and M will you choose?
 - Suppose that the price of day trips rises to \$50. How will this change your decision?