

Economics 101
Homework #3
Fall 2009
Due 10/28/2009 before lecture

Directions:

- The homework will be collected in a box before the lecture.
- Place your name, TA name and section number on top of the homework (legibly).
- Late homework will not be accepted.
- It is essential that you do the homework; you can work with others but you must write up the solutions yourself.
- Please show your work.

1. International Trade

Consider the market for books. Domestic demand for books in a small country is given by the equation $P = -3Q_d + 100$. Domestic supply is given by the equation $P = Q_s$. The world price of books is \$10.

- a. Assume that this economy is closed to world trade. Calculate the equilibrium quantity, price in the market for books.
- b. Now assume that this economy opens to world trade. How many units of books will this economy import or export? Calculate the equilibrium quantity, price, consumer surplus, producer surplus, and total surplus in the market for books if this economy opens to trade. Is there a deadweight loss when this economy opens to trade?
- c. Continue to assume that this economy is open to world trade, but now the government has imposed a tariff of \$9 per book imported. Calculate the new equilibrium quantity, price in the market for books when this economy imposes this tariff.
- d. Instead of the tariff, suppose that the government implements a quota of 12 books. Calculate the new equilibrium quantity, price, consumer surplus, producer surplus, and the deadweight loss in the market for books when this country imposes the quota.
- e. Instead of the quota of 12 books, suppose that the government implements a quota of 25 books. Compare the deadweight loss in the market to that of part (d).
- f. If the world price of books equaled \$31 instead of \$10, how many units would this country import or export? Calculate the new equilibrium quantity, price.

2. Elasticity

Consider the market for bicycles. The demand is given by $P = -1.5Q_d + 60$.

- Suppose that the price changes from \$15 to \$30. Using the standard percentage change formula (not the midpoint method), what is the price elasticity of demand?
- Suppose that the price changes from \$30 to \$15. Using the midpoint method, what is the price elasticity of demand?
- When $P = 15$, what is the price elasticity of demand, using the point elasticity method? Is it elastic or inelastic? At $P = 15$, if the price goes up, does the total revenue increase, decrease, or stay the same?
- When $Q_d = 10$, what is the price elasticity of demand, using the point elasticity of demand? Is it elastic or inelastic? At $Q_d = 10$, if the price goes up, does the total revenue increase, decrease, or stay the same?
- At what price is the price elasticity of demand equal to 1?
- Suppose you are a producer of bicycles. To maximize total revenue, at what price should you sell bicycles? How much is the maximized total revenue?

3. Real vs. Nominal price

You are given the following information about production in Wonderland.

Item	Price in 2007	Quantity in 2007	Price in 2008	Quantity in 2008	Price in 2009	Quantity in 2009
Bagel	2	5	2	5	2	5
Pizza	15	4	18	3	20	2
Ears of Corn	5	3	4	5	4	7
Banana	1	10	2	10	1	12

For purposes of computing the CPI you are told that the market basket consists of 5 bagels, 3 pizzas, 5 ears of corn, and 10 bananas.

- Calculate the CPI for 2007, 2008, and 2009 using 2008 as the base year. Use a 100 point scale for your CPI measure. Show your work.
- Calculate the rate of inflation between 2007 and 2008, and the rate of inflation between 2008 and 2009, based upon the above information and using the CPI as your measure of the price level.

- c. Holding everything else constant, recalculate the CPI for 2007, 2008 and 2009 using 2009 as the base year.
- d. Based on your calculation in part (c), what is the rate of inflation between 2007 and 2008? What is the rate of inflation between 2008 and 2009?
- e. Suppose you live in the economy depicted in the above information and your nominal salary in 2007 is \$18,000 a year. Your boss tells you she is going to increase your nominal salary to \$20,000 in 2008. Based on your calculation in part (c) and (d), will this nominal increase in salary increase your purchasing power or decrease your purchasing power? Show your work.
- f. Suppose your nominal salary was \$20,000 in 2008. Based on your calculation in part (c) and (d), what's the minimum nominal salary you should ask for 2009 in order to maintain the same real salary/purchasing power you had in 2008?

4. Budget set

Suppose Noah's available income to spend on jeans and shirts is \$100. Furthermore, suppose the price of jeans is \$50 per pair of jeans and the price of shirts is \$10 per shirt.

- a. Draw Noah's budget line on a graph. Measure jeans on the x-axis and shirts on the y-axis. Label your graph carefully and include the numerical values of the y-intercept and x-intercept.
- b. Suppose the price of shirts doubles while the price of jeans and Noah's income are unchanged. Provide an equation in slope-intercept form for the budget line, and draw Noah's budget line on a graph.
- c. Now, Noah gets a raise in his salary. So, Noah's available income to spend on jeans and shirts becomes \$200. Prices are the same as in part (b). Provide an equation in slope-intercept form for the budget line, and draw Noah's budget line on a graph.
- d. Prices and Income are the same as in part (c). Which of the following combinations of jeans and shirts can Noah afford? (Put a check in the appropriate column for each of the given combinations.)

Combination	Afford	Not Afford
5 shirts, 2 jeans		
2 shirts, 3 jeans		
8 shirts, 1 jeans		
1 shirts, 5 jeans		