ECON 110, Prof. Hogendorn

Problem Set 1

Note that all problem sets include both problems to turn in and review problems. Look over the review problems before working on the problem sets, because often they contain material showing you how to do the problems.

1. *Niko.* In 2001, Niko bought four video game consoles: one from Microsoft for $300, one from Sony for $300, and two from Nintendo for $200 each.

    In 2006 Niko checked out the prices for systems from each manufacturer. A new console from Microsoft cost $280, a new console from Sony cost $400, and a new console from Nintendo cost $250.

    (a) Suppose we treat each console as an unchanging good, e.g. a 2001 console from Microsoft is the same as a 2006 console from Microsoft. Assuming all Niko buys are the consoles mentioned above, calculate a consumer price index for 2006 with 2001=100.

    (b) Using the Rule of 70 and your answer to (a), how long will it take for video game prices to double. (Be careful, your answer to part (a) is *five* years of inflation, not one.)

    (c) All three systems are upgraded with many new and better features: Microsfot Xbox to Xbox 360, Sony Playstation 2 to Playstation 3, Nintendo GameCube to Wii. Given this, is Niko worse off from the inflation?

    (d) Recall the three characteristics of money. Would Sony's Playstation 2 from 2001 make a good money?

2. *Movies.* If you were born in 1990, let's guess that your parents were college age in 1978 and your grandparents were college age in 1948. Let's see what has changed since they were kids.

First, some data: with 1983=100, the CPI was 24.1 in 1948, 65.2 in 1978, and it is 207.0 today.

   (a) Today it usually costs $7.00 to go to a movie (I know this seems hard to believe, but that is the official statistic). If movie prices follow the CPI, how much did your parents pay in 1978 and your grandparents in 1948?

   (b) What are the CPIs for 1948, 1978 and 2008 setting 2008 = 100?

   (c) Actually, the real movie price in 1948 was $0.36 and in 1978 it was $2.34. What was the approximate yearly percentage inflation between 1948 and 1978, and 1978 and 2008, using the CPI? Using the actual movie prices? (Hint, figure out how many doublings occurred and use the Rule of 70 backwards.)

   (d) What is wrong with the following statement: "Since movie prices are a part of the CPI, but they don't go up at the same exact rate as the CPI, the CPI must not be calculated correctly."

3. *SUVs.* This question asks you to analyze the market for Sport Utility Vehicles (SUVs).

   (a) The demand function (measured in hundreds of thousands of vehicles) for SUVs turns out to be $q^d = 4027p^{-1.5}$, where p is the price of a typical SUV (in this problem we will measure price in tens of thousands of dollars). What are the first and second derivatives of this function? Graph the function and explain how the first and second derivatives relate to the shape of the graph.

   (b) The supply of SUVs turns out to be $q^s = 258.3p$. What is the equilibrium price and quantity?

(c) Suppose that the price of gas rises. Which of the following is more likely to be the new demand curve for SUVs? Why?

$$q^d = 4300p^{-1.5} \qquad q^d = 3700p^{-1.5}$$

(d) Calculate and graph what happens to the equilibrium price and quantity after the demand curve changes.

4. *Shifters.* Illustrate and explain the impact on equilibrium market price and quantity exchanged of each of the following changes:

   (a) An improvement in the technology of production

   (b) An increase in individuals' desire for the good

   (c) A decrease in the wage paid to all workers (be careful here)

Review Problems only, not to turn in:

5. *HardBop.* Identify the following as positive or normative statements:

   (a) "Hard bop" jazz music causes warts and hearing loss.

   (b) Free jazz music is an unparalleled musical experience.

   (c) The U.S. unemployment rate is lower than at this time last year.

   (d) The U.S. unemployment rate is still too high.

   (e) Unemployment in teenage labor markets would go up if the minimum wage were raised.

   (f) The government should raise the minimum wage.

6. *SW25.1* Which of the three traits of money do the following assets have, and which are they missing: a house, a day pass to an amusement park, Euros held by a resident of New Haven, CT, a painting, gold.

7. *psquared.* Suppose the demand function for a good is $q = 100 - 2p^2$.

(a) Find the first and second derivatives of this demand function. What are the signs of the derivatives?

(b) Graph this demand function. Explain how your answer to part (a) affects the shape of the curve.

8. *Tradition.* According to Jerry Muller's book *The Mind and the Market,* what were the two traditions in Western thought that made commerce and money-lending disreputable occupations?

Answers to Review Problems:

5. *HardBop_a*

(a) P

(b) N

(c) P

(d) N or P, depending on interpretation of "too high:" "too high to achieve positive condition X" or "undesirably high."

(e) P

(f) N

6. *SW25.1_a.* House: store of value, not a medium of exchange because it is difficult to buy a loaf of bread with a house, not a unit of account because it would be difficult and irrelevant to calculate the number of houses it would take to buy a loaf of bread.

Day pass: a store of value, provided you can use the pass for some future day, not a medium of exchange except at the amusement park itself where the pass buys you admission, not a unit of account because prices are not measured in terms of day passes.

Euros in New Haven: a store of value, not a medium of exchange because very few people in New Haven will accept Euros in exchange for

goods, not a unit of account because in New Haven the value of goods is measured in dollars.

Painting: a store of value.

Gold: a store of value, an imperfect medium of exchange since there are probably some people (but not many) who will accept gold as a means of payment, not a unit of account because we do not measure the price of goods in grams of gold.

7. *psquared_a.*

   (a) The derivatives are:

   $$\frac{dq}{dp} = -4p < 0 \qquad \frac{d^2q}{dp^2} = -4 < 0$$

   (b) From (a) we know that the function is downward sloping and concave:
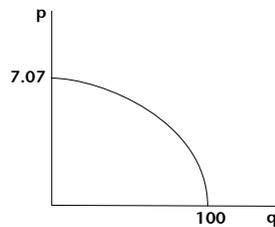
8. *Tradition_a.* The first tradition is the *civic* tradition, alternatively the *civic republican* or *classical* tradition. Going back to Aristotle, it says that a citizen's proper focus is the *polis* or state. The state is best served by citizens engaged in public affairs and managing their estates for agriculture. Commerce and labor are distasteful and should be left to foreigners and slaves.

   The second tradition is the *Christian* tradition which is based on Biblical passages including Gospel accounts of Jesus' sayings and actions. These regard commerce and especially money-lending as immoral. They

are based on zero-sum thinking that if one person gets richer, it necessarily means someone else gets poorer. Later Christian thinkers drew on Aristotle's notions of natural and unnatural uses of goods to bolster this tradition.

The two traditions were combined to force Jews into the money-lending role in the late Middle Ages, since Jews could be classified as both foreigners and non-Christians.