

Econ 001: Midterm 1 Answer Key  
February 15th, 2011

**Instructions:**

- **This is a 60-minute examination.**
- **Write all answers in the blue books provided. Show all work. Use diagrams where appropriate and label all diagrams carefully.**
- **Write your name and your Recitation Instructor's name in every blue book that you use.**
- **This exam is given under the rules of Penn's Honor system.**
- **All blue books, blank or filled, must be handed in at the end of this exam. No blue books may be taken from the room.**
- **No calculators allowed!**

The Midterm has 2 parts. Part 1 consists of 8 multiple-choice questions. Part 2 consists of 2 short-answer questions.

You need 2 blue books. You are required to use the two blue books as follows:

- **BOOK 1:** write your answers to the **7 multiple-choice questions** on the first page and then write your answers to the **first short-answer question** in the remainder of the book.
- **BOOK 2:** write your answers to the **second short-answer question**.

**Part I: Multiple Choice Questions (5 points each/35 points total):**

1. Attendance at GREAT meetings on Sundays has fluctuated more this semester than attendance on Mondays. What could explain this?
  - a. Superbowl Sunday affected the economic cost of attending Sunday sessions but not Monday sessions.
  - b. Proximity of the midterm affected the marginal benefit of attending Monday sessions but not Sunday sessions.
  - c. Both above statements explain attendance patterns listed above.
  - d. Neither statement explains attendance patterns listed above.

2. China and the U.S produce two goods: wild rice and coconut ice cream. The opportunity cost of coconut ice cream (in terms of wild rice) is 2 for the U.S and 4 for china.

Using the information given above, which of the following statement(s) can we definitively say are true?

- I. China has an absolute advantage in coconut ice cream production.
  - II. China has a comparative advantage in coconut ice cream production.
- a. Both statements.
  - b. Only statement I.
  - c. Only statement II.
  - d. Neither statement.

3. Suppose an economy is currently producing at a point inside the production possibility frontier. We know that

- a. the economy lacks the resources to produce at a more desirable point.
- b. the economy's available technology prevents it from producing at a more desirable point.
- c. there may be unemployment in the economy.
- d. any of the above statements would be a legitimate explanation for the situation.

4. Beans and lentils are substitute goods. Beans are also a normal good. Which of the following statements is **wrong**?

- a. If the price of lentils decreases the demand for beans decreases.
- b. If the income increases the demand for beans increases.
- c. If the price of beans increases the demand for lentils increases.
- d. If the price of lentils increases the demand for lentils decreases.

5. We are given that the price of corn is \$4 a bushel and that a million bushels are exchanged in the market. We also know that the supply & demand curves are straight lines.

- i. If we calculate consumer surplus we will find that the more elastic the demand is the larger is consumer surplus.
- ii. If we calculate producer surplus we will find that the more elastic the supply is the smaller is producer surplus.

Which of the above statements is true?

- a. Only i.
- b. Only ii.
- c. Both are true.
- d. Neither is true.

6. We are told that the demand for wheat is inelastic. Suppose the price of wheat increases by 50%, we should expect quantity demanded to:

- a. Increase by 50%.
- b. Decrease by more than 50%.
- c. Decrease by less than 50%.
- d. Increase by more than 50%.

7. President Obama is suggesting subsidizing jobs to reduce unemployment. Assume supply & demand for labor are standard and that currently there are no government interventions in this market. The suggested subsidies would:

- I. Increase employment
  - II. Decrease unemployment.
  - III. Increase total surplus.
- a. only I is correct
  - b. only II is correct
  - c. only III is correct
  - d. All three are correct.
  - e. Both I & II but not III
  - f. Both II & III but not I
  - g. Both I & III but not II
  - h. None are correct

**Answer Key:**

1. a
2. d
3. c
4. d
5. b
6. c
7. a

**Part II: Short Answer Questions (33 points each/61 points total):**

**Explain answers carefully using graphs where appropriate.** Your grade depends on your explanation as well as your answer: so show your work!

**Keep your answers short! You only need a sentence or two per section.**

**Q1. Please write your answer in bluebook #1.**

Antonia and Elena are two college friends who graduate from Penn Economics in 2009. Now Antonia lives on the island of Maui and owns 10 acres of land. Elena lives on the island of Oahu and owns 10 acres of land as well. Antonia and Elena can produce grapes or peaches with their land. Their productivity, per year, is given in the following table:

|         | Grapes<br>(kilograms <b>per acre</b> ) | Peaches<br>(kilograms <b>per acre</b> ) |
|---------|--|---|
| Antonia | 1                                      | 1                                       |
| Elena   | 2                                      | 1                                       |

- a. Draw the **joint** PPF of Antonia and Elena with grapes on the horizontal axis. If they decide to jointly produce 5 kilograms of peaches, how many kilograms of grapes they can (jointly) produce? Who is producing what?
- b. Suppose instead of merging into a combined PPF they choose to trade with each other. At what prices of grapes (in terms of peaches) would they agree to trade?

Now suppose that the productivity of Antonia changes as following. From the first 6 acres of vines she can produce 1 kilogram grapes per acre. From the 7th acre on, however, each additional acre of vines gives her 0.5 kilograms of grapes. She can still produce 1 kilogram of peaches per acre.

- c. Draw the joint PPF of Antonia and Elena in this case.
- d. Suppose that Antonia and Elena are producing jointly (as in part c) and that the international price for a kilogram of grapes is 1.5 kilograms of peaches. With this information can you infer what quantities Antonia and Elena will choose to JOINTLY produce? If yes write those quantities if not write an argument of why not.

**Answer Key:**

**a.**

**PPF with 1 kink points at (0,20) (20,10) (30,0)**

**5 kgs peaches will be produced by Antonia. That leaves Antonia producing 5 kgs grapes & Elena 20 kgs grapes for a total of 25 kgs grapes.**

**Points:12**

**PPf with 1 kink: 3**

**Each points:1 (total3)**

**25 grapes:2**

**Elena grapes:2**

**Antonia both:2**

**b. Answer:**

**Price of grapes must be between the two Opportunity Costs or  $1/2p < P_g < 1p$**

**Points: 6**

**Price is a range:2**

**Each side:2**

**Note: if a student suggest one specific (correct) price: 2 points**

**c. Answer:**

**PPf with two kinks with points at (0,20), (20,10), (26,4), (28,0).**

**Points: 7**

**PPF with 2 kinks: 3**

**Each point: 1**

**Note: a PPF with 1 kink gets a max of 3 points.**

**d. Answer:**

**Those with a lower opportunity cost of growing grapes compared to the international price will produce grapes. In this case the first 6 acres of Antonia and the 10 acres of Elena both have an O.C.  $< 1.5$  and those acres will grow grapes. The last 4 acres of Antonia have an opportunity cost of 1.5 and they will grow peaches.**

**So we have:**

**$10 \cdot 2 + 6 \cdot 1 = 26$  grapes**

**And**

**$4 \cdot 1 = 4$  peaches.**

**Points: 8**

**Understanding that we need to compare O.C. to price:2**

**Understanding that Elena produces grapes: 1**

**Understanding that Antonia produces both: 1**

**26 grapes total: 2**

**4 peaches: 2**

**Q2. Please write your answer in bluebook #2.**

Recent articles in Sports Illustrated & The Economist discuss the complexity of pricing venue tickets for sports & music events. This question asks you to use the basic model of supply & demand to start analyzing these issues.

We will return to this topic later on in the semester.

We will use the case of the Wells Fargo Center, where the 76ers (Philadelphia's NBA basketball team) plays. The stadium holds a fixed 20,000 seats, but demand for the games fluctuates, depending the team they play against.

- a. When the 76ers play against the Detroit Pistons demand for the games is relatively low. At the going tickets price of \$30 there are many unsold seats. Draw a supply & demand graph that is consistent with this statement. Mark the empty seats clearly.
- b. The Center is considering lowering the ticket price to fill up the empty seats. But Sean, a recent Wharton Graduate, claims that this is a bad idea as it will lower revenues. Under what conditions is Sean correct? Do you think his assumption makes sense in this case?
- c. When the 76ers play against the Boston Celtics demand for the games is high. At the going tickets price of \$30 there is excess demand. Draw a supply & demand graph that is consistent with this statement. Mark the excess demand clearly.
- d. Under what condition would it make sense for the Center to raise the ticket price for a Celtics game and decrease the excess demand? Would it ever make sense for them to have empty seats in these games? Explain why or why not.

The city of Philadelphia is considering a Sports Tax to solve its budget deficit. This would be a fixed \$5 tax on each 76ers ticket.

- e. Assuming that ticket prices were always set so that all seats were filled and there was no excess demand, who would be impacted by this tax more: those who want to see the Pistons (low demand) or those who wish to see the Celtics (high demand)? Explain graphically.

**Answer Key:**

**a. Completely inelastic supply at 20,000. Demand intersects supply at a price less than 30. The empty seats=excess supply=20,000-(Quantity demanded at P=30).**

**Points: 6**

**Completely inelastic supply at 20,000:2**

**Demand intersects at P<30:2**

**Excess supply:2**

**b. Answer:**

Sean is correct if demand for the games is inelastic. In this case lowering the ticket prices will increase the quantity sold but revenues will decrease.

This assumption makes sense if demand is linear as we know that the lower part of the line is inelastic. This would also make sense if we think only die hard 76ers fans would go to watch such a lousy game. They are such good fans they would go anyway, and lowering the price will not attract more spectators.

**Points: 6**

Relating elasticity to revenue:2

If inelastic and price decrease will decrease revenue:2

Making a meaningful statement about elasticity:2

**c. Answer:**

Completely inelastic supply at 20,000. Demand intersects supply at a price higher than 30. The excess demand = (Quantity demanded at  $P=30$ ) - 20,000.

**Points: 5**

Inelastic supply with higher demand:1

Equilibrium price above 30:2

Excess demand: 2

**d. Answer:**

As long as they could still fill all 20,000 seats raising the price is clearly good as  $\text{Revenues} = P \cdot Q = P \cdot 20,000$  and is bigger the higher is  $P$ . But clearly if they raise the price too much then they may not fill all the seats. In that case too, as long as demand is inelastic, raising the price would increase revenues. Only in the region where demand is elastic would this not make sense.

**Points: 5**

If they can sell all seats raising price is clearly good: 3

It makes sense to have empty seats if demand inelastic: 2

**e. Answer:**

As the supply is completely inelastic, as long as the price is set at the equilibrium we know that the entire tax burden will fall of the supplies. Neither Celtic fans nor Pistons fans will pay this tax.

**Points: 10**

Typical graph with tax in the case of completely inelastic supply: 4

Showing tax burden falls of producer: 4

Understanding that it does not depend on demand:2

**Note:** A beautifully drawn graph showing a \$5 tax with consumer & producer burdens clearly marked, but with an upward sloping S curve gets 5 points max.