

Econ 001: Midterm 1  
February 17, 2009

**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.**
- **The use of Programmable Calculators is in violation of Departmental rule. It is strictly forbidden!**

The Midterm has 2 parts.

Part 1 consists of **8** multiple-choice questions. Please use the first page of a blue book to record your answers.

Part 2 consists of 2 short answer questions. Please use a separate blue book for each.

**Part I: Multiple Choice Questions (4 points each/32 points total):**

1. Steve already bought a non refundable plane ticket to Florida for Spring Break, which cost him \$150. A week before Spring Break, Steve's roommate Harry invites Steve to come stay with him in New York over break. Train tickets to New York cost \$50, and Steve knows that he will get \$250 worth of benefit if he goes to New York. What is Steve's opportunity cost of going to Florida?

- a) \$150
- b) \$350
- c) \$200
- d) \$250

2. The Economic Stimulus package that we expect to be passed soon includes large investment projects in infrastructure (e.g., roads, railways, bridges). The goals of this package are:

- a) To shift the economy from inside the PPF to onto the current PPF curve.
- b) To shift out the economy's PPF curve for future years.
- c) Both a & b are correct.
- d) Neither is correct.

3. The United States and Japan produce Movies and Cars as follows:

	USA	Japan
Movies (per worker)	20	70
Cars (per worker)	60	20
Workers	30	7

- a) Japan has an absolute and comparative advantage in producing movies.
- b) The USA has an absolute and comparative advantage in producing movies.
- c) Japan has an absolute advantage and the USA has a comparative advantage in producing movies.
- d) The USA has an absolute advantage and Japan has a comparative advantage in producing movies.

4. The exceptionally cold January has reduced the supply of roses. On Valentine's Day more boxes of chocolates were sold than in past years. These two statements are consistent with Roses and Chocolate being, for most boyfriends,

- a) Complements, as the cross price elasticity is positive.
- b) Substitutes, as the cross price elasticity is positive.
- c) Complements, as the cross price elasticity is negative.
- b) Substitutes, as the cross price elasticity is negative.

5. A recent salmonella scare has linked 9 deaths to contaminated peanut butter. As a result we should expect:

- a) Lower demand for peanut butter.
- b) Lower supply of peanut butter.
- c) A fall in the price of peanut butter.
- d) Both a & b
- e) Both a & c
- f) Both a, b & c

6. You notice on your most recent trip to the supermarket that Fresh Grocer-brand olive oil is less expensive than on your last visit. This surprises you because you had read recently how storms in Spain destroyed much of its olive crop. Which of the following is a possible explanation?

- a) Store-brand olive oil is an inferior good, and income has decreased.
- b) Supply of olive oil is relative inelastic.
- c) Demand for olive oil is relatively elastic.
- d) The current recession has depressed wages for olive harvesters.

7. The price of widgets has been cut, leading to an increase in total revenue for Widget Manufacturing Corp. This implies that the demand for widgets is:

- a) Inelastic.
- b) Elastic.
- c) Unit Elastic.
- d) Perfectly elastic.

8. Ed Rendell, Governor of Pennsylvania, has suggested increasing the tax on cigarettes to raise revenues and pay for college grants. In which of the following cases should we expect the **biggest** increase in revenues and the **smallest** Dead Weight Loss?

- a) The demand for cigarettes is perfectly elastic.
- b) The supply of cigarettes is perfectly elastic
- c) The demand for cigarettes is perfectly inelastic.
- d) All of the above cases will have similar consequences for Dead Weight Loss.

### Answer Key

- 1. c
- 2. c
- 3. a
- 4. b
- 5. All answers accepted
- 6. d
- 7. b
- 8. c

**Part II: Short Answer Questions (34 points each/68 points total):**

Please use a separate blue book for each question.

**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.**

At the Greek Lady there are 3 workers, Tom, Dick and Harry, who can make salads and gyros. Tom, Dick and Harry can respectively make a maximum of 200, 300 and 400 salads in a day. Further, their opportunity cost of making a gyro (expressed in terms of salads) is respectively 2, 3 and 4. The following table sums up this information

	Tom	Dick	Harry
Maximum amount of salads possible to produce in a day	200	300	400
Opportunity cost of producing a gyro (in terms of salads)	2	3	4

- a) Prove that the maximum amount of gyros that the Greek Lady can make in a day is 300.

**Answer:**

**Tom can make 200/2 gyros**

**Dick 300/3 gyros**

**Harry 400/4 gyros**

**Total=300 gyros**

**Points: 4**

**Max gyros for each person=salads/O.C. for that person: 3 points**

**Max gyros=sum of the three: 1 point**

- b) Draw the Greek Lady's Production Possibility Frontier (PPF) with gyros on the horizontal axis.

**Answer:**

**PPF with 3 slopes (2 kinks) at points (0,900); (100, 700); (200, 400); (300, 0)**

**Points: 6**

**General shape: 2**

**Each point: 1 (note: if only one coordinate is stated the point gets 1/2).**

- c) Prof. Stein is throwing a party this coming Monday (23<sup>rd</sup> of Feb.) in her class to celebrate the excellent performance of her students in the first midterm. She wants to put an order of 150 gyros and 550 salads at the Greek Lady. Can the Greek Lady service this order (with only that day's production)? If yes, would it be possible for the Greek Lady to service any other customers on the 23<sup>rd</sup> of Feb? Support your answers with precise reasoning.

**Answer:**

To get 150 gyros we will use those with the lowest opportunity cost, i.e., Tom, full time, and Dick, half time, to get  $100+50$  gyros.

These leave Harry, full time, and Dick, half time, producing salads or  $400+150=550$  salads.

With 150 gyros the maximum number of salads is 550 and no more salads could be produced that day.

**Points: 6**

**Showing that 550 salads is possible: 4 points**

**Stating (or showing graphically) that that is the max given 150 gyros: 2 points.**

d) The PPE department is hosting Princeton economist and Nobel Laureate Paul Krugman tomorrow (18<sup>th</sup> of Feb.) for its 2009 Goldstone Forum. They too want to get their refreshments from the Greek Lady. Their order comprises of 125 gyros and 650 salads. Prove that it is not possible for the Greek Lady to service this order.

**Answer:**

To get 125 gyros we will use those with the lowest opportunity cost, i.e., Tom, full time, and Dick, quarter time, to get  $100+25$  gyros.

These leave Harry, full time, and Dick, three quarters time time, producing salads or  $400+225=625$  salads.

With 125 gyros the maximum number of salads is 625 and thus serving PPEs order is not possible.

**Points: 6**

**Showing that 625 salads is the max: 4 points**

**Stating (or showing graphically) that that PPEs order is impossible: 2 points.**

Now suppose a new possibility opens up for the Greek Lady. It can trade with Allegro Pizza. It is determined that the price of a gyro (in terms of salad) is 5 salads.

e) Will it be in the interest of the Greek Lady to trade with Allegro pizza at the prevailing prices? If they do trade, how many gyros and salads will the Greek Lady produce?

**Answer:**

**Note that the Greek Lady has a lower Opportunity Cost of gyros (in terms of salad) than the trade ratio set with Allegro. Thus we can conclude that the Greek Lady should specialize in gyros and produce 300 gyros and no salads.**

**Points:6**

**Trade will be beneficial due to differences in Opportunity Cost: 3 points**

**Production point (300 gyros, 0 salads) : 3 points**

**Note: if students state “the Greek Lady will produce only salads” (w/o specifying that they produce 300 salads) they get 2 out of these 3 points.**

- f) Will it be possible now for the Greek Lady (with the opportunity to trade with Allegro Pizza) to service the order of the PPE department? Explain why or why not.

**Answer:**

**The Greek Lady can produce 300 gyros a day. If it keeps 125 gyros it will have  $300-125=175$  gyros to trade. At a price of 5 salads per gyros that is  $175*5=875$  salads which is more than needed for the PPE order of 650. Thus the Greek Lady, with trade, can fulfill the order.**

**Points: 6**

**Maximum salads given 125 gyros, assuming trade: 4 points.**

**The order is therefore now possible: 2 points.**

## Q2.

“As Recession Deepens, So Does Milk Surplus” stated an article in the New York Times on January 1<sup>st</sup>, 2009.

This question asks you to analyze the market for milk and the effect of the recession on this market. It also asks you to evaluate possible government intervention in this market.

Please answer this question graphically. We expect a series of large, clear, well labeled graphs to answer each of the following parts.

- a) Last summer the price of milk reached a peak of \$3.89 a gallon. Draw a supply & demand graph for milk. Mark clearly this equilibrium price and quantity ( $Q^*$ ).

**Answer:**

**Typical S&D with equilibrium price market at \$3.89.**

**Points: 4**

**Labeling axis: 1**

**Labeling S & D: 1**

**Marking equilibrium: 2**

- b) Due to the recession the price of milk has fallen by some 10 percent. What shift in the demand curve is consistent with this fact? Add this to your graph from part a. What does this say about income elasticity of milk? What type of product is this?

**Answer:**

**The price decrease is consistent with a shift in of the demand curve. We know there is a recession and thus incomes are falling. This implies that milk is a normal good.**

**Points: 6**

**Shift in of demand curve: 2**

**Income elasticity > zero: 2 points**

**Relating this to milk being a normal good: 2**

- c) Instead of selling fresh milk, the milk can be processed and made into milk powder. Draw a typical supply & demand for milk powder. As the price of fresh milk drops what will happen to the supply of milk powder? Explain & show graphically.

**Answer: 5**

**Start with typical S & D.**

**As the price of fresh milk drops firms will sell some of their milk to be turned into milk powder instead of fresh milk so that the supply of milk powder will shift out.**

**Points: 5**

**Typical S&D graph, but it cannot be the graph from parts a& b and it must be labeled as “milk powder”: 2 points**

**Shift out of the supply curve: 3 points.**

- d) In the powdered milk market the government sets a minimum price. If the price falls below this minimum, the government guarantees buying any surplus milk. Recently the equilibrium price has fallen below this minimum and the Agriculture Department has committed to buying 111.6 million pounds of milk powder at 80 cents a pound, for roughly \$91 million. Add the minimum price to your graph and show the amount of powdered milk the government will purchase.

**Answer: 6**

**Add a price floor at 80 cents a pound. This must be above the new equilibrium in the market. The quantity the government will purchase is the difference between quantity supplied at 80 cents a pound and quantity demanded at 80 cents a pound.**

**Points: 6**

**Add  $p_{\text{floor}}$  above the new equilibrium price: 3 points**

**Mark excess supply clearly: 3 points.**

**If compare  $Q_s$  or  $Q_d$  to  $Q^*$ : get 1 out of 3.**

- e) What area in your graph corresponds to the “\$91million dollars” the government will spend on powdered milk?

**Answer:**

**Price floor \* the quantity the government is purchasing.**

**Points: 4 for marking area correctly.**

- f) Evaluate this regulation of minimum price & surplus purchase of powdered milk. In particular: is it efficient? Is it equitable? Explain.

**Answer:**

**This is inefficient as in this case firms are producing at a quantity higher than the efficient quantity. There is Dead Weight Loss. At this quantity  $MC > MB$ .**



**It is equitable because “the farmer feeds us all” and we want to be kind to farmers. Or maybe this is not fair, because we are spending money that should go to corporate welfare rather than for farmers’ income.**

**Points: 6**

**Efficiency: 4 Need to relate to DWL or to  $MC > MB$ .**

**Equity: 2 (need to state an opinion or explain why you don’t have any)**

g) “The thing is, they [the farmers] are going to produce it because they have to milk the cows,” Mr. Van Groningen said. “It’s like a river. It keeps coming.” ... What does this mean about the shape of the supply curve of milk?

**Answer:**

**This suggests that the supply of milk is perfectly inelastic. No matter what the price is the same quantity is produced. Graphical explanation is acceptable.**

**Points: 3**

**(if state only ‘inelastic’ 2 out of 3)**