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Department of Economics
Economics 201-03
Spring 2023

Homework #2 (due by 9:00pm on Friday, February 3)

*Please submit your answers to this homework through the Assignment link at Blackboard. **No credit will be given for answers submitted in class or emailed to the professor, regardless of the excuse.** This includes unique excuses like the police confiscated my computer right before I was going to submit it, excuses like “I lost my Internet”, etc. Please note that all submissions are final, again – regardless of the excuse (which includes “I accidentally hit the submit button”). Note that Blackboard allows you to save your answers, but you must hit the “Save and Submit” button to submit your answers. If you are unfamiliar with Blackboard, then it would be a good idea to visit the class page at Blackboard and check out the homework assignments as they are posted.*

Please note that when Blackboard grades homework answers, more specifically – answers to the fill-in-the-blank questions – your answer must match exactly with the answer that Blackboard is looking for. Below, you’ll find some instructions on how to properly format these answers. Reading this section is strongly recommended.

Homework Questions 7, 8, 11a and 11b

Formatting matters with the answers in these questions. For this reason, **understand that your answer can be technically correct but graded as wrong because you didn’t follow the directions provided below.** Given that formatting is considered part of your answer, a wrongly formatted answer is still a wrong answer.

Please note the following comments regarding formatting below.

(i) Round your answer in questions 7 (both 7a and 7b) and 8 (both 8a and 8b) to the nearest hundredth (i.e. out to 2 decimal places).

(ii) Your answer in question 11a should be expressed as a whole number. If you do get a fractional answer, round that answer to the nearest one unit. E.g., if your answer is 25.1, then record your answer as 25.

(iii) Your answer in question 11b may be expressed in terms of dollars, dollars and cents, as an integer or as a number extended out to a decimal expressed in the hundredths. I.e., you don’t necessarily need to include a dollar sign. E.g., if your answer is 100, then record your answer as \$100, \$100.00, 100 or 100.00, but not \$100.0 or 100.0.

Homework #2 Questions

1. Consider the Metro Louisville area market for oil change (i.e. oil changes for automobiles provided by a firm in different areas of Louisville or Jefferson County). Assume that this market consists of many demanders and suppliers within the city of Louisville. Note that consumers can also purchase an oil change in areas outside of Louisville, e.g. Oldham County, instead of what we consider Metro Louisville. Assume as well that an oil change is considered a normal good and necessity, and that a substitute for buying an oil change would be for consumers to perform those oil changes themselves (i.e. not buy their oil change service from a firm, but rather, buy the oil themselves and perform the oil change at home).

You must identify how different events affect the oil change market in Louisville by matching each event (listed under “Events” below) to the item which represents the most likely item on the list of effects on the market for Louisville oil changes.

Events (Question Items):

- a. Environmental legislation increases the cost associated with providing oil changes.
- b. Higher income for all households within the Metro Louisville area.
- c. Indiana eliminates the state sales tax on all services, which includes services like oil changes.
- d. Metro Louisville passes a Living Wage law that raises the wage of unskilled workers within all Louisville area businesses, including those employed at firms who provide oil changes.
- e. Technological change within firms who provide oil changes allows these firms to provide those services more efficiently.

Effect on Louisville Market for Oil Changes (Answer Items):

- A. Increase in Demand for oil changes
- B. Decrease in Demand for oil changes
- C. Increase in Supply of oil changes
- D. Decrease in Supply of oil changes
- E. Increase in the Demand for oil changes and Increase in the Supply of oil changes
- F. Decrease in the Demand for oil changes and Decrease in the Supply of oil changes
- G. Increase in the Demand for oil changes and Decrease in the Supply of oil changes
- H. Decrease in the Demand for oil changes and Increase in the Supply of oil changes

2. Consider the Metro Louisville area market for coffee shops (e.g. Starbucks). Again, note that Metro Louisville includes all firms within Jefferson County and the city of Louisville. You need to identify how different events affect the equilibrium price and equilibrium quantity of coffee sold in the Louisville coffee shop market by matching each event (listed under “Events” below) to the item which represents the most likely effect on the market’s equilibrium price and quantity. Note that each change in equilibrium price and quantity is the result of a shift(s) in the demand and/or supply curves associated with this market.

Events (Question Items):

- a. Successful marketing campaigns by coffee shop firms convince more consumers to patronize coffee shops in the Metro Louisville area.
- b. Kentucky State government lowers the commodity tax placed on all suppliers within the State.
- c. Falling gasoline prices decrease the distribution cost associated with transporting coffee and other items to coffee shops in the Metro Louisville area.
- d. Price competition amongst coffee shops in counties outside of, but adjacent to Jefferson County (e.g. Oldham and Bullitt County) lower the price of their coffee.
- e. Legislation in Metro Louisville leads to higher leases/rent for all area coffee shop firms.

Effect on equilibrium within the Louisville Coffee Shop Market (Answer Items):

- A. Increase in both the equilibrium price and equilibrium quantity
- B. Decrease in both the equilibrium price and equilibrium quantity
- C. Increase in the equilibrium price, and decrease in the equilibrium quantity
- D. Decrease in the equilibrium price, and increase in the equilibrium quantity

Question 3 relates to how we explain changes in price and quantity on the basis of the demand and supply model from class. Assume that the curves in this market are not horizontal or vertical (i.e. that these curves have their "typical" slope).

3. Match the change in equilibrium on the left with the shift(s) on the right that best explains that change. E.g., suppose you’re given an increase in equilibrium price (P^*) and equilibrium quantity (Q^*). If you believe this change is best explained by a decrease in supply, then your answer would be “decrease in supply” (answer D).

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|--|--|
| a. P^* increases and Q^* increases | A. Increase in demand |
| b. P^* increases and Q^* decreases | B. Decrease in demand |
| c. P^* decreases and Q^* decreases | C. Increase in supply |
| | D. Decrease in supply |
| | E. Increase in demand and increase in supply |
| | F. Decrease in demand and decrease in supply |
| | G. Increase in demand and decrease in supply |
| | H. Decrease in demand and increase in supply |

Assume that researchers determine the following information about good X, in terms of how the quantity demanded for good X is affected by changes in specific variables. Use this information to answer Questions #4-6 below.

- Increasing advertising expenditure on good X by 8% increases the quantity demanded for good X by 3%
- Increasing the price of good X by 4% decreases the quantity demanded for good X by 8%
- Increasing consumer income by 4% increases the quantity demanded for good X by 6%
- Increasing the price of good W by 4% decreases the quantity demanded for good X by 2%
- Increasing the quantity sold of good X by 5% increases the quantity sold of good W by 10%

Assume that the information above allows you to determine the elasticity measures that you must ultimately interpret in order to answer parts a, b and c below. Note that some of the information above may not be relevant to answering any of the three questions below.

4. Based on the information above, which of the following is a correct interpretation of the own price elasticity of good X?

- (a) The demand for good X is inelastic
- (b) The demand for good X is elastic
- (c) Good X is a normal good and a necessity
- (d) Good X is a normal good and a luxury
- (e) None of the above is a correct interpretation of the own-price elasticity of good X

5. Based on the information above, which of the following is a correct interpretation of the income elasticity of good X?

- (a) Good X is a substitute
- (b) Good X is an inferior good
- (c) Good X is a normal good and a necessity
- (d) Good X is a normal good and a luxury
- (e) None of the above is a correct interpretation of the income elasticity of good X

6. Based on the information above, which of the following is a correct interpretation of the cross price elasticity of good X and good W?

- (a) Good X and good W are substitutes
- (b) Good X and good W are complements
- (c) Good X and good W are normal goods
- (d) Good X and good W are elastic goods
- (e) None of the above is a correct interpretation of the cross-price elasticity of good X and good W

7. The table below is taken from a study that calculated measures of income elasticity for two different types of restaurant (fast food vs full service restaurants).

	Income elasticity
Fast food restaurants	0.41
Full service restaurants	1.15

Assume that the economy enters a recession that leads to a 2% decrease in the income of the average U.S. household. If so, then how is the quantity of food purchased at fast food and full service restaurants affected?

a. If income decreases by 2%, then the quantity of food purchased at fast food restaurants will decrease by _____%

b. If income decreases by 2%, then the quantity of food purchased at full service restaurants will decrease by _____%

Note: record your answers to the hundredth (i.e. out to 2 decimal places), rounding if necessary

8. The table below is taken from a study that calculated measures of income elasticity for Walmart and Target.

	Income elasticity
Walmart	1.86
Target	2.24

Assume that the economy enters a recession that leads to a 2% decrease in the income of the average U.S. household. If so, then how is the quantity of food purchased at fast food and full service restaurants affected?

a. If income decreases by 2%, then the quantity of food purchased at fast food restaurants will decrease by _____%

b. If income decreases by 2%, then the quantity of food purchased at full service restaurants will decrease by _____%

Note: record your answers to the hundredth (i.e. out to 2 decimal places), rounding if necessary

Although not a question on this homework, consider your results. I.e., how recession affects different types of business. E.g., fast food restaurants vs full service restaurants, and stores like Walmart vs stores like Target.

In the Blackboard shell for this course, there's a folder entitled "**Homework #2 material**" that's located in the Course Documents section of Blackboard. Access that folder and get the file called "Table 1. Own-Price and Cross-Price Elasticities of various food groups". You'll be using this file to answer questions #9-10.

9. Use Table 1 to answer the question below.

Indicate every **true statement** below about how a change in price should affect the total revenue associated with selling the good "**cakes and cookies**".

(note that in this question, it is **possible to have multiple answers**, e.g. a and c, or c and d)

- (a) Based on Table 1, if there is an increase in the price of cakes and cookies, then there will be an increase in the total revenue associated with selling cakes and cookies
- (b) Based on Table 1, if there is a decrease in the price of cakes and cookies, then there will be a decrease in the total revenue associated with selling cakes and cookies
- (c) Based on Table 1, if there is an increase in the price of cakes and cookies, then there will be a decrease in the total revenue associated with selling cakes and cookies
- (d) Based on Table 1, if there is a decrease in the price of cakes and cookies, then there will be an increase in the total revenue associated with selling cakes and cookies

10. Using the elasticity estimates from Table 1, indicate every **true statement** about the appropriate interpretation of the elasticity measures from the table. E.g., if you believe that only answer b and answer e are true statements, then select b and e as your answer to this question.

- (a) *white bread* is an elastic good
- (b) *white bread* is an inelastic good
- (c) *non-white bread* is an elastic good
- (d) *non-white bread* is an inelastic good
- (e) *cakes and cookies* are a normal good and a necessity
- (f) *cakes and cookies* are a normal good and a luxury
- (g) *white bread* and *non-white bread* are substitute goods
- (h) *white bread* and *non-white bread* are complement goods
- (i) *rice and pasta* and *cakes and cookies* are substitute goods
- (j) *rice and pasta* and *cakes and cookies* are complement goods

Questions #11-12 are on the next page.

11. Assume that the demand and supply curves for good A are given as the equations you see below. *Note: please read the instructions above about rounding your answers.*

Demand: $P = 500 - 2Q_d$ (Q_d = quantity of A demanded, P = price)
Supply: $P = 100 + 3Q_s$ (Q_s = quantity of A supplied)

- a. The equilibrium quantity in this market is _____
(express your answer as a number – e.g., if the answer is 25 units, then record your answer as 25. I.e., do not write the word “units” after your answer or record an answer like 25.0)
- b. The equilibrium price in this market is _____
(express your answer in terms of dollars or dollars and cents, with or without the dollar sign – e.g., if your answer is 25, then record your answer as \$25, \$25.00, 25 or 25.00, but not as 25.0 or \$25.0, etc.)

12. Assume that the demand and supply curves for good A are given as the equations you see below. *Note: these are the same equations from Question #11 above.*

Demand: $P = 500 - 2Q_d$ (Q_d = quantity of A demanded, P = price)
Supply: $P = 100 + 3Q_s$ (Q_s = quantity of A supplied)

Assume that government has placed a price ceiling on the market for good A. If the price ceiling is set at \$280, then which one of the following (direct) effects is the most likely to occur:

- (a) Shortage of 20 units
- (b) Surplus of 20 units
- (c) Shortage of 30 units
- (d) Surplus of 30 units
- (e) Shortage of 50 units
- (f) Surplus of 50 units
- (g) Shortage of 60 units
- (h) Surplus of 60 units
- (i) No effect (i.e. no shortage, no surplus)