Midterm
Microeconomics for Public Policy I
Fall 2023
October 17, 2023

Name: _____

Exam Instructions

1. **Write your name on page 15.**
2. Write your GWID on each page. If you don't know your GWID, write your birthdate (or some other made-up number) on **each page**. I request this so that if we scan exams we will be sure not to misplace pages.
3. Answer all questions.
4. The exam is graded out of 100 points. Points for each section and question are indicated on the exam.
5. Write legibly. Illegible exams cannot be graded.
6. The final page is intentionally left blank for extra work. If you do extra work on this page (or any other non-standard location) that you would like to be counted, note it clearly near the question you are answering.
7. Label all figures as needed.
8. We give liberal partial credit. If a question has multiple parts and you can't answer one, it is in your best interest to answer all the remaining parts to the best of your ability.
9. **Explain** your answers as needed. When appropriate, you should also explain any assumptions that you make to arrive at your answer. Explanations may yield partial credit.
10. Be concise.

For marking purposes only

Part A _____

Part B _____

Part C _____

total _____

A. Ripped From the Headlines (10 points)

Read the article from *USA Today* at the end of the exam.

1 (3). Draw a graph showing an original market equilibrium and the new equilibrium, including the statutory incidence of this tax. (I am not looking for specific elasticities in either the supply or the demand curve; show the statutory incidence and the two equilibria.)

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2 (3). Does the article give enough information to calculate the economic incidence of the tax? Why or why not?

3 (4). Given what you've read in the article, which side of the market is likely more elastic? Explain why, giving two pieces of evidence from the article.

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B. Short Answer Questions (40 points, 5 points each question)

1. Give two examples of things that could shift demand for movies (movies writ broadly, not just movies in the theatre), and describe which way each example shifts the demand curve.

2. Define the cross-price elasticity of demand. Then consider the cross price elasticity of demand for bananas and apples, where we are interested in the impact of a price change in bananas. Is the sign of the cross-price elasticity for bananas and apples negative or positive for you? Explain why.

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3. Suppose that either supply or demand (not both!) change in the market for lentils. Further suppose that the equilibrium price declines and the equilibrium quantity increases. Did the supply curve or the demand curve move? Which way?

4. Define a luxury good (as we have defined in class) and give an example of something that is a luxury good for you. Explain why.

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5. Suppose that the government is contemplating a new tax, for which the statutory incidence is on suppliers. The government is considering two markets on which to levy this tax. Market 1 has relatively elastic demand, and Market 2 has relatively inelastic demand. In which market do consumers bear a greater burden of the tax? Explain the logic behind your conclusion using pictures and words.

6. Suppose that Joe's demand for ice cream is given by $Q = 5-2P$ and Mary's demand for ice cream is given by $Q = 10-3P$. What is the maximum willingness to pay for ice cream, or the highest price anyone in the market is willing to pay? Explain how you arrived at your answer.

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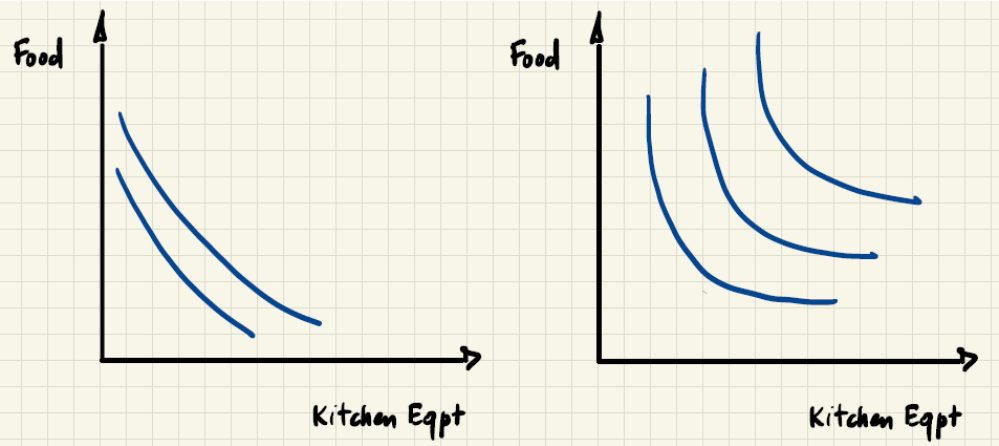
7. Which of the two isoquants below are more likely to represent the production of cooked restaurant meals? The two goods in the figures are food – such as fruits, vegetables, flour, and eggs – and kitchen equipment, such as ovens, frying pans, knives, space and labor. Explain why you chose the figure you did.



8. Define the marginal product of capital. Given an example of a firm and a specific type of capital that displays a diminishing marginal product.

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C. Medium Answer Questions (51 points, sub-points as noted in questions)

1 (25). Supply, Demand and Zucchini

Demand for zucchini is $P = 100 - 5Q$ and supply for zucchini is $P = 20 + 3Q$. (Zucchini is sold in 10-kilo bags.)

(a, 4) What is the market equilibrium price and quantity of these 10-kilo bags of zucchini? Draw a chart that shows the supply curve, demand curve, relevant y-intercepts and the equilibrium point. Label the axes.

(b, 4) Define consumer and producer surplus, give values for them in this market, and show their location in your chart. (You are welcome to add to the chart in part (a).)

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(c, 4) Suppose that the government wants to increase the quantity of zucchini its citizens are eating. To do so, it says that 10-kilo bags of zucchini cannot be sold for more than $40. Add this policy to your chart (or make a new chart if this is easier) and find the new equilibrium price and quantity.

(d, 4) Show the new producer and consumer surplus in a well-labeled chart (using the chart from (c) is fine). What are the values of producer and consumer surplus at a price of $40?

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(e, 4) Has the government achieved its objective (see part (c))? Why or why not?

(f, 5) Alternatively, an outward (downward) shift of the supply curve could also yield a market equilibrium price of $40. What actions could the government take to shift the supply for zucchini outward?

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2 (25). Individual Decisionmaking

(a, 3) Suppose that Fiona's income is \$100, and that she purchases only suits (denoted U), which cost \$10 and dress shoes (denoted S), which cost \$20 per pair. Write the equation for Fiona's budget constraint.

(b, 3) Draw the budget constraint, labeling the axes and intercepts. Put dress shoes on the horizonal axis and suits on the vertical axis.

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(c, 4) If she could afford it, might Fiona prefer 4 pairs of dress shoes and 5 suits to any current optimal consumption? Why?

(d, 3) Draw an indifference curve on your picture from (b) (or repeat the picture with this curve) such that Fiona is consuming optimally. Note the point showing her optimal consumption choice.

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(e, 4) Suppose that Fiona's marginal utility of suits is $MU_U = 2S$ and her marginal utility of shoes is $MU_S = 5U$. If she consumes 4 suits and 3 pairs of shoes, is she consuming optimally?

(f, 4) If Fiona is not consuming optimally in (e), of which good should she increase consumption? Explain why.

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(g, 4) Suppose the government wants consumers to purchase more suits. It can give people money, unrestricted in use, or it can conduct an information campaign about the value of suits. Which of these policies impacts the indifference curve and why? Use a graph to show how an information campaign could increase suit consumption.

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USA TODAY

MONEY Soft Drinks Add Topic

Philadelphia soda tax caused 'substantial decline' in soda sales, study finds

Nathan Bomey
USA TODAY

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Soda sales plummeted in Philadelphia following the implementation of a tax on them, according to a new study.

A study published in the Journal of the American Medical Association found that the city's new tax caused a "significant and substantial decline" in soda sales.

The results also show that the tax crushed sales of soda in the city of Philadelphia while boosting sales in nearby areas as customers sought to avoid the levy.

Overall, sales fell by 38% even when factoring in the spike in neighboring areas, according to the study.

Philadelphia region shoppers bought almost 1 billion fewer ounces of soda in 2017 than in 2016, according to the study.

Just do it, already: 'Apple Watch or it doesn't count': How tech addiction might be ruining your workout

The outcome could influence policymakers weighing similar moves in other jurisdictions.

Supporters say the soda tax effectively discourages unhealthy consumption of sugary beverages, potentially fighting obesity and other conditions. Opponents say it disproportionately hurts lower-income people, damages businesses and represents an inappropriate infringement on consumer rights.

The tax, which took effect at the beginning of 2017, is 1.5 cents per ounce on sugary or artificially sweetened drinks. That translates into 30 cents for a 20-ounce bottle and about a

dollar for a 2-liter.

Sales inside the city of Philadelphia fell 51%. Sales in nearby areas increased 43%.

Beverage tax: Connecticut may be home to the first statewide beverage tax in the U.S.

Soda taxes, ad limits, better labels: Doctors want to limit sugary drinks for kids, teens

The study authors are Christina Roberto and Michael LeVasseur of the University of Pennsylvania's Perelman School of Medicine and Hannah Lawman of the Philadelphia Department of Public Health.

They examined 291 stores, including supermarkets, mass merchandise stores and pharmacies. They used the city of Baltimore as a control group to account for other factors not related to the tax.

The American Beverage Association, which has opposed soda taxes, said the study shows that "beverage taxes hurt working families, small local business and their employees."

The interest group said "taxes on common grocery items like beverages have never really improved public health" and said half of all beverages contain no sugar.

“America’s beverage companies believe there is a better way to help people reduce the amount of sugar they get from beverages than unproductive taxes," the group said in a statement. "We’re creating more drinks with less or no sugar and we’re making smaller bottle and can options more widely available and boosting consumer demand for these options through our marketing."

Follow USA TODAY reporter Nathan Bomey on Twitter @NathanBomey.