ECON 110: Introductory Economics

Exam 1 Review

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Warm-up Quiz 13 9/28

How do the elasticities of supply and demand affect the deadweight loss of a tax? Why do they have this effect? What happens to the deadweight loss and tax revenue when a tax is increased?

Exam 1 Topics

Exam 1 Review: Chapters 1 to 4

Topics covered:

- Chapter 1: How people make decisions; how people interact; the economy as a whole
- Chapter 2: Thinking like an economist; economic models; the economist as policy advisor
- Chapter 3: The gains from trade; absolute and comparative advantage
- Chapter 4: The demand curve and the supply curve; what shifts them; demand and supply together; market equilibrium; changes in equilibrium

Exam 1 Review: Chapters 5 to 8

Topics covered, continued:

- Chapter 5: Price elasticity of demand; elasticity and total revenue; elasticity of supply; cross-price and income elasticity
- Chapter 6: Price controls; rent control and the minimum wage; taxes and tax incidence; how elasticity determines who bears the burden
- Chapter 7: Consumer surplus and producer surplus; market efficiency; market failure
- Chapter 8: The deadweight loss of taxation

Exam 1 Key Concepts

Chapter 1 Key Concepts

- scarcity
- economics
- efficiency
- equality
- opportunity cost
- rational people
- marginal change
- incentive
- market economy
- property rights
- market failure
- externality
- market power
- productivity
- inflation
- business cycle

Chapter 2 Key Concepts

- **circular-flow diagram**
- **production possibilities frontier**
- microeconomics
- macroeconomics
- positive statements
- normative statements

Chapter 3 Key Concepts

- absolute advantage
- opportunity cost
- comparative advantage
- imports
- exports

Chapter 4 Key Concepts

- market
- competitive market
- quantity demanded
- law of demand
- demand schedule
- **demand curve**
- normal good
- inferior good
- substitutes
- complements
- quantity supplied
- law of supply
- supply schedule
- **supply curve**
- equilibrium
- equilibrium price
- equilibrium quantity
- surplus
- shortage
- law of supply and demand

Chapter 5 Key Concepts

- elasticity
- price elasticity of demand
- total revenue
- income elasticity of demand
- cross-price elasticity of demand
- price elasticity of supply

Chapter 6 Key Concepts

- price ceiling
- price floor
- tax incidence

Chapters 7 and 8 Key Concepts

Chapter 7

- welfare economics
- willingness to pay
- consumer surplus
- cost
- producer surplus
- efficiency
- equality

Chapter 8

- deadweight loss

Exam 1 Practice Questions

Chapter 1 Practice: Output per Hour and Living Standards

Suppose that in France total annual output is worth $600 million and people work 40 million hours. In Italy total annual output is worth $700 million and people work 50 million hours. In which country do people enjoy a higher standard of living?

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Suppose that in France total annual output is worth \$600 million and people work 40 million hours. In Italy total annual output is worth \$700 million and people work 50 million hours. In which country do people enjoy a higher standard of living?

Answer: France. Productivity is output per hour worked:

$$\text{France} = \frac{600}{40} = \$15 \qquad \text{Italy} = \frac{700}{50} = \$14$$

Almost all variation in the standard of living across countries is due to differences in productivity.

Chapter 1 Practice: Incentives and a Longer School Year

With the understanding that people respond to incentives, outline the possible outcome for teachers if the K-12 school year is extended to 11 months per year instead of the existing 9 months per year.

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Answer: Working longer per year would be perceived by many teachers as an increase in the cost of teaching. Even with additional compensation, many teachers look at summers off as a major benefit of the profession. If that benefit were diminished, some teachers would perceive the marginal cost of teaching as greater than the marginal benefit, and would choose to leave teaching.

Chapter 2 Practice: Opportunity Cost Along a Frontier

The table shows the production possibilities for an economy that produces only smartphones and pizzas. What is the opportunity cost of increasing production of smartphones from 200 to 500?

Smartphones	Pizzas
0	10,000
200	8,000
500	6,000
900	4,000
1,400	2,000
2,000	0

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Answer: 2,000 pizzas. Moving from 200 to 500 smartphones, pizza output falls from 8,000 to 6,000.

Chapter 2 Practice: Positive Versus Normative Statements

Classify each statement as positive or normative:

a. The minimum wage creates unemployment among young and unskilled workers.
b. The minimum wage ought to be abolished.
c. If the price of a product decreases, other things equal, quantity demanded will increase.
d. A little bit of inflation is worse for society than a little bit of unemployment.
e. There is a tradeoff between inflation and unemployment in the short run.
f. If consumer income increases, other things equal, the demand for automobiles will increase.
g. The U.S. income distribution is not fair.
h. U.S. workers deserve more liberal unemployment benefits.
i. If interest rates increase, then investment will decrease.
j. If welfare benefits were reduced, then the country would be better off.

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Answer: Positive: a, c, e, f, and i. Normative: b, d, g, h, and j.

Chapter 3 Practice: Comparative Advantage in Hot Dogs

Frank can make 20 hot dogs an hour or 10 pints of potato salad an hour. Earnest can make 30 hot dogs an hour or 20 pints of potato salad an hour. Who has the comparative advantage making hot dogs and who has the comparative advantage making potato salad?

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Answer: Frank has the comparative advantage making hot dogs, and Earnest has the comparative advantage making potato salad. Frank gives up half a pint of potato salad per hot dog, while Earnest gives up two-thirds of a pint.

Chapter 3 Practice: Gains from Trade in Home Cooking

Julia can fix a meal in 1 hour, and her opportunity cost of one hour is $50. Jacque can fix the same kind of meal in 2 hours, and his opportunity cost of one hour is $20. Will both Julia and Jacque be better off if she pays him $45 per meal to fix her meals? Explain.

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Answer: Yes. Julia's opportunity cost of preparing a meal is $50 and Jacque's is $40, so at a price of $45 each of them is better off by $5 per meal.

Chapter 4 Practice: Shortage at a Given Price

Suppose the demand schedule in a market is $Q_D = 500 - 10P$ and the supply schedule is $Q_S = 200 + 10P$. If the price is currently \$10, is there a shortage or a surplus in this market, and how large is it?

Chapter 4 Practice: Shortage at a Given Price

Suppose the demand schedule in a market is $Q_D = 500 - 10P$ and the supply schedule is $Q_S = 200 + 10P$. If the price is currently \$10, is there a shortage or a surplus in this market, and how large is it?

Answer: A shortage of 100 units:

$$Q_D = 500 - 10(10) = 400 \qquad Q_S = 200 + 10(10) = 300$$

Chapter 4 Practice: Market Supply and a Surplus

The table shows the cases of water each of the only four sellers in this market is willing to sell. Market demand is $Q_D = 1{,}000 - 100P$. If the price is \$6 per case, is there a shortage or a surplus, and how large is it?

Price per case (USD)	Alpine Springs	Brook Mountain	Cascade Waters	Dew Good
0	0	0	0	0
3	100	40	60	100
6	200	80	120	200
9	300	120	180	300

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3	100	40	60	100
6	200	80	120	200
9	300	120	180	300

Answer: A surplus of 200 cases. Market supply at \$6 is $200 + 80 + 120 + 200 = 600$, while $Q_D = 1{,}000 - 100(6) = 400$.

Chapter 5 Practice: Income Elasticity of Demand

When the Johnsons had a monthly income of $12,000, they ordered takeout 6 times a month. Now that their income has increased to $15,600 a month, they order takeout 10 times a month. Using the midpoint method, calculate the income elasticity of demand for takeout. Is takeout a normal or an inferior good to the couple?

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Answer: The income elasticity is 1.92. Using the midpoint method:

$$\%\Delta Q = \frac{10-6}{(10+6)/2} = \frac{4}{8} = 0.50$$

$$\%\Delta I = \frac{15{,}600-12{,}000}{(15{,}600+12{,}000)/2} = \frac{3{,}600}{13{,}800} \approx 0.261$$

$$\text{Income elasticity} = \frac{\%\Delta Q}{\%\Delta I} = \frac{0.50}{0.261} \approx 1.92$$

Since the income elasticity is positive, takeout is a normal good for the Johnsons. Because it is also greater than 1, takeout is a luxury for them.

Chapter 5 Practice: Cross-Price Elasticity of Demand

Recently, in Smalltown, the price of Oreo cookies fell from \$3.50 to \$3.00 per pack. As a result, the quantity demanded of Chips Ahoy cookies decreased from 1,200 packs to 1,000 packs. What would be the appropriate elasticity to compute? Using the midpoint method, compute it. What does your answer tell you?

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Answer: The cross-price elasticity of demand, which is 1.18:

$$\frac{-200/1{,}100}{-0.50/3.25} = \frac{-0.182}{-0.154} \approx 1.18$$

The two goods are substitutes, because the cross-price elasticity is positive.

Chapter 6 Practice: A Binding Price Floor

The table shows the demand and supply schedules in a market. If the government sets a price floor $2 above the equilibrium price, how many units will be sold in this market?

Price (USD)	Quantity Demanded	Quantity Supplied
1	8	3
3	6	6
5	4	9
7	2	12
9	0	15

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Price (USD)	Quantity Demanded	Quantity Supplied
1	8	3
3	6	6
5	4	9
7	2	12
9	0	15

Answer: 4 units. The equilibrium price is \$3, so the floor sits at \$5 and is binding. The quantity sold is the quantity demanded at the floor.

Chapter 6 Practice: Finding the Size of a Tax

In a particular market, demand is $Q_D = 60 - P$ and supply is $Q_S = P$. Suppose a per-unit tax reduces the number of units bought and sold to 25. What is the size of the tax, and who bears the greater burden, buyers or sellers?

Chapter 6 Practice: Finding the Size of a Tax

In a particular market, demand is $Q_D = 60 - P$ and supply is $Q_S = P$. Suppose a per-unit tax reduces the number of units bought and sold to 25. What is the size of the tax, and who bears the greater burden, buyers or sellers?

Answer: The tax is \$10 per unit, and the burden is shared equally:

$$P_{\text{buyers}} = 60 - 25 = \$35 \qquad P_{\text{sellers}} = \$25 \qquad P_{\text{initial}} = \$30$$

Buyers pay \$5 more than before and sellers receive \$5 less.

Chapter 7 Practice: Total Surplus in a Small Market

The table lists every buyer and seller in a market. How much is total surplus at the equilibrium price?

Buyer	Willingness to Pay (USD)	Seller	Cost (USD)
A	15	W	10
B	30	X	20
C	45	Y	30
D	60	Z	40

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Buyer	Willingness to Pay (USD)	Seller	Cost (USD)
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B	30	X	20
C	45	Y	30
D	60	Z	40

Answer: Total surplus is \$75. At the equilibrium price of \$30, three units trade: consumer surplus is $30 + 15 + 0 = \$45$ and producer surplus is $20 + 10 + 0 = \$30$.

Chapter 7 Practice: Consumer Surplus After a Supply Shift

Suppose market demand and market supply are $Q_D = 40 - P$ and $Q_S = P - 4$. A reduction in input prices shifts the supply curve to $Q_S = P$. By how much does total consumer surplus increase as a result of this shift?

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Answer: Consumer surplus increases by \$38. Before the shift the equilibrium is \$22 and 18 units, so consumer surplus is $\frac{1}{2}(18)(18) = \$162$. After the shift it is \$20 and 20 units, so consumer surplus is $\frac{1}{2}(20)(20) = \$200$.

Chapter 8 Practice: Computing Deadweight Loss

A tax is imposed on a certain good. The tax produces revenue of \$5,000 for the government. The tax reduces consumer surplus by \$3,000 and it reduces producer surplus by \$4,000. What is the amount of the deadweight loss of the tax?

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Answer: The deadweight loss is \$2,000:

$$\$3{,}000 + \$4{,}000 - \$5{,}000 = \$2{,}000$$

Chapter 8 Practice: The Largest Tax That Preserves a Trade

Cameron has been in the habit of mowing Piper's lawn each week for $20. Cameron's opportunity cost is $15, and Piper would be willing to pay $25 to have her lawn mowed. What is the maximum tax the government can impose on lawn mowing without discouraging Cameron and Piper from continuing their mutually beneficial arrangement?

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Answer: $10, the total surplus from the trade. Below $10 there is still a price at which both gain; at exactly $10 they are left indifferent; above $10 every possible price leaves at least one of them worse off.