



# 厦门大学《经济学原理》课程试卷

王亚南经济研究院 2017 年级 经济学本科国际化试点班

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PRINCIPLES OF ECONOMICS

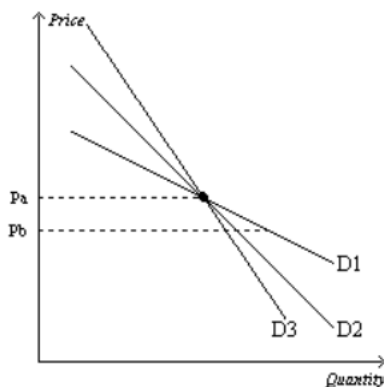
MIDTERM EXAMINATION

## Part I

# Multiple Choices (2 points each)

1. The adage, "There is no such thing as a free lunch," is used to illustrate the principle that
  - (a) goods are scarce.
  - (b) **people face tradeoffs.**
  - (c) income must be earned.
  - (d) households face many decisions.
2. When computing the opportunity cost of attending a concert you should include
  - (a) **the price you pay for the ticket and the value of your time.**
  - (b) the price you pay for the ticket, but not the value of your time.
  - (c) the value of your time, but not the price you pay for the ticket.
  - (d) neither the price of the ticket nor the value of your time.
3. Which of the following statements exemplifies a principle of individual decision-making?
  - (a) Trade can make everyone better off.
  - (b) Governments can sometimes improve market outcomes.
  - (c) **The cost of something is what you give up to get it.**
  - (d) All of the above are correct.
4. Suppose Spencer and Kate are the only two demanders of lemonade. Each month, Spencer buys six glasses of lemonade when the price is \$1.00 per glass, and he buys four glasses when the price is \$1.50 per glass. Each month, Kate buys four glasses of lemonade when the price is \$1.00 per glass, and she buys two glasses when the price is \$1.50 per glass. Assume that changes in the price of lemonade are entirely due to supply shifts. Which of the following points is on the market demand curve?
  - (a) (quantity demanded = 2, price = \$1.50)
  - (b) (quantity demanded = 4, price = \$2.50)
  - (c) **(quantity demanded = 10, price = \$1.00)**
  - (d) (quantity demanded = 16, price = \$2.50)

5. Suppose buyers of computers and printers regard those two goods as complements. Then, everything else being equal, an increase in the price of computers will cause
  - (a) **a decrease in the demand for printers and a decrease in the quantity supplied of printers.**
  - (b) a decrease in the supply of printers and a decrease in the quantity demanded of printers.
  - (c) a decrease in the equilibrium price of printers and an increase in the equilibrium quantity of printers.
  - (d) an increase in the equilibrium price of printers and a decrease in the equilibrium quantity of printers.
  
6. For a particular good, everything else being equal, a 5 percent increase in price causes a 15 percent decrease in quantity demanded. Which of the following statements is most likely applicable to this good?
  - (a) **There are many substitutes for this good.**
  - (b) The good is a necessity.
  - (c) The market for the good is broadly defined.
  - (d) The relevant time horizon is short.
  
7. Refer to the following figure.



As price falls from  $P_a$  to  $P_b$ , which demand curve represents the most elastic demand?

- (a) **D1**
- (b) D2
- (c) D3
- (d) All of the above are equally elastic.

8. Suppose that everything else being equal, when the price of good X increases from \$800 to \$850, the quantity demanded of good Y increases from 65 to 70. Using the midpoint method, the cross price elasticity of demand is about
- (a) -1.2, and X and Y are complements.
  - (b) -0.1, and X and Y are complements.
  - (c) 0.1, and X and Y are substitutes.
  - (d) **1.2, and X and Y are substitutes.**
9. Suppose the price elasticity of supply for cheese is 0.6 in the short run and 1.4 in the long run. If an increase in the demand for cheese causes the price of cheese to increase by 15%, then the quantity supplied of cheese will increase by
- (a) 0.4% in the short run and 4.6% in the long run.
  - (b) 1.7% in the short run and 0.7% in the long run.
  - (c) **9% in the short run and 21% in the long run.**
  - (d) 25% in the short run and 10.7% in the long run.
10. If a price floor is not binding, then
- (a) **the equilibrium price is above the price floor.**
  - (b) the equilibrium price is below the price floor.
  - (c) there will be a surplus in the market.
  - (d) there will be a shortage in the market.
11. Which of the following quantities decrease in response to a tax on a good?
- (a) the equilibrium quantity in the market for the good, the effective price of the good paid by buyers, and consumer surplus
  - (b) **the equilibrium quantity in the market for the good, producer surplus, and the well-being of buyers of the good**
  - (c) the effective price received by sellers of the good, the wedge between the effective price paid by buyers and the effective price received by sellers, and consumer surplus
  - (d) None of the above is necessarily correct unless we know whether the tax is levied on buyers or on sellers.

12. In the market for widgets, the supply curve is the typical upward-sloping straight line, and the demand curve is the typical downward-sloping straight line. The equilibrium quantity in the market for widgets is 200 per month when there is no tax. Then a tax of \$5 per widget is imposed. As a result, the government is able to raise \$800 per month in tax revenue. We can conclude that the equilibrium quantity of widgets has fallen by
- (a) **40 per month.**
  - (b) 50 per month.
  - (c) 75 per month.
  - (d) 100 per month.
13. Suppose a tax of \$1 per unit is imposed on a good. The more elastic the supply of the good, other things equal, the
- (a) smaller is the response of quantity supplied to the tax.
  - (b) larger is the tax burden on sellers relative to the tax burden on buyers.
  - (c) **larger is the deadweight loss of the tax.**
  - (d) All of the above are correct.
14. Suppose the price of milk is \$2.39 per gallon, and the equilibrium quantity of milk is 100 thousand gallons per day with no tax on milk. Starting from this initial situation, which of the following scenarios would result in the smallest deadweight loss?
- (a) The price elasticity of demand for milk is 0.3, the price elasticity of supply for milk is 0.7, and the milk tax amounts to \$0.40 per gallon.
  - (b) The price elasticity of demand for milk is 0.2, the price elasticity of supply for milk is 0.5, and the milk tax amounts to \$0.30 per gallon.
  - (c) The price elasticity of demand for milk is 0.2, the price elasticity of supply for milk is 0.7, and the milk tax amounts to \$0.30 per gallon.
  - (d) **The price elasticity of demand for milk is 0.1, the price elasticity of supply for milk is 0.5, and the milk tax amounts to \$0.20 per gallon.**

15. A Giffen good is a good for which the demand curve is upward-sloping. A classic textbook example of a Giffen good is potato in Medieval Ireland, where people were very poor. If the price of potato rises, people would be forced to give up on other things like meat and will have to buy more potatoes instead to stay alive. Hence the demand curve is upward-sloping. Now suppose the government decides to tax a Giffen good. Why? In reality, Giffen goods are very rare and whether taxing them is a good idea should not be a policy question that we should be interested in. However, since we are doing an exam, let's just imagine taxing a Giffen good. What would be the consequence? (**There may be more than 1 possible answer**)
- (a) **Both the equilibrium price and quantity of the Giffen good would go down.**
  - (b) Price would go up. Quantity would go down.
  - (c) Price would go down. Quantity would go up.
  - (d) **Both price and quantity would go up.**
16. Which of the following is true of markets characterized by positive externalities?
- (a) Social value exceeds private value, and market quantity exceeds the socially optimal quantity.
  - (b) Social value is less than private value, and market quantity exceeds the socially optimal quantity.
  - (c) **Social value exceeds private value, and market quantity is less than the socially optimal quantity.**
  - (d) Social value seldom exceeds private value; therefore, social quantity is less than private quantity.
17. Which of the following statements is NOT correct?
- (a) Patents help internalize the externalities associated with technological advances.
  - (b) **Economists typically prefer regulations to corrective taxes because regulations provide more incentives for firms to seek continued reductions in pollution.**
  - (c) Allowing firms to trade pollution permits will lower the total cost of reducing pollution.
  - (d) A big impediment to implementing the Coase theorem in many cases is high transactions costs.

18. Suppose that an MBA degree creates no externality because the benefits of an MBA are internalized by the student in the form of higher wages. If the government offers subsidies for MBAs, then which of the following statements is correct?
- (a) The equilibrium quantity of MBAs will equal the socially optimal quantity of MBAs.
  - (b) **The equilibrium quantity of MBAs will be greater than the socially optimal quantity of MBAs.**
  - (c) The equilibrium quantity of MBAs will be less than the socially optimal quantity of MBAs.
  - (d) There is not enough information to answer the question.
19. Which of the following is an advantage of tradable pollution permits?
- (a) Each firm is allowed to pollute exactly the same amount.
  - (b) Revenue from the sale of permits is greater than revenue from a corrective tax.
  - (c) **The initial allocation of permits to firms does not affect the efficiency of the market.**
  - (d) Firms will engage in joint research efforts to reduce pollution.
20. Suppose that electricity producers create a negative externality equal to \$6 per unit. Further suppose that the government imposes a \$8 per-unit tax on the producers. What is the relationship between the after-tax equilibrium quantity and the socially optimal quantity of electricity to be produced?
- (a) They are equal.
  - (b) The after-tax equilibrium quantity is greater than the socially optimal quantity.
  - (c) **The after-tax equilibrium quantity is less than the socially optimal quantity.**
  - (d) There is not enough information to answer the question.

## Part II

# Problems

### Problem 1 (10 points)

Define opportunity cost. What is the opportunity cost to you of attending college?  
What was your opportunity cost of coming to class today?

Whatever must be given up to obtain some item is its opportunity cost. Basically, this would be a person's second choice. The opportunity cost of a person attending college is the value of the best alternative use of that person's time, as well as the additional costs the person incurs by making the choice to attend college. For most students this would be the income the student gives up by not working plus the cost of tuition and books, and any other costs they incur by attending college that they would not incur if they chose not to attend college. A student's opportunity cost of coming to class was the value of the best opportunity the student gave up. (For most students, that seems to be sleep.)

### Problem 2 (10 points)

Fill in the table below, showing whether equilibrium price and equilibrium quantity go up, go down, stay the same, or change ambiguously.

	No Change in Supply	An Increase in Supply	A Decrease in Supply
No Change in Demand			
An Increase in Demand			
A Decrease in Demand			

ANS:

	No Change in Supply	An Increase in Supply	A Decrease in Supply
No Change in Demand	P same Q same	P down Q up	P up Q down
An Increase in Demand	P up Q up	P ambiguous Q up	P up Q ambiguous
A Decrease in Demand	P down Q down	P down Q ambiguous	P ambiguous Q down



### Problem 3 (10 points)

Suppose demand for a product is given by the equation  $Q_D = 120 - 4P$ , and supply for the product is given by the equation  $Q_S = 4P$ .

1. What are the equilibrium price and equilibrium quantity in the market for this product? ( 3points)
2. Suppose the government sets a price ceiling at \$12 for this product. Is this price ceiling binding? What will be the size of the shortage/surplus in this market? (2 points)
3. Suppose the government sets a price floor at \$13 for this product. Is this price floor binding,? What will be the size of the shortage/surplus in this market? (2 points)
4. Following question 3, suppose the government still sets a price floor at \$13, but for some reason demand were to decrease to  $Q_D = 80 - 4P$ . Would the \$13 price floor be binding after the shift in the demand curve? If so, what is the size of the resulting shortage/surplus? (3 points)

ANS:

1. The equilibrium price is \$15 and the equilibrium quantity is 60 units.
2. The price ceiling will be binding, and there will be a shortage of 24.
3. The price floor will not be binding and, therefore, there will be no shortage or surplus in this market resulting from the price floor.
4. Initially the price floor is not binding since \$13 is below the market equilibrium price of \$15. However, when the demand curve shifts, the equilibrium price becomes \$10. Thus, the price floor is now binding and will result in a surplus of 24 units.

## Problem 4 (10 points)

Suppose the labor market is described by the following supply and demand equations:

$$\begin{aligned}\text{Supply: } Q_S &= 5W \\ \text{Demand: } Q_D &= 150 - 10W\end{aligned}$$

, where  $W$  denotes hourly wage,  $Q_S$  is the quantity of labor supplied (in hours), and  $Q_D$  is the quantity of labor demanded (in hours).

1. What are the equilibrium wage and hours of employment in this market? (2 Points)

$$W = 10, Q = 50$$

2. Suppose the government imposes an ad-valorem wage tax  $\tau \in (0, 1)$  on the workers. Let  $W^b$  denote before-tax wage and let  $W^f$  denote after-tax wage. An ad-valorem tax is a percentage tax such that after tax, the workers receive  $W^f = (1 - \tau) W^b$ . Solve for equilibrium  $W^b$  and  $W^f$  as a function of  $\tau$ . (2 Points)

$$\begin{aligned}Q_S &= 5W^f \\ Q_D &= 150 - 10W^b \\ W^f &= W^b(1 - \tau)\end{aligned}$$

$\Rightarrow$

$$\begin{aligned}W^b &= \frac{30}{3 - \tau} \\ W^f &= \frac{(1 - \tau) 30}{3 - \tau}\end{aligned}$$

3. Solve for tax revenue as a function of  $\tau$ . (2 Points)

$$\begin{aligned}Q &= 5W^f = \frac{(1 - \tau) 150}{3 - \tau} \\ TR &= \tau W^b Q = \frac{\tau (1 - \tau) 4500}{(3 - \tau)^2}\end{aligned}$$

, where  $TR$  denotes tax revenue.

4. Let  $\tau^*$  denote the tax rate at which tax revenue is maximized. Calculate  $\tau^*$ . (2 Points)

$$\left. \frac{dTR}{d\tau} \right|_{\tau=\tau^*} = 0 \Rightarrow \tau^* = 0.6$$

5. Solve for deadweight loss as a function of  $\tau$ . (2 Points)

$$\begin{aligned} DWL &= \frac{1}{2} (W^b - W^f) (Q^* - Q) \\ &= \frac{1500\tau^2}{(3 - \tau)^2} \end{aligned}$$

, where  $Q^* = 50$  is the equilibrium quantity of labor supply before the wage tax is imposed.

## Problem 5 (10 points)

The markets for corn and oil are described by the following demand and supply equations:

$$\text{Corn Demand: } Q_D^C = 500 - 5p^C + 2p^O$$

$$\text{Corn Supply: } Q_S^C = 100 + 10p^C$$

$$\text{Oil Demand: } Q_D^O = 2000 - 10p^O + p^C$$

$$\text{Oil Supply: } Q_S^O = 5p^O$$

, , where  $p^C$  is the price of corn (in \$/bushel),  $p^O$  is the price of oil (in \$/gallon),  $Q_D^C$  and  $Q_S^C$  are respectively the quantity demanded and supplied of corn (in bushels), and  $Q_D^O$  and  $Q_S^O$  are respectively the quantity demanded and supplied of oil (in gallons).

1. Solve for the equilibrium price and quantity of corn and oil. (4 Points)

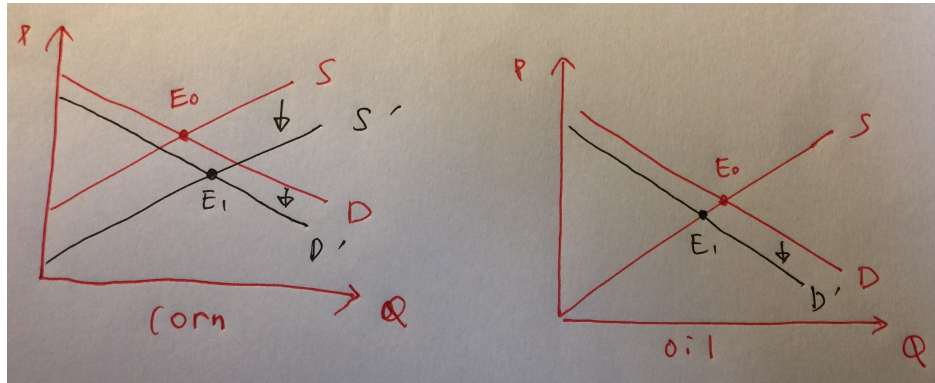
$$p^C = 44.84$$

$$Q^C = 548.43$$

$$p^O = 136.32$$

$$Q^O = 681.61$$

2. Suppose the government wants to support corn farmers and gives a subsidy of  $S = \$30/\text{bushel}$  to corn farmers. Draw supply and demand diagrams to show the impact of this subsidy on these two markets. (2 Points)



3. Solve for the equilibrium price and quantity of corn and oil after this subsidy. (4 Points)

$$p^C = 24.66$$

$$Q^C = 646.64$$

$$p^O = 134.98$$

$$Q^O = 674.89$$

Note that corn farmers receive  $p^C + S = 54.66$  after subsidy.

## Problem 6 (10 points)

A small island off the coast of Cape Cod contains two restaurants and two retail stores. Tourists need to take a ferry boat to reach the island, but with a recent slowdown in the economy, tourists are less willing to pay for the boat ride to visit the island. The owners of the restaurants and stores on the island — Restaurants 1 and 2, and Stores A and B — think that if tourists could ride the ferry for free, they would be happy to visit the island, eat and shop. The business owners are considering contributing to a pool of money that will be used to pay for roundtrip ferry service each day. The table represents their willingness to pay, that is, the maximum amount that each business owner is willing to contribute, per day, to pay for each ferry trip.

	Restaurant 1	Restaurant 2	Store A	Store B
First ferry trip	\$300	\$400	\$200	\$180
Second ferry	200	350	150	90
Third ferry trip	100	300	100	30
Fourth ferry trip	50	250	50	0

- Suppose the cost to run the ferry for each roundtrip is \$750. How many ferry trips should there be to maximize the total surplus of the four business owners?  
2
- Suppose the cost to run the ferry for each roundtrip is \$750. What is the total surplus for the 4 business owners if there is 1 ferry trip.  
330
- Suppose the cost to run the ferry for each roundtrip is \$750. What is the total surplus for the 4 business owners if there is 2 ferry trips.  
370
- Suppose the cost to run the ferry for each roundtrip is \$750. What is the total surplus for the 4 business owners if there is 3 ferry trips.  
\$150
- Suppose the cost to run the ferry for each roundtrip is \$750 per day and the 4 business owners have agreed to split the costs of the ferry trips equally. Which business owner(s) would be opposed to having any ferry trips?
  - only the owner of Store B
  - only the owners of Stores A and B
  - only the owners of Stores A and B and Restaurant 2
  - All 4 business owners would be opposed to paying for any ferry trips.