厦门大学《经济学原理》课程试卷

王亚南经济研究院2021年级经济学本科国际化试点班

主考教师：周斯凡，韩晓祎，茅家铭，薛绍杰

试卷类型：（A卷）

Principles of Economics

Midterm Examination

Part I
Multiple Choices (2 points each)

1. The amount of goods and services produced from each unit of labor input is called

   (a) opportunity cost.
   (b) **productivity.**
   (c) externality.
   (d) marginal benefit.

2. Which of the following firms is most likely to have market power?

   (a) a grocery store in a metropolitan area.
   (b) a convenience store in a suburb.
   (c) a pub in a college town.
   (d) **the only gasoline station in a rural area.**

3. Prices direct economic activity in a market economy by

   (a) **influencing the actions of buyers and sellers.**
   (b) reducing scarcity of the goods and services produced.
   (c) eliminating the need for government intervention.
   (d) allocating goods and services in the most equitable way.

4. The term used to describe a situation in which markets do not allocate resources efficiently is

   (a) economic meltdown.
   (b) **market failure.**
   (c) equilibrium.
   (d) the effect of the invisible hand.

5. Government policies can change the costs and benefits that people face. Those policies have the potential to

   (a) alter people's behavior.
   (b) alter people's decisions at the margin.
   (c) produce results that policymakers did not intend.
   (d) **All of the above are correct.**

6. Which of the following will shift the demand curve of gasoline to the right?

   (a) The OPEC (Organization of Petroleum Exporting Countries) decide to restrict their production so as to raise their total revenue.

   (b) The advancement of shale oil technology

   (c) **The price of gasoline-powered automobiles decreases.**

   (d) Both the current price and the expected price of electricity decreases.

7. The skill-biased technology advancement is complementary to skilled labor but substitutable to unskilled labor. Education will transform workers from unskilled labor to skilled labor. When skill-biased technology advances while education does not change, which of the following is necessarily true?

   (a) The equilibrium wage level of skilled workers will decrease.

   (b) The equilibrium wage level of unskilled workers will increase.

   (c) **The equilibrium quantity of skilled workers will increase.**

   (d) The wage gap between skilled workers and unskilled workers will decrease.

8. When theres is a non-binding price ceiling, which of the following statement is true?

   (a) There is a shortage.

   (b) There is a surplus.

   (c) The quantity demanded is larger than the quantity supplied.

   (d) **The quantity demanded is the same as the quantity supplied.**

9. On a perfectly competitive labor market with perfectly inelastic labor demand curve, increasing a binding minimum wage will

   (a) **Increase unemployment**

   (b) Decrease employment

   (c) Increase deadweight loss.

   (d) All of the above

10. Which of the following may cause a shortage?

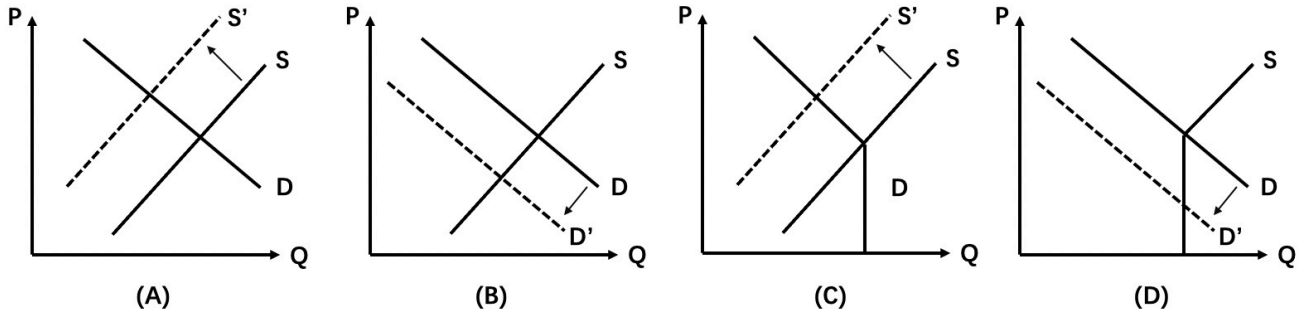
    (a) A binding price ceiling

    (b) **A binding price floor**

    (c) Imposing a tax

    (d) A shift of the supply curve to the left

11. Which of the following best represents the housing market of a declining city where the income level is dropping and people are leaving[1]?



(a) A
(b) B
(c) C
(d) **D**

12. Let (p_1, q_1) and (p_2, q_2) be respectively the price and quantity sold of a product in period 1 and period 2. Which of the following assumptions are *not* needed in order for us to estimate the price elasticity of demand for this product based on (p_1, q_1) and (p_2, q_2)?

(a) the number of buyers in this market has not changed from period 1 to period 2
(b) the income level has not changed from period 1 to period 2
(c) **the cost of producing this product has not changed from period 1 to period 2**
(d) the prices of related goods have not changed from period 1 to period 2

13. The effect of AI on the labor market is a hotly debated topic. Suppose the demand for labor is elastic, then technology growth in the form of AI will cause the total income earned by labors to

(a) **increase**
(b) decrease
(c) stay the same

[1] S represents housing supply and D represents housing demand.

14. The demand for good X is given by $Q = 40 - 0.5P$. The demand curve of good Y is linear and intersects with the demand curve of X when the price is 8, and at the intersect point the price elasticity of Y is twice as big as that of X. Then which of the following is the demand curve for Y?

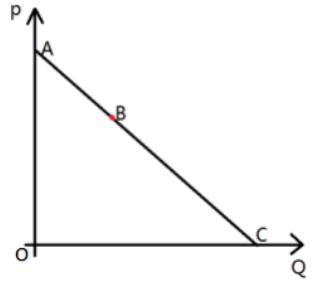
    (a) $Q = 44 - 0.5P$

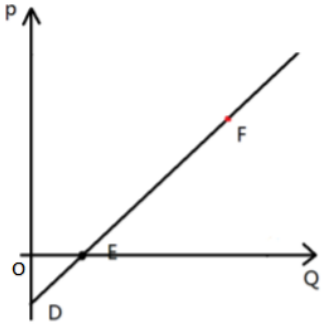
    (b) $Q = 44 - P$ (**correct**)

    (c) $Q = 44 - 1.5P$

    (d) $Q = 44 - 2P$

15. The price elasticity at point B and point F equal:





    (a) AB/BC, DE/FD

    (b) AB/BC, FD/EF

    (c) **BC/AB, EF/DF**

    (d) BC/AB, DE/EF

16. When a tax is levied on a good, the buyers and sellers of the good share the burden,

    (a) If the tax is levied on the sellers.

    (b) If the tax is levied on the buyers.

    (c) If a portion of the tax is levied on the buyers, with the remaining portion levied on the sellers.

    (d) **Regardless of how the tax is levied.**

17. When a tax is imposed on a good, the

    (a) Supply curve for the good always shifts.

    (b) Demand curve for the good always shifts.

    (c) Amount of the good that buyers are willing to buy at each price always remains unchanged.

    (d) **Equilibrium quantity of the good always decreases.**

18. Suppose a tax of $3 per unit is imposed on a good. The supply curve is a typical upward-sloping straight line, and the demand curve is a typical downward-sloping straight line. The tax decreases consumer surplus by $3,900 and decreases producer surplus by $3,000. The tax generates tax revenue of $6,000. The tax decreased the equilibrium quantity of the good from

    (a) 2,000 to 1,500.

    (b) 2,400 to 2,000.

    (c) **2,600 to 2,000.**

    (d) 3,000 to 2,400.

19. Suppose the government imposes a tax on cheese. The deadweight loss from this tax will likely be greater in the

    (a) First year after it is imposed than in the eighth year after it is imposed because demand and supply will be more elastic in the first year than in the eighth year.

    (b) First year after it is imposed than in the eighth year after it is imposed because demand and supply will be less elastic in the first year than in the eighth year.

    (c) Eighth year after it is imposed than in the first year after it is imposed because demand and supply will be more elastic in the first year than in the eighth year.

    (d) **Eighth year after it is imposed than in the first year after it is imposed because demand and supply will be less elastic in the first year than in the eighth year.**

20. Which of the following statements is true for markets in which the demand curve slopes downward and the supply curve slopes upward?

    (a) As the size of the tax increases, tax revenue continually rises and deadweight loss continually falls.

    (b) As the size of the tax increases, tax revenue and deadweight loss rise initially, but both eventually begin to fall.

    (c) **As the size of the tax increases, tax revenue rises initially, but it eventually begins to fall; deadweight loss continually rises.**

    (d) As the size of the tax increases, tax revenue rises initially, but it eventually begins to fall; deadweight loss falls initially, but eventually it begins to rise.

Part II
Problems

Problem 1 (15 points)

The government has decided that the free-market rental price of apartments is too high.

1. Suppose the government imposes a binding price ceiling in the apartments rental market (a rent control policy). Draw a supply-and-demand diagram to show the effect of this policy on the rent of apartment and the quantity of apartments rented. Is there a shortage or a surplus of apartments for rental?
2. Do you think the shortage or the surplus will become more or less severe in the long run? Why?

Ans:

- The rent decreases, and the quantity of apartments rented also decrease.
- There is a shortage.
- More severe in the long run because the price elasticity of the supply (and/or demand) is bigger in the long run.

Problem 2 (15 points)

Suppose market demand is given by the equation

$$Q^D = 40 - 2P$$

1. If the market equilibrium price is \$10, how much is total consumer surplus in this market?
2. If the market equilibrium price rises from \$10 to \$15, what is the change in total consumer surplus in the market?
3. If the market equilibrium price falls from \$10 to \$5, what is the change in total consumer surplus in the market?
4. If the market equilibrium price falls from \$10 to \$5, how much additional consumer surplus do consumers initially in the market at the \$10 price receive?
5. If the market equilibrium price falls from \$10 to \$5, how much consumer surplus do consumers entering the market after the price drop receive?

Ans:

1. **Consumer surplus is \$100.**
2. **Consumer surplus decreases by \$75.**
3. **Consumer surplus increases by \$125.**
4. **The consumers initially in the market at a price of \$10 receive an additional \$100 in consumer surplus.**
5. **The consumers entering the market after the price decrease receive \$25 in consumer surplus.**

Problem 3 (15 points)

Consider a labor market, where workers are on the supply side and firms are on the demand side. The price paid by firms to hire workers are called wages. The market demand and supply are given by, respectively, $Q_d = 400 - W$ and $Q_s = 3W$. To begin with, the market is free and has reached its equilibrium where the number of workers supplied equals to the number of workers demanded. "Employment" is the number of workers who are hired. "Unemployment" is the number of workers who are looking for a job at the on-going wage level but cannot find a job.

1. What are the equilibrium wage level and employment?
2. Suppose a per unit tax T is imposed on the workers. Would the tax cause unemployment in the labor market? What is the equilibrium wage level and employment after the per unit tax is imposed? (Hint: you may solve the wage level and the employment in terms of T.)
3. How much tax revenue will be collected?
4. What will be the dead weight loss from this per unit tax?

Ans:

1. $W = 100$ **and** $Q = 300$
2. **Would not cause unemployment;** $W = 100 + \frac{3T}{4}$**,** $Q = 300 - \frac{3T}{4}$**.**
3. $300T - \frac{3T^2}{4}$
4. $\frac{3T^2}{8}$

Problem 4 (15 Points)

Suppose the markets for high-skill labor (those with more than college education) and low-skill labor (those with less than college education) can be described by the following supply and demand equations:

$$\text{High-skill Demand: } Q_H^D = 85 - 2 \cdot w_H + \alpha_H \cdot w_L \tag{1}$$
$$\text{High-skill Supply: } Q_H^S = 10 + w_H \tag{2}$$
$$\text{Low-skill Demand: } Q_L^D = 80 - 4 \cdot w_L + \alpha_L \cdot w_H \tag{3}$$
$$\text{Low-skill Supply: } Q_L^S = 20 + 4 \cdot w_L \tag{4}$$

, where (w_H, w_L) are respectively the hourly wages of high-skill and low-skill labor, Q_D^H and Q_S^H are respectively the quantity demanded and supplied of high-skill labor (measured in number of hours), and Q_D^L and Q_S^L are respectively the quantity demanded and supplied of low-skill labor (measured in number of hours).

1. Let $\alpha_H = 1, \alpha_L = 1.5$. Solve for the equilibrium wage and hours worked of high-skill and low-skill labor.

$$w_H = 29.33, \;\; Q_H = 39.33$$
$$w_L = 13, \;\; Q_L = 72$$

2. In this case, are high-skill and low-skill labor substitutes, complements, or neither?

   `substitutes`

3. Calculate the demand and supply elasticities[2] of high-skill and low-skill labor at equilibrium.

$$\epsilon_H^D = 1.49, \;\; \epsilon_H^S = 0.75$$
$$\epsilon_L^D = 0.72, \;\; \epsilon_L^S = 0.72$$

[2] More precisely, the price elasticity of demand and the price elasticity of supply

4. Is high-skill labor demand elastic, unit elastic, or inelastic? Is high-skill labor supply elastic, unit elastic, or inelastic? Is low-skill labor demand elastic, unit elastic, or inelastic? Is low-skill labor supply elastic, unit elastic, or inelastic?

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   high-skill labor demand:  elastic
   high-skill labor supply:  inelastic
   low-skill labor demand:  inelastic
   low-skill labor supply:  inelastic
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5. Calculate the cross-price elasticity of high-skill labor demand with respect to low-skill wage[3] and the cross-price elasticity of low-skill labor demand with respect to high-skill wage[4] at equilibrium.

$$\epsilon_{Q_H^D, w_L} = 0.33$$
$$\epsilon_{Q_L^D, w_H} = 0.61$$

6. Suppose as a result of immigration, low-skill labor supply increased so that the new low-skill labor supply curve becomes

$$Q_S^L = 50 + 4 \cdot w_L \tag{5}$$

   Solve for the equilibrium wage and hours worked of high-skill and low-skill labor in this new labor market.

$$w_H = 28, \;\; Q_H = 38$$
$$w_L = 9, \;\; Q_L = 86$$

7. Draw supply and demand diagrams to show the impact of low-skill immigration on the labor market. Clearly label and write down the equation for each supply and demand curve on your graph.

8. Now suppose the labor market is still described by (1)−(4). Let let $\alpha_H = -1.5, \alpha_L = -1$. Solve for the equilibrium wage and hours worked of high-skill and low-skill labor.

$$w_H = 22.67, \;\; Q_H = 32.67$$
$$w_L = 4.67, \;\; Q_L = 38.67$$

9. In this case, are high-skill and low-skill labor substitutes, complements, or neither?

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   Complements
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10. Now again suppose as a result of immigration, low-skill labor supply becomes (5). Solve for the equilibrium wage and hours worked of high-skill and low-skill labor.

$$w_H = 24.67, \;\; Q_H = 34.67$$
$$w_L = 0.67, \;\; Q_L = 52.67$$

[3] i.e., how much high-skill labor demand changes in response to changes in low-skill wage.
[4] i.e., how much low-skill labor demand changes in response to changes in high-skill wage.

11. Draw supply and demand diagrams to show the impact of low-skill immigration on the labor market in this case. Clearly label and write down the equation for each supply and demand curve on your graph.

12. Compare your answers to (6) − (7), how do the effects of low-skill immigration differ? Why?

    In both cases, low-skill immigration increases low-skill labor supplied and decreases low-skill wage. However, in the first case, low-skill immigration *decreases* high-skill wage and labor supplied. This is because low-skill and high-skill labor are substitutes so that more abundant low-skill labor would replace high-skill labor and decrease high-skill demand. In the second case, low-skill immigration *increases* high-skill wage and labor supplied. This is because the two kinds of labor are now complements, so that increase in the supply of one factor will stimulate demand for the other.

13. Now suppose the labor market is still described by (1)−(4) with $\alpha_H = 1, \alpha_L = 1.5$. In order to support low-skill workers, the government imposes a minimum hourly wage of $w_{\min} = 18$. Solve for the wage and hours worked of high-skill and low-skill labor after the imposition of this minimum wage.

$$w_H = 31, \quad Q_H = 41$$
$$w_L = 18, \quad Q_L = 54.5$$

14. Draw supply and demand diagrams to show the impact of minimum wage on the labor market. Clearly label and write down the equation for each supply and demand curve on your graph.

15. Now suppose instead of the minimum wage, the government taxes high-skill workers at \$5 per hour worked and distributes the collected tax dollars evenly to each low-skill worker (regardless of how much he or she works). Solve for the wages that high-skill and low-skill workers receive after tax[5], the wages high-skill and low-skill employers pay out-of-pocket, and the equilibrium hours worked.

    After tax on high-skill labor, the wage that firms pay for high-skill labor (w_H^D) is no longer the same as the wage received by high-skill workers (w_H^S). We have:

$$\begin{aligned} Q_H^D &= 85 - 2 \cdot w_H^D + w_L \\ Q_H^S &= 10 + w_H^S \\ Q_L^D &= 80 - 4 \cdot w_L + 1.5 \cdot w_H^D \\ Q_L^S &= 20 + 4 \cdot w_L \\ w_H^S &= w_H^D - 5 \end{aligned}$$

    $\Rightarrow$

$$\begin{aligned} w_H^D = 31.11, \;\; w_H^S = 26.11, \;\; Q_H = 36.11 \\ w_L = 13.33, \;\; Q_L = 73.33 \end{aligned}$$

    Note that since the tax is levied on workers, the equilibrium high-skill wage after tax is $w_H = w_H^D = 31.11$.

16. Draw supply and demand diagrams to show the impact of minimum wage on the labor market. Clearly label and write down the equation for each supply and demand curve on your graph.

17. Discuss tax incidence. Out of the four groups of market participants – high-skill workers, low-skill workers, high-skill employers, low-skill employers – who would share the burden of this tax? Who would benefit from this tax?

    High-skill workers, high-skill employers, low-skill employers all share the tax burden. Low-skill workers benefit from this tax.

18. If the government's goal is to increase the total income of low-skill workers, which one is a better policy: (a) minimum wage or (b) high-skill taxation and redistribution?

    Total low-skill income under (a): 1158.04
    Total low-skill income under (b): 981
    Hence the minimum wage policy maximizes low-skill income in this case[6].

[5] but before redistribution.

[6] Note that under the free-market equilibrium, total low-skill income is \$936. Hence both policies increase total low-skill income.