

经济学原理 I (2019 年秋季学期)

期中考试 2 (A 卷答案)

(2019/11/27)

(所有题目答案需写在另发的答题本上, 否则无效。本试卷满分 50 分。)

一、判断以下陈述是否正确, 阐述理由。必要时画出图形。(3 分*2 题=6 分)

1. A tax that has no deadweight loss cannot raise any revenue for the government, while a tax that raises no revenue for the government cannot have any deadweight loss.

False. A tax when either supply or demand is perfectly inelastic has neither an effect on quantity nor any deadweight loss, but it does raise revenue. A large enough tax reduces the quantity sold to zero, raises no revenue, yet has a large deadweight loss.

2. 当两国爆发贸易战时, 双方互相加征关税将使得其对社会福利的不利影响相互抵消, 则两国可能都不会从贸易战中受损。

错误。任何一国对对方征收关税, 都会减少贸易量, 使得双方受损。因此, 两国相互加征关税中只会带来“双重伤害”, 而不是相互抵消。

二、选择题。每个题目只有一个正确答案。(2 分*7 题=14 分)

1. John has been working as a tutor for \$300 a semester. When the university raise the price it pays tutors to \$400, Emily enters the market and begins tutoring as well. How much does producer surplus rise as a result of this price increase?

- A. by less than \$100
B. between \$100 and \$200
C. between \$200 and \$300
D. by more than \$300

2. 小偷偷走了你一部花费 8000 元购买的新苹果手机。以下哪一项必然属于这一事件造成的社会总剩余变动?

- A. 社会总剩余减少, 数量为你购买手机的价格 (8000 元)。
B. 社会总剩余减少, 数量等于你对于手机的评价 (必定高于 8000 元)
C. 社会总剩余增加, 数量等于小偷对于该手机的评价。
D. 社会总剩余减少, 数量等于小偷付出努力的成本。

3. Sofia pays Sam \$50 to mow her lawn every week. When the government levies a mowing tax of \$10 on Sam, he raises his price to \$60. Sofia continues to hire him at the higher price. What is the change in producer surplus, change in consumer surplus, and the deadweight loss?

- A. \$0, \$0, \$0.
B. \$0, -\$10, \$0
C. +\$10, -\$10, \$10
D. +\$10, -\$10, \$0

4. The Laffer curve illustrates that, in some circumstances, the government can reduce a tax of a good and increase the:

- A. deadweight loss.

- B. total surplus.
C. government's tax revenue
D. equilibrium quantity.
5. The government distributes 500 units of pollution rights for free. Those pollution rights are then traded in an open market and reach an equilibrium price as \$50. This policy is equivalent to a corrective tax of (_____) per unit of pollution.
A. \$0
B. \$50
C. between \$0 and \$50
D. This policy cannot be equivalent to any corrective tax.
6. 政府干预经济以扶持高技术产业的做法称为技术政策。在经济学家看来，以下哪一理由最能支持政府采取技术政策？
A. 高技术产业具有高的生产率。
B. 高技术产业需要较大的前期研发投入。
C. 高技术产业市场风险较大。
D. 高技术产业带来技术外溢的正外部性。
7. 学生宿舍中有两人：吸烟者和非吸烟者。考虑三种规定：第一种规定：吸烟者有吸烟的权利，即吸烟者无需经过非吸烟者同意而吸烟；第二种规定：吸烟者需要经过非吸烟者同意后才能吸烟。第三种规定：完全禁止吸烟。则对非吸烟者而言，哪一种规定最有利？哪一种规定最不利？
A. 第一种规定最有利，第二种规定最不利。
B. 第二种规定最有利，第一种规定最不利。
C. 第二种规定最有利，第三种规定最不利
D. 第三种规定最有利，第一种规定最不利。

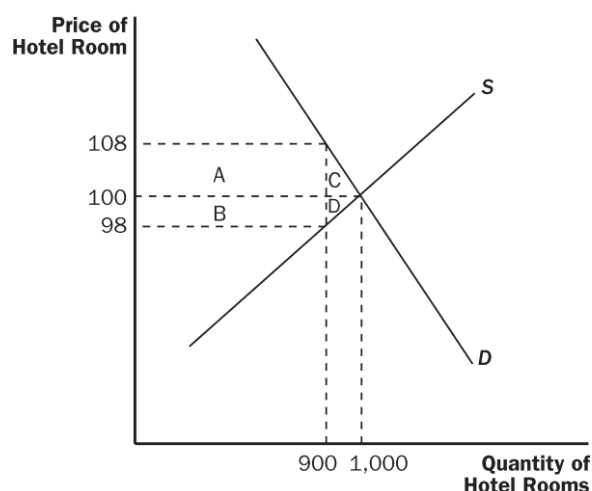
三、问答题。(共 3 小题，30 分)

1. Tax revenues and Deadweight loss (6 pts)

Hotel rooms in Small town go for \$100, and 1,000 rooms are rented on a typical day.

- a. To raise revenue, the mayor decides to charge hotels a tax of \$10 per rented room. After the tax is imposed, the going rate for hotel rooms rises to \$108, and the number of rooms rented falls to 900. Calculate the amount of revenue this tax raises for Small town and the deadweight loss of the tax. (3 pts)

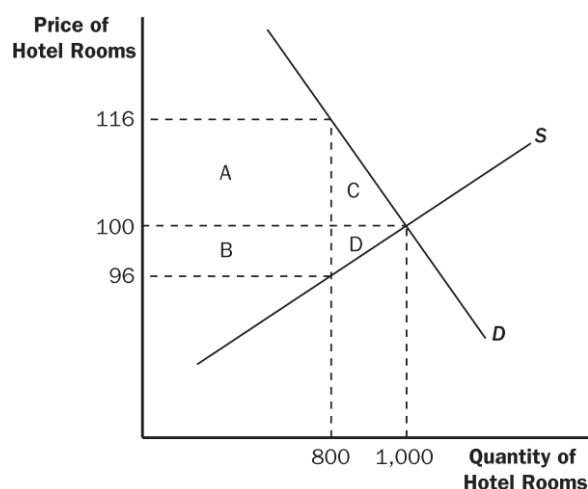
Figure below shows the effect of a \$10 tax on hotel rooms. The tax revenue is represented by areas A + B, which are equal to $(\$10)(900) = \$9,000$. The deadweight loss from the tax is represented by areas C + D, which are equal to $(0.5)(\$10)(100) = \500 .



- b. The mayor now doubles the tax to \$20. The price rises to \$116, and the number of rooms rented falls to 800. Calculate tax revenue and deadweight loss with this larger tax. Are they double, more than double, or less than double? Explain. (3 pts)

Figure below shows the effect of a \$20 tax on hotel rooms. The tax revenue is represented by areas A + B, which are equal to $(\$20)(800) = \$16,000$. The deadweight loss from the tax is represented by areas C + D, which are equal to $(0.5)(\$20)(200) = \$2,000$.

When the tax is doubled, the tax revenue rises by less than double, while the deadweight loss rises by more than double. The higher tax creates a greater distortion to the market.



2. Public Goods Provision (11 pts)

Two towns, each with three members, are deciding whether to put on a fireworks display to celebrate the New Year. Fireworks cost \$360. In each town, some people enjoy fireworks more than others.

- a. In the town of Bayport, each of the residents values the public good as follows:

Frank: \$50

Joe: \$100

Callie: \$300

Would fireworks pass a cost-benefit analysis? Explain. (1 pt)

In Bayport, the sum of the benefits ($\$50 + \$100 + \$300 = \450) is greater than the cost of

the fireworks show (\$360), so fireworks would pass a cost-benefit analysis.

- b. The mayor of Bayport proposes to decide by majority rule and, if the fireworks referendum passes, to split the cost equally among all residents. Who would vote in favor, and who would vote against? Would the vote yield the same answer as the cost-benefit analysis? (2 pts)

If the cost is split equally among all residents, the cost per resident would be $(\$360 / 3 = \$120)$. Frank would vote against because his value (\$50) is less than the cost. Joe would vote against because his value (\$100) is less than the cost. Callie would vote in favor because her value (\$300) is greater than the cost. The result of the referendum vote would be against the fireworks, so the referendum would not yield the same answer as the cost-benefit analysis.

- c. In the town of River Heights, each of the residents value the public good as follows:

Nancy: \$20

Bess: \$140

Ned: \$160

Would fireworks pass a cost-benefit analysis? Explain. (1 pt)

In River Heights, the sum of the benefits $(\$20 + \$140 + \$160 = \$320)$ is less than the cost of the fireworks show (\$360), so fireworks would not pass a cost-benefit analysis.

- d. The mayor of River Heights also proposes to decide by majority rule and, if the fireworks referendum passed, to split the cost equally among all residents. Who would vote in favor, and who would vote against? Would the vote yield the same answers as the cost-benefit analysis? (2 pts)

If the cost is split equally among all residents, the cost per resident would be $(\$360/3) \120 . Nancy would vote against because her value (\$20) is less than the cost. Bess would vote for because her value (\$140) is greater than the cost. Ned would vote in favor because his value (\$160) is greater than the cost. The result of the referendum vote would be for the fireworks, so the referendum would not yield the same answer as the cost-benefit analysis.

- e. What do you think these examples say about the optimal provision of public goods? (1 pts)

The optimal provision of public goods is challenging because the total benefit may exceed the total cost when the average benefit is less than the average cost, or vice versa.

- f. An economist suggests a new policy: for each of the two towns, instead of running a fireworks referendum, each resident reports his/her net benefit from the fireworks. The fireworks show would go on if the total net benefit of all residents is positive, and the cost will be split equally among them.

In addition to the possible payment for fireworks, however, if one resident reports a net benefit such that he or she reverts the decision derived from adding reported net benefits of the other two residents (e.g., the other two residents totally have a positive net benefit from fireworks, yet by adding up net benefit from all three, the net benefit is negative), then he or she pays an (additional) amount of money to the government equal to the total loss of *the other two residents* from his or her decision reversion.

Consider the example of River Height town. Verify that when both Ned and Bess report their *true* net benefit from fireworks display, it is in Nancy's interest to also report her true

net benefit from the fireworks. (2 pts)

Suppose Bess and Ned tell the truth. That is: Bess reports a net benefit as $\$160 - 120 = 40$ and Ned reports a net benefit as $\$140 - 120 = 20$, from fireworks display. Note the total net benefit from these two residents is $\$40 + 20 = \$60 > 0$. So the fireworks display would benefit them as a whole. Consider Nancy. Her net benefit is $\$20 - 120 = -100$. If she reports a higher net benefit (say, $\$-50$) such that she does not revert the decision of doing fireworks, she lost $\$100$. If she does report the truth so that the decision is reverted because $\$-100 + 60 = -40 < 0$, she got to pay $\$60$, cheaper than the loss of $\$100$. Note that any other choice would result in a loss of either $\$100$ or $\$60$. Then she will tell the truth.

- g. Would this policy induce the social optimal result on fireworks display? Explain. (Hint: Consider internalizing externality.) (1 pt)

Yes. By asking Nancy to pay the loss she makes to the other two residents if she reverts the decision, the policy forces Nancy to consider the negative externality she puts on the rest of the society. If the benefit from decision reversion for her is bigger than her negative externality, it is both in her own interest and in the society's interest to revert it. Vice versa.

- h. What is the possible problem of this policy? (1 pt)

One problem of it is that the payment is not zero even if the fireworks display is not done: Nancy pays $\$60$ when fireworks display is not done.

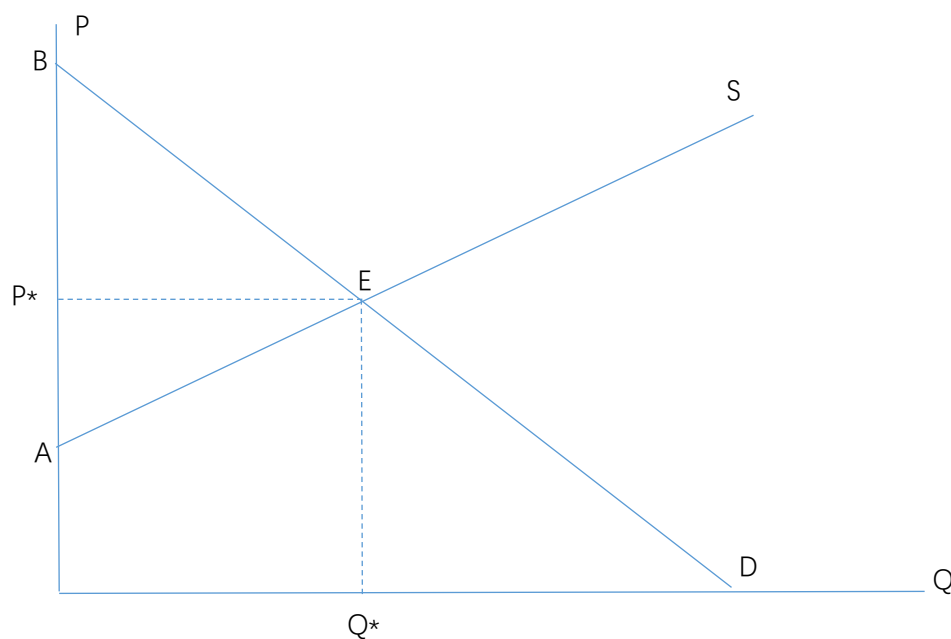
3. 企业内部的转移定价 (13 分)

某钢铁企业有两个部门：铁厂和钢厂。铁厂生产半成品（铁），钢厂从铁厂获得铁后加工成成品（钢）出售。每个部门的业绩目标都是最大化该部门的净收益，即部门的“利润”。企业的目标是最大化企业整体的总利润。

企业的最高执行者要求：当钢厂从铁厂获得半成品铁时，需为每一单位铁支付一定金额，即为半成品的内部转移价格。内部转移价格的大小由企业的最高执行者制定。

- (1) 企业的最高执行者应该选取一个怎样的内部转移价格，才能使得企业的总利润最大？用图形表示并用文字解释。（提示：考虑钢厂对铁的需求曲线和铁厂生产铁的供给曲线）。(1 分)

画出钢厂对铁的需求曲线 D 和铁厂生产铁的供给曲线 S 。使得企业利润最大的内部转移定价为 P^* 。此时，企业获得的总利润（或总剩余）为面积 ABE ，为最大可能的总剩余。

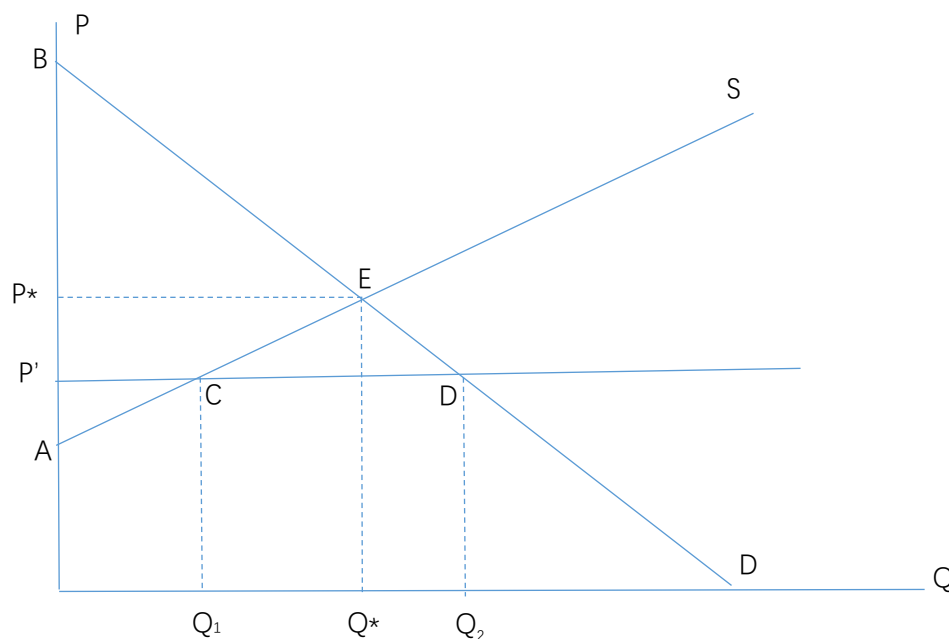


- (2) 在上述内部定价下, 两个部门各自的利润为多少? 半成品铁的产量为多少? (1 分)
 钢厂总剩余 (利润) 为 P^*EB , 铁厂获得总剩余为 P^*EA 。铁产量为 Q^* 。

现在企业面临一个外部的充分竞争的铁市场, 可以以价格 P' 提供企业所需半成品 (铁)。假定该价格 P' 低于在企业没有外部市场时的内部转移定价。

- (3) 为了继续使得企业总利润最大化, 企业在面对充分竞争的外部铁市场时, 应该如何选择内部转移定价? 此时企业利润为多少? 与第 (1) 问 (即无外部市场情形) 相比, 利润是上升了还是下降了? 用图形表示, 并用文字解释你的回答。(2 分)

为了继续使得企业利润最大, 企业应该选择将外部市场竞争性价格 P' 作为内部转移定价。此时企业利润为面积 $BP'D$ (钢厂利润) + 面积 $P'CA$ (铁厂利润)。为此时可能的最大利润。比第 (1) 问无外部市场情形利润增加面积 CDE 。



- (4) 与第(1)问相比,新的内部转移定价如何影响铁的自产量?如何影响铁厂利润,如何影响钢厂利润?哪个部门会欢迎新的转移定价?企业是否从外部竞争市场采购铁或向外部市场外销铁?如果采购或外销,数量为多少?(2分)

铁的自产量下降到 Q_1 。铁厂利润下降到面积 $P'AC$ 。钢厂利润上升到面积 $BP'D$ 。钢厂会欢迎新的内部转移定价。

企业从外部采购铁,数量为 $Q_2 - Q_1$ 。

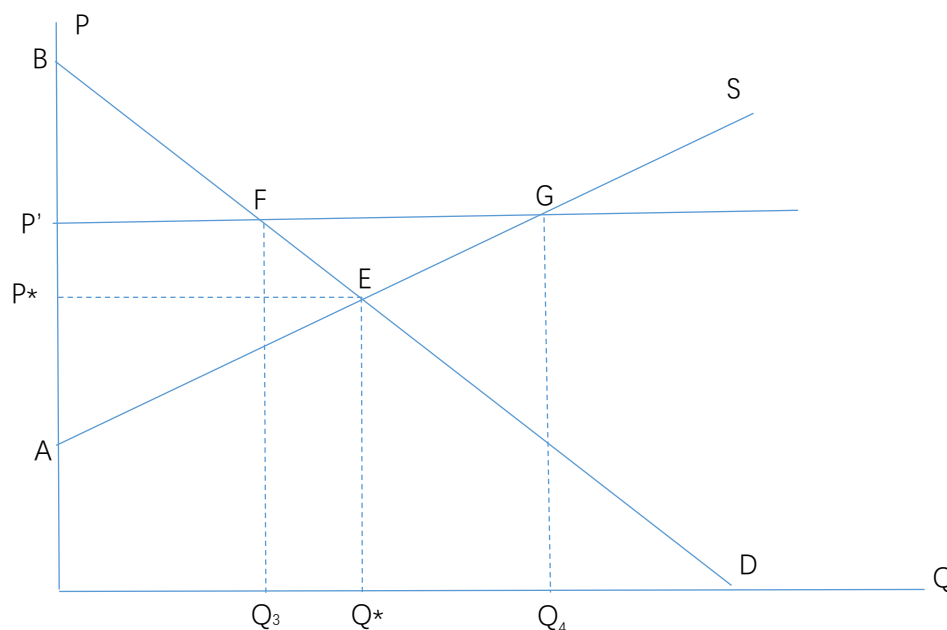
- (5) 与第(1)问相比,你预计企业在新内部转移定价下,其成品(钢)的产量是上升还是下降?(1分)

上升。因为铁的使用量增加了(从 Q^* 到 Q_2)。

现在假定外部的充分竞争铁市场的价格 P' 高于企业在没有外部市场时的内部转移定价。

- (6) 为了继续使得企业总利润最大化,企业此时应该如何选择内部转移定价?此时企业利润为多少?与第(1)问(即无外部市场情形)相比,利润是上升了还是下降了?用图形表示,并用文字解释你的回答。(2分)

为了继续使得企业利润最大,企业仍然应该选择将外部市场竞争性价格 P' 作为内部转移定价。此时企业利润为面积 $BP'F$ (钢厂利润) + 面积 $P'GA$ (铁厂利润)。为此时可能的最大利润。比第(1)问无外部市场情形利润增加面积 FGE 。



- (7) 与第(1)问相比,新的内部转移定价如何影响铁的自产量?如何影响铁厂利润,如何影响钢厂利润?哪个部门会欢迎新的转移定价?企业是否从外部竞争市场采购铁或向外部市场外销铁?如果采购或外销,数量为多少?(2分)

铁的自产量会上升到 Q_4 。铁厂利润上升到面积 $P'GA$ 。钢厂利润下降到面积 $BP'F$ 。铁厂会欢迎新的内部转移定价。

企业向外部销售铁,数量为 $Q_4 - Q_3$ 。

- (8) 与第(1)问相比,你预计企业在新内部转移定价下,其成品(钢)的产量是上升还是下降?(1分)

下降。因为铁的使用量减少了(从 Q^* 到 Q_3)。企业从外销铁中获得新的利润来源。

- (9) 综上所述,你认为当企业面对一个外部充分竞争的半成品市场时,应该如何进行内部转移定价?讨论可能有哪些因素阻碍你选择这一“最优”的内部转移定价。(1分)

应使得内部转移定价等于外部竞争市场定价。

阻碍因素包括:第一,外部市场中不存在完全相同的半成品。第二,外部采购带来一定的采购成本,或者外销带来一定的外销成本。