Principles of Economics I (Fall 2011)
Homework #2 Answers
(Lecture 4-6, Due at 5 pm, Oct. 31, 2011, submitted OUT OF class*)
***For detail, see the course syllabus (Chinese version).**

Note: All textbook problem numbers refer to "Problems and Application" part in corresponding chapter, the 5th international student edition of the textbook.

TAs will score even numbers.

For Chapter 4

1. For a competitive market, which of the following statements is correct?
a. A seller can always increase her profit by raising the price of her product.
b. If a seller charges more than the going price, buyers will go elsewhere to make their purchases.
c. A seller often charges less than the going price to increase sales and profit.
d. A single buyer can influence the price of the product, but only when purchasing from several sellers in a short period of time.

2. Textbook, Chapter 4, #4.
a. DVDs and TV screens are likely to be complements because you cannot watch a DVD without a television. DVDs and movie tickets are likely to be substitutes because a movie can be watched at a theater or at home. TV screens and movie tickets are likely to be substitutes for the same reason.

b. The technological improvement would reduce the cost of producing a TV screen, shifting the supply curve to the right. The demand curve would not be affected. The result is that the equilibrium price will fall, while the equilibrium quantity will rise. This is shown in Figure 16.

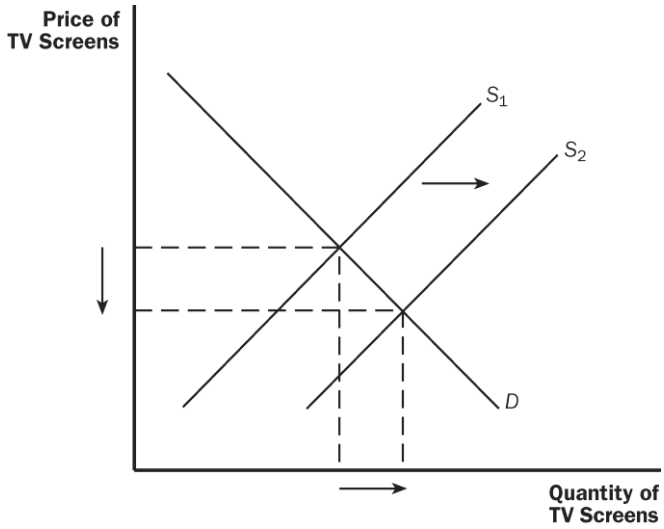


Figure 16

c. The reduction in the price of TV screens would lead to an increase in the demand for DVDs because TV screens and DVDs are complements. The effect of this increase in the demand for DVDs is an increase in both the equilibrium price and quantity, as shown in Figure 17.

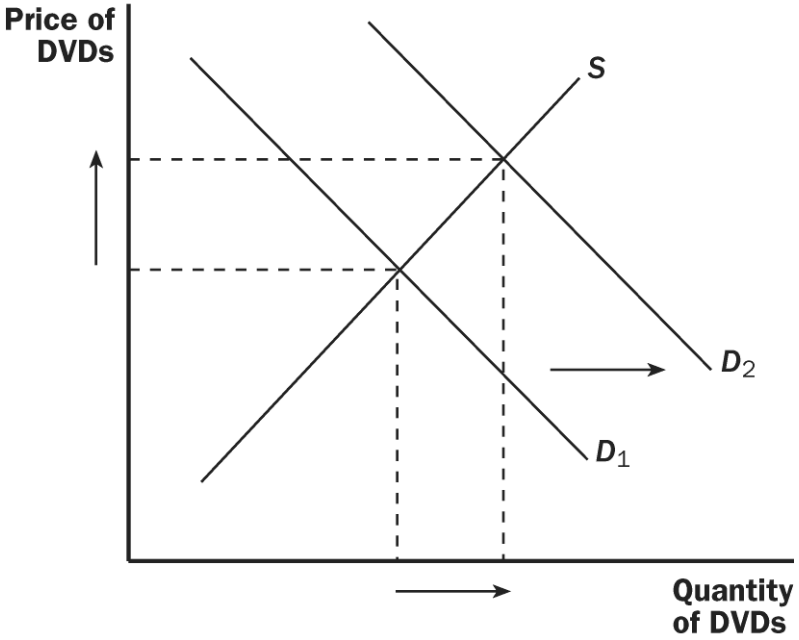


Figure 17

d. The reduction in the price of TV screens would cause a decline in the demand for movie tickets because TV screens and movie tickets are substitute goods. The decline in the demand for movie tickets would lead to a decline in the equilibrium price and quantity sold. This is shown in Figure 18.

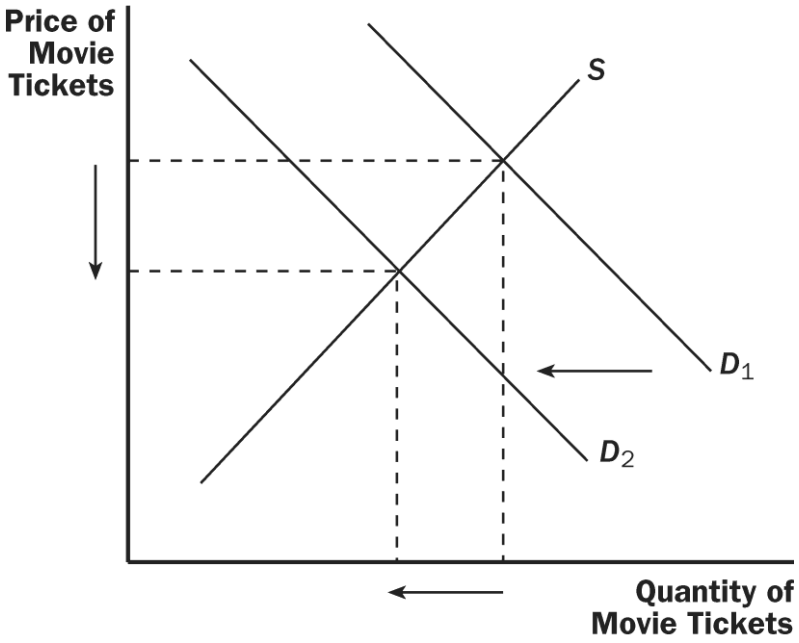


Figure 18

3. Textbook, Chapter 4, #7.

a. Reduced police efforts would lead to an increase in the supply of drugs. As Figure 26 shows, this would cause the equilibrium price of drugs to fall and the equilibrium quantity of drugs to rise.

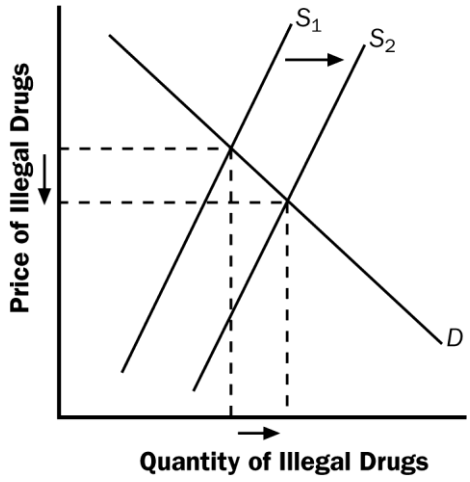


Figure 26

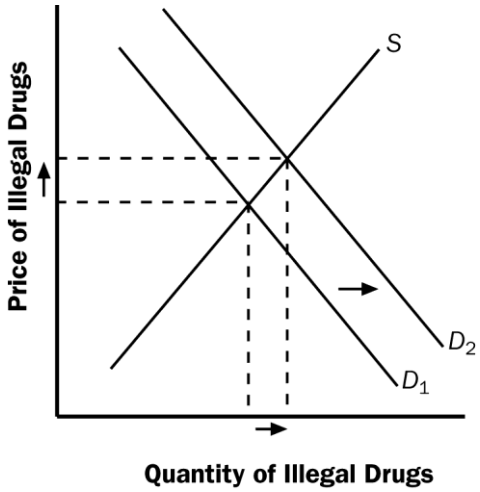


Figure 27

On the other hand, cutbacks in education efforts would lead to a rise in the demand for drugs. This would push the equilibrium price and quantity up, as shown in Figure 27.

b. A fall in the equilibrium price would lead us to believe the first hypothesis. If the equilibrium price rose, we would believe the second hypothesis.

4. 在没有旧书市场之前，学生们只能自己保留（或者干脆扔掉）用过的教材。旧书市场的突然出现使得用过的教材可以转手卖给其他需要的人。两个学生对旧书市场的出现如何影响新书市场做出了不同的预测。甲："因为旧书是新书的替代品，这会减少对新书的需求，导致新书价格下降。"乙："因为购买新书的人预期将来可以重新出售，从而增加了对新书的需求，推动新书价格上升。"你的看法是：

A. 同意甲的看法；不同意乙的看法
B. 同意乙的看法；不同意甲的看法
C. 两个人的看法都缺乏根据，因为他们忽略了新书市场的供给变动
D. 两个人的看法都有一定道理，因此新书价格是升是降难以确定

5. 水泊梁山有两条好汉：张顺和李逵。他们每天均从事砍柴和打鱼两项工作，每天固定工作 8 小时，产量如下表所示：

	一天 8 小时产量		打 1 斤鱼的机会成本
	鱼（斤）	柴（斤）	
张顺	10	30	3
李逵	5	50	10
张横	7.5	30	4
李忠	3	18	6

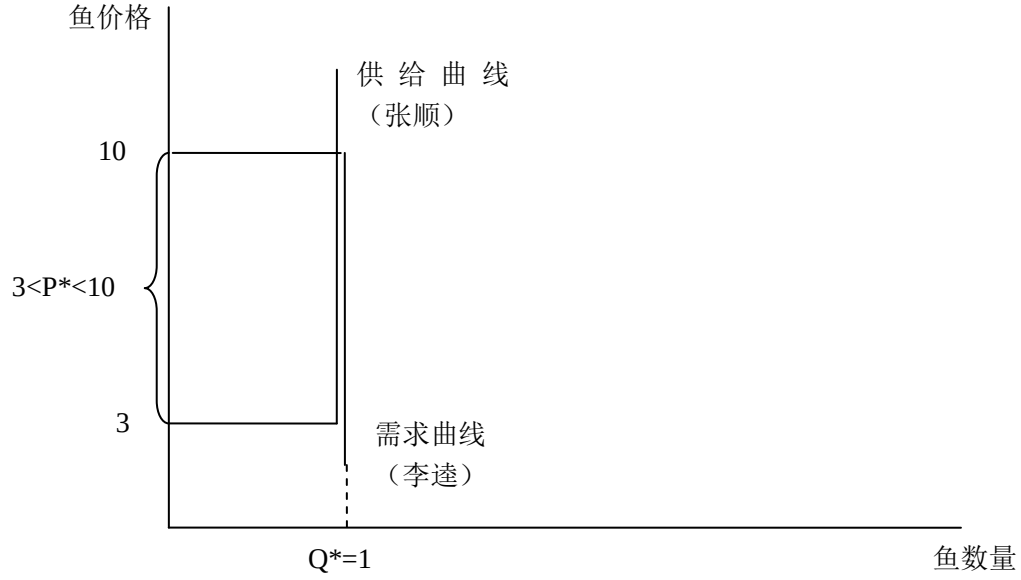
（1） 张顺和李逵每打 1 斤鱼的机会成本是多少？将答案填入表中。

如表。

现在，水泊梁山决定建立一个市场。每天开市时，张顺和李逵将鱼或柴带到市场上进行交换。不过，由于对鱼的运输条件有限，每个卖者只能带到市场上 1 斤鱼，每个买者也只能带走 1 斤鱼。

（2） 将鱼作为市场交换的产品，柴作为鱼的价格单位，画出水泊梁山市场的供求图形。市场最终的交易价格是怎样的？交易数量是多少？谁是鱼的卖者？谁是买者？

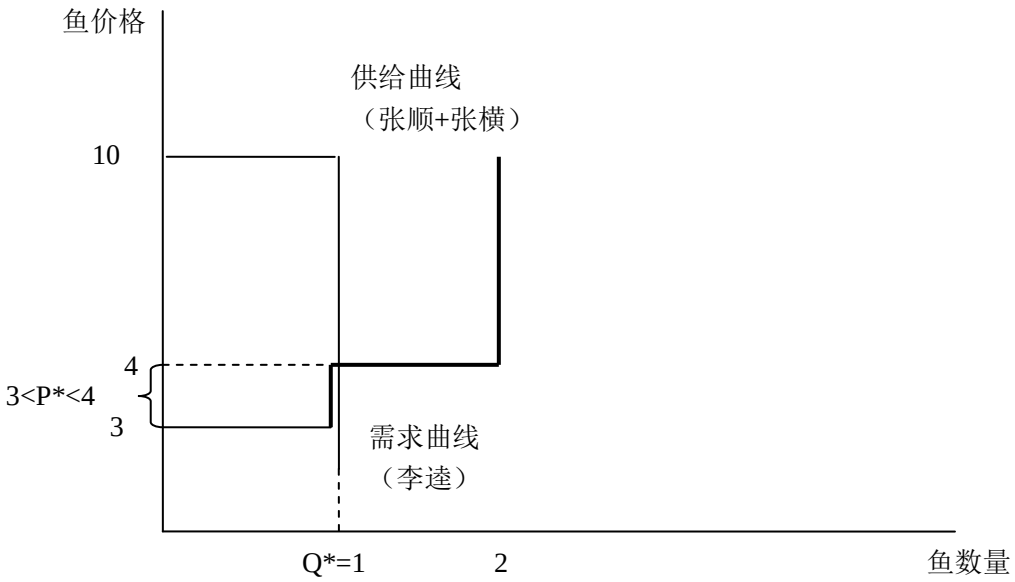
如图。价格在每斤鱼 3-10 斤柴之间。交易量为 1 斤鱼。张顺是鱼的卖者，李逵是鱼的买者。



现在水泊梁山又有一位好汉入伙：张横。张横每天 8 小时的产量如上表所示。这样，在每天的市场上就出现了三位潜在的参与者，假定每个人买入或卖出的鱼数量仍为 1 斤。

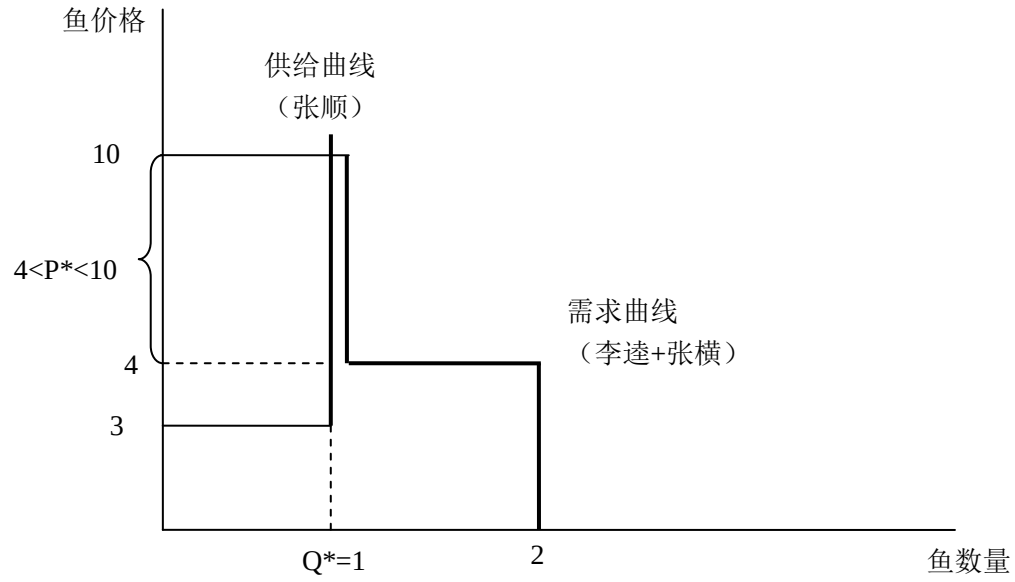
（3） 在表中填入张横生产 1 斤鱼的机会成本。考虑张横作为鱼的卖者加入市场。在新的市场上最终的交易价格是怎样的？交易数量是多少？谁是鱼的买者？谁是鱼的卖者？谁无法参与市场交易（如果有的话）？原来的交易者，即张顺和李逵，谁从张横的加入中获益，谁受损？

如图。交易价格为每斤鱼 3-4 斤柴。交易数量为 1 斤鱼。李逵是买者，张顺是卖者。张横无法参与交易。由于交易价格下降，买者李逵获益，卖者张顺受损。



（4） 现在考虑张横作为鱼的买者加入市场。此时市场交易价格是怎样的？谁是鱼的买者？谁是鱼的卖者？谁无法参与市场交易（如果有的话）？原来的交易者，即张顺和李逵，谁从张横的加入中获益，谁受损？

市场交易价格为每斤鱼 4-10 斤柴。交易数量为 1 斤鱼。李逵是买者，张顺是卖者。张横无法参与交易。由于交易价格上升，卖者张顺受益，买者李逵受损。



现在水泊梁上的好汉增加到四位：张顺、李逵、张横和李忠。新增的李忠每 8 小时的产量如上表所示。仍然假定在所有潜在的市场参与者中，每个买者和卖者交易的鱼数量限定为 1 斤。

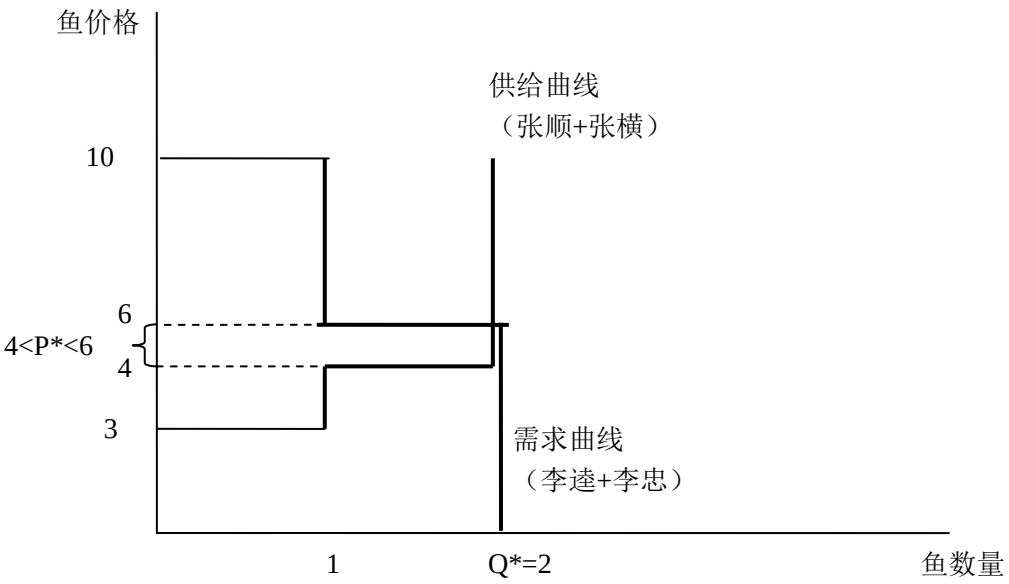
（5） 在表中填入李忠生产 1 斤鱼的机会成本。在这四个人形成的市场中，最终的交易价格是怎样的？交易数量是多少？谁是鱼的买者？谁是鱼的卖者？谁无法参与市场交易（如果有的话）？原来的交易者，即张顺、李逵和张横，谁从李忠的加入中获益，谁受损？

如图。交易价格为每斤鱼 4-6 斤柴。交易数量为 2 斤鱼。鱼的买者为李逵、李忠；鱼的卖者为张顺、张横。所有人都参与交易。

张横肯定获益，因为原来不能参加交易。（注意：如果张横坚持仍为鱼的买者，他仍然不能参与交易从而获益。自利的张横为了寻找获益机会会自动转为鱼的卖者）

李逵和张顺的福利变化不确定，依赖于在原来情况下张横是鱼的买者还是卖者。如果张横是鱼的卖者，李忠的加入增加了鱼的需求，导致鱼的价格上升，这导致李逵受损，张顺受益。

反之，如果原来情况下张横是鱼的买者，现在他转而成为了鱼的卖者。鱼的需求和供给都增加，最终鱼的价格下降。鱼的买者李逵受益，鱼的卖者张顺受损。



现在考虑水泊梁山有 108 条好汉，他们生产鱼的机会成本满足公式：C=R，单位为柴的数量（斤），其中 R=1,2,….,108，是所有好汉按照生产鱼的机会成本由低到高排的“座次”，R 越大则生产鱼的机会成本越高。

（6） 根据上述对于简单情况的分析，你能猜测在所有 108 位好汉参与的市场上，鱼的交易价格（以柴为单位）和数量是多少吗？仍然维持每个好汉只能买入或者卖出 1 斤鱼的假设。

生产鱼机会成本低的前 54 位好汉将卖出鱼，机会成本高的后 54 位将买入鱼。交易数量为 54 斤鱼。交易价格在最后一位卖者（即机会成本最高）的卖者和最后一位买者（即机会成本最低）的买者之间，即在 54-55 斤柴之间。

（7） 竞争市场的一个关键假设是买者和卖者都是价格接受的，这一假设基于如下的判断，即：在一个有众多买者和卖者的市场上，市场价格会被压缩到一个窄小的范围。上述所有的分析是否支持了这一判断？并进行直观的解释。

上述分析表明：随着市场上买者和卖者的增加，总的来说，交易价格的范围的确在缩小。这对竞争市场中行为者价格接受的假定提供了支持。

直观来说，随着买者增加，需求者之间的竞争将使得价格面临上升压力，最终将不低于出价最低者愿意支付的价格。而随着卖者增加，供给者之间的竞争将使得价格面临下降的压力，最终将不高于成本最高的供给者愿意接受的价格。而市场交易又需要使得买者中出价最低者愿意支付的价格高于卖者中成本最高者愿意接受的价格。可以想象，随着买者和卖者增加，这两个价格所形成的价格空间将会越来越小。

For Chapter 5

6. Textbook, Chapter 5, #5.

Both Billy and Valerie may be correct. If demand increases, but supply is "totally" inelastic, equilibrium price will rise but the equilibrium quantity will remain the same. This would also occur if supply decreases and demand is "totally" inelastic. Marian is incorrect. If supply and demand both rise, equilibrium quantity will increase, but the impact on equilibrium price is indeterminate.

7. Textbook, Chapter 5, #6.

a. If your income is $10,000, your price elasticity of demand as the price of DVDs rises from $8 to $10 is [(40 – 32)/36]/[(10 – 8)/9] =0.22/0.22 = 1. If your income is $12,000, the elasticity is [(50 – 45)/47.5]/[(10 – 8)/9] = 0.11/0.22 = 0.5.

b. If the price is $12, your income elasticity of demand as your income increases from $10,000 to $12,000 is [(30 – 24)/27]/[(12,000 – 10,000)/11,000] = 0.22/0.18 = 1.22. If the price is $16, your income elasticity of demand as your income increases from $10,000 to $12,000 is [(12 – 8)/10]/[(12,000 – 10,000)/11,000] = 0.40/0.18 = 2.2.

8. Textbook, Chapter 5, #8.

a. If Maria always spends one-third of her income on clothing, then her income elasticity of demand is one, because maintaining her clothing expenditures as a constant fraction of her income means the percentage change in her quantity of clothing must equal her percentage change in income.

b. Maria's price elasticity of clothing demand is also one, because every percentage point increase in the price of clothing would lead her to reduce her quantity purchased by the same percentage.

c. Because Maria spends a smaller proportion of her income on clothing, then for any given price, her quantity demanded will be lower. Thus, her demand curve has shifted to the left. Because she will again spend a constant fraction of her income on clothing, her income and price elasticities of demand remain one.

9. Textbook, Chapter 5, #13.

a. As Figure 2 shows, the increase in supply reduces the equilibrium price and increases the equilibrium quantity in both markets.

b. In the market for pharmaceutical drugs (with inelastic demand), the increase in supply leads to a relatively large decline in the equilibrium price and a small increase in the equilibrium quantity.

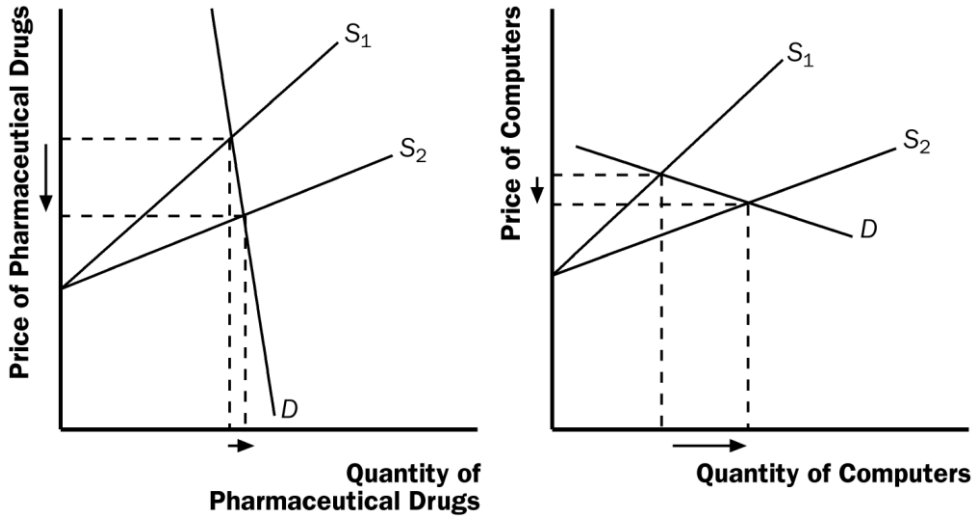


Figure 2

c. In the market for computers (with elastic demand), the increase in supply leads to a relatively large increase in the equilibrium quantity and a small decline in the equilibrium price.

d. Because demand is inelastic in the market for pharmaceutical drugs, the percentage increase in quantity will be lower than the percentage decrease in price; thus, total consumer spending will decline. Because demand is elastic in the market for computers, the percentage increase in quantity will be greater than the percentage decrease in price, so total consumer spending will increase.

10. Textbook, Chapter 5, #14.

a. Farmers whose crops were not destroyed benefited because the destruction of some of the crops reduced the supply, causing the equilibrium price to rise.

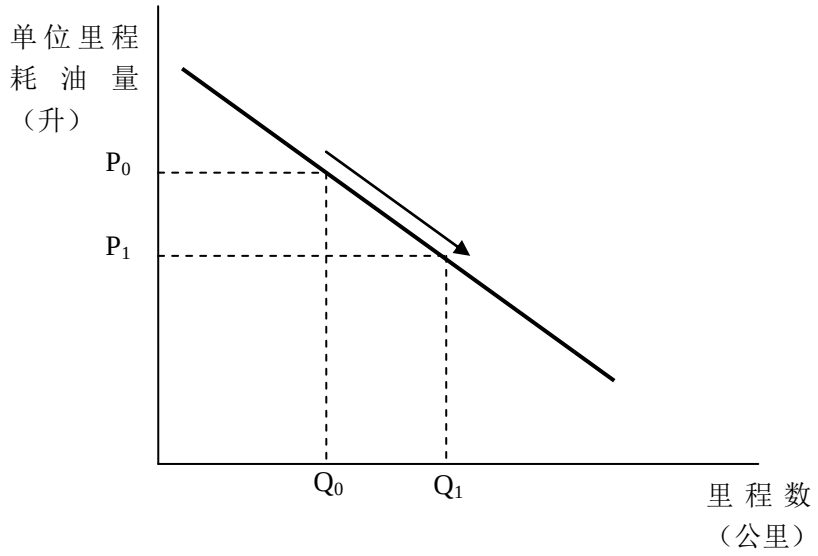
b. To tell whether farmers as a group were hurt or helped by the floods, you would need to know the price elasticity of demand. It could be that the total revenue received by all farmers as a group actually rose.

11. 在现代社会，人们无论是上班、购物或者去郊区旅游，通常会选择驾车出行。考虑人们对驾车出行的需求。需求量以驾车出行的里程数（公里）来衡量，价格以单位里程的耗油量（升）来衡量（忽略汽车本身的损耗）。

（1） 画出驾车出行的需求曲线。给定汽油的价格不变，为什么单位里程耗油量的增加会减少人们的出行里程？用人对激励做出反应的基本原理加以解释。

需求曲线如图。

单位里程耗油量的增加提高了人们增加 1 公里出行的边际成本（汽油支出），但没有改变出行的边际收益（便利或享受）。因此，它最终导致了出行里程数的下降。



现在，一位发明家发明了一种节能技术，能够降低耗油量。政府为了提倡节能，免费为每一辆汽车安装了这个节能技术。

（2） 这个事件会对驾车出行的需求造成怎样的影响？用图形解释之。

导致沿着需求曲线移动。如图，从(P_0, Q_0)点移到(P_1, Q_1)点。

（3） 节能技术的使用一定能够导致汽油需求量的下降吗？仔细解释之。你的答案在短期和长期会有所不同吗？

汽油的需求量等于 P*Q。如果出行对单位里程耗油量的需求价格弹性小于 1；则耗油量下降导致的出行增加较小，最终导致汽油需求量下降。反过来，如果出行对于耗油量的需求价格弹性较大，汽油需求量最终上升。

在长期，需求价格弹性更大（例如，人们可以买马力更大的汽车，增加出行次数，买更远的住宅等），因此长期来讲石油需求量更容易增加。

（4） 假定网络与通讯技术的发展减少了人们出行的必要性。这会导致出行需求怎样的变动？是否一定会导致汽油需求量的下降？

需求曲线左移。是。

For Chapter 6

12. Textbook, Chapter 6, #8.

a. Figure 9 shows the effects of the minimum wage. In the absence of the minimum wage, the market wage would be w1 and Q1 workers would be employed. With the minimum wage (wm) imposed above w1, the market wage is wm, the number of employed workers is Q2, and

the number of workers who are unemployed is Q3 − Q2. Total wage payments to workers are shown as the area of rectangle ABCD, which equals wm times Q2.

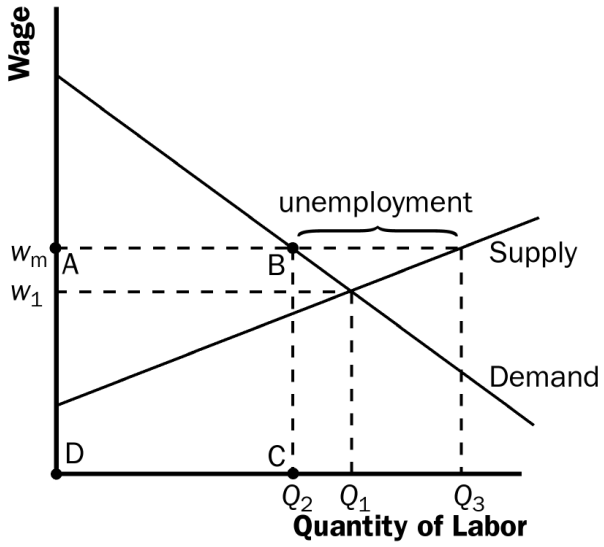


Figure 9

b. An increase in the minimum wage would decrease employment. The size of the effect on employment depends only on the elasticity of demand. The elasticity of supply does not matter, because there is a surplus of labor.

c. The increase in the minimum wage would increase unemployment. The size of the rise in unemployment depends on both the elasticities of supply and demand. The elasticity of demand determines the change in the quantity of labor demanded, the elasticity of supply determines the change in the quantity of labor supplied, and the difference between the quantities supplied and demanded of labor is the amount of unemployment.

d. If the demand for unskilled labor were inelastic, the rise in the minimum wage would increase total wage payments to unskilled labor. With inelastic demand, the percentage decline in employment would be lower than the percentage increase in the wage, so total wage payments increase. However, if the demand for unskilled labor were elastic, total wage payments would decline, because then the percentage decline in employment would exceed the percentage increase in the wage.

13. Textbook, Chapter 6, #12.

a. If gasoline refineries are operating at near full capacity, supply is likely to be highly inelastic.

b. The burden of a tax falls on the side of the market that is relatively more inelastic. Thus, it will be suppliers who will benefit from the temporary suspension of the federal gasoline tax.

14. 在医疗市场上，当政府决定增加对人们看病的补贴时，政府补贴的金额最终会_____，人们看病时自我支付的金额最终会_____，社会总体上花在看病上的金额最终会_____。

A. 上升，下降，上升

B. 上升，可能上升或下降，可能上升或下降

C. 上升，可能上升或下降，上升

D. 可能上升或下降，可能上升或下降，可能上升或下降

15. Market research has revealed the following information about the market for chocolate bars: The demand schedule can be represented by the equation Q^D=1,600-300P, where Q^D is the quantity demanded and P is the price. The supply schedule can be represented by the equation Q^S=1,400+700P, where Q^S is the quantity supplied.

a. Calculate the equilibrium price and quantity in the market for chocolate bars.

Equilibrium occurs where quantity demanded is equal to quantity supplied. Thus:

$Q^D = Q^S$, or 1,600 – 300P = 1,400 + 700P

which results in,

P = \$0.20, $Q^D = Q^S$ = 1,540

The equilibrium price of a chocolate bar is \$0.20 and the equilibrium quantity is 1,540 bars.

b. Chocolate producers persuade the government that chocolate bars are important for people's health. The government decides to impose a price floor \$0.50. How many Chocolates are sold? Do you think this policy indeed help to improve people's health?

The policy will cause a surplus of chocolate bars. The quantity sold will be determined solely by the demand as Q=1,600-300*0.5=1,450. People's health will not be improved as a result.

c. Now suppose the government instead believes that chocolate is harmful to health, and decides to place a \$0.20 tax on it. How many Chocolates are sold now? What is the price paid by chocolate buyers? The price received by producers?

Suppose the tax is placed on buyers. (Result will be the same if assumed being placed on sellers.)

The equilibrium equation becomes,

$Q^D(P+t)=Q^S(P)$,

where t is the tax size. That is,

1,600-300(P+0.2) = 1,400+700P,

Thus,

P=0.14, P+0.2=0.34, $Q^D=Q^S$=1,498.

1,498 chocolate bars will be sold, and the price paid by buyers is 0.34 and received by producer is 0.14.

d. Calculate the price elasticity of demand and the price elasticity of supply when the \$0.20 tax is imposed. Do NOT use the mid-point formula. Use the result to explain the relative tax burden shared by buyers and producers.

The price elasticity of demand is:

E_d=[(1498-1540)/1540]/[(0.34-0.20)/0.20]=-0.04

The price elasticity of supply is:

E_s=[(1498-1540)/1540]/[(0.14-0.20)/0.20]=0.09

The demand is more inelastic than the supply, so buyers will share more tax burden than producers. This is indeed the case: Among all the tax burden of $0.20, buyers share an amount of $0.14, or 70%, and producers share an amount of $0.06, or 30%.

(It can be derived rigorously that buyers' share of tax burden should be $E_s/(-E_d+E_s)=0.09/0.13=70\%$.)