

Principles of Economics (Double Degree, Fall 2022)

Homework #5_Solutions

For Chapter 25

1. Textbook, Chapter 25, #3

3. a. Private consumption spending includes buying food and buying clothes; private investment spending includes people buying houses and firms buying computers. Many other examples are possible. Education can be considered as both consumption and investment.
- b. Government consumption spending includes paying workers to administer government programs; government investment spending includes buying military equipment and building roads. Many other examples are possible.

2. Textbook, Chapter 25, #6

6. Greater educational opportunities for women could lead to faster economic growth in these developing countries because increased human capital would increase productivity and there would be external effects from greater knowledge in the country. Second, increased educational opportunities for young women may lower the population growth rate because such opportunities raise the opportunity cost of having a child.

3. True or False?

Other things the same, a country with low income per person can have a higher growth rate than a country with a high income per person even if the countries have identical saving rates. Try to use the production function to explain your answers.

正确。考虑生产函数 $Y=F(K)$ ， Y 为产出， K 为资本，这里假定其他要素不变（人口单位化为 1）。容易推导得到增长率：

$$\Delta Y/Y = F'(K)\Delta K/Y = F'(K)I/Y = F'(K)s,$$

这里， I 为投资， s 为储蓄率。由于穷国 K 相对较小（因为 Y 相对较小），根据资本边际报酬递减，则穷国的 $F'(K)$ 相对较大，导致其增长率更大。

For Chapter 26

4. Textbook, Chapter 26, #3

3. To a macroeconomist, saving occurs when a person's income exceeds his consumption, while investment occurs when a person or firm purchases new capital, such as a house or business equipment.
 - a. When your family takes out a mortgage and buys a new house, that is *investment* because it is a purchase of new capital.
 - b. When you use your \$200 paycheck to buy stock in AT&T, that is *saving* because your income of \$200 is not being spent on consumption goods.
 - c. When your roommate earns \$100 and deposits it in his account at a bank, that is *saving* because the money is not spent on consumption goods.
 - d. When you borrow \$1,000 from a bank to buy a car to use in your pizza-delivery business, that is *investment* because the car is a capital good.

5. Textbook, Chapter 26, #5

5. Private saving is equal to $(Y - T - C) = 10,000 - 1,500 - 6,000 = 2,500$.

Public saving is equal to $(T - G) = 1,500 - 1,700 = -200$.

National saving is equal to $(Y - C - G) = 10,000 - 6,000 - 1,700 = 2,300$.

Investment is equal to saving = 2,300.

The equilibrium interest rate is found by setting investment equal to 2,300 and solving for r :

$$3,300 - 100r = 2,300.$$

$$100r = 1,000.$$

$$r = 10\%.$$

6. Textbook, Chapter 26, #7

7. a. Harry will have $\$1,000(1 + 0.05) = \$1,050$. Ron will have $\$1,000(1 + 0.08) = \$1,080$. Hermione will have $\$1,000(1 + 0.20) = \$1,200$.
- b. Each student would compare the expected rate of return on his or her own project with the market rate of interest (r). If the expected rate of return is greater than r , the student would borrow. If the expected rate of return is less than r , the student would lend.
- c. If $r = 7\%$, Harry would want to lend while Ron and Hermione would want to borrow. The quantity of funds demanded would be $\$2,000$, while the quantity supplied would be $\$1,000$.

If $r = 10\%$, only Hermione would want to borrow. The quantity of funds demanded would be $\$1,000$, while the quantity supplied would be $\$2,000$.

- d. The loanable funds market would be in equilibrium at an interest rate of 8% . Harry would want to lend and Hermione would want to borrow. Ron would use his own savings for his project, but would want to neither borrow nor lend. Thus quantity demanded = quantity supplied = $\$1,000$.
- e. Harry will have $\$1,000(1 + 0.08) = \$1,080$. Ron will have $\$1,000(1 + 0.08) = \$1,080$. Hermione will have $\$2,000(1 + 0.20) - \$1,000(1 + 0.08) = \$2,400 - \$1,080 = \$1,320$. Both borrowers and lenders are better off. No one is worse off.

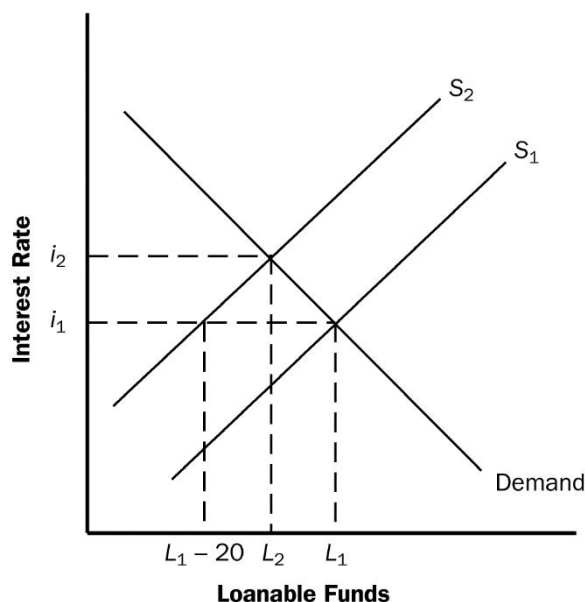


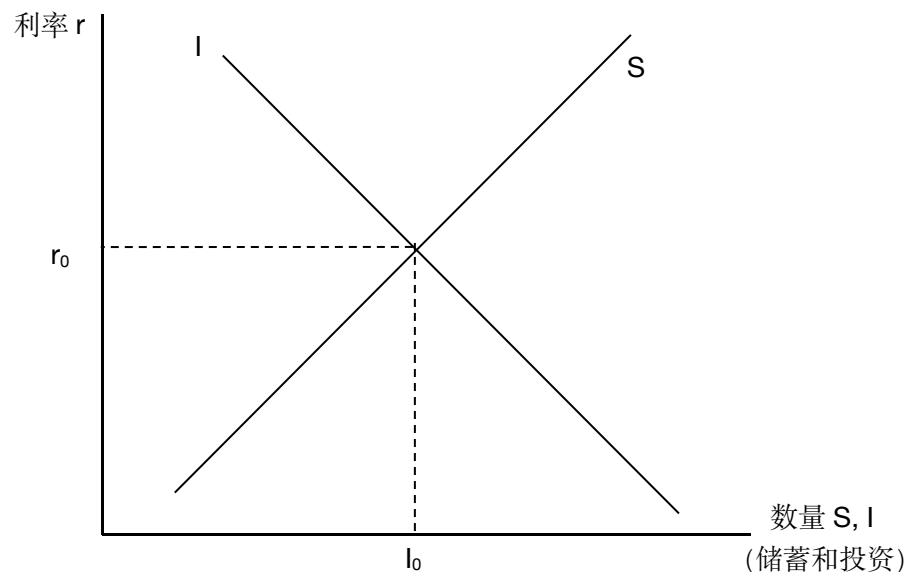
Figure 1

7. 政府政策与投资 Government policy and investment

(1) 画出该国的可贷资金供求曲线，标出均衡的利率和投资数量。

Draw a supply-demand diagram of the country's market for loanable funds. Label the equilibrium interest rate and investment.

如下图。均衡利率为 r_0 ，均衡投资数量为 I_0 。



(2) 分别画图表示对私人储蓄减税和减少预算赤字的影响。各自的利率如何变动？各自的投资数量如何变动？两种政策都能鼓励投资吗？

Draw separate graphs to show the effects on this market of reducing tax on private saving and of reducing the government budget deficit. In each case, how does the interest rate change? How does the investment change? Can each policy encourage investment?

对储蓄减税如下图(a)，减少赤字如下图(b)。（准确来讲，前者是储蓄（供给）曲线下移，含义是在更低的税前利率下，储蓄可以维持不变；后者是储蓄曲线右移，含义是既定利率下储蓄上升。此处不必说明，但以下分析会利用这一点。）

对储蓄减税使得投资者支付的利率下降（图形即表示这一利率），储蓄者得到的利率上升（图形未表示，但可根据均衡储蓄量增加反推）。

减少赤字使得（投资者支付和储蓄者得到的）利率下降。

二者都能鼓励投资（图形中均表示为 I_0 至 I_1 的增加）。

(3) 虽然图形上不易看出，但你能说出两种政策是否都鼓励了私人储蓄吗？解释你的理由。

Although it's not easy to see in the graphs, can you tell how the private saving changes in each case? Explain.

对储蓄减税增加了私人储蓄，因为储蓄者得到的利率上升。

减少赤字减少了私人储蓄，因为利率下降。

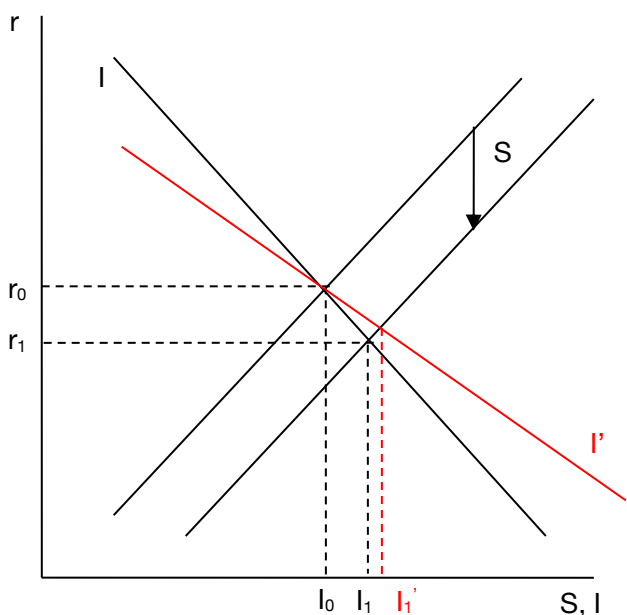
(4) 如果投资对利率的弹性比预想的更大，上述两种政策各自对于投资的影响是更大还

是更小？用图形明确表示你的答案。

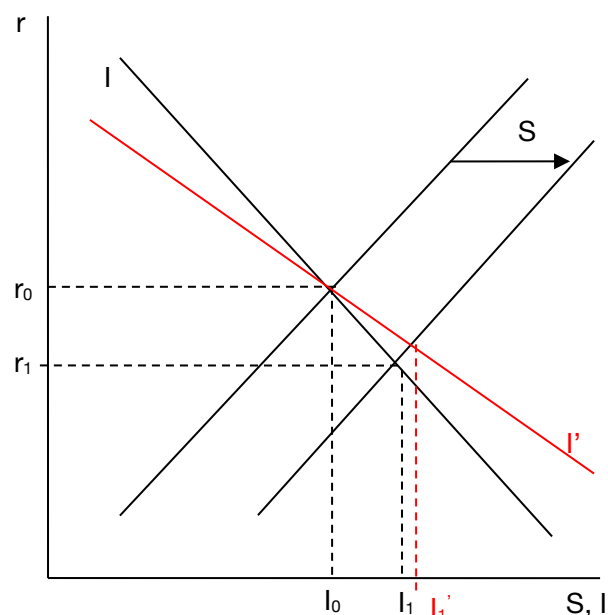
If the interest rate elasticity of investment is larger than expected, will the effect of each policy on investment be larger or smaller? Show your answers clearly by graphs.

如图。两种政策对于投资的影响都变大。（图中用 I' 表示弹性更大的投资曲线， I_1' 表示投资利率弹性更大时的投资数量）。

（注：要求画出弹性变动后曲线准确的变动——绕原始均衡点旋转）



(a) 对储蓄减税



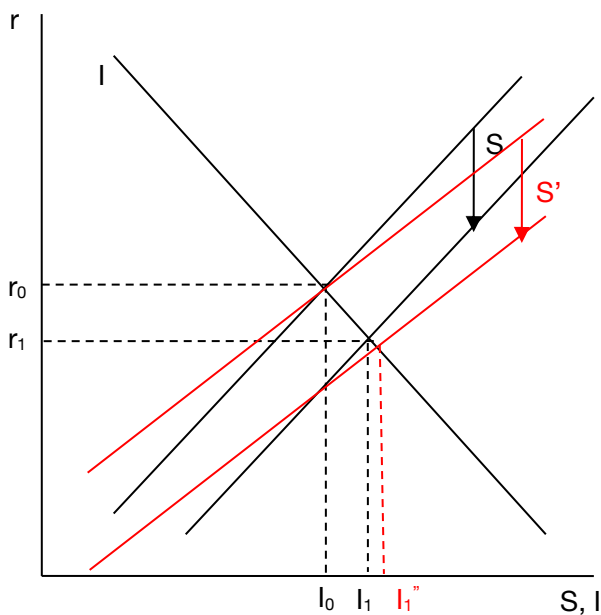
(b) 减少赤字

(5) 如果私人储蓄对利率的弹性比预想的更大，上述两种政策各自对于投资的影响是更大还是更小？画出图形以明确表示你的答案。

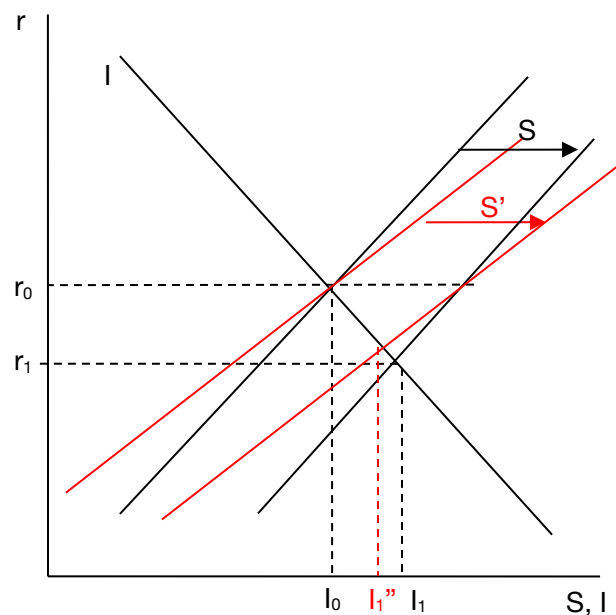
If the interest rate elasticity of private saving is larger than expected, will the effect of each policy on investment be larger or smaller? Show your answers clearly by graphs.

如下图。其中，对储蓄减税政策对于投资的影响更大，但减少赤字政策对于投资的影响更小（图中分别用 S' 表示弹性更大时政策影响， I_1'' 表示弹性更大时均衡投资量）。

（注：对储蓄减税是储蓄曲线向下移动固定距离，无论储蓄曲线弹性如何；而减少赤字是储蓄曲线向右移动固定距离。）



(a) 对储蓄减税



(b) 减少赤字

(6) 政府同时实施这两项政策是困难的。为什么？

Why is it difficult to implement both of these policies at the same time?

困难来自这两项政策面临权衡取舍。当对储蓄减税时，赤字倾向于上升。

(7) 给定这一困难，当投资对利率弹性较大时，你倾向于推荐哪一项政策，还是不能判断？当私人储蓄利率弹性较大时，你倾向于推荐哪一项政策，还是不能判断？说出你的理由。

Given this difficulty, when the interest rate elasticity of investment becomes larger, which policy do you tend to rely on? Or cannot judge? When the interest rate elasticity of private saving becomes larger, which policy do you tend to rely on? Or cannot judge? Explain your answers.

当投资利率弹性较大时，两项政策对于鼓励储蓄的作用是相同的。因此无从判断。（也可以答：对储蓄减税更好，因为此时均衡的投资和储蓄量增加较多，从而对储蓄减税导致的税收收入减少可能较小）。

但私人储蓄对利率弹性较大时，倾向于使用对储蓄减税的政策，因为此时鼓励投资的效果更加明显。