

Econ 102  
Exam I

Lecture 100  
Form 1

**ECON 102/100**

February 10, 2005

*Answers*

**Part I: Multiple Choice: (26 questions, 3 pts each = 78 pts)**

Pick the best answer among the given choices.

1. e
2. b
3. a
4. e
5. c
6. b
7. d
8. d
9. d
10. c
11. d
12. a
13. d
14. a
15. c
16. e
17. a
18. b
19. b
20. b
21. d
22. c
23. a
24. a
25. c
26. b

**Part II: Short Answer: (20pts)**

Write a solution to each of the following problems.

1. Kristen gets a two year job offer from UGG manufacturing company in Australia. Her perspective employer offers the following two salary options:

Option #1: \$5,000 paid at the end of year 1 and \$10,000 paid at the end of year 2

Option #2: \$7,500 paid at the end of year 1 and \$7,300 paid at the end of year 2

a) Kristen is not very good at math, so she hires you to consult with her on which option she should choose. She tells you that the global interest rate is set at 10%. Which option do you recommend? **Defend your answer by showing all of your work. (4 points)**

*In order to answer this question, one needs to calculate the Net Present Value (NPV) of each of the two salary options:*

$$\text{Option \#1: } [5,000/1.1] + [10,000/(1.1)^2] = 4,545 + 8,264 = \$12,809$$

$$\text{Option \#2: } [7,500/1.1] + [7,300/(1.1)^2] = 6,818 + 6,033 = \$12,851$$

*Based on the NPV calculation, Kristen should choose payment option #2.*

b) At what interest rate would you be indifferent between the two options? (3 points)

*For Kristen to be indifferent between the two options, they must have the same NPV. In order to solve for the interest rate, the following equation must be set up and solved:*

$$[5,000/(1+r)] + [10,000/(1+r)^2] = [7,500/(1+r)] + [7,300/(1+r)^2]$$

*To solve for r, you can first simplify a lot by multiplying through by (1+r)^2. This gives*

$$5,000(1+r) + 10,000 = 7,500(1+r) + 7,300$$

*or*

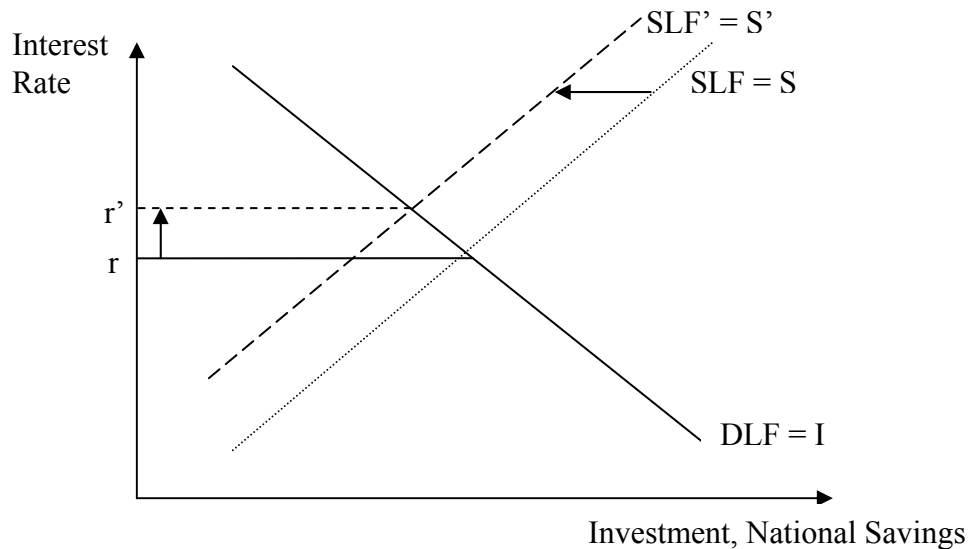
$$15,000 - 14,800 = (7,500 - 5,000)r$$

*which gives*

$$r = 200/2,500 = 8/100 = 8\%$$

*So 8% is the correct answer.*

2. In the space below,
- a. Draw the graph showing equilibrium in the loanable funds market, being sure to label the axes and the curves, and labeling the equilibrium real interest rate  $r_1$ . (4 points)



- b. Now suppose that the government of this country undertakes a new and expensive government project to better educate its youth by increasing the number of teachers, and that it chooses to do this without raising taxes. Explain in words how this policy change will change the underlying behavior represented in the loanable funds market, and show in the diagram that you drew above how this changes one or both of the curves and the equilibrium. (You should ignore, here, the effects that this policy might eventually have on the productivity of the economy.) (5 points)

*The increase in  $G$  will decrease Public Savings, but will not directly affect Private Savings (since Taxes are not effected). The net effect will be a decrease in National Savings for any given level of Interest Rate. The Supply Curve in the Loanable Funds Market will shift to the left, as indicated by the dashed line in the graph above.*

- *The equilibrium interest rate will increase.*
- *This rise in the interest rate in turn causes*
  - *investment to fall (a movement along the DLF curve) and*
  - *private savings to rise (a movement along the SLF curve).*

- c. (1 point each) Record below the resulting direction of change in
- |                          |              |              |              |
|--------------------------|--------------|--------------|--------------|
| i. the interest rate,    | <b>rises</b> | falls        | is unchanged |
| ii. investment,          | rises        | <b>falls</b> | is unchanged |
| iii. private savings and | <b>rises</b> | falls        | is unchanged |
| iv. government savings   | rises        | <b>falls</b> | is unchanged |