Problem Set 3
The Effects of Private Savings
Closed Economy, No Foreign Sector, Savings Responds to the Interest Rate

Overview: In this problem set, you will investigate how changes in the savings rate affects an economy. In particular, you will investigate three scenarios differing only by households’ savings function. You will determine the equilibrium conditions, at full employment, for this economy.

References: This material is covered in chapters 9 (especially pp 231 – 239) of your text and in your notes.

Assumptions: It is assumed that the economy is at full employment. There is no foreign sector in this model. It is an economy that is closed to foreign trade and capital flows. Savings responds to the interest rate. Finally, government borrowing is assumed to have nothing to do with the interest rates. i.e., Your $Q_{SGov}$ and $Q_{D Gov}$ columns should be the same number all the way down for a given situation.

Example: On page two you are given a completed example showing the equilibrium conditions an economy. U.S. supply and demand for loanable funds is composed of private U.S. demand for loanable funds (i.e. Investment), the private U.S. supply of loanable funds (i.e. savings by households), and government borrowing (a demand for loanable funds) or government savings (i.e. the government is a supplier of loanable funds if it runs a surplus). Putting it all together, we find that the loanable funds market will be in equilibrium at a real interest rate of 7.5%. At that interest rate, U.S. private quantity supplied, i.e. Savings, is $1,300. Investment, i.e. the private demand for loanable funds, is $800.

Your Turn: Now comes the fun part. On pages 3 – 5, you are given 3 different situations. The situations only differ by the savings rate (at any given real interest rate). Fill in the numbers, similar to the example, and answer the questions on page 6. Turn in page 6.
### Example

You are given the U.S. private loanable funds market and the following information:

- **Govt Spending (excl. transfers)** = $1,750
- **Taxes (net of transfers)** = $1,250
- **Real GDP** = $4,500

You should get the following results: 1) the U.S. Govt. table, 2) the (total) loanable funds market) and 3) the items below:

- **Govt. Deficit or Surplus** = $500
- **\( r_E \) = 7.5\%**  \( I = $800 \)
- **\( S = $1,300 \)**  \( C = $1,950 \)

### U.S. Private Loanable Funds Mkt

<table>
<thead>
<tr>
<th>( r )</th>
<th>( Q_{SPriv} )</th>
<th>( Q_{DPriv} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.5%</td>
<td>$1,500</td>
<td>$500</td>
</tr>
<tr>
<td>8.0%</td>
<td>$1,400</td>
<td>$650</td>
</tr>
<tr>
<td>7.5%</td>
<td>$1,300</td>
<td>$800</td>
</tr>
<tr>
<td>7.0%</td>
<td>$1,200</td>
<td>$950</td>
</tr>
<tr>
<td>6.5%</td>
<td>$1,100</td>
<td>$1,100</td>
</tr>
<tr>
<td>6.0%</td>
<td>$1,000</td>
<td>$1,250</td>
</tr>
<tr>
<td>4.5%</td>
<td>$900</td>
<td>$1,400</td>
</tr>
<tr>
<td>4.0%</td>
<td>$800</td>
<td>$1,550</td>
</tr>
<tr>
<td>3.5%</td>
<td>$700</td>
<td>$1,700</td>
</tr>
</tbody>
</table>

### U.S. Government

<table>
<thead>
<tr>
<th>( r )</th>
<th>( Q_{SGov} )</th>
<th>( Q_{DGov} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.5%</td>
<td>$0</td>
<td>$500</td>
</tr>
<tr>
<td>8.0%</td>
<td>$0</td>
<td>$500</td>
</tr>
<tr>
<td>7.5%</td>
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<td>$500</td>
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<td>7.0%</td>
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<tr>
<td>4.5%</td>
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<tr>
<td>3.5%</td>
<td>$0</td>
<td>$500</td>
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</tbody>
</table>

### U.S. Loanable Funds Mkt

<table>
<thead>
<tr>
<th>( r )</th>
<th>( Q_{STotal} )</th>
<th>( Q_{DTotal} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.5%</td>
<td>$1,500</td>
<td>$1,000</td>
</tr>
<tr>
<td>8.0%</td>
<td>$1,400</td>
<td>$1,150</td>
</tr>
<tr>
<td>7.5%</td>
<td>$1,300</td>
<td>$1,300</td>
</tr>
<tr>
<td>7.0%</td>
<td>$1,200</td>
<td>$1,450</td>
</tr>
<tr>
<td>6.5%</td>
<td>$1,100</td>
<td>$1,600</td>
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<tr>
<td>6.0%</td>
<td>$1,000</td>
<td>$1,750</td>
</tr>
<tr>
<td>4.5%</td>
<td>$900</td>
<td>$1,900</td>
</tr>
<tr>
<td>4.0%</td>
<td>$800</td>
<td>$2,050</td>
</tr>
<tr>
<td>3.5%</td>
<td>$700</td>
<td>$2,200</td>
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</tbody>
</table>
Situation 1

You are given the U.S. private loanable funds market and the following information:

- Govt Spending (excl. transfers) = $2,000
- Taxes (net of transfers) = $1,750
- Real GDP = $6,000

You should get the following results: 1) the U.S. Govt. table, 2) the (total) loanable funds market) and 3) the items below:

\[
\text{Govt. Deficit or Surplus} = r_E = I = S = C =
\]
Situation 2

You are given the U.S. private loanable funds market and the following information:

- Govt Spending (excl. transfers) = $2,000
- Taxes (net of transfers) = $1,750
- Real GDP = $6,000

You should get the following results: 1) the U.S. Govt. table, 2) the (total) loanable funds market) and 3) the items below:

Govt. Deficit or Surplus =

\[ r_E = I = \]

\[ S = C = \]
Situation 3

You are given the U.S. private loanable funds market and the following information:

- Govt Spending (excl. transfers) = $2,000
- Taxes (net of transfers) = $1,750
- Real GDP = $6,000

You should get the following results: 1) the U.S. Govt. table, 2) the (total) loanable funds market) and 3) the items below:

\[
\text{Govt. Deficit or Surplus} = \frac{S - D}{G}
\]

\[
\text{Investment} = I =
\]

\[
\text{Savings} = S =
\]

\[
\text{Consumption} = C =
\]
Here's My Problem Set # 3

Name: ____________________            Neatness counts!

Part 1: Situation 1
1. _____ What condition is the government budget in?:
   a. deficit
   b. balanced
   c. surplus
2. What is the equilibrium real interest rate?  
   ________
3. What is the $ value of U.S. Investment?  
   $ ________
4. What is the $ value of international capital flows?  
   $ ________
5. Which direction are these flows going?  
   a. from the U.S. to ROW  
   b. from the ROW to U.S.  
   _____
6. What is the value of U.S. exports?  
   $ ________

Part 2: Situation 2
7. _____ What condition is the government budget in?:
   a. deficit
   b. balanced
   c. surplus
8. What is the equilibrium real interest rate?  
   ________
9. What is the $ value of U.S. Investment?  
   $ ________
10. What is the $ value of international capital flows?  
    $ ________
11. Which direction are these flows going?  
    a. from the U.S. to ROW  
    b. from the ROW to U.S.  
    _____
12. What is the value of U.S. exports?  
    $ ________

Part 3: Situation 3
13. _____ What condition is the government budget in?:
    a. deficit
    b. balanced
    c. surplus
14. What is the equilibrium real interest rate?  
    ________
15. What is the $ value of U.S. Investment?  
    $ ________
16. What is the $ value of international capital flows?  
    $ ________
17. Which direction are these flows going?  
    a. from the U.S. to ROW  
    b. from the ROW to U.S.  
    _____
18. What is the value of U.S. exports?  
    $ ________

Part 4: General Questions
19. _____ In this problem set, we assumed that the economy is at QF.  i.e. Only the composition of the economy is changed, not its size.  What time period are we assuming?  
   a. the short-run  
   b. the long-run  
   c. the doo run-run-run
20. How does an increased savings rate effect this economy?  i.e., What changes as a result of an increase in the savings rate?  
    __________________________
    __________________________
21. Is higher savings good or bad for an economy?  
   Why?  ______________________
    ______________________
28. _____ In general, how do leak-ages & injections compare?  
   a. leakages > injections  
   b. leakages = injections  
   c. leakages < injections