Problem Set 7: The Effects of Changes in the Savings Rate
Open Economy, Savings Responds to the Interest Rate
Last 4 of TCU ID: 3000 - 3999

Overview: In this problem set, you will investigate how changes in the private savings rate affects an economy. In particular, you will investigate three scenarios differing by the private savings rate (at any given real interest rate). You will determine the equilibrium conditions for an economy at full employment. This material is covered in chapters 13 and 15 as well as your class notes.

Assumptions: It is assumed that the economy is at full employment (Q_{Act} = Q_{POT}). Further, imports (M) are assumed to be constant. Savings responds to the interest rate. Finally, government borrowing is assumed to have nothing to do with the interest rates. i.e., Your Q_{S_{Gov}} 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. net savings by households), and government borrowing (a demand for loanable funds). Note, if the government is running a surplus, it is supplying loanable funds. To this we need to add foreign (i.e. rest of world) supply and demand. Putting it all together. We find that the loanable funds market will be in equilibrium at a real interest rate of 5.5%. At that interest rate, U.S. quantity supplied is $400 less than U.S. quantity demanded. The difference is made up by $400 of financial capital inflows from abroad (i.e. foreigners purchase $400 of U.S. bonds, stocks, and other financial assets. Likewise, quantity supplied from the rest of the world is $400 greater than quantity demanded. This means (the same) $400 of financial capital inflows from abroad.

U.S. investment has to be $1,400. Since U.S. imports are $900, and there are $400 of financial capital flows coming into the U.S., one can deduce that U.S. exports are $500.

Your Turn: On pages 5 – 7, you are given 3 different situations. The situations only differ by the savings rate. Answer the questions on page 4. Staple and turn in pages 4 – 7.

1 In actuality, imports would respond to changes in 1) the foreign exchange rate caused by low savings. This will not, however, overturn the results found in this problem set. In fact, it would strengthen the results. Ex. ↓Savings ⇒ ↑r ⇒ ↑demand for $’s ⇒ ↑value of the U.S. $ ⇒ ↑M, i.e. a widening trade deficit. Imports would also change in response to savings (which is a function of the interest rate). The more households save, the less they spend on both consumption of domestic goods and on foreign imports. This would mean that government borrowing has less of an effect on the trade deficit.
### Example

You are given the following:

**Private U.S. Market, Rest of World Market**

- **Govt Spending (excl. transfers)** = $1,250
- **Taxes (net of transfers)** = $750
- **Imports** = $900 (this does not change)

You derive the following:

- **Govt. Deficit or Surplus** = $
- \( r_E = \) %
- **Investment** = $
- **Savings** = $
- **Exports** = $
- **Net Financial Capital Flows** = $
- **Trade Deficit or Surplus** = $
### Example

You are given the following:

- **Private U.S. Market, Rest of World Market**
  - Govt Spending (excl. transfers) = $1,250
  - Taxes (net of transfers) = $750
  - Imports = $900 (this does not change)

You derive the following:

- **Govt. Deficit or Surplus** = $500
- \( r_E = 5.5\% \)
- **Investment** = $1,400
- **Savings** = $1,500
- **Exports** = $500
- **Net Fin. Capital Flows** = $400 from ROW to US
- **Trade Deficit or Surplus** = $400
**Part 1: Situation 1**

1. _____ How does the level of savings in this situation compare to that of the other situations?
   - a. highest savings
   - b. middle savings
   - c. lowest savings

2. What is the equilibrium real interest rate? ________%

3. What is the $ value of U.S. Investment? $ ________

4. What is the $ value of international financial capital flows?
   $ ________

5. _____ Which direction are these financial flows going?
   - a. from the U.S. to ROW
   - b. from the ROW to U.S.
   - c. there are no net capital flows

6. What is the value of U.S. exports? $ ________

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**Part 2: Situation 2**

7. _____ How does the level of savings in this situation compare to that of the other situations?
   - a. highest savings
   - b. middle savings
   - c. lowest savings

8. What is the equilibrium real interest rate? ________%

9. What is the $ value of U.S. Investment? $ ________

10. What is the $ value of international financial capital flows?
    $ ________

11. _____ Which direction are these financial flows going?
    - a. from the U.S. to ROW
    - b. from the ROW to U.S.
    - c. there are no net capital flows

12. What is the value of U.S. exports? $ ________

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**Part 3: Situation 3**

13. _____ How does the level of savings in this situation compare to that of the other situations?
    - a. highest savings
    - b. middle savings
    - c. lowest savings

14. What is the equilibrium real interest rate? ________%

15. What is the $ value of U.S. Investment? $ ________

16. What is the $ value of international financial capital flows?
    $ ________

17. _____ Which direction are these financial flows going?
    - a. from the U.S. to ROW
    - b. from the ROW to U.S.
    - c. there are no net capital flows

18. What is the value of U.S. exports? $ ________

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**Part 4: General Questions**

19. _____ In this problem set, we assumed that the economy is at $Q_{Nat}$. i.e. We assumed that changes in government spending do not change the size of production. What time period are we assuming?
   - a. the short-run
   - b. the long-run
   - c. the doo run-run-run

20. In the long-run, how does a decrease in the savings rate tend to affect the economy? Use **Increase**, **No Change**, or **Decrease** in the blanks.
    
    real interest rates ________
    Investment ________
    Net Exports (or just exports) ________
### Situation 1

You are given the following (none of which changes)

- **Private U.S. Market, Rest of World Market**
- **Govt Spending (excl. transfers)** = $4,300
- **Taxes (net of transfers)** = $4,000
- **Imports** = $2,000

You derive the following

- **Govt. Deficit or Surplus** = $4,300 - $4,000 = $300
- **Investment** =
- **Savings** =
- **Net Financial Capital Flows** =
- **Exports** =
- **Trade Deficit or Surplus** =

### Table

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### Graphs

- **Private U.S. Market**
- **U.S. Govt. Borrow/Lend**
- **U.S. Private + Govt.**
- **Rest of World**
- **Loanable Funds Mkt.**
**Situation 2**

You are given the following (none of which changes)

- Private U.S. Market, Rest of World Market
- Govt Spending (excl. transfers) = $4,300
- Taxes (net of transfers) = $4,000
- Imports = $2,000

You derive the following

Govt. Deficit or Surplus = 
\[ r_E = \]

Investment =

Savings =

Net Financial Capital Flows =

Exports =

Trade Deficit or Surplus =
### Situation 3

You are given the following (none of which changes):

- **Private U.S. Market, Rest of World Market**
- **Govt Spending (excl. transfers) = $4,300**
- **Taxes (net of transfers) = $4,000**
- **Imports = $2,000**

You derive the following:

- **Govt. Deficit or Surplus =**
- **Investment =**
- **Savings =**
- **Net Financial Capital Flows =**
- **Exports =**
- **Trade Deficit or Surplus =**