

1. Use the following data about the economy of Celticland to answer the following questions.

Interest Rate i	Investment (I)	Savings (Sp)
8	2400	1200
15	1000	4000

- a. Find

- i. The equations for I and Sp.

$$\text{Slope I} = (8-15)/(2400-1000) = (-1/200) \quad i = b - (1/200) I$$

$$8 = b - (1/200)*2400 \quad b = 20 \quad i = 20 - (1/200) I$$

$$I = 4000 - 200i$$

$$\text{Slope Sp} = (15-8)/(4000-1200) = (1/400) \quad i = b + (1/400) Sp$$

$$8 = b + (1/400)*1200 \quad b = 5 \quad i = 5 + (1/400) Sp$$

$$Sp = 400i - 2000$$

- ii. Equilibrium interest rate, and Investment

$$400i - 2000 = 4000 - 200i \quad i = 10$$

$$Sp = 400(10) - 2000 \quad Sp = 2000$$

$$I = 4000 - 200(10) \quad I = 2000$$

- b. Now suppose there are capital inflows in the economy. Imports are 8000, while Exports are only 7400. Find:

- i. The new loanable funds supply equation

$$\text{Since } i = 5 + (1/400)*Sp, Sp = 400i - 2000 \text{ before the inflows}$$

$$\text{Adding the inflows, New Sp} = 400i - 1400$$

- ii. The new Equilibrium interest rate, Investment level, and Private Savings level.

$$\text{New Supply} = Sp + KI = 400i - 1400$$

$$I = 4000 - 200i$$

$$400i - 1400 = 4000 - 200i \quad i = 9$$

$$I = 4000 - 200(9) \quad I = 2200$$

$$\text{Supply} = \text{Total Savings} = Sp + KI$$

$$Sp = 2200 - KI = 2200 - 600 = 1600$$

- iii. How much does private savings change because of this? Why does private savings change, and does this make sense?

The Capital Inflows are \$600, but equilibrium total savings only increased by \$200 so there is a decrease of \$400 in private savings. This makes sense because when the supply of loanable funds increases due to capital inflows, foreigners are willing to lend loanable funds to private investors, specifically \$600 of them. Interest rates fall as a response to

this increase in loanable funds in the market. When these interest rates fall, private savings decreases, in this case by \$400.

- c. Now assume the government is running a deficit of \$1800 to build a new basketball arena for Celticland, and there are still capital inflows like in part b. Find:

- i. The new loanable funds demand equation

$$\text{Old } I = 4000 - 200i \text{ before the deficit}$$

$$\text{New } I = 5800 - 200i$$

- ii. The new equilibrium interest rate and Total Investment, Total Savings, Private Savings, and Investment Spending

$$\text{Demand} = I - S_g = 5800 - 200i$$

$$\text{Supply} = S_p + KI = 400i - 1400$$

$$5800 - 200i = 400i - 1400$$

$$i = 12$$

$$\text{Demand} = 5800 - 200(12)$$

$$\text{Total Investment} = 3400$$

$$\text{Supply} = 400(12) - 1400$$

$$\text{Total Savings} = 3400$$

$$I = \text{Demand} + S_g = 3400 - 1800 = 1600$$

$$S_p = \text{Supply} - KI = 3400 - 600 = 2800$$

- iii. How much private investment is crowded out (from part B) because of this government deficit? Why does this make sense?
Investment increased by \$1200, but the deficit was \$1800. Private investment is crowded out in the order of \$600, a \$600 decrease in private savings. This makes sense because the government needs to borrow funds to finance their deficit, which increases the demand for loanable funds by \$1800. Because of this, interest rates increase. Since interest rates are the price of borrowing, private investment will fall.
- iv. How much has total Investment increased from part A? Is this an indeterminate change if you don't have specific numbers?
\$1400. No, since both curves shifted right, both lead to an increase in investment.
- v. What is the change in Interest rates from part A? Is this an indeterminate change if you don't have specific numbers?
Interest rates went up by 2%. This is an indeterminate change because the capital inflows led to a decrease in interest rates, while the government deficit led to an increase in interest rates. The change in interest rates is indeterminate and depends on the magnitude of the two shifts. In this case, interest rates go up because the government deficit caused a larger shift than the capital inflows.