1. Suppose Bryan has no current financial wealth but anticipates earning $4500 during the current period and $6600 during the future. He can borrow or lend at a real interest rate of 10%.
   
a) Is it possible for Ed to spend exactly $6000 in each period? Explain.
b) Is it possible for Ed to spend exactly $5500 in each period? Explain.
c) Answer the question in both parts (a) and (b) assuming Ed earns $6500 in the first period and $4400 in the future period.

   This question deals with the Bryan’s (or Ed’s, I guess) tradeoff over time of current and future consumption. Assume period 1 is current and period 2 is future. Then

\[ C_2 = Y_2 + (Y_1 - C_1)(1+r). \]

By applying the formula to (a): \[ C_2 = 6600 + (4500-6000)(1.1) = 4950. \] Thus, if Bryan spends 6000 in the first period, he will have to borrow 1500 and pay back 1650 next year. This will not leave him enough to spend 6000 in the future period.

In (b): \[ C_2 = 6600 + (4500-5500)(1.1) = 5500. \] Therefore, it is possible for Bryan to spend 5500 in each period.

(a) \[ C_2 = 4400 + (6500 - 6000)(1.1) = 4950. \]
(b) \[ C_2 = 4400 + (6500 - 5500)(1.1) = 5500. \] Answers won’t change.

2. Congratulations, you’ve won $11,000,000 in the lottery. You are given the option of receiving the entire amount next year, or $10,000,000 this year. You can borrow and lend at an annual interest rate of 10%. Which option will you choose? Explain.

   All other things the same, you should be indifferent between the options. If you really want to spend $10,000,000 now, you could receive the winnings now, or borrow $10,000,000 now and exactly pay back the loan with the winnings received next year. If you want to spend all in the future, you could receive $10,000,000 now, lend it out at 10%, and get paid $11,000,000 for future consumption. Of course, by assuming everything else the same, we ignore complicated real world factors like risk, differences in borrowing and lending rates, and so on.

3. You want to buy a car that costs $10,000. You have $10,000 in the bank earning 5% interest. You can pay for the car either by using the money in your bank account, or by borrowing the cost of the car from the bank at 5% interest. Explain why you should be indifferent between these two options for financing your automobile purchase.
With each option, you end up with the same thing next year. If you borrow the money to buy the car, you must pay back $10,500 next year. But you will keep your $10,000 in your saving account over the year, which will be worth exactly $10,500 and can be used to pay back the loan. If you don’t borrow, but finance the car by cashing in your saving account, you don’t earn interest over the year, but you don’t have to pay back a loan either. In each case, what you are left with at the end of the year is the same – a car and no cash. It really doesn’t matter how you finance the car.

Of course, in the real world, you usually can’t borrow and lend at the same rate. If you earn 5% at the bank and must pay 7% to borrow, you would be better off paying cash for the car, ceteris paribus.

4. For a closed economy (one that doesn’t trade goods or assets with the rest of the world), predict the effect on the real interest rate, domestic investment, private saving, national saving, and consumption of the following external shocks (holding all other things constant):
   a) an increase in overall stock prices
   b) a decrease in the price of capital goods
   c) an increase in military spending in Iraq
   d) a federal tax rebate to citizens under the conventional view and the Ricardian view.

   a) Households feel wealthier, so they spend more and save less. Supply of LF shifts left, causing r to rise, I to fall, S to fall, NS to fall and C to rise.

   b) The demand for investment rises since the interest cost falls for any given interest rate. Demand for LF increases, r rises, I rises, S rises (because of the rise in r), NS rises and C falls (because of the rise in r).

   c) Shifts the demand for LF to the right, so r rises, I falls (because r rises), S rises, NS falls (the increase in G is greater than the increase in S).

   d) Under the conventional view, the reduction in taxes increases the government deficit and shifts the demand for LF to the right. Because disposable income rises, private saving rises, but by only a fraction of the reduction in taxes. Thus, r rises, I falls, S rises, and NS falls. Consumption must rise even though r rises, because disposable income increases more than saving.

   Under the Ricardian view, private saving increases by the amount of the tax rebate, so the shift in the demand for LF equals the shift in supply. Thus, none of the other variables change.
5. Suppose you observe that, for Argentina, interest rates fall, domestic investment rises, and their trade deficit rises with the rest of the world. Which of the following events could explain your observation, and why?
   a) A decrease in the marginal product of capital goods in Argentina.
   b) A decrease in future income in Argentina.
   c) A reduction in foreigners’ perceived political risk in Argentina

   a) A decrease in marginal product shifts the demand for LF to the left, so investment would fall. b) A decrease in future Argentine income would likely increase private saving, shifting the supply of LF to the right. This will tend to reduce the Argentine interest rate and reduce desired capital inflows. Thus, Argentina’s trade deficit will fall. A reduction in political risk will shift the KI curve to the right as well as the supply of LF; r will fall, I will rise and the trade deficit will rise. Thus, (c) only can explain the facts.

6. Suppose that you observe that US interest rates fall, US domestic investment rises, and the US trade deficit falls. Which of the following are potential explanations, and why?
   a) A decrease in capital goods prices in the US.
   b) An increase in current US income.
   c) A decrease in US federal government spending.

   [Corrected answers.] (a) A decrease in capital goods prices in the US raises the demand for investment, and thus the demand for loanable funds as well. This causes the interest rate to rise in equilibrium, investment to rise, and the trade deficit (capital inflows) to rise. (b) An increase in current US income raises domestic private saving and thus the supply of loanable funds. Interest rates will fall, investment will rise, and the trade deficit will fall (since the interest rate falls, capital inflows will fall). Thus, (b) is consistent with the facts. (c) demand for LF shifts to the left: r falls, I rises and the trade deficit falls (because the interest rate falls, reducing desired capital inflows). Thus, (c) is also consistent with the facts.