1. Suppose that the term structure of the yield curve is determined by the expectations-based model described in Lecture. Assume that there is no risk premium associated with yield for different maturities.

   a. Suppose that \( i_t = .02 \), \( E_t(i_{t+1}) = .03 \), \( E_t(i_{t+2}) = .04 \), \( E_t(i_{t+3}) = .06 \). What is the implied yield on 4 period bonds?

According to the expectations-based term structure model,

\[
i_{4,t} = \frac{1}{4} \left( i_t + E_t(i_{t+1}) + E_t(i_{t+2}) + E_t(i_{t+3}) \right)
\]

Under the values that are stated, this means, \( i_{4,t} = .0375 \)

b. Suppose that \( i_t = .05 \) and \( i_{3,t} = .05 \). Describe possible expectations for \( i_{t+1} \) and \( i_{t+2} \) and interpret your answer.

According to the expectations-based term structure model.

\[
i_{3,t} = \frac{1}{3} \left( i_t + E_t(i_{t+1}) + E_t(i_{t+2}) \right)
\]

Any combination of \( E_t(i_{t+1}) \) and \( E_t(i_{t+2}) \) that sums to .10 is consistent with the values given. There are two points to note. First, the information in the problem does not uniquely identify expectations about \( i_{t+1} \) and \( i_{t+2} \); an infinity of possible expectations are consistent with the theory and the values given in the problem. In order to pin down expectations, one would need to have additional information such as the value of \( i_{2,t} \). Second, it is possible for expectations concerning future short rates to fluctuate in ways that their net effects on long rates cancel out.
2. Answer question 3 on Problem Set 1 in light of the analysis of risk and return described in lecture.

This has been discussed in class. The basic issue I want you to see is that from the perspective of an employee of Ford, Ford stock may be riskier than Honda stock even though the variance of Honda stock is greater. The riskiness of an asset, in an economic sense, depends on how its return covaries with an agent’s portfolio as a whole. If the Ford worker’s salary positively covaries with the return on Ford stock and negatively covaries with the return on Honda stock, then the Honda stock is less risky in the sense that it diversifies the worker’s overall portfolio.

3. Will the random walk theory of stock prices, as derived in lecture, hold if the gap between \( t \) and \( t + 1 \) is large? Explain.

The random walk theory will not necessarily apply for larger time increments. The random walk theory assumes that the discount rate is 0 and that dividends are 0. Both assumptions are reasonable for short time increments, but are problematic for longer increments. Notice that if the discount rate is positive, then (leaving aside dividends), stock prices should have the property that the expected value of future stock prices exceed current levels. This is required in order to generate positive expected capital gains that justify holding the stock.

4. Mankiw, chapter 18, problem 1

a. Purchases by an American while in Europe represent expenditures on foreign goods and services, so US imports increase, US exports are unchanged, and US net exports decrease.

b. When students in Paris watch a US movie, they are purchasing US goods so US exports increase, US imports are unchanged, and US net exports increase.

c. When your uncle purchases a Volvo, he is purchasing a foreign good, so US imports increase, US exports are unaffected, and US net exports decrease.

d. The sale of levis to a UK student represent a purchase of US goods, so US exports increase, US imports are unchanged, and US net exports increase.

e. Canadian purchases in Vermont represent purchases of US goods, so US exports increase, US imports are unchanged, and US net exports increase.

5. Mankiw, chapter 18, problem 4
a. When a US firm establishes a foreign office, this increases direct US capital outflows since the US company makes a direct investment in capital in the foreign country.

b. When a London firm sells stock to a US company’s pension fund, this increases US net capital outflows since the US company makes a portfolio investment in the foreign country.

c. When a Japanese firm expands a factory in the US, this decreases US net capital outflows since the foreign country makes a direct investment in capital in the US.

d. When a US company sells foreign stock to a foreigner (assuming it receives US dollars), this decreases net US capital outflows since the US company is decreasing its portfolio investments in a foreign country.

6. Mankiw, chapter 18, problem 8

a. the real exchange rate increases

b. the real exchange rate decreases

c. the real exchange rate decreases

d. the real exchange rate decreases

7. Mankiw, chapter 18, problem 11

a. Profits can be generated by purchasing rice where it is relatively inexpensive and selling where it is relatively expensive. In the case of this problem, US rice is cheaper than Japanese rice (8000 yen versus 16000 yen) so profits can be generated by buying US rice and selling it in Japan. This increases the supply of rice in Japan and increases the demand for rice in the US, so if this process is not interfered with, in equilibrium prices will be equal in the two countries.

b. If rice is the only commodity in the world, the real exchange rate is lower than the equilibrium value implied by law of one price, i.e. 1. Hence the behavior described in answer a would increase the initial real exchange rate to 1.