MIDTERM #2
14.02
April 8, 1996

I. TRUE, FALSE or UNCERTAIN. 30 Points. Be sure to give explanations for your answers.

1. If Congress passes a tax cut that will take place next year, the yield curve will become flatter.

2. The relevant interest rate in the financial market is the nominal interest rate. This is because changes in expected inflation do not have an immediate impact on the trade-off between money and bonds.

3. If the Federal Reserve announces today that it will increase the money supply next month, no one should be surprised when stock prices rise in response to the announcement.

4. Investment by firms that are credit constrained (i.e. banks are unwilling to extend them loans) will be more concentrated during economic booms than investment by firms that are not constrained.

5. The present discounted value of the stream of expected dividends gives the maximum amount that any rational person would pay for a stock.

II. QUESTION #2. 20 Points.

Having taken a course in macroeconomics, people plan to make their consumption decisions taking into account both current disposable income and their total wealth. In this world, people live forever (while this assumption is obviously unrealistic, it is useful as it simplifies calculations). Initially, the economy is in equilibrium with :

$Y_t = Y^e_{t+1} = ... = Y^e_{t+n} = ...$
$T_t = T^e_{t+1} = ... = T^e_{t+n} = ...$
$D_t = D^e_{t+1} = ... = D^e_{t+n} = ...$
$i_t = i^e_{t+1} = ... = i^e_{t+n} = ...$
$\pi^e_t = 0$
where D represents dividends.

a) Write the expression for the PDV of financial wealth, human wealth and total wealth. What is the expression for the consumption function?

b) News that firms plan to increase their hiring in the future leads to expectations of higher inflation. Using the IS-LM framework, graph and describe the effects this will have on interest rates and output.

c) Using your answer from b), explain what effects this will have on total wealth and on consumption. Are the effects ambiguous? Explain why or why not.

d) People know that the Federal Reserve is very concerned about keeping output constant. Graph and explain what effect this will have on real and nominal interest rates, output and the composition of the goods market.

e) Can one conclude that 'good news' is always good news for consumers characterized by the expression in a) ? Explain why or why not.

III. QUESTION #3. STOCKS. 20 Points.

Charbucks, a coffee retailer, decides to go public, issuing 100 shares of stock at a price of Q_t. Expected total (not per share) dividends for the company are \$55, \$110, and \$110 for the next three years (t+1, t+2, and t+3) respectively, and \$0 thereafter.

a.) If the nominal interest rate is expected to remain constant at 10%, compute the price of one share of the company. For a.) and hereafter in this problem, assume no inflation, expected or otherwise.

b.) A prospective shareholder considers buying the stock in the first year at Q_t, but knows that he will sell it one year from the purchase date. He lines up a buyer who promises to pay him at time t+1 a specified amount for the stock. If there is no dividend risk and the prospective shareholder will receive dividends at t+1, what must be the pre-specified stock price, Q_{t+1}, that makes the prospective shareholder indifferent between pursuing the stock purchase today and buying a treasury bill that will mature in one year? (For those who need further clarification, the buyer at t+1 would not receive the t+1 dividend, the prospective shareholder would.)

c.) A short time after the stock issuance, Brazil experiences a horrible bean harvesting season and is forced to raise its price of exported coffee significantly. Charbucks, realizing that it cannot pass on the total price increase to its customers, acknowledges that future profits will most likely decline from what was previously forcasted. What will happen to the stock price? real interest rates? nominal interest rates?

d.) Meanwhile, domestic consumer confidence begins to erode amid speculation that the present recovery period touted by the press is a myth. What will happen to the stock price? real interest rates? nominal interest rates? (Assume the LM curve is not vertical and the IS curve is not horizontal. It may help to draw an ISLM diagram.)

IV. QUESTION #4. BONDS. 20 Points.

A T-bill you buy today with a maturity of three years has an approximate annual average return of 4%. The interest rates are 3%, 4%, and 5% for the first, second, and third years, respectively.

a.) If the price you pay for the bond today is $100. How much will you receive at maturity?

b.) You decide to sell the bond next year. At what price will you sell the resulting 2-year bond?

c.) You buy a corporate bond from a friend's start-up company. Do you expect a higher return on this bond than the t-bill? Why or why not?

d.) Alan Greenspan, the head of the Federal Reserve, announces that he will take a less active approach to combatting inflation. Henceforth, the Fed will pursue a policy of pegging the interest rate at some determined level, i. That is, the Fed will take measures to keep i constant. What do you expect will happen to the yield curve for t-bills? Draw this yield curve.

e.) Multiple Choice Question. An upward sloping yield curve means that:
(i.) long term interest rates are expected to increase
(ii.) short term interest rates are expected to increase
(iii.) long term interest rates are expected to decrease
(iv.) none of the above.