14.02 Principles of Macroeconomics
Spring 03

Quiz 3
Thursday, May 8, 2003
7.30 pm – 9:00 pm

Please answer the following questions. Write your answers directly on the exam. You can achieve a total of 100 points. There are 7 multiple-choice questions, followed by 2 long questions.

Good luck!

NAME:

MIT ID NUMBER:

TA:

CLASS TIME:

EMAIL:

Multiple Choice Questions (28/100):

Please circle the correct answer for each of the 7 multiple-choice questions. In each question, only one of the answers is correct. Each question counts 4 points.

1. Which of the following factors might cause investment to depend very heavily on current profits?

   I. Current profits are a bad predictor of future profits.

   II. Most companies find it difficult to raise finance externally at low interest rates.

   (a) I. only.

   (b) II. only.

   (c) Both I. and II.

   (d) Neither I. nor II.

2. Which of the following two statements is correct?

   I. A farsighted consumer will try to base her consumption decisions on the present discounted value of her current wealth plus future pre-tax income.

   II. A permanent change in income of 1 will generally result in a change in consumption of much less than 1.

   (a) I. true, II. true

   (b) I. true, II. false

   (c) I. false, II. true

   (d) I. false, II. false

3. In an open economy with a floating exchange rate, an increase in the money supply will:

   (a) Increase output, decrease the interest rate and cause exchange rate appreciation.

   (b) Increase output, decrease the interest rate and cause exchange rate depreciation.

   (c) Increase output, not affect the interest rate and cause exchange rate depreciation.

   (d) Not affect output, decrease the interest rate and cause exchange rate appreciation.

4. The current exchange rate between the US$ and the Euro is 1.1 (i.e. E = 1.1 from the US perspective). E is expected in one year's time to be 1.0. Inflation in the US is 4 per cent. Inflation in Europe is 2 per cent. Which of the following statements is true?

(a) The nominal exchange rate is expected to <u>DEPRECIATE</u>, and the real exchange rate is expected to depreciate by a <u>GREATER</u> percentage than the nominal exchange rate.

(b) The nominal exchange rate is expected to <u>DEPRECIATE</u>, and the real exchange rate is expected to depreciate by a <u>LESSER</u> percentage than the nominal exchange rate.

(c) The nominal exchange rate is expected to <u>APPRECIATE</u>, and the real exchange rate is expected to appreciate by a <u>GREATER</u> percentage than the nominal exchange rate.

(d) The nominal exchange rate is expected to <u>APPRECIATE</u>, and the real exchange rate is expected to appreciate by a <u>LESSER</u> percentage than the nominal exchange rate.

5. Which of the following statements characterizes the response of the world economy to the end of the war in Iraq?

I. The stock market in the US increased, as the end of the war boosted future expected profits.

II. Oil prices fell, which reduced the cost for firms.

III. Growth in Europe remained above its long-run average.

(a) I. and II. are true

(b) II. and III. are true.

(c) I. and III. are true.

(d) I. and II. and III. are true.

6. The IMF has recently revised its growth forecast for the world economy downward for the following reasons:

   (a) Deflation in Europe is a continuing problem, Japan faces inflation, and the US faces corporate governance problems.

   (b) Corporate governance problems in Japan continue to drag profits down, the US faces the risk of inflation, and the EU is growing faster than the rest of the world.

   (c) The EU is facing structural economic problems that hamper growth, the US is struggling to recover from the burst of the stock market bubble, and Japan continues to face the risks of deflation.

   (d) The risk of overheating in the US has led to an increase in interest rates, the bad loan problems in Japan have not yet been solved, and the deflation in Europe has caused Europe to be in a recession for years.

7. The Bush tax cut has been criticized for the following reasons:

   I. The tax cut would cause the budget deficit to increase rapidly, putting pressure on long term interest rates to rise.

   II. Even though the tax cut is large relative to GDP, the average household does not profit much from it, and the impact on aggregate demand is expected to be small.

   III. The tax cut should be larger in order to finance the costs of war.

   (a) I. and II. are true.

   (b) II. and III. are true.

   (c) I. and III. are true.

   (d) I., II. and III. are true.

Long Question 1 (36/100): Expectations in the US Economy

Please read the following instructions and questions carefully. Answer each of the 6 questions as precisely as you can. Each question counts 6/100.

To answer this question, you should have in mind the extended IS-LM model which includes a role for expectations. Recall the basic structure of this model:

IS: $Y = A(Y, T, r, Y^e, T^e, r^e) + G$

LM: $M/P = Y L(r)$

where Y: Output, T: Taxes, r: the interest rate and the superscript `e' stands for an expectation about the future value of a variable. A is the sum of consumption and investment, which depends on current Y, T and r, as well as expected future Y, T and r.

1) Is the IS curve in this model steeper or flatter relative to the basic IS-LM model? Explain why in 3-5 lines, being as precise as you can.

Following the end of the war in Iraq, and excitement about the new series of 'American Idol', expectations about future output improve (i.e. Y^e increases).

2) Draw an IS-LM diagram, and show how the change in Y^e affects Y and r. [Assume all other variables (M/P, T, T^e, r^e, G) stay the same.]

3) What is the effect of the change in Y^e on (i) current investment and (ii) the stock market (increase, decrease or ambiguous)? Explain why in 3-5 lines, be as precise as you can.

4) Following the increase in Y^e, how must the Fed change the size of the money supply (M/P) to return the interest rate to its old level (increase M/P, decrease M/P, ambiguous)? Use a diagram to help answer this question.

Assume for the next two questions that the Fed has undertaken the action you suggested in the previous question 4), so the interest rate has remained unchanged following the increase in Y^e.

5) What is the effect of the increase in Y^e on (i) current consumption and (ii) current investment (increase, decrease, ambiguous)? [Again, assume all other variables (r, T, T^e, r^e, G) stay the same.] Explain why in 3-5 lines, be as precise as you can.

Suddenly, concerned about the cost of the war in Iraq, the government passes through Congress a new tax increase, scheduled to take effect in a year.

6) Based on the IS-LM framework, what will happen to current output following the tax increase? (State the answer to this question, there is no need to draw a diagram). Explain <u>how</u> and <u>why</u> your answer would be different if Ricardian equivalence was true. (Explain in 3-5 lines, be as precise as you can).

Long Question 2 (36/100): Managing Vermont's Economy

Please read the following instructions and questions carefully. Answer each of the 6 questions as precisely as you can.

Vermont has been an independently minded state for some time. It finally decides to introduce its own currency, the VT\$. You are lucky and get the job as Vermont's first central bank president. In order to determine the best economic policy, you write down the following open economy model for Vermont:

IS: $Y = A + \alpha\,Y - \beta\,T - \gamma\,i + \delta\,Y^{US} + \phi\,E$

LM: $M = Y - \lambda\,i$

UIP: $i = i^{US} + (E^e - E)/E$

With the following notation:

Y: Vermont's Real GDP

Y^{US}: Real GDP of the US

T: Vermont's Taxes

i: Vermont's nominal interest rate

i^{US}: Nominal interest rate of the US

E: US\$ in terms of VT\$

E^e: Expected future US\$ in terms of VT\$

M: Vermont's stock of money in circulation

The only trading partner of Vermont is the US. Please note that the level of prices is normalized to 1 in both Vermont and the US, and there is no inflation. All of the coefficients α, β, γ, δ, ϕ and λ as well as the constant A are assumed to be positive. Capital is perfectly mobile.

1) For the IS relationship, interpret each of the coefficients as well as the constant A. (Hint: relate your answer to the marginal propensity to consume, invest, export, and import). **(4 points)**

Assume that you start with a fixed exchange rate regime such that US$ 1 is VT$ .5, i.e. the fixed exchange rate E*=.5. Financial markets expect the exchange rate regime to prevail in the future ($E^e=E^*$).

2) Suppose that the level of taxes in Vermont is changed from T to T'>T. How do you as the central banker need to adjust your money supply? Explain why, relating your answer to the interest parity condition. **(6 points)**

Things start to go wrong in Vermont's economy. The exchange rate is still fixed at the level E^*, but financial markets now expect that this exchange rate will be abandoned in the future for a higher exchange rate $E^\# > E^*$ (financial markets expect a devaluation).

3) If the initial exchange rate E^* is maintained, how is Vermont's interest rate affected by the anticipation of a future devaluation? What is the appropriate central bank policy that you need to undertake in order to maintain the fixed exchange rate? Give an explanation, and complete the open economy the IS-LM diagram below. **(8 points)**
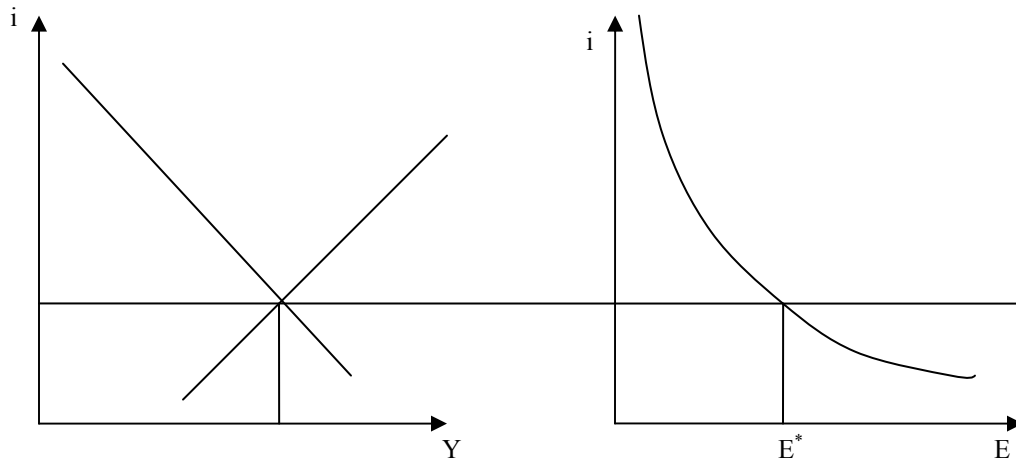
After a number of months of financial turmoil, you decide to abandon the fixed exchange rate and let the VT$ float.

4) What is the impact on Vermont's economy (output, interest rates, exchange rate, trade balance) of an increase in i^{US} for a fixed M and fixed exchange rate expectations ($E^e=E^{\#}$)? Explain your answer using an open economy the IS-LM diagram. **(8 points)**

5) Can the Central Bank of Vermont use monetary policy to offset the impact of the increase in i^{US} on Vermont's GDP? What does this imply for the exchange rate? Indicate in diagram from question 4). **(4 points)**

After a number of years as central bank president, you become finance minister. You analyze the state finances and come up with the following assessment: the Vermont primary deficit is close to zero, real interest rates are high, and the growth rate of real GDP is low.

6) What do you expect to happen to the debt-to-GDP ratio over time? How would your answer be different if Vermont's GDP was growing rapidly? **(6 points)**