QUEEN'S UNIVERSITY AT KINGSTON

FACULTY OF ARTS AND SCIENCE

DEPARTMENT OF ECONOMICS

ECON 222 FINAL EXAMINATION

APRIL 2004

If the instructor is unavailable in the examination room and if doubt exists as to the interpretation of any question, the candidate is urge to submit with the answer paper a clear statement of any assumptions made.

Instructions:

This examination is THREE HOURS in length.

You may use a hand calculator.

Answer 8 of the 10 questions in Part A. Each question in Part A is worth 5 marks, for a total of 40 marks.

Answer 3 of the 4 questions in Part B. Each question in Part B is worth 20 marks, for a total of 60 marks.

The total number of marks is 100.

For questions that involve a numerical part be sure to show your calculations and intermediate steps.

Read the questions carefully.

PART A – True, False, Uncertain: Answer 8 of the 10 following questions.
Each question is worth 5 marks.

1. In a fixed exchange rate regime, an undervalued exchange rate is not sustainable because the country will eventually run out of foreign currency reserves.

2. The employment ratio in the Irish labor market is 63% and the unemployment rate is 10%. The participation rate is therefore 70%.

3. In a small-open economy, a tax increase will necessarily increase the current account, leading to "twin surpluses".

4. An increase in the expected inflation rate will increase the nominal money demand, but will have no impact on the real money demand.

5. The future MPK increases in Chile. In the short-run, investment will increase and consumption will decrease. In the long-run, Investment will increase further and consumption will decrease further. Justify your answer using an $IS - LM - FE$ closed-economy diagram.

6. If expected inflation is constant, then there must be a negative relationship between unemployment and actual inflation.

7. In a closed economy, a decrease in government spending causes an increase in private investment.

8. In the growth model studied in class, an increase in the savings rate causes a rise in per capita consumption.

9. If interest rate parity and intertemporal external balance both hold, a monetary contraction causes an appreciation in the current real exchange rate and a depreciation in the future real exchange rate.

10. Hysteresis occurs when the natural rate of unemployment falls because the actual rate of unemployment is above the natural rate.

PART B: Answer 3 of the 4 following questions. Each question is worth 20 marks.

1. The economy of Denmark can be described by the following equations:

$$\pi_t^e = \pi_{t-1}$$
$$\pi_t = \pi_t^e - 2(u_t - \bar{u}_t)$$
$$\bar{u}_t = 0.5u_{t-1} + 0.5\bar{u}_{t-1}$$

Note that the Danish economy experiences hysteresis on the labor market. Suppose that inflation has been steady for many years at 8% and that unemployment has also been steady for many years at 6%. The Danish central bank wants to deflate the economy. It considers two different strategies:

(a) "Cold-Turkey". The central bank sets $\pi_t = 0\%$ (and $\pi = 0\%$ thereafter). What will be the time path of unemployment in Denmark? (i.e. what will be u_t, u_{t+1}, u_{t+2}, etc.)

(b) "Gradualism". Now the central bank sets $\pi_t = 4\%$, and $\pi_{t+1} = 0\%$ (and $\pi = 0\%$ thereafter). Again, what will be the time path of unemployment under this policy?

(c) Describe what happened in part (a) and (b) using an expectations-augmented Phillips curve diagram.

2. For this question, assume that the interest rate parity holds between any pair of countries. For parts (a) and (d) consider Canada as the home country and for parts (b) and (c) consider the U.S. as the home country. A trader has the following data about some European and Canadian financial variables: $r_{\text{CAN}}^e = 4\%$, $r_{\text{EEU}}^e = 2\%$, $\pi_{\text{CAN}}^e = \pi_{\text{EEU}}^e$, and $e_{\text{nom}} = 0.70\frac{\text{Euros}}{\text{CAN \$}}$.

(a) What is the future nominal exchange rate (e_{nom}^f) ?

(b) At the same time, the trader is informed that the nominal exchange rate between Canada and the U.S. is $0.80\frac{\text{U.S. \$}}{\text{CAN \$}}$. What is the nominal exchange rate between the U.S. dollar and the Euro (i.e. $e_{\text{nom}} = \frac{\text{Euros}}{\text{U.S. \$}}$) ?

(c) The expectations about future inflation are the following: $\pi_{\text{EEU}}^e = 5\%$, and $\pi_{\text{US}}^e = 0\%$ (recall that $r_{\text{EEU}}^e = 2\%$). If the trader expects that the U.S. dollar will appreciate by 3% relative to the euro over the course of the year, what is r_{US}^e ?

(d) Using your result in part (c), what should the investor expect about the future nominal and real exchange rate between the Canadian and U.S. dollar?

3. Consider an economy that lasts for two periods. The budget constraint of individuals in this economy is given by:

$$C_1 + \frac{C_2}{1+r} = Y_1(1-t_1) + \frac{Y_2(1-t_2)}{1+r}$$

The budget constraint of the government is given by:

$$Y_1 t_1 + \frac{Y_2 t_2}{1+r} = G$$

where G is total government expenditure over both periods. Individuals desire to smooth consumption perfectly over the two periods. Income in the two periods is given by $Y_1 = 1000$ and $Y_2 = 1100$. The real interest rate $r = 0.1$ and the tax rates set by the government are $t_1 = t_2 = 0.2$.

(a) Solve for G, C_1 and the amount of (after tax) savings by private individuals S_p.

(b) Suppose that there is an election scheduled at the end of period 1. In an attempt to win re-election, the government reduces the tax rate in the first period so that $t_1 = 0$, while at the same time maintaining G at its original level. Assuming that Ricardian equivalence holds, solve for C_1 and the amount of (after tax) savings by private individuals S. (Hint: in order to maintain G, the government will have to raise t_2.)

(c) Now suppose that private individuals still seek to smooth their consumption over both periods but they are myopic in the sense that they still expect $t_2 = 0.2$ (with $t_1 = 0$). Could they be better off compared to (b)?

(d) Instead of setting $t_1 = 0$, the government instead offers a new savings plan where private individuals can save at a real interest rate of $r = 0.2$. The taxes are credibly announced to be $t_1 = t_2 = 0.2$. Will private individuals gain from this policy? Why or why not?

(e) Finally, suppose that the government offers the new savings plan (with $r = 0.2$) AND sets $t_1 = 0$ at the same time (the taxes in period 2 are credibly announced to be $t_2 = 0.4$). Assuming that Ricardian equivalence holds, will private individuals gain from the combination of these two policies? Why or why not?

4. Suppose that the Russian economy can be represented by the set of equations:

$$
\begin{aligned}
C &= 5 + 0.8(Y - T) \\
I &= 30 - 2r \\
G &= 80 \\
T &= 50 \\
NX &= 5 - e \\
e &= 10 + r - r_{for} \\
M^s/P &= 4Y - 2(r + \pi^e)
\end{aligned}
$$

Suppose further that $\bar{Y} = 170$, $r_{for} = 6$, $P = 1$, $M^s = 652$ and $\pi^e = 0$.

(a) Find the long run values of Y, r, e and NX.

(b) One of the big problems facing the Russian government after the fall of communism was an inability to collect sufficient tax revenue. What value of T is required in order for Russia to have a zero trade balance ($NX = 0$) in part (a)?

(c) The Russian government decides that increasing T is not possible. However they do have the ability to increase M^s. By how much does M^s have to rise in order for NX to be zero?

(d) Before the policy in part (c) is actually implemented, it is publicly announced and expected inflation π^e rises. Use an IS-LM-FE diagram to describe how this will affect r and Y in both the short run and the long run (with $T = 50$). (You don't need to compute numbers here. Just show the direction of the changes.)

(e) Suppose that Russia moves from a floating exchange rate to a fixed exchange rate system. They choose to set $e = 5$ in order to have NX equal to zero. Can this fixed exchange rate be sustained indefinitely? What would happen if investors in the rest of the world anticipated Russia's move from a floating exchange rate to a fixed exchange rate?