QUEEN'S UNIVERSITY AT KINGSTON

FACULTY OF ARTS AND SCIENCE

DEPARTMENT OF ECONOMICS

ECONOMICS 222 FINAL EXAMINATION

June 2005

Instructor:

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Instructions:

This examination is THREE HOURS in length.

You may use a hand calculator.

Answer 6 of the 8 questions in Part A. Each question in Part A is worth 6 marks, for a total of 36 marks.

Answer 4 of the 6 questions in Part B. Each question in Part B is worth 16 marks, for a total of 64 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.

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.

PART A: Answer 6 of the 8 following questions. Each question is worth 6 marks.

1. The economy of Chad has gone through the following changes over the last year: $\Delta^{\%}Z = -1\%$ (Z is the GDP per capita), $\Delta^{\%}A = -1\%$, $\Delta^{\%}K = -1\%$ and $\Delta^{\%}N = 3\%$. What was the population growth in Chad last year if the production function was: $Y = AK^{0.5}N^{0.5}$?

2. What are main costs of anticipated inflation? What are the main costs of unanticipated inflation? Give an example of what can happen during a hyperinflation.

3. Is the natural rate of unemployment constant over time? Discuss.

4. If the government cuts the taxes in a small open economy, what will be the impact on the current account?

5. Explain what is meant by "seignorage". Why would a government ever decide to employ this financing procedure?

6. The price of oil is expected to decline sharply in 2006. Analyze the impacts of this shock on a closed economy using an $IS - LM - FE$ diagram.

7. If the central bank increases the money supply in an open economy, what will happen to the nominal and the real exchange rate in the long-run?

8. In the growth model, what will be the time path of consumption if the saving rate increases?

PART B: Answer 4 of the 6 following questions. Each question is worth 16 marks.

1. The money demand function for Madagascar is given by:

$$\frac{M^d}{P} = \frac{\sqrt{Y}}{10(r + \pi^e)}.$$

Initially assume that $Y = 100$, $r = 0.064$ and the velocity is $v = 10$.

(a) What is the expected inflation?

(b) What is the income elasticity of real money demand in Madagascar?

(c) Over the course of a year the $\Delta^{\%}M = 5\%$, the $\Delta^{\%}Y = 2\%$ and the $\Delta^{\%}i = 1\%$. What must have been the inflation rate?

(d) Given your answer in part (c), what was the growth rate of velocity?

2. Turkey's expectations-augmented Phillips curve is given by:

$$\pi_t = \pi_t^e - 2(u_t - \bar{u})$$

The inflation has been a steady 5% over the previous years and people have inflationary expectations: $\pi_t^e = \pi_{t-1}$ and the natural rate of unemployment is: $\bar{u} = 0.07$.

(a) What is the unemployment rate in period 1?

(b) Suppose that the Turkish central bank wants to disinflate gradually so that: $u_2 = 0.08$, $u_3 = 0.085$ and $u_4 = 0.07$. What will be the inflation rate in periods 2, 3 and 4 ?

(c) If the Turkish central bank were to use the "Cold Turkey" scheme to achieve zero inflation, what would be the unemployment in periods 2, 3 and 4?

(d) If Okun's law is given by

$$\frac{\bar{Y} - Y_t}{\bar{Y}} = 1.5(u_t - \bar{u}),$$

what is the sacrifice ratio for this economy?

3. Juliet is living for four periods. Her income stream is: $Y_1 = 0$, $Y_2 = 40$, $Y_3 = 50$ and $Y_4 = 0$. Juliet aims to smooth her consumption across time periods and also wishes to give a bequest $b = 10$ to Romeo. For simplicity, assume that the real interest rate is zero.

(a) What will Juliet's consumption and saving be during each period?

(b) Unexpectedly, at the beginning of period two (prior any consumption), Juliet wins a nice prize $p = 30$ at the lottery. How will she rearrange her consumption and saving decisions for the remaining periods?

(c) Another surprise awaits Juliet at the beginning of the third period: the real interest rate rises to $r = 0.10$. How will she rearrange her consumption and saving decisions for the remaining periods?

(d) Would Juliet been better off if she had known from the beginning what eventually happened to her in periods two and three?

4. For this question assume that purchasing power parity and interest rate parity hold. Currently the nominal interest rate in New-Zealand is $i_{nz} = 0.06$, the nominal interest in Canada is $i = 0.04$ and the nominal exchange rate is $e_{nom} = 1.2$.

(a) What is the future nominal exchange rate?

(b) If the expected inflation rate is $\pi^e = 0.01$ in Canada, what must it be in New-Zealand?

(c) If the price level is expected to be 101 in Canada next year, what is the expected price level for New-Zealand?

(d) An investor borrows 1000$ from a Canadian bank and invest the money in New-Zealand. What is his expected profit in one year from now?

5. Suppose that the Canadian economy can be represented by the following Keynesian model:

$$\begin{aligned} C^d &= 250 + 0.6Y - 70r \\ I^d &= 200 - 25r \\ G &= 225 \\ NX &= 125 - 0.1Y - 5r \\ \frac{M}{P} &= Y - 100(r + \pi^e) \end{aligned}$$

Assume that the money supply is $M = 700$, $\pi^e = 0$ and $\bar{Y} = 1000$.

(a) Assume that the Canadian economy is currently in a long-run equilibrium. Find r, C, I, NX and P.

(b) There is a surge in expected inflation and now $\pi^e = 1.5$. Find the short-run equilibrium values for r, C, I, NX and Y.

(c) The central bank wants to avoid any change in the price level following from the shock in part (b). How should it set the money supply?

(d) What happened to the real exchange rate in part (b) and (c)?

6. An entrepreneur has the following production function: $Y_t = A\sqrt{K_t}$. The price of capital is $p_k = 10$, the real interest rate is $r = 0.10$, the depreciation rate is $d = 0.10$ and the technology index is $A = 100$. The effective tax rate on capital is $t = 0.20$.

(a) What is the desired capital stock for this entrepreneur?

(b) The technology improves so that $A = 160$ now. What is the gross investment needed to attain the new desired capital stock?

(c) Assume that the entrepreneur cannot finance the investment needed found in part (b). Instead he saves a fixed fraction s of his production Y_t to accumulate capital. What is the saving rate needed to attain the new desired capital stock as a steady-state of the capital accumulation process?

(d) What will be the steady-state investment?