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M.Sc.(Economics), M.Sc. Financial Economics

Macroeconomics A - ECOM001 (resit/first sit)

Date: 25 May 2007, 10:00 p.m.
Duration: 2 hours and 15 minutes (This includes 15 minutes reading time)

Answer one question from Section A and two questions from Section B.

You are not permitted to start reading this question paper until instructed to do so by an invigilator.

Complete all rough workings in the answer book(s) and cross through any work that is not to be assessed.

Calculators are permitted in this examination provided they are not programmable. Please state the name and type of calculator on your answer book.

Section A

1. (50 points) Consider the Solow growth model with constant saving rate s, population growth rate n and no depreciation rate. Let the production function be

$$F(K, L) = K + K^{\alpha} L^{1-\alpha} \ ,$$

with $0 < \alpha < 1$.

   (a) Is the economy characterised by constant returns to scale?

   (b) Let k be capital per capita. Write the equation describing capital accumulation in per capita terms.

   (c) Derive restrictions on parameters which ensure k is finite along the balanced growth path.

   (d) Find the share of labour along the balanced growth path as a function of s and n.

   (e) Discuss whether the model balanced growth path is consistent with Kaldor's stylised facts?

2. (50 points) Consider the following version of the Human Capital model. The model is defined by the set of equations

$Y = K^{\alpha} L^{1-\alpha}$,

$\dot{K} = s_K Y$,

$\dot{H} = s_H Y$, with $0 < \alpha < 1$, $0 < s_K < 1$, $0 < s_H < 1$.

   (a) Discuss the economic interpretation of the different parts of the model.

   (b) Show that K/H converges to a balanced growth path level.

   (c) Compute the growth rates of K/H and Y along the balanced growth path.

   (d) How does the growth rate of output depends on the investment rates s_H and s_K ?

   (e) Assuming that K/H is initially above its balanced growth value, how does the initial growth rate of Y compare to the growth rate of Y along the balanced growth path?

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Section B

3. (25 points) In this question you will review some issues partaining to the theory of Real Business Cycles (RBC).

   (a) Describe the stylised empirical facts concerning the economic fluctuations. In particular compare the volatility of GDP to the volatility of investment, of government consumption and private consumption of non-durable goods.

   (b) Compare the 1929 Great Depression and the 1974 recession. In particular, discuss the movement of unemployment, labour productivity, investment, consumption and the price level in the two episodes.

   (c) According to the Real Business Cycles approach what is the mechanism producing economic fluctuations? Is this explanation plausible? Discuss.

   (d) What are the main other assumptions of the RBC Theory? To which extent do fluctuations represent optimal responses to shocks?

   (e) Are fluctuations in the price level an exogenous shocks? Describe the two major post-war oil shocks.

   (f) What is the effect of changes in the quantity of money on output? Do changes in the price level affect output? Is unemployment voluntary or involuntary?

   (g) Describe the notion of "endogenous fluctuations". Discuss an economic model in which endogenous fluctuations may occur. Are the conditions ensuring the occurrence of endogenous fluctuations realistic?

4. (25 points) Consider the two-period, pure exchange, overlapping generation model Assume that the individual utility is $u(x, y) = \ln(x) + \delta \ln(y)$ and that the initial endowments are $(e^y, e^o) = (4, 1)$.

   (a) Briefly, describe the stylised empirical facts concerning the economic fluctuations.

   (b) Give the main structure of the overlapping generations pure exchange model (without production).

   (c) Relate the real interest rate between time t and $t + 1$ to the present prices in period t and $t + 1$.

   (d) Write and solve the consumer maximization program (you can use interest rates or present prices)

   (e) Draw the offer curve. Draw the dynamic curve Γ. How is the latter obtained?

   (f) State the equation concerning the evolution of interest rates (or present prices).

   (g) What are the steady states? Are these stable? What is the value of real savings at these?

   (h) Draw some indifference curves and an associated offer curve which is consistent with endogenous fluctuations.

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5. (25 points) Consider a pure exchange intertemporal model that extends over two periods. There is one perishable good per period. There are two consumers with utility function $u(c_1, c_2) = \log c_1 + \log c_2$ where c_1 and c_2 denote consumption in period 1 and 2, respectively. The initial endowments of the first consumer are $\omega_1(1), \omega_1(2) = (2, 1)$ while for the second these are $\omega_2(1), \omega_2(2) = (1, 2)$.

   (a) Are total resources and preferences independent of time?

   (b) Do you expect individual consumption to be constant or vary across periods?

   (c) For consumer 1, draw his indifference curve passing through the point representing his initial endowments. Find its analytical expression.

   (d) Let r be the interest rate. What is the individual demand for consumer 1?

   (e) Can there be an equilibrium with zero interest rate?

   (f) Is there an equilibrium with strictly positive interest rate?

   (g) Explain why the model depicts a situation in which endogenous fluctuations are impossible.

End of Examination
Dr. G. Fella