

NATIONAL UNIVERSITY OF SINGAPORE

EC2102 MACROECONOMIC ANALYSIS I

(SEMESTER 2 : AY2007-2008)

Time Allowed : 2 Hours

INSTRUCTIONS TO CANDIDATES

1. This examination paper contains 3 questions, and comprises 5 printed pages, including two figures, Figures 1 and 2. This front page counts as page 1.
2. ALL questions are compulsory. The total number of points is 100.
3. This is a CLOSED BOOK examination.
4. Write your answers in the exam booklets provided only.
5. Write your matriculation number on each exam booklet used. Number all the exam booklets used.
6. On the front page of the first exam booklet, write down how many exam booklets you used, and write down the order in which the questions were answered.
7. If you have used more than one exam booklet, tie them all up.

Question 1 (25 points)

Consider an economy with an infinitely-lived representative consumer, an infinitely-lived representative firm, and a government. The representative consumer has h units of time each period, values consumption and leisure, and has a per period utility function of $u(C_t, l_t)$, $t = 1, 2, \dots$; he has a discount factor of β . The representative firm is entirely owned by the representative consumer, and it has a production technology of $Y_t = z_t F(K_t, N_t)$, $t = 1, 2, \dots$, where z_t , K_t , and N_t are period t 's productivity (TFP), capital stock and employment respectively. Let w_t and r_t be the real wage rate and real interest rate in time period t respectively. The government spends and taxes G_t and T_t in time period t respectively.

(i) Write down the representative consumer's maximization problem in time period 1, and write down the First Order Conditions to his maximization problem. (8 points)

(ii) Write down the representative firm's maximization problem in time period 1, and write down the First Order Conditions to its maximization problem. (8 points)

(iii) Define a competitive equilibrium for this economy. (9 points)

Question 2 (25 points)

Consider the monetary intertemporal model studied in class, where all prices are fully flexible, and where government expenditures every period is G , $G > 0$. Suppose that the economy is initially in an equilibrium. Equilibria in the labour and goods markets in time period 1 are illustrated in Figure 1.

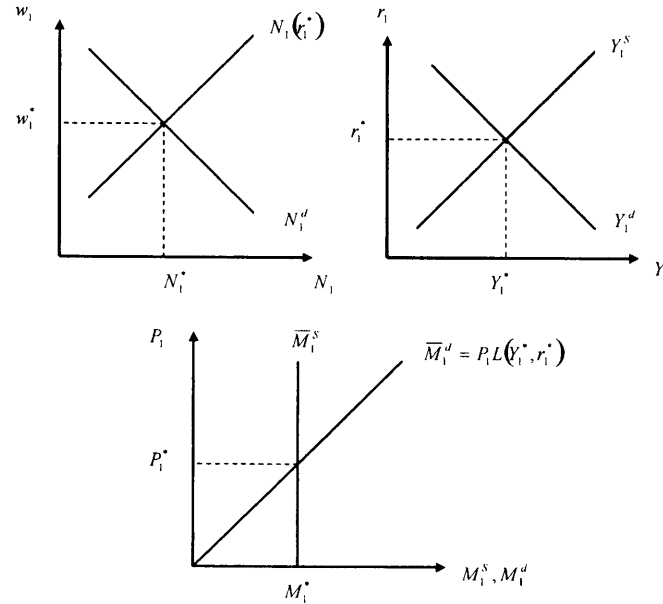


Figure 1

At the beginning of time period 1, the government announces that it will permanently increase its expenditures by ΔG every period, $\Delta G > 0$, starting from time period 1. With the aid of graphs, illustrate and explain in detail the impact of this on equilibria in the labour, goods, and money markets in time period 1, as well as on decisions made by the representative consumer and the representative firm in time period 1.

Question 3 (50 points)

You are an economist hired by the government of country X , and you believe in the Keynesian sticky (nominal) wage model. You believe that the economy today, which we shall call time period 1, is going to be that as shown in Figure 2: the real output is \hat{Y}_1 , the real rate of interest is \hat{r}_1 , the price level is \hat{P}_1 , and the fixed nominal wage in time period 1, \bar{W}_1 , is such that the implied real wage in time period 1, \hat{w}_1 , where $\hat{w}_1 = \bar{W}_1 / \hat{P}_1$, is above the market clearing real wage in the labour market. You know that the government spends G_t and taxes T_t in real terms in time period t . The government in country X is also the central bank; the supply of money in time period t is M_t^s .

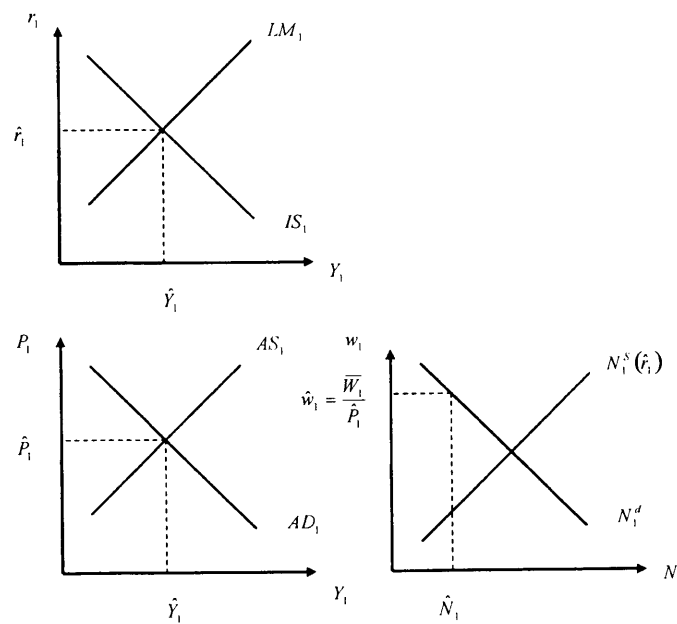


Figure 2

There are two proposals you have come up with to help the economy be at an equilibrium. At the beginning of time period 1, either

- (1) government expenditure for time period 1 (and only time period 1) could be increased;
- or
- (2) money supply for time period 1 (and only time period 1) could be increased.

You have to explain *each* of your proposals to your boss, who is not familiar with the Keynesian sticky (nominal) wage model. Draft a very clear and detailed explanation of each proposal to your boss, taking care in each proposal to describe completely the impact of that proposal on the economy in time period 1, with the aid of graphs.

(Each proposal is worth 25 points.)

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