Economics 102: Problem Set 5

Due date: November 5 (Thursday), 2002.

Note: you can either give your homework to the TA right after class or put it in the box outside my office (Heady 469) before 5:00pm. Note that old assignments can be picked up from my office.

Problem 1

Suppose an economy is described by the following consumption and investment functions: $C(Y - T) = 25 + M(Y - T)$, $I(r) = 100 - 50r$, where $0 < M < 1$ denotes the constant $MPC$. Take $M$, $G$, $T$, and $r$ as the model’s exogenous variables. The model’s only endogenous variable is $Y$.

1) Suppose $M = 0.5$, $r = 0.1$, $G = 15$ and $T = 10$. (a) Solve for the equilibrium $Y$. (b) Compute the equilibrium private saving and public saving.

2) Solve the equilibrium $Y$ as a function of the exogenous variables $M$, $G$, $T$, and $r$.

3) Suppose there are two economies which are identical in all other aspects except that the $MPC$ (which is $M$ in our model) in the first economy is lower than that in the second economy. Which economy’s equilibrium $Y$ is higher?

4) What happens to the equilibrium $Y$ if the Fed lowers the interest rate.

5) What happens to the equilibrium $Y$ if the government increases $G$? Compute the government-purchases multiplier.

6) Suppose $T = tY$, where $t > 0$ is a constant, the tax rate. How does the equilibrium $Y$ depend on $t$? (You must show mathematically.)