Economics 314 Spring 2010
Project #7 Assignment Due: 9am, Wednesday, April 7

Partner assignments

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1. Suppose that equilibrium in the Keynesian-cross model is written as $Y = E \equiv \Phi(Y - T, r) + G$, where the Φ function represents desired private expenditures ($C + I$). Suppose that $m = \frac{\partial \Phi}{\partial (Y - T)}$ is a positive constant that is less than one.

   a. What is the slope of the desired expenditure function (the *E* curve in Romer's Figure 5.1)? Is it constant?
   b. How much does a one-unit increase in *G* raise *E* (and thus *Y*) directly? How does it affect the *E* curve?
   c. Given this direct increase in *Y* due to the rise in *G*, how much will people raise spending at the second round? Given that second-round increase in *Y*, how much will spending go up in the third round?
   d. How much does a one-unit increase in *G* raise the eventual equilibrium level of *Y*? In other words, what is the government-expenditure multiplier $\frac{dY}{dG}$? How does this result relate to the formula for the geometric series: $\sum_{i=0}^{\infty} x^i = \frac{1}{1-x}$, where $0 < x < 1$?
   e. By how much does the unit increase in *G* shift the *IS* curve? Why?
   f. If *m* differs between two countries, how will their multipliers differ? Explain both in terms of the equation and in intuitive terms.
   g. What happens if $m > 1$?

2. Suppose that the current nominal interest rate on one-year U.S. government bonds is 3%, that the current spot exchange rate is 1.5 \$/€, and that everyone expects the exchange rate one year from now will be 1.47 \$/€. Ignoring any possible risk premium, what must be the nominal interest rate on one-year German government bonds if there is perfect capital mobility? Why?

3. Use the Mundell-Fleming model (of a small economy with perfect capital mobility) to evaluate the following statement: "A recession due to a spending shock will be more severe in a country with fixed exchange rates than if the exchange rate floats."

4. Suppose that everyone expects the price level to fall at a rate of 5 percent per year: $\pi^e = -5\%$.

a. What is the real interest rate if the nominal interest rate approaches zero?
b. Can the nominal interest rate ever be less than or equal to zero in equilibrium? Why? (Hint: Would anyone willingly hold bonds in that situation? This situation is sometimes called a "liquidity trap.")
c. What range of values is feasible for the central bank in setting the nominal interest rate i? Does this restrict the feasible range at which it can set r? How would you represent this in the *MP* curve?
d. Suppose that a large contraction in desired expenditures pushes the *IS* curve far to the left so that the nominal interest rate becomes small. How feasible is it to use monetary policy to moderate the effect on output or to reverse it? Why?
e. Do the limitations on monetary policy apply to fiscal policy?

5. Use the *IS*/*MP* model to analyze the following situations. For each situation, tell which (if either) curve would shift which direction and why. Describe the effect this would have on the model in verbal terms. Characterize the eventual effects on quantity of output demanded (equilibrium Y) and the real interest rate.

a. A strong "inflation hawk" is installed as central-bank chair and embarks on a mission to lower inflation.
b. Economic recovery in Europe raises the demand for American exports. (Do not use the full Mundell-Fleming model for this one.)
c. Congress raises taxes to lower the deficit, but consumers are infinitely lived utility maximizers who recognize the government budget constraint tying lifetime spending (which is unchanged) to lifetime taxes. In other words, consumers are "Ricardian."
d. Congress raises taxes to lower the deficit, but consumers are not Ricardian.
e. Forecasts of a recession cause households' expected future levels of income to fall and businesses' expected marginal product of capital to fall.

6. Work Romer's problems 5.6, 5.7, 5.8, and 5.10.