ECON 101B: FALL 2006: PRACTICE FINAL EXAM

Real final on Wed Dec 13, Davis 543:

Long-Run Economic Growth (20% of exam)

Consider an economy in which the (real) savings rate is about 20 percent of output, the average rate of increase in the efficiency of labor E is 1 percent per year, the average rate of growth of the labor force L is about 1 percent per year, and the depreciation rate is about 3 percent per year.

(1) Suppose that the economy maintains these investment, population growth, depreciation, and labor efficiency growth rates far into the future. What is the steady-state capital-output ratio K/Y? What would the steady-state capital-output ratio be if the savings rate was 21 percent of output?

(2) Suppose (with the savings rate s equal to 20%) that the parameter α in the production function $Y/L = (K/L)^{\alpha} \times E^{1-\alpha}$ is 1/2. (Remember that steady-state output per worker equals:

$$\frac{Y}{L} = (\kappa^*)^{\frac{\alpha}{1-\alpha}} \times E$$

where κ^* is the steady-state capital-output ratio.) What is steady-state output per worker as a function of the efficiency of labor E and of the parameters of the model)?

(3) What will the long-run rate of growth of GDP per worker be when the economy is on its steady-state balanced-growth path? What would your answer be if the parameter α were 1/3? If it were 2/3?

(4) Suppose (with the parameter α still equal to 1/2) that the labor force growth rate n drops to zero and the savings rate rises to 24 percent of output. What happens to value of output per worker along the steady-state balanced growth path?

(5) In assessing the impact of various policies on growth, is it fair to regard the efficiency of labor growth rate g, the savings-investment share s, and the labor-force growth rate n as independent variables determined by different forces? Write a paragraph explaining why or why not.

The Sticky-Price Income-Expenditure Model (20% of exam)

Suppose that we have the following income-expenditure model of the economy:

$Y = C+I+G+NX$ (national income identity)
$C = C_0 + 0.8(Y - T)$ (consumption function)
$T = .25 \times Y$ (total tax revenues)
$NX = GX - IM$ (net exports)
$IM = .2 \times Y$ (imports)

And suppose that I, G, and GX are exogenous: determined externally, outside this model.

(1) Solve, algebraically, for Y as a function of autonomous spending A—the sum of I, G, GX, and C_0—and the other parameters of the model.

(2) What is the value of the multiplier in this model? What would the multiplier be if imports were only 10% of national income Y? What would the multiplier be if imports were 30% of national income Y?

(3) Suppose that the sum $C_0 + I + G + NX$ increases by $100 billion. By how much does equilibrium real GDP Y change? How about if $C_0 + I + G + NX$ increases by $300 billion.

(4) Suppose that the tax rate were to go up from 25 to 40 percent. What then would the value of the multiplier be? From the perspective of reducing business cycle variability, would such an increase in the tax rate be a good thing? Explain why or why not.

(5) Write a paragraph explaining why the first equation includes "+NX" on the right-hand side. Why isn't it just $Y = C + I + G$?

Inflation and Output (20% of exam)

Suppose that inflation and output relative to potential can be modeled by two equations:

$$\pi_t = \pi_{t-1} + \alpha \times y_t + \eta_t$$
$$y_t = e^* - \gamma \times r_t$$

where π is the inflation rate, y is the difference between real GDP and potential output, r is the real interest rate chosen by the Federal Reserve, η is a supply shock, and e*, α and γ are parameters determined by the structure of the economy, the state of expectations of future profits, and the economic environment.

(1) Suppose that we know that over some reasonably long period of time (a) inflation is roughly stable, (b) e* has averaged +6%, and (c) the parameter γ is roughly one—a one percentage point increase in the real interest rate reduces equilibrium real GDP by one percent. What can we conclude about the average level of r during this period? (Alan Greenspan referred to this as the "equilibrium real interest rate" during Congressional testimony in 1993 and 1994.)

(2) What parameters of which behavioral equations for what components of GDP and other economic variables determine the value of the parameter γ? List as many as you can think of, tell me what they are, and tell me whether increasing them would raise or lower the value of γ.

(3) Suppose that the value of α in this economy is 0.25, that the central bank and the government agree that they are going to fix and hold real GDP at five percent above potential output for as long as they can, and that no supply shocks affect the economy. How many years will it take before annual inflation is ten percentage points higher as a result of this policy?

(4) How can you tell that this economy has adaptive expectations of inflation? How would the equations be different if this economy had static expectations of inflation?

(5) Suppose that this economy had rational instead of adaptive expectations of inflation. How would the equations be different. What could we then say about the value of y if we also knew that there were no "surprise" policies affecting the economy?

Short Essays: Do Two of Four (40% of exam)

(1) What made the Great Depression so great? Is it at all likely to happen again?
(2) What is the relationship between the sticky-price "Keynesian" model that was the workhorse of the second half of this course and the flexible-price full-employment model that preceded it?
(3) Why is unemployment so high in western Europe today?
(4) If the U.S. economy is in a severe recession at this time next year, what, most probably, has happened between now and then to make it so?