

ECON 110, Prof. Hogendorn, Spring 2008

Second Midterm Exam

Each part of each question (a, b, c, etc.) is worth 5 points. Make sure to allot your time accordingly. Total of 35 points, -1 for messiness, -2 for extreme messiness.

1. *SmallCountry*. Remember that a country's supply of loanable funds is the *net* supply after households that borrow are subtracted from those who save. Suppose there is a small country with 1000 households. 700 of these have a savings function $s = 50r$, where r is the rate of return on capital. The remaining 300 households have savings function $s = -1 + 10r$. (You can imagine that both the number of households and the amount of savings are in thousands.)
 - (a) Graph the individual and aggregate savings functions. Describe in words what happens to both types of household and the whole country when the interest rate rises from 3% to 11%.
 - (b) There are 100 firms, and each firm has an investment demand function $(i(r) = 10/r$. Find and graph the aggregate investment function for the whole country.
 - (c) Show that the equilibrium interest rate in this country is 16.6% (rounded to one decimal).
 - (d) In most countries, a real interest rate of 7% would be more typical. Do you think this country will have higher or lower economic growth than the typical country? Explain.

2. *Fear*. This problem shows how in the neoclassical long-run macro model, widespread fear across an economy will not cause a recession! This is an important and comforting insight for the long run, but on the other hand, in the long run we are all dead...

Suppose the production function for the one representative firm in the economy is $Y = f(L) = 20L^{4/5}$. This firm also has investment demand $I(r) = 0.8/r$.

There are $\mathcal{L} = 40$ workers who inelastically supply labor. These workers collectively supply savings of $\mathcal{S} = 10$ units of output. (Again, that's total savings of all 40 workers.)

- (a) Show that the labor demand curve is $L(w) = (16/w)^5$, graph the labor market, and show the equilibrium real wage. Also graph the capital market and show the equilibrium real interest rate.
- (b) Verify the national income accounts identity, i.e. that income from wages and dividends (which equals consumption plus savings) equals output (consumption plus investment).
- (c) Now suppose that people in this country hear about Bear-Stearns and worry that some horrible thing could happen to them too. Everyone becomes very fearful of the future. The consumers all increase their savings to $\mathcal{S}' = 20$ to prepare for bad times ahead. The firm decreases its investment demand to $I(r) = 0.4/r$ due to pessimism. The firm also shifts down its labor demand curve to $L(w) = (8/w)^5$ – even though this is not profit maximizing because the production function remains unchanged. What happens to the real wage, real interest rate, income, and output?