Problem Set 2
Econ 100B

Problem sets are due to your GSI in Section on Wednesday April 6 or Thursday April 7. Do not leave problem sets in the GSI’s mailbox. Problem sets that are a day late lose half the credit; see the course syllabus for other details.

As always, your grade will be determined largely by the explanation you provide. Also, please label your graphs clearly, indicating the direction in which curves are shifting.

1. (1 ½ point) You are considering buying a small commercial building in Berkeley. The building costs $1 million to buy. Rent on the building is $8000 per month; you have also found out that operations and maintenance on this building cost $20000 per year, and that this level of expenditures will allow the building to exist pretty much forever.

Should you buy this building if you can get a loan at 8 percent per year? What if the rate were 6 percent? At what rate of interest would you be indifferent to buying this building? That is, what is the rate of interest at which your expenses would equal your income?

2. (1 ½ point) Suppose a small company that prepares tax returns for individuals is considering expanding its business. Buying the new computers and related equipment will cost $75,000 (which the owner has available to her from past profits) and will raise revenues net of expenses by $16,000 per year. The owner also estimates that it will become necessary to replace the new computers after 5 years. Should the owner buy the additional computers if the interest rate is 6 percent? What if it were 7 percent? Since this is her own money, should she care about the interest rate at all?
3. (2 points) In recent months a number of newspapers and journals have published articles expressing concern about how the U.S. could be adversely affected if the Chinese, or some other foreign countries, stopped buying U.S. government securities, that is, if they stopped lending to the U.S. government.

Use your knowledge of the classical, flexible price model to discuss this argument, indicating where in the model such a change might show up; then, use a graph show how this change would affect equilibrium interest rates and investment levels. What does this model tell you that the Solow model did not?
3. (4 points) Assume that financial markets are in equilibrium with the real interest rate equal to $r^*$ and the amount of investment being financed equal to $I^*$. Suppose that firms realize that a certain recent invention (the internet, perhaps) will lead to higher productivity in the future. This will make them want to increase investment spending now.

   a. (1 ½ points) Use a graph to show what will happen to the equilibrium real rate and level of investment.

   b. (1/2 point) Assume that the amount by which firms initially wanted to increase investment was 25 percent (the exact amount does not matter). In the new equilibrium will investment go up by 25 percent? More than 25 percent? Or less? Explain why.

   c. (1/2 point) Now assume that households also realize that they will be richer in the future (because of the increase in productivity). Will this realization affect the decisions they make today? Why?
d. (1 ½ points) What effect will this have on the real interest rate? Draw a second graph that includes the response of both firms and households to this information. (You should have already discussed the response of firms in 3a above.)

5. (1 point) Suppose that financial innovation causes the velocity of money to go up permanently by 2 percent. Use your knowledge of the quantity theory to describe what effect this would have on the price level and on the level of output in the long run. What, if anything, could the Fed do to counteract the effects of the change in velocity?