Economics 304 Fall 2017

Problem Set #4 Due: Friday, October 27

1. Consider a model in which individuals live for three periods (youth, middle-age, and retirement), earning income of Y_1, Y_2, and Y_3 and consuming C_1, C_2, and C_3. You may assume that they receive and leave no bequests. For simplicity, you may also assume that the real interest rate is zero.

a. Show the equation for the individual's lifetime budget constraint.
b. Solve for permanent income using an extension of equation (8.2) in the textbook.
c. If the consumer smoothes consumption perfectly, what consumption level will she choose in each year if Y_1 = \$20,000, Y_2 = \$100,000, and Y_3 = \$0 and she has access to perfect capital markets? In an economy comprising many such consumers, what pattern of borrowing and lending will emerge among individuals of various ages?
d. How would her consumption in each period be different if the government had a program giving a \$30,000 transfer payment to all young people, paid for by a \$30,000 tax on all middle-aged people?
e. How would her consumption in each period be affected if the government had a Social Security program that paid old people \$30,000 and taxed middle-aged people \$30,000 to pay for it?
f. Re-do parts c through e under the assumption that young individuals are unable to borrow due to imperfections in the capital market.
g. What implications does your analysis have for government transfer policies?

2. Read the short article "Did the 2008 Tax Rebates Stimulate Spending?" *American Economic Review* 99 (2):374–379 (May 2009). (This is available through the Reed Library Web site. You can find it directly at https://www-aeaweb-org.proxy.library.reed.edu/articles?id=10.1257/aer.99.2.374.) What are the authors' results? Are they consistent with modern consumption theory? Are they consistent with Keynes's consumption theory? Explain your conclusions.

3. Consider the theories of investment described in the text. You may ignore risk in all of these parts.

a. Explain why an increase in the real interest rate would affect the desirability of investment in capital for a firm that borrows to finance its investment.
b. Explain why (assuming perfect capital markets) the cost of capital for a firm that finances its investment by using retained earnings would be affected in the same way as if it borrowed.
c. Explain why the increase in the real interest rate would affect Tobin's q and, therefore, the desirability of investment for a firm that finances its investment through issuing new stock.

(Don't forget #4 on the next page)

4. Use the St. Louis Federal Reserve Bank's FRED database (https://fred.stlouisfed.org/) to access data on banks' excess reserves (above required reserves).

a. What happened in and after 2008 relative to the previous period? Why did this happen?
b. What impact did this have on the money-supply multiplier and why?
c. How did the change in excess-reserve holding affect the impact on the money supply of the Fed's quantitative easing, which expanded the monetary base dramatically?
d. How did this modify the effects of quantitative easing on the economy? Was/is this good or bad?