Consumption (continued): (Ch. 17)

1. True, False, Explain: To say that a consumer has *time inconsistent preferences* is simply to say that he discounts the future (i.e., perceives the value of a dollar received or spent in the future to be less than the value of a dollar received or spent today).

Investment: (Ch. 18)

2. Suppose that you are considering the purchase of a piece of machinery this year that will increase your firm’s profits by $0.38 in each of the next three years, and by nothing thereafter. The piece of equipment costs $1 and can not be resold. The interest rate is 10%. Should you buy this piece of machinery?

3. Suppose that the price of a unit of capital equipment is $100,000. The unit, if purchased, is expected to yield increased revenues of $10,000 per year for your firm, in each future year forever, but is expected to require maintenance expenditures of about $5,000 (i.e., 5% of its value) each year. Once the unit is purchased, it can not be resold.

   If the nominal interest rate at which your firm can borrow and lend is 7%, should you buy this piece of capital equipment? What is the maximum interest rate at which the investment would be profitable?

4. Suppose that the aggregate desired capital stock $K^*$ is given by

   $$K^* = \frac{Y}{r + d}$$

   where $r$ is the real interest rate and $d$ is the depreciation rate, and that firms invest so as to keep their actual capital stocks ($K$) at their desired levels ($K^*$). Suppose also that currently, $Y = 2000$, $r = 0.02$, and $d = 0.03$.

   a. Calculate the current level of aggregate gross investment spending ($I$).

   b. Suppose that there is an exogenous increase in consumption spending and so $Y$ rises to 2100. Assuming that GDP remains at this level, and that there is no change in interest rates, calculate the path of the capital stock and investment spending over time, following the change in GDP. How might multiplier-accelerator interactions affect these numbers (qualitatively), if $Y$ were not fixed?

   c. Now suppose that the depreciation rate $d$, rose to 0.04. Would this cause gross investment to rise or fall in the long run?


Money Supply and Demand: (Ch. 19)

6a. Suppose that we pass a law setting the *required reserve ratio* at one. What is the value of the money multiplier? Explain.

b. Suppose that the public desires to hold all of its money as currency and none as deposits. What is the value of the money multiplier? Explain.

c. Suppose that $B = 100,000$, $cr = 1$, and $rr = 0.2$. What is the nominal money supply? Suppose that $rr$ rises to 0.25. What happens to the money supply? Explain (briefly) the process by which this change in money supply happens.

7. Suppose that the demand for real money balances is completely insensitive to interest rates, and has the form

   $$\left(\frac{M}{P}\right)^d = 0.8Y$$

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1 $K^*$ is the sum of all firms’ desired capital stocks.
Then notice that LM will be vertical, and so equilibrium output (but not interest rates) in the IS-LM model will be independent of IS. Suppose further that $B = 1200$, $rr = .25$, $cr = .5$, and $P = 1$.

a. Solve for the equilibrium level of output in the IS-LM model.

b. If the Fed buys $100$ worth of bonds in an open market operation, what will be the effect on equilibrium output? Explain the mechanism by which output is affected and show the change on a graph.

c. Ignore part b. Suppose that the Keynesian Cross multiplier is 5. Suppose that the government raises its purchases $G$ by 100 without raising taxes (i.e., using deficit financing). Suppose further that the Fed monetizes the resulting addition to the government debt by buying the $100$ of newly issued Treasury bonds from the Treasury. Will interest rates rise or fall as a result of this joint monetary and fiscal policy action? Use a graph to illustrate your answer.