

Financial Crisis (Ch. 20)

- 1a. Explain why the risk of a bank becoming insolvent is increasing in its leverage ratio.
- 1b. Discuss how a financial crisis, like the one that the U.S. experienced in 2008-09 can be magnified by positive feedback, or by what Mankiw describes as a “vicious circle.”

Monetary Policy (Ch. 18)

2. Rational Expectations: Consider the extended model of dynamic AS and AD (DAS and DAD) from Ch. 15, in which the Fed follows a Taylor style monetary policy rule. Suppose that the economy is initially in long run equilibrium and that the Fed’s inflation target is 10%. Now suppose that the Fed announces (in advance, and credibly) that it will lower its inflation target to 2% in the next period. Compare the effect over time of the change in the target (starting next period) assuming that the public has adaptive expectations (as is assumed in Ch. 15) and then assuming that the public has rational expectations. In the latter case, assume that the public understands that the economy is well described by the DAD and DAS model and that everyone has rational expectations.
3. How should central banks conduct monetary policy:
 - a. What are some potential benefits and costs of having a central bank follow an inflation targeting rule?
 - b. In what ways has Fed policy during and after the most recent recession (the “great recession”) been atypical?
4. Monetary and Fiscal Policy: Suppose that the demand for real money balances is completely insensitive to interest rates, and has the form

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

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 (recalling Ch. 4) 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.

Consumption: (Ch. 16)

5. Life-cycle Model: Consider a strange world in which individuals (or families) begin their economic lives at age 20, work until age 60, retire, and die at age 80. Workers start work at age 20 at an annual salary rate of \$10,000, and receive continuous raises through age 60. At any moment t , in an individual’s working life (age 20–60), she/he earns disposable labor income at

an annual rate of $10,000 + 1000(t - 20)$. For example, at age 42.5, a person is momentarily receiving disposable income at an annual rate of $10,000 + 1000 \times 22.5 = 32,500$. After age 60, she/he receives no disposable income.

- a. Suppose that the interest rate is zero, that there is no uncertainty or liquidity constraints, and that people don't leave bequests at the end of life. What does the life-cycle theory predict the path of consumption (in annual rates) to be over an individual's lifetime. At what age is her/his saving rate equal to zero. At what ages are her/his assets equal to zero.

Hint: Lifetime income is the area under the labor income curve over the working lifetime, age 20 to 60. This can be easily calculated geometrically.

- b. Suppose that the government budget deficit and corporate saving are zero in this economy, and that there is no trade between this and any other economy. If there is also no population growth, what do you suppose must be true about gross investment.
 - c. Consider an individual at age 40. Suppose that the government unexpectedly announces a tax rebate of \$1000 for the upcoming year. What is the MPC on this rebate if the individual expects the rebate to be a one time event (temporary). What would the MPC be if the rebate was believed to be permanent, so that the individual expected to receive it in each of her/his remaining working years. What might you expect the MPC to be if the individual were uncertain as to whether the tax rebate was transitory or permanent, but believed that past tax changes had been permanent 50% of the time.
 - d. Suppose that the government announces a "social security" program, in which individuals will be taxed at an annual rate of \$2000 until retirement (age 60), and then will be paid the accumulated income (evenly) during retirement. Each individual's payments received in retirement are financed entirely out of her/his personal tax payments during employment. What are the (aggregate) MPC and MPS out of this change in (aggregate) disposable income. What is the immediate (qualitative) impact of the government program in part **b** on *national* saving ($S_p + S_g$). Would the existence of credit constrained households in the economy make this impact larger or smaller.
6. 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. 17)

7. 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?
8. 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?

9. Suppose that the aggregate desired capital stock K^* is given by¹

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

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?
10. Chapter 17: Problems and Applications #4 – 5 (p. 530).

Government Debt: (Ch. 19)

- 11.
- a. True, False, Explain: Suppose that the nominal government debt is currently \$4 trillion, and the nominal government budget surplus is currently \$100 billion. Then if the inflation rate is 3%, the measured nominal surplus understates the real (inflation adjusted) surplus by \$3 billion.
 - b. The U.S. has been running a sizable federal budget deficit, and Congress recently passed tax cuts which are expected to increase the deficit further. Discuss (at least) three views on whether this new tax policy change may be good or bad for the economy.

¹ K^* is the sum of all firms' desired capital stocks.