

Economics 132.03
Principles of Macroeconomics
Spring 2008

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<http://www2.bc.edu/~irelandp/ec132.html>

Second Midterm Exam

This exam has 12 questions on 5 pages; before you begin, please check to make sure your copy has all 12 questions and all 5 pages. Each of the 12 questions will receive equal weight in determining your overall exam score. You can work on the questions in any order, but please be sure to keep your answers to all of the parts of a specific question together in your exam book.

1. Suppose that you are an investment advisor and, after checking the latest interest rates in the bond market, you collect the following information:

Issuer	Maturity Date	Interest Rate (per year)
US Government	December 2008	1.75%
US Government	December 2028	4.50%
General Motors	February 2038	11.00%
General Electric	February 2038	6.25%
State of Massachusetts	December 2028	3.25%

Explain briefly (no more than a sentence or two for each case) which of these bonds you would recommend, and why, to a client who tells you:

- a. "I'm saving for retirement, so I won't need the money for many years, but above all I don't want to risk losing my money."
- b. "I'm saving to buy a new house. I may need the money next year, and I don't want to take any risk either."
- c. "I'm in a high federal income tax bracket and would really benefit from a tax break on the income from my savings."
- d. "I want to aim for a high return and don't care if that means taking on a lot of risk."
- e. "I want a decent return and am willing to tolerate some risk, but not too much risk."

2. Consider a closed economy in which GDP equals \$15 billion, consumption equals \$9 billion, government purchases equal \$2 billion, and tax revenue equals \$1 billion. Use this information to answer the following questions (*note*: if you show your calculations and use the correct formulas, we can give you partial credit even if you make a mistake with the arithmetic):
 - a. What is investment equal to in this economy?
 - b. What is national saving equal to in this economy?
 - c. What is public saving equal to in this economy?
 - d. What is private saving equal to in this economy?
 - e. What are net exports equal to in this economy?

3. Suppose that after the 2008 elections, the new President and Congress act to cut government spending and, by doing so, eliminate the current federal government budget deficit.
 - a. Does this change in policy shift the demand curve or the supply curve in the market for loanable funds?
 - b. Use a supply-and-demand diagram for loanable funds to show in which direction the relevant curve shifts.
 - c. Does the interest rate rise or fall as a result of this change in policy?
 - d. What happens to private investment as a result of this change in policy?
 - e. What effect would this policy have on the productivity of US workers?

4. Suppose that you are the CEO of a large corporation, and one of your vice presidents finds an investment project that costs \$100 million today, but promises to pay off \$200 million 7 years from now.
 - a. Write down a formula for the present value of the \$200 million that your firm stands to receive from the project 7 years from now, assuming that the interest rate is 10 percent per year (*note*: all you need to do for this part is to write down the formula, since actually computing the numerical value of this present value isn't possible without the help of a calculator).
 - b. Suppose the present value from part (a) turns out to be greater than \$100 million. Should you use your corporation's funds to undertake the project?
 - c. Suppose that the interest rate falls to 5 percent per year between the time that the vice president alerts you to the project and the time at which you actually have to make the decision of whether to undertake the project. Would that change the answer that you gave in part (b) above: yes, no, or maybe?

5. Legend has it that Peter Minuit, a Dutch official working in the colony of New Netherland, which stretched along the Northeast US coastline from what is now Rhode Island down to what is now New Jersey, purchased the island of Manhattan from a group of Native Americans 382 years ago, in 1626, for the equivalent of \$24. Assuming that those \$24 were invested at an interest rate of 7 percent per year, write down a formula that shows how much money the Native American sellers would have today, if they took advantage of compounding by leaving all of the money in the bank, earning interest over time on the previous years' interest payments as well as the original amount deposited (*note*: again, all you need to do here is to write down the formula, since actually computing the numerical value isn't possible without the help of a calculator).

6. Please answer these short-answer questions:
 - a. Some insurance company executives worry that once a driver buys automobile insurance, he or she will become a less careful driver, more likely to have an accident. Are they describing the problem of *adverse selection* or the problem of *moral hazard*?
 - b. Some insurance company executives worry that drivers who tend to drive less carefully are more likely to buy automobile insurance than drivers who tend to drive more safely. Are they describing the problem of *adverse selection* or the problem of *moral hazard*?
 - c. Some investment advisors argue that stock prices tend to move randomly and are impossible to predict. Do these advisors believe in the *efficient markets hypothesis* or in *market irrationality*?
 - d. Some investment advisors argue that waves of optimism or pessimism can push stock prices above or below their true intrinsic values, and that savers can profit by buying undervalued stocks. Do these advisors believe in the *efficient markets hypothesis* or in *market irrationality*?
 - e. Some investment advisors point out that when a firm's future prospects improve, the price of that firm's stock usually rises right away, when the news is released, and not later on, when the firm's profits actually do improve. Does this fact support the *efficient markets hypothesis* or the theory of *market irrationality*?

7. Consider a very simple economy in which there are only 20 people of age 16 or over. Eight are working at jobs, two do not have jobs but are actively looking, six are full-time students who are not looking for jobs and have not done so at any time in the past month, and four are retired people who are not looking for jobs and have not done so at any time in the past month. Using the same definitions employed by the Bureau of Labor Statistics, please answer the following questions (*note*: if you show your calculations and use the correct formulas, we can give you partial credit even if you make a mistake with the arithmetic).
 - a. How large is the labor force in this economy?
 - b. What is the unemployment rate?
 - c. What is the labor force participation rate?

8. Consider each of the following labor-market developments. In each case, indicate whether the event raises or lowers the natural rate of unemployment, and whether that effect arises because of a change in the amount of frictional unemployment or because of a change in the amount of structural unemployment.
- More firms start paying “efficiency wages.”
 - The internet makes it easier for firms to advertise their job openings and for unemployed workers to find job openings.
 - Labor unions successfully organize workers in new industries.
 - More and more consumers switch from Dell and Hewlett-Packard’s laptop computers, and buy Apple’s instead.
 - Government training programs help unemployed people who lost their jobs in declining industries to acquire new skills.
9. Draw a supply-and-demand diagram for the labor market to show what happens when the government sets the minimum wage above the equilibrium wage; then use that diagram to answer the following questions:
- What happens to the wages paid to workers who remain employed?
 - What happens to the number of workers who are actually employed?
 - What happens to the number of workers who would like to work at the prevailing wage?
 - What happens to the number of workers who would be classified by the Bureau of Labor Statistics as unemployed?
10. Consider an economy in which the following assets are available:

Asset	Dollar Value Outstanding
Currency	\$7
Demand Deposits	\$3
Savings Deposits	\$20
Money Market Mutual Funds	\$8
Time Deposits (Certificates of Deposit)	\$11
Short Term Government Bonds	\$21
Stock Market Mutual Funds	\$50

- What is the value of M1 for this economy? (*Notes: If you show your calculations and use the correct formulas, we can give you partial credit even if you make a mistake with the arithmetic. Also, please assume that if a particular asset from the actual US economy is not shown above, then there is none of that asset available in this economy.*)
- What is the value of M2 for this economy?

11. Consider an economy in which, initially, there are no banks. Suppose that one consumer initially holds the economy's entire money supply, in the form of \$100 in currency. Then a new bank – call it the First National Bank – opens, and the consumer deposits the entire \$100.
 - a. Assuming that the First National Bank has a 100 percent reserve ratio, use a T-account to show what effect this deposit has on the Bank's balance sheet.
 - b. Still assuming a 100 percent reserve ratio, explain what effect this deposit will have on the economy's total money supply.
 - c. Show how the First National Bank's T-account will look if, instead, it chooses a 10 percent reserve ratio.
 - d. Assuming that many other banks open up, all choosing the same 10 percent reserve ratio, and assuming that every consumer now chooses to hold all of his or her money as deposits instead of currency, explain what effect the initial deposit will eventually have on the total money supply.
 - e. Are consumers as a group wealthier when the banking system chooses a 10 percent reserve ratio instead of a 100 percent reserve ratio?

12. Suppose that the Federal Reserve conducts an open market operation in which it purchases \$10 million in US Government bonds.
 - a. Will this open market operation increase or decrease the money supply?
 - b. If there were no banks in the US economy, by how much will the money supply change?
 - c. Given that there are banks in the US economy, is the actual change in the money supply likely to be larger or smaller than the answer you gave in part (a) above?