Economics 132.02

Principles of Macroeconomics

Spring 2013

Professor Peter Ireland

Final Exam

This exam has nine questions on five pages; before you begin, please check to make sure your copy has all nine questions and all five pages. Each of the nine questions will receive equal weight in determining your overall exam score. Please record all of your answers on the answer sheet that is provided: tear off the answer sheet and be sure to write your name at the top before handing it in.

1. Suppose that the Federal Reserve conducts an open market operation in which it buys $100 in US government bonds from a private saver.

    a. Consider, first, an economy without banks. In this economy, by how much, in dollar terms, does the total money supply increase as a result of this open market operation?
    b. Consider, next, an economy with banks that engage in 100% reserve banking and in which households and non-bank businesses always deposit all the funds they receive and therefore never hold any currency. In this economy, by how much, in dollar terms, does the total money supply increase as a result of this open market operation?
    c. Finally, continue to consider an economy with banks that engage in 100% reserve banking, but assume, instead, that households and non-bank businesses deposit only half of the funds they receive and hold the rest as currency. Is the increase in the money supply as a result of this open market operation in this case larger than, smaller than, or the same as the increase in the money supply from part (b) above, where households and non-bank businesses hold no currency?

2. Suppose again that the Federal Reserve conducts an open market operation in which it buys $100 in US government bonds from a private saver, but assume now that banks engage in fractional reserve banking.

    a. Assume, in particular, that all banks choose a 10% reserve ratio and that all households and non-bank businesses always deposit all the funds they receive and therefore never hold any currency. In this economy, by how much, in dollar terms, does the total money supply increase as a result of this open market operation?
    b. Continue to assume that all banks choose a 10% reserve ratio, but assume, instead, that households and non-bank businesses deposit only half of the funds they receive and hold the rest as currency. Is the increase in the money supply as a result of this open market operation in this case larger than, smaller than, or the same as the increase in the money supply from part (a) above, where households and non-bank businesses hold no currency?
    c. Finally, go back to assuming that all households and non-bank businesses deposit all the funds that they receive and therefore hold no currency, but assume that while most banks choose a 10% reserve ratio, some banks choose a lower reserve ratio. Is the increase in the money supply as a result of this open market operation in this case larger than, smaller than, or the same as the increase in the money supply from part (a) above, where all banks choose a 10% reserve ratio?

3. Please indicate whether each of the following statements is true or false (circle one on the answer sheet):

    a. When a Federal Reserve note is held by a consumer or a nonbank business, it gets classified as currency in circulation and therefore is included in the M1 and M2 measures of the money supply.
    b. When a Federal Reserve note is held by a bank instead, it gets classified as bank reserves and is not included in the M1 and M2 measures of the money supply.
    c. In 2008, the Federal Reserve began paying interest on the funds that private banks hold as deposits at the Federal Reserve Banks.
    d. The discount rate is the interest rate that one private bank as a lender charges another private bank as a borrower for a very short-term loan of bank reserves.

4. Please answer each of the following questions, relating to the Fed's tools of monetary control:

    a. When the Federal Reserve conducts an open market operation in which it sells US government bonds, does it increase or decrease the money supply?
    b. When the Federal Reserve increases reserve requirements, does it increase or decrease the money supply?
    c. When the Federal Reserve decreases the discount rate, does it increase or decrease the money supply?

5. Suppose that lending opportunities improve, so that banks wish to make more loans to households and firms, and therefore wish to hold fewer dollars in reserves at any given value of the federal funds rate.

    a. If the Federal Reserve does not change the supply of reserves in response to this improvement in banks' lending opportunities, what will happen to the federal funds rate: will it rise, fall, or stay the same?
    b. If the Federal Reserve wants the federal funds rate to remain unchanged despite this improvement in banks' lending opportunities, what must it do: increase the supply of reserves, decrease the supply of reserves, or keep the supply of reserves unchanged?

6. Please indicate whether each of the following statements is true or false (circle one on the answer sheet):

    a. The quantity theory of money implies that in the United States, the Federal Reserve can choose whatever inflation rate it thinks is best and can then bring about that inflation rate by choosing the appropriate rate of money supply growth.
    b. The quantity theory of money is supported by evidence from historical episodes of hyperinflation in different countries around the world, where very high inflation has been accompanied by very high rates of money growth and where that very high inflation stopped when the rapid money supply growth stopped.
    c. The theory of long-run monetary neutrality says that changes in the money supply do not affect real variables in the long run.
    d. The term "inflation tax" refers to the revenue that the government raises through money creation instead of outright taxation.

7. Consider three banks – the First National Bank, the Second National Bank, and the Third National Bank – with balance sheets as shown below:

First National Bank

Assets	Liabilities
Reserves $10 Loans $90 Other Assets $10	Deposits $100 Shareholders' Equity $10

Second National Bank

Assets	Liabilities
Reserves $20 Loans $80 Other Assets $10	Deposits $100 Shareholders' Equity $10

Third National Bank

Assets	Liabilities
Reserves $10 Loans $90 Other Assets $10	Deposits $90 Shareholders' Equity $20

a. If the First National Bank experiences a $15 deposit outflow, is it illiquid, insolvent, or neither?
b. If the Second National Bank experiences a $15 deposit outflow, is it illiquid, insolvent, or neither?
c. If the Third National Bank experiences a $15 deposit outflow, it is illiquid, insolvent, or neither?
d. If some of the consumers and businesses who borrowed from the Second National Bank default on their loans, so that the Second National Bank's manager is forced to conclude that $15 in loans will never be repaid, is the Second National Bank illiquid, insolvent, or neither?
e. If some of the consumers and businesses who borrowed from the Third National Bank default on their loans, so that the Third National Bank's manager is forced to conclude that $15 in loans will never be repaid, is the Third National Bank illiquid, insolvent, or neither?

8. Consider a microeconomic supply and demand diagram for money, with the quantity of money increasing as you move to the right along the horizontal (x) axis and the goods price of money increasing as you move up the vertical (y) axis.

    a. When the dollar price of goods rises, people need more money to buy the same number of goods. This observation helps explain the slope of the demand curve for money in this diagram. Does it explain why the demand curve slopes up, or does it explain why the demand curve slopes down?
    b. In this diagram, if the Federal Reserve conducts an open market operation that works to increase the money supply, will the supply curve in the diagram shift to the left or will it shift to the right?
    c. According to the diagram, what happens to the goods price of money because of this increase in the money supply: does it rise or fall?
    d. According to the diagram, what happens to the dollar price of goods because of this increase in the money supply: does it rise or fall?

9. Consider an economy in which the velocity of money (V) equals 2 and real GDP (Y) equals 4.

    a. If the money supply (M) equals 2, what is the value of nominal GDP?
    b. If the money supply (M) equals 2, what is the value of the economy-wide price level (P)?
    c. If the money supply doubles while velocity and real GDP remain unchanged, what happens to nominal GDP: does it rise, fall, or stay the same?
    d. If the money supply doubles while velocity and real GDP remain unchanged, what happens to the economy-wide price level (P): does it rise, fall, or stay the same?