

## Macroeconomics – Homework 2

Due to 24.3.2015, at the beginning of the lecture

1. Three students have each saved \$ 1,000. Each has an investment opportunity in which he or she can invest up to \$ 2,000. Here are the rates of return on the students' investment projects:

Harry	5 percent
Ron	8 percent
Hermione	20 percent

- a. If borrowing and lending is prohibited, so each student uses only his or her saving to finance his or her own investment project, how much will each student have a year later when the project pays its return?
  - b. Now suppose their school opens up a market for loanable funds in which students can borrow and lend among themselves at an interest rate  $r$ . What would determine whether a student would choose to be a borrower or lender in this market?
  - c. Among these three students, what would be the quantity of loanable funds supplied and quantity demanded at interest rate of 7 percent? At 10 percent?
  - d. At what interest rate would the loanable funds market among these three students be in equilibrium? At this interest rate, which student(s) would borrow, and which student(s) would lend?
  - e. At the equilibrium interest rate, how much does each student have a year later after the investment projects pay their return and loans have been repaid? Compare your answers to those you gave in part (a). Who benefits from the existence of the loanable funds market – the borrowers or the lenders? Is anyone worse off?
2. Suppose GDP is \$ 8 trillion, taxes are \$ 1.5 trillion, private saving is \$ 0.5 trillion, and public saving is \$ 0.2 trillion. Assuming this economy is closed, calculate consumption, government purchases, national saving, and investment.
  3. Assume that the reserve requirement is 20 percent. Also assume that banks do not hold excess reserves and there is no cash held by the public. The Federal Reserve decides that it wants to expand the money supply by \$ 40 million dollars.
    - a. If the Fed is using open-market operations, will it buy or sell bonds?
    - b. What quantity of bonds does the Fed need to buy or sell to accomplish the goal? Explain your reasoning.
  4. Suppose that this year's money supply is \$ 500 billion, nominal GDP is \$ 10 trillion, and real GDP is \$ 5 trillion.
    - a. What is the price level? What is the velocity of money?
    - b. Suppose that velocity is constant and the economy's output of goods and services rises by 5 percent each year. What will happen to nominal GDP and the price level next year if the Fed keeps the money supply constant?
    - c. What money supply should the Fed set next year if it wants to keep the price level stable?
    - d. What money supply should the Fed set next year if it wants inflation of 10 percent?