

Practice Set 9

Banking & The Monetary System

This set contains problems for your own practice. It is highly recommended to work on the problems on your own. Do not just read the provided solutions. Instead, try to solve the problems and use the solutions only when you cannot continue on your own. Reading problems that someone else has solved has the same value for your preparation like watching someone else running a marathon on TV and then expecting to be able to run it, too. If you have questions on this set, please ask your section's teaching assistant.

- The Central Bank sets the reserve ratio (RR) at 20% and a commercial bank receives a deposit of \$1,000.
 - How much money will be created from the \$1,000 deposit if the commercial bank can reloan it 5 times (assuming that each time the money from the loan will end up being deposited to the same bank)? Include the initial \$1,000 in your answer.
 - How much is the total money that can be created from the \$1,000 deposit, if the bank can reloan it indefinitely? Include the initial \$1,000 in your answer.
 - If the CB reduces the RR to 10%, will the money created from the initial deposit go up or down?
 - How much money can be created by the \$1,000 deposit, if the CB requires the commercial banks to reserve 100% of the deposits.
 - How much money can be created by the \$1,000 deposit, if the CB does not require the commercial banks to reserve deposits.
- The Monetary Authority of Singapore (MAS, the Central Bank of Singapore) owns a large amount of Government's securities. Firms and households in Singapore also own such securities as a form of saving.
 - If MAS offers to buy more of these securities from firms and households, how will this action affect the money supply of Singaporean Dollar?
 - If MAS offers to sell some of its securities to firms and households, how will this action affect the money supply of Singaporean Dollar?
 - How can MAS convince firms and households to sell their securities (as in subtask b) or to buy more securities from MAS (as in subtask b)?
- A commercial bank pays 1% interest rate per year to its depositors. The RR is 0.5 and the bank can loan out the rest at a 3% rate per year. The bank does not have ample reserves and when it cannot close its daily position meeting the reserve requirements, it must borrow from the central bank at the discount rate.
 - How much profit will the bank make per year if it has deposits of \$1,000 and the discount rate is 15%?
 - What will happen if the CB sets the discount rate to 1%?
- A \$1,000-bond requires \$30 commission for selling it. You currently have \$2,000 in cash in order to make a payment of \$1,000 to someone in 1 month from now and another payment of \$1,000 to someone else in 2 months from now.
 - How much will you hold in cash now if the bond yields 4% per month?
 - How much will you hold in cash now if the bond yields 2% per month?
 - How much will you hold in cash now if the bond yields 1% per month?
- A perpetual bond with face value of \$1,000 was issued two years ago and pays a yearly coupon of \$40. Perpetual bonds never mature. The only way to cash them is to sell them in the open market at their current price. In some cases, the issuer may offer to buy the bond in order to terminate the loan.
 - What is the interest rate for this bond?

- (b) What would happen to this bond if the interest rate of newer bonds is 5%?
 - (c) What would happen to this bond if the interest rate of newly issued bonds was 2%?
6. Consider the country of Cornovia, which produces only corn and nothing else. This year, Cornovia's real GDP was 1,000 kg of corn. Cornovia's Central Bank issues a fiat money supply of 500 cornals (the currency of Cornovia).
- (a) If the price of 1 kg of corn is 10 cornals, for how many transactions per year on average is a cornal used? Cornovia's Central Bank prints another 50 cornals and gives it to the government for spending it to buy corn and trade it with another country for vaccines against cornvid-19.
 - (b) If the number of average transactions for each cornal remains constant, what will happen to the price of corn?
 - (c) How much purchasing power will a Cornovian lose if he holds 20 cornals?
 - (d) How much purchasing power will all Cornovians who held cornals lose in total?
 - (e) How much purchasing power will a Cornovian lose if she used all her 20 cornals of cash holdings to buy 2 kg of corn just before the central bank prints the extra 50 cornals?