

Week 10 Recitation

This week's recitation is the last recitation before Exam 2, so we will be reviewing the material we learned so far. First, we are going to practice some problems together, related with this week's material. After that, we will play with Kahoot! to see how sharp you are with the concepts you'll need to know for your second midterm.

- 1) The table below represents the initial T-account for NoCo Bank, which has \$480 million in assets—divided in reserves, bonds and loans—and \$450 million in liabilities—all in the form of deposits—, which makes the bank's net worth equal to \$30 million.

Assets		Liabilities + Net worth	
Reserves	\$20 million	Deposits	\$450 million
Bonds	\$160 million		
Loans	\$300 million	Net worth	\$30 million

- a) Suppose that the Central Bank decides to do an open market operation, so they purchase \$10 million in bonds from NoCo Bank. How will that operation impact the bank's assets, liabilities and net worth? How does the new T-account look like?

Assets		Liabilities + Net worth	
Reserves	$\\$20 + \\$10 = \\$30$ million	Deposits	\$450 million
Bonds	$\\$160 - \\$10 = \\$150$ million		
Loans	\$300 million	Net worth	\$30 million

NoCo Bank will now have \$150 million in bonds and \$30 million in reserves, but the sum of assets and the liabilities are still \$480 million and \$450 million (therefore, the net worth is also the same and equal to \$30 million).

- b) Now, assume that NoCo Bank does not want to hold those \$10 million as reserves, so they decide to lend that money for their clients. How will that operation impact the bank's assets, liabilities and net worth? How does the new T-account look like?

Assets		Liabilities + Net worth	
Reserves	$\\$30 - \\$10 = \\$20$ million	Deposits	\$450 million
Bonds	\$150 million		
Loans	$\\$300 + \\$10 = \\$310$ million	Net worth	\$30 million

Again, the operation will change the composition of the assets of the bank, but the sum of assets and the sum of liabilities (and, therefore, the net worth) will remain unchanged.

- c) How does this open market operation change the money supply of the economy as a whole, assuming that all the new loans were stored under their mattresses by NoCo Bank's clients, instead of deposited in other banks?

When the central bank buys bonds, money is flowing from the central bank to the individual banks of the economy, which in turn flows to households and businesses. Therefore, it increases money supply. The assumption that all funds were stored under mattresses and not deposited in other banks makes the observed money multiplier process equal to one (as discussed in Recitation Week 9, if people could take the loans from NoCo Bank and deposit that money in other commercial banks, the actual impact on M1 would be much greater). Therefore, this monetary policy increases the money supply in the economy by \$10 million.

- d) Assuming that the price level is constant and equal to one, the velocity is also constant and equal to two, and the initial money supply was \$600 million, what's the impact of that monetary policy on Real GDP?

Basic quantity equation of money: $M \times V = P \times Y$

Before monetary policy: $Y = 600 \times 2 = \$1,200 \text{ million} = \1.2 billion

After monetary policy: $Y = 610 \times 2 = \$1,220 \text{ million} = \1.22 billion

$[(1.22 - 1.2) / 1.2] \times 100 = 1.7\%$

So the monetary policy increased Real GDP by 1.7%, or \$20 million (the \$10 million circulated through the economy twice)

Note this relies crucially on the assumption of constant fixed prices (i.e. the Keynesian view). If prices could change in response to the policy, might have smaller increase in Real GDP (or even no increase in Neoclassical (long-run) view).

Another way to solve the problem is to show that, since V and P are constant, a 1.7% increase in the money supply generates a 1.7% increase in Real GDP.

$$\% \Delta M + \% \Delta V = \% \Delta P + \% \Delta Y$$