

## Lecture 18: The Federal Reserve and the U.S. Monetary System

### I. OVERVIEW

- In the last lecture, we looked at monetary policy decisions in more detail. In particular, we looked at how the long-term perspective and the independence of the U.S. Federal Reserve System play a critical role in determining the appropriate monetary policy to follow.
- In today's class, we will take a closer look at the monetary system: we will look at what the nature of money really is, examine how the policy decisions of the Fed are implemented and also focus on the roles played by banks in the domestic financial system.
- In the next lecture, we will look at other components of the domestic financial system such as the bond market and the stock market and think about the roles they have to play in the economy.

### II. WHAT IS MONEY?

- Money can be anything that is widely accepted for conducting economic transactions, i.e. anything that eliminates the double coincidence of wants. Therefore the dollar bills in your wallet, gold, the stone money of Yap, cigarettes in WW II POW camps etc. are all considered to be forms of money.
- A good used as money, that also has an intrinsic value is known as commodity money: silver, gold, salt and cigarettes fall into this category.
- Money is generally assumed to serve three functions in an economy. Money provides a
  1. Store of value: butter or eggs would be a bad way to accumulate wealth! One of the primary advantages of metal coinage was the fact that they were long lasting with very limited wear and tear.
  2. Medium of exchange: eliminates double coincidence of wants. Money helps eliminate the need to barter.
  3. Method of account: easier to price goods and services in terms of a single unit. Although this seems to serve the same purpose as the medium of exchange there are times when the two differ.
    - One example is in countries with extremely high inflation: Chile had 2 currencies for a while, one of which was used as the unit of account and the other was used as the medium of exchange).
    - The other example is in the recent transition to EMU where prices were denominated in Euros even though most countries still had their existing currencies.
- Over time, we have moved away from commodity money to paper money. Paper money is easier to transport and were not subject to the vagaries of supply and demand of a particular commodity.
- Prior to the 20<sup>th</sup> century, paper money was by law linked to gold (the gold standard). Governments would specify a rate at which all paper money could be converted to gold.
- Increases in the stock of paper money could occur only with increases in government gold holdings. During the Civil War and the World Wars, more paper money was issued than could be backed by existing holdings of gold and the world has gradually moved away towards having currencies that are no longer commoditized.

### III. MODERN DEFINITION OF MONEY

- The definition of money is a fluid one, changing with innovations to the financial system. Typically economists refer to currency + bank deposits as money. In this section we will look at some definitions of money that pick and choose from the plethora of different bank accounts available to the public.
- The narrowest categorization of money is M1: categorized as money, currency (coins and dollar bills) issued by the Federal Reserve, traveler's checks and checking account balances held in banks by the public and by firms.
- The other useful measure of money that is often used is M2: which basically consists of M1 + savings deposits, time deposits (like CD's which can not be accessed for a specific period of time) and other deposits where check writing is limited.

### IV. WHO CONTROLS THE MONEY SUPPLY IN THE UNITED STATES?

- Up to this point we have identified the Fed as the entity that sets monetary policy in the economy; we have couched the policy decisions of the Fed in terms of changes in interest rates in response to movements in inflation. Most of the articles in the popular press that deal with the Fed also present the Fed as deciding to change interest rates in whatever direction it deems most appropriate given the state of the economy.
- In reality, the Fed really controls the money supply in the economy. When it wants to change interest rates, it does so by changing the supply of money in order to bring about the desired changes to the interest rate.
- The primary entity within the Fed responsible for changing monetary policy is known as the Federal Open Market Committee (FOMC). The FOMC consists of the 7 members of the Board of Governors, the President of the New York Fed, and 4 other members chosen from the chairs of the regional Federal Reserve banks.
- The FOMC meets about 6 times a year and these meetings are among the most eagerly awaited events of the year: many people on Wall Street can make or lose millions of dollars depending on the decisions of the Fed and they need to keep a close eye and try to predict what the policy actions of the Fed are likely to be.

### V. HOW DOES THE FED AFFECT THE MONEY SUPPLY?

- The Fed chooses to change the money supply using what are called Open Market Operations: decisions to buy or sell government bonds. If the Fed wants to increase the money supply it will print up some currency and use the currency to buy government securities.
- If the Fed wants to decrease the money supply it will sell government securities from its existing collection in exchange for cash and pull that money out of circulation from the economy
- The Fed performs other tasks for the economy as well. It acts as a bank for banks: all banks are required to keep a certain fraction of their customer's deposits at the Federal Reserve. This fraction is known as the required reserve ratio.
- So another way that the Fed can increase the money supply is by reducing the required reserve ratio: this will require banks to keep fewer currency at the Fed and allow them to make more loans and increase the amount of money circulating in the economy.

- Finally, banks are allowed to borrow from the Fed if they need money for some reason, such as an unexpected increase in customer withdrawals. The rate at which the Fed lends money to banks is known as the discount rate. Lowering the discount rate is the third way the Fed can increase the money supply because this can make it easier for banks to borrow money from the Fed and make loans or to repay depositors.

## VI. HOW DO CHANGES IN THE MONEY SUPPLY AFFECT INTEREST RATES?

- So the Fed can change the money supply in three ways: open market operations, changes in the reserve ratio and changes in the discount rate. Of the three, open market operations are the most common but regardless, all three policies change the supply of money in the economy.
- How do changes in the supply of money affect interest rates? The interest rate that newspapers often refer to when talking about Fed policy decisions is the federal funds rate: this is the interest rate that applies when banks lend money to each other for short periods of time.
- Interestingly, this is not an interest rate that is set by the Fed: it is determined by the demand and supply for currency between banks. You can think of the federal funds rate as the price that prevails in this market for inter-bank lending.
- However, the Fed can directly affect the federal funds rate through its decisions to increase the money supply. For example, if they increase the supply of money, banks will be less inclined to borrow from each other because the Fed is making more money available to them. The fall in demand on the federal funds market results in a fall in the federal funds rate.
- On the other hand, if the Fed reduces the money supply in the economy, this will make less money available to banks and require them to demand more from each other, which leads to an increase in the federal funds rate.
- So even though the Fed really controls the money supply, we can abstract away from it and instead think of the Fed's policy decisions in terms of its impact on the interest rate. Essentially we can abstract away from money and think of the Fed as controlling interest rates directly.

## VII. OTHER FUNCTIONS OF THE FED

- In addition to holding reserves for banks: act as a bank of banks, the Fed also agrees to serve as the lender of last resort for the banking system: i.e. it agrees to provide banks with enough currency in an emergency, such as a run on a bank.
  - What is a bank run? Since banks lend out most of their deposits in the form of loans, it may not necessarily have enough money to return their deposits to all the customers at once. If many customers pull out their money on a given day, the bank may run out of enough reserves to pay all the people their money back.
  - When some people are not getting paid, other people worry about whether they will have access to their deposits at the bank and rush to withdraw money. The bank is unable to give money to these new folk and the situation degenerates quickly into panic.
  - In such an extreme situation, the Fed will be willing to step in and give banks enough currency to meet the demands of its depositors. Currently, most U.S. bank accounts are insured up to \$100,000 which makes bank runs less likely to occur, but they are still a possibility
- The Fed also performs other tasks such as acting as a clearing house for checks: when you write a check on your Bank Boston to your phone company and they deposit it into their Citibank account, it is the Fed that debits Bank Boston's reserves at the Fed and credits Citibank's accounts.

## VIII. THE ROLE OF BANKS IN THE DOMESTIC FINANCIAL SYSTEM

- Banks serve a vital role as financial intermediaries in the economy. They take deposits from individuals and firms in the economy and lend them out in the form of mortgages, car loans, investment loans etc. By charging a higher interest rate for lending than for borrowing, banks make profits on these transactions.
- How much money can a bank lend out? On the one hand it does not want to keep too much money in its accounts at the Federal Reserve because these accounts earn no interest. On the other, they cannot keep too little money at the Fed because they need to meet the needs of customers making withdrawals.
- The Fed requires banks to hold a fraction of their deposits on reserve at the Fed. This fraction is called the Required Reserve Ratio. If the RR ratio is 10% then the bank is only allowed to lend out 90 cents of every dollar that is on deposit at the bank.
- The money that the bank chooses to hold at the Fed in excess of the Required Reserve ratio is sometimes known as Excess Reserves. How much excess reserves the bank chooses to hold is a function of how soon they expect money to be withdrawn from the accounts and how many loan opportunities they have available.
- Now suppose that the FOMC decides to expand the money supply. By buying bonds from the banks and increasing the cash that banks hold in reserve at the Fed, the Fed manages to release currency into the financial system. The bank that sold the bonds now has extra money in its reserves and will therefore loan the money out to interested individuals or firms.
- As a result, the banking sector helps to transform a relatively small open market operation into a much larger change in the amount of deposits in the economy, thus serving a vital role in the transmission process of monetary policy decisions to the overall economy.