

LECTURE 25: MONETARY POLICY

- I. The monetary multiplier
 - a. The fiscal multiplier exists because the spending of one person becomes the income of another person. As we've discussed, a similar thing happens with money creation.
 - b. When banks lend money, something similar happens. Some (not all due to required reserves) of the money you save in Bank A goes to someone else as a loan. They put that loan in Bank B to use while they spend it.
 - c. Bank B uses a portion of this money to lend out to someone else who puts it in Bank C, and so on and so on.
 - d. Like the fiscal multiplier, the *monetary multiplier* describes the how much the money supply expands with each dollar increase in reserves. It equals $1 / \text{reserve ratio}$.
 - e. If the reserve ratio is 5% (0.05) and there's an increase of \$2,000 in reserves, the money supply increases by \$40,000.
- II. What is a central bank?
 - a. A state-backed bank responsible for implementing monetary policy. (Engaging in actions that alter the interest rate, exchange rate, how private banks are run, etc.)
 - b. "Bank" in this case is a little deceiving; a central bank isn't trying to make loans or earn a profit. It is more of an authority than a bank. But the terminology "central bank" is the norm so we will use it here.
 - c. Because most countries use a fiat currency, the bank must print new money—the government's the only one that can supply it.
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- IV. The Federal Reserve System (the "Fed")
 - a. This is a network of the U.S.'s central bank, managed by the Board of Governors.

- i. There are twelve Federal Reserve Banks in the U.S. spread throughout the country. Each Bank is in charge of a District.¹
 - ii. The Board makes policy decisions which determine the monetary control of the United States. When the government increases the money supply, the Board made the decision.
 - iii. Each board member is elected to a fourteen-year term. This lengthy term to help insulate the Board from political pressures.
 - iv. The chair of the Board of Governors is Jerome Powell.²
 - b. The Fed has a dual mandate: keep prices stable and keep unemployment low.
 - i. Keeping prices stable typically means fighting inflation. The Fed is concerned about deflation as well, but historically the major concern is inflation.
 - ii. The Fed also tries to keep unemployment low. Money is incredibly powerful in how it affects the performance of the economy, and, by extension, the level of employment.
- V. Abundant reserves monetary policy
 - a. Starting during the 2007-2009 financial crisis, the Fed started using a new framework for implementing monetary policy, moving from “limited reserves” to “abundant reserves.” By the early 2020s, the abundant reserves framework is now how the Fed implements monetary policy.
 - b. Before we dive into it, remember what the Fed is trying to do. Monetary policy works by adding money to or removing money from the economy.
 - i. Less money means higher interest rates, shifting AD to the left and mitigating inflation. This is called contractionary monetary policy.
 - ii. More money means lower interest rates, shifting AD to the right and mitigating unemployment. This is called expansionary monetary policy.
 - iii. The Fed tries to strike the right balance. Shift AD too far to the right and you get inflation. Shift it too little, and you get needless suffering.

¹ The banks are in Boston (1); New York (2); Philadelphia (3); Cleveland (4); Richmond (5); Atlanta (6); Chicago (7); St. Louis (8); Minneapolis (9); Dallas (10); Kansas City (11); and San Francisco (12).

² As of February 2018; before Powell was Janet Yellen; before her was Ben Bernanke, before him it was Alan Greenspan.

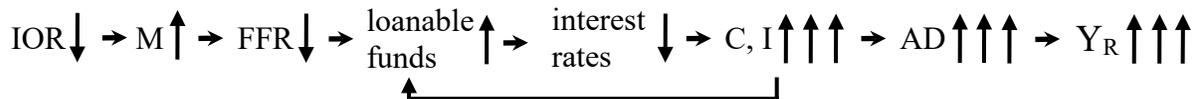
- c. The challenge is how to put money “in the economy.” The Fed focuses on banks, as banks are the ones doing the lending and inherently touch all parts of the economy.
- d. They *used to* (and to some extent they still do this) influence the money supply by buying and selling government bonds that banks held. This is called open market operations.
- e. *Now* the dominate framework for monetary policy involves the Fed paying interest on reserves that banks hold at the Fed. The interest the Fed pays these banks is called interest paid on reserves (IOR).
 - i. This is a short-term interest rate; banks get this money the next day.
 - ii. Critically, the Fed doesn’t try to loan this money out. It just sits there in (electronic) vaults.
 - iii. Contractionary: When the Fed increases IOR, banks put more money in the Fed, effectively pulling the money out of the system, increasing interest rates, and shifting AD left.
 - iv. Expansionary: When the Fed decreases IOR, banks take money out of the Fed, effectively putting money into the system, decreasing interest rates, and shifting AD right.

VI. Types of interest rates and the multiplier

- a. The Fed operates by altering the interest rate through the money supply. But there are multiple interest rates: rates banks borrow from the Fed, rates banks borrow from each other, rates banks grant savers, rates bank charge lenders, and so on.
- b. The *federal funds rate (FFR)*—the interest rate which banks lend from one another on overnight loans of reserves—is the key interest rate for monetary policy. It’s the interest rate which seeps into all sectors of economy and thus directly relates to economic growth.
 - i. This is a short-term interest rate—banks get interest payments the next day.
 - ii. The FFR is also a market rate, determined by supply and demand. The Fed does not “set” this interest rate, but it does influence it.
- c. In addition to the federal funds rate, we should be made aware of the *discount rate*—the rate at which banks borrow from the Federal Reserve.
 - i. This is a short-term interest rate—banks pay interest payments the next day.
 - ii. This rate effectively caps FFR because if a bank needed to borrow money for an overnight loan (perhaps to make sure it had enough deposits), it could always borrow from the Fed.

VII. What Actually Happens

- a. In sum, changes to the IOR and the discount rate change the FFR. Changing this short-term rate then changes long-term rates, including mortgage rates, student loan rates, business loan rates, etc. Changes in these rates change behavior, shifting AD.
- b. Here's how expansionary monetary policy works:
 - i. The Fed lowers IOR, resulting in banks taking money out of the Federal Reserve;
 - ii. Thus, the federal funds rate decreases because banks there's more money to cover withdrawals;
 - iii. With FFR so low, banks are more willing to lend out to others, causing longer-term rates to fall;
 - iv. Thus consumption and investment rise;
 1. These additional loans eventually get deposited in banks, which are then loaned out again; this is the multiplier in action.
 - v. Thus, more people borrow money (AD shifts right), and GDP increases.



- c. Like in fiscal policy, the greater the multiplier (this time the monetary multiplier), the greater the shift in AD.
 - i. The additional arrows I added starting at C, I represent the multiplier.
 - d. Note the Fed does *not* set interest rates. Interest rates are ultimately set by the market. The Fed merely influences interest rates.
 - e. The opposite occurs with contractionary monetary policy to fight inflation. The Fed increases IOR and the interest rate rises.
- ## VIII. Challenges
- a. Can't handle real shocks: just fiscal policy, because monetary policy shifts AD, it can't respond to recessions caused by real shocks.
 - b. Lags: the delay between problem and solution still exist here, but they are less severe.
 - i. Recognition lag—it takes time to identify the problem.
 - ii. Effectiveness lag—it takes time for investors to apply the new interest rates to investment and for that effect to be felt in real GDP.

- c. Demand for Cash: the actual monetary multiplier is lower than the theory
 - i. The equation for the monetary multiplier assumes everyone puts 100% of their money in the bank.
 - ii. In fact many people, when they take a loan or deposit a check, get at least some of it in cash. Thus that portion never enters the banking system and is thus not multiplied.
 - iii. This highlights the point made earlier: the Fed doesn't set interest rates and does not have direct control over the resulting price. It merely influences that price and is thus subject to other factors.
- d. Liquidity Trap: when monetary policy doesn't work anymore.
 - i. The Fed's expansionary monetary policy is based on lowering interest rates. But interest rates have a floor; you can't have a negative interest rate.
 - ii. When there's a recession and interest rates are already low, economists refer to this as a *liquidity trap*—when adding more liquidity has little-to-no positive effect on lending.
 - iii. The Fed can make more reserves available, but it can't make banks lend the money. Banks might simply want liquidity in their coffers to assuage potential problems in the future.