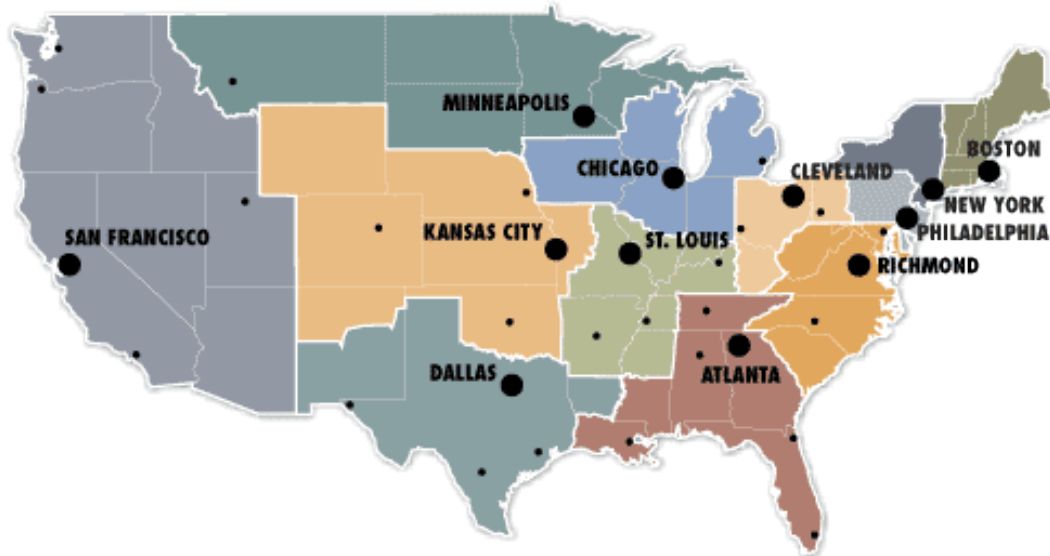


TOPIC 25: MONETARY POLICY

- I. Monetary policy and the monetary multiplier
 - a. Monetary policy is when the government shifts AD using the money supply/interest rates.
 - b. Recall that 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.
 - c. 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.
 - d. 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.
 - e. Like the fiscal multiplier, the *monetary multiplier* describes the how much the money supply expands with each dollar increase in reserves. It equals $1 / \text{reserve ratio}$.
 - f. 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, the 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 all countries use a fiat currency, the bank must print new money—the government's the only one that can supply it.
 - i. Some countries, like Nepal and Panama, use another country's currency (the Indian rupee and the U.S. dollar, respectively). Such countries still have a central bank to regulate commercial banks, but using another country's currency means you've lost the ability to conduct monetary policy.
- III. 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.



- 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. The chair of the Board of Governors is Jerome Powell.¹
 - 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.
 - c. While it has this dual mandate, the Fed is independent because there's strong political pressure to manipulate the economy through the money supply, even if it creates harm later on. Zimbabwe's historic hyperinflation, for example, was the result of a central bank beholden to politicians.
 - d. Federal Reserve independence is achieved in various ways.
 - i. Each board member is elected to a fourteen-year term. While the chair serves for a max of two four-year terms, they revert to board membership status when their term is up.
 - ii. The Federal Reserve is self-funded. It owns trillions of dollars of U.S. securities so when the Treasury Department pays bondholders, it pays the Fed. The Fed isn't part of the congressional

¹ As of February 2018; before Powell was Janet Yellen; before her was Ben Bernanke; and before him it was Alan Greenspan.

appropriations process and is thus shielded from congressional threats to cut funding.

- iii. The [Treasury-Fed Accord](#) (March 4, 1951) reestablished the Fed's independence in the wake of World War II (during which time the Fed had formally committed to follow Treasury's request to keep interest rates low). The agreement formally ended that connection and affirmed the Fed's independence.

IV. 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.
- 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 balances (IORB).
 - 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.

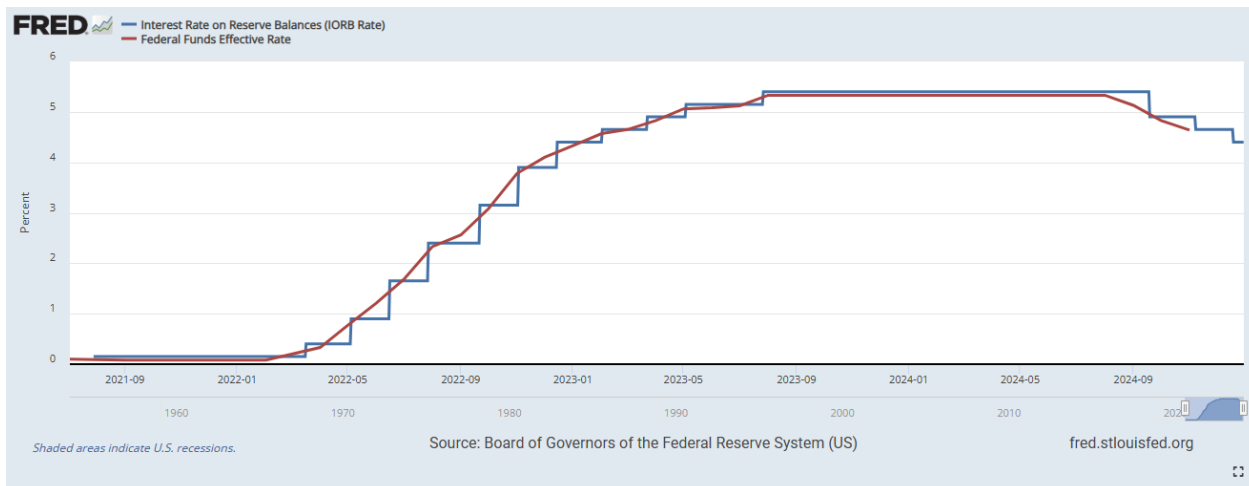
- iii. Contractionary: When the Fed increases IORB, banks put more money in the Fed, effectively pulling the money out of the system, increasing interest rates, and shifting AD left.
- iv. Expansionary: When the Fed decreases IORB, banks take money out of the Fed, effectively putting money into the system, decreasing interest rates, and shifting AD right.

V. Types of interest rates

- 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.
 - i. This is a short-term interest rate—banks get interest payments the next day.
 - ii. It's called the federal funds rate because the money banks are lending to each other exist in accounts at the Federal Reserve. They are “federal funds.”
 - iii. The FFR is 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. Like IORB, the Fed sets this interest rate. It is not a market rate.
 - iii. 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.

VI. What Actually Happens

- a. The Fed establishes a target range for FFR. As a market rate, FFR reflects not just actions of the Fed, but also other market factors like the appetite for risk.
- b. Eight times a year, the Fed meets to discuss monetary policy. It's at these meetings that the Fed adjusts the IORB and the FFR adjusts with it. (If FFR adjusts before IORB changes, it's because market actors are anticipating a change in IORB. Note that when IORB is stable, FFR stays below it.)



- i. Those steps you see in the blue line represent times the Fed met and decided to change IORB. When the news talks about the Fed changing interest rates, this is what they're talking about.
 - ii. Note that the blue line started in August 2021; the abundant reserves framework is a new approach.
 - iii. The Fed changes interest rates in quarter-point increments. A "basis point" is 0.01 percentage points so 25 basis points is 0.25, or a quarter of a point.
 - iv. "Effective" federal funds rate means that this is the average rate, adjusted for the size of the loan. It's calculated monthly.
- c. Changes to the IORB (as well as 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 right or left.
 - d. Note the Fed does *not* set interest rates. Interest rates are ultimately set by the market. The Fed merely influences interest rates.
 - e. Monetary policy, like fiscal policy, has its own challenges. Here we cover four of them: real shocks, lags, demand for cash, and liquidity trap.
- VII. Challenge: Real Shocks
- a. Because monetary policy shifts AD, it also can't respond to recessions caused by real shocks. Only a real shock can fix a real shock.
- VIII. Challenge: Lags
- a. The delay between problem and solution still exist here, but they are less severe because the Board's composed of a small number of economists who are largely insulated from political pressure.
 - i. Recognition lag—it still takes time to identify the problem.

- ii. Effectiveness lag—it still takes time for investors to apply the new interest rates to investment and for that effect to be felt in real GDP.

IX. Challenge: Demand for Cash

- a. 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, 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.
- b. You might remember from our conversation about the fiscal multiplier and how it's lower than the simple $1/MPS$ equation suggests. If the fiscal multiplier is also hard to estimate, why wasn't that mentioned as a challenge to fiscal policy?
 - i. I didn't include it because the process of creating a stimulus package is so wrought with politics that it's hard to imagine estimations on the fiscal multiplier carry any weight. In contrast, the Board of Governors is completely composed of economists.

X. Challenge: Liquidity Trap

- a. When expansionary 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. A *liquidity trap* is when adding more liquidity has no positive effect on lending because interest rates are already at or near zero.
 - iii. During the Great Recession (and in the Covid Recession), the Fed engaged in "quantitative easing" (QE) as a work around to the liquidity trap. QE involves buying assets from financial institutions, not just government bonds, freeing them from troubled investments and giving them yet more cash to lend out.
 - 1. QE makes the existence of a liquidity trap controversial among economists.
 - 2. But QE has its own problems—such as encouraging banks to take on risky investments knowing the Fed will save them if things go wrong and the Fed now having to shoulder the risk of these troubled assets.