Money, Banks, and the Federal Reserve

What is Money?

- Money – any asset that people are generally willing to accept in exchange for goods and services or for payment of debts.
- Is money simply just bills and coins? No
  - Many items have been used by different cultures, including gold, cattle, beads, shells, cigarettes, casino chips, deerskins, and more. Even large stones that are difficult to move have been used as money on the island of Yap, called fei.

Does an Economy Need Money?

- An economy does not need money to function, but it greatly facilitates trade, and therefore economic growth.
- Money solves the *double coincidence of wants* found in a barter economy.
  - For example, say you have some goats, but would like a guitar. It will take you a long time to find someone who will trade you or you will have to go through numerous trades before you finally get your guitar.
  - An economy that uses money allows you to take your goat to the market, sell it, and then use your funds to buy a guitar.

The Functions of Money

- Any asset that is used as money should fulfill the following four functions:
  - 1. Medium of Exchange
    - People use money to make payments for goods, services, and financial assets.
  - 2. Unit of Account
    - Prices are quoted in terms of money values.
  - 3. Store of Value
    - People can hold money for a time without losing much of its purchasing powers for future use in exchange
  - 4. Standard of Deferred Payment
    - People can buy goods and services today by promising to pay at a later date.

What can Serve as Money

- Any good currency will meet the following five criteria:
  - 1. It should be *accepted* by most people.
  - 2. It should be of *standardized quality* so that any two units are identical.
  - 3. It should be *durable* and not easily spoiled.
  - 4. It should be easily transported.
  - 5. It should be *divisible* since different goods are valued at different prices.

Commodity and Fiat Money

- Commodity Money – Money that is backed by a tangible commodity; gold, beads, shells, stones, cigarettes. Commodity money often suffers from Gresham's Law, particularly precious metals. Bad money drives out good money in an economy. Historically, ridges were placed on coins in order to prevent shaving and turning good money into "bad money".
- Fiat Money – Money by decree of law. "This Note is Legal Tender: For All Debts, Public and Private."

Do Firms Have to Accept Money?

- By law, fiat money has to be accepted for payment of debts and taxes.
- "There is…no Federal statue mandating that a private business, a person or an organization must accept currency or coins as payments for goods and/or services. For example, a bus line may prohibit payment of fares in pennies or dollar bills. In addition, movie theaters, convenience stores and gas stations may refuse to accept large denomination currency (usually notes above $20) as a matter of policy."
  - U.S. Treasury Department.

Measuring the Amount of Money in the Economy

- Money is typically measured by M1, M2, and M3 (discontinued in 2006), with M1 being the most liquid and M3 being the least liquid. Also, M1 is the most narrowest definition with M3 being a wider definition.

Measuring the Amount of Money in the Economy

- M1 - focuses on money's role as a medium of exchange. It includes only currency, checkable deposits, and traveler's checks. This is money used for the intention of buying and selling.
- M2 - is equal to M1 plus near-money assets such as savings accounts, money market mutual funds, and small time deposits (CD's under a $100,000). This includes money for buying and selling, but also money being used as a store of value.
- M3 – is equal to M2 plus large time deposits and other near monies.

Measuring the Amount of Money in the Economy

- M3 was discontinued by the Federal Reserve in 2006 since:
  - "M3 does not appear to convey any additional information about economic activity that is not already embodied in M2 and has not played a role in the monetary policy process for many years. Consequently, the Board judged that the costs of collecting the underlying data and publishing M3 outweigh the benefits."
- http://www.federalreserve.gov/releases/h6/discm3.htm

Measuring the Amount of Money in the Economy

- How big is M1?
  - As of September 2012, it is 2382.6 billion
    - 1068.5 billion in coins and currency
    - 3.9 billion in traveler's checks
    - 1310.3 billion in checking account deposits
- How big is M2?
  - As of September 2012, it is 10126.8 . It is M1 plus:
    - 6454.6 billion in savings deposits
    - 667.7 billion in small time deposits
    - 621.9 billion in money market funds
- http://www.federalreserve.gov/releases/h6/current/

Banking

- The word bank means “table” in Italian and “bench or counter” in German. Benches were used as exchange counters or tables during the Renaissance in Florence.
- A bank is an institution that serves as a financial intermediary, which is a 'middleman' between those who want to lend and those who want to borrow.
- Since the mid-1980’s the number of banks in the US has plummeted due to bank failures and bank mergers. The numbers of banks fell an astonishing 41% between 1986 and 2000. During this time, we have seen the rise of megabanks and since the Great Recession, the number of banks has fallen even more.

Banking

- Bank's Assets – Banks Reserves (cash in vault + deposits held by the Fed), loans to HH's and firms, securities (T-bills), and other.
- Bank's Liabilities – Customer deposits, federal funds (funds borrowed by other banks to meet reserve requirements), discount loans (funds borrowed by the Federal Reserve to meet reserve requirements), and other.

How Do Banks Create Money?

- Banks create money by making loans. Banks can make loans on money that they don't have. This is called *fractional banking*. For example, if everyone went to a bank and withdrew their money, only 3% - 10% would be available. 90% to 97% of the people's money would not be available. Hence, why we have the FDIC.

How Do Banks Create Money?

- An individual sells a $10,000 bond to the Fed and deposits the Fed's check into their bank account. Therefore, the monetary base increases by $10,000.
- Assuming that the reserve requirement is 10%, the bank holds $1,000 and loans out $9,000 for someone to buy a used car.
- Now that auto dealer takes their $9,000 that they received for the used car and deposits it into their bank. Their bank must hold onto $900 in reserves and then lends out $8,100 to someone else.
- Repeat ad infinitum.

What is the Money Multiplier?

- The upper-bound limit on the money multiplier is estimated by calculating the *deposit multiplier* which is 1 / RR;
  - where RR = reserve requirement.
  - Therefore, if the reserve requirement was 10%, the money multiplier is equal to 1 / 0.10 which equals 10.
    - Simply put, the money multiplier is the inverse of the reserve requirement.
  - With a money multiplier of 10, the money supply potentially increased by $100,000 from a single, originating transaction of $10,000.

Money Multiplier and Change in the Money Supply

- The change in the money supply equals the money multiplier times the change in the monetary base ($\Delta M^S = MM * \Delta MB$).
  - M^S – Money Supply
  - MM – Money Multiplier
  - MB – Monetary Base.

Money Multiplier, In Summary

- When banks gain reserves, they make loans, and the money supply increases.
- When banks lose reserves, they reduce loans, and the money supply decreases.
- Like the autonomous spending multiplier, the money multiplier can work in both directions.
  - However, contractionary policy is more effective, since expanding the money supply requires banks to lend. Banks cannot be forced to lend.

The Federal Reserve System

- In practice, withdrawals are not a problem for banks. Typically as much is withdrawn per day as much is deposited. If banks cannot meet their reserve requirements, then they typically borrow from other banks.
- When many depositors simultaneously withdraw their money, it is a bank run. Banks runs that lead to bank panics are problematic.
  - The Central Bank or "The Fed" is the *lender of the last resort*.

The Federal Reserve System

- The Fed was created in 1913 in partial response to the panic of the 1907. However, during the panic of 1930, the Fed was not willing to act as a lender of last resort. Some regional banks did while others did not.
  - Many economists believe that the Fed's unwillingness to act as the *lender of last resort* exacerbated the Great Depression.

The Functions of The Fed.

- The Fed conducts monetary policy, holds, bank deposits, and performs several other functions:
  - Function's as a banker's bank.
  - Functions as lender of last resort. It offers extension of credit to financial institutions experiencing financial difficulties which are unable to obtain necessary funds elsewhere.
  - Supervises banks.
  - Conducts monetary policy.
  - Issues currency printed by the U.S. Treasury, but the Fed puts it into circulation.
  - Clears Check.

The Structure of the Fed

- The Fed has a Board of Governors (BoG), which is responsible for the overall direction of the Fed and its policies. There are seven members on the BoGs with 14 year nonrenewable terms that are staggered to expire every two years. Members are appointed by the President and confirmed by the Senate
  - One BOG member is appointed chairperson who serves a four year renewable term. This may be the most powerful economic actor in the world. As of 2011, that person is Ben Bernanke who replaced Alan Greenspan in 2006.
  - As of today, Janet Yellen is the chairperson of the Fed.

The Structure of the Fed

- Even though governors are assigned to 14 year non-renewable terms, their actual terms are much shorter.
- Average terms for 67 Fed governors appointed before Greenspan: 7.2 years. Since then: 4.8 years. Last 10 governors: 4.4 years.
  - This allows the President to nominate the entire board, which the system was set up to protect against. It can create political gridlock among the parties when appointing governors.
  - Since the recession, we have only had a full BoG 20% of the time.
    - http://www.thefiscaltimes.com/Columns/2014/04/08/Who-s-Blame-Power-Shift-Fed

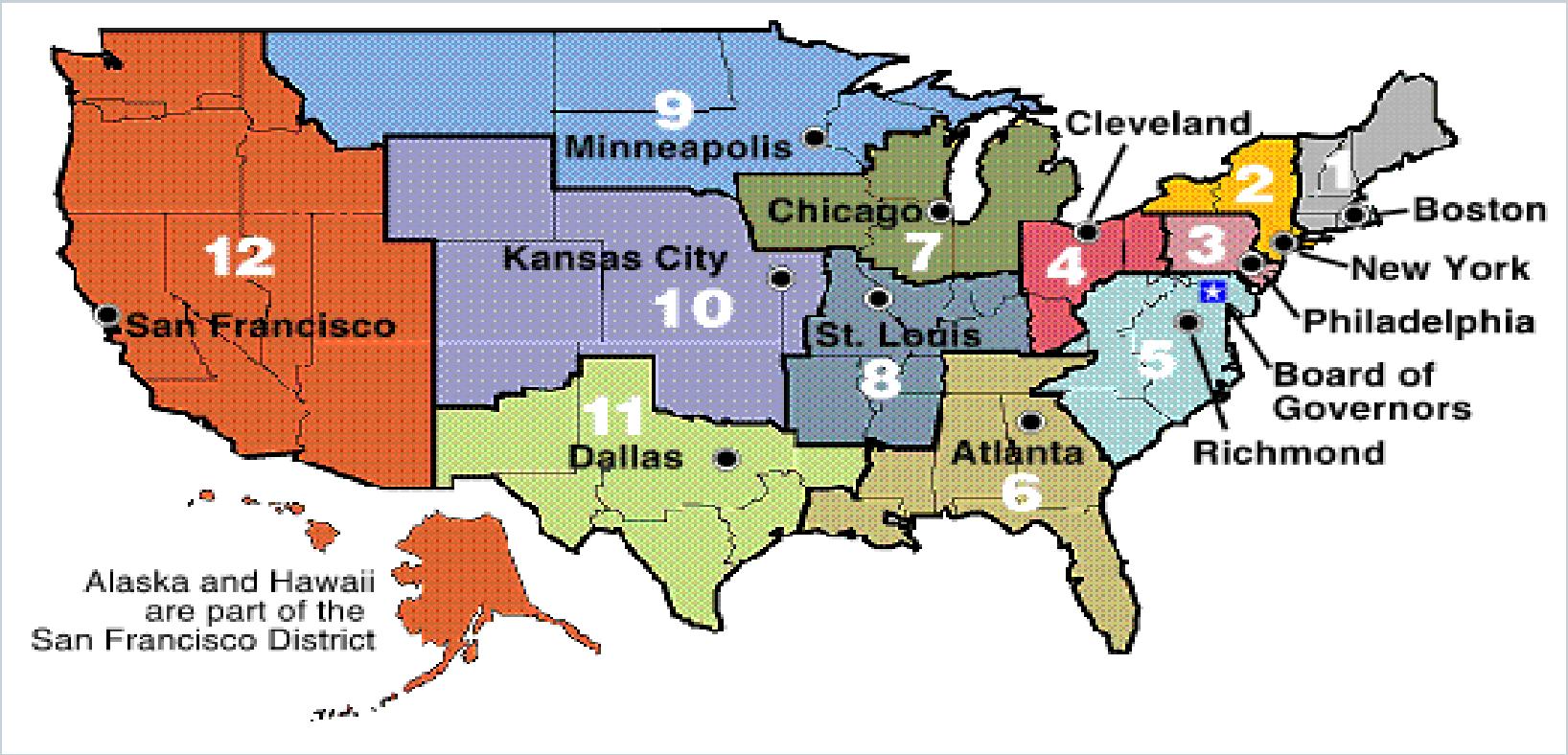
The Structure of the Fed

- Federal Open Market Committee (FOMC), which conducts monetary policy. It consists of twelve members (7 BoGs + 4 rotating district bank Presidents + the President of the NY District Bank). They meet every 4 – 6 weeks to discuss and conduct monetary policy.
  - The President of the NY Bank always gets a seat since NYC is arguably the financial capital of the world.
    - Before becoming U.S. Secretary of Treasury, Timothy Geithner was the President Federal Bank of New York.

The Structure of the Fed

- The Federal Reserve Regional Banks. There are twelve regional bank spread out through U.S. Iowa's regional bank is located in Chicago.

The Structure of the Fed



- Source: http://www.federalreserve.gov/otherfrb.htm

How The Fed Manages the Money Supply

- The Fed conducts monetary policy to manage the money supply and interest rates to pursue macroeconomic objectives.
- The tools that the Fed has at its disposal are:
  - Conducting Open Market Operations (OMO)
  - Changing the discount rate
  - Changing the reserve requirements
  - Quantitative Easing
  - Changing Expectations
  - Moral Suasion

Open Market Operations

- OMO – this is the ***primary*** tool, along with the discount policy, used by the Fed to conduct monetary policy. The FOMC meets roughly 8 times a year to buy and sell government securities, typically T-bills which mature in a few days to a year.
  - Selling securities will decrease bank reserves and therefore decrease the money supply.
    - Contractionary Monetary Policy.
  - Buying securities will increase bank reserves and therefore increase the money supply.
    - Expansionary Monetary Policy.

Changing the Discount Rate

- The discount rate is the Fed's other primary took and is the rate that the Fed charges member banks to borrow.
  - An increase in the discount rate will reduce the money supply since banks borrow less.
    - Contractionary Monetary Policy.
  - A decrease in the discount rate will increase the money supply since banks borrow more.
    - Expansionary Monetary Policy.

Changing the Reserve Requirement

- Increasing the RR will decrease the money multiplier and hence the decrease the supply of money.
  - Contractionary Monetary Policy.
- Decreasing the RR will increase the money multiplier and hence increase the supply of money.
  - Expansionary Monetary Policy.
- Notice that altering the reserve requirement affects both reserves and the money multiplier.
- This tool is hardly used. It easy to lower the reserve requirement, but difficult to raise it since banks with insufficient reserves would be forced to sell securities and call in loans. This would be a disruption to banks and their customers. That last time it was changed (lowered) was in 1992.

Moral Suasion

- Moral suasion is when Presidents of the Federal Reserve banks call upon member banks to cooperate to meet a financial objective.
  - This is hardly used anymore in the US.

Quantitative Easing (QE)

- QE is an unconventional practice to expand the money supply when short-term interest rates are extremely low. The Fed buys long term government securities and mortgage backed securities from banks with newly created electronic money. This increases the bank's reserves in order to try to get them to lend.

Changing Expectations

- Changing expectations can be a very powerful tool that is often left out of discussion when talking about monetary policy.
- When the chair of the Fed speaks about future goals and policies, then can have a significant impact on markets today.
  - E.g. On June 19, 2013, Bernanke announced a possible tapering off of QE later in the year. The result was the biggest jump in mortgage rates in 26 years of 53 points, even though actual Fed policy did not change.

Monetary Policy: Summary

Tighter Monetary Policy	Looser Monetary Policy
Open market sales of securities	Open market purchase of securities
Increase in the discount rate	Decrease in the discount rate
Increase in reserve requirement	Decrease in reserve requirement