Money, Monetary Policy, and the Fed

Money
- Money is an asset
- 4 main functions
  - Medium of Exchange
  - Store of Value
  - Standard of Value
  - Standard of Deferred Payment
- Kinds of money
  - Commodities
  - Paper
  - Deposits

US Monetary Systems
- US - “Fiat Money” – intrinsically worthless green pieces of paper that serves as money
- What backs our money – Reliance and faith of citizens that there is work to these pieces of paper
- This is not always the case – only since 1971 has the US had “fiat money” – pre-1971 the US had “convertible paper money” – money backed by a commodity (usually gold)
Measurements of Money

- How does the government measure the amount of money in the economy?
- M1 – closest measurement to what we have been calling money
  - Total Stock of currency, coins, checkable deposits and travelers checks
  - Does not include vault cash, interbank deposits, government accounts
  - 70% is checkable deposits
  - M1 is the most liquid form of money

- M2 – M1+ savings deposits, small time deposits, MMMFunds, Eurodollar

The Money Market

- In the money market real supply of, and demand for, money interact to determine the interest rate.
- The real money supply \( (m^r) \) is the nominal money supply \( (M^s) \) adjusted for the price level.
- \( M^s \) is determined by the money multiplier and controlled by the Fed
- The price level is taken as given (for now)

Real Money Demand

- The demand for real money balances \( (m^d) \) is positively related to income and inversely related to the interest rate.
- An increase in income raises the level of transactions
- An increase in the interest rate increases the opportunity cost of money
Changes in the Money Supply

- Increase in M\(^s\) shifts the supply curve to the right causing interest rates to fall.
- The Fed can cause this by:
  1) Buy (sell) securities in the open market
  2) Lower (raise) the discount rate
  3) Lower (raise) the reserve requirement
- These actions are expansionary (contractionary) uses of monetary policy.

Changes in the Price Level

- Increases in the price level shift the real money supply curve to the left, increasing the interest rate
- Inflation will tend to raise interest rates unless the Fed allows the money supply to increase

  - Real Interest Rate = (Nominal Interest Rate) – Inflation Rate

Changes in Real Income

- Increases in real income shift the demand for money to the right causing interest rates to rise.
- During an economic expansion, interest rates will tend to rise unless the Fed allows the money supply to increase.
Money Creation
1) Money (deposits) is created when banks make loans (or buy securities)
2) Banks must have excess reserves to make loans.
3) Excess Reserves are created when:
   • The Fed buys securities in the open market
   • Banks borrow from the Fed through the Discount Window
   • The Fed buys foreign exchange in the foreign exchange market
4) Lending/deposit creation “uses up” excess reserves. Each $ of new deposits uses up rr$ of excess reserves

Bank’s Balance Sheet
• Reserve Accounts – Deposits that banks have at the Fed, required to hold reserves as a percentage of their checkable deposits
• Reserve Requirement Ratio - % of checkable deposits that banks are required to hold
• Vault Cash – currency held by banks to meet depositor needs and reserve requirement
• Loans/Securities - earning assets for banks

Reserve Requirement
• Required Reserves (RR) = Reserve Requirement * Deposits
  \[ RR = rr \times D \]
• RR can be held as Vault Cash (VC) or in a reserve account. The amount held at a bank are its total reserves (TR).
  \[ TR = R + VC \]
• If the actual total reserves of a bank exceed its required reserves, it has excess reserves (ER)
  \[ ER = TR - RR \]
Money Creation II

- Suppose that a bank receives an initial deposit of $200. How much new money can be created with a reserve requirement of 10%?
- Simple money multiplier = (1/rr)
- The key to money creation is the “fractional reserve system” and the assumption that all of the ER are being loaned out.
- What happens if not all the ER is loaned out? What happens if rr is increased?

Monetary Policy

- The Federal Reserve can change the money supply in the economy through three methods:
  - Changes in rr
  - Changes in the discount rate
  - Open market operations in the securities markets
- Each of these serves to increase (decrease) the nominal money supply, which in turn affects interest rates in the country.
- Changes in interest rates affect investment by firms and savings/consumption by households, therefore affecting GDP.

Expansionary (Contractionary) Monetary Policy

- Decrease (Increase) rr – allows banks to hold less (more) of all deposits in reserve – increases ER
- Decrease (Increase) discount rate – cheaper (more expensive) for banks to borrow from Fed
  - Announcement Effect
  - Actual Effect
- Purchase (Sell) securities in open market – banks sell (buy) securities - additional (less) money that can be loaned out
Money and the Goods Market

- Monetary Policy affects $M^s$, which in turn affects interest rates
- Interest rates in turn affect the level of investment expenditures, a component of AD
- Changes in AD affect output and prices
- Expansionary MP – increase AD - raise output and price level
- Contractionary MP – decrease AD – lower output and price levels