A Crash Course on Money & Banking.

1. The Money Supply

- The amount of liquid funds that individuals and corporations have available for purchases. Liquid assets are those that can be costlessly and immediately exchanged for goods and services.
- There are various measures of the money supply, the distinctions having to do with how liquid the funds are.

M1: the sum of

often called "narrow money"

(i) Notes + coins in circulation — Jan 1998 $400 bn.

(ii) Private checking accounts with no penalties for, or restrictions on, immediate withdrawals. Travellers' checks — $900 bn.

M2: M1 plus

often called "near money"

(iii) Saving deposits, money market deposit accounts, small time deposits — $3,700 bn.

M3: M2 plus

(iv) Even more restrictive deposits.

- The line between the different monetary measures has been subjectively determined and is often a gray area.
- In our theories, we assume
  - money is liquid and earns zero interest.
  - non-money assets must be converted into money (with a transaction cost) before it can be used, but provides a positive interest rate.
- In reality, there are shades from money to non-money. So, one difficulty, as we will see, is working out what people are using as money.

2. Central Banking.

- Central banks differ in characteristics.

  a) objectives

  U.S. Fed has variously been concerned with objectives such as price stability, income growth, employment levels, wages.

  German Bundesbank is constitutionally concerned only with price stability.

b) Independence

- Some central banks are under the direct control of the administration of the day. So those who control fiscal policy also control the money supply.
- In other countries, fiscal policy and monetary policy authorities are separated.

3. Controlling the money supply.

- If the Fed wants to increase the money supply, it has to get more money in people's hands. The Fed needs an orderly mechanism for doing this.
- The orderly way is to exchange money for non-money assets. The Fed has three ways that it can do this:

  a) Open market transactions

  b) Reserve requirement policies

  c) Discount window transactions.

We will discuss each one in turn.

Open market transactions.

- Refers to the buying and selling of government debt instruments, such as Treasury bonds.
- Sale may be made to banks or the public at large, in exchange for money in checking deposits.

- To increase the money supply, Fed offers to buy a certain quantity of bonds from the public. It pays for these purchases by asking a private bank to open a deposit in the name of the seller.

- The Fed simultaneously credits the private bank with a deposit for the same amount in an account that the private bank has at the Fed. At the end of each business day, each private bank must have in its account at the Fed an amount at least as great as a proportion, θ, of all its customers' checking deposits. θ is the required reserve ratio.

- By crediting the private bank's reserve account, the bank can make more loans, giving it extra profits.

Example

- $\theta = 0.1$
- private individual sells \$1 million in bonds to the Fed.
- individual's checking account is credited with \$1 million
- bank's reserve account is credited with \$1 million.
- the extra million allows the bank to have extra customer deposits equal to $1/\theta$ = \$10 million.
- \$1 million is taken up with the bond seller.
- So the bank can make \$9 million in loans to its customers, and begin earning profits on that.

Note that by buying \$1 million in bonds, the Fed has increased the money supply by \$10 million. This money has been created out of thin air!

Extra realism.

- In reality, if a commercial bank has more customers with more deposits, it will also need to keep more cash on hand, because as a customer I want part of my money in notes & coins.
- If M^s increases, banks request the Fed to print money and deliver it to them. The Fed sends the cash + charges the bank's reserve accounts. The required reserves are not altered because cash in the bank's vault is counted as part of the required reserves.

Notation:

δ: the ratio of customer's cash holdings, C, to checking deposits, D.

B: the sum of cash in the economy and the commercial banks' vaults, plus the amounts in the reserve accounts. This is the monetary base, or high-powered money, and it can be controlled directly and precisely by the Fed.

By definition:

$$M^S = C + D$$

and

$$B = C + \theta D$$

θ the fraction of deposits held as reserve.

Banks can make more loans if the amount of checking deposits goes up, but they cannot make more loans simply because their customers are carrying more cash around in their pockets.

$$\frac{M^S}{B} = \frac{C+D}{C+\theta D} = \frac{\frac{C}{D}+1}{\frac{C}{D}+\theta} = \frac{1+\delta}{\theta+\delta}.$$

Thus

$$M^S = \left(\frac{1+\delta}{\theta+\delta}\right) B$$

B: can be directly controlled by Fed

$\frac{1+\delta}{\theta+\delta}$: can be directly controlled by Fed

$\frac{1+\delta}{\theta+\delta}$: is subject to uncertainty, because it depends on customer preferences.

So, while the Fed can control the monetary base exactly, it does not have total precise control over the money supply.

Reserve requirement ratio.

- Fed can alter Θ. If the Fed announces a reduction in Θ, M^S will rise, as banks make more loans.

Discount window transactions

- Fed can make loans directly to private banks. The interest rate is the discount rate. Banks borrow this money to increase their reserves and make more loans. By lowering the discount rate, private banks borrow more and M^S rises.

Summary.

To increase M^S:

- Fed buys bonds from public
- Discount rate is reduced
- Reserve requirement ratio is reduced.

To reduce M^S:

- Fed sells bonds to public.
- Discount rate is increased
- Reserve requirement ratio is increased.

- Fed does not use all three tools equally.
  - open market transactions used on a daily basis
  - discount rate changed at most a couple of times a year.
  - change in reserve requirement ratio is very rare.
    - this has such a big impact it is usually only used to signal the Fed's belief that there is something seriously wrong with the financial system.

Some clarifications

- The Treasury sells bonds to finance fiscal deficits. It is not trying to control the money supply: it cannot, because money obtained by the Treasury from selling bonds is still part of the money supply.
- Credit card loans are not part of this banking system. A credit card company is like any customers of the bank - it competes to get a loan. The credit card company then uses this loan to make its own loans. An increase in credit card debt, therefore, does not signal an increase in MS.

- The Fed does not have direct control over interest rates. When monetary policy changes are announced (nearly always on Tuesdays, after the Federal Open Market Committee has met to decide policy), however, it is an announced change in interest rates. What is going on?
    - The New York branch of the Fed does all its bond trading. When the FOMC (in Washington, DC) decides to change i, instructions are sent to the bond traders.
    - If the FOMC decides to lower interest rates, the traders are told to buy more bonds. This will bid up the price of bonds, lowering the effective interest they are earning.
    - The announcement has an immediate effect. Everyone knows bond prices are about to rise, so they won't sell at the old, lower price. Hence the price immediately jumps up, and i immediately falls.
    - In practice, there are subtle complexities in the bond market. The New York traders keep buying and selling every day to keep the interest rate as close as possible to the target. They get very close, but not exact. Bond prices fluctuate by small amounts all the time. Large jumps are caused by actual or expected changes in FOMC policy.