AP Dojo

# AP Macroeconomics
# Unit 4 - Cheat Sheet

# 4.1 - Financial Assets

**Liquidity** - The ease with which a financial asset can be accessed and converted into cash.

- Cash is the most liquid asset. It can most quickly and easily be converted into other assets.
- Other assets are not as liquid as cash. For example, if you have invested money into a certificate of deposit (CD), in order to maintain a higher interest rate, you have to keep your money in there for six (6) months.
- Assets like houses, cars, and fine art are even less liquid. It takes considerable time to turn them into cash

**Fed Funds Rate** - the interest rate at which banks lend to one another

**Discount Rate** - the rate at which the central bank lends to banks as a lender of last resort

- The fed funds rate will always be lower than the discount rate

# 4.2 - Nominal & Real Interest Rates

**Interest** - the cost of borrowing money

- Lenders earn a fee for lending their money; they earn interest
- Borrowers pay a fee for borrowing money; they pay interest

**Nominal Interest Rate** - interest rates that have not been adjusted for the impact of inflation (the rate that banks charge)

- If you earn 10% annual interest on a loan of $1000, that means that at the end of one year, your investment will be worth $1,100

**Real Interest Rate** - interest rates that have been adjusted to take into account to loss of value of money due to inflation (Real Interest Rate = Nominal Interest Rate - Inflation Rate)

- If you earn 10% annual interest on a loan of $1000 and the inflation rate is 5%, the real interest rate is 5%.
- You still have $1100 at the end of the year, but since goods became more expensive (inflation), your investment is only 5% more valuable than last year


## 4.3 - Definition, Measurement, and Functions of Money

| MEDIUM OF EXCHANGE | UNIT OF ACCOUNT | STORE OF VALUE |
|---|---|---|
| Money is used to buy goods and services without the complications of bartering | Money is used to measure the value of goods and services | Money is used to preserve or save purchasing power for future consumption |

**Liquidity:** how easily a form of money can be used for everyday purchases, or converted into cash

**Money Supply:** the amount of money in circulation in an economy at any given time

- The central bank of a given country takes action to influence the money supply

M2 includes all M1 measures of money, as well as the less liquid measures

| Money Supply | What is Included? | Liquidity Level | Function |
|---|---|---|---|
| $M_1$ | Coins, paper currency, and checkable deposits, including checking accounts and debit accounts | High Liquidity | Medium of Exchange |
| $M_2$ | Near money accounts below $100,000 including savings deposits, money market accounts, certificates of deposits, and mutual funds, bonds, and securities. | Medium Liquidity | Store of Value |
| $M_3$ | Near money accounts above $100,000 including savings deposits, money market accounts, certificates of deposits, and mutual funds, bonds, and securities. | Low Liquidity | Unit of Account |

## M1 , M2 AND THE ABILITY TO EARN INTEREST:

- M1 assets give the holder little to no opportunity to earn interest
- M2 assets give the holder considerable opportunity to earn interest

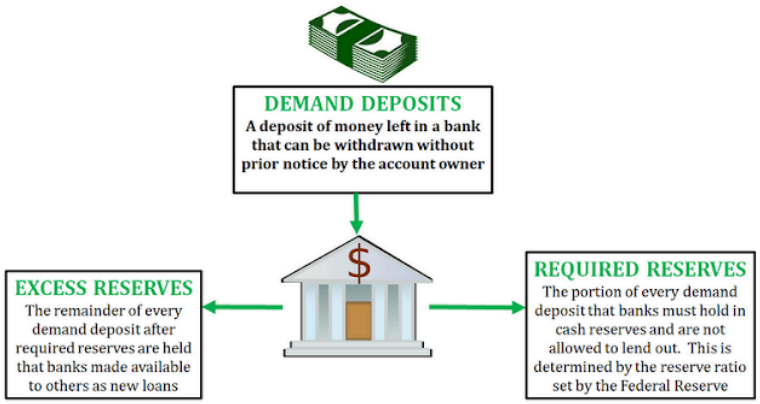
Monetary Base - refers to the money in circulation or in the bank reserves.

- The physical paper and coin currency that is being used by the economy AND bank deposits. This is NOT included in the money supply.

# 4.4 - Banking and Expansion of the Money Supply

**Fractional Reserve Banking** - the practice by which a bank accepts deposits and is required to hold only a fraction of its deposits in cash reserves

- the amount they are required to hold is set by the central bank (called the reserve ratio)




**<u>Money Multiplier</u>** - the amount of money that banks generate with each dollar of excess reserves

$$\text{Money Multiplier} = \frac{1}{\text{Reserve Ratio}}$$

Setting the reserve ratio higher or lower can impact the overall money supply in an economy

**<u>Bank Balance Sheets</u>** - a visual record of the fractional reserve banking within a bank. These ledgers show the assets and liabilities within a bank.

- They can show how a bank uses any deposits and available funds to create reserves and new loans for the purpose of lending.

| Assets (+) | Liabilities (-) |
|---|---|
| • Required Reserves<br>• Excess Reserves<br>• Loans<br>• Securities<br>• Physical assets | • Checkable Deposits<br>• Other Deposits<br>• Other liabilities<br>• Owner Equity |

**Question 1:**

The bank balance sheet above is for the First Superior Bank.

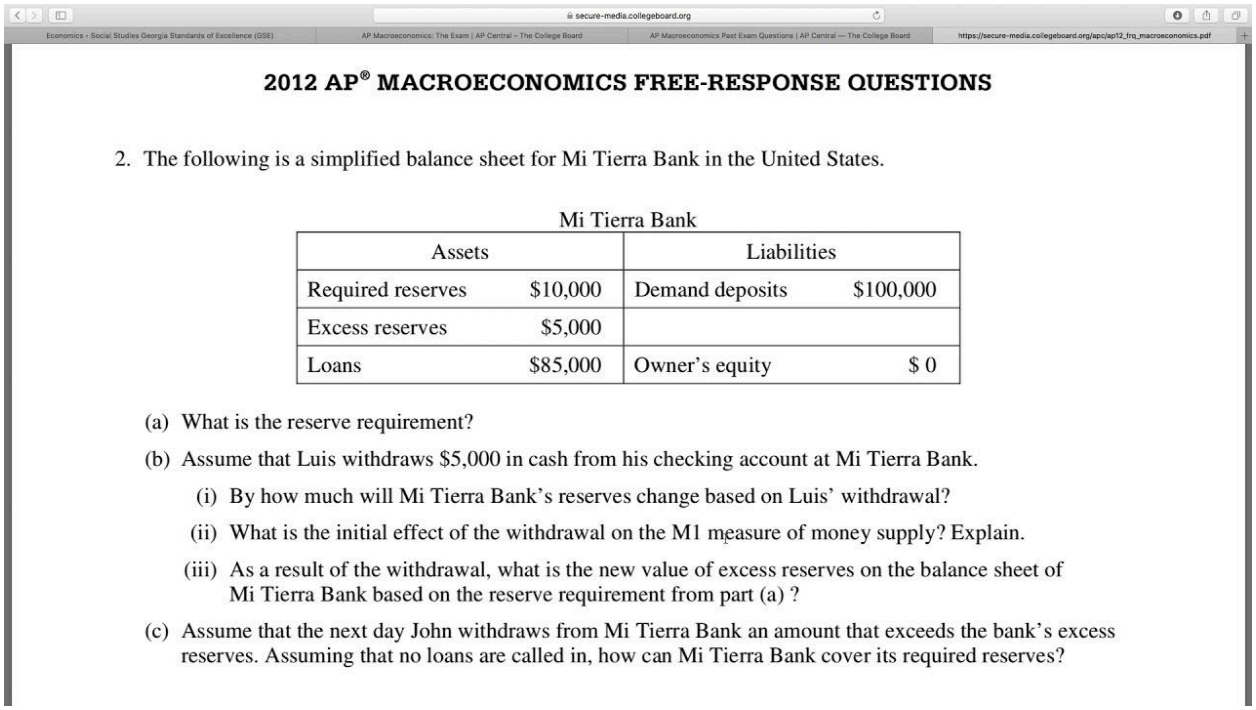
Assume that the required reserve ratio is 10 percent.

- - Assume Mr. Smith deposits $1,000 dollars. How does this change the required reserves for First Superior Bank?

**- How much new money can First Superior Bank loan out?**

**FIRST SUPERIOR BANK**

| ASSETS | | LIABILITIES | |
|---|---|---|---|
| RESERVES: | $200 | DEMAND DEPOSITS : | $2000 |
| LOANS: | $1800 | | |



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2. The following is a simplified balance sheet for Mi Tierra Bank in the United States.

Mi Tierra Bank

| Assets | | Liabilities | |
|---|---|---|---|
| Required reserves | $10,000 | Demand deposits | $100,000 |
| Excess reserves | $5,000 | | |
| Loans | $85,000 | Owner's equity | $ 0 |

(a) What is the reserve requirement?

(b) Assume that Luis withdraws $5,000 in cash from his checking account at Mi Tierra Bank.

(i) By how much will Mi Tierra Bank's reserves change based on Luis' withdrawal?

(ii) What is the initial effect of the withdrawal on the M1 measure of money supply? Explain.

(iii) As a result of the withdrawal, what is the new value of excess reserves on the balance sheet of Mi Tierra Bank based on the reserve requirement from part (a) ?

(c) Assume that the next day John withdraws from Mi Tierra Bank an amount that exceeds the bank's excess reserves. Assuming that no loans are called in, how can Mi Tierra Bank cover its required reserves?

# 4.5 - The Money Market

**Money Market Graph -** shows the supply and demand for cash money (M1)

- **Important**: The central bank (the FED) sets the SUPPLY of money and people determine the DEMAND for money

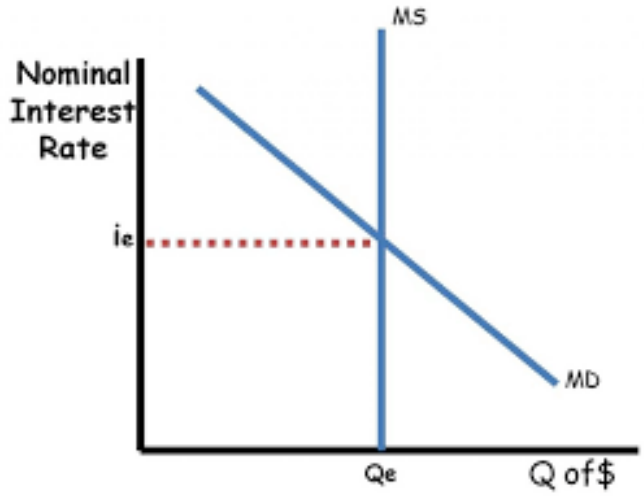
## DEMAND FOR MONEY

### Two Reasons People Demand Money:

1) Transaction Demand - you need money to buy things
    - As nominal GDP increases, consumers demand more money to buy goods and services.
2) Asset Demand - people might prefer having money (liquid asset) over another type of asset, like stocks or bonds

**IMPORTANT:** There is an inverse relationship between nominal interest rates and the quantity of money demanded

- Remember: think of INTEREST RATES as the PRICE of borrowing money
- Inverse relationship between PRICE and QD



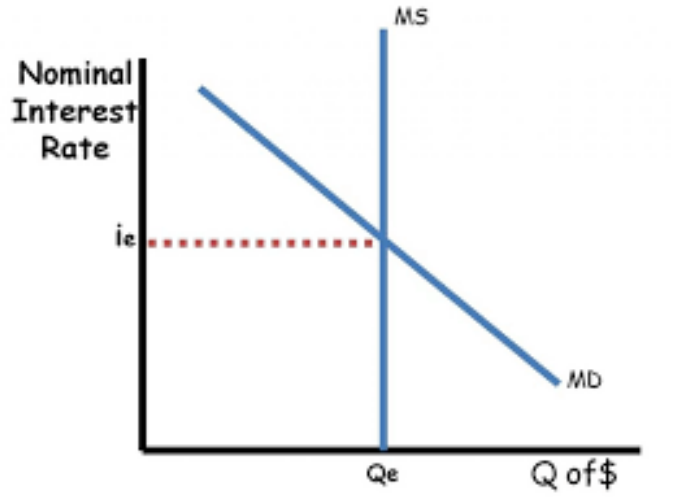

At higher interest rates, the opportunity cost of having cash is higher. You could lend your money - bond, CD, etc. - and earn interest for your savings.

At lower interest rates, the opportunity cost of having cash is lower.

**<u>Shifters of Money Demand:</u>**

1) Price Level
    a) If prices increase, demand for money will shift to the right (increase). People need more money to buy the same goods.
2) Incomes (Real GDP)
    a) As incomes increase, demand for money will shift to the right (increase). People tend to spend more and they will need more cash.
3) Technology
    a) As transaction costs decrease, meaning it costs less in time or money to get ahold of money, the demand for money increases

**SUPPLY OF MONEY**




Central banks can increase of decrease
the money supply to impact interest rates, and therefore the demand for money

Decreasing the money supply will raise interest
rates and decrease the demand for money

Increasing the money supply will lower interest rates and increase the demand for money

- This isn't the demand for borrowing money, just the demand for cash as opposed to other forms of money

# 4.6 - Monetary Policy

**Monetary Policy** - action taken by the central bank to guide the economy towards favorable outcomes

- monetary policy can be used to close a recessionary gap
- monetary policy can be used to close an inflationary gap

**Expansionary Monetary Policy** - action taken by the central bank with the goal of increasing the money supply in order to increase real GDP and decrease unemployment

- Increasing the money supply eventually leads to increased aggregate demand (which is how we close the recessionary gap)

**Contractionary Monetary Policy** - action taken by the central bank with the goal of decreasing the money supply in order to reducing inflation

- Decreasing the money supply eventually leads to decreased aggregate demand (which is how we close the inflationary gap)

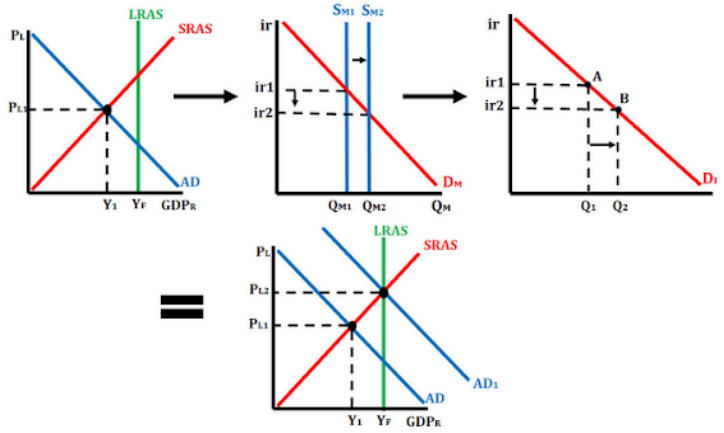
**3 Monetary Policy Tools:**

1) **Increase or Decrease Interest Rates**
   **Discount Rate:** the interest rate that commercial banks PAY when borrowing from the central bank
   **Federal Funds Rate:** the interest rate that commercial banks PAY when borrowing from other commercial banks
   a) Increase Discount Rate → borrowing becomes more expensive → banks borrow less from the Fed and lend less
   b) Decrease Discount Rate → borrowing become less expensive → banks borrow more from the Fed and lend more
2) **Increase or Decrease Required Reserve Ratio**
   a) Increased reserve requirement → banks can lend out less money → money supply decreases
   b) Decreased reserve requirement → banks can lend out more more → money supply increases
3) **Buy or Sell Government Bonds (Open Market Operations)**
   a) BUY bonds → money supply BIGGER
      i) The central bank buys bonds from investors. They take BONDS OUT of the market and put MONEY INTO the market
   b) SELL bonds → money supply SMALLER

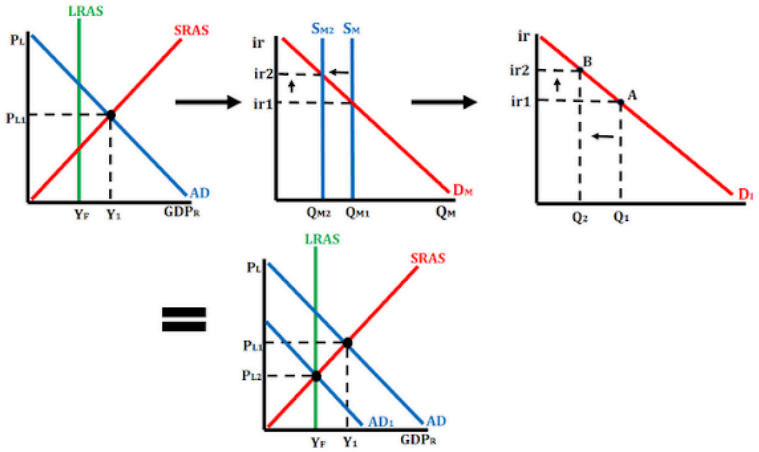
i) The central bank sells bonds to investors. They put BONDS INTO the market and take MONEY OUT of the money market

| MONETARY TOOL | INCREASE MONEY SUPPLY | DECREASE MONEY SUPPLY |
|---|---|---|
| DISCOUNT RATE | Decrease the Discount Rate | Raise the Discount Rate |
| RESERVE RATIO | Decrease the Reserve Ratio | Increase the Reserve Ratio |
| OPEN MARKET OPERATIONS | Buy Bonds | Sell Bonds |
| FEDERAL FUNDS RATE | Decrease the Federal Funds Rate | Increase the Federal Funds Rate |

## Recessionary Gap to Full Equilibrium via Expansionary Monetary Policy



**Inflationary Gap to Full Equilibrium via Contractionary Monetary Policy**

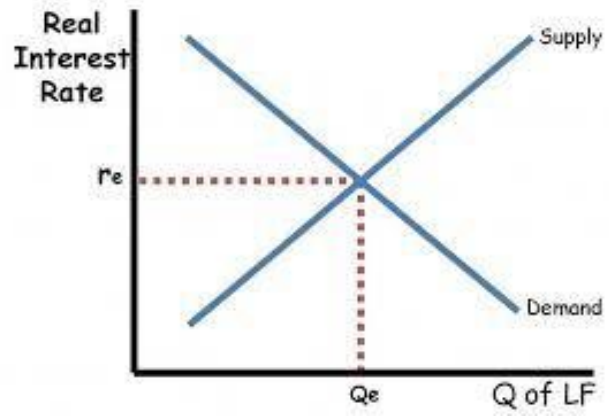



## 4.7 - Loanable Funds Market

**Loanable Money** - the amount of money that is available to be lent out

**Loanable Funds Market** - illustrates the interaction of borrowers and savers in the economy.

- Borrowers DEMAND loanable funds
- Savers SUPPLY loanable funds.
- The market is in equilibrium when the real interest rate adjusts to the point that the amount of borrowing equals the amount of saving.
- Real interest rate is essentially the PRICE of borrowing money (very similar to PRICE in a supply and demand graph)




**Shifters of Demand for Loanable Funds:**

1) Foreign demand for domestic currency
    a) If Japan wants to purchase US goods, they must use US dollars. An increase in demand for US goods could increase demand for US currency.
2) All borrowing (by business, households, and government)
3) Deficit spending (increased government borrowing)
4) Expectations for the future
    a) If businesses believe that the economy will do well in the future, they will likely increase levels of investment today. That will shift demand for LF to the right

# F.A.D.E.

**Shifters of Supply for Loanable Funds:**

1) Savings rate (propensity to save or savings habits)
    a) the percentage of income that consumers put into savings
2) Expectations for the Future
3) Levels of Capital Inflow
    a) If the US has higher interest rates than other countries, foreigners may prefer to save their money in US dollars to earn higher returns. That increase in savings shifts supply to the right.

4) Foreign purchases of domestic assets

# S.E.L.F.

2. Assume that an economy is in long-run equilibrium. Assume that consumers wish to hold less money because they use credit cards more frequently to purchase goods and services than cash.

   (a) Draw a correctly labeled graph of the money market and show the effect of the reduced holdings of money on the equilibrium nominal interest rate in the short run.

## PRACTICE TEST RESOURCES:

**https://apcentral.collegeboard.org/media/pdf/ap-macroeconomics-practice-exam-2012.pdf?course=ap-macroeconomics**

**MCQ Practice Questions:**

12
16
19
23
40
43
46

**FRQ Practice Questions:**

1
2

## VIDEO LINK RESOURCES:

### Jacob Clifford - Monetary Policy Graphs (Part 1):

https://www.youtube.com/watch?v=4bxrGKRChf0

**Jacob Clifford - Monetary Policy Graphs (Part 2):**
**Monetary Policy Graphs (2 of 2) - Macro 4.6**

Marcus withdrew $2,000 from his current account. Based on the bank balance sheet below what is the total amount now in required reserves