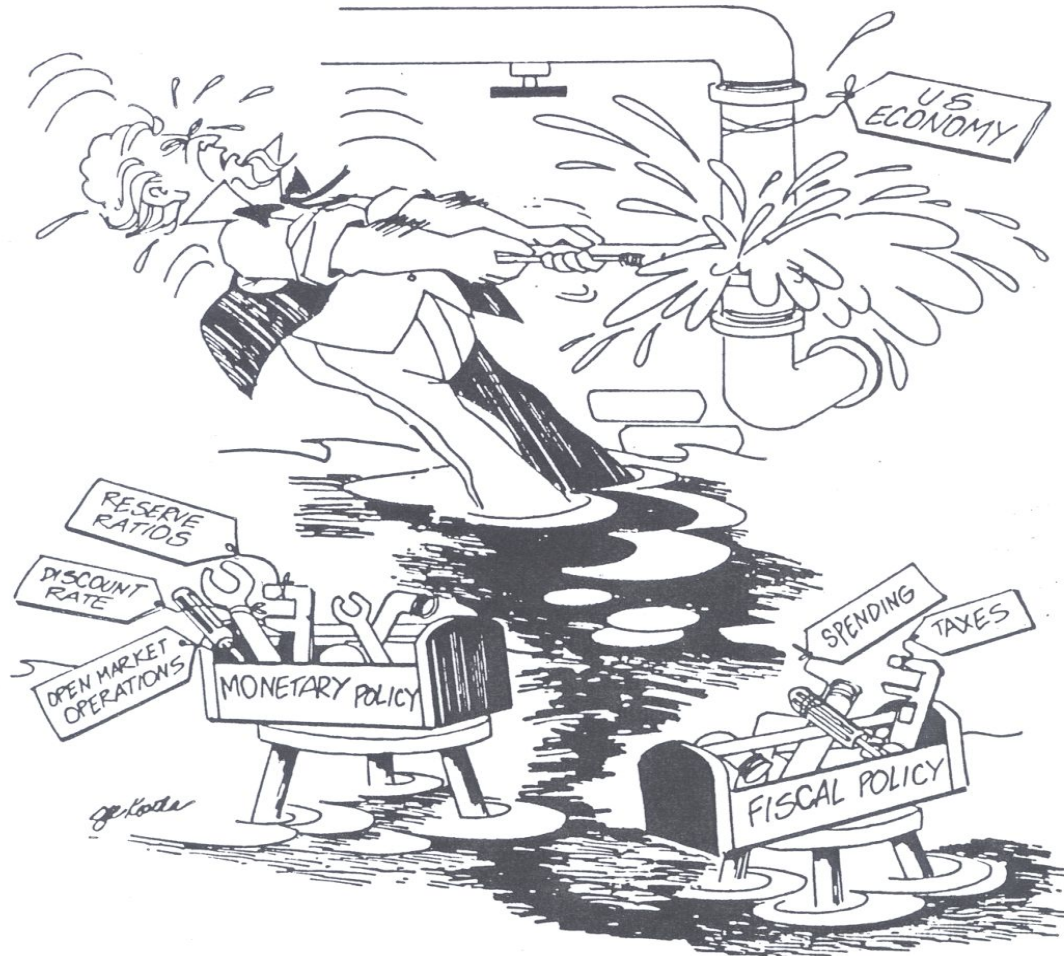


Tutorial Tuesday, February 18

We Can Learn Wednesday, February 19

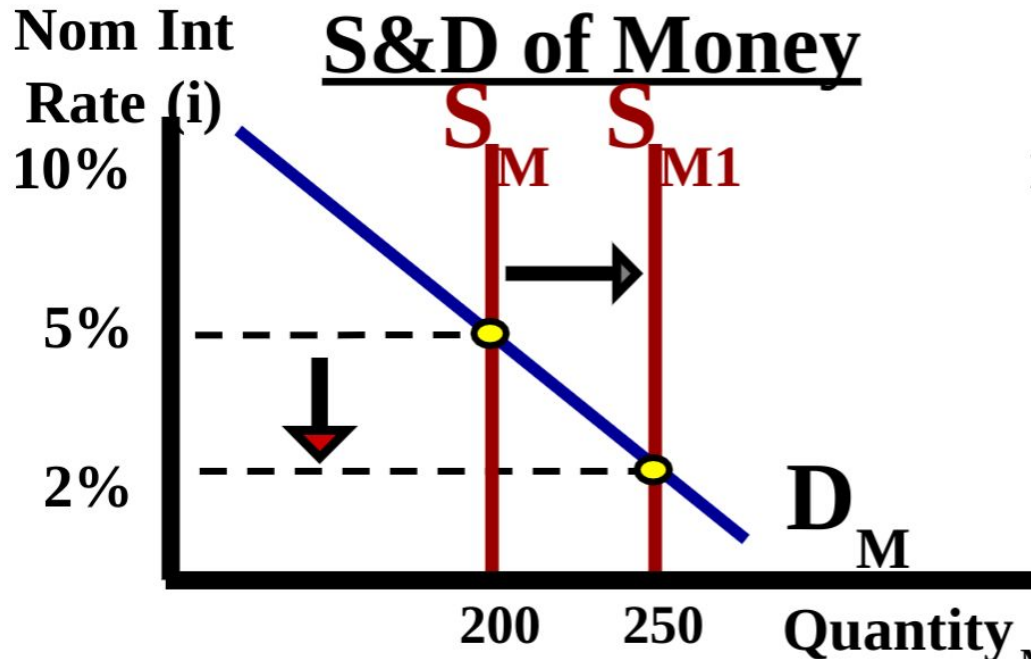
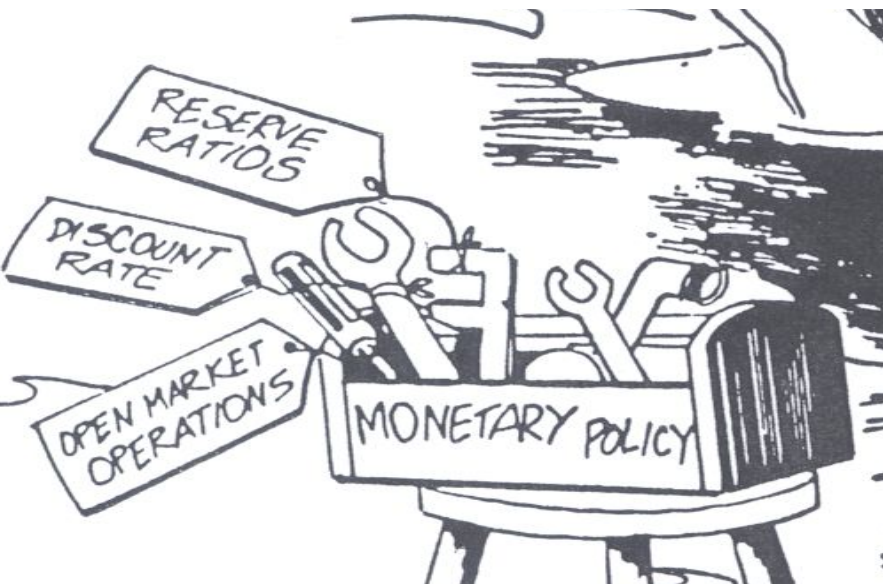
- **Tutorial this week: Tuesday, Wednesday and Thursday**
- **DUE NOW: HW 4-2**
- *Learning target: I can explain fractional reserve banking, the reserve requirement and the money multiplier.*
- Agenda: Warm up (4); Work period (notes + probs 60); Closing (6)
- Warm up--write question and complete correct answer in notes:
- Assume that the nominal interest rate is 10%. If the expected inflation rate is 5%, the real interest rate is
 - 0.5%
 - 2%
 - 5%
 - 10%
 - 15%

How the Government Stabilizes the Economy



How the Fed Stabilizes the Economy

These are the three Shifters of Money Supply



DR. RRROMO

Remember
DR.
RRROMO!!



Fractional Reserve Banking

When banks hold only a small portion of deposits to cover potential withdrawals and then loan the rest of the money out.

If we all went to the bank to withdraw money at the same time what would happen?

BANK RUN!



#1. The Reserve Requirement

The reserve requirement (reserve ratio) is the % of deposits that banks must hold in reserve (the % they can NOT loan out--called required reserves).

The Fed sets the Reserve Requirement!

Banks' Reserves

- Actual reserves = required reserves + excess reserves
 - Required reserves are set by Fed and are equal to checkable deposits \times RR
 - Excess reserves are loaned out and multiplied in the economy

The Money Multiplier

Example: Assume the reserve ratio in the US is 10%.

You deposit \$1000 in the bank.

The bank must hold \$100 (required reserves).

The bank lends \$900 out to Bob (excess reserves).

Bob spends \$900 which is eventually deposited in another bank.

Bob's bank must hold \$90. It loans out \$810 to Jill.

Jill spends \$810 which is eventually deposited in another bank.

SO FAR, the initial deposit of \$1000 caused the CREATION of another \$1710 (Bob's \$900 + Jill's \$810)

The Money Multiplier (aka Deposit expansion multiplier)

$$\text{Money Multiplier} = \frac{1}{\text{Reserve Requirement (ratio)}}$$

Amount of excess reserves from initial deposit X money multiplier = Total money “created”

Example:

- If the reserve ratio is .20 and the initial deposit is 4 million, what is the money supply increase?**

Assume that \$1,000 is deposited in the bank and that each bank loans out all of its excess reserves. Complete the table for each of the following required reserve ratios:

	Required Reserve Ratio		
	1%	5%	10%
Required reserves			
Excess reserves			
Deposit expansion multiplier			
Max increase in money supply			

Using The Reserve Requirement

1. If there is a recession, what should the Fed do to the reserve requirement? (Explain the steps.)

Decrease the Reserve Ratio

- 1. Banks hold less money and have more excess reserves.**
- 2. Banks create more money by loaning out excess.**
- 3. Money supply increases, interest rates fall, AD up.**

Using The Reserve Requirement

2. If there is inflation, what should the Fed do to the reserve requirement? (Explain the steps.)

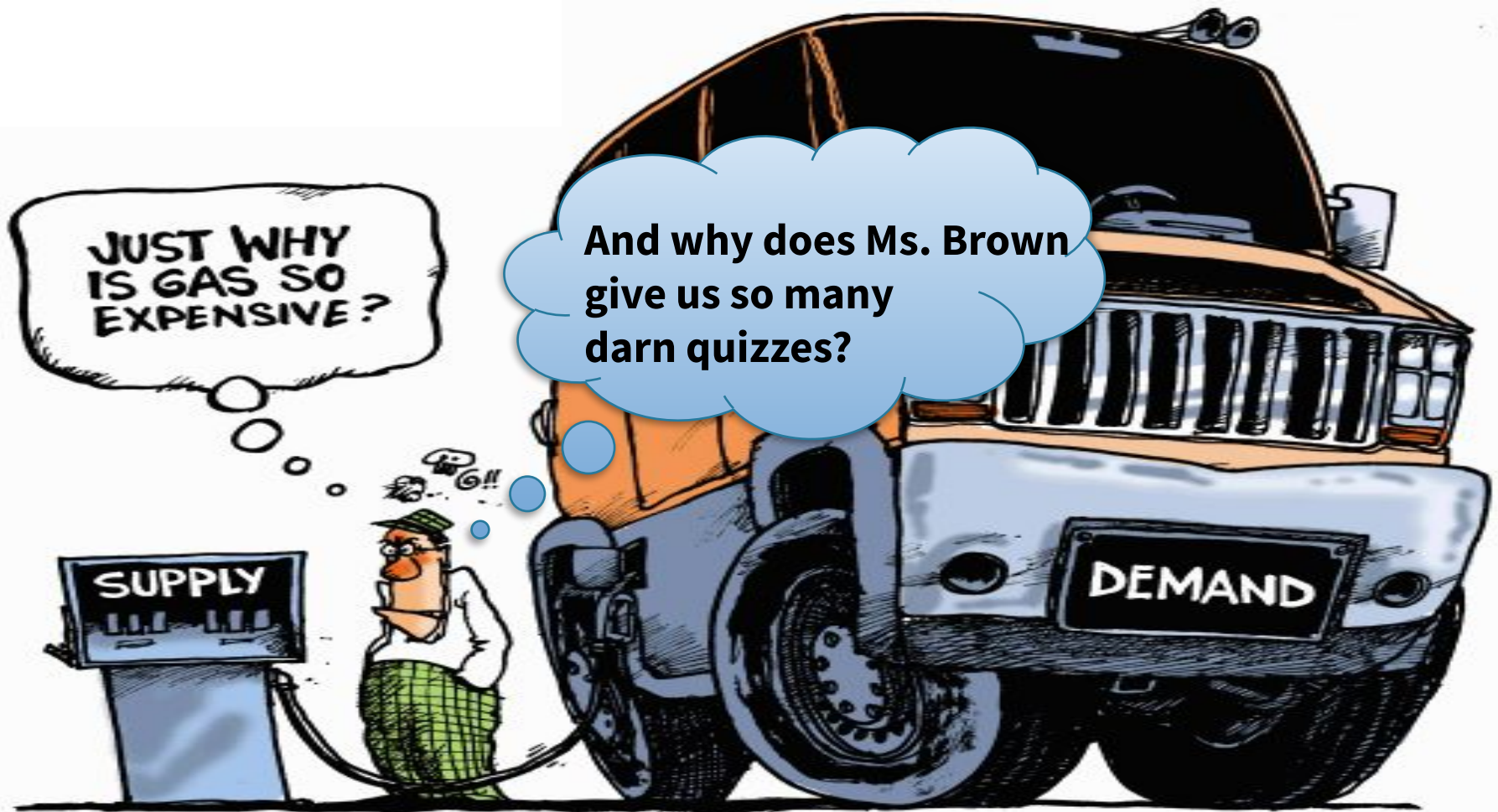
Increase the Reserve Ratio

- 1. Banks hold more money and have less excess reserves.**
- 2. Banks create less money.**
- 3. Money supply decreases, interest rates up, AD down.**

Tutorial Thursday, February 20

TGIFriday, February 21

- **Tutorial this week: Tuesday, Wednesday and Thursday**
- **For the Quiz: clean sheet of paper for scratch work; number your scratch work so we can diagnose issues later if needed**
- *Learning target: I can explain changes in the reserve requirement and open market operations as tools to change the money supply and therefore influence aggregate demand.*
- Warm up--write question and complete correct answer in notes:
- Assume that your nominal wages are \$1,000 per month. If the economy experiences 5% inflation what has happened to your real wages? Explain.
- **Team Energizer: see new seating chart**



JUST WHY IS GAS SO EXPENSIVE?

And why does Ms. Brown give us so many darn quizzes?

SUPPLY

DEMAND

Let's see how this works . . .

How Does the RR Help Increase (or Decrease) the Money Supply?

Banking Simulation

- Some of you will be bankers, some borrowers
- *Borrowers can borrow only one time per round.*
- *No cash changes hands in this game--borrowers get Loan Certificates rather than money.*
- *Successful borrowers must deposit their loan certificates into a bank other than the one which lent them the funds.*
- *Successful banks will follow RR and earn points for the loans made; also accept new deposits.*

Round 1 – 5 Minutes

- Every borrower should speak to at least two banks and try to get the funds they need for their project **but you may only borrow one time per round.**
- Successful borrowers will get loan certificates -- these will be essential for round 2 of the game.
 - Borrowers should deposit their loan certificates with a different bank in this round. This represents that in real life, borrowers will spend their money and the money will eventually be deposited by someone else.

Let's add up the total bank deposits for each round (A-1):

	Beginning Funds	Round 1 (20% RR)	Round 2 (20% RR)	Round 3 (10% RR)	Round 4 (10% RR)
Bank 1K	\$10,000	\$4,250			
Bank 2L	\$10,000	\$5,000			
Bank 3T	\$10,000	\$3,000			
Total	30,000	\$12,250			

How many borrowers still need loan funds? 6

How many borrowers are done?

What are banks' available balances (excess reserves)?

Let's add up the total bank deposits for each round (A-2):

	Beginning Funds	End Round 1 (20% RR)	Round 2 (20% RR)	Round 3 (10% RR)	Round 4 (10% RR)
Bank 1G	8,000	4,800	6,240		
Bank 2K	8,000	5,800	3,280		
Bank 3S	8,000	5,600	1,600		
Total	30,000/ \$24,000	20,250/ \$16,200	11,120		

How many borrowers still need loan funds? 6

How many borrowers are done? 4

What are banks' available balances (excess reserves)?

Total bank deposits (B-1):

	Beginning Funds	Round 1 (20% RR)	Round 2 (20% RR)	Round 3 (10% RR)	Round 4 (10% RR)
Bank 1A	10,000	5,000	2,600		
Bank 2I	10,000	5,750	6,100		
Bank 3W	10,000	9,000	3,000		
Total	30,000	19,750 + 30,000 = 49,750	11,700 + 49,750 = 61,450		

How many borrowers still need loan funds? 7; 5

How many borrowers are done? 2; 4

Total bank deposits (B-2):

	Beginning Funds	Round 1 (20% RR)	Round 2 (20% RR)	Round 3 (10% RR)	Round 4 (10% RR)
Bank 1C	10,000	10,550	5,050		
Bank 2E	10,000	3,600	8,050		
Bank 3Y	10,000	6,450	4,828		
Total	30,000	20,600 + 30,000 = 50,600	17,928 + 50,600 = 68,528		

How many borrowers still need loan funds? 13

How many borrowers are done? 0; 1

Round 1--Debrief

1. How many borrowers were able to get funding in round 1?
2. For those who were turned down, why did the bank say no?
3. How many bankers met their goal of lending 80% of their assets?
4. When those dollars were lent, where did they go?
5. Each bank started with \$10,000 - Bankers do you have more than that now? How come?
6. What is all that extra money doing in the economy?

- Borrowers, if you met your goal in round one, then you may serve as bank examiners from the Fed and check the math of the banks from the first round.

Round 2 – 5 Minutes

- If you weren't able to borrow all the funds you need in Round 1, then you need to talk to more banks in Round 2. Successful Round 2 borrowers must deposit their funds in a different bank.
 - They can deposit them in any bank other than the one where they borrowed. This represents that borrowers will spend their money and that the money will eventually be deposited by someone else.
- Bankers need to record their deposits on the Bank Balance sheet. RR is still 20% . . .

Round 2—Debrief

- Did all borrowers make deposits into another bank?
- Borrowers, how did you decide which bank to deposit in? How do people decide in real life?
- Did all bankers receive some new deposits?
- What do you think this symbolizes in the actual economy?
- Bankers, do you know how to figure out how much you have to lend in round 3?
- Borrowers, are you ready?