

Many Many Monday, February 24

Too Much Tuesday, February 25

Warm up: In your notes describe what could have changed in our banking simulation last week to give banks more money to lend out.

HW 4-3 due now. Look for a new USATP to be posted soon.

Luc, Zanai, Juana and Noah need to take the quiz.

Learning target: I can explain open market operations as a tool of monetary policy to affect the money supply.

Agenda: Warm up reflection on banking simulation (5 min); Work period: notes on open market operations; final rounds of banking simulation (55 min); Closing: reflection on RR and OMO (10 min).

How Does the Reserve Reqt Impact the money supply?

- How did our simulation yesterday increase the money supply?
- The Federal Reserve can impact the amount of money available to borrowers in the economy by raising or lowering the reserve requirement!

#3. Open Market Operations

- Open Market Operations is when the Fed buys or sells government bonds (securities).
- This is the most important and widely used monetary policy.

To increase the Money supply, the Fed should BUY government securities.

To decrease the Money supply, the Fed should SELL government securities.

#3. Open Market Operations

How are you going to remember?

Buy-BIG- Buying bonds increases money supply.

Sell-SMALL- Selling bonds decreases money supply.

Tool: Open Market Operations (OMO)

- Open-Market Operations = the purchase and sale of U.S. government bonds **by the Fed**.
- The Fed changes the money supply and increases or decreases interest rates and availability of credit
- Government bond = debt issued by a government to support government spending when there is a budget deficit. Also called savings bonds, Treasury bonds, Treasury notes, government securities, etc.

Tool: C
(OMO)

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**TREASURY BOND
 OF 2002-2007**

Dated February 15, 1977
 Due February 15, 2007

CUSIP 912810 BX 5

Redeemable on call on and after
 February 15, 2002
 CIRCULAR No. 4-77



1586F

THE UNITED STATES OF AMERICA

FOR VALUE RECEIVED PROMISES TO PAY TO THE BEARER THE SUM OF
ONE MILLION DOLLARS

ON THE DUE DATE, AND TO PAY INTEREST ON THE PRINCIPAL SUM FROM THE DATE HEREOF, AT THE RATE SPECIFIED HEREON. THIS BOND AND INTEREST COUPONS ARE PAYABLE AT THE DEPARTMENT OF THE TREASURY, WASHINGTON, D. C., OR AT ANY FEDERAL RESERVE BANK OR BRANCH. THIS BOND IS ONE OF A SERIES OF BONDS, AUTHORIZED BY THE SECOND LIBERTY BOND ACT, AS AMENDED, ISSUED PURSUANT TO THE DEPARTMENT OF THE TREASURY CIRCULAR REFERRED TO HEREON. ALL OR ANY OF THE BONDS OF THIS SERIES MAY BE REDEEMED, AT THE OPTION OF THE UNITED STATES, ON AND AFTER FEBRUARY 15, 2002, AT PAR AND ACCRUED INTEREST, ON ANY INTEREST DAY OR DAYS, UP TO SIX MONTHS' NOTICE OF REDEMPTION GIVEN IN SUCH MANNER AS THE SECRETARY OF THE TREASURY SHALL PRESCRIBE. IN CASE OF PARTIAL REDEMPTION THE BONDS TO BE REDEEMED WILL BE DETERMINED BY SUCH METHOD AS MAY BE PRESCRIBED BY THE SECRETARY OF THE TREASURY. FROM THE DATE OF REDEMPTION DESIGNATED IN ANY SUCH NOTICE, INTEREST ON THE BONDS CALLED FOR REDEMPTION SHALL CEASE. THE INCOME DERIVED FROM THIS BOND IS SUBJECT TO ALL TAXES IMPOSED UNDER THE INTERNAL REVENUE CODE OF 1954. THIS BOND IS SUBJECT TO ESTATE, INHERITANCE, GIFT OR OTHER EXCISE TAXES, WHETHER FEDERAL OR STATE, BUT IS EXEMPT FROM ALL TAXATION NOW OR HEREAFTER IMPOSED ON THE PRINCIPAL OR INTEREST HEREOF BY ANY STATE, OR ANY OF THE POSSESSIONS OF THE UNITED STATES, OR BY ANY LOCAL TAXING AUTHORITY. THIS BOND IS ACCEPTABLE TO SECURE DEPOSITS OF PUBLIC MONIES. IT IS NOT ACCEPTABLE IN PAYMENT OF TAXES.

WASHINGTON, D. C., FEBRUARY 15, 1977.

William E. Fisher
 SECRETARY OF THE TREASURY

1000,000

ONE MILLION DOLLARS

1000,000

Tool: Open Market Operations (OMO)

- **Expansionary monetary policy:** The Federal Reserve BUYS bonds → increases money held by banks → lower interest rates and more loans → increased AD and lower unemployment
- **Contractionary monetary policy:** The Federal Reserve SELLS bonds → decreases money held by banks → higher interest rates and fewer loans → decreased AD and lower inflation

Round 3 – Banking Simulation

- Same rules as round 1 EXCEPT:
 - Starting balances in banks are \$5,000 in demand deposits + \$10,000 in Treasury bonds for each bank
 - RR still 20%

How many borrowers still need loan funds? 6 After Round 3: 15; after round 4: 13 got all they needed

Total bank deposits (A-1):

	Beginning Funds	Round 1 (20% RR)	Round 2 (20% RR)	Round 3 (20% RR)	Round 4 (20% RR)
Bank 1K	\$10,000	\$4,250	4,700	5,000 + 6,900	8,0000 + 7,550
Bank 2L	\$10,000	\$5,000	5,350	5,000 + 4,275	8,0000 + 4,450
Bank 3T	\$10,000	\$3,000	4,050	5,000 + 3,000	8,0000 + 17,075
Total money supply	\$30,000	\$12,250 + \$30,000 = \$42,250	42,250 + 14,100 = 56,350	15,000 + 14,175 = 29,175	

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 (20% RR)	Round 4 (20% RR)
Bank 1G	10,000	4,800	6,240	5,000 + 1,000	8,000 + 1,700
Bank 2K	10,000	5,800	3,280	5,000 + 5,100	8,000 + 9,000
Bank 3S	10,000	5,600	1,600	5,000 + 4,500	8,000 + 9,300
Total money supply	30,000	30,000 + \$16,200 = \$46,200	11,120 + 46,200 = \$57,320	\$15,000 + 10,600 = 25,600	44,000 + 25,600 = 69,600

How many borrowers still need loan funds? 6
 How many borrowers are done? 4

Total bank deposits (B-1):

	Beginning Funds	Round 1 (20% RR)	Round 2 (20% RR)	Round 3 (20% RR)	Round 4 (20% RR)
Bank 1A	10,000	5,000	2,600	5,000 + 7,000	12,000 + 4,500
Bank 2I	10,000	5,750	6,100	5,000 + 1,500	12,000 + 5,000
Bank 3W	10,000	9,000	3,000	5,000 + 5,000	12,000 + 12,250
Total	30,000	19,750 +	11,700 +	15,000 +	28,500 +
money supply		30,000 =	49,750 =	13,500 =	57,750 =
		49,750	61,450	28,500	86,250

How many borrowers still need loan funds? 7; 5
 How many borrowers are done? 204

Total bank deposits (B-2):

	Beginning Funds	Round 1 (20% RR)	Round 2 (20% RR)	Round 3 (20% RR)	Round 4 (20% RR)
Bank 1C	10,000	10,550	5,050	5,000 + 3,663	12,000 + 3,966
Bank 2E	10,000	3,600	8,050	5,000 + 3,134	12,000 + 13,698
Bank 3Y	10,000	6,450	4,828	5,000 + 1,600	12,000 + 13,788
Total	30,000	20,600 +	17,928 +	15,000 +	23,397 +
money	How many borrowers still need loan, funds? 13	30,000 =	50,600 =	8,397 =	36,000 +
supply	How many borrowers are done? 401	50,600	68,528	23,397	31,452 =

Newsflash: We are in a recession! GDP is down, unemployment is up.

Therefore, the Federal Reserve has enacted an expansionary monetary policy, including lowering the reserve requirement . . . The new RR is 10%.

Round 4—Banking Simulation

- Exactly the same as round 2:
 - RR is now 10%, so 90% of deposits can be loaned out

Our Banking Simulation . . .

- Rounds 1 and 2: \$30,000 original deposits with 20% RR
 - Multiplier = $1/.2 = 5$
 - Total money possible to create = $5 \times \$30,000 = \$150,000$
- Round 3: \$5,000 original deposits + \$10,000 bonds with 20% RR
 - \$12,000 total available to lend
- Round 4: OMO Fed BUYS bonds from banks in expansionary Monetary policy
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- 1. In this activity the incentive for banks to make loans was bonus bucks. What incentive do banks have for making loans in the real world? What incentive do people have for keeping their money in the bank?
- 2. We started with a money supply of only \$30,000 (3 bankers x \$10,000). We finished with a whole lot more than that. Where did the extra money come from?
- 3. What would the borrowers do with all the money they borrowed? Would their activity be helpful or harmful for an economy? How can you tell?
- 4. In our simulation all of the loans were "good" loans because the borrowers all paid them back. What would happen in an economy where people stopped paying back their loans? What would banks be forced to do?
- 5. Our reserve requirement in rounds 1 and 2 was this simulation was 20%. What happened to the simulation when the RR was changed to 10%? What would've happened if it were changed to 30%? Under which of those scenarios would it be easiest for high-risk borrowers to get a loan?
- 6. Most economics textbooks say that banks "create" money. After our simulation do you agree? Why or why not?
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Simulation—Final Debrief

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Simulation—Final Debrief

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- 6. Most economics textbooks say that banks "create" money. After our simulation do you agree? Why or why not?

West World Wednesday, Feb. 26

Tournament Thursday, February 27

- *Learning target: I can use a balance sheet to show the changes in bank reserves caused by deposits and the Federal Reserve's monetary policy actions.*
- Warm-up: What pocket does your phone want to live in for the rest of the year? My room is a no-phone zone for the rest of the year--I don't want to see them ever, even before class starts.
- USATP "Fiscal Review-AP" due March 2
- Agenda: Warm up--Open Market Operations review (5 min); Work period: notes + practice on balance sheets (60 min); Closing--OMO review (5 min)

New York Times Opinion Columnists & Reporters

- Jim Rutenberg (NYT chief political correspondent during 2012 presidential race): New York University (NO degree)

“[Jim] had financial and family challenges that sidelined him, but he wasn’t, in the end, set back by that, because he had and has something better than any degree: a cunning, a drive and a grace in dealing with other people that are shared, to varying extents, by all of the journalists I just mentioned. Their careers weren’t built on the names of their colleges. They were built on carefully honed skills, ferocious work ethics and good attitudes.”

Source: Bruni, Frank. *Where You Go Is Not Who You’ll Be: An Antidote to the College Admissions Mania*. New York, Hachette Book Group, 2016.

Emphasis added.



The role of the Fed is to “take away the punch bowl just as the party gets going” ²²

Bank Balance Sheets

Balance Sheet- A record of a bank's assets, liabilities, and net worth (AKA retained earnings, owners' equity).

- **Assets**- Anything tangible or intangible that is owned.
- **Liability**- Anything that is owed.
- **Loan**- An agreement between a lender and a borrower, usually at a fee called the interest rate.

A loan is an asset for the lender and a liability for the borrower.

Bank Balance Sheets

Demand Deposits- Money deposited in a commercial bank in a checking account.

Required Reserves- The percentage of demand deposits that banks must hold by law.

Excess Reserves- The amount of excess reserves that banks can loan out.

Are demand deposits in a bank an asset or a liability?

Liability for the bank, asset to the depositor.

Bank Balance Sheets

Assets		Liabilities & Equity	
Loans	\$8,000	Demand Deposits	\$5,000
Reserves	\$500	Owner's Equity	\$5,000
Treasury Bonds	\$1,500		
Total Assets	\$10,000	Total Liabilities & Equity	\$10,000

It is “balanced” because the total assets must equal total liabilities & equity.

If the bank is holding no excess reserves, how much is the required reserve ratio?

.1 or 10%

Bank Balance Sheets

Assets		Liabilities & Equity	
Req. Reserves	\$2,000	Demand Deposits	\$20,000
Excess Reserves	\$3,000	Owner's Equity	\$5,000
Treasury Bonds	\$5,000		
Loans	\$15,000		

If Bob deposits \$1000 into this bank:

- 1. What is the required reserve ratio?**
- 2. Will M1 money supply initially \uparrow , \downarrow , stay same?**
- 3. How much will demand deposits change?**
- 4. How much is the required reserves?**
- 5. How much is the excess reserves?**
- 6. How much more can the bank initially lend out?**
- 7. Maximum change in money supply from deposit?**

Bank Balance Sheets

Assets		Liabilities & Equity	
Req. Reserves	\$2,000	Demand Deposits	\$20,000
Excess Reserves	\$3,000	Owner's Equity	\$5,000
Treasury Bonds	\$5,000		
Loans	\$15,000		

If the Fed buys \$1000 of bonds:

- 1. How much is the required reserves?**
- 2. How much is the excess reserves?**
- 3. How much more can the bank initially lend out?**
- 4. Maximum change in the money supply?**
- 5. Maximum change in demand deposits (all banks)?**
- 6. Maximum change in req. reserves (all banks)?**
- 7. How much will demand deposits change?**

Bank Balance Sheets

Assets		Liabilities & Equity	
Req. Reserves	\$2,000	Demand Deposits	\$20,000
Excess Reserves	\$3,000	Owner's Equity	\$5,000
Treasury Bonds	\$5,000		
Loans	\$15,000		

If Bob withdraws \$3,000 from this bank:

- 1. Will M1 money supply initially \uparrow , \downarrow , stay same?**
- 2. How much is the required reserves?**
- 3. How much is the excess reserves?**
- 4. Assume Bob burned the money, what is the maximum change in money supply?**

Friday, Feb. 28 & Monday, March 2

Warm up--copy in notes + answer Qs:

Assets		Liabilities & Equity	
Req. Reserves	\$2,000	Demand Deposits	\$20,000
Excess Reserves	\$3,000	Owner's Equity	\$5,000
Treasury Bonds	\$5,000		
Loans	\$15,000		

If the Fed sells \$500 bonds to the bank:

- 1. How much do demand deposits change?**
- 2. How much do required reserves change?**
- 3. How much do excess reserves change?**
- 4. How much more can the bank initially lend out?**
- 5. Maximum change in the money supply?**
- 6. Is this expansionary or contractionary?**

Friday, Feb. 28

Monday, March 2

- *Learning target: I can explain the discount rate and interest on reserves as some of the Federal Reserve's monetary policy tools to influence the money supply.*
- USATP “Fiscal Review-AP” due March 2 by midnight
- Agenda: Warm up--Balance sheet review (15 min); Work period: notes + practice on balance sheets and new fun set (60 min); Closing--OMO review (5 min)

#2. The Discount Rate

The Discount Rate is the interest rate that the Fed charges commercial banks.

Example:

- If Bank of America needs \$10 million, they borrow it from the U.S. Treasury (which the Fed controls) but they must pay it back with 3% interest.

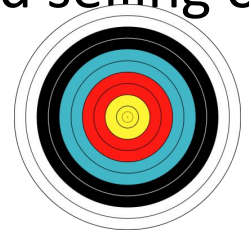
To increase the Money supply, the Fed should DECREASE the Discount Rate (Easy Money Policy).

To decrease the Money supply, the Fed should INCREASE the Discount Rate (Tight Money Policy).

Federal Funds Rate

The Federal funds rate is the interest rate that banks charge one another for one-day loans of reserves.



- The Fed can't dictate what interest rates banks charge their customers. Instead, banks set rates on their own.
- The Fed influences market interest rates by setting a target Fed Funds rate and using OMO to hit the target.
- Banks use the Fed Funds rate to base all other short-term interest rates.
- The Federal Funds rate fluctuates due to market conditions, but it is heavily influenced by monetary policy (buying and selling of bonds).



Tool #4: Interest on Reserves

- Banks can earn interest on excess reserves that they keep at the Fed.
- By changing the interest rate that banks earn on their reserves, the Fed can encourage banks to make more loans or fewer loans.

Tool: Interest on Reserves in Practice

- **Expansionary monetary policy:** Lower the interest rate paid on reserves to give banks an incentive to loan more \$\$ out so the bank can make a profit--increased loans leads to increased spending; AD 
- **Contractionary monetary policy:** Raise the interest rate paid on reserves to give banks an incentive to keep more money in reserve so the bank has less \$\$ to lend--decreased loans leads to decreased spending; AD 

Expansionary Monetary Policy

Problem: Unemployment and Recession

Fed buys bonds, lowers reserve ratio, lowers the discount rate, or increases reserve auctions

Excess reserves increase

Federal funds rate falls

Money supply rises

Interest rate falls

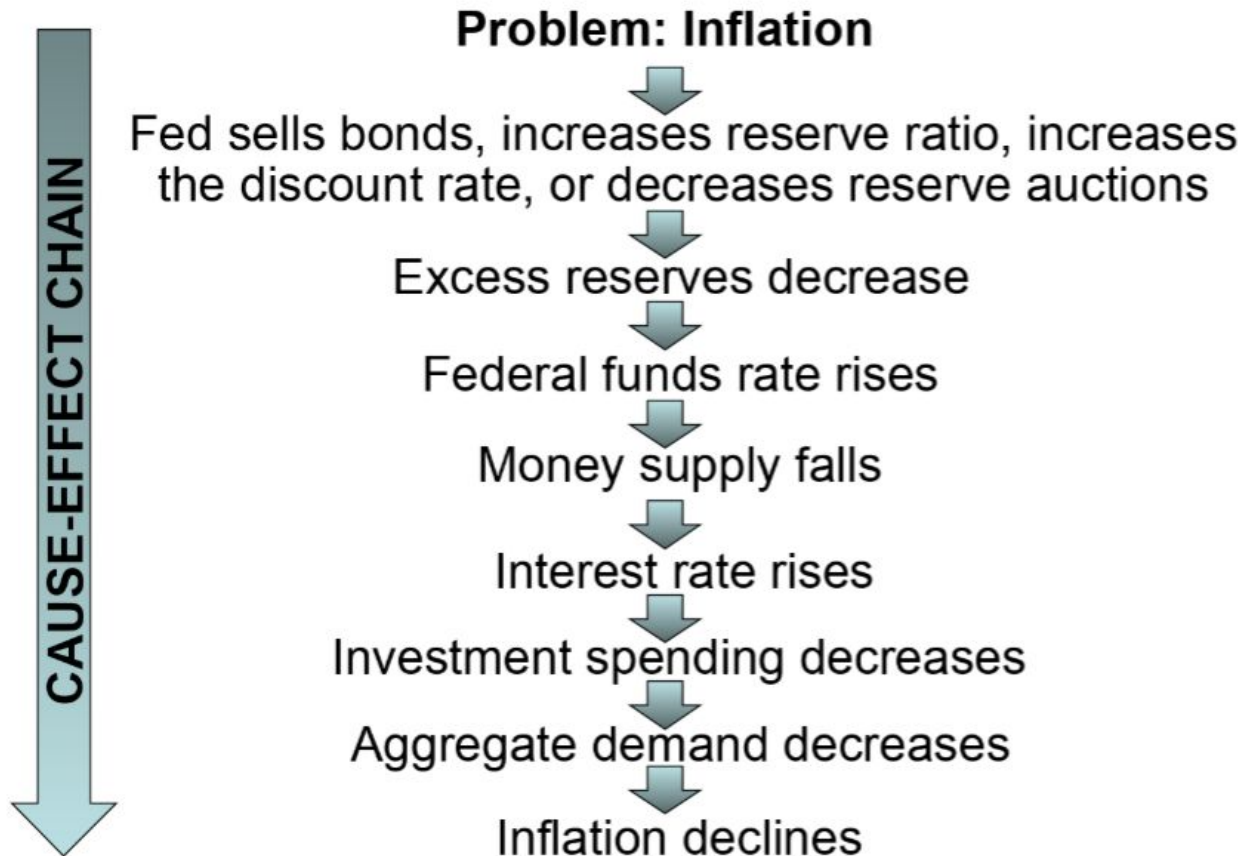
Investment spending increases

Aggregate demand increases

Real GDP rises

CAUSE-EFFECT CHAIN

Restrictive Monetary Policy



Monetary Policy and Economic Activity

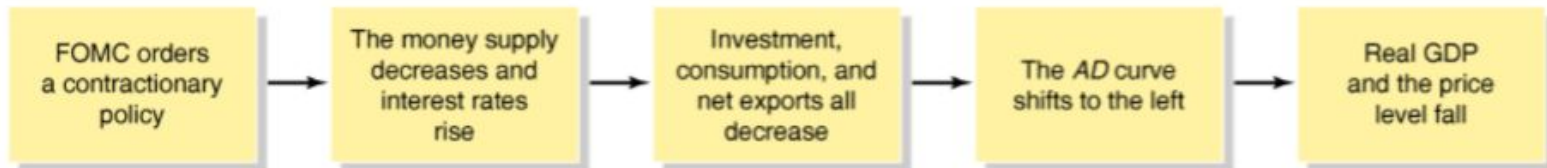
A Summary of How Monetary Policy Works

Table 26-1

Expansionary and Contractionary Monetary Policies



(a) An expansionary policy



(b) A contractionary policy