Money, Banks and the Federal Reserve System

Follow the yellow brick road…

News on a course from SAIS

This course is an introduction to the Congressional role in foreign policy. The Constitution grants the President the authority to conduct foreign policy. Yet it also gives Congress a substantial role in the shaping of foreign policy. The distinct roles are not always clear, creating an inherent tension between these two branches of government and efforts on each side to increase their power. This class will address the "rules of the road" in conducting American foreign policy and how they change. The class will go beyond theory to include case studies that show the tension between Congress and the Administration – including the Iran Agreement, Climate Change, the use of sanctions and American policy towards Cuba. The course will include guest lecturers who work in Congress on the various aspects of foreign policy – including appropriations, intelligence, oversight and investigations. We will address the Congressional role in ratification of treaties and in declaring war. The class will consider the different ways that each branch of government approaches human rights, arms sales and sanctions. The class will also address the domestic political aspects of foreign policy – including the role of advocacy groups and special interests and the political use of Congressional investigations. Most of these classes will be in Washington, DC to facilitate guest speakers. Several classes will meet at the US Congress.

Here are the other details for the class:

AS.191.354 (01) Congress and Foreign Policy Spring 2020 Washington DC Center Thursday
3:30PM - 5:50PM
J. Frifield
Upper Level Undergraduate Area
HS Credits 3.00
Department: AS Political Science, AS International Studies
Enrollment: Limit 15

The Seminar on Financial Literacy is a cornerstone of the finance programming for our students and is viewed as one of the preeminent ways to get our students involved with, and ultimately working on, Wall Street.

Each year, we bring in a number of esteemed and expert alumni in various aspects of finance to give one, two-hour lecture to roughly 30 students selected to participate in the course. The on-campus class takes place for two weeks, followed by a trip to visit Wall Street in New York in the third week.

This year the on-campus classes will run from January 7th to January 18th, 2019. The trip to New York will be from January 22nd to January 25th, 2019.

The application for the course closes on 11/16. The application can be found on Handshake by doing a Job Search for "Intersession" or with the link here (if you plan to share via email https://jhu.joinhandshake.com/jobs/2037853/share_preview)

Money, Banks and the Federal Reserve System

- Loanable Funds Model:

  HOUSEHOLDS SAVE---FIRMS BORROW

  Money and Banks Model:

  HOUSEHOLDS LEND TO BANKS

  BANKS LEND TO FIRMS

  BANKS ARE IN THE MIDDLE!

The Functions of Money

Medium of exchange: Wildly better than barter

Money a form of payment for goods and services.

Unit of account: How many golf balls is an oil change worth?

Money allows a way of measuring value in a standard manner.

Store of value

Money allows people to defer consumption because it is *liquid* and easily exchanged for goods.

Standard of deferred payment (OLG models)

Money facilitates exchanges *across time* when we anticipate that its value in the future will be predictable.

Remember *The Wizard of Oz*

- In the U.S. and in much of the developed world, leading into the GREAT DEPRESSION, money printed by central banks was

BACKED BY GOLD

Silver (not ruby) slippers: If money was backed by gold and silver, there would be more money in the system, the price of money, I, would fall, and farmers and workers would benefit, at the expense of nasty New York Bankers

Fiat money

China in the 10th century issued *paper money.*

The paper money was exchangeable for gold.

In modern economies, paper money is generally issued by a *central bank* run by the government.

FRB, USA ECB, Euro Area PBoC, China BoJ, Bank of Japan

The *Federal Reserve,* the central bank of the United States.

The Federal Reserve no longer exchanges for gold;

The Fed issues currency known as *fiat* money*.

Fiat money is backed not by gold, but by Trust!

**fiat ≡ decree or edict or order or command or dictum*

The Great Recession: Greatly Damaged Trust in Government. The Value of Gold Soared…

And Bitcoin Arrived: A 21st Century alternative to traditional currencies

Bitcoin Appeared as the world's banks tumbled:
A stock index of bank shares, capturing the market value of these companies, fell from 414, in early 2007, to 49, in early 2009.
(People perceived banks as worth only 1/8 of their 2007 value)

WHY Bitcoins?

- From the founder of Bitcoins:

  "The root problem with conventional currency is all the trust that's required to make it work."

  "The central bank must be trusted not to debase the currency, but the history of fiat currencies is full of breaches of that trust."

  "Banks must be trusted to hold our money and transfer it electronically, but they lend it out in waves of credit bubbles with barely a fraction in reserve."

Bitcoins: in conclusion

- From the New Yorker,

  …rather than trusting in governments, central banks, or other third-party institutions to secure the value of the currency and guarantee transactions, Bitcoin would place its trust in mathematics.

Bitcoin as Money? Recall that Money Should Provide A Standard of Value:

- Steinway upright PIANO, $6,000, 12/2016
- Yamaha upright PIANO, $5,000, 12/2016

A successful monetary instrument allows us to judge the prices of various items over time.

What are the bitcoin prices for
the two pianos, over the past 24 months?

				BITCOIN/	BITCOIN/
	STEINWAY	YAMAHA	$/BITCOIN	STEINWAY	YAMAHA
12/15/2016	6,000	5,000	775	7.7	6.5
12/15/2017	6060	6000	18,500	0.3	0.3
11/8/2018	6060	6120	6,500	0.9	0.9

Off the books transactions, then wild speculation

Banks and Money in modern day economies

house	holds
assets	liabilities + Equity
cash	mortgages
deposits	student loans
bonds	car loans
stocks	
homes	equity
total	total

BA	NKS
assets	liabilities + Equity
cash	deposits
car loans	CDs
business loans	bonds
mortgages	
	equity
total	total

NON-BANK	FIRMS
assets	liabilities + Equity
cash	bank loans
factories	bonds
retail stores	
planes	
algorithems	equity
total	total

We need some very basic accounting to understand banks and money

Accounting Model: The Bathtub Analogy

Stock/Flow Model

Faucet/Inflow minus Drain/outflow
= Income statement (revenues minus costs)

Accounting Basics:
Five Key Concepts

- 1. Dual-Aspect Concept

  Assets = Liabilities + Equity

  A Balance Sheet Is In Balance, Thanks to Dual Aspect
- 2. Money-measurement

  We count dollar value of apples, not apples
- 3. Entity
- A business entity exists. We count solely from its perspective.
- 4. Going-concern
- We presume that the entity survives indefinitely

- 5. Asset-measurement
- Financial (liquid) assets are valued at mark-to-market prices.
- Physical (hard) assets are valued at cost

Balance sheet definitions:

- Balance Sheet:

  Snapshot of a Moment in Time

- Assets are economic resources:

  items that can provide future benefits

- Liabilities are creditors' claims on the assets"

  obligations; they require future payment

The income statement

- Revenues – costs = profits
- Results of Activities over a Period of Time
- The income statement links the balance sheet at the beginning of the period with the balance sheet at the end of the period.

A SUPER SIMPLIFIED WORLD:

household		household	
assets		liabilities + Equity	
deposits	900	equity	1300
stocks	400		
total	1300	total	1300

BANKS		BANKS	
assets		liabilities + Equity	
loans to firms	1000	deposits	900
		equity	100
total	1000	total	1000

NON-BANK FIRMS		NON-BANK FIRMS	
assets		liabilities + Equity	
		bank loans	1000
factories	450		
retail stores	350	equity	300
planes	100		
algorithems	400		
total	1300	total	1300

An actual Bank balance sheets

Assets (in millions)		Liabilities and Stockholders' Equity (in millions)	
Reserves	$108,427	Deposits	$1,010,430
Loans	898,555	Short-term borrowing	394,572
Securities	896,097	Long-term debt	359,180
Buildings and equipment	14,306	Other liabilities	272,479
Other assets	347,524	Total liabilities	$2,036,661
		Stockholders' equity	228,248
Total assets	$2,264,909	Total liabilities and stockholders' equity	$2,264,909

Figure 14.2 Balance Sheet for a Large Bank, December 31, 2010

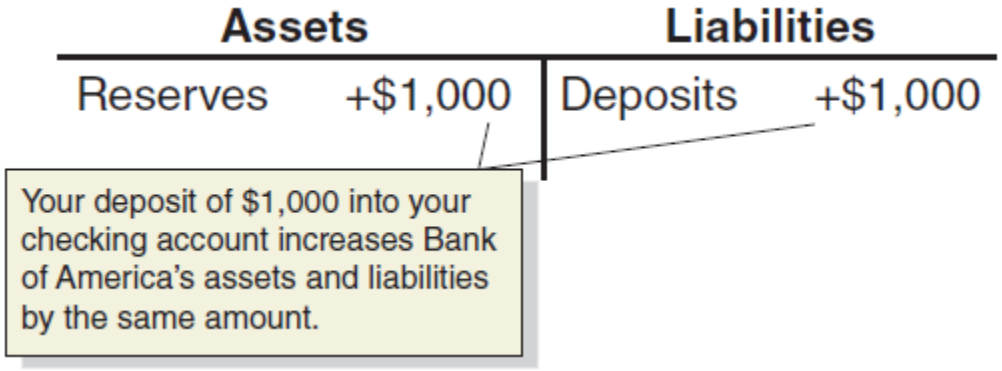
Banks use money deposited with them to make loans and buy securities (investments).

Their largest liabilities are their deposit accounts: money they owe to their depositors.

T-accounts

A T-account is a stripped-down version of a bank balance sheet, showing only how a transaction *changes* a bank's balance sheet.

When you deposit $1,000 in currency at Bank of America, its reserves increase by $1,000 and so do its deposits:



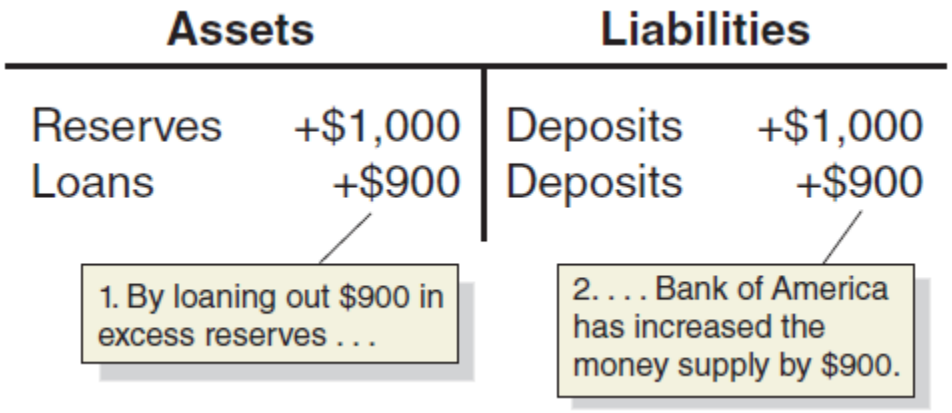
The currency component of the money supply decreases by the $1,000, since that $1,000 is no longer in circulation; but the checking deposits component increases by $1,000. So there is no net change in the money supply—yet.

Money creation

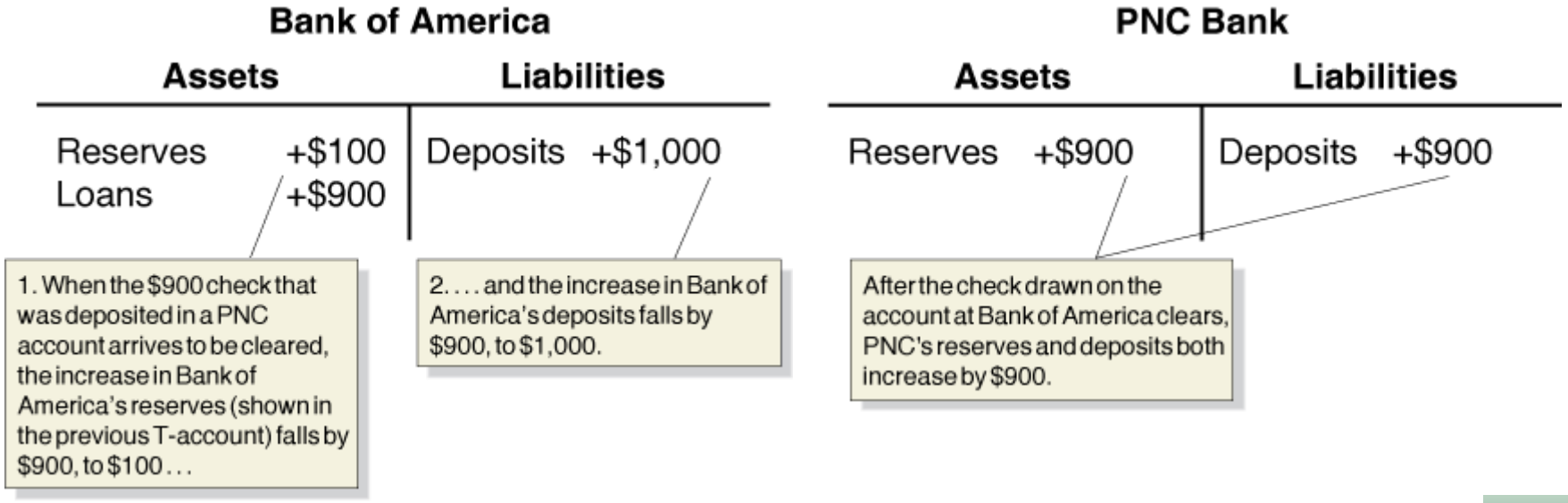
Banks are out for profit

It keeps 10% of the deposit as reserves

It lends out the rest, creating a $900 checking account deposit.



The $900 initially appears in a BoA checking account, but will soon be spent; and Bank of America will transfer $900 in currency to the bank at which the $900 check is deposited.



Additional Conclusions about banks, loans and money

1. When banks are confident they create loans.
2. When a bank lends money, if it does not have it, it borrows it from the Federal Reserve
3. The loan is deposited in another bank.
4. Therefore, just as money creation can be said to drive loan growth, loan growth will result in money creation
5. The key? When interest rates are EASY, MONEY AND CREDIT GROW
6. THE ALTERNATIVE? WHEN INTEREST RATES ARE TIGHT, MONEY AND CREDIT CONTRACT.

What drives a banker's decision to lend?

- A bank pays 2% on its deposits
- A bank charges 5% to loan money

- It must pay its depositors 2%
- It may not collect 5% on all its loans—indeed it may lose some of the principle on its loans

BANK RUNS AND THE NEED FOR THE FEDERAL RESERVE

SEAFIRST BANK			
assets		liabilities + Equity	
cash	30,000	deposits	950,000
mortgages	970,000	equity	50,000
total	1,000,000	total	1,000,000

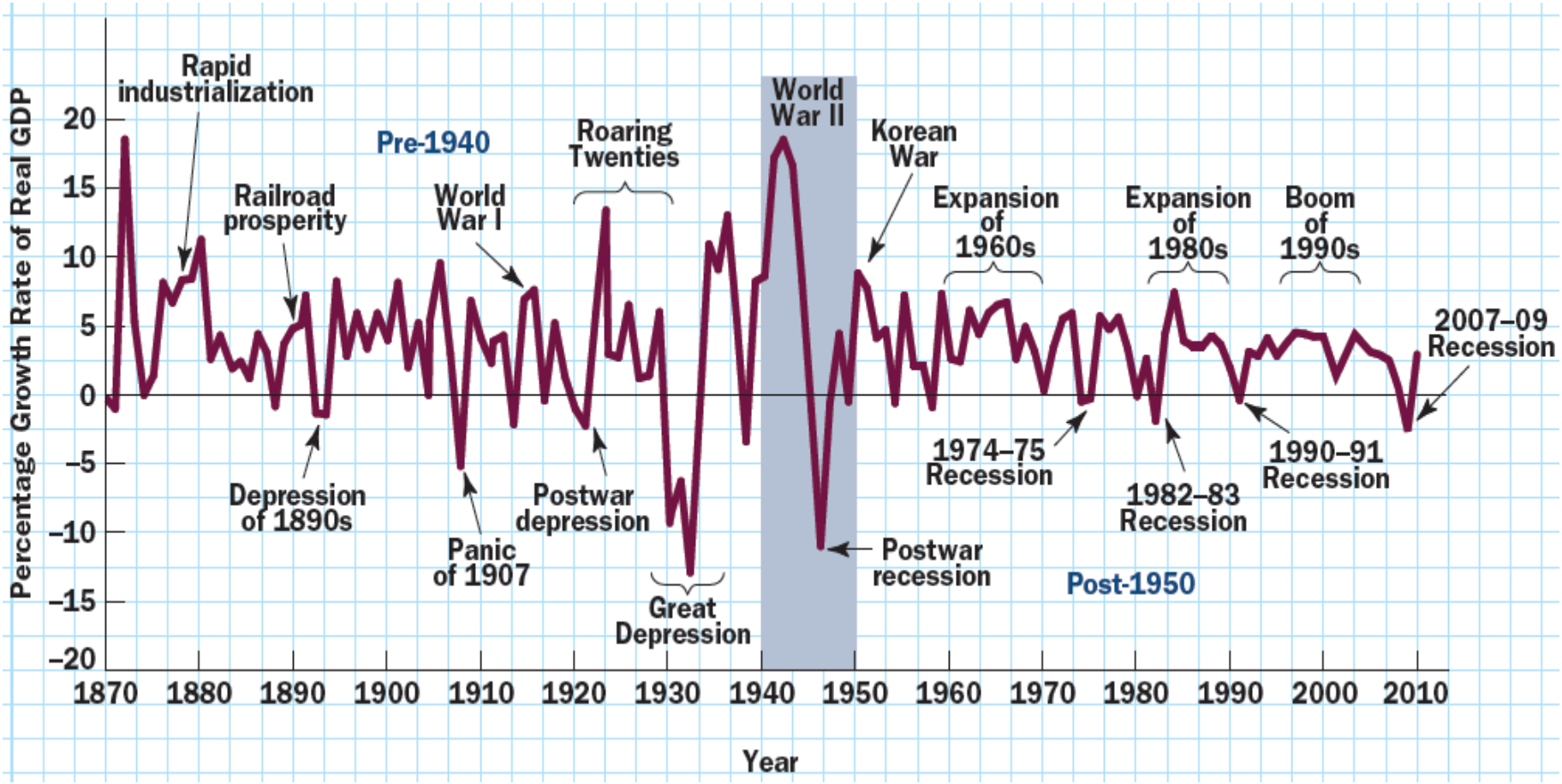
BANK RUN IN A SUPER SIMPLE BANKING MODEL

- 950 PEOPLE IN THE TOWN
- EACH HAS 1,000 'IN THE BANK'
- THE BANK HAS $30,000 IN CASH
- THE BANK OWNS 10 MORTGAGES WORTH $97,000 APIECE.
- THERE WAS FRAUD AT THE BANK IN THE NEXT TOWN
- ALL THE MONEY WAS STOLEN FROM THE DEPOSITORS
- SOME PEOPLE IN THIS TOWN PANIC AND DEMAND THEIR MONEY.
- THE BANK CANNOT DEMAND THE MONEY IT LEANT TO THE HOMEOWNERS, SO AFTER $30,000, IT HAS TO TURN THEM AWAY.
- WHEN WORD SPREADS, ALL BANKS SEE LONG LINES
- IT'S A BANKING PANIC!

Too many panics to ignore

- In the late 1800s and again in 1907 the U.S. suffered serious BANK PANICS.
- Banks, unable to secure funds to honor withdrawal requests, would collapse
- Economic activity contracted.

The Depression of the 1890s and the recession of 1907 were precipitated by bank panics



The Federal Reserve System: Created in the image of the Bank of England

- Financial system crises were a regular feature of the economic landscape of Great Britain
- Walter Bagehot wrote the Bible for central bankers, in 1873, '*Lombard Street*' describing BOE responsibilities.
- Bagehot's dictum:

  'In crisis, lend freely, to solvent firms, but at a healthy rate'

Walter Bagehot
(rhymes with Gadget)

Modern Day Worries of the Federal Reserve System

William McChesney Martin

9th Chair of the FRB, 1951-1970

Gave the best modern day description of the job,

'[the Fed's job is] to take away the punch bowl just as the party gets going!'

William McChesney Martin

One of the great U.S. central bankers
(And he looks like a banker)

He graduated from YALE, a double major:

ENGLISH

LATIN

(Don’t neglect your study of humanities)

Contrasting original role vs. modern day focus

- The Fed was created to protect

  THE SAFETY AND SOUNDNESS OF BANKS

Central Banks, today, have charters that direct them to **maximize growth** and protect against **INFLATION**

The Fed vs. the ECB
Single vs. Dual Mandate

- The ECB has ONE MANDATE:

  The ECB is directed to conduct monetary policy to ensure that prices are stable.

The Federal Reserve Board's DUAL MANDATE:

The FRB is directed to conduct monetary policy to deliver maximum attainable growth with low inflation.

Explaining the ECB Mandate

- European politicians certainly want strong growth.

- The ECB asserts that the best way for a central banker to support real growth…

  …is to keep prices stable.

  (in other words, they see central bank powers as limited)

Returning to their roots: Central banks and the Great Recession

- Modern day discussion of the Fed focused on strategies to keep +%ΔY strong and π low.
- The E.C.B. mandate solely focuses on inflation.

- Panic in the financial markets compelled central banks to return to their first job:

LENDER OF LAST RESORT

In summary:

- The central bank is driving the bus:

  1)They want to keep inflation LOW.

  2)They want to keep real growth strong.

  3)They MUST protect the financial system, as it pumps out the life blood of the economy.

The U.S. Federal Reserve
Some Specifics

- Formed in 1913

- There are 12 Federal Reserve Districts:

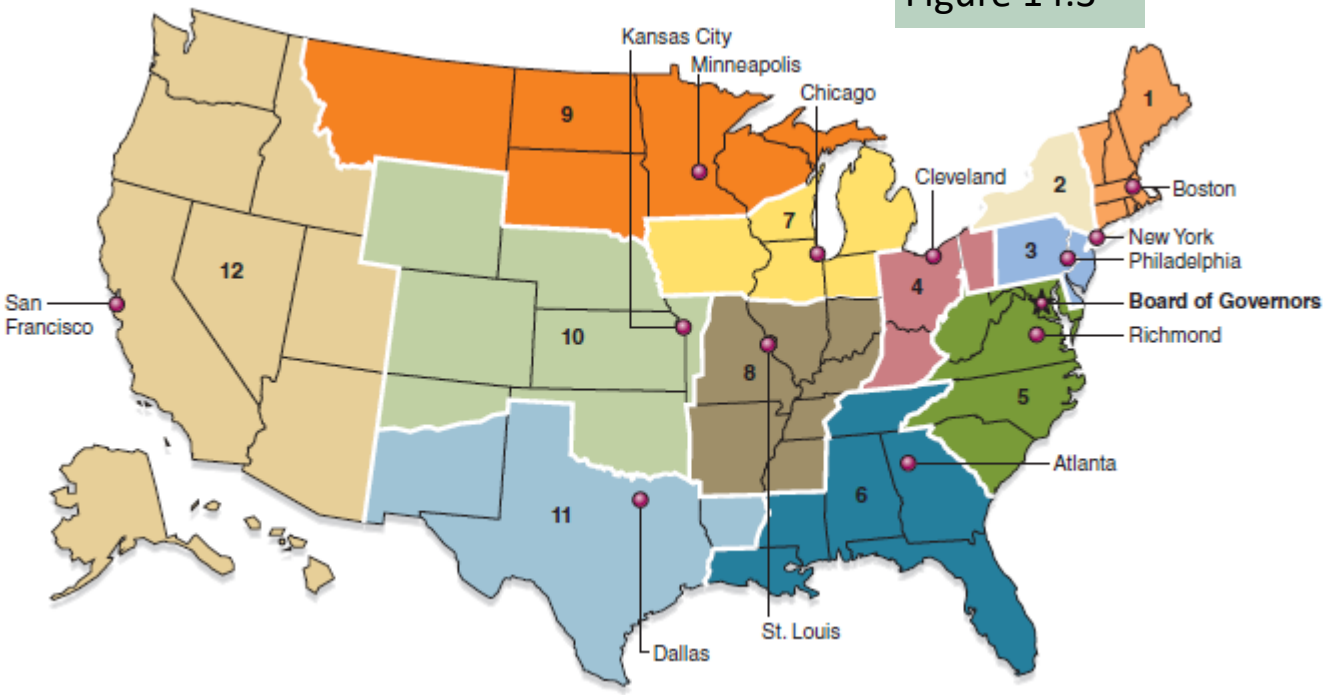
  Boston, New York, Philadelphia, Cleveland

  Richmond, Atlanta, Chicago, St. Louis

  Minneapolis, Kansas City, Dallas, San Francisco

The Federal Reserve system

Figure 14.3



Each of the 12 Federal Reserve districts elects a District bank president.

The mechanics of central banking

- Federal Reserve sets reserve requirements

  10% of deposits must be kept as reserves.

  Federal Reserve guarantees, to all member banks, that it will meet any bank's needs for funds, to provide for withdrawals.

The Power Resides in Washington

- The Fed's central office is in Washington.

- The Board of Governors of the FRB hold much power:

  Seven members, all appointed by the President and approved by the Senate.

  One of the 7 members is appointed Chair.

  (Note: not Chairman, Chair!)

The Board today. More power in Fed bank President hands, by default

- Jerome Powell — Chair
  - Richard Clarida — Vice-Chair
  - Randal Quarles
  - Lael Brainard
  - Michelle Bowman
  - Vacant
  - Vacant

Open market operations

Open market operations refers to the buying and selling of Treasury securities by the Federal Reserve

The Fed directs its *trading desk* in New York to *buy* U.S. Treasury securities—Treasury "bills"

when the Fed buys bills, the price goes up

when the price goes up, the yield goes down.

Thus the Fed, by buying and selling treasury bills, controls the level of short term interest rates.

Hubbard asserts that Federal Reserve manages the money supply:

"Open market operations refers to the buying and selling of Treasury securities by the Federal Reserve in order to control the money supply.

To increase the money supply, the Fed directs its *trading desk* in New York to *buy* U.S. Treasury securities—Treasury "bills", "notes", and "bonds", To decrease the money supply, the Fed *sells* its securities."

[by raising or lowering interest rates, in normal times, the Fed can generate stronger or weaker growth. One measure of that changing growth rate, is the change in the growth rate for money]

Moreover, throughout history there are examples of central banks that 'printed money', by buying their countries government debt and printing the money to do it.

BUT NO CENTRAL BANK IN THE DEVELOPED WORLD TODAY FOCUSES ON MONEY SUPPLY.

How does the money supply affect prices?

Beginning in the 16th century, Spain sent gold and silver from Mexico and Peru back to Europe.

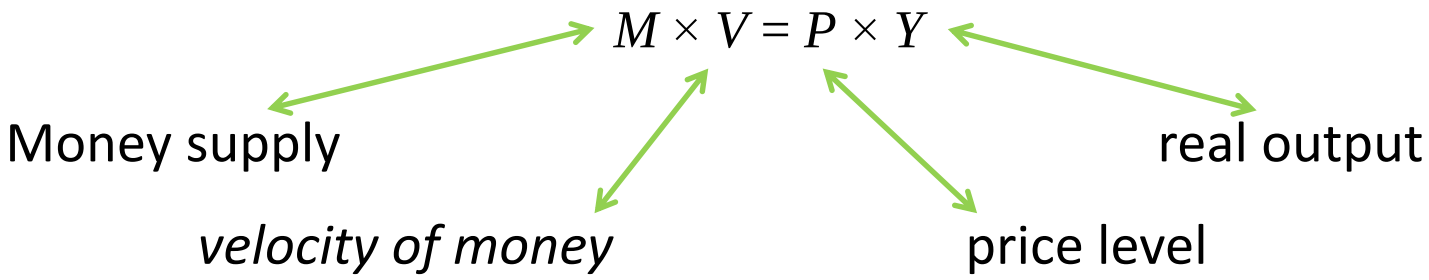
These metals were minted into coins, increasing the money supply.

Prices in Europe rose steadily during those years.

This helped people to make the connection between the amount of money in circulation, and the price level.

Connecting money and prices: the quantity equation

In the early 20th century, Irving Fisher formalized the relationship between money and prices as *the quantity equation*:



Velocity of money: the average number of times each dollar in the money supply is used to purchase goods and services included in GDP.

Rewriting this equation by dividing through by M, we obtain:

$$V = \frac{P \times Y}{M}$$

The Quantity Theory of Money: Beautiful in its simplicity

- $M \times V = P \times \mathrm{Y}$

- Transform the equation, in DYNAMIC terms:

$$\%\Delta\mathrm{M} + \%\Delta\mathrm{V} = \%\Delta\mathrm{P} + \%\Delta\mathrm{Y}$$

- Fisher asserted velocity was constant
- That means growth rate for money supply

= sum of real growth rate and inflation rate.

The Quantity Theory and a plan for central banks

- Suppose FRB and ECB agree that 2% real growth + 2% inflation is IDEAL.

- IF Quantity theory works, what should the central bank do?

- Set %ΔM at 4%, and hope that it splits into:

  2% real growth and 2% inflation.

Three Big Problems:

- 1. How do we define money:

  Cash? Cash plus bank deposits?

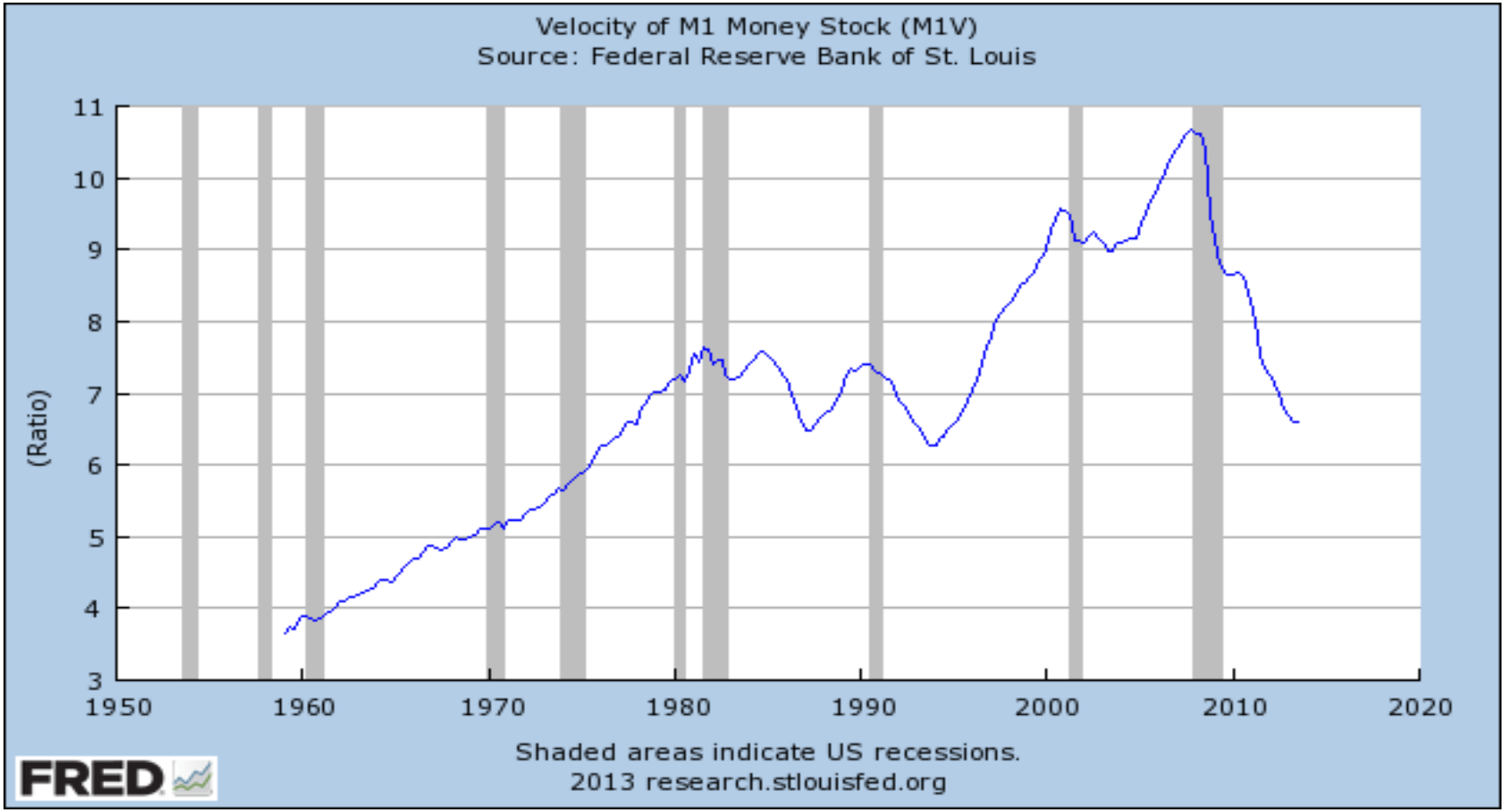
  what about credit cards?

  2. The Fed cannot really control money

  it buys and sells securities, changing short rates, which influences but does not guarantee a change in the money supply.

  3. VELOCITY OF MONEY, HOWEVER DEFINED, is MOST DEFINITELY NOT CONSTANT.

M1 has surged, alongside weak gains for output and prices: So V of M1 has plunged



How do Central banks operate, given money supply confusion?

- The Fed targets a (short term) interest rate
- They shift the rate target to influence other interest rates, other financial markets, and the value of the dollar versus other currencies.
- The changing state of financial markets, in turn, is expected to shift the performance of the real economy.

In summary:

- The Fed drives Wall street
- Wall Street drives main street
- Much more on this as the semester progresses