

Welcome to the Webinar

- We will be starting promptly at 3:30pm central time, 4:30pm eastern time.
- The audio part of the presentation will be delivered via conference call. Check your email for the phone and access number.
- In addition to the conference call, there is a chat function which will be managed by an economic education staff member.
- If you are disconnected you may re-enter by using the original link in your email.
- This webinar will be recorded and archived for later use.

Welcome to the Webinar

The views expressed in this presentation are our own and not the views of the Federal Reserve Bank of Atlanta, Federal Reserve Bank of St. Louis, or the Federal Reserve System.

Fractional Reserve Banking

Key Ideas



- The roots of modern fractional reserve banking
- The role of banks
- Reserves and reserve requirements
- Money creation
- The Fed's role

Terms to Know

- **Checkable Deposits:** Any demand deposit account against which checks or drafts may be written.
- **Reserves:** The fraction of deposits that banks do not lend
- **Required Reserves:** The minimum amount of reserves (cash held by the bank) a bank is required to hold

Terms to Know

- **Required Reserves Ratio:** The percentage of deposits that banks are legally required to keep available in order to satisfy customer demand
- **Excess Reserves:** The amount available for lending after required reserve balances and clearing balances have been met
- **Simple Money Multiplier:** The amount that an initial increase in excess reserves will eventually add to the money supply if banks lend all but their required reserves and all of the borrowed money is deposited into a depository institution

Fractional Reserve Banking

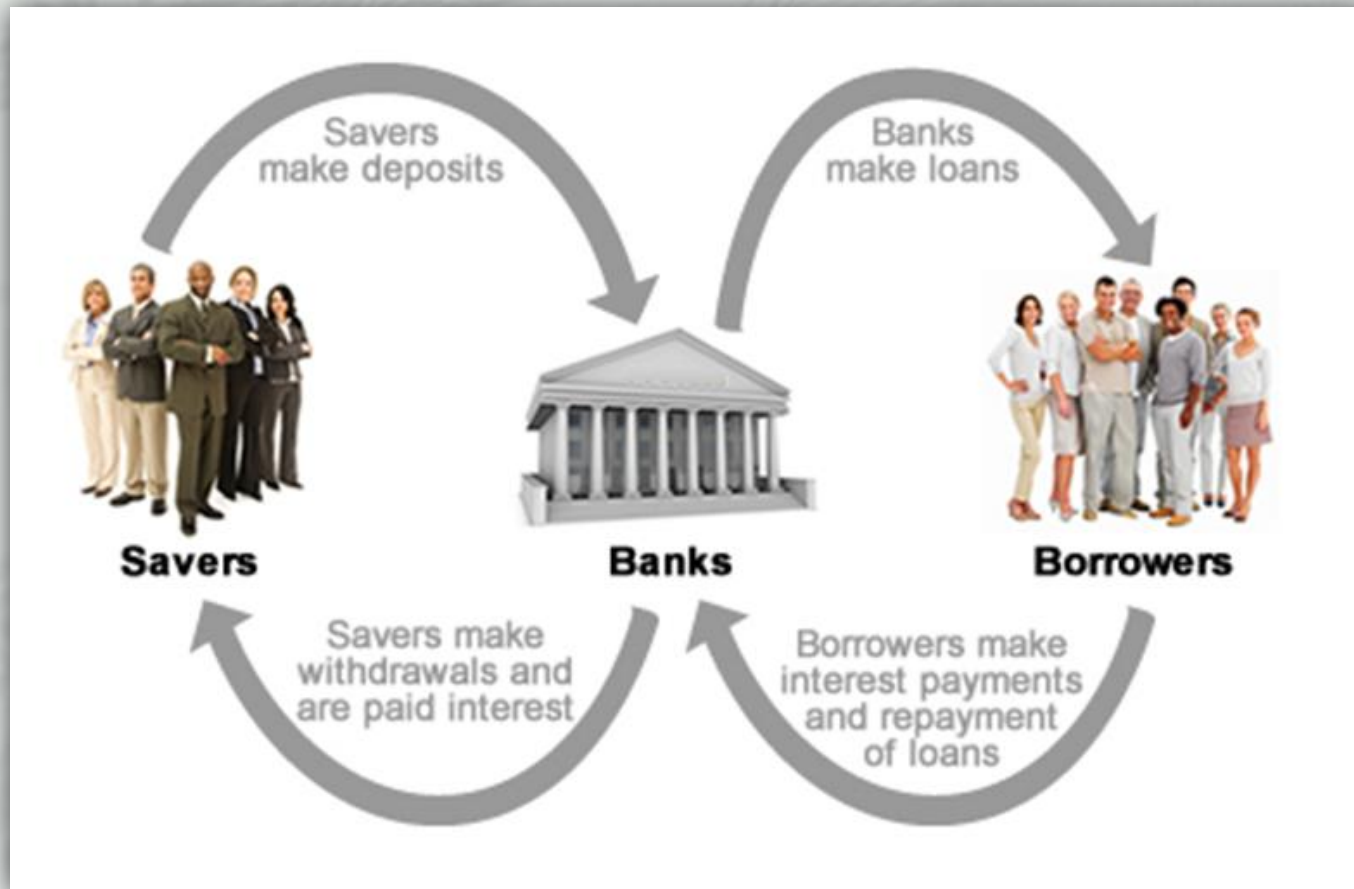


- The predominant banking system in the world
- Origin traces its roots to stories about the actions of 17th century goldsmiths

Role of Banks



- Banks are private, for-profit businesses
 - Hold deposits
 - Make loans
- Banks earn profits by charging a higher interest rate on the money they lend than the interest rate they pay depositors



Banks serve as **intermediaries**. Your local bank takes the deposits of thousands of depositors and lends the money to hundreds of borrowers. The bank collects payments from borrowers and distributes some of the money to depositors as interest payments to compensate the depositors for the use of their funds.

Checkable Deposits



- A small fraction of checkable deposits are backed up by cash in bank vaults or deposits at the central bank
- The larger fraction of the checkable deposits are loaned out

Reserves



- Reserves
 - The fraction of deposits that banks do not lend
- Required Reserves Ratio
 - The percentage of reserves required to be held to meet liquidity needs
- Excess Reserves
 - The amount available for lending after required reserves have been met

Interest on Reserves (IOR)

In October of 2008 Congress granted the Federal Reserve statutory authority to pay interest on reserves.

- Provided a new incentive for banks in the reserves market.

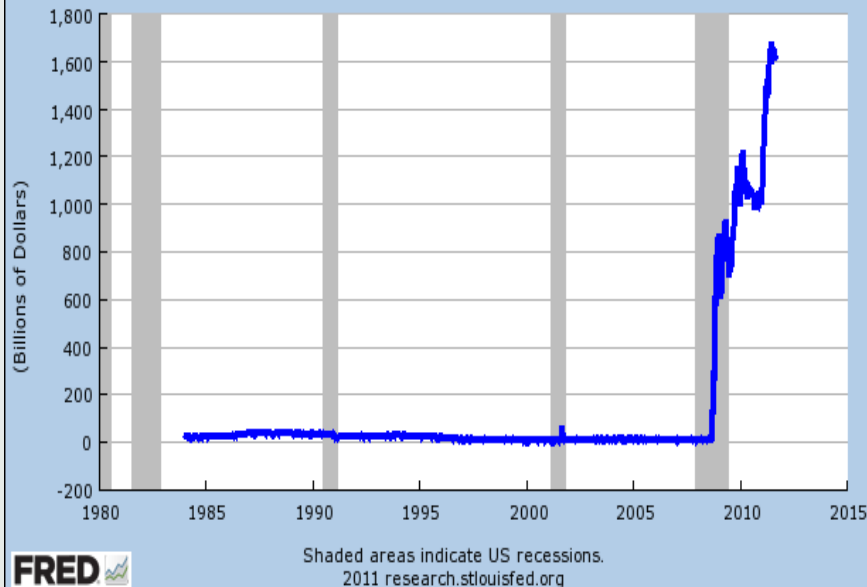
Prior to paying interest on reserves it was assumed that banks would hold no excess reserve balances. (Viewed as an implicit tax on banks.)

- Banks had an incentive to earn interest on these balances by lending them out.

Now, though, since banks earn interest on all reserves, both required and excess, the incentive has changed.

As of today IOR=25 basis points

Reserve Balances with Federal Reserve Banks (WRESBAL)
Source: Board of Governors of the Federal Reserve System



Required Reserve Ratio



- Set by the Fed, may vary according to the type of bank deposit and size of financial institution.
- Generally stated at approximately 10%

Fractional Reserves & Monetary Expansion



- The Simple Money Multiplier = $1/\text{required reserve ratio}$
- Money creation potential = money multiplier x excess reserves

Deposits, Reserves, and Loans “Create Money”

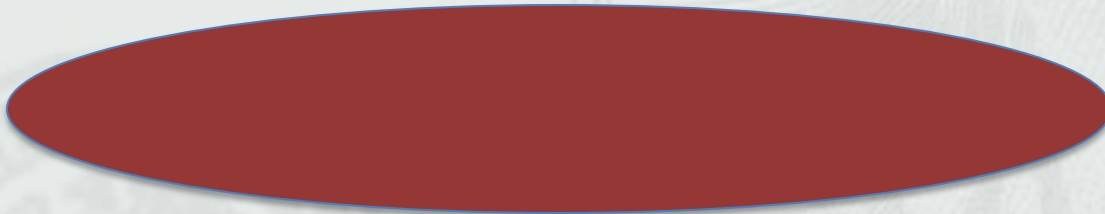
Deposit	10% Reserve Requirement	Loans Made
\$1,000	\$100	\$900
A customer makes a deposit of \$1,000 in the bank. The bank must hold \$100 in cash, they then loan or invest the rest of the money, \$900 . . .		
\$900	\$90	\$810
The recipient of the \$900 loan spends it, and the recipient deposits his money in a bank. This bank only holds 10% of the money, \$90, and the bank proceeds to loan out the rest of the money, \$810. Note how this continues through the rest of the loans and deposits into banks.		
\$810	\$81	\$729
\$729	\$72.90	\$656.10
\$656.10	\$65.61	\$590.49
\$590.49	\$59.05	\$531.44
\$531.44	\$53.14	\$478.30
When all the money has been deposited, loaned out, re-deposited, re-loaned out, etc. until there is no more money to loan out, you will arrive at these totals:		

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\$10,000	\$1,000	\$9,000
This means that the initial deposit of \$1,000 has become \$10,000 in terms of how much money was actually created for the economy. Where is the original \$1,000? It's in the vaults of the bank as the reserve requirement.		

$$\text{money multiplier} = \frac{1}{\text{required reserve ratio}}$$

What is the simple money multiplier with a required reserve ratio of 10 percent? _____



With a \$1,000 initial deposit, excess reserves are \$1,000 - \$100 = \$900. What is the total amount the money supply could expand in our example? _____



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$$(1/0.10 = 10)$$

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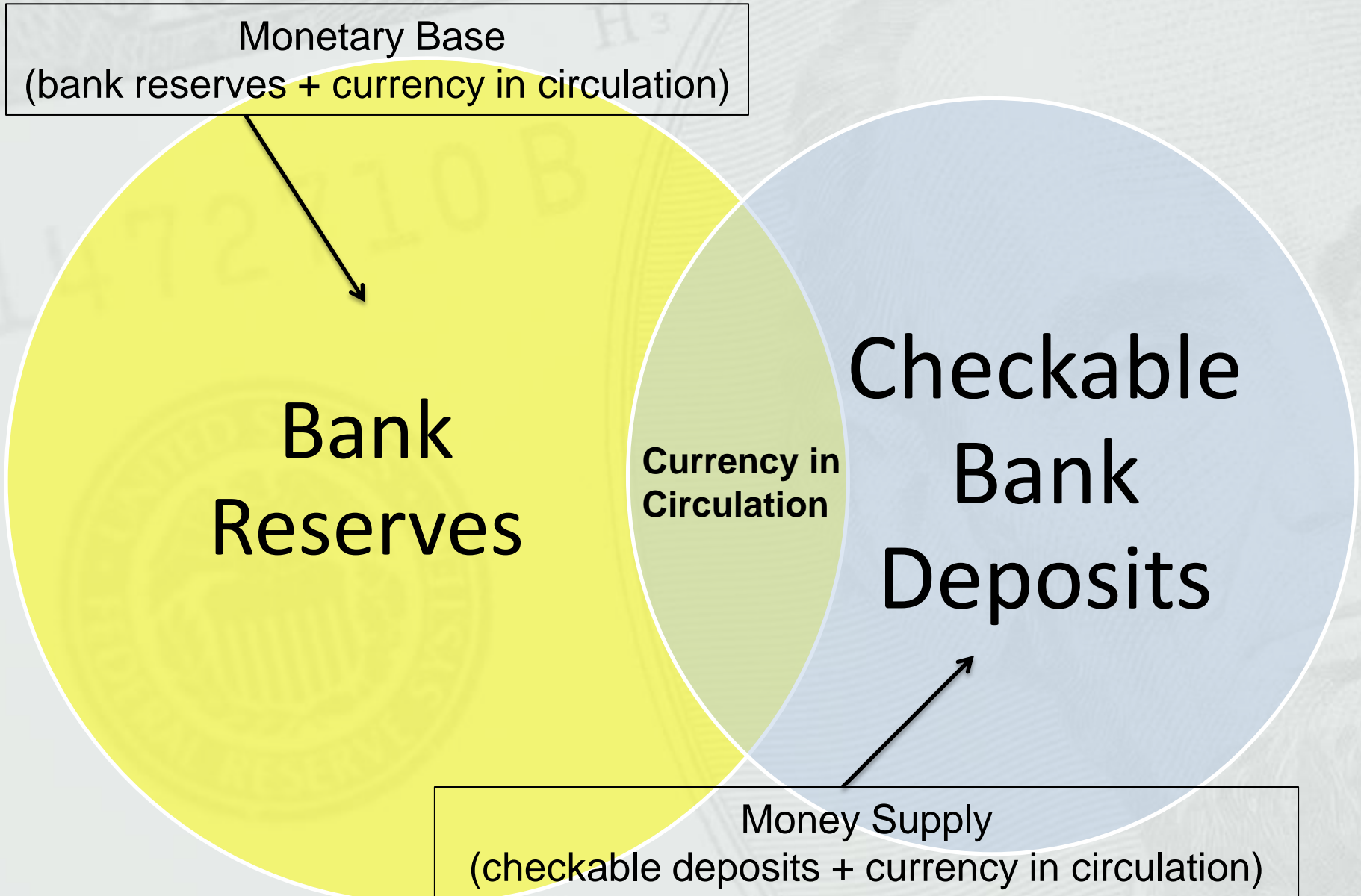
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$$(\$900 \times 10 = \$9,000)$$



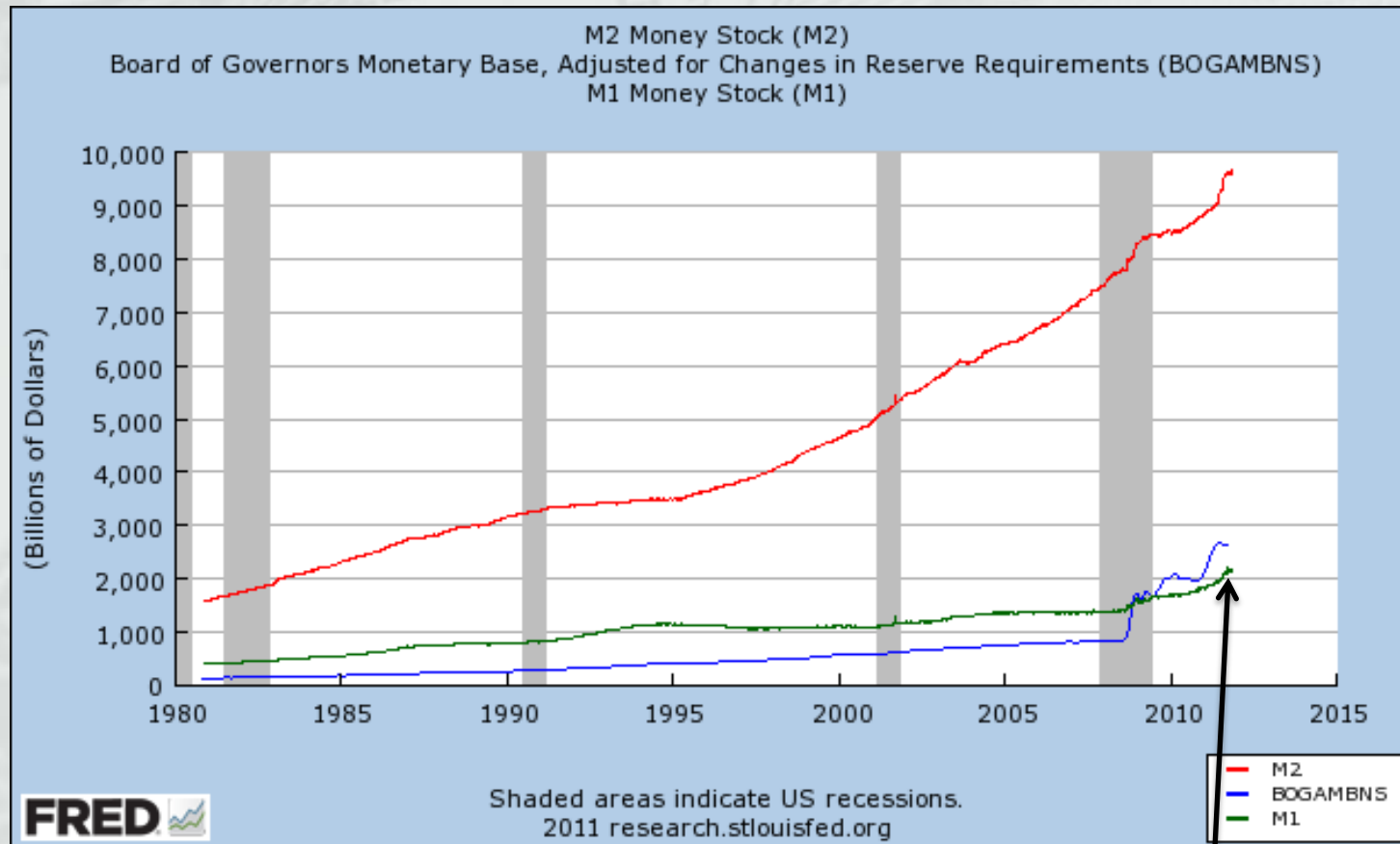
Monetary Base
(bank reserves + currency in circulation)

Bank
Reserves

Currency in
Circulation

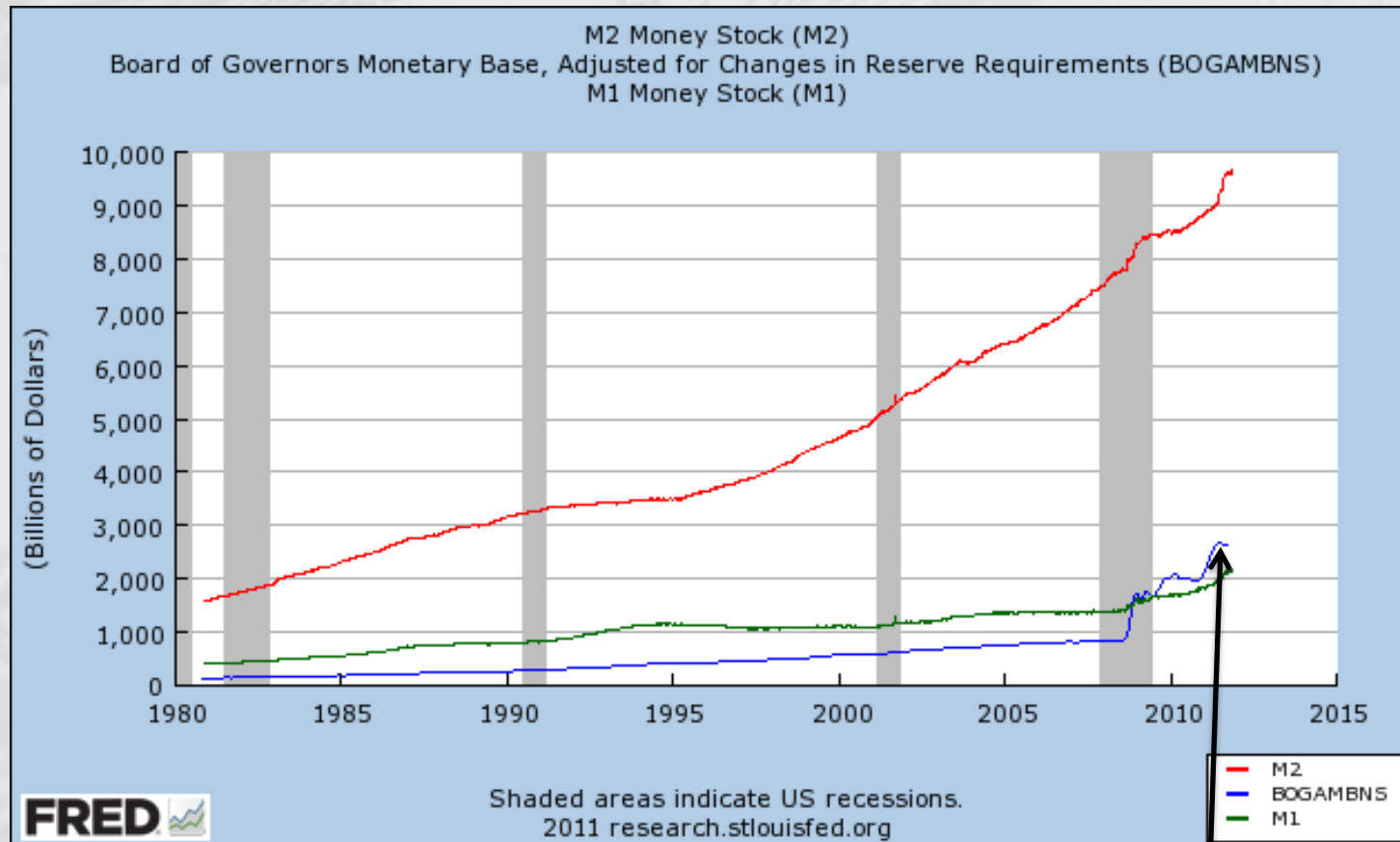
Checkable
Bank
Deposits

Money Supply
(checkable deposits + currency in circulation)



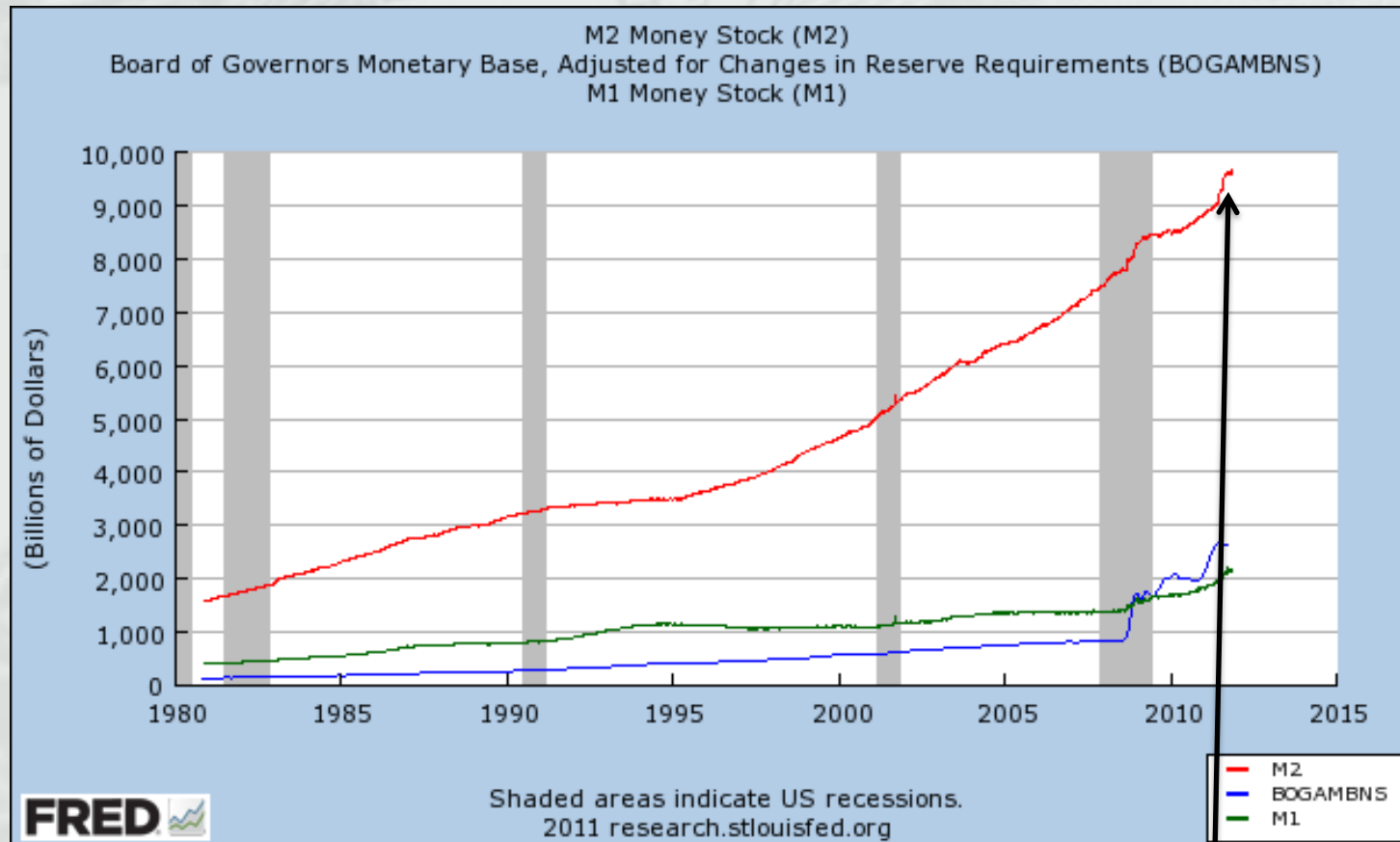
M1 (Green) Currency, checkable deposits, travelers checks.

Board of Governors Monetary Base (Blue) These are reserves created by the Federal Reserve System.



M1 (Green) Currency, checkable deposits, travelers checks.

Board of Governors Monetary Base (Blue) These are reserves created by the Federal Reserve System.



M2 (red) M1 + accounts with check writing features and other assets that are very liquid (savings deposits, money market mutual funds, and small-denomination time deposits).

Reserves Affect Money, Credit, and Interest Rates

When reserves go up (if the Fed buys government securities), money and credit increase and short-term interest rates may fall.

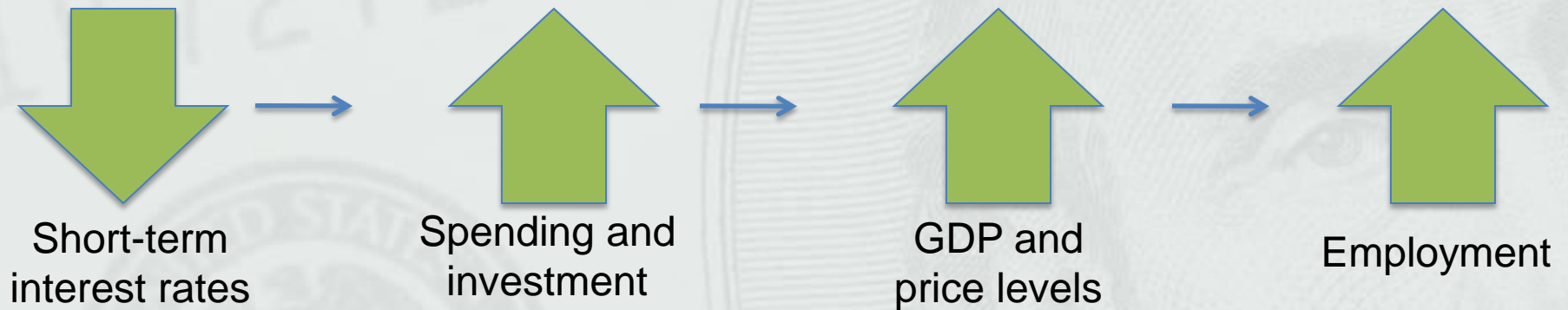


When reserves go down (if the Fed sells government securities), money and credit decrease and short-term interest rates may rise.



Effects of Expansionary Monetary Policy

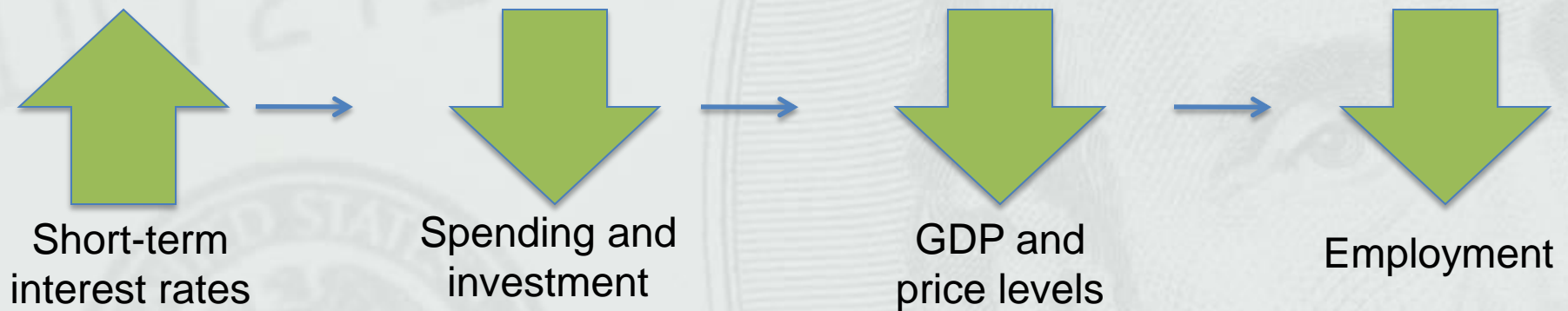
Interest Rates Affect Economic Activity



When interest rates go down, people and businesses tend to borrow and spend more, increasing GDP and employment. Additional demand for goods and services puts upward pressure on prices.

Effects of Contractionary Monetary Policy

Interest Rates Affect Economic Activity



When interest rates go up, people and businesses tend to borrow and spend less, which can decrease GDP and employment. However, the decrease in demand for goods and services should cause price levels to stabilize, thus bringing down inflation pressures.

The Fed's role

By changing the amount of reserves that banks have to loan, the Fed influences the amount of money in the economy available for loans. Then, banks create money through loans.



Recap

- The roots of modern fractional reserve banking
- The role of banks
- Reserves and reserve requirements
- Money creation
- The Fed's role

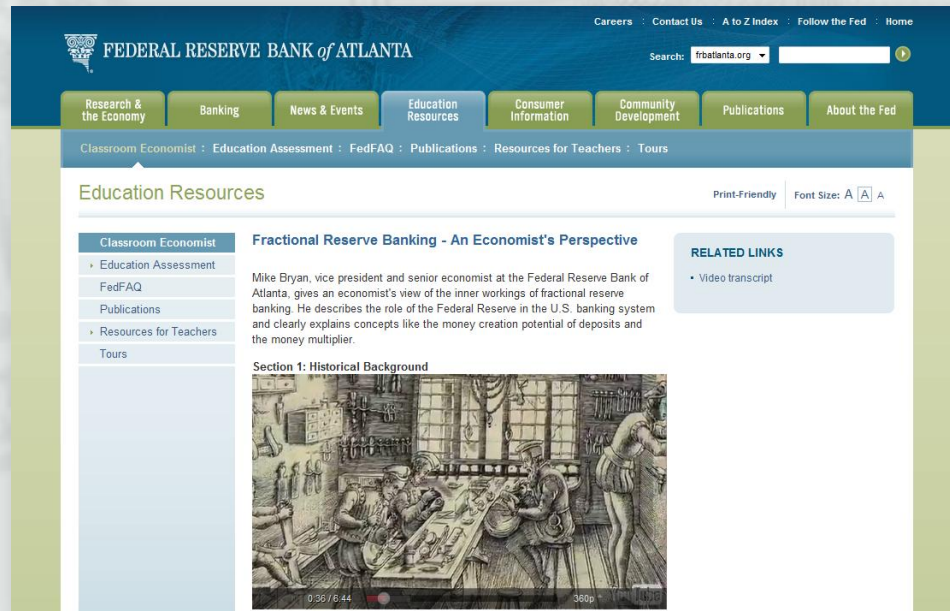


Federal Reserve Teaching Resources

Classroom Economist

The *Classroom Economist* features video and PowerPoint content designed to clarify and enhance teacher understanding of core economic and Federal Reserve topics. This content provides lesson demonstrations and resource ideas to help teachers bring the economic topics to life in the classroom.

<http://www.frbatlanta.org/edresources/classroomeconomist/>



The screenshot displays the Federal Reserve Bank of Atlanta website. At the top, the logo and name "FEDERAL RESERVE BANK of ATLANTA" are visible, along with navigation links for "Careers", "Contact Us", "A to Z Index", "Follow the Fed", and "Home". A search bar is present with the text "frbatlanta.org". Below the header is a menu with categories: "Research & the Economy", "Banking", "News & Events", "Education Resources", "Consumer Information", "Community Development", "Publications", and "About the Fed". The main content area is titled "Education Resources" and includes a breadcrumb trail: "Classroom Economist : Education Assessment : FedFAQ : Publications : Resources for Teachers : Tours". A sidebar on the left lists navigation options: "Classroom Economist", "Education Assessment", "FedFAQ", "Publications", "Resources for Teachers", and "Tours". The main content area features a video player titled "Fractional Reserve Banking - An Economist's Perspective" by Mike Bryan, vice president and senior economist at the Federal Reserve Bank of Atlanta. The video description states: "Mike Bryan, vice president and senior economist at the Federal Reserve Bank of Atlanta, gives an economist's view of the inner workings of fractional reserve banking. He describes the role of the Federal Reserve in the U.S. banking system and clearly explains concepts like the money creation potential of deposits and the money multiplier." Below the video player, there is a "RELATED LINKS" section with a link to "Video transcript". The video player shows a timestamp of 0:36 / 6:44 and a resolution of 360p. The video content shows a historical illustration of a bank interior with several people working at desks.

Federal Reserve Teaching Resources

The Case of the Gigantic \$100,000 Bill

In this lesson students simulate the money creation process using a giant \$100,000 bill. The simple money multiplier and the basics of fractional reserve banking are demonstrated through this role play.

<http://www.philadelphiafed.org/education/teachers/lesson-plans/gigantic-100K-bill.pdf>

What Does the Fed Do?

As students participate in this banking activity they explore the money creation process behind the fractional reserve banking system.

<http://www.philadelphiafed.org/education/teachers/lesson-plans/PurposesandFunctionsGrades9-12.pdf>

Council on Economic Education Resources

AP Economics: Macroeconomics(Published by CEE)

- The Multiple Expansion of Checkable Deposits, Unit 4, Lesson 3, Activity 37
- The Federal Reserve: The Mechanics of Monetary Policy, Unit 4 Lesson 4, Activity 38

This may be purchased from the Council for Economic Education

<http://store.councilforeconed.org/apecconomics-macro.html>

Council on Economic Education Resources

Focus: Understanding Economics in U.S. History

Lesson 16: Andrew Jackson and the Second Bank of the United States

This banking simulation introduces students to process of creating money through the fractional reserve banking system.

This may be purchased from the Council for Economic Education

<http://store.councilforeconed.org/focus-ushistory.html>

Federal Reserve Teaching Resources

The Economic Lowdown audio podcast series

Functions of Money (Episode 9) Money has taken many forms through the ages: shells, wheels, beads and even cows. All forms, though, have always had three things in common. Find out what in this eight-minute podcast. You will also learn how commodity money differs from representative money and how both differ from today's fiat money.

http://www.stlouisfed.org/education_resources/podcasts/economic_lowdownv1ep9.cfm

Inflation (Episode 4) The fourth episode of our podcast series, *The Economic Lowdown*, discusses three aspects of inflation: what it is, what causes it and how it is measured. The episode also addresses related topics such as deflation, disinflation and the role of the Federal Reserve in monitoring inflation.

http://www.stlouisfed.org/education_resources/podcasts/economic_lowdownv1ep4.cfm

Federal Reserve Teaching Resources

Liber8

Then and Now: Fed Policy Actions During the Great Depression and Great Recession

Although the recent Great Recession was severe, its financial impact never paralleled that of the Great Depression. The November *Liber8* compares these two economic downturns and shows how lessons learned in the Great Depression helped current Federal Reserve policymakers stabilize the economy during the recent economic crisis.

The classroom application includes a fractional reserve banking exercise for the classroom.

<http://liber8.stlouisfed.org/newsletter/2011/Lib1111ClassrmEdition.pdf>



November 2011

Then and Now: Fed Policy Actions During the Great Depression and Great Recession

"Regarding the Great Depression, You're right, we did it. We're very sorry...we won't do it again."
—Federal Reserve Chairman Ben S. Bernanke, November 8, 2002

Any mention of the Great Depression conjures up images of unemployed masses queuing in bread lines and frantic crowds trying to withdraw money from banks. And yet these illustrations tell only part of the story. The Great Depression was undoubtedly the most severe economic downturn in the United States and caused untold suffering among millions. To contextualize it, national output fell by about 33 percent and consumer prices plummeted by over 25 percent between 1929 and 1933; one in four workers was unemployed by 1933. The resulting protracted slump only ended at the onset of World War II.¹ In contrast, during the Great Recession of 2007-09, national output fell by only 5 percent, consumer prices increased by 1 percent, and unemployment peaked at 10.1 percent.²

Scholars have posited a variety of causes for the Great Depression, and the role of central banks in exacerbating the crisis has emerged as a key point. This article thus considers (i) how Federal Reserve policies during the Great Depression weakened economic conditions and (ii) how policymakers used the [lessons learned](#) from the Depression to stabilize the economy during the Great Recession.

Federal Reserve actions in the run-up to the Great Depression were important in hastening the decline in economic conditions. The speculative effects of the stock market boom in 1928-29 caused the Fed to increase interest rates to curtail the bullish trend.³ While this policy action dampened excessive borrowing to finance stock purchases, it also brought unintended consequences. Capital spending (e.g., for equipment and infrastructure) slowed dramatically in many sectors of the economy, leading to a drop in industrial production and output growth. The infamous stock market collapse in October 1929 finally ground the economy to a halt, and the Depression hit with full force soon after.

In the early 1930s, continued policy missteps by the Fed significantly lengthened the Depression. Specifically, the Fed failed to prevent four massive banking panics from battering the economy in 1930-33. On each occasion, anxious depositors descended on banks to withdraw cash because the public had lost confidence in the ability of financial institutions to service deposit obligations. Due to fractional banking procedures,⁴ banks did not have enough cash on hand to meet this increased demand. The Federal Reserve, as the lender of last resort, was in a prime position to limit the fallout by providing emergency funds to banks under distress. However, Fed policy at that time dictated that only banks with sufficient collateral or member banks of the Federal Reserve System were eligible for these funds. Consequently, cash-starved banks failed in large numbers.

¹ As determined by the National Bureau of Economic Research, the Great Depression officially lasted from August 1929 to March 1933. Although output rebounded significantly from 1934-37, the effects of the Depression lingered throughout the 1930s and the economy only returned to full employment when the United States entered World War II.

² As determined by the National Bureau of Economic Research, the Great Recession lasted from December 2007 to June 2009.

³ Prior to this, the Fed reduced the discount rate on loans made to banks from 4 percent to 3.5 percent between July and September 1927. Some observers contend that this prolonged an unsustainable boom in the stock market and that the Fed should have tightened monetary conditions sooner.

⁴ Fractional-reserve banking is a system where banks hold a portion of their deposits (cash) in vaults or at the Federal Reserve and use the remaining cash for lending activities.

The views expressed are those of the author and do not necessarily reflect the official positions of the Federal Reserve Bank of St. Louis, the Federal Reserve System, or the Board of Governors.

Federal Reserve Teaching Resources

Soar to Savings

Soar to Savings is an online course designed for economics and personal finance classes.

Students will learn the benefits of saving, tips for saving, and the impact of individual saving on the overall economy. Lessons include banking, opportunity cost, interest, down payments, and financial investment.

The course includes a description of the role of banks as intermediaries .

http://www.stlouisfed.org/education_resource_s/online_learning.cfm

Soar to Savings Fred's Nest Egg: \$15,000

Conclusion [Glossary](#)

In this course, we've discussed the importance of saving. Saving can help you through a difficult time, pay for education, and prepare for a comfortable retirement. Saving is also beneficial for the economy—deposits are turned into loans that result in increased economic activity and opportunity. Thus, being a good saver benefits you, the individual saver, as well as the economy in general.

Saving requires you to spend less than you earn. People who spend more than they earn make up the difference by borrowing money. Those who don't save may have to take the bus if their car breaks down, sacrifice getting an education that could lead to a better job, and perhaps even have to work long past retirement age. Too, debt requires using *current* income to pay for past spending **and** interest on those debts.

Of course, the difficulty with saving isn't knowing that it is a good thing, it is actually doing it—saving. Successful saving requires self-discipline. To save, you have to make sure you have money left over *after* your monthly expenses. Yes, financial responsibility is a must if you desire to be a saver. Recent research shows that many people know the benefits of saving but find it difficult to resist the opportunity to buy rather than save for the future. Planning and self-discipline are necessary skills for the successful saver, so don't just know it—do it!

Thank you for helping Fred save for the down payment on his new condo!

Based on your answers throughout the course, Fred has **\$15,000** in his nest egg. With all that money, Fred can afford the down payment for a **Basic Nest** at Eagle's Summit.

If you'd like to practice what you've learned and try again, you can take this stand-alone quiz. Maybe you can save even more toward Fred's goal and help him afford a more luxurious condo!

Federal Reserve Teaching Resources

In Plain English: Making Sense of the Federal Reserve

Want to learn about the Federal Reserve? Have no fear! In Plain English describes the structure and functions of the Federal Reserve System in an easy-to-understand interactive format.

Online Course: http://www.stlouisfed.org/education_resources/in_plain_english_class.cfm

Need to learn - or teach someone else - about the Federal Reserve? Have no fear! Whether you're a high school history teacher from Helena or a businessperson from Boise, Buck, our friendly tour guide, will show you around the Federal Reserve System, introducing you to who we are and what we do.

Video: http://www.stlouisfed.org/education_resources/inplainenglishvideo.cfm

Thank you for attending. You will receive a certificate for one hour of professional development via email after this event. If for some reason you do not get it, do not hesitate to contact us.

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Remember to check out Federal Reserve Education Resources at:

Federal Reserve Education
<http://www.federalreserveeducation.org/>

Federal Reserve Bank of Atlanta Education Resources
<http://www.frbatlanta.org/edresources/>

Federal Reserve Bank of St. Louis Education Resources
http://www.stlouisfed.org/education_resources/