Money

Everyday Economics

Federal Reserve Bank of Dallas

GENERAL STORE

8 carrots = 5 onions
1 cabbage = 3 turnips
1 duck = 2 lbs coffee beans
Pint of vinegar = 10 buttons
1 hen = 2 bevels
Bushel of peas = mutton shoulder
Pint of currants = 1 handkerchief
Side of beef = 3 yards of cloth
Bushel of apples = handsaw
10 squash = pint of cranberries
Dozen pickles = 1 salmon
5 lbs salt = dozen oysters
1 lobster = 6 pigeons
3 lbs flour = 1 chisel
1 ham = bushel of potatoes

1 turkey = 2 lbs cheese
3 buckles = 5 eggs
1 quart tallow = 1 lb dry beans
11 cucumbers = ½ lb bacon
3 augers = 10 lbs beef flank
Spool of thread = dozen beets
Bonnet = 13 apples
1 lb sugar = 7 cigars
10 ears of corn = 20 pears
Gallon of molasses = 10 lbs veal
½ yard of lace = 1 gallon of milk
3 lbs butter = 1 broadaxe
1 goose = 100 nails
Barrel of crackers = 5 claw hammers
5 lbs beef chuck = 3 lbs green beans

...OR BEST OFFER...

Money

Money is so important that when no official money exists, people often create it. For example, during World War II, prisoners in prisoner-of-war camps used cigarettes as money. All other goods were priced in terms of cigarettes, and prisoners willingly accepted them as payment for any other good. While cigarettes have value to smokers, once they become money, they gain value in terms of everything they can be exchanged for, whether a person smokes or not. People will always find something to serve as money, even with no government to enforce its legitimacy.

What Is Money?

Money is anything that is widely accepted as a form of payment for goods and services or repayment of debts.

In the limited economies of POW camps, cigarettes became money as soon as they became the accepted form of payment for rations that prisoners were exchanging. In developed economies, such as the United States, the use of commodities as money has been replaced with paper currency endorsed by the government, along with coins minted under government direction and electronic deposits facilitated by banks. No matter the size of an economy, money facilitates transactions between buyers and sellers.

A World Without Money

Imagine that you work on a cattle ranch in a world without money. When the cows are ready to go to market, you take them to the butcher shop to see if the shop will be willing to take some of your beef in return for butchering and packaging the rest of the beef for you and your family. The shop agrees, and you take your packaged meat and leave. On your way home, you decide you need bread to go with your meat, so you stop at a bakery. You offer the bakery some of your meat in return for some bread, but you are told that the baker does not need meat but will gladly give you bread for a pair of shoes. You go quickly to the cobbler's shop and trade meat for shoes and then head back to the baker to trade shoes for bread. You thankfully have no more errands to run today and head home. You have just participated in a form of trade called bartering, or trading goods and services without the exchange of money.

Bartering is a way for people to exchange goods and services in a manner beneficial for all involved. It is one of the simplest forms of economic interaction. But for bartering to occur, a number of conditions must be met. First, both parties to the transaction have to desire what the other has—a coincidence of wants. If one party is offering something the other party does not want, the transaction will not happen.

Second, the goods or services must be immediately available. If they are not, then enough trust must exist between the two parties to exchange something today for a promise of payment in the future. Third, both parties must agree on a price of each good in terms of the other. If these three conditions exist, people can exchange goods and services without the benefit of money.

Unfortunately, bartering is not suited to our complex modern economy. A trip to the grocery store for the components of a sandwich would be overwhelming. Every item you needed would have to be priced in terms of every conceivable item that could be offered in trade. This would pose a tremendous inconvenience, and that's where money comes in.

Defining Money by Its Uses

How can we know when something has become money? One way to identify money is by its uses. Money functions as (1) a medium of exchange, (2) a unit of account and (3) a store of value. When people accept money as payment for goods and services, it is not because of the intrinsic value of the money; it is because they believe it will allow them to purchase the goods and services they desire, now and in the future.

Medium of Exchange. A medium of exchange is anything that is traded broadly for goods and services in an economy. Since money is a generally acceptable form of payment, the recipient of money knows it can be exchanged for goods and services. In a complex economy, it is important that transactions not be dependent on bartering—that is, finding a willing counterparty holding the goods or services you need and willing to accept the goods or services you have in return. Money, when functioning as a medium of exchange, removes the need for this dual coincidence of wants.

THE EVOLVING UNITED STATES CURRENCY

Continentals were circulated around the time of the American Revolution. Overproduction led to significant devaluation and the phrase "not worth a continental."

Unit of Account. A unit of account is simply the unit by which the prices of all other items are quoted. If we remember our trip to the grocery store in a bartering society, the price of each item had to be quoted in terms of every other item. The tremendous inconvenience is overcome as soon as all prices are quoted in terms of a single unit. For example, the unit of account in the United States is the dollar. In Mexico, it is the peso. Once we standardize prices, people can quickly make value judgments based on those prices. In a bartering society, it would be almost impossible to ensure all prices are equivalent enough to make relative-value decisions. Once the prices are quoted using a single unit of account, the decisions become easier. Do I value one item over another at their respective prices?

GLOSSARY OF MONEY TERMS

Legal tender is money (coin or banknote) that a government or court has authorized as acceptable for payment of debts. A lender cannot refuse legal tender that is offered for repayment.

Mint price of a commodity is the number of dollars that the government declares a unit of the commodity to be worth.

Money is anything that is generally accepted as payment for goods and services or repayment of debts.

Purchasing power is how many goods and services can be bought for a given amount of money.

Specie is money in the form of coin, as opposed to notes.

Store of Value. The third use of money is as a store of value. When people are paid in money, they expect to be able to spend that money on purchases now and in the future. For money to be a good store of value and allow people to carry earnings into the future, it must be durable and maintain most of its purchasing power. This is one reason why perishable items make very poor money. It is unlikely in the POW camp that milk would emerge as a currency. Even with refrigeration, milk has a very short shelf life. U.S. currency does degrade over time, but the average bill lasts several years in circulation. And if a bill is damaged, it will still be accepted as long as 51 percent remains intact. In addition to its physical durability, money must allow people to buy goods and services today and in the future. Holding currency does not provide a person with a return, but U.S. money does maintain the majority of its ability to purchase goods and services over time. Money is a good store of value for a student if earnings from a summer job can be used to pay for next year's spring break trip.

The Characteristics of Money

Cash payments account for almost 50 percent of all transactions in the U.S., so the role of currency in the country's payment system is very important. Just imagine if you were designing the nation's currency from scratch. You already know that currency must function as a medium of exchange, a unit of account and a store of value. But what features does your money need? Six characteristics have been identified: Money must be **durable**, **portable**, **divisible**, **scarce**, **uniform** and **acceptable**.

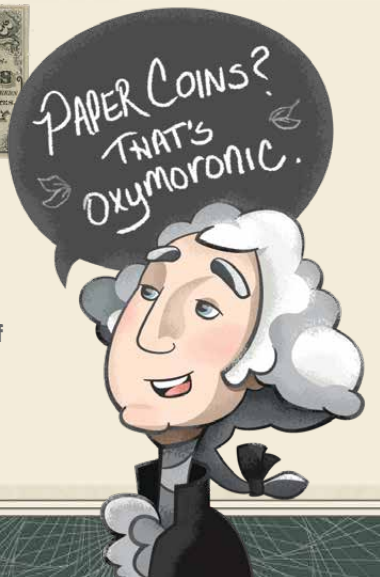
There are more than 107 billion cash transactions in the U.S. per year. To meet the rigors of these transactions, U.S. currency must be **durable**. Though often called "paper money," U.S. Federal Reserve Notes (also referred to as notes or bills) are 75 percent cotton and 25 percent linen. This distinct texture is more durable than paper and also deters counterfeiting. The average one-dollar note lasts 56 months in circulation; coins can last decades. This is long enough to make Federal Reserve Notes a feasible currency, though millions of worn notes are shredded and replaced every day to maintain currency that is fit for circulation.

U.S. currency travels all over the world. For a currency to effectively function as money, it must be **portable**. The size and weight of currency can help or hinder the portability of money; however, these are not the only aspects of currency that impact its movement. Before the advent of electronic transactions, the U.S. issued notes as large as $100,000 for use between Federal Reserve Banks (the bills were not circulated publicly). Today, the largest denomination in circulation in the U.S. is the $100 bill. When money is the appropriate size and weight and in the right denominations, it can be easily transported to meet the needs of consumers and businesses.

THE EVOLVING UNITED STATES CURRENCY

During the free banking era (1836–62), many entities printed and circulated their own money. At one point, 30,000 different currencies were in circulation.

Fractional currency was issued because of a metal shortage caused by the Civil War. Called "paper coins," these notes allowed people to make change during the war.



To facilitate transactions, money must be **divisible**, available in a form that can be divided to match the varied prices of goods and services. In the U.S., Federal Reserve Notes are available in $1, $2, $5, $10, $20, $50 and $100 denominations, and coins are available in 1¢, 5¢, 10¢, 25¢, 50¢ and $1. No coins smaller than a penny are minted in the U.S., so retail prices are generally set to the penny.

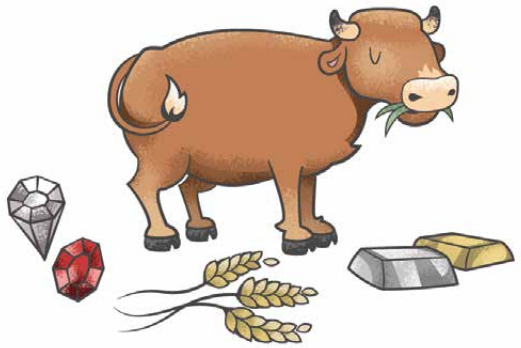
Most people think they would be better off if they had more money. But if we all were given more money, the only thing that would happen is the money would become less valuable. For money to retain its value, it must be relatively **scarce**. Throughout history, this scarcity has been brought about through physical limitations, like the quantity of gold and silver that can be mined, or through planned limitations, like the volume of dollars that will be printed and put into circulation. The money supply should be large enough to facilitate transactions but not so large as to degrade the value of the money. In the U.S., the Federal Reserve System is responsible for ensuring that the supply of money is appropriate for fostering economic growth without causing inflation (see "Explore the Concept: Inflation" on page 8).

For money to effectively enable trade, its value, in terms of the goods and services it can purchase, must be **uniform**. Although U.S. currency has been redesigned many times since the creation of a national currency in 1862, all notes printed since then are still redeemed at face value. Consistent value of denominations and the ability to distinguish between them are important when selecting objects to act as money. People do not have to determine when a note was printed to know how much purchasing power it has. By the denomination on the face, they can be confident of its value.

On each Federal Reserve Note is the statement: "This note is legal tender for all debts, public and private." This means that if you owe someone money in the U.S. and you pay them in Federal Reserve Notes, the debt is repaid. The declaration that a Federal Reserve Note is legal tender makes it **acceptable** as payment. However, to be willing to accept Federal Reserve Notes in trade, people must have confidence in the ability to exchange the bills for goods and services in the future. A key characteristic of money is its acceptability for payment, whether it is paper currency issued by a government or bushels of wheat.

Types of Money

We know that one of the uses of money is as a store of value. But how does money get its value? Three different types of money are recognized based on their sources of value: commodity money, representative money and fiat money.



Commodity Money. A commodity is an item that has value in and of itself. This can include anything from cows and wheat to silver and gold. Cows and wheat can be eaten; silver and gold can be made into jewelry. When goods and services are priced in terms of a commodity and people are willing to accept the commodity as payment, the commodity becomes worth whatever it can be exchanged for, in addition to its value as a consumable item. Through history, the commodity that most commonly has become money is a precious metal. Metals have all the characteristics of money. Metals are generally durable, lasting a very long time in circulation. When minted into coins, precious metals become relatively portable. They are divisible by weight or denomination. They are scarce, requiring time and energy to find and extract. Precious metals are uniform because their value in trade can be confirmed using rules regarding purity. Last, by being easily recognizable, precious metals are acceptable to most people.

Commodity money has limitations. With exclusive use of a commodity, the amount available for circulation at any given time is determined not by the needs of society but by the available supply of the commodity. And since there is a market for the commodity, in addition to its being money, its price will fluctuate. Those fluctuations impact the prices of every good and service bought and sold in society.

As a society's demand for money increases, the constraints of using a commodity often become burdensome. To simplify transactions, people stop using the actual commodity as money, and instead paper becomes the commodity's substitute. The new paper money is called representative money.

THE EVOLVING UNITED STATES CURRENCY

Courtesy of San Francisco Fed

After the creation of national currency during the Civil War, national banks and the U.S. Treasury began issuing United States Notes. These two United States Notes are both worth two dollars, but one was issued by the First National Bank of Pawtucket in Rhode Island and the other by the Treasury in New York.

Representative Money. Representative money does not have value on its own. Its only value lies in the value of the commodity it represents. It is actually a promise. When a government begins printing representative money, it is promising that the money is backed by, and often can be exchanged for, a specific amount of the represented commodity. The strength of the representative money is based on both the value of the commodity and the credibility of the promise to redeem it for the commodity.

Early forms of representative money were often receipts for gold and silver deposited with local metal smiths. In time, people began to accept the receipts as payment, rather than returning to claim the commodity. When this happened, the receipts began to function as money. By accepting the receipt, a person trusted in the ability to return to the smith and obtain the amount of metal specified on the receipt.

Eventually governments officially converted commodity money to representative money in the form of paper currency. This was essentially a promise that the printed note could be redeemed for a certain amount of gold or silver coin—called specie. To facilitate redemptions, the government had to maintain ample reserves of the represented commodities. In this conversion process, governments established a ratio of the metal or other commodity to its dollar value. For example, after the Great Depression, President Franklin Roosevelt issued an executive order setting the mint price for one ounce of gold at $35.

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BANK DEPOSITS AS ELECTRONIC MONEY

How does money exist in the absence of paper currency? When people hold bank deposits that can be traded without ever being physical currency, those deposits become money. Remember that money is anything generally accepted as a medium of exchange, a store of value and a unit of account. If a vendor is willing to allow consumers to swipe their debit card and transfer an account balance from one bank account to another, that balance is functioning as a medium of exchange. If a bank account balance continues to be worth the same amount of goods and services as the paper currency value it represents, it is functioning as a store of value. Since both prices and bank account balances are quoted in dollars, the value of your bank deposit can be easily compared with the cost of a good or service. This allows the bank deposit to function as a unit of account.

Bank deposits also fulfill the characteristics of money. They exist perpetually in the systems and ledgers of the bank, making them durable. They can be traded in any amount, keeping them divisible. Even though they might earn interest, that payment is not the creation of money but simply compensation for holding money rather than spending it. This keeps the money represented scarce. Bank deposits are uniform because they can be withdrawn for the amount of currency they represent. Through checks and debit cards, they become portable, and they are acceptable as long as vendors will allow the electronic transaction to substitute for cash.

Explore the Concept...

Inflation

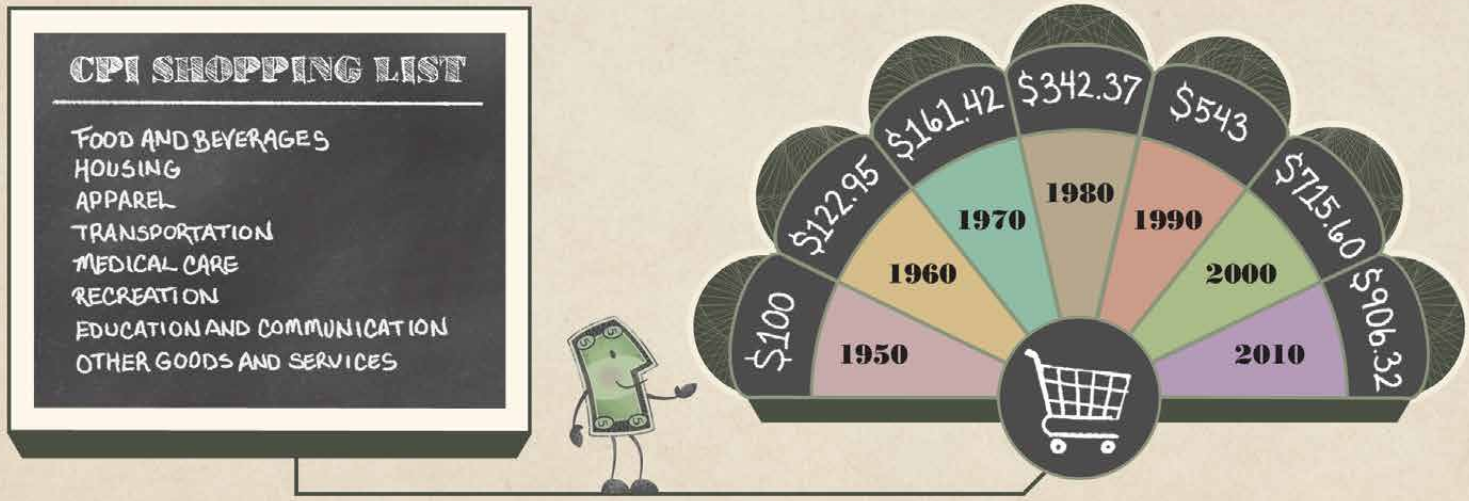
Prices of specific goods and services can go up and down substantially over any given period. The variation can happen because of sudden changes in the supply of inputs or changes in consumer demand for a product. When the prices of many goods and services across many sectors rise together, it is called inflation. When those prices fall together, it is called deflation.

Causes of Inflation and Deflation

Over short periods, changes in prices, both up and down, can be caused by a number of issues in the economy. A common cause of short-run inflation is a change to the supply of a natural resource, like oil. Oil is integral to many products in our economy. Oil is used in the production of plastics, many other consumer goods and fuel for transportation. If the supply of oil is low, the prices of production and transportation go up. This in turn raises the prices of many goods and services, perhaps enough to cause inflation in the short run. However, energy prices are generally very volatile, and when the price of oil falls at some point in the future, prices of the affected goods may fall as well.

Similarly, when high-fructose corn syrup became a staple item in many processed foods, it created a new use for corn, and many food prices became linked to the price of corn. Later, when corn ethanol started to be used as a gasoline additive and in ethanol-driven vehicles, the demand went up again. Since food was already dependent on corn prices, the change in demand for corn related to its new use as ethanol caused food prices to rise.

In the cases of oil and corn shocks, the effects are usually short-lived. Over longer periods, all inflation has typically one root cause: too much money demanding too few goods. Milton Friedman, the Nobel Prize-winning economist, famously wrote, "Inflation is always and everywhere a monetary phenomenon...." This means that for inflation to be sustained in the long run, the economy must be producing too much money relative to its production of goods and services. This is one reason why scarcity of money is so important to protecting prices.



The CPI market basket contains items from these eight categories.
The price of the basket of goods and services has risen over the years.

Inflation in Zimbabwe peaked in 2008 above 79 million percent per month. The government printed bills in denominations as high as $100 trillion before abandoning the currency.

Effects of Inflation

Low, predictable inflation is not bad for an economy. In many developed nations around the world, it is the responsibility of the central bank, like the Federal Reserve in the United States, to keep inflation at or around 2 percent. But when inflation is too high for too long, many negative consequences can result.

When prices rise, money purchases fewer goods and services. If a person's wages increase at the same rate as inflation, that person is not any worse off in terms of the ability to purchase things needed. However, if a person lives on a fixed income, or if wages do not increase at a rate equal to the rate of inflation, that person is forced to purchase fewer goods due to the higher prices of the goods and services consumed.

Savers and lenders are also hurt by high inflation. When inflation is low and predictable, savers and lenders can anticipate the rate of interest needed to maintain their purchasing power—that is, their ability to buy goods and services over time. If savers earn a rate of interest from the bank that is less than the rate of inflation, they will see their ability to purchase goods and services eroded and will be worse off. Similarly, a lender, when deciding whether to make a loan at a particular interest rate, must account for the borrower's likelihood of repayment as well as the expected inflation over the period of the loan. A lender who does not accurately forecast the level of inflation will not receive, in real dollars, the anticipated profit for making the loan.

Hyperinflation is when the rate of inflation is many times the acceptable amount, sometimes upward of hundreds or even thousands of percent per month. Hyperinflation can force a nation to give up control of its money, circulate foreign currency and depend on foreign governments for sound policy regarding the value of money.

Measuring Inflation

It is not easy to measure the prices of every good and service in an economy to determine if prices are rising. So policymakers use selected groups of goods and services to estimate the overall change in the price level. The selected groups of goods and services, called market baskets, are used to create indexes. An index is a ratio that illustrates the change in a value over time. Inflation indexes illustrate the change in prices over time. The most common measures of inflation are the consumer price index (CPI), the producer price index (PPI) and a favorite of the Federal Reserve System, the personal consumption expenditures (PCE) price index. No matter who compiles the index, or which items it contains, the goal remains to estimate the trend in prices in the economy.

The Federal Reserve and Inflation

The Federal Reserve System, as the central bank of the United States, is charged by Congress with maintaining stable prices. The Federal Reserve uses monetary policy—its ability to influence the availability of money in the economy—to keep inflation low and predictable and to foster economic growth. In the long term, inflation is a problem of too much money chasing too few goods and services. The Federal Reserve lowers or raises interest rates to speed up or slow down the economy and keep inflation in line with its target. The Federal Reserve has proven to be effective at keeping inflation low and predictable.

Fiat Money. Fiat money is money by decree. When it is no longer feasible or desirable to back money with a commodity, governments can declare an item to *be* money. This decree means that the money is an acceptable payment for goods and services and enforceable for repayment of debts. Fiat currency has no value in and of itself, as commodity money does, nor does it represent a promise to exchange for a commodity, as with representative currency. Its value comes exclusively from the willingness of people to accept it as payment. This willingness is driven mainly by the belief that when a person wants to spend that money, it will still have value—that is, the next person will accept it as well. Fiat money, like all other money, must be durable, portable, divisible, scarce, uniform and acceptable. Since fiat money is not based on an underlying supply of a scarce commodity, the responsibility to maintain its scarcity lies in a regulating body. For the money to remain acceptable, that regulating body must keep the appropriate amount of money in circulation to protect its value.

Fiat currency has many advantages over commodity and representative money. Fiat currency is not constrained by the arbitrary amount of a commodity. Although this does pose a risk, namely that the money supply can expand without limit, it has an advantage: The money supply can grow and shrink to meet demand. Also, fiat currency is not subject to a market price outside of its declared value. Dollar bills do not sell on a secondary market (with the exception of collectible dollar bills). This protects prices from extra fluctuation added by a changing market value. Also, as economies expand, resources do not have to be dedicated to extracting a precious metal to back the money necessary to facilitate expansion.

The disadvantages of fiat currency are largely associated with its management. If a regulating body makes too much available, inflation—the general rise of prices in the economy—can occur. If not enough money is available, growth in the economy can be constrained. Balancing between not enough money

(Continued on page 13)

THE EVOLVING UNITED STATES CURRENCY

Martha Washington, wife of George Washington, is the only woman depicted on the face of a U.S. currency note. She appeared on the silver certificate, first issued in 1878.

Courtesy of San Francisco Fed

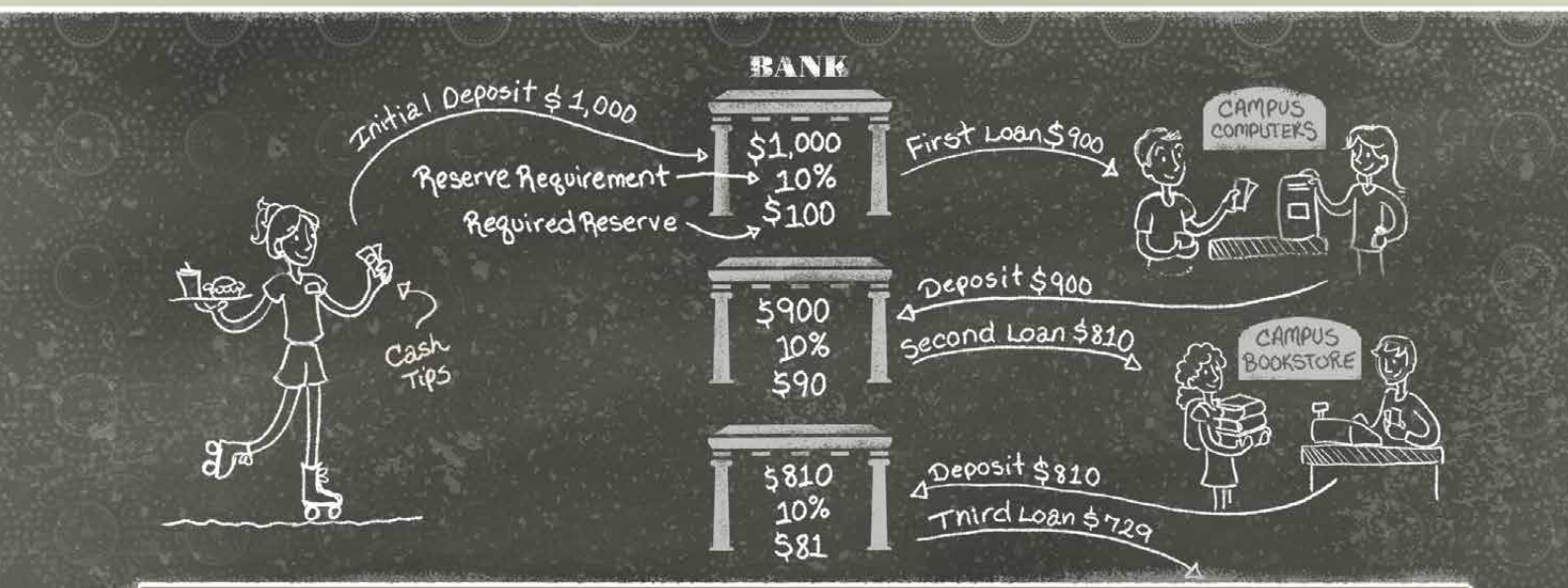
The $10,000 bill was the largest denomination circulated in the U.S. Salmon P. Chase was pictured on its face for his role in passing the National Bank Act of 1863 and upholding its constitutionality in the Supreme Court.

THE MONEY MULTIPLIER

When money is deposited into a bank, the bank does not hold the money and wait for the account holder to use it. The bank, in an effort to make money, will loan out the majority of the money to other clients and charge them interest. But a portion of the money cannot be loaned out. This is called the **required reserve** and is calculated by multiplying the amount of the **new deposit** by the **reserve requirement**, a percentage set by the Federal Reserve. For example, with a reserve requirement of 10 percent, only $900 of a $1,000 deposit can be loaned.

Money that is loaned out by a bank is put to productive uses to purchase items like houses, cars and college educations. Each time one of these purchases is made, the money is deposited in the account of the seller, creating another opportunity for loans. As each loan is made, the **money supply** is expanded.

Multiple deposit expansion is the process of taking in deposits, withholding a portion in reserve and loaning the rest. This process is critical to financing purchases for both individuals and businesses.



Calculating the expansion in the money supply from an individual's deposit

When the carhop gets paid cash tips, no new money supply is created. However, once she makes a deposit, the bank can make a loan. The total potential increase in **money supply** from her deposit is calculated by dividing the **first loan** ($900) by the **reserve requirement** stated in decimal form (.10).

First Loan Amount ÷ Reserve Requirement = Potential New Money Supply

$900 ÷ .10 = $9,000

Calculating the expansion in the money supply from the Fed creating new reserves

When the Federal Reserve System buys bonds through open market operations, it creates **new reserves**. Unlike the deposits of individuals, the **potential new money supply** created by dividing $1,000 in **new reserves** by the **reserve requirement** does include the initial deposit.

New Reserves ÷ Reserve Requirement = Potential New Money Supply

$1,000 ÷ .10 = $10,000

GOVERNMENT ACTION RELATED TO MONEY

Coinage Act of 1792
Established the U.S. Mint; declared the types of metals and the denominations that could be used for coins; made coins legal tender.

National Bank Act of 1863
Created a national currency; chartered national banks that could issue currency against U.S. securities; later amended to put a federal tax on notes of state banks, effectively taxing the notes out of existence.

Federal Reserve Act of 1913
Established the Federal Reserve System to, among other things, create an elastic currency—one that grows and shrinks to meet demand.

Presidential Executive Order 6102 (1933) and Gold Reserve Act of 1934
Required people and businesses in the U.S. to turn over gold coins, bullion and certificates to the Treasury; ended the convertibility of gold certificates to gold; made it illegal to hoard gold or add clauses to contracts to make them payable in gold. Changed the mint price of gold from $20.67 to $35 per ounce, devaluing U.S. currency and obligations.

The Bretton Woods Conference (1944)
Established the International Monetary Fund (IMF) to manage fixed exchange rates where all currencies were pegged to gold or the U.S. dollar; most currencies pegged to the dollar.

The Nixon Shock (1971)
Ended the U.S. willingness to convert dollars to gold as prescribed under the Bretton Woods agreement; ushered in a period of free-floating exchange rates.

Riegle Community Development and Regulatory Improvement Act of 1994
Declared that no notes other than Federal Reserve Notes would be maintained in the U.S.; to standardize currency, it stated that all previously printed United States Notes that were deposited would be collected and destroyed.

THE EVOLVING UNITED STATES CURRENCY

Courtesy of San Francisco Fed

During World War II, many locations that the U.S. considered to be at risk for capture were supplied with overprinted notes. These notes, like this one from Hawaii, would be declared invalid if the territory fell into enemy hands.

in circulation and too much money in circulation has proven difficult for some countries. When the growth of the money supply gets out of hand, it can lead to an economic collapse and the abandonment of the money. If people cannot count on money to retain its purchasing power, they will refuse to accept it whenever possible. While the government can enforce the use of fiat money for the repayment of debt, enforcing its acceptance for other transactions is often more difficult.

The Federal Reserve System and U.S. Fiat Money

The Federal Reserve System, or the Fed, is the central bank of the United States. A central bank is the financial institution charged by the government to oversee the monetary system of a nation. Remember that money is anything that functions as a medium of exchange, store of value and unit of account. One type of money used in the United States is physical money—currency and coins. Other ways people hold money are in checking accounts and savings accounts, and some people have money market accounts. Frequent travelers may hold travelers' checks. All of these, in addition to currency and coin, are considered money.

The distribution, evaluation and destruction of physical money are responsibilities of the Federal Reserve System. In managing physical currency, the Fed is working to ensure acceptability of money. After receiving currency from a commercial bank for processing, the Fed counts the money to verify the deposit, inspects the money to make sure it is legitimate and examines the money for wear, damage and dirtiness. Bills determined to be unfit for circulation are shredded, but not before they are credited to the bank's account because a bill remains legitimate currency regardless of its condition. Federal Reserve Banks and many of their branches shred money. At the Federal Reserve Bank of Dallas,

MONEY AND TRUST

What role does trust play in a barter economy? When people exchange goods and services directly in a barter economy, sometimes the unavailability of items may limit transactions. Take for example a farmer and a grocer. Long before the crops are available for harvest and trade, the farmer needs fertilizer to help them grow. The only thing he could offer the grocer as payment is a promise of future crops. If the farmer and grocer have done business before and trust each other, perhaps the grocer would accept the IOU in lieu of immediate payment. However, for many transactions, the burden of trust is too great to bear.

In a money-based society, trust between buyers and sellers is unnecessary. When the farmer comes to the store at planting time with the money earned from the previous season's crops, the grocer is happy to sell the fertilizer, and money changes hands. The grocer is not dependent on a good crop or an ethical farmer to receive his payment. Later in the year, when the crops are harvested, if the grocer would like to purchase some of the farmer's crop, he can pay the farmer with money and not future fertilizer. Money removes the need for trust and facilitates smooth transactions.

ANTICOUNTERFEITING

If consumers become concerned about the authenticity of money, they become less likely to accept it. And counterfeit currency can impact the scarcity of money and undermine its value. To combat this, countries design and redesign money to stay ahead of counterfeiters.

In the United States, many security features are incorporated into the bills, starting with the "paper" that money is printed on: a blend of 75 percent cotton and 25 percent linen. Anticounterfeiting features include microprinting and color-shifting ink. Money is filled with features that protect its integrity.

Microprinting

When the bill is magnified, you can see microprinted words, which are hard for counterfeiters to duplicate.

Watermark

The watermark, a smaller image of President Grant's portrait, is visible when the bill is held up to a light.

Security Thread

Embedded into the paper of the $50 bill is a security thread that can be seen under ultraviolet light.

Color-Shifting Ink

The 50 in the lower right corner changes colors when the bill is tilted.

tens of millions of dollars worth of notes are shredded each day. Each of these shredded notes is replaced by a newly printed note from the Bureau of Engraving and Printing, keeping the currency acceptable.

During the inspection process, if counterfeit bills are found, they are turned over to the U.S. Secret Service for investigation. Quickly removing and investigating counterfeit bills is important in maintaining consumers' faith in currency and its overall acceptability.

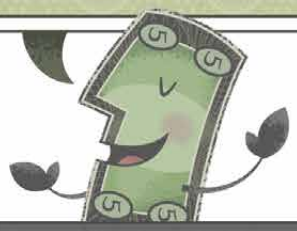
Federal Reserve Notes and the World

The stability of U.S. currency, coupled with the size of the U.S. economy, has made Federal Reserve Notes desirable money, not just domestically but worldwide. At times throughout history, countries have held the notes as reserves and occasionally circulated them in place of their own currency. This demand is driven by the perceived safety of the dollar—the belief that it will hold its value and will remain acceptable for transactions for many years to come.

Another way that the Federal Reserve System impacts money in the United States is through its monetary policy actions. Monetary policy is how a central bank, like the Federal Reserve System, influences the availability of money and credit to achieve national economic goals. For the United States, the goals are price stability and maximum employment. To maintain price stability, the Federal Reserve most often uses open market operations. Open market operations allow the Federal Reserve to set the federal funds target rate—the rate of interest that banks charge each other to loan reserve balances. Although this interest rate is not available to consumers, it does work its way through the economy and impacts the rates that are available for individuals seeking to borrow money. If the Fed makes money too cheap, meaning interest rates that are too low, more money will flow into circulation through lending activities, and this generally causes prices of goods and services purchased with that borrowed money to rise. When prices rise, we experience inflation—a general rise in prices over time. Low and predictable inflation, around 2 percent, is actually beneficial to the economy, but too much inflation, caused by an overabundance of money, will cause the purchasing power to go down and can damage economic stability.

WHO PRINTS THE MONEY?

The Bureau of Engraving and Printing (BEP) is a government agency within the U.S. Treasury Department that designs, engraves and prints all paper money for the U.S. The BEP has two facilities, one in Washington, D.C., and the other in Fort Worth, Texas. These facilities supply billions of dollars to the Federal Reserve Banks to replace worn bills that have been taken out of circulation and shredded and to meet increases in consumer demand for money.



WHO MAKES THE COINS?

Under the Coinage Act of 1792, the United States authorized the construction of the U.S. Mint in Philadelphia. The Mint was tasked with coining money for the young republic, a role it still fills today. The Mint is now headquartered in Washington, D.C., and operates production facilities in Philadelphia, Penn.; Denver, Colo.; West Point, N.Y.; and San Francisco, Calif. The Mint is also responsible for the gold bullion depository at Fort Knox in Kentucky.

THE EVOLVING UNITED STATES CURRENCY

To deter counterfeiting, the U.S. redesigns currency periodically to incorporate the newest and most effective security features. The redesigned $100 bill, released in 2013, has a 3-D security thread and ink that shifts color when the bill is tilted.

During the Great Depression and through World War II, many countries abandoned the practice of using their gold reserves to back the currency they circulated—known as the gold standard. After the war ended, a push to reestablish gold on an international scale led to the hosting of a conference in the village of Bretton Woods, N.H. At the conference, it was agreed that countries would commit to a system of fixed exchange rates. The United States agreed to maintain the price of gold at $35 per ounce and to exchange dollars for gold. The dollar became the de facto world currency as many international transactions were quoted in dollars. As long as countries believed that the United States was both willing and capable of redeeming the notes for gold at any time, the notes were considered to be equivalent to the gold they represented. In 1971, President Richard Nixon suspended the convertibility of notes to gold and ended the gold standard. However, the end of the Bretton Woods agreement was not the end of the circulation of U.S. currency abroad.

Billions of dollars in Federal Reserve Notes are used outside the United States in a number of ways. Some countries circulate the money as their only form of currency. Some countries try to preserve the value of their currency by pegging it—that is, setting the exchange value of their domestic currency—to the dollar, and many more circulate Federal Reserve Notes unofficially. Countries' specific reasons for using Federal Reserve Notes may vary, but the dollar's use is generally associated with its effectiveness as a medium of exchange, unit of account and store of value.

The economies of the modern world are far too complex to be run via direct trade of goods, too fast-paced to be constrained by the growth of commodities and too disparate to be limited to physical currency transactions. Fortunately, as the world has changed, so has the money that lubricates the gears of the economy. The creation and continuing evolution of money are among the most important innovations in human history.

Great minds think about…

money

William Stanley Jevons (1835–1882) stated clearly the problem of double coincidence of wants associated with money. He defined the role of money as a medium of exchange to solve this problem and discussed the function of money as a unit of account and temporary store of value. Jevons did pioneering work on the price indexes for measuring inflation.

Irving Fisher (1867–1947) contributed to our understanding of money through his exploration of the quantity theory of money and his work on the relationship between nominal interest rates, real interest rates and inflation. Fisher's price index is the basis for the way real gross domestic product is calculated in almost all developed economies.

John Maynard Keynes (1883–1946) shifted the focus of analysis of money from its traditional three roles as a medium of exchange, unit of account and store of value to individuals' motivations for holding money. Keynes called these the speculative motive, precautionary motive and transactions motive. He pioneered the theory of money demand.

Milton Friedman (1912–2006) emphasized the role of the money supply and monetary policy in determining an economy's rate of inflation and prescribed ways to maintain price stability. His *A Monetary History of the United States: 1867–1960* built a persuasive empirical case for the role of money and monetary policy in affecting economic activity. He received a Nobel Prize for his work in 1976.

Don Patinkin (1922–1995) combined Keynes' ideas about money demand with the classical theory of value, providing one of the earliest complete "microeconomics-founded" models of money and economic activity.

Robert E. Lucas Jr. (1937–) and **Thomas Sargent** (1943–) made compelling arguments for the importance of expectations in understanding the role of money and the effects of monetary policy. Their general approach to modeling monetary economies, with its consistent treatment of expectations, is now a near-universal standard. Lucas received a Nobel Prize in 1995, and Sargent was awarded a Nobel Prize in 2011.

Money

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Economic Education Contacts

Susan Kizer
susan.kizer@dal.frb.org

Princeton Williams
princeton.williams@dal.frb.org

Dallas Fed Economic Education materials are available at **www.dallasfed.org/educate**.

Author
Stephen Clayton

Editor
Jennifer Afflerbach

Art Director and Illustrator
Darcy Taj

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