[MUSIC] Welcome to The Power of Macroeconomics.
The purpose of this lesson is to first describe how our money and banking system works. After that, we'll show you how monetary policy may be used to fight recessions and inflation. Monetary or Fiscal Policy? Monetarism or Keynesianism? These became the macro economic questions 1970s as the nation found itself fighting a soaring inflation and then a virulent stagflation. In this lesson we're going to explore these questions and explain how Monetarism emerged in the 1970s to challenge the Keynesian orthodoxy Monetary policy involves the use of Changes in the Money Supply to Contract or Expand the Economy.

Between the Great Depression, and the height of the Vietnam War, monetary policy largely played second fiddle to fiscal policy. Perhaps, rightly so. After all, fiscal policy had been a resounding success, in lifting us out of the Great Depression in the 1930s. As well as ending a more mild, but nonetheless significant recession in 1949 and 1950. More over. the astonishing success of the Kennedy tax cut of 1964 seemed to provide incontrovertible proof. That Keynesian economics could be used to fine tune the economy.

And keep it at or close to full employment with minimum inflation.

Nonetheless, even during these four decades of Keynesian triumphs, monetary policy played an important supporting role.
Particularly in the 1950s, the Eisenhower administration relied heavily on a tight monetary policy to keep inflation in check.
In fact, many critics now believe that an overly conservative
monetary policy led to a stagnating
economy in the late 1950s.
And set up the defeat of Eisenhower's would-be successor, Republican Richard Nixon, in the 1960 presidential election.
Nixon of course lost to democrat and Keynesian disciple John F Kennedy who ran on slogan of getting the country moving again.

Moving again is actually what the democratic administrations of first John F Kennedy and then Lyndon Johnson did to the economy.
In fact, by the end of the 1960s the economy was moving so fast that inflation began to rear its ugly head. By 1969, inflation had crept over 5%, high for those good old days. And by the early 1970s it had jumped to almost double digits. And it was at this point as a new phenomenon known as stagflation began to emerge that monetarism began to challenge the Kevnesian orthodoxy.

getting ahead of our story. Let's go back to soem basics and let's satrt by defining money.

[MUSIC] What is money? That's easy to answer, you may say. It's the cash in our pockets. But money actually has a much broader definition.
It is anything that can be widely used, and accepted, in exchange for other goods and services. In practice, there are three kinds of money. Commodity money, like gold nuggets, represents the preferred money of centuries past. Today, however, in virtually all countries, commodity money has been replaced by the two other kinds of money, bank money and paper (or fiat) money. An example of bank money is the checkbook you use to pay your bills. So-called Fiat money, or paper money, is simply the dollar bills in America, and the yen in Japan. Money is the most liquid of assets, meaning that it is the most readily spendable, and it has three major functions. First it is a medium of exchange.
Without money we would have to conduct our transactions by barter.
Which involves the direct exchange of one good or service for another. Second, money serves as a unit of account or standard of value, it tells us the rate at which goods can be exchanged.
For example if a loaf of bread costs \$1 and a pound of butter costs \$2, the butter will exchange for two loaves of bread. Third, money serves as a store of value. This is because people can hold onto money this year and then spend it next year However it is this function that money performs least. Well this is because most methods of holding money do not yield the same kind of monetary returns that you get by storing wealth in the form of. Whether the less liquid assets such as stocks and bonds, thus in the presence of inflation money can rapidly lose its value In talking about monetary policy. Macro economists distinguish between four kinds of money. M one, M two, M three, and L. These different kinds of money reflect variations in the liquidity and the accessibility of assets They are defined in this table. As a practical matter, macroeconomists concern themselves the most with M1 and M2. M1 is known as transactions money because it consists of items that are actually used for transactions. These items include, most imporantly, paper currency and coins. Plus, checking account demand deposits. M2 is known as broad money. It includes M1, plus so called near moneys, such as savings accounts, small time deposits, and money market mutual fund shares Finally,
M three and L, are the broadest definitions
of money, and include almost all
short-term assets.

Now, you may find these definitions either boring or confusing, or both.
But remember that monetary policy uses changes in the supply of money to contract or expand the

economy.
So in order to conduct monetary policy effectively we must have a very good idea of what we are changing when we

change the money supply.

[MUSIC] When we examine how money affects economic activity, we will focus on the impact of the interest rate. Something we've already talked a lot about, but haven't yet really defined. Technically, the interest rate is the amount of interest paid per unit of time, expressed as a percentage of the amount borrowed. Put simply, interest is the payment made for the use of money, and it is often called the price of money. For example, you may deposit \$2,000 in a savings account at your local bank, where the rate of interest is 4% per year. At the end of the year, the bank will have paid \$80 in interest into your account. Your deposit will be worth \$2,080. Textbooks often speak of the interest rate.
But in today's complex financial system, is really a vast array of interest rates. There are three major reasons why interest rates differ. First, there is the term or maturity of the loan. This refers to the length of time until it must be paid off. This can range from overnight loans to up to 30 years or more for a home mortgage. In general, longer term loans command a higher interest rate because lenders are willing to sacrifice quick access to their funds. Only if they can increase their return or yield. Second, there is the degree of risk. Some loans, such as the securities of the U.S. government, are virtually riskless. In fact, the interest rate on U.S. government securities is often called the riskless rate. In contrast, very risky investments, which bare a significant chance of default or non-payment might include the securities of businesses close to bankruptcy. Cities with shrinking tax bases, or countries
with large overseas debt, and unstable political systems.
These riskier investments might pay 1, 2, 5% or more per year above the risk less Third, there is the issue of liquidity. An asset is said to be liquid if it can be converted into cash quickly with little loss in value. In contrast, because of the higher risk and difficulty of extracting a borrowers investment, illiquid assets, or loans usually command higher interest rates These fluctuations underscore the need to understand the difference between real and nominal rates. The nominal interest rate measures the vield in dollars per year per dollar investment. But as with nominal GDP, inflation can make the dollar a rubbery and distorted yardstick. That's why economists also compute the real interest rate. It corrects for inflation and is simply calculated as the nominal interest rate minus the rate of inflation. Thus, if the nominal interest rate is 8% per year, and the inflation rate is 3% per year, what's the real interest rate? That's right, it's 5%. This table helps emphazise why the distinction between nominal and real interest rates is so important. Look at the years in the table, such as 1973 through 1975 when investors were actually earning a negitive rate of real interest. Even though nominal rates were high. That's why, as an investor, it's important

for you

nominal return.

to focus on your real return, not your

[MUSIC]

So far, we have talked about the functions of money, and the price of money. These discussions lead logically, to a broader discussion of the demand for money.
The two major determinants of money

demand, are known as the Transactions Demand, and the

Asset Demand.
The transactions demand for money arises

because people and firm use it as a medium of exchange. For example, households need money to buy

groceries and firms need money to pay for materials and labor.

This figure illustrates the mechanics of transactions demand.

The figure shows the average money holdings of a

family that earns a three thousand dollar paycheck per month.

Reeps it only in money, and spends the money during the month.

A simple calculation will show that the family holds \$1,500 on average in

money balances.
Basic determinant of the amount of money

demanded for transactions, is the level of nominal GDP.

The larger the total money value of all goods and services that are exchanged in the economy, the larger amount of money the economy, the larger amount or mone need, to negotiate these transactions. So, what do you think will happen to the transactions demand for money if prices and nominal GDP double? If prices and nominal GDP double, the transactions demand for money will double. The asset demand or, speculative motive for holding money,

arises because people use money as a store of value.

As an example of the asset demand for money,

suppose you were interested in buying some stocks or bonds.

But maybe you think that the present prices are too high.

In this case, you might want to hold some money, so that you can

be ready to buy the stocks or bonds when the price becomes more attractive. Essentially then, you are speculating that a better financial opportunity will appear

Note, however, that while money is an asset, money provides no rate of return or interest, like other assets, such as stocks and savings accounts do. Moreover, when you hold money, it's value can depreciate, because of inflation. So here's the punch line, there is an opportunity cost of holding money. That includes the interest or rate of return that

could have been earned by lending or investing the money.
As well as the loss in value from holding

As well as the loss in value from nololing money during inflation.

So what do you think will happen to the Asset Demand for money, if interest rates rise, or the

expectation of inflation increases? If either the interest rate, or the

expectation of

inflation increases, the opportunity cost

of holding money increases.
So, the Asset Demand for money must

[MUSIC] Now that we know about money, let's find out more about how money is created. The best way to think about this, is to go back several hundred years to England, when commodity money, such as gold, was the prevailing medium of And goldsmiths emerged as the first commercial bankers In this earlier era people didn't like to carry around all their gold or leave it sitting around the house because it was cumbersome and might even get stolen. So people asked their goldsmith to store The Goldsmiths in turn, would give the gold depositors a paper receipt, and when a depositor needed to get some gold to make a purchase, he or she would use that receipt to redeem the gold. Now, over time, three important things happened with this system. First the depositors figured out that they could trade their gold receipts for goods rather than go back to the goldsmith to redeem the paper every time they needed to make a transaction. These receipts function in effect as the first paper money.
Second, the gold depositors soon figured out that they didn't have to leave their gold with the goldsmith for free. In fact, it wasn't long before goldsmiths began competing for depositor's gold. In those good old days, they didn't offer people free toasters or rebates to open an They did offer them interest on their gold deposits.
Finally, the goldsmiths figured out that they could operate under what is today called the system of fractional reserves.
For example, they might take in a \$1000 of gold deposits and issue receipts for that amount to the depositors.
however they then might turn around and also issue another thousand dollars in gold receipts as loans to other people.
Even thought they didn't have enough gold deposits to redeem all the receipts that they issued. The goldsmiths could operate this way highly unlikely that everyone who held the receipts would come in at the same time to demand their gold. In this particular example the implicite fractional reserve is 50% or 5. At this level the goldsmiths would issue twice as many receipts as they had gold deposits for and such a system allowed the goldsmiths to expand the supply of money Over and above the amount of gold reserves they held in their vaults. Today's modern banks function much like the goldsmith's of old. And you can see now how such banks can create money. Suppose for example that a person deposits a thousand dollars in bank one. This table shows the balance sheet for bank one in this initial position where both reserves and deposits are \$1000. Now, suppose further that the banks board directors decides that they're going to maintain a fractional reserve or reserve requirement of 10%. This means that the board of directors is betting that no more than ten percent of their depositors will come in and demand their money at any one time. This in turn means they can safely lend at least \$900 of the new \$1000 demand deposit. This table shows bank one's balance sheet after making such a loan. Deposits remain at \$1,000, but reserves \$100 while loans and investments go to

\$900.

At this point, the borrower from bank one deposits the money in bank two.

And this is reflected in bank 2's initial balance sheet in this table. But since bank 2 also has a 10% reserve requirement, it can lend out funds, \$810 to be precise, as indicated by bank 2's final balance sheet. In this table. By now you get the pictures, when \$810 is deposited in bank three, bank three lends out \$729, bank four lends out \$656, and so on. And from this table you can see how the actions of all the banks together produce what is called the multiple expansion of money. The final equilibrium is reached when every new dollar of original bank reserves supports ten dollars of demand deposits. And through this expansion the original \$1000 demand deposit creates an additional \$9000 of new loans and investments And a total of \$10,000 in new deposits. From this example, we see that there is a new kind of multiplier operating on bank reserves, a money supply multiplier very different from the Keynesian expenditure multiplier. Perhaps you're obvious question is how do you calculate this multiplier. It's a good question and fortunately there's a very simple formula for it.
The money supply multiplier is simply one divided by the bank's required reserve So in the example above, if the reserve requirement is 0.10 or 10%, then the money multiplier is ten. And, 10 times the original \$1,000 increase in demand deposits, is \$10,000. Now you try it. Suppose the reserve requirement is instead 50%. What's the money multiplier?
[BLANK_AUDIO] That's right, it's two. One divided by 50. So if bank one receives a new demand deposit of \$1000, it can lend out \$500. Bank two can lend out \$250 and so on until a total of \$2000 of new money is in circulation.

Note, then the bigger the reserve requirement, the smaller the money multiplier, and the less money that is created by any dollar of demand deposits.

Now, if you have been listening closely, there is probably something bothering you. You might want to know where, in the example above, the one thousand dollars of paper money that was deposited in bank one originally came from? In America, the answer is the Federal Reserve, the nation's central bank. Through its control of bank reserves, the Federal Reserve sets the level of interest rates and has a major impact on output and employment. The Fed, as it is called, was created in 1913 following the Financial Panic of 1907.
During this panic, numerous banks collapsed because of so-called runs on the banks. A bank run occurs when too many of the bank's depositors demand their money at the same time. To see the serious problem a bank run creates, imagine what would have happened to our goldsmith in the example above if everybody had showed up all at once demanding their \$2,000 in gold, and the goldsmith had had only \$1,000 of gold in his vault. Such bank runs usually happened because, for one reason or another, people suddenly believed that may not be able to get all their money out of their bank. The irony of course, is that when everybody tried to do that at once, the fear becomes In effect, a self-fulfilling prophecy.
And that's where a central bank comes in.
It can serve as the lender of last resort,

to pay off its depositors, it can always

borrow it from the fed which is, in essence, a bankers bank.

[MUSIC] Now, from a global perspective, the Fed is somewhat peculiar central bank in at least Rather than being one big bank directly controlled by the federal government, Like in Germany or Japan, the Fed is both very decentralized and privately owned. It consists of 12 regional banks spread throughout the country, and they are owned by the commercial banks. While legally these 12 regional banks are private, in reality, the Fed as a whole behaves as an independent government agency This regional structure of the Fed, was originally designed in an age of populism. The populist goal was to avoid too great a concentration of central backing powers in the hands of Eastern establishment bankers or Washington bureaucrats. This figure, shows the structure of the Fed. The board of governors consists of seven members, nominated by the President, and confirmed by the Senate, to serve overlapping terms of 14 years. Members of the board are generally bankers, or economists. The key policy making body at the fed is the federal open market committee. This committee consists of 12 people. The 7 members of the feds board of governors, plus the president of the New federal reserve district bank, plus four rotating members of the other 11 federal reserve district banks. At the pinnacle of the system is the chairman of the board of governors, often called the second most powerful individual in America. He acts as public spokesperson for the Fed and exercises enormous power over monetary policy. Besides issuing currency, and being the lender of last resort, the Fed has four other functions. Including regulating our financial institutions, providing banking services to the federal government. providing financial services to the nation's banks, and most importantly, conducting monetary policy. The Feds stated objectives for the use of monetary policy include: economic growth in line with the economy's potential to expand.
And a high level of employment, stable prices and moderate long term interest rates. Federal Reserve conducts monetary policy through its open market committee. This open market committee meets periodically to discuss monetary policy. And a conducts such monetary policy through the use of three major policy instruments. The first, and least used of these instruments, is setting the reserve ratio or the reserve requirement. As we've learned from our discussion of the money multiplier above, the Fed can increase the money supply by lowering the reserve requirement Or decrease the money supply by raising the reserve requirement.
As a practical matter, the Fed rarely uses changes in the reserve requirement to conduct monetary policy. The primary function of the requirement is to ensure that banks don't fall below a safe level of reserves and thereby undermine the stability of the system. The second instrument of monetary policy is the discount rate. The discount rate is the interest rate that the fed charges banks when the borrow money from the fed. Lowering the rate makes it cheaper for to borrow money and expand the money In contrast, raising the discount rate, makes it more expensive for banks to borrow from the Fed and is

contractionary.

The third, and by far the most important

instrument of monetary policy, is open market operations. Open market operations involve the buying and selling of government securities, to expand or contract the money supply. In a nutshell, the Fed buys government when it wants to expand the money supply. And it sells government securities when it wants to contract the money supply. As illustrated in this figure, in step one, the Fed's Open Market Committee purchases government bonds and pays for the bonds with a Federal Reserve check.
Step two, the seller of the bond, deposits the fed's check in a private bank. Then in step 3, the bank deposits the check, at a federal reserve bank, as a reserve credit, and this allows it to expand its reserves. Now the point is this. By altering its holdings of government securities, the Fed can change bank reserves.
And, through the money supply multiplier, thereby trigger the sequence of events that ultimately determine the total supply of money.
In this regard, open market operations represent the Fed's most potent tool. So let's see how such operations work. Suppose then, that the Fed thinks the economic winds are blowing up a little inflation. At it's next open market committee meeting, the committee votes to sell 1 billion dollars of treasury bills from the Fed's portfolio to tight money. And this action, is unanimously approved, by a vote of the Board of Governors Now, to whom are the Bonds sold? The open market, which includes dealers in government bonds, who then resell them commercial banks, big corporations, other financial institutions, and individuals.
The purchasers usually buy bonds by writing checks to the Fed, drawn from an account in a commercial bank. For example, if the Fed sells \$10,000 worth of bonds to Linda Smith, she writes a check on the Coyote Bank of Santa Fe. The Fed then presents this check at the Coyote Bank And here's the important point, when the Bank pays the check, it will reduce its balance of reserves with the Fed and the reserves in the entire commercial banking system by \$10,000. From this example, you can see how open market operations
can be used to close either recessionary or an inflationary gap.
This is illustrated with the help of a five step monetary policy sequence, called the monetary transmission mechanism, shown here for closing and inflationary gap
The Fed reduces reserves R, through open market operations. Money supply M contracts, and causes interest rates I, to rise. This rise, not only reduces investment I, also reduces consumption expenditure C, and net exports X. For example, consumers may respond to higher mortgage interest rates by buying a smaller home, or renovating their old home, rather than purchasing a new one. Similarly, as we'll learn in a later lesson, in an economy open to international trade, higher interest rates may raise the foreign exchange rate of the dollar. And this will in turn depress net exports The total effect of a fall in I, C and X is to push aggregate expenditures or aggregate demand down in doing so real GDP and inflation likewise go down.
Thereby achieving the desired policy goal. A similar sequence for closing a recessionary gap can be illustrated in an aggregate supply -aggregate demand framework. This figure shows how an expansion of the supply of money causes a rightward shift of the aggregate demand curve from AD to AD prime.

Note that in the range of this shift, the aggregate supply curve is relatively flat.

This Keynesian range reflects the presence of unemployed resources and ressionary forces. In this region, we get a very small increase in the price level from the Feds expansionary monetary policy and a large increase in real GDP as equilibrium moves from P to P.
Suppose, however, that the Fed decides to expand the economy even further and tries to push the aggregate demand out even more to say e double prime.

This is well past the economies level of potential output or potential GDP, and in this case we are in the so-called

and in this case we are in the so-called classical range of the economy. Here, the slope of the aggregate supply curve turns steeply upward. In this fully employed economy, the higher money stock would be chasing the same amount of

output so that the major impact of the Fed's

expansionary policy would be to significantly raise the

price level.

With little increase in real GDP.

This table summarizes how monetary

This table summarizes now informally policies may be used to combat recession and inflation. Take a few minutes to study it. Note that easy money policies are used to expand the economy and fight recession, while tight money policies are used for contraction, to fight inflation.

[MUSIC] Now, there is at least one more important point to note about using open operations, to close recessionary and inflationary gaps. From a purely mechanistic Keynesian point of view, Monetary Policy Is conducted with Less Precision Than Fiscal Policy.
To see this, recall from our lesson on the Keynesian multiplier model, that if we knew the size of a recessionary gap, and the value of the multiplier, we could calculate exactly how much we would have to increase government expenditures, or cut taxes, to close the gap.
In the case of monetary policy, however, it is a bit more of a guessing game.
Because the link between the money supply, and shifts in the Aggregate Expenditure curve, is much more complex.
Relying on changes in the interest rate, and the responsive investment, consumption and net exports. This observation leads us to the major paradox of the Keynesian-Monetarist Namely, that it is the Keynesian economist, not the Monetarist, who support and activist role for monetary policy, in fighting recessions and inflation. In defining an activist role for monetary policy, Keynesians believe that monetary policy is most effective as a fine tuning policy instrument, when the economy is near full employment. Either in a mild recession, or in a mild inflation.
In this narrow band of output. Keynesians believe that investment in aggregate expenditures will respond relatively swiftly to changes in the interest rate which are brought about by changes in the money .vlggus This is particularly true when there is an inflationary gap in the economy. In such a case, Keynesians see the use of contractionary monetary policy as pulling on a string.
However, Keynesians also believe, that in a severe recession, or depression, monetary policy is largely ineffective, equivalent to, pushing on a string. That is, in a sever economic downturn, Keynesians believe, that an increase in the money supply may well lead to a reduction in interest rates However, these lower rates will have little or no success, in encouraging additional investment, and shifting the aggregate expenditures curve upward. Thus in the recessionary and depressionary ranges, Keynesians believe, that expansionary fiscal policy is much more appropriate.
In contrast, the Monetarist School doesn't an activist fiscal and monetary policy at According to the father of Monetarism, Milton Friedman, the problems of both inflation and recession may be one thing, the rate of growth of the money supply.

Inflation happens when the government prints too much money, and recession happens when it prints too little. In fact, Milton Friedman totally rejects the Keynesian view of the origins of the Great Depression, as well as the Keynesian fiscal policy cure. Instead. Friedman blames the nation's economic collapse in 1929 on bad monetary policy by the Federal Reserve rather than any inherent Keynesian instability with As Friedman has argued, the Federal Reserve contracted the money supply, plunging a private economy that would otherwise have been pretty stable into a depression. And in fact, there is much truth in Friedman's In the wake of numerous bank

failures immediately preceding and then

following the

1929 stock market crash, people began hoarding cash, rather than leaving it in banks. The same time, the banks themselves dramatically increase their reserves in case nervous depositors triggered a bank run. This fall in demand deposits coupled with an increase in the banks own self imposed reserved requirements led to a sharp contraction of the money supply.

And Friedman faults the Federal Reserve for not stepping in to the monetary policy breach to stabilize the situation.

Moreover to Friedman, if the Fed had acted promptly and injected enough currency to stabilize the money supply, an activist fiscal policy, as embodied in Franklin Roosevelt's New Deal, would never have been necessary.

More broadly, monetarists like Friedman liken the Federal Reserve to a bad driver, constantly either accelerating too fast or braking to hard on the money supply. This analogy describes quite well the behavior of the Federal Reserve during the 1970s, as it tried to cope alternatively with the recession and inflation and then both at the same time. As the Keynesian successes in the 1960s, way to a soaring inflation in the early 1970s, the Federal Reserve stomped on the monetary brakes, and watched as interest rates climbed dramatically. Predictably, investment slowed and the economy plunged into a recession until 1975. The government stomped back on the accelerator using a Keynesian-style tax cut to stimulate the To accommodate this tax cut, the Federal Reserve reluctantly increased the money supply, and then stood by as a and unly macroeconomic phenomenon called stagflation, simultaneous high unemployment and high inflation, began to tighten its deadly grip on the nation. This video provides a simple example of stagflation brought about by cost push inflation, here we started full employment output Y star however a supply shot shifts the aggregate supply curve back to AS prime this leads to a recessionary depth of Y star minus Y sub r But note also that the price level has also risen from P star to P sub R. In other words, we've got both recession and inflation. Prior to the 1970s, economists didn't believe you could even have both high inflation and high unemployment at the same time. One went up, the other had to go down. But the nineteen seventies proved economists wrong on this point, and likewise exposed Keynesian economics as being incapable of solving the new stagflation problem. Now, you see the Keynesian dilemma. Put another way, how would you use Keynesian fiscal policy to fight Stagflation?
The Keynesian dilemma was simply this. Using expansionary policies to reduce unemployment, simply created more inflation.
While using contractionary policies to curb inflation only deepened the recession. That meant that the traditional Keynesian tools could solve only half of the stagflation problem, at any one time, and only by making the other half worse It was this inability of Keynesian economics to cope with stagflation that set the stage for professor Milton Friedman's monetarist challenge to what had become the Keynesian

To fight stagflation and to, more broadly, prevent the roller coaster ride of economic booms and busts, the Monetarist

solution is to set monetary targets and stick with them.
For example, if we want economic growth to proceed at an annual rate of 3%, then we should simply increase the money supply by 3%.
This monetary targets approach was precisely the policy prescription embraced by the Fed in 1979, after almost a decade of fruitless battling against inflation. In October of that year, federal reserve chairman Paul Volcker, announced that the Fed would no longer focus on holding interest rates stable. Instead, it would simply adopt monetary growth targets, and stick by them. Unfortunately, the Fed's Monetarist cure proved to be almost as bad as the stagilation disease. Interest rates soared to above 20%. Inflation remained in the double digits. And the economy entered into the beginning of a severe 3 year recession. While chairman Volcker stuck to his monetarist guns and watched as both tight money and a deep recession, eventually helped wring inflation out of the economy, the cost in human terms was high. Finally, in the summer of 1982 the Fed relaxed its monetarist rules and by late fall, the recession had ended, just in time to try the latest evolution in economic theory supply side economics. [MUSIC]