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Title: Principles of Economics

Money Supply

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[0:00]

So in the last few chapters we looked at some real variables in the economy we looked at national output, the amount of employment and unemployment in the economy, the amount of saving and investment that goes on.

Now in the next 2 chapters we will look at the amount of the money stock in the economy.

In chapter 29, we will consider just the quantity of money available in the economy, and in the following chapter we will discuss more determinants and consequences of the quantity of money in the economy.

When we talk about quantity of money, there are two interesting things to know.

First of all, what is the definition of money. The beginning of chapter 29 discusses that definition and not surprisingly, just like we had different definitions of national output, different definitions of unemployment or about price level, here we have several different measures of money supply from very narrow definition just including what's a cash from people's pockets, we can define money more generally to include bank deposits, loans and so on.

So please read that section of the chapter, it is interesting in terms of definition and in terms of understanding what we mean by money.

Now let's talk about money creation.

In general, money can be created by two kinds of institutions in the economy. The government, and the banking system.

In the government, it is the federal reserve system or the central bank that manipulates the amount of money in the economy, and in the private sector, banks themselves can influence how much effective money there's available to the private loanable funds market.

And here, when we discuss money creation, the issue of how money is actually defined will become a little bit important (that) I'll try to come back to it at the end of the lecture.

So let's go over some basic terms here. Let's first talk about money creation in the private sector, in the banking industry, and then we will talk about policies that the government uses to influence the amount of money in the economy.

[03:02]

So the way that banks work is that banks accept deposits from lenders and generally keep some of the loans as reserves in their volts and lend out parts of the deposits to borrowers.

We say that in fractional reserve banking, relatively constant amount,... constant proportion of deposits are kept within the volts of banks and proportion of the deposits are loaned out.

Banks have some desired reserve ratio between how much is kept in volts and how much is being loaned out.

And, so we should think that, when a bank receives a deposit, it puts the deposit among its assets and recognizing that eventually the bank will have to repay the loan to lenders, it also puts the same amount of money among it liabilities.

So without any further financial transactions we would put, let me go back, it would, the bank would put 100, supposed that there's a deposit of 100 dollars, it would put 100 dollars among its assets and 100 dollars among its liabilities because the bank has to repay the loan eventually.

Now with the money in its volts, we should think that the bank will not want to store that money without using that money in anyway.

Really the only reason why banks would be willing to take money from lenders is if they can profit from it somehow by lending it elsewhere and collect interest from borrowers.

So out of this 100 dollars that the bank collects, let's suppose that the bank lends out 90 dollars.

Then, the balance sheet of the bank would look something like this.

The bank would keep reserves from the original deposit of 10 dollars, it would have made loans of 90 dollars and the bank will still have liabilities of 100 dollars to the original depositor.

And we should think that now the borrower who borrows the 90 dollars would also have his own balance sheet with 90 dollars of newly acquired assets and 90 dollars of liabilities owed to the bank.

[06:10]

And why is this interesting? This seems like simple algebra, we are, we have some fixed amount of money, we can either store it in the bank or we can lend it out.

But we should think that effectively, by loaning out part of the deposit, the bank can effectively create money.

Because the original depositor is still sure that he can come to the bank at any time and withdraw his deposit.

So the depositor doesn't lose any amount of money effectively in this transaction, and the borrower gains money.

The borrower didn't have any money, any funds to conduct transactions with, and now the borrower has 90 dollars that he can transact with.

So, effectively we can think that 90 dollars' worth of money was created because both the original depositor and the borrower can use that money for future transactions.

And now let me come back to the original point I made that it's important to keep in mind the definition of money.

Money is not just the cash that people hold.

Money is also bank deposit, it is the... the money that you borrow from a bank and from this point of view, new money was created; the depositor still has a checking account where his money is always available, and but also the borrower now has money that he can use.

So, in a little bit of broader definition of money, the stock of money has increased.

This point now, the point is that borrowing doesn't have to stop here.

The borrower who borrowed 90 dollars here could purchase some commodity in the real market, and the seller of that commodity might deposit the money in a different bank, or even in the same bank in a different account, and... So we can think that these 90 dollars can be deposited in a different bank, again, in a different bank, this deposit can be divided between reserves and further loans and this borrowing can continue.

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And we can start talking about the money multiplier a fact of a money that is deposited in the banking system.

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So as I said, the borrower can deposit $90.00 or can market transaction at the end of which some party will make a deposit of $90.00 of that.

If we keep reserve ratio the same, $9 might be kept in the second bank as reserves and 81 can loaned out again.

And if we continue this process we could say that originally $90.00 could be borrowed from the first bank, 81 from the second bank, $72 through third bank and so on.

If we continue this process, the theoretically to infinity we would realize that up to $900 can be borrowed in this process.

So we can say that from the original deposit of $100, $900 worth of a borrowing can be created plus the original amount of $100.

And we can say that original amount of $100 deposit generated $1000 increase in the money stock in the economy.

Okay, algebraically we could show that if we reborrow 90% of each additional deposit to infinity we would get 900 worth of dollars from the original deposit and if we add the original deposit 100 to this, we will end up with $1000.

Okay, so the money multiplier the amount that can be eventually created from an initial deposit, is related to the affective reserve ratio at the banks in this inverse relationship.

So we would say that if the reserve requirement or reserve ratio is 20% then, the money multiplier is 5.

In a, the previous example, if the reserve requirement or just the effective reserve ratio that a bank use is 10% then up to ten times the amount of original deposit can be a generated.

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Now keep in the back of your head of that, this is the maximum amount of a money increase that can be created.

[12:02]

Um, Even if there is a 10% reserve requirement, it doesn't mean that banks will actually end up a lending out 90% of all their deposits.

So this discussion really applies to the effective reserve ratio that banks end up using.

So that’s the discussion of money creation in the private sector, in the banking system.

Now let’s look just a little bit at the tools that the federal government, the central bank uses to influence the amount of effective money in the economy.

We say that there are three possible monetary policies that government uses.

Open market operations which is, you can think that that's the simplest kind of operation, the government borrows money from the public or lends out money to the private sector directly.

Changing the reserve requirement here you should think back to the discussion so far.

The reserve requirement was important because it was inversely related to the money multiplier.

So if the government influences this reserve requirement, it indirectly affects the money supplier in the private sector.

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And changing the discount rate, we will say that sometimes monetary transactions don't happened just between banks and lenders or banks and borrowers but sometimes government has to be involved.

Banks borrow money from the federal government or government makes money transaction with banks and depending on the interest rate that the government charges banks that will affect the demand for money by banks and by private, private borrowers.

We will discuss that in the next few slides. So the open market operations are the purchases or sales of government bonds to the private sector.

Here you should think back to chapter 26 when we discuss private loanable funds market.

And when we talk about the sale of government bonds, we should think that the case when the government sells promissory notes to the public in exchange for money.

So the government receives money, some payment, from the private loanable funds market and it issues promissory notes.

[15:17]

So just like we discuss in chapter 26, when we discussed a crowding out and budget deficit, when the government sells bonds to the public, it decreases the amount of money or the amount of loanable funds available in the private sector.

And the opposite case if the government repurchases the bonds from the private sector, so there are some outstanding government bonds and the government offers money to buy back the promissory note, it effectively increases the amount of loanable funds in the private sector.

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Reserve requirements we've already discussed this that the banks collect deposits and lend out a portion of those deposits.

What portion of they should lend out that... we could think that it depends on two factors.

One is the legal requirements. If the government requires 10% reserve ratio, then banks cannot lend out more than 90% of the deposits.

You could also think that how much the bank actually lends out depends on the risk taking preferences of the banks.

But on this slide, it is clear that when the government changes reserve requirement that can influence a bank's lending behavior.

And finally changing the discount rate, So sometimes banks have to borrow money from the government.

If either there, the withdrawals by account holders are too high or the bank has lent out too many funds and if the bank is afraid of violating the reserve requirement, it might have to borrow some funds from the government.

And how much it is willing to borrow clearly depends on the price that it has to pay which is the interest rate or the discount rate or the overnight interest rate that the bank has to pay for this short term borrowings from the federal government.

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And one interesting point here that we will get back to in the next two chapters is that money is just like any other commodity in the economy.

We could draw a downward slope in demand curve for money.

So, of course the higher the price of borrowing, the less banks will be willing to borrow.

And so we can find that by decreasing the discount rate that the government charges banks that can effectively increase the money supply because banks are more willing to take risk and lend out money from their reserves.

Let's talk a little bit about the consequences of money creation.

So we can see that the government has these three options for affecting the amount of money.

And we are getting the feeling that money is good commodity in the markets it allows market transactions to happen if there is enough money in the economy.

The economy is, we can say liquid.

It is easy to conduct transactions between individual sectors.

So, on one hand here we should think that it's a good thing for the private sector and for the government to create money.

And we would be tempted to say that the government should introduce a very low discount rate perhaps very low reserve requirement and should repurchase all the government bonds that it has outstanding.

But there are three problems with controlling the money supply and with increasing the money supply.

First, we should think that well, by increasing the supply of money in the economy the government might change the value of money.

We will come, we will talk more about it in the following chapter.

We will say that the more money there is available, the less valuable.

The money is to mark participants.

Maybe that will influence the rate of the exchange between money and real commodities in the market.

So, we can think that the more money in the economy could result in higher prices in the economy or inflation.

That's one problem with money supply.

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Second problem is that when the government chooses the reserve requirement, the government has to balance the efficiency of the system so the amount of liquidity, the ease of making market transactions.

And on the other hand, the government has to worry about the stability of the system or trust ordinance of the system.

We should think that depositors will be willing to give money into a bank only if they are sure that they can come back tomorrow to withdraw their deposit.

If the reserve requirement is too low, chances are that some depositor will come into a bank and they won't be any money available.

If this happens on a larger scale, we could have a bank run when many depositors simultaneously become afraid of not being able to get their money in the future and will flood the banking system and the banking system will go bankrupt.

There are some discussion of that the end of chapter 29. So I've mentioned that the money supply affects value of money in prices in the economy. We will talk about that more.

Second, making the system more efficient unfortunately could also make it less stable or trustworthy and finally I wanted to mention that of course these are, especially latter two policies are indirect.

The government changes rules that the banking system operates under and the government simply hopes that the banking system and private borrowers and depositors will respond correspondingly.

But there is no guarantee that the private individuals will respond exactly the way that the government wants.

So there is some we should expect there to be some difference between what the government tries to achieve, how much exactly how much money the government really wants in the economy and how much there ends up to be through the decision making of private individuals. Okay?

That's all I want to say about chapter 29.

In chapter 30, we will continue with this discussion and we will talk more about the determinants on the supply and demand side of the amount of the money and the consequences of the amount of money in the economy.

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