

The Science of Economics

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1. The origin and nature of money

Money is a medium of exchange, which means that its function is to facilitate the exchange of goods. Without money, we would have a direct exchange of goods, or barter. Goods would exchange directly for other goods. With money, we have indirect exchange: you exchange a good for money (such as trading your labor for dollars), and then you exchange your money for other goods. The unique nature of money is that it is a good which can be easily exchanged for any other good. Money becomes the final means of payment; you can exchange goods for money substitutes such as IOU notes, but ultimately these notes are exchangeable for money.

A medium of exchange implies that it is also a "unit of account," which means it includes some measurement unit by which the value of all other goods can be measured. For example, if gold is used as money, the unit can be a gram or ounce. The value of goods is then calculated in terms of grams or ounces. In the U.S., the unit of account is the dollar, and in the U.K. it is the pound. These once referred to weights of gold, but now there are simply artificial units, accepted by law and custom.

Money originated in many societies for several reasons. First, with much trading, barter becomes inefficient, since you can't always find someone who wants your particular goods. Some commodities can be much more easily exchanged than others, and these become a medium of exchange. Shells, cacao beans, salt, cattle, gold and silver have been such mediums, since they transported and measured more easily than other commodities. Gold and silver became widely used because of their high value, durability, and divisibility. A second origin of money was temple worship. Pieces of metal were used as offerings to deities. These became valued generally by the community and evolved into media of exchange. Gold and silver eventually became coined into pieces with standard shapes and weights.

" Pieces of metal were used as offerings to deities." Interesting -- in the Christian tradition, we bring bread, wine and money, on the basis that these are the fruits of our labors.

The value of money relative to other goods today depends on its value yesterday. Though originating as a tradeable commodity, money takes on a life of its own, and its exchange value can become different from that of the original commodity, since the commodity gets extra value from being used as money. The relative value of the money units becomes established by custom, though it can evolve.

While originating in private and religious practice, governments took over the coining of money. In recent decades, money has become a government monopoly called "legal tender." Paper money originated as receipts for money stored with goldsmiths. During the 20th century,

governments stopped the convertibility of paper notes into metals, and paper continued to circulate out of habit. How the world uses "**fiat money**," which is valued only because the government mandates it.

Money is financial wealth, but not real or economic wealth. Real wealth consists of produced things, such as buildings, automobiles, and computers. If an earthquake destroys buildings, this is a real economic loss. But if all the money in a city were burned, there is little real loss. Since a \$100 bill can be printed at a cost of one or two pennies, the money can be reprinted at low expense, and if we have a record of who held the money, we can give it all back and everything is back to normal!

If we double the amount of money in an economy and the amount of goods stays the same, generally their prices will double. So the amount of wealth has not doubled just because the amount of money is doubled, since the real wealth consists of the goods. The money claims simply lose half their exchange value for real wealth. We cannot arbitrarily increase the amount of wealth just by printing money, in contrast to real wealth, which is indeed increased when more is produced.

Therefore, money is not real wealth but a "claim" on wealth, just as a ticket to a show does not have value except that it can be exchanged for attendance at the show. We can burn the tickets and still let you into the show. Similarly, bonds are not real wealth, but a claim on wealth. If gold is used as money, however, it is real wealth, since melted gold has a market value as a commodity. But the real value of a gold coin is the melt value of the gold, which can be less than the exchange value of the coin.

When people deposit cash in a checking account in a bank, it is called a "demand deposit" because you can demand your money in cash at any time. Economists consider demand deposits to be money just like cash, since these funds are available for spending just by writing a check or using a debit card, both of which withdraw the money from your account. Savings accounts are considered a secondary type of money, and economists have various names for these, such as M1, M2, and so on. We will not be concerned with these distinctions here, which can be studied more thoroughly in a course on money and banking (and vary from country to country). We will, for simplicity, consider money to be cash and demand deposits.

The "demand for money" is the amount of money that people in an economy want to hold. People hold money for transactions (ordinary purchases) and for precaution, in case they need to buy something in a hurry. The "price level" is an index of prices relative to changes in the index at some other time. Mathematically, the price level is calculated by the formula: $P = MV/T$, where P is the price level, M is the total stock of money, V is the "velocity" or turnover of money, and T is the total amount of transactions measured by a price-level index of 1. For example, we can say that the prices as of January 1, 1995 will have a price level of 1, P at other times measured relative to that one.

Here is a simple example. Suppose on January 1, 1995, the economy has only two goods, bread and pens. Bread costs \$1 per loaf, and a pen costs 50c. We set $P = 1$. The total amount of money M is \$15. During one year, we buy twenty pens and twenty loaves of bread, so $T = 20*(1+.5) =$

30. Since velocity $V = PT/M$, V is $1*30/15 = 2$. The turnover of money is 2: each dollar is spent twice each year.

It is now January 1, 1996. The velocity of money is unchanged. The same amounts of both bread and pens are purchased per year, so T , measured in 1995 dollars, is still 30. But the money supply has doubled to \$30. Then $P = MV/T = 30*2/20 = 2$. Prices have doubled. So if the turnover or velocity of money does not change and the total amount of production does not change, but the amount of money goes up, the price level will also go up. That's called "inflation."

2. Inflation and deflation

There are two types of inflation. Monetary inflation is an increase in the money supply that is higher than the increase in total real transactions (T), or the real amount of output measured by some fixed standard (like 1995 dollars in the example). Price inflation is a continuous increase in the price level. Note that the definition involves a continuing increase, since a one-time increase in the price level is technically not "inflation." It is possible, for example, for turnover to suddenly increase, resulting in greater MV , so with T unchanged, P will increase, but this one-time jump is not the same as chronic inflation, which is usually caused by monetary inflation. Inflation is measured using some price index, such as the consumer price index, producer price index, or the "GNP deflator" that uses prices throughout the economy.

Deflation is the opposite of inflation. With monetary deflation, there is a decrease in the money supply relative to goods, and with price deflation, there is a decrease in the price level. When people talk about "inflation" or "deflation" without any adjective, they usually mean price inflation or deflation. The "GNP deflator" is called that because price inflation increases the gross national product by more than the real increase in goods, and so the deflator index reduces or deflates the GNP to its real level relative to some base year.

With today's fiat money system controlled by central banks, the supply of money is determined by the policy of the government or its central bank. Governments profit from inflation, since the real value of its debt decreases, and it is able to repay bonds with "cheaper" money. Also, when newly created money is spent, the government or bank is able to get goods without having to produce anything. This revenue, called "seignorage," is effectively a tax on the total production of an economy. Also, inflation reduces the value of savings, so it is a tax on money holding or any loans, including bonds and savings accounts.

Monetary inflation does not raise all prices evenly. Some goods will rise in price more than others as the increase in money works its way unevenly through the economy. The subsequent distortion of relative prices is another bad effect from inflation.

In a pure market economy, there would be no government monopoly on the creation and holding of money. Most likely, free-market money would be based on and convertible to some commodity such as gold. So there would be little or no monetary inflation, and thus no price inflation other

than minor fluctuations. As technology and increasing capital investments make production more efficient, some of that increased productivity would go to higher wages, some to higher land rent, and some to lower prices of goods. Hence, there would be a gradual reduction in the price level. This is in fact what happened during the 1800s when the world was on a gold standard and there was rapid technological change.

3. Banking

A bank is a firm that receives deposits of money and loans the money. In most countries, banks pay interest to the depositors and charge a higher amount of interest to the borrowers, the difference in rates being kept for operating expenses, losses from bad loans, and profits. A bank is thus an "intermediary" or go-between. Ultimately, the lender is not the bank itself but the saver or depositor of the money. The bank is basically an agent that handles the lending, saving the depositor the trouble and risk of knocking on doors to see who wants to borrow his money.

In some cases, especially in Islamic countries, banks do not pay or receive direct interest, but instead participate as a partner in the business they loan money to, and get some of the profits. As noted in Chapter 5, there is always a "natural" interest rate when people save or borrow goods or money, due to the time preference of preferring goods in the present rather than in the future. So in a profit-sharing partnership, the partner who borrows funds is in real effect paying interest, even though no financial interest is being paid. If you give someone an "interest-free" loan, and the going market rate is 5%, in effect the borrower is being given a gift of 5% annually; the borrower is really collecting the interest. Islamic law thus forbids direct payments of interest but does not rule out paying for the benefit of obtaining goods now and repaying later. The partnership approach may be a wise policy in general, since the bank as partner takes a business equity "interest" in seeing that the operation is successful.

One type of "bank" is a credit union, a club which receives deposits and loans money to its members. It is also possible to run a mutual exchange without cash, in which members exchange goods and services with debits and credit, account balances adding up to zero.

"**Usury**" means the collection of excessively high interest rates. This may happen when legal restrictions prevent the poor from obtaining credit from normal channels and instead have to borrow from loan sharks. In a pure market economy, there are no restrictions and thus usury does not exist. Interest paid for loans then reflects real risks as well as the natural interest rate and operating costs. Too-lenient laws on bankruptcy and fraud raise interest rates to borrowers, since they increase operating costs for bad loans not repaid. A pure market economy thus requires that fraud is severely prosecuted and that debts cannot be eliminated except by voluntary agreement.

"**Credit**" is the exchange of goods received in the present for goods paid back in the future. A person is said to have "credit" if he is able to receive goods today and can pay back later, plus interest. (A "credit" entry in bookkeeping has a different (and opposite!) meaning from that used in economics. You indicate a bookkeeping credit when you sell goods and receive cash.) Banks extend credit to borrowers, which means they enable borrowers to get goods at present and repay

in the future. But in real effect, the banks being only intermediaries, the ultimate credit is extended by the depositors of the banks.

Money is a type of credit, since with the buyer obtains goods in the present and the seller does not get immediate goods but tickets for goods he will get in the future. Money is essentially transferable credit.

Banking is normally done with "fractional reserves." Reserves are stocks of money. They are fractional because only a fraction of deposits is kept by a bank, the rest being loaned out. Banks can therefore expand the money supply beyond the base of cash. You put \$100 in the bank, and if the reserve ratio is 10%, the bank only keeps \$10 in its vault, and loans out the other \$90. It figures that it is unlikely for all depositors to come in and demand all their money at once. Central banks typically set reserve requirements for a country's banks.

This \$90 loaned out gets deposited in some bank. That bank in turn keeps \$9 and loans out the other \$81. This goes on and on until out of the original \$100, we now have \$1000 of deposits created from all that lending if none of the extra money is held as cash. This is not a problem so long as

- 1) depositors are informed of the policy (hence it is not fraud),
- 2) the money loaned is eventually repaid;
- 3) there is little or no inflation of the cash base.

Unfortunately, conditions #2 and #3 have not been the case. Central banks have expanded the monetary base, which the banks then expand many times more through loans. Also, during recessions, many borrowers cannot repay their loans. Then many banks fail, since depositors are not able to get their cash back. The solution is not to eliminate fractional reserves (though some banks may do this and advertise themselves as extra-safe) but to eliminate conditions (2) and (3) by switching from coercive central banking to free banking.

With free banking and a pure and free market in money, the money supply expands with production and the demand for money, but no further, resulting in a stable money supply, without price inflation. There is no need for any government monetary policy, just as in a pure market economy there is no bread policy or automobile policy. Consumers and entrepreneurs can freely determine the demand and supply for both money and credit, just as with any other commodity. Bank safety is established by

- 1) banks wanting to have a reputation for security;
- 2) banks forming a clearing house and network for mutual support in case of crises;
- 3) private insurance; and
- 4) rating services that inform consumers of the various bank policies and risks.

With government deposit insurance, depositors may feel safe, but they are paying for this safety, since the banks must pay premiums for the insurance, and the government insurance can lead banks to take too-high risks and make unwise loans, as happened in the U.S. during the 1980s.

The taxpayers had to pay many billions of dollars to bail out the savings and loans and banks. It turns out that this deposit insurance was very expensive indeed.

Under free banking, banks may be established without having to join a federal reserve or central bank system, and they may issue their own bank notes. There are no restrictions on interest rates or the extension of credit, so long as there is no fraud. Banks may form branches anywhere, making banking more accessible and efficient. Free banks are not required to have deposit insurance. There are also no taxes on savings, interest, banking, or bank notes. When the money consists of private bank notes (as it did in the U.S. before the Civil War, Scotland before 1844, and many other countries before the 20th century), monetary inflation does not take place. If one bank issues more notes than people want to hold, they take them to the bank for redemption, or conversion into some base money, such as gold. (For a detailed explanation of free banking, see *The Theory of Free Banking* by George Selgin.)

In a free economy, a government bank can operate, but not be imposed by force on the economy. It could provide services such as check clearing and the provision of currency in competition with other institutions. When all individuals have the freedom to use the currency of their choice, and when there is unhampered competition among financial institutions, then an economy will tend to have a stable currency, credit for responsible borrowers, and interest rates set by the desires and needs of enterprise. There is no need for government monetary policy other than the provision of a national currency that is offered to the public but not imposed by force.