

Money in the Ecological Economics Context

Introduction

A basic understanding of money and the monetary system is essential to gaining insight into the current drive toward growth in the world economy as it stands today. This article first explores the essential nature of money, what roles it fills and how it is useful to people and businesses as they make transactions, financial plans, and decisions about the future. Once money's roles have been defined, the article will explore the ways in which money is created, paying particular attention to the role of private banks due to the magnitude of their part in the system. Finally, I highlight the importance of the monetary system within the context of ecological economics, including the roles of fractional reserve banking and interest with respect to economic growth and income disparity.

What is money?

Introduction

Unfortunately, the most natural question about money, "What is it?" does not have such a straightforward answer. Though money is all around us, it is easy to ignore exactly what it is and how it functions. In fact, economists have a difficult time pinning down an answer, and it is a matter of some controversy. There are, though, some standard definitions that are widely agreed upon. These state that money serves important roles as a means of exchange or payment, a store of value, and a standard of value (Ritter 1984, 8)(Daly 2004, 245)(Greco 2009, 81). Some authors include a fourth role of money as well: money as debt or as a token of indebtedness (Greco 2001, 5-6)(Smithin 1994, 18-22). These roles are interconnected, and money almost always fills different roles simultaneously.

Money as a medium of exchange

In its role as an *exchange medium*, money is what allows people to move away from the inefficiencies of barter. In barter, people must experience what is commonly called a, "coincidence of wants." That is to say, Johnny has apples but wants oranges while Sally has oranges but wants apples. Under barter, these kinds of alignments are the first step in an exchange. Beyond this, these two must locate each other and negotiate terms. It is only when each of these requirements has been met that trade can occur. Finding these coincidences can be difficult and costly, so many potential exchanges do not take place in a pure barter system.

Money allows people to move away from barter, because both parties involved see the currency as an "abode of purchasing power." Whether it is bills, coins, bits of information in a bank computer, or anything that the society uses as money, it can be exchanged for a useful good because the person who accepts it can then use it in exchange for a different useful good in a separate transaction (Friedman 1992, 16). It is this role of money that most people recognize intuitively.

Money as a store of value

In order for money to act as a *store of value*, it must be durable. People can hold money instead of a perishable commodity as a way to ensure their wealth will be useful in the future. For example, if you are a lettuce farmer, it is more useful to you to sell your fresh lettuce at harvest time and hold money for your future purchases than it is to hold on to the lettuce since it will quickly go bad, or, in economic terms, depreciate in value. Money however, in its capacity as a store of value, will be useful to you in the winter when any lettuce you had grown would be long rotten. Money sometimes does not fill this role successfully. If the item used as currency is not chosen well and it “goes bad” over time, it is less useful as a store of value and people will not want to hold money. This is analogous to high rates of inflation, which erode the value of money as time passes. In either case, the money in question is not able to function well as a store of value, and people will not save it but spend it quickly before the value is reduced. Money that is a good, durable store of value promotes saving, while money that depreciates promotes lots of trade among people and businesses.

Money as a standard of value

The third widely recognized role of money is as a *standard of value*, also known as a unit of account. This simply means that money provides a system of units in which people can measure the value of something. Using money as a standard of value allows a person to compare the values of different goods easily, use accounting practices, or set prices. For example, if you have a house for sale, you can set a single price on that house in dollars (or Euros or pounds or yen, etc. according to the location of the house). Without money as a standard of value, this would not be possible. Instead you would have in mind a variety of bundles of goods that you would be willing to accept in exchange for the house. If you were selling in order to move, you might have in mind a different house in a new location, information that is relatively easy to convey. A bigger challenge would arise, though, if you were selling because you no longer wanted to own a house. In this case, you would have a more complex bundle of goods in mind that would equal the value of your house, say: 1 midsize car, a small wardrobe of clothing, a collection of gift certificates from your favorite stores and a promise of 10 hours a week of labor from the new home owner for the next 6 months. As you can imagine, the variety of bundles you may be willing to accept is endless. Without money serving as a store of value, the simple price tag would be impossible to create. It is this inconsistency that would also make standardized accounting impossible. Without a standard unit to use to compare balance sheets, accounting practice would be subjective to each asset holder, and businesses and individuals would need alternative methods for measuring and conveying their material successes and shortcomings. Money, when serving as a standard of value, is a way for people within a market to communicate with each other.

Money as debt

Money serves as a tool for communication and store of information as well in its role as *debt*. It may seem counterintuitive to think of holding money as holding debt or obligations, but this can be a very useful way to frame one’s thinking about it. Imagine a very simple case in which there are two people living in two remote mountain cabins. Jack makes ice cream and Jill makes tea. After Jack finishes a batch of ice cream, Jill asks to buy

a pint from him in exchange for an IOU written on a slip of paper, and they make the trade. Now, Jill has ice cream and Jack has an IOU. Jill has a useful commodity that she can eat and savor, while Jack has only a slip of paper that is not in itself useful. Later, though, Jill finishes drying her tea, and Jack is interested in having some. He approaches Jill with the IOU she originally wrote him and they agree on an amount of tea to exchange so that she gets her IOU back. Now, Jack has the commodity, tea, and Jill has her own IOU back.

In this situation, the slip of paper with the IOU written on it served as the currency, the money, in Jack and Jill's market. When Jack had the IOU, Jill owed him a pint of ice cream's worth of something useful. Jill was in debt to Jack, and the paper represented that debt. When Jack approached Jill to get some tea, she had an opportunity to pay off her debt. By accepting the exchange, she eliminated the debt and, since an IOU to one's self is meaningless, and because the debt *is* the money, she also eliminated the money that had been in circulation in the market. If, instead of an IOU, they had used U.S. dollars to facilitate their exchanges, the bills would still be an indication of Jill's indebtedness to Jack. Money is a token representing a claim on goods and services. The money system functions because a large number of people choose to accept these tokens of debt as payment for actual, useful goods and services. They know that, as money holders, they are creditors who are owed a useful good or service of some kind in the future.

How is money created?

The act of turning something into money is called monetization, and there are a few ways in which something can be monetized (Greco 2009, 81-2). In the above example, in which Jack and Jill produce ice cream and tea, they turn the written IOU into money when they agree to use it to facilitate their exchange and denote that Jill owes Jack something in the future. This money was created because Jack produced something of value and wanted to make an exchange. When the government prints bills and mints coins, it is monetizing the fibers and metals that compose those tokens. In current practice though, most of the money in circulation comes from the monetization of debt by private banks (Ritter 1984, 15-20).

Banks create money out of debt whenever they make loans (Greco 2009, 81-2). Though it is a common perception that banks loan money that has already been created by the government and that they hold in savings, this is not the case. Rather, banks need to hold only a fraction of the amount they loan to borrowers. Where does the rest of the loaned money come from? That portion is newly created money that is matched, or secured, only by the borrower's debt. If Jack takes out a loan for \$1000, then the banker adds \$1000 to Jack's account balance in the computer. Then, he balances the bank's books with Jack's debt to the bank in the same amount. This is quite different from the IOU that Jack got from Jill in the first example because in this case Jack does not produce anything in order to receive the money, he only promises to pay the bank with money in the future. In short, money is simply loaned into existence without any requirement that useful goods have yet been produced to justify its creation (Greco 2001, 5).

When banks loan more money than they hold in their vaults, they are practicing what is called fractional reserve banking, and it is through this system that the bank increases the money supply, or creates money. This additional money allows borrowers to make investments in new assets, like entrepreneurs starting businesses and families

buying homes, but it extends the bank beyond its ability to distribute money to all its depositors at the same time. Because banks make profits by loaning money and because the likelihood that many depositors request a large portion of their money at one time is low, bankers are willing to take the risks associated with fractional reserve banking. If they did not, or were regulated such that they could not, they would be unable to profit from creating new money from debt and would instead profit from loaning out existing money that depositors have put into savings (Herman Daly and Robert Costanza 2009).

How is money important to ecological economics?

Introduction

There are two main groups in the debates of monetary economics: the neoclassical economists and the monetarists. Neoclassical economists take a view in line with the fundamentals of economic theory, which do not incorporate money in any meaningful way. Instead money is just another good that people might choose to hold and exchange (Guttman 1994, 16). In contrast, monetarists view the regulation of money as critically important to business cycles and the performance of the economy at large (Guttman 1994, 38-40). Both groups, however, hold the overarching goal of economic growth, and their treatments of money are a reflection of how each group thinks about how to best reach that goal. In contrast, ecological economists are more concerned with how money and the monetary system affect the scale of the economy and the distribution of wealth among people (Daly 2004, 223). In this section we will examine these questions.

Money, debt, and the growth imperative

“The way in which money is created by the banking system today causes a debt imperative, which drives a growth imperative – this forces destructive competition for the available supply of money, which is never sufficient to enable all debtors to pay what they owe.”
-Thomas Greco, Jr.

Given that the money supply consists of a collection of people's debts, or promises to pay, traded in the market for actual wealth, the nature of debt is critically important to understanding the monetary system as a whole. One aspect of this debt that is critically important to ecological economics is that when banks lend, they charge the borrower interest on the amount borrowed. The purpose of this charge is to account for the fact that most people value money in hand more than a guarantee of money in the future. That is, if you were to ask someone if they would rather have \$100 today or one week from today, he is very likely to prefer to have the money today, even if he has no doubt that you will pay him in a week. Of course, collecting interest on loans is an important way that banks generate a profit as well.

A major flaw in a monetary system reliant on interest bearing debt serving as money is that there is always more money that must be repaid than exists. Banks loan essentially all the available money into existence, but they also ask for interest to be repaid on those loans. No matter how productive the debtors are some will always default. For

example, imagine a small economy with just one bank. The bank loans \$10,000 to households and business and charges 10% interest. Even though there is only \$10,000 in existence in this economy, the people and businesses owe the bank \$11,000. They must compete with each other for the available money. The only way to resolve this competition in a way that does not lead to default, which is bad for the bank as well as the borrowers, is for the bank to loan more money out into the economy. That money, though, will also be loaned out at interest, so a cycle of loaning money to match the growth of debt must continue in order for the system as a whole to function. In a more realistic system with many banks, each bank has an incentive to loan out as much money as it believes can be repaid at interest in order to maximize profits. This incentive pushing lending (and therefore debt-money creation) to its highest limit also pushes money owed in interest to its highest limit.

Banks evaluate whether a loan is likely to be repaid based on the investment the potential debtor proposes making with the money. If the banker thinks the investment will return profit enough to cover the original loan plus interest, they will create the money for this business. How does the business make a profit? They are unable to make money from nothing like the banks are, so they must get money from other members of the economy in exchange for actual wealth, real useful goods or services. The business must create these goods and services using physical resources. So, the business converts the time of its employees, services of its capital, and inputs from the environment into money through market exchanges. As more and more loans are made and more interest must be repaid, there will be an ever-larger drain on these physical resources (Greco 2009, 55).

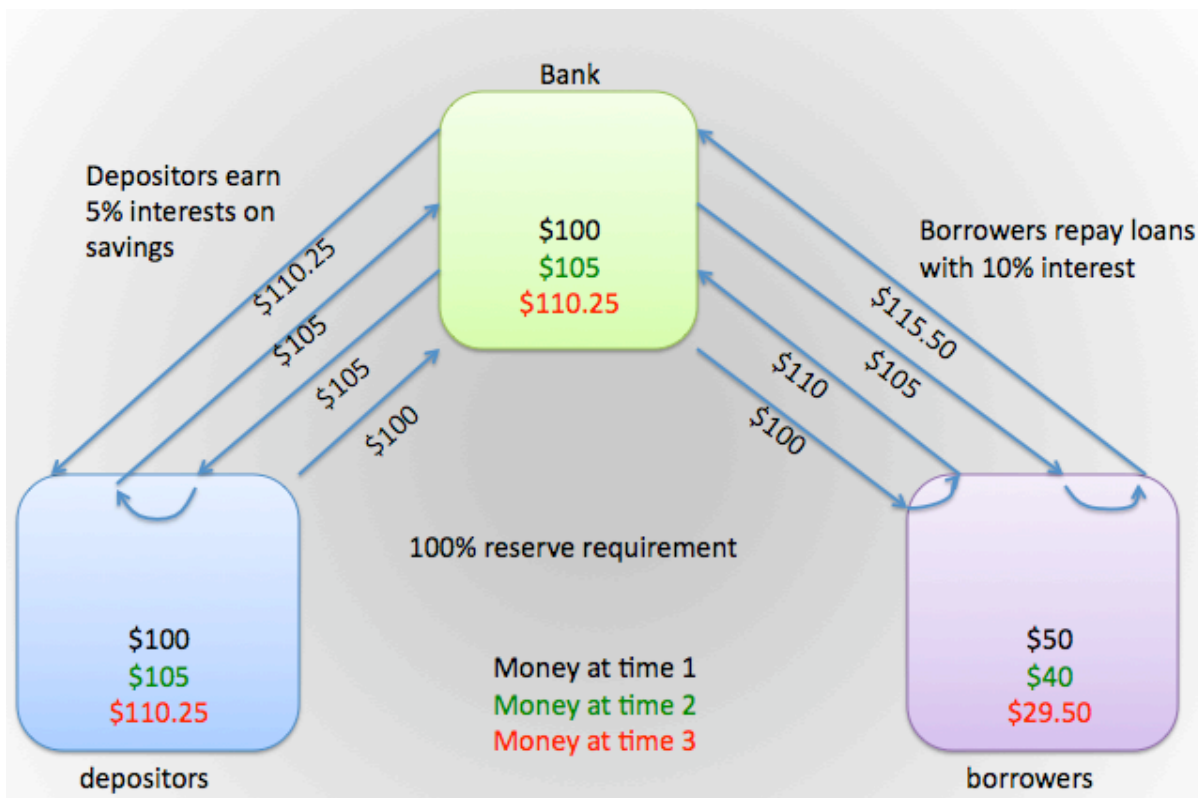
A prominent trait of ecological economists is their call for conversion to a steady state economy. However, the growth inherent to our monetary system is in direct opposition to this goal (Greco 2009, 14-15). Since interest rates compound, the debt in the economy increases exponentially. And since firms will work to repay debt through production, there is a drive for them to increase production exponentially as well. However, production is necessarily linked to physical resources that do not grow in this way. As the existing pool of physical resources in the environment is depleted, we approach the point at which the exponential growth of debt and money comes up against the linear growth of natural resources. When that occurs, the natural regeneration rate of the resource will become a limitation on the production and the ability of businesses to repay debts. Malthus famously observed the conflict of exponential growth within a linearly growing system in his *Essay on the Principle of Population* in 1798 (Greco 2009, 13), (Malthus 1798). Ecological Economists assert that we are approaching the point at which economic growth, which is demanded by interest collection, cannot be sustained on Earth and call this situation the “full world” (Daly 2004, 111-21).

Interest and Fair Distribution

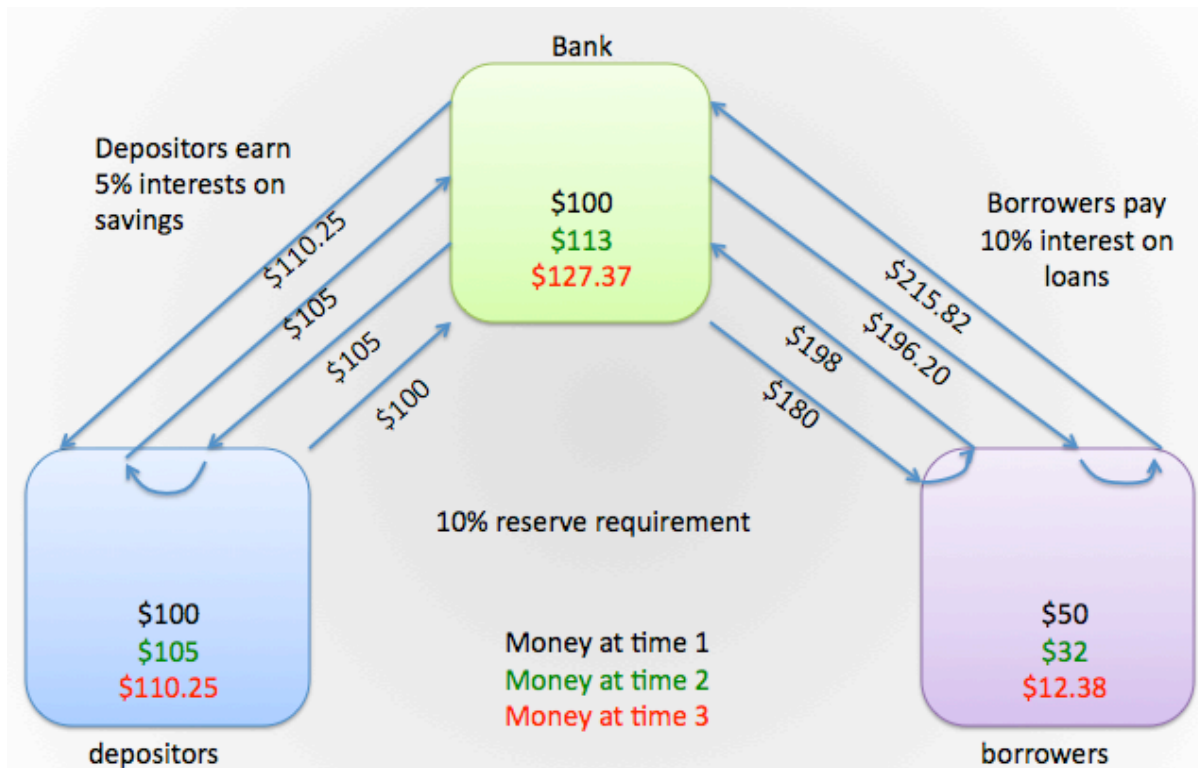
In addition to the dependence on growth in production that interest charges introduce into the economic system, these charges have an affect on the distribution of money among people in an economy. One role of banks is to bring together people who have money to invest with people who need money for investments. Lenders, or depositors, earn interest on the money they keep in the bank while borrowers pay the bank a larger amount of interest on their loans. In this way, people with money to save are

motivated to use the bank, and the bank makes its money. It follows that, through interest charges on loans, money is systematically transferred from borrowers to lenders. That is, people who, on the whole, need more money, give their money to people who, on the whole, already have extra money to invest.

The diagram below shows a simple example of how this transfer works. For simplicity's sake, the bank starts with \$100 and there is a 100% reserve requirement. The bank's depositors start with \$100, and the borrowers start with \$50. In the first step, the depositors put their \$100 into savings with the bank, and the bank lends the full amount to the borrowers, with an agreement to charge 10% interest. In the next step, the borrowers repay their loan, \$100 dollars of principle and \$10 of interest, and the depositors withdraw the full amount they are due, \$100 of initial deposit plus \$5 earned interest. The difference between the money paid by the borrowers and the money paid to the depositors is the profit for the bank. The cycle continues when the depositors put their money back into the bank. As you can see, the earnings of the bank and the lenders come entirely from the money that the borrowers had before any lending occurred. Interest simply transfers money from one group to another, and the resulting income disparity is a matter of concern in ecological economics (Daly 2004, 262-9).



Fractional reserve banking accelerates this process, with the bank's profits increasing and the savers' earnings staying the same. In this diagram, the bank holds 10% reserves.



Suggestions for change

Because the current monetary system violates two central values of ecological economics, sustainable scale and fair distribution, ecological economists and others who hold these values have suggested policy changes. Herman Daly and Robert Costanza propose a move away from fractional reserve banking as one of their top ten priorities for bringing the economy to a steady state (Herman Daly and Robert Costanza 2009). The ethics and practicality of intertemporal discounting, which is the justification for interest charges, is also questioned in the field (Daly 2004, 273-6). Those involved in the local currency movement cite fractional reserve banking and interest rates as reasons to create alternatives to national currencies (Greco 2009). Putting such changes into practice, though, is a matter of politics.

Whether suggestions for creating change focus on government intervention or grassroots organization, an important common thread is the recognition that money only functions because each player in the economic game agrees to accept it. Money is a part of culture, an example of both social capital and a public good. As such, societies need not be reliant on private banks to create money and collect the profits its creation affords them. If the power to create money were transferred away from private banks and to government or community organizations, these profits could instead be used for public projects.

Summary

Money serves many important roles in an economy, allowing people to exchange goods and services and save for the future much more easily and cheaply than would be possible without a currency. Despite the fact that money is a public good created by social interaction, in most economies today private banks create it when they make loans to their customers. This practice in combination with the charging of interest on borrowed money has two troubling consequences: the integration of a growth requirement into the economy at large and the systematic transfer of money from the poor to the rich. Ecological economists have recognized these shortcomings and proposed a move away from the current system and toward one that would allow for a shift to a steady state economy.

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