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An Inquiry into the Nature of Money: An Alternative to the Functional Approach

By

Éric Tymoigne

California State University, Fresno
Department of Economics

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The Levy Economics Institute
P.O. Box 5000
Annandale-on-Hudson, NY 12504-5000
http://www.levy.org

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ABSTRACT

The paper argues that the functional approach of money does not provide a good method to study monetary history and monetary mechanisms. An alternative approach is developed and illustrated by analyzing the role of tobacco and cowry shells in past monetary systems. It is shown that any monetary system has specific properties that most students of money do not take into account when theorizing about money or analyzing its history. This leads them to miss some important points, and to see monetary systems where none exist. Hence, one can doubt some of the past research on the subject, at least until further investigation is conducted that is based, not on what we think "money" is, but on what its essential properties are. By comprehending what the main characteristics of a monetary system are, one is able to improve regulation of the system and get some insights into the financial mechanisms of sovereign governments.

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1. INTRODUCTION[1]

The history of money is a fascinating subject that can rapidly overwhelm its inquirer if he does not have a good theoretical conception of what "money" is. This theoretical conception helps to narrow the field of research of the inquirer and to make his argumentation stronger. Different theoretical frameworks will lead to different, sometimes opposite, types of inquiry and conclusion. This paper presents a framework that is argued to be superior to the existing methods of analysis of money. It extends the framework developed by MacLeod (1889), Innes (1913, 1914), Keynes (1930), and others, and rests on asking not what money does, but what money is. By providing a more rigorous method to understand what "money" is, this framework gives some insights about monetary regulations and the role of taxes and bond issues for a sovereign government.

Today, there are basically two ways to analyze monetary systems. Most modern economists use a narrow approach based on a Chicago view of society. Market exchange is assumed to have existed in different forms since most of the existence of human beings because of their propensity to barter and truck. In order to avoid the problem of double coincidence of wants, a unique commodity was progressively sorted out as the best for use in exchange (Jevons 1875; Menger 1898). Thus, a monetary system can be detected by checking for the presence of a medium of exchange, which usually goes by checking for physical objects passing hands frequently. Einzig (1966), Quiggin (1949), and others argue against the narrowness of this and other approaches, and adopt the opposite stand by being as broad as possible in their understanding of money. For them, sociological and political factors are also important. Thus, this second approach, usually used by noneconomists, argues that "exchange" usually was not done principally, or even at all, for economic reasons and so the nonexistence of a double coincidence of wants was not a problem. Those authors, then, include in their classification of monetary instruments all kinds of objects as long as they perform all or parts of the functions of money. The distinction between "all purpose money" and "special purpose money," used by Polanyi and others, follows the same approach.

[1] The author thanks Warren B. Mosler, John F. Henry, and Stephanie A. Bell for their comments. All errors are mine.

The paper argues that both preceding approaches are theoretically flawed. They all rightly understand the importance of economic, sociological, and political factors; however, they examine those factors through an inappropriate method of inquiry. Indeed, both analyze money by its functions— "money is what money does" (Walker 1878; Dalton 1965; Hicks 1967). Studying the functions performed by money may provide some interesting additional facts, but this should be separated from the main analysis of monetary systems. One central reason is that, given its lack of rigor, the functional approach is highly based on the subjective view the inquirer. This leads either to select one principal function of money, or to pick and choose depending on the circumstances. This may lead the inquirer to force his own experience on what is going on in a particular society working under very different mechanisms (Dalton 1965). The functional approach also confuses monetary instruments (the things denominated in a unit of account) and the unit of account. An object cannot be a unit of account, even if it has the same name as the unit; the latter is necessarily abstract and independent of any objects. In addition, inquirers following the functional approach usually assume that monetary instruments must take a physical form, whereas they may exist mainly in an immaterial form.[2] In the end, this approach may lead to confuse monetary payments and in-kind payments, to assume that there is a monetary system where there is none, to make a truncated analysis of monetary systems consisting only in recollecting objects, or to miss completely the presence of a monetary system.

Thus, we must abandon this approach to the study of money. Monetary instruments are not defined by what they do, or by what inquirer thinks they do, but by intrinsic characteristics. For example, all monetary instruments are debt instruments and all monetary systems must start with a unit of account, *de facto* or *de jure*. Thus, monetary instruments sometimes can exist and never be used as a medium of exchange, means of payment, or store of value. Sometimes, monetary instruments may not perform any functions at all, exist without the existence of any circulating physical objects, or some objects may become monetary instruments and then may be demonetized. The point is to understand what "sometimes" means, that is to say, what the characteristics of a monetary instrument and system are and their implications. In order to do so, the paper is divided in three parts. The first part develops the basic framework set up by

[2] Pryor (1977) is a good example of the problems that this creates. Through an empirical analysis, he claims to verify Polanyi's theory of money, but does so by excluding an important item put forward by Polanyi, namely bookkeeping entries (Polanyi 1957).

Tymoigne and Wray (2006). The second part of the paper draws on such framework by developing specific points. The last part uses the framework to study the use of cowry shells and tobacco as monetary instruments.

2. THE INTRINSIC PROPERTIES OF A MONETARY SYSTEM

Tymoigne and Wray (2006) have put forward the following essential characteristics of a monetary system:

1. The existence of a *recording mechanism* with a *unit of account* and *tools* to record transactions.
2. The *unit of account* must be social, that is, recognized as the unit in which debts and credits are kept.
3. Some *tools* (i.e., *recording instruments*) are *financial instruments,* that is, they record the fact that someone acknowledged he owes someone else a certain number of units of the unit of account. Anything can be a financial instrument, as long as it is first an *acknowledgement of debt* and, second, a denominated in a unit of account.
4. Some financial instruments are *monetary instruments*, that is, are "generally accepted."
5. There may or may not exist a hierarchy of financial instruments, with one issuer (or a small number of issuers) whose debts are usually used to clear accounts.

Before any monetary instruments exist, there must be a unit of account. This unit may come from units of measure used for other purposes [for example, most past units of account were weight units (pound, lira) or land units (mark)], or may come from the pure imagination of its creators (like the Euro today). In any case, historically, units of account always have been imposed by an authority recognized by a body of individuals residing over a more or less large geographical space. This authority can be religious, political, military, economic, or others, for example, a village council.

Once this unit exists and its purpose has been well specified, it is possible to develop some tools. The tools used are the carriers of the unit of account that help to keep scores, that is, check who is in deficit or surplus in terms of the unit of account. If those tools (that can take

whatever form: coins, piece of rock, casino chips, subway tokens, bookkeeping entries, notes, etc.) are used only internally by their creator to keep track of some specific information, they are not financial instruments but only recording instruments. If some tools are issued to external individuals as acknowledgment of debt, they are financial instruments.

Because the latter are acknowledgments of debt, they have the following specifications besides being denominated in a given unit of account. They have a distinctive characteristic that allows its owner to know who issued them and how many units of the unit of account they carry (form, sign, name, size, color, etc.), and the issuer must have made the promise to accept them back (at discount, par, or premium) in payment whenever they mature. Stated another way, they have a *predefined maturity* that can go from instantaneous maturity (monetary instruments) to infinite maturity (corporate shares, consols).[3]

Financial instruments can be issued on whatever supports (wood, clay, papyrus, leather, metal, stone, computer memory, etc.) that best fit given the technology available, political considerations, cultural matters, emergency situations (e.g., Miller 1968), or other reasons. The support used does not matter to determine if financial instruments exist in an economy; however, it may have a strong impact on the working of the monetary system (Gresham's law, price instability, poorly working payment system, etc.), especially if its net supply is hard to manage. For example, one of the problems of the monetary systems of the middle ages was that anybody who had gold or silver could issue the king's debt instruments by going to the local mint. In addition, the reliance on a material that was hard to supply prevented the possibility of lender of last resort interventions.

Continuing on the problem of the support used to carry the unit of account, one should not exclude a financial instrument from monetary instruments because it is not issued through traditional accounting methods—off-balance sheets items also obey the law of debit and credit and may also be generally accepted. For example, off-balance sheet credit lines (e.g., credit card accounts)[4] are part of the monetary instruments. Technically, credit lines are exactly the same things as demand deposits and both emerge from loans. If there were a type of bank loan that

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[3] It is better to qualify shares and consols as having an infinite maturity rather than no maturity because the latter may lead to confuse "no maturity" with "no predefined maturity." Those financial instruments have a predefined maturity, which is that they never mature (i.e., the issuer is not contractually obligated to take them back). As shown later, the fact that commodities have no predefined maturity helps to explain why they are not money-things.

[4] However, a credit card is not a financial instrument—it does not have a maturity (credit card companies do not accept credit cards in payment) and it is not related to a unit of account (it is not a carrier of the unit of account).

provided a demand deposit upon which one did not pay any interest as long as one did not use it, both would be conceptually the same thing. The only real difference would be that in order to access cash from credit lines one has to pay fees, making them more similar to time deposits. The use of off-balance sheet credit lines is just an innovation of banks to bypass a banking regulation based on a narrow functional view of what "money" is.

Some financial instruments are transferable, that is, the original creditor can use them to pay a third party. In this case, they may or may not record the name of the original creditor, and, in the latter case, they are "impersonal." Other financial instruments circulate at a value different from their par value, so the amount of unit of account that they carry changes with the number of third parties that are willing to acquire or to depart from them (the issuer usually accepts back his financial instruments at par value when they mature). For example, a bond with a $100 face value may be used to pay a third party, but it may only allow to reimburse $90 of debt toward this third party, or it may allow payment of $200 of debts.

Some financial instruments have the following characteristics: their maturity is instantaneous, they are always accepted at par value, and they are impersonal. Their *degree of transferability of the unit of account* or *payment capacity* is infinite. This type of financial instrument is a monetary instrument. As developed later, this is what "general acceptance" really means. For example, a check is a financial instrument but usually not a monetary instrument because it is personal (it names the receiver) and is hard to transfer to a third party without facing a discount.

If some financial instruments have an instantaneous maturity, they should circulate at the value the issuer takes them back in payment. Thus, if the issuer is ready to take his financial instruments back at par, arbitrages should eliminate the possibility that they circulate at a premium or at a discount. However, lack of technological developments, misunderstanding of how to manage a monetary system, and other factors may prevent this arbitrage between third parties to take place. This is especially the case the further a financial instrument is from its issuer. As shown below, history has a way of complicating things because the preceding factors enter into play.

Capitalist economies are *monetary economies*, that is, economies in which money drives economic decisions. Monetary systems exist in both monetary and non-monetary economies (feudal economies for example). In addition, the main purpose of financial instruments differs

depending on the type of economy: pyramidal monetary system or flat monetary system. In a pyramidal monetary system, there are several types of financial instrument classified by their degree of transferability, with the most transferable at the top (today coins, central bank notes, and deposits at the central bank). In a flat monetary system, everybody uses the same financial instrument or all existing financial instruments have the same degree of transferability. This type of monetary system seems rare, if it ever existed; it is more probable that we went directly from a recording system to a pyramidal monetary system.

In the end, one reaches a definition of a monetary system that does not rely on any functions but on two characteristics: the existence of a unit of account and of financial instruments. A unit of account is not what money does, it is *part* of what money *is*. Financial instruments have not been defined in terms of any functions, and it is not how one can differentiate between a financial instrument and a monetary instrument. Some of the points presented above are developed below to clarify their implications and to see the limits of a functional approach to money.

3. SPECIFIC POINTS

3.1 Financial Instruments: Logical and Cultural Uses

Financial instruments are all promises to deliver, promises to be able to get in the future. Their logical use is to allow inter-temporal choices. Thus, financial instruments can be issued even though they are not backed by a higher form of financial instrument. Banks do not need reserves to make loans, checks can be draw without having funds on a bank account, and derivatives are issued even though the thing they promise to deliver does not exist at issuance. The macroeconomic implication of this is that a pre-existing amount of (financial) saving is not needed to start investment. It is, in fact, against the logic of financial instruments to wait for the things they promise to deliver before issuing them. By creating a bet against the future, financial instruments may generate instability, but one cannot solve this by requiring a 100% backing without at the same time killing the economic dynamics that these instruments aim at creating.

Some financial instruments (and so, some monetary instruments), given the way individuals are accustomed to use them, are not conceived as financial instruments in the sense defined above. We already saw this with credit card accounts. This situation is one where the

subjectivity of the inquirer is strong. The following may help to illustrate this point. We start with an extract from a discussion of "The Value of Money" by Francis A. Walker:

> He [Walker] says a bank note is money, but that a check drawn against a bank deposit is not. What is a bank note except a cashier's check upon a bank deposit? I think we need to make a distinction, […] and I should put into a different category those instruments of exchange which are of the nature of titles to money, but are not themselves lawful money. A bank note is a title to money, but it is not itself money according to any true discrimination, nor is it legal tender, because it cannot be forced upon a creditor. (Atkinson 1894)

Thus, Atkinson's position is that we should consider state bank notes as equivalent to the way we conceived checks today—simple orders of transfer. At the same time, however, Markham notes that in the United States, state chartered "banks were left with the task of creating devices that could serve as currency," and that "bank notes were only rarely redeemed for specie" (Markham 2002). Thus, Markham counts bank notes as part of the money stock and ranges with Walker. Friedman and Schwartz (1963) also count state bank notes as part of the money stock. In the end, a reader may be left on his own to decide what is and what is not "money."

The framework developed here should help an inquirer to figure out what is and what is not a financial instrument. According to this framework, one cannot assume that bank notes are just a representation of "money on the flow," with demand deposits representing where "money" accumulates. Demand deposits are just one method to accumulate the unit of account; one could decide to hold all his "money" in the form of bank notes.

What applies to bank notes also applies to checks. Checks are financial instruments, not simple orders of transfer; they have a defined value in terms of a unit of account and an instantaneous maturity. They fall short on being monetary instruments because they name the receiver and are usually not transferable. One could conceive that people decide to accumulate their surplus of unit of account in the form of checks and that checks become generally accepted (as defined below). The fact that it is illegal to write blank checks knowingly does not imply that checks are only orders of transfer. This legal requirement applies to all financial instruments—one should not issue knowing he will not be able to reimburse (lying about a project, ponzi system, etc.).

3.2. Acknowledgements of Debt and Clearing Methods

An acknowledgement of debt states (explicitly or implicitly) the number of units of the unit of account someone must provide to someone else in the future. However, most IOUs do not specify how the delivery of these units should be made.[5] A corollary point is that the finality of payment does not imply that a transfer of monetary instrument (or even legal tender monetary instruments) must be implemented. All that is required is that a certain amount of the unit of account be transferred from the debtor to the creditor at maturity so that debts are cleared; this can take whatever forms as long as the creditor agrees. The methods through which payments are made are only limited by the imaginations of creditors and debtors.

Thus, simply stating "I owe you $10" does not mean that someone promises to deliver cash or any other specific form of monetary instruments for a total of $10. It only means that someone promises to deliver ten units of the unit of account named Dollar. This can be delivered in many forms. One essential way is by giving back to a creditor some of his IOUs for an amount of $10. Another way, if a debtor does not have his creditor's IOUs, is by transferring units of account by using cash or other monetary instruments. Also, it is possible that payment takes place with a lower financial instrument than a monetary instrument, or even a lower form of debt than the debt that it clears. Finally, payment in kind can also be a solution to clear a debt.

For example, let us assume that ten units of dollar were created via the issuance of an acknowledgement of debt by a firm F to a bank B, in exchange for the generally accepted financial instrument of the latter. We have:

Bank B

Assets	Liabilities
$Loan_F$ $10	DD_F $10

Firm F

Assets	Liabilities
DD_F $10	$Loan_F$ $10

The repayment of this debt by F at maturity can take many forms. First, by bring back to B $10 of its debt, F is able to credit its demand deposit with $10. Another solution is for F to bring to B some cash (central bank financial instruments). These first two cases represent a payment made with similar or higher level financial instruments, however, the bank may also

[5] Some, like derivatives, do specify precisely what should be delivered to clear the acknowledgment of debt.

accept in payment from F a commercial paper from another firm F1, so that the loan is cleared as followed (assuming, to simplify, no discounting of the commercial paper):

Bank B	
Assets	Liabilities
$Loan_F$ -\$10 CP_{F1} \$10	

Firm F	
Assets	Liabilities
CP_{F1} -\$10	$Loan_F$ -\$10

In this case, bank B has accepted a lower acknowledgement of debt than the ones it issues as means of payment. A payment in kind would replace the entry CP_{F1} by a physical object. Note that the payment in those two cases is final and does not require the use of any top monetary instruments. Thus, defining "money" as "that which passes from hand to hand in final discharge of debts and full payment for goods" (Walker 1878) is too broad to be useful for the study of monetary systems.

One thing to note as an aside is that the term "bank loan" is a misnomer for the previous initial transaction. It is not a loan; it is an exchange of debt instruments between a private individual and a bank. The bank does not lend anything that it owns, it just creates a debt instrument (demand deposits). In exchange, non-bank agents give their own debt instruments (that materialized as a bookkeeping entry on the asset side of the balance sheet of banks— "loan to X" or, more rigorously, "advance to X"). Banks agree to accept their demand deposit in payment whenever presented to them, individuals promise to take back their financial instruments by paying banks at a given maturity.

3.3. Special Purpose Money and Payment in Kind

Many studies on "primitive money" have been performed and two famous ones are by Einzig (1966) and Quiggin (1949). They describe how objects were used in payment for compensations of debts "incurred not as a result of economic transaction, but of events like marriage, killing, coming of age, being challenged to potlatch, joining a secret society, etc." (Polanyi 1957). Those who could accumulate a lot of those objects obtained great prestige in the community, especially

if they gave them away. It is assumed that these objects were monetary instruments because they performed the function of means of payment or medium of exchange for specific transactions—they were "special purpose money" (Polanyi 1957). This view, however, can be disputed.

There is ample evidence that objects have been used by "debtors" to compensate "creditors," and that "creditors" were able to use these objects later to pay for compensations. However, all the characteristics of what make a financial instrument were absent. First, there was no unit of account in which the compensations, and the objects used to compensate, were denominated. There was no unit of account because one could not count anything independently of the presence of the recording instrument. In fact, it took several millennia to develop a uniform numerical system, starting from 8000 B.C. with concrete counting to 3100 B.C with the creation of abstract counting (Schmandt-Besserat 1992; Nissen, Damerow, and Englund 1993; Englund 2004). Second, the objects had no sign that defined who the issuer was and they had no predefined maturity. All this is illustrated by the fact that the payment of a compensation could go through several ways defined by what the elders said was appropriate: ten pigs, five cows, twenty chickens, a round piece of rock, thirty bags of potatoes, or whatever else is felt relevant. Thus, some individual may stay stuck with an object until the elders say it is appropriate to give this object in payment. Therefore, unless new archival sources (which sometimes exist as the example of cowry shells below shows) appear to add to our available information, transactions with "primitive money" or "special purpose money" should be seen as transfers of "treasure items, wealth, valuables, and heirlooms" (Dalton 1965), i.e., a transfer in kind, rather than as a monetary payment.

Some of these objects may also have been used as recording instruments, like we use marks on a calendar (or when we put an object at an unusual place) to remind ourselves of something. They helped the population to remember who owes or owed something.

3.4. Pyramidal Monetary System, Flat Monetary System, and Recording System

Typically, financial instruments are conceived as means of "providing money now for money latter." They credit debtors with the amount of monetary instruments they need. Indeed, even though everybody can issue financial instruments, not everybody can get them generally accepted. Thus, one needs to swap his financial instrument with the ones accepted as monetary instruments, promising to swap back to his financial instrument at a given date.

In a flat monetary system, or for the top issuer, there is no swapping involved. However, the top monetary instruments are still acknowledgements of debt because they fulfill the definition of a financial instrument—the issuer promises to accept them back at a given par value in payment when they mature. How, then, are those specific financial instruments made acceptable if creditworthiness does not play a role? Innes provides the answer when the top issuer is the modern (federal) state:

> The government by law obliges certain selected person to become its debtors. It declares that so-and-so, who imports goods from abroad, shall owe the government so much on all that he imports, or that so-and-so, who owns land, shall owe to the government so much per acre. This procedure is called levying a tax […]. (Innes 1913)

People who are credited with the monetary instrument issued by the state are willing to accept it because their issuance is coupled with the creation of a due toward the state—the need to pay tax in the future. Thus, in a monetary system, taxes are not a source of funds for the top issuer, they serve as reflux mechanism, that is, they bring back to the top issuer its financial instruments (Lerner 1943). Before the existence of nation-states, there were monetary authorities who levied monetary dues in different forms: tax, fines, duties, fees, offerings, tributes, etc.

In a pyramidal monetary system, the top issuer may decide to issue a range of more or less transferable financial instruments that promise to swap back to the top monetary instrument. All this has several implications that are fully developed elsewhere (Lerner 1943; Bell 2000; Wray 2003a). First, in order to be able to issue those instruments, the top issuer must have issued some monetary instruments first, so that other economic agents are able to buy the less transferable instruments. Second, there is a swapping involved; however, it is very easy to do because the top issuer issues the top financial instruments. Third, if the government redeems bonds by issuing notes or coins, its indebtedness has not changed a bit. It has only swapped a financial instrument and a monetary instrument. The only way to reduce the government debt would be to have a reflux without an injection, which means taxing, fining, etc. All these points show that the issue of bonds by the top issuer does not represent a borrowing operation. The point is to provide easy means to earn interests for economic agents with an excess of top

instruments. Today, Treasury bonds are part of an interest-rate management strategy of the central bank.[6]

What applies to the state today, applied in flat, or nearly flat, monetary systems like ancient Mesopotamia or Egypt around 3000 B.C. (Hudson 2000, 2004; Hudson and Wunsch 2004; Henry 2004). Those monetary systems, however, also provide additional insights into understanding the difference between a recording system and a monetary system. The religious authorities first used a unit of account for internal purposes to record the inflows and outflows of grains, cattle, and other goods between different religious departments. The authorities also used the unit of account to record the dues they imposed on others and to check that debtors complied with their obligations. Initially, one can think that this system did not contain any financial instruments and so there was no monetary system. Indeed, nobody was a creditor in terms of the unit of account because the religious authorities did not issue any acknowledgments of debt; they *imposed* a debt on people and recorded its fulfillment, so this was only a recording system. However, financial instruments appeared rapidly for two reasons. Some of the debtors could more than fulfill their dues and got a net credit in terms of the unit of account, while others were granted advances by the religious authorities, which were mostly in physical, but also in monetary, forms (advances of unit of account) (Nissen, Damerow, and Englund 1993; Hudson and Wunsch 2004). As long as only the first case existed (if it did), the monetary system was flat, and when loans were granted the system became pyramidal with two levels (the monetary instrument of religious authorities and the financial instruments of borrowers). In addition, as some people became creditors in terms of the unit of account, techniques to transfer those credits developed, i.e., fully transferable financial instruments emerged. Innes, for example, talks about the circulation of sealed shubati, but pure transfer of credit to pay next dues was another possibility.

One can see that recording system and monetary system are different—the first, contrary to the second, does not contain any financial instruments (i.e., nobody issued a recognition of debt to a creditor). In a recording system, there may or may not be a unit of account, and early tribal societies with primitive recording system probably did not need a unit of account given the small amount of things to track. A unit of account emerged with the need to improve the

[6] Note that all this could be achieved just by paying interest on reserves. In this case, the issuance of bonds would be unnecessary (Wray 2003a).

redistribution mechanism of the first large economies and took a long time to develop, as stated earlier. The functional approach of money distinguishes between the two mechanisms only by checking if only "credit" (rather than "money") exists. Thus, for example, if nobody uses an object to exchange but everything is done in terms of bookkeeping, there is only a recording system that keeps score of who is in surplus and who is in deficit. However, beside employing vague terms, this position eliminates the possibility that credits on a book are generally transferable to a third party for final payment.

3.5. Acceptance and Value of Financial Instruments

The acceptance of a financial instrument rests on the expected capacity of its issuer to "acquire credits," i.e., "to force cash flows," from others (Innes 1913; Minsky 1986a) and the time it will take for the issuer to become a creditor. By getting future inflows of a unit of account (via either monetary instruments or other forms), one is expected to be able to swap back to their financial instrument; creditworthiness is the determining factors of acceptance. The lower the creditworthiness, the higher the discount; that is, the less monetary units a financial instrument can carry in payments relative to its par value (Innes 1913). For the top issuer, creditworthiness is not a concern because no (relevant) swapping will be involved. In this case, the expected capacity to collect on dues imposed on others now creates a demand for the monetary instrument (and, indirectly, all other financial instruments the top issuer issues); this is a special form of creditworthiness that is better characterized as sovereignty (Wray 2003b).

The actual capacity to acquire credits affects the value of circulating financial instruments through its impacts on creditworthiness. Indeed, acknowledgements of debt must be able to come back to their issuers when needed so that their value is preserved, i.e., the creditworthiness of the issuer is confirmed. The role of the *reflux mechanism* is, therefore, very important. If there is no reflux, there is a refinancing process that, as shown below, leads to inflation or to a depreciation of the currency.

In conclusion, the acceptance of a monetary instrument does not rest principally on the material used to issue them but on the economic (and/or political) credibility of the issuer. This is, of course, in perfect accordance with the nature of financial instruments, as they represent bets against the future. Analyzing and listing the materials used (as the functional approach tends to do) completely misses the most important elements that determine a monetary system. The use

of precious metals may boost the acceptance if the credibility of the issuer is low by acting as collateral. However, the law of credit requires that the face value of, say, gold coins be higher than the value of the gold content. Out of the space of influence of the issuing government, where nobody paid taxes to the latter and so no reflux mechanisms exist (assuming that the government is not involved in profitable economic activities), gold coins issued by the latter may circulate only at intrinsic value. The choice between melting down the coins and keeping them depends on which solution gives more of the unit of account desired. All this applies to paper monetary instruments or immaterial monetary instruments which have no intrinsic value and so nobody would accept them if credibility was not good; their value would be nil, i.e., they could not carry any units of the unit of account.

3.6. The Value of the Unit of Account

If the capacity of the issuer to implement a reflux mechanism is essential for the maintenance of the value of his financial instrument, there may be situations in which the value of all financial instruments changes at the same time, either relative to the value of goods and services (inflation or deflation) or relative to another unit of account (depreciation or appreciation). These changes are due either to the discretionary decisions of the monetary authority (exchange rate devaluation/reevaluation) or to mechanisms at work in the monetary system. The first case is straightforward, but the second case requires more explanations.

Indeed, the value of a unit of account depends on how hard it is to get. It is initially possible to get access to the unit of account via transferable financial instruments that carry this unit, either by earning an income, by being granted a credit from suppliers of monetary instruments,[7] or by government spending in the economy. The less effort income earners (or borrowers, given the credit standards) have to put out in order to get access to the unit of account, the less valuable the latter is, given the existing reflux mechanisms. In addition, government spending injects reserves and cash, respectively, in the banking system and the non-banking sector. The larger the size of government spending, the easier the access to the unit of account, and so the less valuable it is given the reflux mechanisms.

[7] These suppliers can be domestic or foreign agents, but the latter do not have access to the refinancing source provided by the top supplier of a domestic monetary instrument.

In the end, thus, in terms of the domestic economy, if it is too hard to get access to get the unit of account (e.g., too low wage, too strict credit standards), the economy will tend to be deflationary, and if it is too easy to get, the economy will tend to be inflationary. This will be the tendency because the final effect will depend on the elasticity of the supply conditions of goods and services, the way financial instruments are used, and the strength of the reflux mechanisms.

The same factor affects the relationship between units of account. Reflux mechanisms, like capacity to export goods and services and to get net income payments from the rest of the world, affect the relative value of two units of account (Minsky 1979, 1986c). In addition, the capacity to accommodate a willingness of surplus units to switch their portfolio plays a central role. However, because monetary authorities cannot manage the top monetary instruments of other monetary systems (and because they are not large enough creditors in foreign currencies), portfolio movements can lead to large depreciations or appreciations of the domestic unit of account relative to foreign units of account unless monetary authorities coordinate their efforts.

In the end therefore, inflation, depreciation, etc. are not related only to the possibility that there is "too much money," but also to the quality of the debt instruments issued, that is, how hard it is to get them, given the *injection mechanisms* and the *reflux mechanisms*. Monetary instruments do not fall from the sky, and assuming that it is "as if" they did truncates the analysis of monetary mechanisms. As debt instruments, they are created with the needs of the economic process. This does not exclude the possibility of monetary inflation or the possibility of exogenous sources of money supply,[8] but the latter are not the only sources (Minsky 1991).

3.7. Unit of Account and Monetary Instruments

The relationship between a unit of account and a financial instrument is different from the one supposed by the functional approach. Typically, an object is said to be "all-purpose money" when it fulfills all the functions of money—it is a unit of account, medium of exchange, store of

[8] The only source of exogenous money supply today is government spending (G, if G is defined broadly) (Mosler and Forstater 1998; Wray 1998). This leads to an injection of top monetary instruments that takes different names depending where it goes: either to the banking system (reserves), to households (cash), to foreign households (foreign currency). Today, this injection (that goes mainly through the banking system) is offset constantly by the central bank in order to maintain the short-term rates on target (Bell 2000; Wray 2003a). The necessity for the central bank to do so is true under any monetary systems in which the Treasury has an account at the central bank; even if the Treasury cannot get advances from the central bank and needs to collect funds first in order to spend.

value, and a means of payment. The problem with this approach is that a unit of account is not a function of money; there cannot be "money" if there is no unit of account in the first place.

A unit of account can take the name of an object, however, once created, it has an independent existence from the object. This manifests itself in two ways—the object may disappear but the unit of account used for the monetary system will persist, or the relationship between the unit of account and the object can change. Taking, for example, the case of cowries. A cowry unit of account may exist without any cowry shells being used as financial instruments. If cowries are used as financial instruments, their value in terms of the cowry unit may change—one cowry shell may be worth one cowry at one time and three cowries at another time. A similar case exists, for example, with the new and old franc of 1959. A coin of 1 franc before 1959 was worth 1 franc unit and 0.01 franc unit after 1959. This change in the method of recording surplus and deficits is completely at the discretion of the monetary authority.[9]

Thus, the unit of account is not a function of money; it is one of the characteristics of a monetary system, the other one being the existence of financial instruments. A unit of account cannot be a medium of exchange, a store of value, or a means of payment. Like a medium of exchange, a store of value and a means of payment cannot be a unit of account. Stated another way, a monetary system necessitates a unit of account and carriers of this unit of account, but they have separate roles—one measures, the other records the measure.

3.8. The "General Acceptance" of Monetary Instruments

The difference that is made between different financial instruments is usually based on their degree of acceptance between economic agents—monetary instruments are financial instruments that are "generally accepted." The notion of medium of exchange is supposed to reflect that; a thing that is observed to be accepted by everybody in economic transactions.

There are, however, problems with an understanding of "general acceptance" as meaning a media of exchange accepted by everybody. First, this view lacks a rigorous definition of what "general" means. If general acceptance means that 100% of the population must be accepting a medium,[10] this condition is usually never realized. Indeed, there is a direct counter example with

[9] This change, however, does not represent a change in the value of the unit of account relative to goods and services because the value of everything is redefined to correspond to the new counting method.
[10] It seems doubtful that any student of money takes this restrictive definition.

some shops refusing to be paid in cash. If "general" means that a large portion of the population accepts a medium in payment, this vague definition leaves the inquirer with too much suggestive interpretation to be valuable. What is a "large" portion? 90%? 80%? 70%? Less? In the end, the notion of general acceptance, defined in terms of circulation among the population, is hard to implement and leads to either a very restrictive view or a very general view. Second, there are monetary instruments that are never, or only rarely, used in exchange. For example, commemorative or "special" coins are usually not used as media of exchange; therefore, if someone in 1000 years looks back at our monetary system by taking the medium of exchange function as criteria, he will exclude those coins, even though they are monetary instruments. Third, as shown later with tobacco, some media of exchange may exist and be extensively used in payments but may not be financial instruments and so cannot be considered monetary instruments. In the end, therefore, the notion of general acceptance is not related to any proportion of the population accepting an object in exchange.

One counter argument here could be that "general acceptance" simply means that people are legally required to accept a medium as ultimate means of payment when settlements are done in courts—monetary instruments are legal tenders. However, it is not hard to counter argue that most monetary systems did not and do not have legal tender laws. For example, the United States did not have any legal tender laws before 1862, and currently the Eurozone does not have any legal tender laws. Thus, the notion of "general acceptance" does not rest on the existence of legal tender laws. In addition, as the example of tobacco below makes it clear, just imposing that a medium should be accepted in payment does not qualify it as monetary instrument. Other conditions have to be verified.

The meaning of "general acceptance" has to be redefined—it means that the payment capacity of a financial instrument is infinite. This means that three conditions must be satisfied: instantaneous maturity, circulation at a defined monetary denomination (i.e., value in terms of a unit of account), and it is impersonal. First, the maturity of a financial instrument must be instantaneous, that is, its issuer must be ready to accept it back at any time in payment, possibly immediately after he issued it and from the same person to whom he issued it. Second, the capacity of payment must stay constant in terms of the unit of account, that is, it is accepted by a third party at no discount and no premium, *unless* the issuer decides to change the amount of unit of account his financial instruments carries, which then becomes the new par value. Finally, no

specific creditor should be named—they must be impersonal in terms of receiver. This includes financial instruments for which the name of the receiver appears but can be erased or crossed over and replaced by another receiver—a complicated way to materialize the impersonality of a financial instrument.

3.9. Monetization, Demonetization

The preceding subsections help to comprehend when something becomes a monetary instrument and when it ceases to be so. A commodity is not intrinsically a financial instrument but can become so, or even a monetary instrument, but one has to avoid several traps. Two of them are that, first, as noted earlier, checking for the existence of a medium of exchange will do a poor job. Second, even if this goes in the right direction, checking if a commodity has a constant price is only a very partial indication of the monetary nature of a commodity. Grierson (1977) and others used this criterion to differentiate "money" and "money substitutes." However, this criteria only tells us that the price of a commodity is administered and fails to consider other crucial criteria, for example, the fact that the one who produced the commodity must be ready to accept it back in payment:

> A moment's reflection shows that a staple commodity could not be used as money, because *ex hypothesi*, the medium is equally receivable by all members of the community. Thus if the fishers paid for their supplies in cod, the trader would equally have to pay for their cod in cod, an obvious absurdity. (Innes 1913)

If a commodity is used by an entity to make payment, and if this entity accepts back the commodity in payment *at a defined maturity date*, then, given the existence of a clear value in terms of the unit of account and of a sign showing who the issuer is, it is a financial instrument. If, in addition, the commodity circulates at par, is impersonal, and is accepted back whenever presented to the issuer, it is a monetary instrument. Thus, for example, a monetary system based on a gold standard does *not* have gold pieces at the top of the pyramid even though it may have gold *coins*. A gold bullion would be a financial instrument if it respected all the conditions for becoming so: impersonal (it is), distinctive sign of the issuer (none), well-defined par value (none, unless the issuer says at what price he will accept it back in payment), defined maturity (none). Thus, a settlement of debts with gold bullions is *not* a monetary payment but an in-kind payment. Also, if a government buys gold bullions, it injects monetary instruments in the

economy and if it sells gold bullions it removes monetary instruments from the economy. The closest monetary instruments to gold bullions are full-bodied coins, i.e., coins with a par value equal to their precious metal content. This type of financial instrument is, however, rare and inappropriate for an obvious reason—it creates such an intense speculation between the price of, say, gold and the par value of the coins that it cannot be a good base to create a stable monetary system. Owners would melt coins down to sell the gold whenever more units of the unit of account could be obtained than the par value. Sargent and Velde (1997) provide a historical study of the instability of monetary systems based on full-bodied coins.

A financial instrument is demonetized when it ceases to be an acknowledgment of debt (the issuer will not accept it back in payment), if its payment capacity starts fluctuating among third parties for other reasons than changes in the par value by the issuer, or if the issuer suddenly states that he will accept his financial instrument in payment only after a period of time. This excludes some important cases for which monetary instruments are used for non-monetary purposes. For example, collectors may be ready to pay a hundred times the par value of a commemorative $1 note or a low-issue 25-cent coin; others may collect foreign currencies that nobody will accept in the country of their collectors. In addition, anthropologists noted that when coins were introduced in Africa, some indigenous tribes used them both as monetary instruments and as decoration, or even totally forgot about their monetary use. None of these cases represent a demonetization of a financial instrument; they represent a non-monetary use of a monetary instrument.

In conclusion, a monetary instrument can cease to be used as means of payment, media of exchange, store of value, or all of them at the same time (like foreigners collecting coins), but still be a monetary instrument. Monetization and demonetization are explained by other means than the fulfillment of one or several functions.

3.10. Money and Credit

Sometimes a difference is made between “money” and “credit” on the basis that the former does not promise to provide a higher form of monetary instrument. Indeed, we saw earlier that financial instruments are usually conceived as instruments that provide access to monetary instruments with the promise to swap back in the future. There are, however, two problems with this distinction.

First, this distinction confounds clearing mechanisms and the nature of acknowledgments of debt. As shown earlier, the payment of a debt can take many forms, some not involving any higher form of financial instruments. The only specific characteristic of acknowledgments of debt is that the person who issued them promises to accept them back in the future in payment (which implies that they have a defined value in terms of a unit of account, a sign of the issuer, and a predefined maturity).

Second, as stated earlier, all monetary instruments are financial instruments, and all financial instruments are debt instruments. An acknowledgement of debt is a relationship between a creditor and a debtor, and monetary instruments do not escape this relationship. Thus, the things that are usually conceived as "money," like notes and coins, are the debts of the government—they are recorded at the liability side of the balance sheets of the central bank or the Treasury. They are liabilities, not because they promise a higher form of financial instrument, which they do not, but because the government promises to take them back in payment whenever presented to it. Considering Federal Reserve notes and coins as "pure assets" leads one to see strange paradoxes where there are none. For example, it seems crazy that the government destroys coins and notes by truckloads whenever it receives them. However, if one understands that they are just transferable promissory notes (that play the same role as when a person writes an IOU on a piece of paper and gives it to someone), the government has no use for them, and, on the contrary, wants to destroy them to eliminate any proof of debt.

3.11. Some Complications Due to History

We are accustomed to monetary systems working smoothly with well-defined monetary instruments being used over a well-defined geographical space. We are also used to a State having a strong hold on all the monetary system, bringing the uniformity and regulation so much needed for a well-working monetary system. History, however, shows how difficult it was to establish this. For example, in the middle ages, coins had been issued by a multitude of individuals, their value was changing daily and fluctuating widely, and their area of circulation was never well known. In addition, royal powers were constantly contested, leading to areas of influence moving all the time as wars were won or lost. Finally, precious metals, that may have been first used to limit counterfeiting, boosted the acceptance of issuers with a low creditworthiness, or for political and cultural reasons, became wrongly assimilated to what

money is. This increased the instability of monetary systems; even more so because the net supply of gold and other precious metal was erratic and not well controlled.

In terms of our framework, this implies that it was actually very hard to find perfect monetary instruments, notably ones that circulate at par all the time. Coins, for example, even if they were accepted immediately in payment by their issuers and were impersonal debt instruments, did not respect the par-value condition and so cannot be considered as strict monetary instruments—they were *imperfect* monetary instruments, like most financial instruments at this time. They are several reasons for this. First, coins did not have any value inscribed on them and so their value "was carried out by royal proclamation in all the public squares, fairs, and markets, at the instigation of the ordinary provincial judges: bailiffs, seneschals, and lieutenants" (Boyer-Xambeu, Deleplace, and Gillard 1994). With kings and other individuals issuing coins in a not well-regulated system, it was sometimes hard to know what the official value of a coin was, especially in remote areas or far from the issuer's area of influence. Second, kings and other issuers of coins complicated the determination of the value of their coins by crying them down or up too often (i.e., changing their par value), leading to a situation in which "there were so many edicts in force referring to changes in the value of the coins, that none but an expert could tell what the value of various coins of different issues were, and they became highly speculative commodities" (Innes 1913). Indeed, if crying down a currency can be considered as a normal way to tax citizens (the nominal value of their coins holding is decreased), abusing it led to two types of speculation: one regarding the occurrence of a future crying down, another concerning the value of the coins relative to the value of the precious metal content. In this condition, bankers or moneychangers usually refused to take coins at par, expecting a future crying down, or at other times, they accepted them at premium expecting a rise in the price of gold or silver. This last speculative channel was compounded by the uncertainties surrounding the supply channels of new precious metals.

All this seems to bring back the subjectivity of the functional approach because we "know" coins were monetary instruments, but the framework we developed does not seem to accept them unless it is stretched to accommodate history and coins are classified as "imperfect" monetary instruments. One could claim then that all previous systems of exchange were "imperfect" monetary systems. However, this is not the case, the reason for the imperfection does not rest on the view of the inquirer but on the way the monetary system was set up. Lack of

experience, political forces, economic forces, and cultural forces led to set up and to manage wrongly monetary systems. For example, there was a reliance on precious material, and the value at which an instrument was taken back in payment frequently changed. Like any badly built piece of machinery, monetary systems often broke down and led to approximate results. Another important problem during the middle ages was the difficulty of carrying information about changes in the par value efficiently. This led to long delays between the announcement and the time the new par value was fully in place; given the frequency of changes, the monetary system never had a chance to adapt fully. In addition, some carriers of the king's debts may have been in isolated areas where the king's officials, or external people (like merchants) who were in closer proximity to the king's area of influence, rarely went. This led some coins and other instruments with instantaneous maturity to circulate at discount between third parties, but, given everything else, the closer to its issuer a coin was, the closer it should be to its par value. Finally, some coins may have circulated at a premium, not only because of speculative concerns, but also because there were not enough coins to pay the dues to the king in this form.

Thus, all the imperfections can be explained fairly simply by following the framework we set up, and there is no wild guess to make in order to decide if something is or is not a monetary instrument. All the properties were there to make the system work correctly, providing that other non-monetary factors were set up appropriately. All of this shows that the study of money is broader than the simple study of monetary instruments or the economics of it—monetary systems do not operate in a vacuum.

3.12. Conclusion: A Rejection of the Functional Approach of Money

Thus, the supposed "functions" of "money" do not provide a reliable guideline to study monetary history and monetary mechanisms because they do not define what "money" is. They blurred together the crucial distinction between monetary instruments and unit of account, and they do not provide a systematic guideline to tell when there is a monetary system and when there is none. One may then be led to confuse a monetary payment with a payment in kind, and vice versa, and to concentrate all the analysis on the categorization of objects.

The only characteristic of a monetary instrument is that it has a payment capacity that is infinite. This has nothing to do with the extent to which a financial instrument circulates, the image that individuals have about what money is, the things people do with a financial

instrument, or the characteristics of the support used to issue those financial instruments. Thus, even if a financial instrument circulates only in a limited geographical space, say a village,[11] but respects the conditions necessary in terms of maturity, par value, and nomination, then it is a monetary instrument. In addition, a monetary instrument may never be used as medium of exchange, may never be used to make payments, may never be used as store of value, and can never be a unit of account.

4. SOME EXAMPLES: COMMODITY AND MONETARY SYSTEM

Books on the history of money are full of "primitive monies" or "money-substitutes" used as medium of exchange, means of payments, or unit of account. We will study how two of them, cowries and tobacco, are analyzed, and show how these presentations may deform the reality or only present part of the story. In doing so, they prevent the reader from drawing any conclusions about the monetary nature of those objects, or even show that they are not monetary instruments. As Grierson puts it:

> The nature and functioning of most "primitive" currencies are known to us only through the reports of casual travellers, colonial administrators, or professional anthropologists, who will not always have realized what questions to ask, when they have been in a position to ask questions at all, or how best to interpret the answers they received. (Grierson 1977)

The drawback in the presentation usually comes from the fact that the essential properties of a monetary system are not well presented or understood.

4.1. Cowry Shells and Monetary Systems

The case for cowry shells used as monetary instruments is usually presented by first looking at the Maldives. By relying on the words of an Arab merchant and an Arab historian of the 9th and 10th century, Quiggin reports that more than a thousand years ago cowry shells:

[11] Actually, only *three* persons are required: a creditor, a debtor, and a third party.

> formed the wealth of the royal treasury […] [and] when funds were getting low, the sovereign sent out servants to cut branches of coconut palm and throw them into the sea. The little mollusks climbed on to the branches and were collected and spread out on the sand to dry until only the empty shells were left. So the royal bank was filled again. Ships from India brought goods to the Maldives and took back millions of shells packed up in thousand in coconut palm leaves. It was a profitable trade, for even in the seventeenth century we hear of 9,000 or 10,000 cowries being bought for a rupee and sold again for three or four times as much on the mainland of India. (Quiggin 1963)

However, from the description given by the Arabs, one cannot conclude that cowries were monetary instruments used by the king to finance the purchase of foreign goods and services. Indeed, it is not explained what the unit of account of the Maldives was and how cowries were monetized, i.e., who, if anybody, issued them as debt instruments (did the royal authority issue them and was the royal bank ready to accept cowries in payment?), and what was their relationship relative to the unit of account. In addition, the role of cowries as monetary instruments is doubtful for the Maldives because, cowry shells were worth nothing against goods "except by shipload" (Polanyi 1966)—an extremely inconvenient means of payment and medium of exchange. What seems more logical is that the Maldives authorities were involved in the trade of cowries with Indian and Arab merchants. They were exporting cowries against imports of other goods—a situation of bilateral trade, not a situation of cowry monetary system. We know that Indian, Arab, and, later, after Marco Polo's journey, European merchants made huge profits from the international trade of cowries, but they recorded those profits in Rupee or Dinar or whatever the unit of account of their respective country was (but not in terms of cowry shells). This example shows well that one may confuse commercial exchange and monetary payment.

One way to be sure that cowries were actually used in a monetary system would be that cowry shells be generally accepted. Cowry shells could also be involved in a monetary system by giving the name "cowry" to a unit of account (even if the shells were not used in this system). Looking, first, at the later, it seems that there is some evidence of this. We know, for example, that cowries were used as unit of account in Africa (Polanyi 1966):

1 toque = 40 cowries
1 galinha = 5 toques = 200 cowries
1 cabess = 20 galinha = 4000 cowries

Quiggin (1949) also describes a system of compensations entirely determined in cowry. Vansina, in his analysis of the Kuba kingdom in Africa, also shows that "everything was calculated in cowries and most of the exchanges were made in cowries" (Vansina 1962), so one has to assume that most of the transactions were done in a cowry unit in those cases. The evidence is usually hard to find, however, because authors content themselves with a listing of things used as media of exchange or of units of account with no explanation. For example, the imposition of the unit of account has to be explained. In Dahomey, the cowry unit of account was imposed by the monarch (Polanyi 1966) and the king had to respect specific rules in order to maintain the value of the cowry (unit of account).

As an object, one way to know if cowries were a monetary instrument is to check if an economic agent issued them to make payments and received them in payments (therefore specifying their value in terms of the unit of account), and if he promised to take them back in payment whenever they were presented to him (making them debt instruments with instantaneous maturity). As Innes put it:

> A priceless gem or a worthless bit of paper may equally be a token of debt, so long as the receiver knows what it stands for and the giver acknowledges his obligation to take it back in payment of a debt due. (Innes 1913)

From evidence, it seems that cowries were actually used in payment of taxes in Africa (Forstater 2005), but also in other parts of the world, like China:

> Cowries were received for taxes as late as the fourteenth century; the record show that 1,133,119 strings of cowries were received by the Treasury in A.D. 1329. (Morse 1908)

That, however, fulfills only half the requirements necessary to make the cowry shells a debt instrument. Indeed, all kinds of objects can be accepted in payment of taxes (or fines or any other obligations), but they usually represent payments in kind.

Fortunately, several authors have done more detailed studies and Forstater (2005) summarizes some of this literature. In the African region of Dahomey, the monarch issued strings of cowries to make payments and had a monopoly on the stringing. Once issued by the government, cowries could be used by residents of Dahomey as medium of exchange. Perhaps, as in New Britain, which used the diwarra (a strip of cowry-like Nassa shells) (Quiggin 1963),

each cowry could be detached to make payments in petty exchanges. The cowry strings were accepted back in payment of taxes by the government. The government controlled the supply of cowries so as to maintain its scarcity by controlling the importation of cowries. The government of Dahomey was able to do it so well that the value of the unit of account was stable from the 17th century to the middle of the 19th century (Polanyi 1966). Therefore, there was an effective management of the cowry money supply by the government. By controlling the external inflow from foreign trade, by taxing, and controlling its spending, the government controlled the scarcity of cowries and preserved their value—the cowry was managed money. When the government of Dahomey failed to do so, "cowrie inflation" (Dalton 1965) prevailed, and in the end, the cowry monetary system had to be abandoned.

In China, it seems that a cowry monetary system also existed at several periods in time; from Morse's quote, one can suspect that the Chinese government had a control over the stringing of cowries. At one time, however, the system was abandoned for the opposite reason of Dahomey:

> Hwei Wan, the Prince of Ts'in, who in his second year, i.e., 335 B.C., recognizing the difficulties of finding a proper supply of shells and cowries and the rapidly increasing demand for convenient currency, altogether suppressed it. (Lacouperie, quoted in Quiggin 1949).

The incapacity to manage the supply to accommodate demand led, supposedly, to a deflationary area and the collapse of the cowry monetary system. Later, cowries were reintroduced by the government:

> Wang Mang hoped to gain favour by a return to the customs of the past. He abolished all the existing types of currency including the popular *wu shu*, and, besides re-establishing a currency in cowries and other shells he reintroduced, […] knife- and *pu*-money which had been out of used for over 200 years. (Quiggin 1949)

Swann (1950), in her translation of the Han Shu, shows that the usurper Mang (45B.C.–23 A.D.) used cowry shells in five denominations related to a unit of account translated as "cash." The suppression of metallic currency was repeated by the king of Wei after 220 A.D., but 40 years after China went back to *wu shu* coin again (Quiggin 1949).

Cowry shells seem, therefore, after a more careful (but still partial) examination, to qualify as monetary instruments in some parts of the world. This, however, could not be deduced

by looking at the trade of cowries. The problem with most of the studies is that they fail to explain clearly several important points. First, they fail to explain how the unit of account came into existence. What was the unit of account used? Who imposed it and for what reasons? Second, they do not explain clearly how the cowry shells were monetized. Who issued them as acknowledgement of debt? What was their value in terms of the unit of account? What were the mechanisms that allowed the cowries to flow back to the issuer? How was the scarcity of the objects used as monetary instruments managed in order to preserve their value?

As an aside, this example shows well what the main problem is with a monetary standard based on a commodity (or any other monetary system that has its highest form of financial instrument based on a material not available rapidly). Indeed, the elasticity of the supply of the material becomes of great importance, as well as the maintenance of a relatively fixed value of the material in terms of the unit of account.[12]

4.2. Tobacco and Monetary Instruments

The best example put forward to make the case that tobacco was a monetary instrument is the case of Virginia and other U.S. states in the 17th and 18th centuries:

> Tobacco was an accepted medium of exchange in the southern colonies. Quit rents and fines were payable in tobacco. Individuals missing church were fined a pound of tobacco. In 1618, the governor of Virginia issued an order that directed that "all goods should be sold at an advance of twenty-five percent, and tobacco taken in payment at three shillings per pound, and not more or less, on the penalty of three years of servitude to the Colony." […] Virginia was using "tobacco notes" as a substitute for currency by 1713. These notes originated after tobacco farmers in Virginia began taking their tobacco crops to warehouses for weighing, testing, and storage […]. The inspectors at the rolling houses were allowed to issue notes or receipts that represented the amount of tobacco being held in storage for the planter. These notes were renewable and could be used in lieu of tobacco for payment of debts. […] Later, in 1755, the Virginia Assembly authorized the payment of tobacco debts in money at two pence per pound. Fines in Virginia were payable in tobacco. For example, a master caught harboring a slave that he did not own was subject to a fine of 150 pounds of tobacco. The Maryland Tobacco Inspection Act of 1747 was modeled after the Virginia statute. The Maryland statute required tobacco to be inspected and certified before export in order to stop trash from being put in the tobacco. […] Inspection notes were given for the tobacco that was inspected. Those notes were passed as money in Maryland. The use of warehouse receipts for tobacco and other commodities would spread to Kentucky as settlers began to cultivate that region. (Markham 2002)

[12] The same is true for any fixed-exchange rate system for which a direct or indirect promise of the government to deliver foreign currencies is established. In both systems, the government ties its hands by promising to deliver a form of debt that it does not control.

Hence, it appears that in these colonies, tobacco leaves served as media of exchange and so, following the narrow functional approach, were a monetary instrument. However, what the preceding example actually shows is that the states of Virginia and Maryland were at the center of a redistribution system in the trade of tobacco (and other agricultural products) which was central to the economy of these states (Markham 2002). By accepting tax payments (fine payments or any other dues) in tobacco at a relatively high fixed price, they could influence tobacco output, could centralize production and redistribution, and could make it easier for farmers to pay their taxes (who usually did not have enough monetary instruments because of their scarcity). This, however, does not qualify the payment in tobacco as a monetary payment, but rather as a payment in kind at a price that was administered. It seems doubtful that tobacco producers would have accepted to be paid in tobacco, even more so to accept it back immediately in payment; like any monetary instrument is.

Between private individuals, tobacco and other commodities could also be used to settle their debt positions, but Markham clearly notes right after the passage quoted above that this was a payment in kind:

> One method for financing private transactions in the colonies was through records of account kept by tradesmen and planters. Credits and debits were transferred among other merchants and traders. This was a form of "bookkeeping barter" in which goods were exchanged for other goods, and excess credits were carried on account. The barter economy that prevailed in the colonies required "voluminous record-keeping … to carry over old accounts for many years." This practice would continue through the eighteenth century […]. (Markham 2002)

Thus, tobacco was not a monetary instrument. Also, note that the author actually makes a distinction between a medium of exchange (tobacco) and money—the payment of tobacco debts was made possible "in money at two pence per pound." This clearly shows that tobacco was not a monetary instrument, but rather a commodity with an administered price that could be used instead of monetary instruments to settle debts written in a unit other than tobacco.

The two previous quotes, however, give us some clues about the monetary system that existed. First, whereas tobacco was not a financial instrument, tobacco notes were a debt instrument of the government warehouses representing £*x*, depending on the volume of tobacco they embodied and the administered monetary value of a pound of tobacco. Thus, tobacco notes may have become monetary instrument if they were redeemable instantaneously at par; nothing

clear is said about that. We are only told that they were used "in lieu of tobacco for payment of debts" and "passed as money in Maryland." This is a good illustration of how the functional approach may lead to skip a detailed study of the "moneyness" of a financial instrument and to talk extensively about an object that does not even pass the qualities necessary to be a financial instrument. Second, the bookkeeping system was actually more complicated than presented above (Littleton 1956). Indeed, credits on an account were sometimes transferable at par, making them monetary instruments. Thus, a national monetary system based on the English pound was present during this period in the United States, even though its functioning was not very smooth given the too high scarcity of top monetary instruments (coins and notes) and the localized emergence of generally acceptable bookkeeping transfers. Tobacco, however, was not part of this monetary system.

5. CONCLUSION

The study of monetary history and the monetary system is a complex matter that cannot rely on checking for the functions performed by an object. Using the functional approach to money will prevent differentiating between monetary payments, payments in kind, or simple commercial exchanges. This will also prevent the inquirer from detecting monetary systems or lead him to assume that a monetary system exists where there is none. Anything can be a monetary instrument and any type of support can be used to issue monetary instrument, as those are unimportant determinants of what a monetary instrument is. What matters is the existence of specific monetary characteristics; monetary instruments are generally accepted financial instruments. All monetary systems rest on debit/credit and assets/liabilities relationships because all monetary instruments are acknowledgments of debt.

The alternative theoretical framework used to understand "money" implies that many of the "primitive monies" were in fact not monetary instruments, at least not until more information is provided. Unfortunately, many of the early studies available cannot be repeated.

This alternative framework also has important theoretical implications. First, it shows that any modeling must take into account the financial implications of economic decisions. This means that the accounting framework of a model must be stated explicitly. Second, one can understand easily why Starr (1974) finds a non-zero price for money when there are taxes.

Because of the nature of money (debit/credit relationship), any model with money must have debtors with a shortage of monetary instruments. This is sufficient to create a demand for money. If the state does not exist, debtors with a shortage of bank monetary instruments create a demand for the latter. Third, related to the previous point, monetary instruments cannot be modeled as pure assets, i.e., like a commodity. This is against the logic of monetary instruments to be pure assets, they are all bets against the future.

The alternative theoretical understanding of money also greatly improves our understanding of monetary mechanisms. It shows, for example, that the issuer of top monetary instruments, today the sovereign State, makes its acknowledgement of debt accepted by imposing a debt on others and by promising to take its acknowledgements of debt in payment at a defined value. The state does so because it is the way financial instruments work—there must be a reflux mechanism. Taxes and bonds are not financing methods for the (federal) government because they cannot be implemented before the top monetary instrument has been injected. The framework also helps to understand why using a precious material or having a narrow view of what money is (which led to the monetarist experience) had a large negative impact on the economic system. Given the nature of financial instruments (bets against the future), what matters is the credibility of the issuer. This is regulated by economic and political confidence, not by tying up the hand of the issuer immediately (via a gold standard, a fixed exchange rate regime, high collateral, etc.). Not until the end of 19th century was the "standard formula" (Sargent and Velde 1997) for running monetary system using precious material understood, therefore, it may take a long time before the law of credit and their consequences are fully understood.

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