

MONEY AS A SOCIAL BOOKKEEPING DEVICE
From Mercantilism to General Equilibrium Theory

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Revised version

Abstract

The bookkeeping approach postulates that money records individual contributions to the national product, documents the 'justification' to demand goods, and signals fairness in economic transactions. It emanates from early considerations on income distribution in a centralized economy, but is also assumed to support acceptance of money in a market system with decentralized exchange. Money is a memory of economic activities, signals that agents keep to their budget constraint, and serves as a substitute of trust. But its acceptance is not built on useful labour effort of money users. Interest costs and not labour costs indicate the solidity of the currency.

Keywords

Money functions. Monetary contracts. Information. Trust. Fairness.

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Money is memory.
Narayana R. Kocherlakota (1998)

Evil is the root of all money.
Nobuhiro Kiyotaki / John Moore (2002)

Introduction

Money is what money does. This is a well-known phrase in the theory of money. Unfortunately however, economists do not seem to agree on what money does, i.e. on the true meaning of the functions of money. The trinity of a medium of account, a means of exchange and a store of value is mentioned in every textbook. But there is no agreement on the question which of these functions is the basic one and on the relations to other concepts as, e.g., the function of a means of payment. Presumably this vagueness mirrors the still unsettled controversy on the actual role of money in a market economy, i.e. whether money belongs to the 'core' of a capitalistic system or whether it merely smoothens economic transactions in the process of allocation of resources, which essentially remains a regime of barter.

In this Chapter a further feature of money is presented, which can be found--possibly among others--in the writings of Galiani, Marx, Bendixen, Schumpeter, and Luhmann, but also in the modern variant of neoclassical General Equilibrium theory. The common denominator in all these studies is that money performs a kind of a bookkeeping role: it records the value of market agents' contributions to the national product and, at the same time, documents the 'justification' of its bearer to demand goods and services. The bookkeeping idea points to the principle of efficiently guided incentives in a society built on the division of labour and the necessity of monetary contracting instead of direct barter in large, anonymous societies. Money functions as a kind of memory of its bearers' economic activities, signals that they keep to their budget constraint, and serves as a substitute of trust.

The following two sections present the stages of the bookkeeping approach in the history of economic thought, before finally some critical conclusions are drawn with respect to the validity of the bookkeeping concept. It might appear as a convincing idea at first glance, conveys important insights into the working of a monetary economy, but nevertheless suffers from severe analytical flaws. In this context the pivotal role of the rate of interest for the stability of a monetary economy will have to be reassured.

Monetary contracts in mercantilist thought

Whereas one track of mercantilist monetary theory deals with money as finance, i.e. an 'input' factor for production perceived to be in short supply, another begins with the more institu-

tional question about the type of asset or medium that performs as money. The determination and the value of money according to Locke rest on a 'consent of men' (1690: 26). At first glance, Locke seems to be a metallist, because in the long run the value of money is assumed to equal its cost of production. But it is an open issue which of the precious metals is chosen to perform as money. Even gold drew its high market valuation not from the mere value of being a precious metal, but rather from the (sometimes only implicit) agreement to use it as money. The acceptance of any currency does not depend on physical properties of that medium but from a social convention, derived from the collective expectation that it will perform its function as a means of payment *in the future*. This highlights the potential allocative inefficiency and global instability of such an expectation ('sunspot') equilibrium.

The analysis of money as a precarious conventional equilibrium hardly made any analytical progress during the first half of the 18th century. But it seems to be rewarding to have a closer look at Galiani's *Della Moneta* (1751), a book which has much in common with the work of Davanzati. Like the latter, Galiani is seen as a metallist in monetary matters, and he is praised for his presentation of the paradox of value (Schumpeter 1954: Ch. 6). However, Galiani's much more important contribution to the history of economic thought, which more or less seemed to have been ignored, consists of his considerations on the institutional aspects of money. In an illuminating passage Galiani addresses the question how a society should be organized obeying the principles of efficiency and fairness.

I believe that large societies too [...] can live as happy communities. But I considered also that this depends on a particularly chosen and hard-working population. It is necessary that all people reliably deliver their products to public warehouses, from which they draw all necessities supplied by other fellow citizens. However, in this system the lazybones who withholds his products from the community is a parasite that lives off the others. There would be neither a reward for diligence through an increase of welfare nor a punishment of the idle who suffer from increased poverty. [...] In such a society all individuals aim for a 'good life' and little work; this system could not be maintained.

As an improvement I worked out the following idea: we could keep account of each man's work, and everyone would participate in the yield of other men's work, proportionately to his own input. Everyone who delivers his products in a store should receive a certificate, which reads: 'The owner of this paper has supplied the public warehouses with a quantified amount of a particular commodity. Hence, he has become a creditor of the community to the extent of the value of his contribution.' Under no circumstances commodities should be distributed without collecting certificates of an appropriate value. After cashing in the paper ought to be destroyed. [...]

But then I suddenly realized that I unintentionally had sketched an image of the actual world. [...] *The certificates, i.e. the money, represent the credit, which everyone receives in exchange for his individual work.* [...] Spending money means to give up shares of the yield of one's own work. The difficulty in the first-mentioned system that could not have been solved by resorting to the command of virtue is perfectly resolved by bringing self-interest into play. [...]

My readers will have extended my considerations and recognized *our existing order of*

society which rests on contracts and money.

Ferdinando Galiani (1751: Bk. II, Ch. 1, my emphases)

First, Galiani shows a clear understanding of the basic problem of misguided incentives in any unified community or socialist economy. Second, like Smith who followed him, he hit upon the approach that made use of, rather than tried to restrain, private interests. But unlike Smith, he did not simply rely on the forces of competition, which are supposed to 'channel' selfish behaviour for the benefit of social welfare in classical economics. Rather, *money* is presented as a medium, which brings about an efficient allocation of resources and a fair distribution of real income. Galiani also intimates that the pattern of market interaction is structured by *contracts*, which is a modern view of the working of a private-property market system, maintained by institutional and Post Keynesian branches of economic theory. However, Galiani treads a rather short path from bureaucratic receipts to money, i.e. from a central-clearing-house way of allocating resources to decentralized market contracts. This will turn out to be a crucial distinction when assessing the bookkeeping idea.

The notion of 'social bookkeeping' appears to differ from two of the more traditional money functions:

- A *money of account* is any medium, which simply is able to express various valuations in a common standard. But in Galiani money is not some neutral yardstick, which itself has no necessary bearing on the society's process of production; rather, it is supposed to carry the information on each market agent's productive contribution to national welfare, and it documents that its bearer is entitled to demand resources from the common pool of the social product.

- A *medium of exchange* on the other hand is used to enhance the facility of bilateral exchange by solving the problem of a lacking double coincidence of wants. Galiani however does not address the problem of matching in isolated barter; the focus is not on the efficiency of decentralized exchange transactions, but rather on the fairness of income distribution at large, i.e. the stipulated equivalence of an agent's product and his or her income or consumption. The social system that is under scrutiny is not a *barter economy*, but an *accounting economy*, in which, using the words of a modern General Equilibrium theorist, 'each agent could be trusted to take out of the economy, in value terms, exactly what he put in' (Gale 1982: 186).

Traces of Galiani's idea in the history of economic thought

The followers of Galiani did not make much of the above sketched-out part of his work. But Marx did: when he elaborated on the labour theory of value he picked up the thread of Galiani (though without explicit reference) and the concept of a labour-certificating currency, which in the meanwhile had been propagated by the socialist writer Owen. Marx (1857/78: 53-8, 85) hit upon serious shortcomings of the bookkeeping idea, i.e. the concept of issuing specific

certificates ('Stundenzettel') documenting how much labour had been put into the production of some commodity by a particular worker; he recognizes that it would be impossible to honour simply each hour spent as an *economic* input; for value is only created by *efficient* work. Moreover, the 'necessary amount' (and quality) of labour, which determines each commodity's relative price, is found *ex post* by forces of competition. Obviously, Marx conceived of a *market* process of allocation whereas Galiani (1751: Bk. II, Ch. 1) in his benevolent-clearing-house approach recommended that the *political sovereign* ought to decree the value of each commodity and thus, indirectly, the value of each unit of labour used in their production.

Marx (1857/58: 46-7, 60, 82) confirmed the bookkeeping approach with regard to money when he argued that the 'socially necessary quantity of labour', which serves as the standard of value, must exist in a physically observable form in the market because each commodity draws its effective value, not from a notional measurement, but from an actual exchange with money. He was puzzled by the seemingly strange trait of a capitalist market society that the--so to speak--collective average of all members' labour input, i.e. money, is opposed to the market supply of each single member and thus executes a rating of his work: a social order of production embodied in an isolated object! Money does not certificate a market agent's individual and labour input, but his contribution to the social product as assessed by the demand of other agents. The product of 'private labour' does not count as 'socially necessary labour' before it is successfully sold on the market. The interpretation of money as an embodiment of 'socially necessary labour' led Marx to believe that the money medium itself must be a produced commodity. Hence, he is to a greater extent a metallist than Galiani who recommended the use of precious metals only because of a lower risk of being forged, but in his above vision stipulated that the sovereign controlled the quantity and authenticity of the labour certificates by his personal signature.

The bookkeeping aspect in Marx' monetary theory makes clear that the above mentioned principle of *fairness* in the market distribution of real income in no way must be confused with the aim of *equality* of income distribution. The former requires that impersonal laws of competition govern market prices, whereas the latter might involve a far-reaching control or abolishment of the markets' law of motion. For Marx, the exploitation of the labour force is no violation but the equilibrium outcome of a regime of a labour theory of value. The extraction of a surplus income from the labour class is efficiently accomplished by the interplay of *money* wages and prices, and overcoming the inequality of income would necessitate a changeover to another type of economic system.

Shortly after Marx, the approach of understanding money as a bookkeeping device was overturned by a competing idea, which had a detrimental effect on the theory of money: Walras, who--like Marx--looked for a society where the market power of agents was less unevenly

distributed than in the actual system of early industrialized capitalism, hit upon the idea of an auction where the economic inputs of all individuals should be converted into commodities that made up each agent's personal income. The auction--a procedure to measure each person's contribution to overall welfare--took the place of money, which in Marx accomplished the same task in a decentralized way. It can be questioned whether Walras really modelled a *market* society, as there are actually no markets in his theory (De Vroey 1999). The institutional set-up is basically different from a capitalist system; it is simply another type of economic order.²

Interestingly enough, Walras' neoclassical companion Marshall also was motivated by visiting a bourse, but obviously it was the London stock exchange where transactions were carried through by means of a *continuous* trading, not the one-time spot trading organization, which was used in Paris (Kregel 1995). Therefore, differences between market and equilibrium prices, lack of information, and false trading were among the issues in those theories, which had their source in Marshall. An aggregation of Marshall's partial markets would not constitute Walras' general equilibrium approach (De Vroey 1999). Money itself was not a key topic in Marshall. His most important descendant, Keynes, emphasized that contracting in terms of money is the essential characteristic of a market economy (1930: 3), but he was more concerned with the *macroeconomic* consequences of the use of money.

The bookkeeping idea can be rediscovered in the sphere of the debate between metallist and nominalist theories of money. The less known German economist Bendixen (1920) partly defended Knapp (1909) against his critics and confirmed the principle that the transfer of a money medium did not involve a transfer of a 'real' value given by that medium itself, but insisted that the buyer of goods makes over quantified symbols of some abstract value. He departs from Knapp though in the belief that these are not just nominal signs; the 'essence' of money, moreover, is an entitlement earned by each buyer's work to acquire goods in the market.³ A concise summing up of his book *Das Wesen des Geldes* (1908) is given by his following statement:

The modern style of economic activity does not consist in holding and exchanging goods between individual agents, but in the work of all and for the benefit of all people in the regime of an economic union, in producing *for* the community and in the consumption *of* the community. Therefore money, which has given the name to this

² Walras misled his followers for more than a century to draw 'economic laws' from his auction model, which are valid only here, but not in a monetary market system. As a consequence, economic theory was set on a wrong track with regard to many issues; the notion of a real rate of interest is one of the most prominent examples (Spahn 2001: 25-32).

³ Schumpeter (1930: 85) coined the phrase 'transfer theory of money' to characterize Bendixen's approach. The opinion of Bendixen that money entitles its bearer to the consumption of goods, the value of which he himself has helped to produce, quite naturally made him succumb to the real bills doctrine.

economic order, is neither a tool for the execution of barter nor a medium of exchange, but rather a symbol indicating a service provided for the community, and the justification for receiving a return for one's own input.

Friedrich Bendixen (1922: v)

This clearly is a resumption of Galiani's vision, now embedded in the Historical School's holistic view of the inseparability of the economic and the social system. Like Marx, money is seen to be the common denominator of all single, valued commodities. The rejection of the notion of money being a medium that facilitates barter paves the way for the conception of a *means of payment*. 'Payment means the transfer of units of general value: economic entitlements to market commodities, given in a numerical, quantitatively specified amount' (Bendixen 1920: 19).

The notion of a means of payment suggests itself if one--following Marx--conceives of money as a symbol representing abstract and highly liquid value, distinguishable only by its quantity; then a buyer hands over some parts of nominal wealth if he or she acquires a commodity. The notion of a medium of exchange, on the other hand, appears to be more reasonable if money only facilitates the technical exchange of goods, but is not being held as an *asset* by market agents, which also plays an important role in the savings and investment behaviour. Neoclassicals who see the essence of a market economy in a system of sophisticated barter tend to stick to the medium-of-exchange view. Thus Menger (1909: 579) explicitly denied any justification of treating money as a means of payment, in contrast to Keynes (1933a, 1933b: 82) who headed for a 'monetary theory of production' that could be characterized by Marx' famous formula $M-C-M'$, i.e. the principle that investing and refunding sums of abstract wealth form the capitalist law of motion.

Finally, also Schumpeter implicitly followed Galiani's approach when he in one of his early writings defined money as 'a certificate and valuation of productive services' (1917: 634-6). In his subsequent book on monetary theory (which he hesitated to publish until his death) Schumpeter continued to speak of money as a claim to goods, which has its foundation in the money-using agents' preceding work, when he elaborated on accounting problems in socialism and capitalism. In the first case, notes confirming a specified labour input might be issued by a central planning agency and later be withdrawn when spent for consumption goods. In the latter, the banking system is said to record the financial counterparts of all transactions and thus collects--although unintentionally--an image of the society's economic life. Each person's account is credited with the value of his individual services, and debited with the value of his withdrawals of goods from the national product.

Schumpeter envisaged an *accounting economy*, which serves as a 'scaffold' for each type of economic system. A main accounting agency actually takes over the job of Walras' auction-

eer. As a medium of account and a tool to distribute income he considered money, preferably in the form of bookkeeping entries, to be indispensable in all these economic orders. 'The idea that everyone's economic transactions will be recorded on an *actual or imaginary account* is extremely informative for the understanding of social interrelations and processes; it is thus a basic concept of monetary theory' (Schumpeter 1930: 127, my emphasis, cf. Chs. IV, VI, IX). As Galiani before him, Schumpeter does not draw a clear-cut distinction between the clearing-house approach with its *factual* bookkeeping and a decentralized system where money can be *interpreted* to carry the information on its bearer's productive services.

Accounting and payment in low-trust societies

The great auction that was used by Walras to describe the working of a market system obviously excluded the problems of time and imperfect information. All contracting takes place once for all at the same time (whereas delivery of goods occurs at stipulated dates), and there *are* contracts for all future possible needs of market agents (Hahn 1980). There is no dispute on the realism of the Walras-Arrow-Debreu model. It is unable to grasp the evolutionary aspect of the economic process. The critical assumption with regard to the analytical content of the model, however, is that agents are believed to *trust* each other. 'The Arrow-Debreu model concerns itself with trading at the first date only, because it implicitly assumes that a promise to deliver a commodity is as good as the thing itself' (Gale 1982: 235). The auction where relative prices for future deliveries are determined thus has to be supplemented by another government agency, which guards the fulfilment of all contracts. This would amount to a tricky and costly task, as these contracts in general could be made contingent on various events or states of the world, which may not be observable with certainty.

The follow-up model of sequential trading surely made a big step towards realism. Here agents equipped with some physical endowments move through historical time and randomly meet other agents who offer useful goods and services. It seems reasonable to assume that the potential buyer has nothing suitable to trade in return, particularly if the special case of a long-term relationship between the trading partners is ignored. The buyer's only opportunity is to write a promissory note indicating that he or she is willing to deliver some amount of specified commodities at a future date. Each buyer thus becomes a debtor. As a consequence the markets would be flooded with millions of heterogeneous promissory notes of dubious solidity; the deplorable creditors would be busy to hunt up their debtors and get them to deliver the stipulated quantity of goods.

Thus it becomes apparent why such a barter economy never existed at all. No seller would be ready to agree to these types of trading contracts altogether. The basic problem is, on the part of potential sellers of goods, a lack of information about the 'character' of market participants;

and the difficulty to signal their credibility, on the part of potential debtors. Therefore 'limited *commitment* [...] rather than physical trading frictions' call for a money medium (Kiyotaki/Moore 2002: 62). It is neither an essential feature of money that it reduces transaction costs, nor that it enhances the efficiency of barter; rather its existence is a precondition that enables the *opening* of economic transactions in a society based on the division of labour. A monetary economy thus is an *alternative* economic order vis-à-vis a Walrasian system (Laidler 1988). The following nice parable shows again that money can be used as a book-keeping device:

Two elderly, largely self-sufficient gentlemen live on an island. [...] Their sole contact is the irregular exchange of dinners. Since both agree that meal preparation is onerous, they take turns. However, because dinners are exchanged so infrequently and because their memories are not what they used to be, these Robinson Crusoes cannot always agree on who gave the last dinner. [...] These disagreements have produced so much tension and ill-will that dinners are now exchanged even less frequently.

To attenuate this problem, the one who is coming to dinner next picks up a stone and paints it an artificially colored green to distinguish it from other stones and brings it to his host. At the next planning session for a dinner, the most recent host will be reminded by the presence of the green stone that it is his turn to be invited, and he will be expected to bring the stone with him when he arrives. Indeed, without receiving the stone the host may feel justified in turning away his guest as not having the required evidence of an invitation.

This quite rudimentary story reveals an essential feature of monetary exchange. *Money is a commonly acknowledged record-keeping device.* Here the only information about the past which has to be recorded is who gave the last dinner. Each gentleman 'pays' for his dinner by transferring the record of this fact to the other.

Joseph M. Ostroy / Ross M. Starr (1990: 8-9, my emphasis)

This story elucidates that money is needed even in the extremely simple case of a two-person barter society where only two goods of equal quantity and--let us assume--quality are regularly exchanged. Thus the Adam Smith problem, the missing double coincidence of wants, does not exist, and yet without money trade would not occur because of incomplete information or low trust. The parable even in a literal way gives to understand that money serves as a kind of memory (Kocherlakota 1998). The touch of distrust noticeable between the two Robinsons also hints to the fact that market agents rightly act on the assumption that their trading partners will behave selfishly, and might not even shrink back from fraud and deception if this appears to be advantageous after considering all sorts of costs.

Because of their sheer size and their complexity market economies are low-trust societies, where people's daily routine depends on the proper working of basic institutions; here, trust means to ignore the risk of that assumption. Moreover, individuals do not know whether their potential trading partners are able or willing to deliver a quid pro quo if they demand goods and services in the first place. The use of money is an attempt to 'depersonalize' this interac-

tion problem. Two-party contracts, the realization of which is at risk due to information problems, are substituted by a three-party arrangement.⁴ The third party, i.e. money, acts as a kind of trustee, it contributes its own reputation to the otherwise instable bilateral business relations, and it relieves both participants of proving their solidity to each other before any contract can be signed. The buyer of any commodity thus does not write out an own promissory note, which requires him to deliver goods or services later, but hands over a token or medium that serves as a means of payment. Thus, distrust or evil is the root of money or, to put it inversely: 'The institution of money can act as a substitute for trust.'⁵

Historically, the promissory note issued by a veritable third party was used, who became known as a *banker*. This note was generally accepted as a means of payment, which resolves all kinds of debt, because of the high reputation of the issuing agent or institution. The history of banking teaches that in order to earn reputation the issue of bank notes often was restricted by various regulations. The above parable shows, however, that mere symbols can fulfil the money role if the persons involved agree on this convention and if the token chosen as the money medium exhibits the basic requirements of low verification and high counterfeiting costs. The general acceptance of a promissory note circulating as money reveals that a claim against a particular debtor has been substituted by a claim against the market society as a whole--as each of its members is willing to deliver goods in return for a money payment. From a sociological point of view, Simmel (1907: 177-8) held it to be 'the core of truth in the theory that money is only a claim upon society. Money appears [...] as a bill of exchange from which the name of the drawee is lacking; [...] the liquidation of every private obligation by money means that the community now assumes this obligation towards the creditor.'

The notion of 'payment' involves a convention: one type of asset, the debt paper of the buyer, is merely replaced by another asset, money, which represents a social liability vis-à-vis its bearer. But the first type of asset is a 'named commodity' and exhibits a risk of default whereas the latter is *defined* to be without risk in this respect; this enthrones money as the asset, which measures the liquidity of all other assets. The seller of any commodity, if being paid in units of money, is no longer interested in the reputation of the buyer. 'Because money is a claim on the economy as a whole rather than on a single individual, there is no need to acquire information about the individual who offers it in exchange' (Gale 1982: 187, cf. 186,

⁴ 'Monetary relations are trilateral. Monetary exchange [...] involves a third party of those authorities that may legitimately produce money' (Ingham 2000: 23, cf. Kiyotaki/Moore 2002).

⁵ Gale 1982: 239, cf. Kiyotaki/Moore 2002. This conclusion drawn by neoclassical General Equilibrium theory was already known in sociology before: 'Anybody who disposes of money does not need to trust others' (Luhmann 1968: 66). The topic of trust is also dealt with in Simmel's work; but he did not grasp clearly that money acts as a *substitute* for interpersonal confidence: 'Without the general trust that people have in each other, society itself would disintegrate, [...] in the same way, money transactions would collapse without trust' (Simmel 1907: 179).

Kiyotaki/Moore 2002). The flipside of this argument is that money not only economizes on trust and information, but also enables anonymous trade on the part of buyers (Hahn 2002).

The use of money establishes a *payment society* where debts resulting from acts of purchase are *immediately* discharged, as an alternative to the fragile structure of creditor-debtor relations, which is implied by a barter economy. Hence, in a way, money helps to relieve the economy from the complications related to the aspect of *time*, as spot payments replace intertemporal commodity loans (Spahn 2001: Ch. 2). Therefore, Keynes's famous dictum that '*the importance of money essentially flows from its being a link between the present and the future*' (1936: 293) might appear to turn the essence of a monetary economy upside down. But on a second look an obvious justification for that assertion can be found if the question of budget constraints is raised: whereas in a one-time Walrasian auction a person trades his whole lifetime income against the flow of his lifetime consumption, sequential trading also implies that agents should be forced to obey to a *sequence of monetary budget constraints* so that moral hazard can be precluded. All members of a market society then can be sure that none of their fellow citizens is able to consume goods of a greater value today compared to his individual contribution to the national product yesterday. Budgets have to be balanced in money terms in each period, including intertemporal transactions, i.e. savings and loans.

People also hold money in order to make provision for their solvency in a regime of stochastic trades (Laidler 1988, Hellwig 1993). Needless to say that the possibility of receiving a *general claim on all goods and services* instead of a definite quantity of a specified commodity increases any seller's utility, because this monetary payment opens up the option of reallocating the demanded bundle of consumption goods (or assets held) at some later date. This view leads to the interpretation of the *market rate of interest as an option price* (cf. Kregel 1998: 123, Hahn/Solow 1995: 144).

The procedure of allocating resources should preserve a 'neutral' status; its mechanisms and rules should not be opaque and suspected to involve acts of arbitrariness or bribery. People observing the consumption of others then are induced to keep quiet, because they *know* that in order to acquire resources they will not have to resort to physical violence, they also will be able to buy later by means of *payment*, which therefore becomes the 'unit act' of a market economy. Money not only serves as a common language in economic communications and transactions, but also brings about a definite transfer of property rights. 'The problem of scarcity of resources is transformed into the shape of scarcity of money. The problem of scarcity arises if somebody excludes others from the access to resources for the sake of his own future welfare. The question is: on what condition and how is he allowed to do so? The answer given by the communicative medium money is: *if he pays*' (Luhmann 1988: 252, cf. 46-7, 52, 69, 246-7, 253, Ostroy/Starr 1990).

The meaning and limitations of the monetary bookkeeping approach

The use of some currency for writing monetary contracts, which in turn makes that currency the definite medium to settle these contracts, can be understood as the result of an implicit agreement of the members of a market society. Of course, government agencies may shorten the evolutionary process of search for a suitable money medium by suggesting and establishing a national currency--this is the element of truth in the view of Knapp (1909). But the agreement always remains a fragile expectation equilibrium where changes of beliefs tend to exhibit a cumulative character (Dow/Smithin 1999).

Accepting a fiat money note without intrinsic value as the ultimate equivalent for the disutility of work and for a definite delivery of resources amounts to a very demanding act of abstraction. The fundamental problems of low trust, which precluded the intertemporal barter solution to the organizational problem of coordinating activities in a market society, are concentrated on, and have to be solved by, the chosen money medium. This marks an enormous gain with respect to the economics of information, as individual agents are exempt from proving their own reputation in each transaction, but it creates a substantial task of establishing and preserving the reputation of a national currency. How does society learn to trust and accept its currency?

This is where the bookkeeping idea appears to contribute to our understanding of money. To begin with, bookkeeping is no *function* of money; rather, it is an ascribed feature of the money medium in use, which is assumed to support the *acceptance* of that medium as a means of payment. The history and the theory of money know various mechanisms that have been applied or propagated in order to establish and preserve the acceptance and reputation of a money medium:

A famous way of trying to make people believe in the value of money was the argument that it is 'backed' by some other valuable asset (De Grauwe 1996: 2). The bookkeeping approach lends support to this idea because its roots might be located in some sort of 'labour metallism'. But money is not made of any 'substance', and it does not measure subjective inputs, although this opinion can be read off from Galiani's work and from the somewhat romantic Historical School writings of Bendixen. Marx and General Equilibrium theory rightly emphasize that money measures the *markets' valuation* of inputs, or *equilibrium* prices (in the appropriate sense of a sequential trading economy).

A second possibility of enhancing the reputation of a currency might evolve from an approval of the macroeconomic results of the monetary process of production and distribution. The core of the bookkeeping idea consists of the argument that an agent is 'justified' to consume a

certain amount of goods and services because he or she has correspondingly contributed to the overall welfare of the economy. Basically, this is a statement on a 'fair' real wage; its link to monetary theory is given by the additional hypothesis that money is a certificate of the agent's (valued) contribution.

But the use of money indicates a 'fair' trade only insofar as market agents obey to their budget constraints and signal that they are willing to bear the cost of their purchases. This knowledge *may* help to maintain the social acceptance of the outcome of the process of income distribution. This hypothesis suggested by Luhmann (1988) however is highly debatable. The acquisition of resources via money payments only means that agents behave according to the 'rules of the game', which of course does not imply that the game itself is approved by all of its participants. Moreover, there are numerous reasons to believe that competitive market forces do not always bring about an objective, i.e. impartial valuation of an agent's supply of goods and services (Hayek 1967: 122).

The basic flaw of the bookkeeping idea, from the point of view of modern monetary theory, stems from its roots in the vision of a society where income is distributed in accordance with the decision of a collective body or a benevolent dictator. In this setting, the evaluation of any citizen's contribution to the national product by means of record keeping at a central clearing-house is an obvious guide. But surely, things are fundamentally different in a market system where money symbolizes the *decentralized* pattern of the allocation of resources and income. Here, it seems odd to believe that a seller of resources accepts a money payment just because the buyer credibly assures to have earned these notes by hard work. Such an assurance stands for a *backward-looking* attempt of granting acceptance to a money medium. In a market economy, trust in a currency depends on a *forward-looking* reasoning. The decisive question is whether the disposition of money is supposed to entitle its bearer to obtain resources in the future.

The above story of the two Robinsons does not invalidate this finding. In a way, this two-person economy exhibits elements of both the bureaucratic procedure of implementing a network of fair rewards and the competitive way of market exchange. Both members of the island society agree on the use of a 'green stone' in order to enforce their commitment in favour of a free and mutually advantageous trade. This money medium carries the information of each agent's past work--this is the bookkeeping and fairness aspect--but much more important is the agreed-upon rule that entitles the bearer of the stone to receive the *next* dinner. This example-specific rule can be generalized and confirms the traditional goal of preserving the purchasing power of money. The acceptance of money rests on the *expected future stability of the level of money prices*.

Bookkeeping does *not* enhance the acceptance of money because it does not support--and might even endanger--price stability on a macro level:

- People who trust in the stability of nominal prices know that this aim depends on the confidence of others. The rigidity of the price level--like the use of a currency itself--is built on mutual expectations. In this respect money is a public good (Grantham et al. 1977, Luhmann 1968: 90).

- As money also serves as a store of value, monetary stability is endangered if agents should start to convert their stock of holdings of financial assets into goods. Even if money should have been issued strictly on account of the bookkeeping rule in the first place, inflation would undermine the quality of the currency, and interest rate policy is required in order to keep the agents' money holdings 'passively' within the banking system.

- Money is not created by issuing certificates for hours worked, but originates endogenously from the extension of credit. It is essential for microeconomic efficiency and macroeconomic stability that the structure of credit is controlled by the commercial banking system, and its volume by refinancing and interest policies of the central bank.⁶

- Any rule that links the creation of money to previous work or production of individual agents would resurrect the real bills fallacy again: the level of commodity prices becomes indeterminate as each nominal trade volume is being financed. The path of prices can no longer be controlled although banks confine themselves to discounting 'solid' trade bills. A correct measure of the value of an agent's goods supply by money requires that any link between the production of these goods and the creation of money notes must be severed.⁷

These considerations confirm the basic insight of Locke (1690: Bk. V, § 49): a decisive distinction between a barter and a monetary economy is that money, considered as a medium facilitating the exchange, can become abundant vis-à-vis the quantity of goods as a whole. Likewise Schumpeter (1930: 219-25) noticed that the price level as such is an alien element in an accounting economy; its macroeconomic movement creates an order of its own; and some policy agency is required to define and preserve the stability of a 'critical figure' (in modern terms: a nominal anchor). Thus we finally arrive at the message that Wicksell (1898) had spelled out earlier when he designed his vision of a paper money standard: because there is no firm endogenous nominal anchor in a monetary economy, the central bank ought to react with

⁶ Schumpeter (1930: 210) addresses this topic by introducing *two* types of money: they both come in the form of current account balances and both represent a claim on the national product, but the first is considered to be a certificate of accomplished work, and the second is the mirror image of credit creation. But whereas the bookkeeping idea suggests a 'natural' restriction governing the quantity of the first type of money, the constraints on the second type remain somewhat obscure.

⁷ These problems are hidden in the above told story of the two Robinsons, because there were only two agents, two goods, and the knowledge that there is only *one* 'green stone'. The illegitimate manufacturing of a second money unit would immediately be detected. Therefore, in this example, the bookkeeping feature of money coincides with the expectation that the possession of money entitles to the pleasure of being served with another meal in the near future.

its interest rate to changes in the price level--a recommendation that now has become known as the Taylor rule.

Some final remarks

Looking back it now appears as if the bookkeeping idea is nothing but a minor aberration in the history of economic thought, which had its roots in a romantic striving towards a 'fair' income distribution; in the quasi-metallist belief that money ought to comprise or present a 'real' substance, i.e. useful labour effort; and which implied some variant of the real bills fallacy when applied to practical monetary policy. But some elements of truth contained in the bookkeeping approach should not be ignored. These are firstly the principle of efficiently guided incentives in a society built on the division of labour; secondly the necessity of money as a medium of payment, which results from a lack of information and mutual trust in large, anonymous societies; and thirdly a social mechanism or convention that ensures the overall acceptance of money.

With regard to the last mentioned item, the idea that runs through from Galiani to modern General Equilibrium theory is the following: money is accepted because it signals that its bearer has taken upon himself some real cost that entitles him to demand a real equivalent in return. It comes as no surprise that (pre-) classical writers envisioned this real cost to consist of accomplished labour. From the point of view of modern monetary theory, it would be more obvious to take into account that all money is created in an act of credit. This implies that for each money unit in circulation some market agent pays, directly or indirectly, interest to the central bank (Riese 1995). Thus, in a monetary economy, it is interest costs and not labour costs that indicate the solidity of the currency and the degree of its scarcity vis-à-vis the supply of goods and services. For a seller of resources the knowledge that money in circulation is charged with interest costs generally signals that other market agents cannot live beyond their budget constraint.

But strictly speaking, it is irrelevant for him whether the person opposite the counter has paid interest for the notes, which he plans to use in the act of purchase; what counts is the seller's expectation that the central bank keeps the rate of interest high enough so that the stability of future prices appears to be ensured. That is why bookkeeping has turned into the widespread fashion of central bank watching.

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