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In his interesting and important chapter, Charles Goodhart makes three main contributions.

First, he argues that there are two competing approaches to the study of money, with one dominating most research and policy formation to the virtual exclusion of the other. Second, he examines and rejects Mundel's Optimal Currency Area approach, which is based on the dominant approach to money, leading to a criticism of the theoretical basis for European Monetary Union. Finally, he introduces some historical literature on the origins of coins and money that is not familiar to most economists, and that seems to conflict with the dominant approach to money. This chapter will focus primarily on what Goodhart identifies as the neglected "cartalist", or "chartalist" approach to money, with a brief analysis of the historical evidence and only a passing reference to the critique of Mundel's theory.

I. The Orthodox, M-form, Approach

Goodhart calls the orthodox approach the M-form, for Metalist. This is so dominant that it scarcely needs any exposition, however it will be useful to briefly outline its main features in order to contrast them with the "Chartalist" or C-form theory later. I still think the Metalist approach is best summarized in a quote from Samuelson I like to use.

Inconvenient as barter obviously is, it represents a great step forward from a state of self-sufficiency in which every man had to be a jack-of-all-trades and master of none....If we were to construct history along hypothetical, logical lines, we should naturally follow the age of barter by the age of commodity money. Historically, a great variety of commodities has served at one time or another as a medium of exchange: ...tobacco, leather and hides, furs, olive oil, beer or spirits, slaves or wives...huge rocks and landmarks, and cigarette butts. The age of commodity money gives way to the age of paper money...Finally, along with the age of paper money, there is the age of bank money, or bank checking deposits. (Samuelson 1973: 274-5)

According to M-form theory, money was invented to facilitate exchange, and that remains the most important thing about money. M-form economists argue that the value of money was initially determined by the value of the coined metal, or later by the backing held against paper money. It is only much later that evil governments came along and duped the public into accepting a fiat money with no backing. This would seem to be a hard thing to explain, thus, as we'll see it isn't much explained. To economists, Samuelson's position seems obviously true; to anthropologists and historians, it should be hilariously wrong. Unfortunately, from what I've seen, if historians know any economic theory at all, they know M-form. Thus, they would dismiss the Samuelson story as too simplistic, but every time I read accounts of money written by historians, it sure seems like they try to interpret the facts to make them loosely fit M-form theory.

In any case, the M-form approach begins with barter, which is replaced by transactions-cost-reducing exchange based on a commodity money. The next step in the orthodox story is to explain how the modern economy, which no where uses a precious metal as a medium of exchange, could have emerged. Indeed, all modern societies use as media of exchange items that have almost no value in alternative use. It is thus argued that at some point, the precious metal medium of exchange was deposited for safe-keeping, with evidence of the deposit provided to the depositor. The evidence might take the form of a note indicating the quantity of, say, gold left on deposit. So long as these notes were issued by trustworthy safe-keepers, and so long as the notes could not be easily counterfeited, they could circulate as a medium of exchange. This further reduced transactions costs, as it was much easier to carry notes than

gold. (It was also possible to prepare the notes in such a way that they became worthless if they fell into the wrong hands—reducing risks associated with theft of one’s gold.) Eventually, the safe-keepers discovered the “deposit expansion process”. At first they might have occasionally lent gold, holding the IOUs of borrowers and hoping that depositors would not try to redeem their notes for gold until the gold loans were repaid. This could increase the money supply up to a factor of two—all of the notes could be circulating as media of exchange, as well as all the gold borrowed (lent by the safe-keepers). Soon, however, the safe-keepers would have recognized that they could simply lend notes, creating them for use by borrowers while holding IOUs. In this case, the gold could remain within the safe, with a multiple number of notes circulating—both those initially created when depositors stored their gold but also all those created in loans. At this point, we essentially have the characteristics of a modern bank, which recognizes that it is safe to issue deposits to an amount that is, say, ten times its reserves on the expectation that only a small fraction of depositors will try to “cash-out” deposits, redeeming them for reserves.

Given a relatively stable "deposit multiplier" (itself a function of the ratio of reserves held against deposits), the supply of deposits will then be determined by the quantity of loans demanded and the quantity of reserves supplied. It is often presumed that governments exert substantial control over this, first by dictating what will be held as reserves, and second by establishing a legally required reserve ratio. While in the distant past, bank reserves consisted of gold, today in virtually all nations, government fiat money (or, base money, or, “high powered money”, HPM) is required as the banking system reserve. This allows the government to obtain seigniorage by issuing fiat money, desired by banks since their own ability to make loans is constrained by the quantity of reserves they can obtain. Thus, in the modern economy, the money supply consists of bank deposits (created as banks make loans) plus the portion of HPM created by government that is not held by banks as reserves. Banks have some influence over the portion of fiat money held by the nonbanking public as they can offer to pay interest to induce the public to hold deposits rather than fiat money. However, given preferences of the public, deposit interest rates, and required reserve ratios, the government "exogenously" controls the money supply through its supply of fiat money to be held as banking system reserves. Thus, most orthodox monetary theory simply begins with the presumption that the money supply is determined by government policy; Friedman’s (1969, p. 4) famous declaration that we might as well assume that money is dropped from central bank helicopters is a good, albeit extreme, example.

In 1999, Mundell was awarded the Nobel Prize, largely for his extension of orthodox monetary theory to the international sphere. Several contributions were mentioned in justification for the award, including his contributions to the Mundell-Fleming model, some less important work on dynamic stability, and most importantly for our purposes, his optimal currency area (OCA) theory. (See Royal Swedish Academy of Sciences Press Release, 13 October 1999.) This latter work was cited due to its supposed real-world relevance for the development of the European Monetary Union. Briefly, Mundell had recognized that if money developed primarily as a medium of exchange, then there is no reason to suppose that the optimal region within which a particular currency ought to be adopted should coincide with nation states. Instead, an optimal region should be defined as one within which labor is mobile (and several other less important conditions would also hold). If capital were mobile between two regions, but labor were not mobile, then it would be “optimal” for each region to adopt its own currency. Thus, he provided an example in which it was presumed that the eastern US and eastern Canada formed

an “optimal” region, with highly mobile labor and similar (manufacturing) production characteristics, while the western US and western Canada formed another “optimal” region with production based on natural resource exploitation. He explained that it is not optimal to have a US dollar and a Canadian dollar, rather, there should be an eastern dollar and a western dollar. When applied to Europe, it was argued that the individual nation states within Europe did not represent optimal currency areas but rather had issued currencies based on arbitrary political boundaries. Hence, formation of the EMU based on a euro could be promoted as an application of Mundell’s OCA theory. Certainly, not all orthodox theorists would agree that the EMU is the appropriate OCA, however, what is important for our purposes is the belief that it is not necessary to link a currency with a nation state. In a similar vein, many orthodox economists have applauded the creation of currency boards in (mainly) less developed countries on the argument that abandonment of monetary sovereignty by explicitly tying a nation’s (weak) currency to another nation’s (strong) currency helps to discipline profligate governments. Again, what is important for our purposes is the orthodox belief that nations are not benefitted by monetary sovereignty.

II. The Neo-Chartalist Approach

In this section, we will first examine what Goodhart calls the C-form or Chartalist approach before turning to recent extensions made by Post Keynesians—what might be termed a neo-Chartalist (or nC) approach.

The central idea of the alternative view is that the value of money is based on the power of the issuing authority, and not by any embodied or backing precious metal. Hence, Chartalists give a central role to the state in the evolution and use of money. For the most part, this evolution is not linked to reduction of transactions costs of exchange. Rather, the evolution of money is linked to the needs of the state to increase its power to command resources through monetization of its spending and taxing power. Thus, money and monetary policy are intricately linked to political sovereignty and fiscal authority—a point to which we shall return below when we examine the origins of the first coins in classical Greece.

Unfortunately, Schumpeter has misled generations of economists by equating Chartalism with legal tender laws. Rather, as I’ll show below, early Chartalists argued that all that is required is that the State impose a tax payable in the State’s own currency. In what follows, I am not arguing that legal tender laws ought to be thrown out, along with the civil law of contracts, and trust in our government, and democratic election procedures. All of those things are also important in the evolution of money, monetary institutions, and monetary contracts, but the critical point is that governments impose fees, fines, and taxes to move resources to the government sector, and that for many thousands of years, governments have imposed these liabilities in the form of a monetary liability. Originally, the money liability was always in terms of a unit of account as represented by a certain number of grains of wheat or barley. In fact, all the early money units were weight units for grain--the mina, the shekel, the lira, the pound. Once the state has imposed the tax liability, the taxed population has got to get hold of something the state will accept in payment of taxes. This can be anything the state wishes: It can be clay tablets, hazelwood tallies, iron bars, or precious metal coins. This, in turn, means the state can buy whatever is offered for sale merely by issuing that thing it accepts in payment of taxes. If the state issues a hazelwood tally, with a notch to indicate it is worth 20 pounds, then it will be worth 20 pounds in purchases made by the state so long as the state accepts that same

hazelwood stick in payment of taxes at a value of 20 pounds. And that stick will circulate as a medium of exchange at a value of 20 pounds even among those with no tax liability so long as others need it to pay taxes. The matching of those with tallies but no taxes with those who have tax liabilities but no tallies is accomplished by bankers-- who have always been the agents of government precisely to accomplish such matching.

The modern Post Keynesian view of money is based on a neo-Chartalist, or state money, approach. The most important early contributor to this approach was Knapp (1924), whose work heavily influenced Keynes. However, a relatively unknown 1913 article by Innes lays out the approach in a clear and concise manner. The most recent pre-cursor to the revival of this approach was Lerner, whose 1947 AER article was titled "money as a creature of the state". This approach leads to very different conclusions regarding the origins and functions of money, the relation between national sovereignty and currency, appropriate monetary policy, and the relations between money and prices. In the remainder of this section we will examine the neo-Chartalist (nC) approach, while in the final section we will conclude with policy implications.

The nC approach begins with the recognition that no matter what might have been the case in the long distant past, the nearly universal situation today is one in which the nation state establishes the unit of account to be used within its boundaries. (Lerner 1947) As Goodhart has persuasively argued, if it were true that money originated as a cost-minimizing medium of exchange it would be difficult to explain why the one nation-one currency rule is so rarely violated today or in the past. The first task of every newly independent nation state has been the creation of its own new currency. When the American Confederacy seceded from the Union, it adopted its own currency; when America revolted, it adopted a new currency loosely based on the Spanish currency; and more recently, as the USSR disintegrated, each new independent state adopted a new currency. The examples are endless. Obviously, this does not in itself demonstrate that each nation must have its own currency (and there are examples, albeit very few, of nations that choose to adopt foreign currencies as their own), nor does it necessarily tell us anything about the origins of money. However, it does tend to focus attention away from money as a medium of exchange and toward money as a unit of account, for it is difficult to see why transactions costs of exchange are nearly uniformly reduced by adoption of a new currency. If anything, one would suppose that a new nation would face increased transactions costs by creating a new currency that markets would have to become accustomed to using. Thus, we are faced with one of two possibilities: either a) nation states are almost universally irrational in choosing a transactions cost increasing sovereign currency, or b) transactions costs of exchange are not a primary consideration in adoption of a money of account.

The nC-based Post Keynesian approach is, rather obviously, largely based on Keynes's beliefs. In the Treatise, Keynes argued "Money proper in the full sense of the term can only exist in relation to a money of account" (Keynes 1930, p. 3), hinting that the unit of account must pre-exist use of a medium of exchange (or, at the very least, be created simultaneously). Elsewhere, he went further in arguing "Now for most important social and economic purposes what matters is the money of account; for it is the money of account which is the subject." (Keynes 1982, p. 253) According to Keynes, the money of account "comes into existence along with Debts, which are contracts for deferred payment, and Price-Lists, which are offers of contracts for sale or purchase? . Money itself? derives its character from its relationship to the Money-of-Account, since the debts and prices must first have been expressed in terms of the latter". (Keynes 1930, p. 3)

It is difficult for orthodoxy to explain how “spontaneous consensus” could have emerged to choose some commodity or other for use as a medium of exchange, necessarily prior to its use as unit of account in which prices are denominated. Keynes, following the Chartalists, reversed things and emphasized the role played by the state in first establishing a money of account—or what Ingham (2000) has called “value in the abstract”. Keynes argued “Chartalism begins when the State designates the objective standard which shall correspond to the money-of-account” (Keynes 1930, p. 11) The “right” to designate the money of account “is claimed by all modern states and has been so claimed for some four thousand years at least.” (Keynes 1930, p. 4) While Keynes did not go so far as to claim that money originated as a state-designated unit of account, he did emphasize that for “at least” the past four thousand years, the state has claimed “the right to determine and declare what thing [money] corresponds to the name [unit of account], and to vary its declaration from time to time”. (Ibid, p. 4) Thus, it is no coincidence to find that the one nation-one money phenomenon is so ubiquitous around the world today and throughout recorded history.

Just how does a state adopt a unit of account, or “write the dictionary” as Keynes put it? Some, including Schumpeter (1954) and Davidson (1978), have emphasized legal tender laws—the state issues a currency in terms of a unit of account, then passes laws that require “acceptation” of that currency in designated (public and private) payments. Knapp, however, doubted that this would be sufficient, arguing that such laws “merely express a pious hope”. (Knapp 1924, p. 111) In Knapp’s view, the state does play a critical role in determining what will serve as the unit of account, for trying to “deduce” the monetary system “without the idea of a State” is “absurd”, but the state establishes the money of account when it determines what will be “accepted at public pay offices”, rather than through “jurisprudence”. (Knapp 1924, pp. Vii-viii; 40) Keynes endorsed this view, arguing “Knapp accepts as ‘Money’ -rightly I think- anything which the State undertakes to accept at its pay-offices, whether or not it is declared legal-tender between its citizens”. (Keynes 1930, pp. 6-7) Later, Abba Lerner explained

The modern state can make anything it chooses generally acceptable as money? .It is true that a simple declaration that such and such is money will not do, even if backed by the most convincing constitutional evidence of the state’s absolute sovereignty. But if the state is willing to accept the proposed money in payment of taxes and other obligations to itself the trick is done. Everyone who has obligations to the state will be willing to accept the pieces of paper with which he can settle the obligations, and all other people will be willing to accept these pieces of paper because they know that the taxpayers, etc., will accept them in turn.” (Lerner 1947, p. 313)

Recall that in the orthodox story, market participants “spontaneously” decide to use some relatively scarce, hence valuable, commodity as a medium of exchange. (Dowd 2000) A few orthodox economists still argue that if only we returned to a gold standard that required full gold backing against paper money, this would provide for a money with stable value. The nC approach insists that money does not derive its value from the commodity from which it is manufactured (nor from reserves of a commodity held against its issue in the case of a paper money), but rather from the willingness of the state to accept it to retire obligations to the state. As Keynes argued, “money is the measure of value, but to regard it as having value itself is a relic of the view that the value of money is regulated by the value of the substance of which it is made, and is like confusing a theatre ticket with the performance” (Keynes 1983, p. 402). A theater ticket has value not because it is manufactured from precious paper but rather because it

is accepted as payment for entry to the performance. Adam Smith had long ago recognized that “A prince, who should enact that a certain proportion of his taxes should be paid in a paper money of a certain kind, might thereby give a certain value to this paper money; even though the term of its final discharge and redemption should depend altogether upon the will of the prince.” (Smith 1937, p. 312) Echoing Smith, Minsky argued “the fact that taxes need to be paid gives value to the money of the economy? . [T]he need to pay taxes means that people work and produce in order to get that in which taxes can be paid.” (Minsky 1986, p. 231) Goodhart argued that “the state levies taxes and can insist that these be paid in state-issued money. This ensures that such fiat currency will have some value.” (Goodhart 1989, p. 36) Even the “Keynesian” Tobin has lately recognized that “By its willingness to accept a designated asset in settlement of taxes and other obligations, the government makes that asset acceptable to any who have such obligations, and in turn to others who have obligations to them, and so on.” (Tobin 1998, p. 27)

However, perhaps the clearest and fullest expression of the Chartalism that underlies the modern nC approach to money is in the aforementioned, and rather obscure, article by Innes. In contrast to the orthodox preoccupation with precious metal coins, Innes recognized that coins were a very late development and that they remained relatively unimportant even after their invention. Instead, he focused on hazelwood tallies, although the main principle advanced was simply that money is a token of indebtedness, issued by the “spender” who automatically becomes a “debtor”, and accepted by the “seller” who automatically becomes a “creditor”. A tally was simply “a stick of squared hazel-wood, notched in a certain manner to indicate the amount of the purchase or debt”, with the name of the debtor and the date of the transaction written on two opposite sides of the stick. (Innes 1913, p. 394) After notching, the stick was split down the middle in such a way that the notches were cut in half. The split was stopped about an inch from the base, with the longer piece (called the stock, from which our term “capital stock” derives) retained by the creditor, with the “stub” (a term still used as in “ticket stub”) held by the debtor. The two pieces of the tally would be matched later (most significantly at the time of settlement) to verify the amount of the debt. Importantly, governments spent by raising a “tallia divenda” on the exchequer, issuing tallies for payment for goods and services delivered to the court (after 1670, wooden tallies were supplemented by paper “orders of the exchequer”, although tallies were still held in the English House of Commons until 1834). (Davies 1996) But why on earth would the crown’s subjects accept essentially worthless sticks, and later, paper?

The government by law obliges certain selected persons to become its debtors? . This procedure is called levying a tax, and the persons thus forced into the position of debtors to the government must in theory seek out the holders of the tallies or other instrument acknowledging a debt due by the government, and acquire from them the tallies by selling to them some commodity or in doing them some service, in exchange for which they may be induced to part with their tallies. When these are returned to the government Treasury, the taxes are paid. (Innes 1913, p. 398)

Note that the key is the ability of the crown to impose a debt on its subjects. More generally, Minsky had later recognized that “bank money”, which today takes the form of demand deposits (although for most of bank history, bank money took the form of paper notes) has “exchange value because a multitude of debtors to banks have outstanding debts that call for the payment of demand deposits to banks. These debtors will work and sell goods or financial

instruments to get demand deposits.” (Minsky 1986, p. 231) This focus on debt turns the barter paradigm on its head, for market activity derives from monetary debts as debtors work to obtain the means of debt settlement that is accepted by their creditors.

Exactly how debts became denominated in a generalized money of account will probably never be known with certainty. As Grierson argues, “Units of value, like units of area, volume, and weight, could only be arrived at with great difficulty, in part because natural units are absent, in part because of the much greater diversity of commodities that had to be measured and the consequent difficulty of finding common standards in terms of which they could reasonably be compared? .” (Grierson 1977, p. 18) However, he insists that “monetary evaluations were already in existence in what Sir John Hicks has felicitously christened ‘customary’ and ‘command’ pre-market societies”. (Grierson 1977, p. 19) We do know that many of the early monetary units were based on weight units, specifically, on the weight of a specific number of grains of wheat, barley, or rice. It is possible that the practice of valuation came out of the elaborate compensation schedules established in tribal society—the Wergeld, Cumhal, and Brehon codes. “The general object of these laws was simple, that of the provision of a tariff of compensations which in any circumstances their compilers liked to envisage would prevent resort to the bloodfeud”. (Grierson 1977, p. 19) (And note that the verb “to pay” derives from the verb “to pacify”—indicating the original purpose of the payment of Wergeld fines or bridewealth.) These “tariffs” were “established in public assemblies, and the common standards were based on objects of some value which a householder might be expected to possess or which he could obtain from his kinsfolk.” (ibid.) Note, however that these schedules did not use, nor did they require, a unit of account since specific payments were required for each type of inflicted injury—and as they were established in public assembly, the required payment would have been widely known.

It is probable that with the development of class society, an upper class or authority attempted to impose (or at least, to share in) fines, fees, tithes, and tribute—essentially “socializing” the Wergeld compensation. It may not be too far from the truth to argue that our monetary system developed out of the criminal justice system, rather than to replace inefficient barter in markets. While we view justice today as the process that forces criminals to “pay their debt to society”, in tribal society, justice meant compensation of victims in order to prevent bloodfeuds from developing. In a very interesting book, Innes (1932) argued that tribal justice was gradually replaced by the modern justice system that was designed to maximize payments to “pacify” the elite. If correct, standardization of fines, fees, tithes, tribute, and, later, taxes, in terms of a monetary unit of account was accomplished to reduce the transactions costs of enforcement of “justice” and centralization of collection rather than to replace inefficient barter. Note that even after the development of capitalism, the crown still relied on fines (levied on almost every conceivable activity) for a substantial portion of state revenues. (See Madox 1769.) Above we noted the importance of the imposition of a tax debt in generating a demand for the money issued by the state; taxes are of course just a set of specific fines—a “fine” for owning property, a “fine” for earning income, or a “fine” for importing commodities—although no one today thinks of these activities as “crimes”. While the modern economy has largely separated the state’s fiscal system from its criminal justice system, they were closely intertwined until very recently.

The origins of the modern, Chartalist, money (used for the last 4000 years, according to Keynes) might be traced to the levies of the palaces of the great granary empires, eventually

standardized in the wheat, or barley, weight units of account to lower “tax” (or more generally, fee, fine, rent, tithe, tribute, and tax) collection costs. It also seems likely that the authority played a role in development of “private” debts denominated in the unit of account. Apparently temples and palaces acted as neutral witnesses, recorders, and enforcers of debts and transactions between third parties. Indeed, it is often surmised that writing was invented in the temples to keep accounting records of debts and credits, inscribed on clay tablets held in the temples for safe-keeping. Later, “encased” tablets were developed that could circulate without danger of tampering since the information regarding the debt was inscribed on both the case and on the tablet enclosed. When the debt was paid, the case would be broken to examine the tablet, verifying the terms. In this way, one could retire one’s own debt by delivering a third party debt recorded on an encased tablet. These clay tablets were essentially the same as the hazelwood tallies discussed above, with encasement serving the same purpose as the division of the tally into stock and stub.

Why is this important? Recall that the orthodox story begins with barter, which is replaced by market exchanges using some valuable commodity. The nC story begins with debts denominated in a unit of account. The physical representation of these (encased tablets, wooden sticks, paper notes) can circulate among third parties for the purposes of retiring debt. Indeed, the great medieval fairs appear to have begun as a convenient way to bring creditors and debtors together to match tally stock and stub (and to clear bills of exchange—the principle “private” debt instruments used in “international” trade within Europe at the time). To sum up: money derives from obligations (fines, fees, tribute, taxes) imposed by authority; this authority then “spends” by issuing physical representations of its own debts (tallies, notes), demanded by those who are indebted to the authority. Once one is indebted to the crown, one must obtain the means of payment accepted by the crown. One can go directly to the crown, offering goods or services to obtain the crown’s tallies—or one can turn to others who have obtained the crown’s tallies, by engaging in “market activity” or by becoming indebted to them. Indeed, “market activity” follows (and follows from) imposition of obligations to pay fees, fines, and taxes in money.

In this view, banks developed not as “intermediaries” between depositors of gold and borrowers of gold, but rather as intermediaries between the crown and his indebted subjects. Furthermore, as Innes argued, the “market” is not a place for obtaining desired commodities, but rather the place one earns the means of settling debts. For this reason, money can never be a neutral “veil” obscuring the real exchanges that are of primary importance, for what is truly important is the money-denominated obligations one must retire. As Ingham (2000) suggests, this leads to the conclusion that a medium of exchange is not at all necessary for operation of a monetary economy. What is needed is a unit of account in which debts are denominated, some means of recording debts (including an oral history, a system of notching sticks, or, after writing was developed, a written record), and an agreed upon means of payment for final settlement. While circulating evidences of debt might be used as media of exchange, they certainly are not necessary to enable an elaborate market system to develop, and it is clear that such evidences of debt can become media of exchange only *after* a money of account is adopted.

How, then, do we explain the apparent use of gold and silver “commodity money”. First, it must be recognized that development of precious metal coins comes several thousand years after the development of a money of account, clay tablets and other debt instruments, and, indeed, after the development of quite complex domestic and international trade. Even after their

invention, coins played a rather minor role—both in terms of the finance of “government” spending (which, as discussed above took place mainly on the basis of tallies and, later, exchequer notes) and in terms of “private” spending. We have already mentioned bills of exchange, which sufficed for most long distance wholesale trade. However, even the smallest retail transactions took place on the basis of credits and debits with, for example, the merchant keeping a running “tally” of his customers’ purchases, with clearing occurring only after years. (McIntosh 1988) Further, the earliest known coins are thought to have been too valuable for use in retail trade. For example, the earliest electrum (an alloy of silver and gold) coin had a value of about ten sheep. Nor is it likely that precious metal coins would have reduced transactions costs in trade—the typical case until recently was a wide variety of coins issued by kings, feudal lords, barons, ecclesiastics, and others. Until recently, these never had a nominal value stamped on them, but, rather, nominal value was announced by proclamation. Given that trade had occurred for many hundreds of years on the basis of highly efficient, cheap, and abundant hazelwood, clay tablets, papyrus and other papers, it seems implausible that coins would have represented any transactions-cost-minimizing advance for retail or wholesale trade.

Indeed, using a precious metal coin whose non-money use is supposed to govern its value as money would have to be a very high cost way to conduct transactions. (And recall that the orthodox story recognizes that paper money replaced precious metal money precisely to reduce such costs—which indicates that introduction of precious metal coins would have been a backward step if wood, paper, or clay were already in use.) Instead, it seems probable, as argued by Goodhart, that “coinage was invented to make a large number of uniform payments of considerable value”, and probably “the purpose of coinage was the payment of mercenaries.” (Cook 1958, p. 257) More specifically, Kraay (1964) argued that coins were minted by government to provide a simple means of paying taxes, issued as the crown paid mercenaries. Previously, Innes had argued that the coins issued by the crown were nothing more than “tokens of indebtedness with which they made small payments, such as the daily wages of their soldiers and sailors”. (Innes 1913, p. 399) This explains a) the relatively large denomination of the coins, b) why the invention of coinage was at the hands of government rather than of markets, and c) why coins did not have nominal value stamped on them. As tokens, the coins were worth whatever the crown declared them to be worth at government pay offices. Use of precious metal in the coinage made it more difficult to counterfeit them (as metal was scarce and the mines were usually controlled by the crown). This does not mean that the embodied silver or gold determined the value of the coins, for it would make little sense for the crown to issue full-bodied coins. Indeed, we know that kings “cried down” the coinage from time-to-time, which was a sort of “debasement” in which the king would simply announce that the nominal value of previously issued coins would henceforth be lower when accepted in payment of taxes. This was a well-recognized form of raising taxes, for instead of delivering one of the king’s coins to pay the tax, one might now have to deliver two coins—by offering twice as much labor services or commodities to earn the means of paying the tax.

Kurke has offered a detailed analysis of the invention of coinage, somewhat modifying the views of Cook, Kraay and Grierson. She notes that coins seem to have originated in seventh century (BC) Greece, at a time when the economy was largely embedded, and argues “the fact of an embedded economy must make a difference to the causes for the invention of coinage”. (Kurke 1999, p. 5) While Kurke notes that Kraay (1964) revolutionized numismatics when he argued that coins were invented to standardize payments made by and to the state, she recognizes that some of Kraay’s evidence has since been disputed. However, her primary objection is that

Kraay had not paid sufficient attention to culture, institutions, and other social and political motivations. In her view, “the minting of coin would represent the state’s assertion of its ultimate authority to constitute and regulate value in all the spheres in which general-purpose money operated simultaneously—economic, social, political, and religious. Thus, state-issued coinage as a universal equivalent, like the civic *agora* in which it circulated, symbolized the merger in a single token or site of many different domains of value, all under the final authority of the city.” (Kurke 1999, pp. 12-13) In a sense, the choice of precious metals for coinage was a historical accident, a pointed challenge to elite monopoly over precious metal (the elite valued precious metal for use in complex hierarchical gift exchange). By coining precious metal, the *polis* appropriated the highest sphere of gift exchange, and with its stamp it asserted its ultimate authority—both inwardly (or domestically) but also outwardly (in long-distance trade): “For every Greek *polis* that issued its own coin asserted its autonomy and independence from every other Greek city, while coinage also functions as one institution among many through which the city constituted itself as the final instance against the claims of an internal elite.” (Kurke 1999, p. 13) As the *polis* used coins for its own payments and insisted on payment in coin, it inserted its sovereignty into retail trade in the *agora*. By tying the invention of coinage to the special circumstances of Greece, Kurke’s analysis makes it clear why coins have been so unimportant to other economies before and since.

Of course, from the perspective of Greece, coinage was no historical accident. As Kurke argues, introduction of coins arose out of a “seventh/sixth century crisis of justice and unfair distribution of property”. (Kurke 1999, p. 13) Coins appeared at this particular time because the *polis* had gained sufficient strength to rival the *symposia*, *hetaireiai* (private drinking clubs) and other institutions and *xenia* (elite networking) that maintained elite dominance. At the same time, the *agora* and its use of coined money subverted hierarchies of gift exchange, just as a shift to taxes and regular payments to city officials (as well as severe penalties levied on officials who accepted gifts) challenged the “natural” order that traditionally had relied on gifts and favors. As Kurke argues, as coins are nothing more than tokens of the city’s authority, they could have been produced from any material. However, because the aristocrats measured a man’s worth by the quantity and quality of the precious metal he had accumulated, the *polis* was required to mint high quality coins, unvarying in fineness. The citizens of the *polis* by their association with high quality, uniform, coin (and in the texts the citizen’s “mettle” was tested by the quality of the coin) gained equal status; by providing a standard measure of value, coinage rendered labor comparable and in this sense coinage was an egalitarian innovation. As Kurke argues, the “mystification” of the origins of money that ties it to markets (rather than to the *polis* or state) is ideological—as it remains today—a purposeful rejection of the legitimacy of democratic government.

Hence, while Kurke modifies to some extent the argument above, she similarly maintains that coinage was not a transactions-cost-minimizing invention but rather emerged from a spatially and temporally specific contest between an elite that wished to preserve the embedded hierarchy of gift exchange and a democratic *polis* moving to assert its sovereignty. Precious metals were not chosen for coinage to ensure that nominal value would be maintained by high embodied value, but rather because of the particular role played by precious metals in the hierarchy. Always above all a means of providing for state finance, coins were mystified by an elite that associated their creation with petty, debasing, and contaminating retail trade. While both the elite and the supporters of the *polis* claimed legitimacy for their positions through reference to the natural, embedded, order, coinage, development of sovereign government, and

evolution of retail trade all contributed to the gradual disembedding of the economy. It is ironic that today's M-form approach views the completely disembedded economy as the natural case, emerging from rational, individualistic, pursuits, and even sees the "pure" case as one in which only precious metals are used as media of exchange. The evil government only corrupts the natural, disembedded economy by debasing the currency and by substituting its own tokens. As Kurke's analysis makes clear, through their ignorance of history these economists have wholly misinterpreted the nature of money and the importance of government to the formation of democratizing market exchange.

Kurke's arguments are largely consistent with the Chartalist or state money approach outlined above. Money is, and always has been, a "creature of the state" (in Lerner's felicitous phrase), and currency has always been a state token. Precious metal coins merely represent one kind of state token, and their origins can be traced to the specific social upheaval that took place at the end of the 7th century B.C. Except in rare circumstances, the value of a coin was never determined by, or governed by, the quantity of embodied precious metal. Use of such coins could not have originated "spontaneously" in market exchange. This is not to say that the value of coins would never be determined by precious metal content. The nominal value of a coin would be determined initially by the value placed on it by the issuing government's pay offices—and this would normally be far higher than the coin's value as metal. However, if that government were overthrown, the new government might not accept it at all, or, more likely only at its bullion value. Furthermore, the coin might leave the jurisdiction over which the government could enforce tax obligations. For example, a French coin might migrate to Italy. In Italy, the coin could still have a nominal value in excess of its bullion value if there were money changers willing to send it home to France, or if there were individuals in Italy who desired the coin because they might directly or indirectly use it to retire obligations to the French government. While distance from the issuer would not be the sole determinant of a coin's value in excess of its bullion value, it is easy to see why a coin could fall in value as it became increasingly difficult to reflux the coin back to its issuer. At the limit, coins would fall to their bullion value, and would be weighed like so much gold or silver. These would not be "Chartal" (or token) monies, and any market exchanges based on full-bodied coin would be closer in character to barter than to monetary exchange.

Of course, it is difficult for a government to impose obligations on the subjects of another sovereign nation—that is, France cannot easily tax Italians. International trade between the French and Italians took place on the basis of bills of exchange, which provided a complicated way to trade goods using the exchange of liabilities denominated in two (or more) different monies of account. This, however, leaves us with two problems. Within a sovereign nation, ultimate clearing is accomplished using high powered money—the money issued by government and accepted at government pay offices. This is necessary when one economic unit has a net claim on another—after canceling debits and credits, if there is still a net claim, the debtor delivers to the creditor some HPM. In the case of international trade, however, there is no ultimate HPM because there is no international government that stands above all sovereign nations. While an ultimate, world, HPM could be created (as Keynes had advocated—see Davidson 1994), for most of world history nations had to rely on a second (or third) best solution. In recent centuries, the currency of the dominant nation (the USA after WWII, or the UK previously) was used as the HPM in much of the rest of the world. The "third best" solution was to use gold for net clearing. In practice, most of the clearing was actually accomplished through movement of sterling-denominated UK liabilities, however, the UK had pegged the

pound to gold. We needn't go into this in more detail, except to note that choice of gold as the "ultimate" clearing unit also provided a solution to the second problem associated with absence of an international money. It was rather difficult for the King of England to directly purchase the goods and services of the subjects of the King of France, for he could not directly impose tax obligations on them, thus, they would be reluctant to accept his token coins. This would become a serious problem whenever England invaded France--how could England purchase French mercenaries and supplies to wage the war against France within its own borders? (Today, of course, we generally expect an invading army to carry with it the soldiers and supplies needed, but that was impractical several centuries ago.) Thus, the King of England needed something of high and easily recognized value to conduct foreign wars, and precious metals fit the bill. As discussed above, use of full bodied coin in this instance would be more akin to bartering gold for military provisions than to use of money to purchase them. It is not surprising, we believe, that Mercantilism, the international gold standard, and large-scale foreign wars all developed at about the same time.

Unfortunately, these developments misled economists for hundreds of years, hiding the true nature of money behind a veil of gold. The value of a Chartal money is not determined by the substance of which it happens to be made. First, of course, there must be a demand for the money. It is not enough to argue that money can be used in markets--for this simply returns us to the question as to why anyone ever traded goods and services for money in the first place. Rather, there must have been an involuntary payment required--such as a fee, fine, tribute, tithe, or tax obligation--in terms of money. This generates the underlying demand for money. The *value* of a Chartal money (that is, its value in terms of what it can buy) depends on the difficulty of obtaining it. If the state simply handed out HPM on request, its value would be close to zero, as anyone could meet her tax liability simply by requesting HPM. On the other hand, if the state required an hour of hard labor to obtain a unit of HPM, then that unit would be "worth" an hour of hard labor. As the monopoly issuer, the state can determine what must be done to obtain its HPM, thus, can set the value of HPM far above the value of the material from which it is manufactured. This is why precious metal coins issued by the state normally carried a nominal value far above the value of the embodied precious metal.

III. Policy Implications

Above we had discussed the orthodox belief that the government controls the money supply through control over bank reserves. This position is rejected by Post Keynesians, who argue that banks expand the money supply endogenously. How is this possible in nations with a legally required reserve ratio? Banks, like other firms, take positions in assets by issuing liabilities on the expectation of making profits. Much bank activity can be analyzed as a "leveraging" of HPM--because banks issue liabilities that can be exchanged on demand for HPM on the expectation that they can obtain HPM as necessary to meet withdrawals--but many other firms engage in similar activity. For our purposes, however, the main difference between banks and other types of firms involves the nature of the liabilities. Banks "make loans" by purchasing IOUs of "borrowers"; this results in a bank liability--usually a demand deposit, at least initially--that shows up as an asset ("money") of the borrower. Thus, the "creditors" of a bank are created simultaneously with the "debtors" to the bank. The creditors will almost immediately exercise their right to use the created demand deposit as a medium of exchange.

Indeed, bank liabilities are the primary "money" used by non-banks. The government accepts

some bank liabilities in payment of taxes, and it guarantees that many bank liabilities are redeemable at par against HPM. In turn, reserves are the "money" used as means of payment (or inter-bank settlement) among banks and for payments made to the central bank; as bank "creditors" draw down demand deposits, this causes a clearing drain for the individual bank. The bank may then operate either on its asset side (selling an asset) or on its liability side (borrowing reserves) to cover the loss of reserves. In the aggregate, however, such activities only shift reserves from bank-to-bank. Aggregate excesses or deficiencies of reserves have to be rectified by the central bank. Ultimately, then, reserves are not discretionary in the short run; the central bank can determine the price of reserves--admittedly, within some constraints--but then must provide reserves more-or-less on demand to hit its "price" target (the fed funds rate in the US, or the bank rate in the UK). This is because excess or deficient reserves would cause the fed funds rate (or bank rate) to move away from the target immediately.

This means that central banks cannot control the money supply. Indeed, rather than viewing monetary policy as the source of "money", the nC approach recognizes that most HPM enters the economy as a result of fiscal policy. Whenever the government spends, it "emits" HPM (usually in the first instance, it issues a check drawn on the treasury, but this is normally deposited into a private bank whose account is then credited by the central bank with HPM). On the other hand, payment of taxes drains HPM from the economy (usually, taxpayers write checks on their bank accounts; bank reserves are then debited by the central bank). Thus, government budget deficits mean that there has been a net creation of HPM, while surpluses drain HPM from the economy. While it is true that the central bank can also intervene to inject or drain HPM from the economy, this is done—as described above—only to accommodate bank demands for HPM. When banks are deficient the central bank injects HPM; when banks have excess reserves, the central bank removes them. Interventions by the central bank are made on a day-to-day basis as necessary, and are required to keep the overnight interest rate on target.

Thus, while fiscal policy consists of spending and taxing, and has a direct impact on the supply of HPM to the economy, monetary policy consists of accommodative behavior required to target the shortest of interest rates. Furthermore, while orthodoxy views inflation-fighting as a primary role of monetary policy, the nC approach again stands that on its head and assigns responsibility over inflation primarily to fiscal policy. As we noted above, Chartalism insists that the value of money is determined by what must be done to obtain it. Placing an onerous tax liability on the population creates a residual demand for money—the population must obtain HPM to pay taxes. The government then provides the money necessary to pay taxes when it spends. If it spends "too much", it can reduce the value of the currency. This could be because the total volume of spending is too high as the government tries to move too many resources to the public sector, or because the government places too high a price on the things it buys. Indexing the prices of things the government buys (for example, to the CPI) is common and can devalue the currency.

Modern governments typically use unemployment to try to fight inflation. While it is commonly believed that this is accomplished through tight monetary policy (which raises interest rates), tight fiscal policy is much more effective at raising unemployment. However, as some working within the nC approach have recognized, it is not necessary to use unemployment in order to enhance price stability, indeed, full employment can be more effective at reducing inflation—if it is properly implemented. While we cannot go into the details here, it has been

proposed that the government develop a labor “buffer stock” program. (Mitchell 1997, Mitchell and Watts 1997, Gordon 1997, Harvey 1989, Minsky 1986, Wray 1998) While there are alternative formulations, the employment buffer stock program would have the government offer a job to anyone ready, willing, and able to work. The wage and benefit package would be fixed at some level, which would become the base compensation package for the economy. The government would essentially stand ready to “buy” or “sell” labor, offering jobs to any workers who showed up, or offering workers to any employers willing to hire workers out of the buffer stock. Of course, employers would have to offer a more attractive job, or a better wage and benefit package, to induce workers out of the buffer stock pool.

In economic booms, the buffer stock would be “selling” labor and helping to dampen wage pressures (since wages in the buffer stock program would be held constant); in recessions, buffer stock employment would grow and would prevent wages from falling below the base rate (since workers could always choose to leave the private sector and take buffer stock jobs). Employment in the buffer stock program would be superior to unemployment because it would prevent deterioration of labor skills, would maintain income at a base level, and could actually be geared toward enhancing education and skills of its employees to make them more productive. Recall that the nC approach emphasizes that government is the monopoly supplier of HPM. As such, it can always “emit” HPM to buy anything for sale in the domestic currency. This means it is always financially able to run a buffer stock program, without fear that it will “run out” of the money to buy the commodity (in this case, labor) that is for sale when the government’s bid price is hit.

If HPM grew on trees it would be worth very little. However, if one must work to obtain HPM to pay taxes, that gives HPM value. By operating a labor buffer stock program the government is essentially offering to provide HPM in exchange for labor. So long as the wage and benefit package is not increased, HPM will maintain a stable value in terms of the buffer stock labor it can purchase. This is not to say that all wages in society will remain constant—in an economic boom, it is likely that demand for some specialized skills will cause wages for specific types of workers to rise relative to the buffer stock wage. This will then induce two processes—it will encourage more individuals to pursue education and training to obtain the specific skills demanded by markets, and it will encourage firms to attempt to find ways to substitute less-skilled workers for those types of workers in shortage (for example, by changing production processes, using more capital plus lower skilled workers). In this way, the buffer stock program complements “market processes” to reduce, but not necessarily eliminate, inflationary pressures even as it maintains full employment and enhances economic stability by causing the government’s budget to move countercyclically.

Finally, something should be said about the policy implications of the nC view for operation of the international monetary system. Above we briefly examined Mundell’s optimal currency area approach, which is credited for spurring creation of the monetary union of Europe. Perhaps this can be taken as the future direction in the international sphere, a direction based on M-form analysis. Alternatively, some C-form economists have advocated that other nations should simply adopt the US dollar for use as their domestic currency—a policy actually adopted by several nations. Again, this appears to be consistent with C-form theory in which money is simply a transactions-cost-reducing medium of exchange.

As Goodhart rightly emphasizes, the real world observations that we use fiat money and that

there is a nearly perfect one-to-one correlation between each fiat money and each fiscal authority are easy to explain from the point of view of C-form theory--although they are quite difficult to explain from the vantage point of M-form theory. I would underline Goodhart's point that the European Monetary Union is a unique and scary experiment, and one that comes at a particularly bad time--just as Europe, the USA and the rest of the world prepare to spiral down into deep recession if not depression. By divorcing money from fiscal authority, the individual European nations will probably have to retrench precisely when they should adopt expansionary policy. (However, I'm not sure things will be a whole lot better in the US, since the President and Congress are committed to running fiscal surpluses for the next 15 years in order to save Social Security. Such a policy represents a fundamental misunderstanding of the pressures placed on the private economy as the government drains HPM and income from the system.) Kregel (1999) has provided a proposal that would actually reconnect money and fiscal policy in Europe--by having the European Central Bank (ECB) finance an Employer of Last Resort (ELR) program much like the one described above. In this way, deficit spending would automatically increase, in the form of Euros, whenever the private sector shed workers. Under the Euro, individual nations would not be able to operate an ELR program precisely because monetary integration has divorced fiscal policy from the currency. However, Kregel's plan would have the funding come from the ECB—operating much like a European Treasury--for national ELR programs. Without some sort of reconciliation of monetary and fiscal policy, the European Union will be unnecessarily hampered in its attempts to fight recessionary pressures as they arise.

According to the nC approach, then, sovereign countries ought to operate with their own, sovereign, currencies. If they do so, they can always obtain full employment through an ELR program. However, the Chartalist “rules” operate only within a nation—it is difficult to tax foreigners and difficult to control the foreign value of a currency (in other words, the exchange rate). Most domestic currencies will have some value outside the borders of the issuing nation—because, ultimately, citizens of the issuing nation will demand the currency so they can pay taxes. This means that a foreigner can accept the currency, safe in the belief that at the very least, citizens of the issuing nation will provide goods, services, and assets to obtain that currency. However, the forces that determine the day-to-day (or hour-to-hour) exchange rates are complex and probably impossible to predict. To avoid uncertainties over exchange rates, countries are frequently tempted to attempt to maintain fixed exchange rates. This gives rise to two primary problems: first, it is really impossible to prevent a depreciation of the currency if international markets are determined to push it down; more fundamentally, a nation that attempts to fix the foreign exchange value of its currency must relinquish fiscal policy independence. This is because a country facing downward pressure on its currency must try to slow emission of the currency by tightening fiscal policy (reducing spending or raising taxes). It would be dangerous to adopt an ELR program in a nation that is attempting to fix its exchange rate because a growing ELR pool automatically increases government spending and thus emission of HPM. This may make it impossible to maintain a fixed exchange rate.

Thus, while it is difficult to say exactly what the international monetary system should look like (should nations use the US dollar as the international reserve, or should a new international reserve currency be created along the lines suggested by Keynes?), it is clear that the principles of Chartalism point toward a system of flexible exchange rates for the international sphere, and toward sovereign currencies with full employment programs (such as ELR) at the domestic level.

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