

Arguments on non-metallic money (1650 – 1750)*

Mauricio C. Coutinho

UNICAMP.

Email: mcout@eco.unicamp.br

Financial support by FAPESP is acknowledged

Resumo

O trabalho trata dos temas centrais da economia monetária no período 1650-1750: valor da moeda, *debasement*, cunhagem, escassez de meio circulante, definições e funções do dinheiro. Os autores considerados são Davanzati, Potter, Montanari, Rice Vaughan, Davenant, Locke, Dudley North, Barbon, Law, Galiani e Harris. O ponto de convergência de tão variados temas monetários são os argumentos em objeção ou aceitação ao dinheiro não-metálico. Procura-se argumentar que a função de medida de valor da moeda é uma questão ineludível na época, seja devido aos frequentes *debasements*, seja porque os sistemas monetários metálicos repousavam na contraposição entre unidade de conta nacional e peças monetárias propriamente ditas.

Summary

The paper discusses the central issues in debate in 1650-1750 monetary economics: value of money, debasement, coinage, scarcity of money, definitions and functions of money. Authors considered: Davanzati, Potter, Montanari, Rice Vaughan, Davenant, Locke, Dudley North, Barbon, Law, Galiani and Harris. Arguments on non-metallic money, either accepting or rejecting it as money proper, are the focus of the paper. It is argued that the role of ‘standard of measure’ of money is decisive and even indelible, be it in view of the frequent debasements, be it because metallic monetary systems were characterized by the duality coin (currency) / monetary standard (unit of account).

Palavras-chave

Debasement, valor da moeda, escassez de dinheiro, economia monetária do período 1650-1750, dinheiro não-metálico

Keywords

Debasement, value of money, money scarcity, 1650-1750 monetary economics, non-metallic money

Trabalho submetido à área de História do Pensamento Econômico e Metodologia Econômica

JEL: B11

* This is a second draft. A first draft was presented at the History of Economics Society Conference,

1. Introduction

From 1650 to 1750, roughly, the two major (and interconnected) issues in debate in monetary writings were debasement and scarcity of money, although there are some exceptions, that is, authors and texts not concerned with debasement or overwhelmed by the possibility money becomes scarce. Cantillon is one of these exceptions, and an outstanding one. The same applies to Hume, whose approach to the ‘value of money’ is entirely circumscribed by the quantity theory framework, and to whom any preoccupation with scarcity of money is downplayed by the price-specie-flow mechanism. However, acknowledging the few exceptions, a long line of monetary theorists, from Davanzati¹ to Harris, including Potter, Montanari, Rice Vaughan, Davenant, Locke, Dudley North, Barbon, Law, and even Galiani, developed their quite varied approaches to monetary phenomena by means of a debate on debasement and/or as responses to questionings about the adequate quantity of money in circulation.

It is worth noting that the above list includes staunch supporters of metallic money, like Locke, as well as radical proponents of paper money, like Law. Locke’s stands on the value of money in *Some Considerations...* (Locke, 1692), as well as his objections to debasement, in *Further Considerations...* (Locke, 1696), are part of his pondering over the consequences of scarcity of money – the same pondering that led him to reject the possibility paper money might act as a proper substitute for specie. Law, on the other extreme, in considering how to circumvent Scotland’s scarcity of money and its harmful effects upon trade, argued in *Money and Trade Considered...* (Law, 1705) the superiority of paper money over silver money. This superiority was based on the presupposition land notes would keep their value stable, while silver money’s value was inherently unstable. By the way, Locke’s defense of silver money and Law’s stand on the inadequacy of any unstable standard of value is well representative of another relevant theme: ‘value of money’, a permanent seventeenth and eighteenth century economics issue, strictly related to the definition of money itself, and to descriptions of money functions. Any of the above listed monetary writers defined money and described or listed the roles it should perform, in debating the value of money.

In what concerns money functions, we all acknowledge, after Schumpeter (1954), the difficulties in transposing modern economic theory concepts into seventeenth and eighteenth century monetary parlance, simply because in these times concepts were in building, thus lacking a precise meaning. That is, we should be cautious in equating means of exchange, store of value, unit of value, to ‘pawn’, ‘pledge’, ‘security’, ‘counters’ ‘tickets’ – some of the terms in usage. Having Schumpeter’s warning in view, it is important to pay attention to the roles or functions attributed to money by monetary theorists of the past, because in most cases the acceptance or rejection of paper money as proper money may be inferred from these functions. Unit of value or standard of measure – under whatever denomination – was an especially critical issue, in a century overwhelmed by debasement. It will be argued that the admitted stability (or, contrariwise, instability) of money’s value along time affected not only the understanding of money as a standard measure, but also the

¹ *A Discourse upon Coins* (1588) antedates our reference period, and has been included in the list of representative monetary writings for two reasons: Davanzati advances many arguments of further debates on debasement; his text is also a crucial reference to the understanding of Locke’s position on money’s value.

perception of how could money act as a due instrument for contracting, as well as a due exchange instrument, whenever the elapsing of time or the temporal disjunction between buying and selling was at stake.

Although the points to be developed in this paper are enmeshed in the just signaled issues – definitions and functions of money, debasement, scarcity of money – it will be attempted to relate them to a singular question: what were the main arguments on non-metallic money, advanced both by economists aware of the decisive role of paper credit (and/or prone to admit the substitution of paper money for specie), as well as by adversaries of (or skeptical about) paper money. These arguments, spread throughout the paper, are revealing of the different conceptions of money sustained by monetary thinkers in the period under consideration.

The paper will be especially attentive to the characteristics of metallic monetary systems, most of all the existence of a dual monetary structure, comprising unit of account and specie proper (silver and gold coins). It will be argued that the intrinsic characteristics of seventeenth and eighteenth century monetary systems defined much of the arguing of the times; which means, many monetary concepts, in their inception, owe a lot to the peculiar seventeenth and eighteenth century monetary ambience.

Besides this introduction, the paper contains four more sections. The second one contrasts Locke and Law, in order to set the main issues in debate. In this sense, Locke and Law are singled out as archetypical seventeenth and eighteenth century monetary thinkers. The third section situates debasement as a decisive component of monetary controversies, in order to stress the importance of the more than one century long debates on debasement upon monetary thinking - needless to say, upon economic theory in general. The fourth section will review some conjectures on coinage and seigniorage, as well as present different concepts of money, including its nature and functions. Definitions of money are deeply considered in section five, that will try to summarize to what extent, and in which terms, paper money was admitted as money proper by significant authors.

2. Locke and Law

Locke's arguing against the possibility bills of exchange, and paper money in general, be considered as surrogates for specie, is twofold. In one sense, he restricts the extent bills of exchange may represent money in international trade. Whenever there is a cumulative balance of trade deficit, says Locke, bills of exchange will not pay our debts abroad – money (he means specie) or metal must be sent to keep the credit. In this sense, "*It is ridiculous to say, that bills of exchange shall pay our debts abroad: that cannot be, till scrips of paper can be made current coin.*" (Locke, 1692, p.13) In fact, adds Locke, these bills do not have 'intrinsic value'. They serve only as instruments to redirect credit, or to direct money to whom it is due.

In another context, Locke adds that even in internal circulation, paper money is not a surrogate for specie. The context is the relation of money to trade, or the necessity of a 'certain proportion' of money to trade. Locke presents his view on circulation:² money goes from hand to hand, serving 'for counters and for pledges',

² I've developed this point further in Coutinho (2012) and Coutinho (2011).

implying ‘reckoning and security’. Having assigned functions to money, he explains what he means by ‘security’: it is the property that “... *he that receives it shall have the same value for it again, of other things that he wants, whenever he pleases.*” (Locke, 1692, p.13) Reckoning may be performed by stamp and denomination, while security implies intrinsic value, “...*which is the quantity.*” (Locke, 1691, p.14). It will be seen that, under different designations, Locke’s understanding of ‘security’ is well spread in monetary texts.

Letting aside for the moment intrinsic value as ‘quantity’ and the fact that Locke attaches to ‘security’ the property of keeping value along time, let us focus on Locke’s ‘pledge’. Bills may be suitable as ‘counters’, since “... *reckoning may be kept, or transferred by writing,...*” (Locke, 1692, p.15), but money as a ‘pledge’ requires metal; more precisely, the metals (gold and silver) mankind has consented to attribute an ‘imaginary value’ to, by ‘common consent’.

Locke harshly denies that any kind of paper money may be taken as a ‘pledge’.³ The lack of security is a characteristic of “... *bill, bond, or other note of debt,...*” (Locke, 1692, p.15), even when bills are issued by public authority. Locke is expressing the idea that national bills cannot be imposed upon foreigners, and goes further: even internally, however acceptable, “... *they are liable to unavoidable doubt, dispute, and counterfeiting...*” (Locke, 1692, p.16).

In listing and defining the functions of money, in *Some Considerations...*, Locke was responding to the enactment of a legal ceiling to the interest rate by Parliament. In his view, the interest rate defined the ‘value of money’.⁴ Fixing it below its natural rate would reduce the price of money, thus contracting money lending. Besides affecting circulation, this reduction of the price of money would harm interest receivers (widows, orphans, creditors) and divert part of the lending activity into obscure channels, stimulating illegal behavior. On the other hand, the reduction of the value of money would raise the price of commodities in general, since money is “... *the counter-balance to all other things purchaseable by it,...*” (Locke, 1692, p.19).

In Locke’s view, similar consequences – reduction of the value of money, imposition of a loss upon creditors, the sanctioning of malfeasance (money clipping) – emerged from debasement. In fact, *Further Considerations...* (Locke, 1696) fierce criticism of debasement shares the same philosophical and analytical underpinning of the 1692 text, especially in what refers to the value of money.

To begin with, debasement, as well as clipping, defrauds the ‘public voucher’ inherent in a stamped coin, which concerns the quantity of silver contained in it.⁵ In what refers to the intrinsic value of money, Locke insists in ‘common consent’ and ‘quantity’: “*The intrinsic value of silver, considered as money, is that estimate which common consent has placed on it, whereby it is made equivalent to all other things...*” (Locke, 1696, p.82). Or, “*Silver is the measure of commerce by its quantity, which is the measure also of its intrinsic value*”. (Locke, 1696, p.82)

³ He also denies paper money may be considered in computing the ‘certain proportion’ of money to trade.

⁴ Locke’s ‘dual theory’ of value of money establishes that the value of money consists in providing interest and giving access (by exchange) to other commodities.

⁵ “*The stamp is a mark, and as it were, a public voucher, that a piece of such denomination is of such a weight, and of such a fineness, e.e. has as much silver in it.*” (Locke, 1696, p.84)

Although in his chastisement of debasement, in *Further Considerations...*, Locke was less specific on non-metallic money, he was not entirely silent. According to him, credit would not be able to counterbalance the lack of cash produced by debasement.⁶ Additionally, credit – more specifically, bills of exchange - would not substitute hard money in international trade, whenever trade was unbalanced.⁷ In what refers to the connection between money and balance of trade, Locke simply recurs to a frequently rephrased mercantilist truism, which posits that balance of trade unbalances imply bullion or cash transfers, from debtors to creditors.

Yet, Locke's objection to the possibility that credit instruments were considered a component of money supply in the internal market, depends on 'principles' not always supported by economic reasoning. First of all, the objection is connected to his understanding of money as a 'pledge', which, as mentioned, implies universal acceptance and stability of value. Nor money, neither any commodity, is stable in value.⁸ In his pursuit of a stable measure of value, Locke ends up sliding into a physical measure: weight. Value of money is 'quantity' and thus, weight, in a double sense: a physical measure may be taken as invariable and, on the other hand, considering money's weight in pure gold or silver its 'intrinsic value' was common parlance, in seventeenth and eighteenth century.⁹

Additionally, and most of all, a permanent concern with pure metal weight was one of the consequences of debasement. In the end of the day, debasement meant a loss of silver and gold content in money – or an attempt to keep old denominations in new (and thinner, in terms of pure metal) coins. Debasement is a loss of value of circulating media, relatively to the unit of account and to any commodity. In this sense, there were two ways to evaluate debasement; it could be considered an adaptation to the changing value of metals, and/or a necessary reaction to neighboring countries debasements; it could also be seen as an instrument for devaluing public debt and/or enhancing public revenue. Both evaluations will be dealt with below.

Law's proposal of transforming Scotland's money into paper money, or of adding land-money to Scotland's circulating media, however innovative in its overall understanding of money and in its acknowledgement of credit money, was overtly motivated by a traditional issue: the pursuing of a stable money. According to Law, silver money's value was very unstable, thus unable to provide a due standard to the monetary system. Paper money would not only add to the circulating media; it would represent a better money, since it didn't partake silver money's value unstableness, taken as its most evident defect.

Law's monetary analysis combines tradition and innovation. His account of the evolution of money, from barter to gold or silver pieces stamped by government,

⁶ "Credit will supply the defect of it (money) to some small degree, for a little while. But, credit being nothing but the expectation of money within some limited time, money must be had, or credit will fail." (Locke, 1696, p.87)

⁷ "...where the over-balance, on either side, demands payment, there bills of exchange can do nothing; but bullion, or money in specie, must be sent." (Locke, 1696, p.89)

⁸ As Locke acknowledges in passages compatible with the quantity theory of money approach – in these passages, value is dependente on supply versus demand (literally, 'quantity versus vent').

⁹ Montanari (1668) and Cantillon (1755) didactically explain that, in plain monetary market parlance, 'intrinsic value' was weight in gold or silver, and 'extinsic value' was the value attributed by the authority's stamp.

is quite traditional.¹⁰ The inconveniences of barter and the uncertainties of contracts made payable in goods (goods of the same kind differ in value) are the point of departure. In a second phase, silver imposes itself, due to convenience derived from its uniformity, divisibility, conservation... qualities that led silver to be used as money, even previously to coinage. In this precise point, Law defines money: it is “... *the measure by which goods were valued; the value by which goods were exchanged; and in which contracts were made payable.*” (Law, 1705, p.2). It is worth noting that a special stress is put on money as an instrument for contracting. Instability in value hampers, most of all, silver’s ability to be used as an instrument to denominate commercial deals, including deals that extend across time.

According to Law, the value of any commodity depends on demand and supply. Silver, and silver-money, don’t stay aside the general rule. In this sense, and overtly, Law rejects Locke’s conception of money as a pledge. It is noteworthy that, although rejecting Locke’s formula, he slips into the entirely disputable Lockean solution: money must keep the capacity of buying the same goods, or goods equal in value, “... *as his occasions require*”. But it must be acknowledged that Law attenuates Locke’s equal value by adding a escape clause: money is only “*least liable to a change in value*”.¹¹(Law, 1705, p.26)

However, and the adhesion to the Lockean solution notwithstanding, Law ends up admitting that the stability of the value of money would not exempt its owner – who sold a good and is a buyer in perspective – of alterations that might occur in the value of the goods aimed at. In this precise sense, Locke’s (and Law’s) purpose of assuring “... *equal quantity of the same goods he has sold, or other goods equal in value...*” is untenable. But we should stick to the fact that, despite relaxing an impossible clause, the obsession with a stable standard of measure is pervasive in Law’s analysis. As mentioned, stability stands out as the leitmotif of his 1705 paper money proposal.

It is not our purpose to review or question the solidity of Law’s 1705 paper money proposal. It is well acknowledged (Murphy, 1997; Boyer, 2003) that Law’s solution is complex, not to say unreasonable, since he couldn’t demonstrate that a wise administration of land-money was all that was required to guarantee monetary stability in any condition. Even if we let aside a critical issue, represented by the practical and theoretical hurdles posed by balance of trade unbalances and exchange rate fluctuation, keeping money issuing in balance with demand is a difficult task in itself. How to gauge demand? Besides, once the interest rate decreases, as it is likely to happen when money extreme supply constraints are relaxed, the uniqueness of the new credit money value disappears at once. Anyhow, and letting aside the complexities of Law’s proposal, it is not difficult to hold that scarcity of money and value of money, two standard 1650-1750 monetary debate issues, are inherent in his arguing.

¹⁰ In this sense, I disagree with Karimzadi (2013), who envisages Law’s version of the traditional tale of the evolution of money, from barter to paper money, as innovative.

¹¹ Precisely: “*Money is not a pledge, as some call it. It’s a value paid or contracted to be paid, with which, it is supposed, the receiver may, as his occasions require, buy an equal quantity of the same goods he has sold, or other goods equal in value to them: and that money is the most secure value, either to contract for, or to value goods by; which is least lyable to a change in value.*” (Law, 1705, p.26)

Just to conclude this section, it is important to remark that Law's solution implied the acceptance of credit money as full money. Additionally, his text acknowledges fractional reserve banking and describes the activities of typical banks - such as Bank of Amsterdam, Bank of England and Italian banking. He arrived at the conclusion that traditional banking could not provide an alternative to the scarcity of money in Scotland, simply because the absence of a dynamic trade enfeebled Scottish banking activities themselves. Traditional credit was a good strategy, but not bold enough to Scotland. A much more daring solution was claimed for, and he presented his alternative.

3. Debasement, a critical and pervasive issue¹²

Law's barrage of objections against silver money included debasement: "... *Silver Money is an uncertain value; because liable to be alter'd in the fineness or denomination by the prince.*" (Law, 1705, p.32) As a matter of fact, debasement was a pervasive issue in monetary writings. More than a century before Law, Davanzati chastised debasement, which he matched with traditional mischiefs (counterfeiting, monopolizing, simony, usury...) associated to money. The loss of weight of coins in circulation, said Davanzati, leads officers of the mint to ill-advise his masters: "... *Since your money ... is one grain lighter, 'tis fitter you should get by it, than that others clip it;...*" (Davanzati, 1588, p.19); which starts a competition among neighboring states.

The consequences of debasement, according to Davanzati, were a decrease in public revenues, losses imposed on creditors and a general rise in prices. By debasing, he proceeds, the sovereign gains once, but in the long run he suffers a permanent loss. Besides, confusion concerning the alteration of coins and prices unsettles contracting, making people "... *strangers in their own country;...*" (Davanzati, 1588, p.21).¹³

Davanzati's precocious criticism of debasement was to be followed by many economists. One century later, in his magnificent *Mercantile Treatise – Della Moneta*, Montanari (1683) restates Davanzati's complaints against bankers and ill-advised monetary consultants. In a telling example, he describes the behavior of the inhabitants of cosmopolitan Dantzic, that, anticipating the dire consequences of a projected debasement, opposed it. Since the debasement was nonetheless imposed by the ruler, the outcome was inevitable: as an active international trade center, Dantzic saw, in a short lapse of time, 'good money' being sent abroad.

The consequences of debasement, according to Montanari, were reduction of public revenue, losses imposed upon those entitled to receive their earnings in cash, advantages to debtors; all in all, however, a general loss, because debasement unsettled trade and led arts to vanish, to the advantage of competing states.

But Montanari was cautious in not crediting all responsibility to profiteers and ill-advised consultants. The ruler opts for debasement either because he doesn't understand its ultimate consequences, or because he is "... *forced by necessity, the fierce tyrant of kings...*" (Montanari, 1683, p. 122)¹⁴

¹² This paper concentrates on the economist's arguments on debasement, letting aside the historical context, or debasement in history. For a classic historical assessment of debasement in England, see Feaveryear (1963).

¹³ The coincidence between Locke's and Davanzati's arguments is astounding.

¹⁴ Translation of Montanari's text into English, by the author.

Necessity was also Galiani's motto, in *Della Moneta* (1751). According to him, the princes opt for debasement when public debt is excessive and/or it is impossible to raise taxes accordingly. Raise the money is *raison d'état*. Unlike Locke, Galiani doesn't devise rulers as potential breakers of the social bond – as a general rule, they are committed to public interest.

Of course, Galiani's solution was not only based on his political conceptions. It was attuned to his understanding of relative prices, as well as of existing lags in price and income adjustments. His definition of 'raising the money' unveils his analytical stand: it is "... a gain that the prince and the state obtain from the slow pace of the collectivity in changing the connection of ideas concerning prices of commodities and of money." (Galiani, 1751, p. 231)¹⁵ That is, prices are sticky, or markets adjust slowly. Through debasement, the prince effectively reduces, at least temporarily, his debts and the monetary burden with public servants and public services. Additionally, as far as Galiani considers taxes reduction a benefit to the public, he doesn't take decrease in public revenue (in terms of metal, in the long term) as an evil in itself.

Before continuing with Galiani, it is interesting to observe that we have straddled almost two centuries – from Davanzati (1588) to Galiani (1751), or even to Harris (1757/58) – with debasement in the center of the monetary debates. Effectively, although disagreeing on its effects, economists conferred debasement a central position in monetary economics. In this respect, Dudley North may be taken as a rare example of a first grade economist not to situate debasement in the center of his arguing.¹⁶ Economists' disagreement on the consequences of debasement mostly stemmed from their different assessments of the pace of price reactions. Some economists, like Davanzati, Locke, Harris, either tied their analyses to long term adjustments, and/or supposed an immediate reaction of prices. Others, as Galiani, envisaged the sluggishness of price adjustments, or the imperfections of the several markets and the importance of contractual prices and incomes. Anyway, and as a first and general approach to points to be developed in other sections, the consequences of debasement may be grouped in three classes.

First of all, reactions in prices, exchange rates, and gold and silver flows across countries. The contrasting positions in the English monetary debates of the 1690s are illustrative¹⁷: while Locke (Locke, 1696) thought the debasement proposed by Lowndes would not bring silver back and would likely contribute to aggravate its drainage,¹⁸ defendants of debasement, like Barbon (Barbon, 1696) concluded that a correction of the mint rate was indispensable to attune 'value of money' with the truly existing weight of coins, prompting silver outflows to stop.

Comparisons of mint patterns across countries, as well as comparisons of the efficiency of debasing as a means to attract bullion, were issues permanently under debate. Even Barbon, the author who most fiercely defended value of money was established by law, irrespectively of the metallic content of the coins, at last admitted (Barbon, 1696) that international competition kept monetary standards and currencies

¹⁵ Translation of Galiani's text into English, by the author.

¹⁶ However, in *Discourses upon Trade* he shares the mainstream view, criticizing debasement and admitting that "...the price of bullion answers." (North, 1691, PS)

¹⁷ Feaveryear (1963) and Eltis (1995) provide good accounts of English circumstances in the 1690s.

¹⁸ In Locke's view, the only way to attract bullion was a balance of trade surplus, not to be obtained by debasement.

across countries tied – he allowed for small discrepancies in value. As we have already seen, Davanzati affirmed that international competition furthered debasement. He was not an isolated voice: Montanari and Rice Vaughan, (Vaughan, *A Discourse of Coin and Coinage*, 1675), among others, echoed the theme. In most cases, statements about bullion drainage through international competition were interrelated to a major seventeenth and early eighteenth century concern: scarcity of money and its impacts on trade. This was the backdrop of Locke’s monetary writings, as well as of Barbon’s responses to Locke, and of Potter’s (1665), Law’s (1705) and Berkeley’s (1735) paper-money proposals. In this sense, and once more, Dudley North was ahead of his time, since his approach to the money versus trade conundrum, in a (remote) sense, antedates Hume’s unworried attitude concerning scarcity of money.¹⁹

The second class of debasement-associated items encompasses seigniorage and mint practices. The states’ capacity of arbitrating the ‘value of money’, or at least of establishing a distinction between the value stamped on a piece of money and the market value of the gold or silver melted into coins – that is, between coined metal and bullion – was long acknowledged.²⁰ First of all, the public character of the seal, and of mint activities, was taken as a state prerogative. Economists accepted as a general stand that, as much as law enforcement and keeping military forces, coinage was up to the state, or to its agents. Secondly, economists added to this legal and/or political conclusion, an argument based on utility, that goes as ‘once money is indispensable for trade and entails a special utility, a governmental charge is due to mint activities’. In other words, coinage can be converted into a revenue raising capacity: seigniorage. This combination of state prerogatives, utility of coined money, and revenue raising capacity of coinage, is the nucleus of the explanation for seigniorage shared by a wide range of monetary economists, including Montanari, Barbon, Dudley North, Rice Vaughan, Harris. Needless to say, the acceptance of seigniorage as a typical fund raising device was almost certainly a reflex of reality.²¹

It is noteworthy that this class of seigniorage, much debated by monetary economists, was associated to the seventeenth and eighteenth century monetary system characteristics. Coinage had a cost, public stamps were indispensable, but, most of all, the existence of a dual system, combining non-material national monetary standards and real metallic pieces – ‘ideal money’ versus ‘real money’ -, allowed for debasement and also for a permanent difference between the ‘value of money’ and the market price of bullion. The administration of the mint rate was exactly the mechanism to make debasement, and seigniorage, softly applied.

Rice Vaughan’s insightful analysis of debasement combined two phenomena, public funds raising capacity and international competition. As we have already seen, debasement ensued across-borders reactions. According to Vaughan, raising the money was provoked by the necessity of providing gains to the state and by a “... *second and most frequent cause, an art which states have used to rob one another of their money, by setting on higher prices upon it;...*”. (Vaughan, 1675, p.9) And he

¹⁹ “... *since the increase of trade is to be esteem’d the only cause that wealth and Money increase...*” (North, 1691, p. 14). According to North, appetites of men further industry and ingenuity, and then trade.

²⁰ On seigniorage and mint practices across centuries, Feaveryear (1963). Locke (1696) and Harris (1757-58), among others, echo the pervasive English debates on mint practices.

²¹ Although in England, from 1666 on, the industrial burden of coinage had been diverted into a specific tax revenue. The real or supposed interest of mint officials in recoinage is an additional issue, typical of the English monetary debates. See Locke (1696) and Harris (1757/58).

harshly concluded: “*All these parts of the world, for some few hundred of years, have done nothing but vye one upon another who shall raise their money highest, which hath brought great confusion in all states; ...*” (Vaughan, 1675, p.9)

Vaughan’s ‘confusion in all states’ possibly matches our third and last point: debasement unsettled monetary standards, disorganizing trade. As already mentioned, in saying debasement made people “... *strangers in their own country*”, Davanzati pointed to the harm produced by the loss of a stable measure of value. Locke’s point (Locke, 1696) was quite the same, and he went further: debasement harmed the recipients of fixed (in terms of contractual money) incomes, and disorganized market transactions, since it led to silver outflows, producing scarcity of hard cash. In Locke’s view, once money lacked, one of the major benefits of a monetary economy - the impersonality of market transactions - would be lost.

Harris echoes Locke: “*Established standards should be inviolably kept, and more especially that of money*”, adding that deviations from the standard measures – he included money among them – would “... *disturb the arithmetic of the country, confound settled ideas, create perplexities in dealings, and subject the ignorant and unwary to frauds and abuses.*” (Harris, 1757/58, II, p. 30)

To Harris, as to Locke and Vaughan, there is no other road to keep monetary standards than measuring the ‘intrinsic value’ of money by its weight in precious metal. Galiani explains that the ‘value as weight’ approach to the value of money is a consequence of an important attribute of gold and silver: physical homogeneity. As many economists emphasized, a piece of gold can be considered equal to any identical weight piece of gold, while, for instance, a cow differs from another cow. But this conclusion – value as weight – is linked to the necessity (and possibility) of a stable measure of value, a point to be commented in the next section.

4. Coinage and seingoriage: defining money

Section 2 has already presented Law’s definition of money, as well as Locke’s views on the nature and functions of money, and it was argued that Locke’s conception of money as ‘pledge’ and ‘security’ led him to downplay paper money. In section 3 we’ve seen that economists admitted seigniorage, on the grounds of the necessity of a ‘public voucher’ of weight and fineness of gold and silver turned into coins, that enhanced their utility and value relatively to bullion. In fact, to most economists, the definition of money itself implied a public stamp: the difference between bullion and coined metals resided in the public seal. As it will be argued, public stamp was an indispensable, and decisive, issue in seventeenth and early eighteenth century monetary economics.²²

Once more, Barbon’s extreme and peculiar position - “*money is a value made by a law...*”²³ - is illustrative of the role of public stamp. According to Barbon, since gold and silver are commodities as any others, their value oscillates. Yet, money is not a profane commodity, and in this sense it differs from their constituent metals. Money is measure of value and means of exchange, and, for this reason, its value must be “... *made certain by law, ...*”. (Barbon, 1691, p.7) From this peculiar stand,

²² In fact, the acknowledgement of public stamp goes back at least to Aristotle, but we will stick to the seventeenth and eighteenth century boundaries. On the antiquity of this issue, see Karimzadi (2013).

²³ “*Money is a value made by a law; and the difference of its value is known by the stamp, and size of the piece.*” (Barbon, 1691, p. 7)

Barbon concluded that money should not necessarily be manufactured in gold or silver – any publicly stamped material is apt to play the role of money.²⁴

It might be argued that Barbon was a conceptual non-metallist, although he pragmatically bowed to the dominance of gold and silver money, and ultimately admitted the importance of precious metals in international trade. But it must be acknowledged that many other monetary economists, non-adherent to Barbon's legalist fetishism, and metallists *de facto*, also emphasized public seal.

Davanzati was a precocious and upfront defendant of the perspective public stamp is inherent to money. More precisely, he said that, although gold and silver were chosen as money by the 'consent of nations', the public stamp is indispensable: "*Money ... is gold, silver, or copper coined by publick authority at pleasure, and by the consent of nations made the price and measure of things, to contract them the more easily.*" (Davanzati, 1588, p.12) Coins based on other materials, being not part of the 'common consent', were not 'universal'. They were only tallies, countermarks, notes or bills from the prince, "... *obliging him to pay as much good money when he is able*" (Davanzati, 1588, p.12); that is, these instruments are only temporary representatives of gold and silver money.

In Davanzati, as ultimately in Locke, the idea of 'common consent' and the acknowledgement of the universal acceptance of gold and silver as exchange instruments, add up to stamp, considered by them an official certificate of weight and fineness. Although Davanzati and Locke were metallists, it is arguable that the official seal was taken as an important element by non-strict metallists too - and here we are not only referring to Barbon's legalist fetishism, but, for instance, to Montanari's much more balanced, and broad, stand on money.

According to Montanari, money is "... *any metal or object that, stamped or by any means certified by public authority, may act as price and measure of sellable things, in order to facilitate commerce.*" (Montanari, 1683, p.28/29) Of course, this definition breaks with Davanzati's exigency of gold and silver as indispensable money materials, but it is attuned with the idea that the "*essence of money*" or its "*formal reason*" lies in the *placet* of the sovereign – without the prince's endorsement, any material taken as money would not be able to act as "*price and measure*" of things.

In what refers to the possibility of using instruments apart from gold and silver as money, Montanari adopts an usual, and decisive, formula: in a closed economy, any material is acceptable; in an open economy, gold and silver are required, and always in accordance with their 'intrinsic value'. To Montanari, this is the reason why, making allowance for a small seigniorage, the prince should stick to the intrinsic value of the metals.²⁵ In this sense, external trade pull us back to Davanzati's (or Locke's) formula.

Adding another important point, Montanari immediately connects 'measure' to its intellectual origins: Aristotle. Money measures all things, said Aristotle (*apud* Montanari). As any measure, money is a *tertius*, or a standard the exchangeable

²⁴ According to Barbon, the only advantages in using precious metals as materials for making money, were the difficulties in counterfeiting, and the facility in transporting and making arbitrage, due to the general acceptance and high value (in small bulk) of these metals.

²⁵ This is the reason of Montanari's skepticism about debasement, and of his eulogies of Venice's stable monetary practices.

commodities must be compared with.²⁶ It is significant that, in defining money's functions, Montanari stressed 'measure', and not means of exchange.

Harris is a good instance of the preference for an ampler formula. According to him, money performs three tasks: it is the standard measure, means of exchange, and instrument for contracting.²⁷ For Harris, as for Locke, the dilemma was that money was not only the "... *thing bargained for*...", but also the "... *measure of the bargain*...". As measure, money should be invariable (in value) - a property achievable only if we take a physical measure, as weight, as measure of value.

In Harris, we are back to an ancient formula: the value of precious metals is defined by their weight. Even if we accept Galiani's teaching that the 'value as weight' approach derives from the homogeneity of gold and silver, we must admit that it is also associated to the search of an invariable standard. Moreover, and as above remarked, to take 'intrinsic value of money' as its weight in pure gold or silver was also popular usage. In this precisely defined sense, 'intrinsic value' contrasted to 'extrinsic value', which was the official value, conferred by the seal.²⁸

As to its 'extrinsic value', so defined, it is possible that a divergence between the market value of metals and the 'value of money' emerges, if by the latter we mean value in terms of the exchange rates between the coined pieces proper and the monetary unit of the country. Episodes like the English monetary crisis of the 1690s (the backdrop of Locke's and Barbon's disputes), that involved scarcity of silver money, evasion of silver, money clipping, and a long term low mint rate for silver, are instances of this divergence.

As discussed above, even letting aside a clear understanding of credit money, non-metallic money was admitted by many writers as money in a special case, or under special conditions. Economists developed a kind of genealogy of money, in which gold and silver ultimately imposed their dominance, especially under the pressure of international trade constraints. This adherence to metallic money, as well as the allowance non-metallic money should have been dominant in certain periods and societies, is part of the traditional and always recounted tale of the evolution of money, from barter to gold and silver money.

Slightly different versions of this well-known tale spread throughout monetary writings, and we have already passed through some of them. A sort of schematic version goes as follows: in the beginning men bartered; the inconveniences of barter soon led society to chose a standard commodity as money, generally an indispensable or diffused one – for instance, salt, cattle.²⁹ Due to their rarity, general acceptance and

²⁶ On the Aristotelian connections of the concept of money as a 'measure', see Karimzadi (2013) and Meikle (1994).

²⁷ "*Money is a standard measure, by which the values of all things, are regulated and ascertained; and is itself, at the same time, the value or equivalente, by which, goods are exchanged, and in which contracts are made payable*". (Harris, 1757/58, p.37)

²⁸ Montanari (1783) explains the popular meaning of 'intrinsic' and 'extrinsic' value of money. Cantillon (1755) also remarks that, when referring to money, by 'intrinsic value' people meant the gold or silver content of the coin, and not intrinsic value *per se* – in Cantillon's formula, labour and land involved in the production of the coin.

²⁹ It is interesting to note that this standard commodity was not only a convenient means of exchange – it performed the role of standard of measure, too. Turgot refers to the fact that in rural France lamb (*mouton*) was the unit of account, the same happening, in West Indies slave trade, to a 'piece from

physical qualities (divisibility, uniformity, durability...), gold and silver were singled out as the standard commodity, acting as money. A further step introduces the stamping of pieces of metal by public authorities, in order to avoid suspicion, disagreement and doubts concerning weight and fineness. Finally, an (optional) step recalls the possibility – again, for the sake of security and functionality – precious metal coins be ‘represented’ by written receipts, which certify their existence and safe storage.

This tale admits of two qualifications. One of them points to the embarrassments brought about by money scarcity, and leads to the quantity theory of money. It states that, in a closed economy, the proportion of money to commodities is irrelevant or, as Locke pondered, “... *any quantity of that money (if it were so much that every body might have some) would serve to drive any proportion of trade, whether more or less.*” (Locke, 1692, p.30) Yet, in an open economy the irrelevance of money quantity does not apply anymore. Metal flows disturb trade, and/or ensue corrective mechanisms – we are now in the antechamber of the price-specie-flow mechanism.

The other qualification, much more relevant to the origin of money’s tale, follows suit. Taking again Locke’s lead, in an isolated economy, any durable material would appropriately act as money. It is in this closed economy setting that economists develop most of their considerations on the possibility any material should perform the role of money. Montanari is concise: “*If a state had no external trade and lived only of the goods internally produced ... the prince could evaluate his money as he wanted, and the material used to make money would be indifferent.*” (Montanari, 1683, p.76)

Among the various illustrations of monetary options available to closed economies, an amazing one is in Berkeley’s (1735/1750) recount of the history of money. Despite of being quite conventional (from barter to paper notes...), Berkeley’s account adds a special proviso, convenient to his proposal of issuing paper money in order to bypass inconveniences brought about by scarcity of hard cash. Berkeley’s account stages castaways, secluded in an island after a shipwreck – nothing would block they produce, exchange, and, in order to facilitate exchanges, chose a local material, like shells, or written tallies, to act as money.³⁰ Metals were unnecessary, is Berkeley’s message.

Rice Vaughan admits that, in ancient times and even in his days, objects other than gold, as shells, cocoa, salt, were in many countries used as money. Yet, “... *they cannot be without gold and silver money, unless they will barr themselves from all commerce with other nations...*” (Vaughan, 1675, p.3). Additionally, he adds, gold and silver are accepted in international trade by their ‘universal value’, and not by the value attributed to them by the prince.

India’ – a standard male African slave. Nor ‘lamb’ neither ‘piece from India’ were physical animals or men; they were typical, or standard, measures. See Turgot (1766).

³⁰ “*Whether such men would not all set themselves to work? Whether they would not subsist by the mutual participation of each other’s industry? Whether, when one man had in his way procured more than he could consume, he would not exchange his superfluities to supply his wants? Whether this must not produce credit? Whether, to facilitate these conveyances, to record and circulate this credit, they would not soon agree on certain tallies, tokens, tickets, or counters?*” (Berkeley, 1750, Q 47).

That is, irrespectively of the realism or non-realism of the tale of the origins and evolution of money, all economists bow to reality, or end up admitting that international trade and international monetary flows ultimately impose gold and silver money all over the civilized globe. Non-metallic money is seen as a possible ancestor of specie – although such an ancestor might be alive in secluded communities and/or in some colonial American spots. Paper money existence is confined to two circumstances: either it is a representative of ‘real money’, a kind of receipt of metallic money piled up somewhere; or, as in the arguments of non-metallists (Potter, Law, Berkeley), credit money is seen as an heroic alternative to circumvent scarcity of money.

However, it is worth stressing that, even when paper money is presented as a better money and fractional reserve banking is openly admitted, as in Law’s solution, a standard of measure, or a national unity of account, is indispensable. Law’s formulation is suggestive because, although it points to the dominance (or even exclusivity) of paper money in circulation, it is silent about the coexistence of circulating media and the national unit of account. In seventeenth and eighteenth century monetary systems, this unit of account (‘ideal money’), that is, the national monetary standard, measured the ‘value’ of coined pieces. Even if the latter weren’t available in national territory, foreign coins were known and bullion was pervasive; which means the exchange rate between paper money, unit of account, and bullion or gold or silver coins, would always be at stake. Most of all, the exchange rate was an unavoidable variable, as hurtfully proved by the demise of Law’s Mississippi System experience in France (Murphy, 1797). As already pointed at, standard of measure leads us to stability: how to allow for a standard of value that is variable in terms of its relation to hard cash (or bullion)?

To take ‘intrinsic value’ as weight is, in theoretical terms, a non-solution, since the value of silver and gold oscillates and the ‘value of money’ (exchange ratio between coins and national monetary unit) cannot stay still. As we will see, Locke, as Harris, sacrificed logic in saying that contracts were, ultimately and under a subjacent but valid convention, referred to weight.

Anyway, in seventeenth and eighteenth century, paper money was an evident component of the circulating media, and no economist could deny its existence. How to combine the realities of metallic systems with paper money, is the question that will be addressed in the following, and conclusive, section.

5. Paper money - conclusions

As mentioned, Locke took for granted that no kind of paper money could be accepted as ‘pledge’, since it didn’t assure its owner that commodities equal in value would be obtained in exchange, at any moment. ‘Pledge’ was a repeatedly mentioned attribute of money. Rice Vaughan says that “*The first invention of money was for a pledge and instead of a surety...*” (Vaughan, 1675, p.2), in the case transactions were not cleared instantaneously. Although money serves first of all for exchanges, he adds, in a mercantile society “... *all exchange is either by the actual or intellectual valuation of money...*”, (Vaughan, 1675, p.2), which reminds us of measure, that is, comparability. And Vaughan adds a geometrical gist to his Aristotelian argument: “... *and Practice hath found out that in values, which the geometricians have found out in quantities, that two lines which are equal to a third line, are equal to one another; so*

is money a third line by which all things are made equal in value...". (Vaughan, 1675, p.2)

Writing a century later, Harris, contrariwise, rejects the possibility money may be considered a pledge. For him, pledge implies redemption, and money is not afterwards redeemed. He defines money broadly, beginning by its role as standard measure: "*Money is a standard measure, by which the values of all things are regulated and ascertained, and is itself, at the same time, the value or equivalent, by which, goods are exchanged, and in which contracts are made payable.*" (Harris, 1757/58, p.37) This approach to money was instrumental to his attack on debasement, to be developed in Part II of *An Essay upon Money and Coins*. Anyway, he proceeded, money is "*an equivalent and a measure*", and also "*... the very thing usually bargained for, as well as the measure of the bargain:...*", a truly Lockean dilemma. (Harris, 1757/58, p.37) Even when we have a barter, he continues, the quantity of money is the "*...measure of the bargain*". (Harris, 1757/58 p.37). Effectively, Harris' barter is not a strict barter, but what Cantillon termed 'exchange by valuation', an exchange not mediated by monetary instruments but that had monetary units, thus prices, as reference. As a measure, according to Harris, the value of money is unalterable, which, once again, points to quantity.³¹

Additionally, money has 'intrinsic value', and this is the true difference between money and bills. The latter are "*... mere promises or obligations of payment...*" (Harris, 1757/58, p. 43), although they count as circulating media. When Harris states his version of the quantity theory, saying that "*... the value of a given sum of money will be always pretty exactly, in a reciprocal proportion to the sum total, or the whole quantity in circulation ...*", (Harris, 1757/57, p. 68) he includes in the 'sum of money' private and public bills, or 'substitutes of coins', even considering the possibility paper-bills might become 'artificial substitutes', or paper-bills that have "*... no bullion locked up in their stead...*". (Harris, 1757/58, p. 95-96)³²

In another context, in addressing banks, Harris admits that hundred percent reserve banks are safe and quite convenient, but the emission even of 'bills of undoubted credit' should be kept under control, because they can increase the quantity of circulating cash 'beyond its natural level', and also endanger credit. In the same thread, he concluded that bills of exchange are useful, as far as they spare costs of transporting money in internal and international trade. However, bills of exchange are substitutes for bullion, and '*... as much a commodity as bullion...*', (Harris, 1757/58, p.120), in the sense their value oscillates. This is an additional reason to separate them from money.

Harris' *An Essay upon Money and Coins* is a sort of paradoxical text because, having been written in the second half of the eighteenth century, it assumes the variety of credit instruments a developed monetary system holds, hardly mentioning credit, and not taking into consideration the meaning and consequences of fractional reserve banking. Yet, many decades earlier, Charles Davenant had been more specific. Combating scarcity of money, he urged the necessity of creating "*... something in the room of money ... make it in common estimation of equal, if not*

³¹ "*Money also differs from all commodities in this, that, as such, its value is permanent or unalterable; that is, Money being the measure of the values of all other things, and that, like all other standard measures, by its quantity only; its own value is to be deemed invariable...*". (Harris, 1757/58), p.40.

³² In its effects, Harris is equating debasement to "*... bills (be) passed to a greater value than there is bullion in their stead.*" (Harris, 1757/58, p.98).

superior value to money itself.” (Davenant, 1697/98, PS p.3) In his defense of national credit, he saw the Bank of England initiatives, as well as the use of exchequer bills in commerce, as a valuable contribution to enhance the supply of money. Bills of the exchequer in fact “... had ... gained that common estimation to be preferred to money...”. (Davenant, 1697/8, PS, p.9)

Davenant was making a defense of credit, proposing its ‘restoration’, and had certainly been influenced by his master, Petty, who, in many writings, proved his awareness of credit and of the possibility instruments other than specie were used as money.³³ Indeed, *Political Arithmetick* (1696) contains a very clear statement about fractional reserve banking.³⁴ Davenant was certainly much more emphatic on credit than his contemporary Barbon, who, after acknowledging the importance of credit - “*Credit is a value raised by opinion, it buys goods as money does; and in all trading citys, there’s more wares sold upon credit, then for present money*”, (Barbon, 1690, p.8) - didn’t proceed, or didn’t go deeper in his treatment of credit. Although Barbon had a clear idea of how spread credit was, he was most of all interested in contrasting money (‘value made by a law’) to credit (‘value raised by opinion’).

Not even Montanari went much further. He mentioned giro-banks, acknowledged paper money and admitted that “...*there is almost no difference between the use of money and of merchant’s bills...*” (Montanari, 1683, p.77). Nevertheless, he scarcely mentioned credit, let alone considered its meaning deeply.

Galiani is a special case, because, in spite of his sophisticated perspective on money and of his non-Lockean stand in most monetary questions, he considered ‘intrinsic value’ an indelible property of money. The absence of ‘intrinsic value’ hampered non-metallic symbols permanent existence as money – they weren’t but temporary substitutes for specie.³⁵ According to him, gold and silver are not only ‘naturally money’: to a certain extent, they are irreplaceable.

By the way, Galiani defined money in at least two senses: i) “*Money is a common measure to allow us to know the price of all things.*” (Galiani, 1751, p.104); ii) Money is “... *pieces of metal the authority divides in equal or proportional parts, and that are quietly given and accepted as pledge and perpetual pawn of receiving from other, whenever wished, an equivalent of what was given in exchange of these pieces of metal.*” (Galiani, 1751, p.110) The first definition points to measure and to the relational character of price (and value); the second one, to the (im)possibility of keeping value along time - in short, the Lockean ‘pledge’ and ‘security’ trap. Curiously, this trap was in a good number of passages dismissed by the same Galiani, based on a strong argument: the value of all things, money included, fluctuates, this fluctuation doesn’t damaging money’s character of measure. What matters is the relative position of commodities. Relative positions are adequately measured by money, however its value changes – ‘value is a relation’, as Galiani insistently phrased.

Galiani’s ‘intrinsic value’ in some circumstances led him to dead ends, although he insisted in the relational character of value (including money’s value),

³³ “*Nor is Money wanting ... nor were in hand to substitute in the place of Money ... what should be equivalente unto it.*” (Petty, 1691, p.14)

³⁴ In discussing the quantity of Money necessary to circulation, Petty argues that there are substitutes to hard cash. See Coutinho (2012).

³⁵ “... *for this reason, no country can use leather and paper-money as money for a long period.*” (Galiani, 1751, p.111)

and was certainly aware of the importance of commercial bills, banking activities and paper money. These instruments and institutions are quite well described in a chapter on ‘representations of money’ (Galiani, 1751, Book IV, chapter IV), that suggestively begins by a clear-cut statement of the role of public and private debts in creating money - “*The representations of money aren’t but expressions of a debt*” (Galiani, 1751, p.310). However, the possibility written documents became counterfeited was a strong preoccupation – and this possibly is the reason of Galiani’s frequent appeal to ‘intrinsic value’, in discussing credit documents as alternatives to specie.

Let us go back to the tale of the origins of money, from barter to stamped money, or even to ‘substitutes’ of money, as paper money. In this tale, a crucial passage is the choice (by ‘common consent’, or by any means) of a unique symbol or material to personify money, in order not only to facilitate exchanges, but to make them feasible in general – to create a Smithean ‘commercial society’, which implies a common measure. Thus, money necessarily implies its general acceptability as measure, that is, as an instrument able to express the ordering of commodities along their value spectrum. In reality, this ‘choice’, the singling out of a commodity as money, many times implies a state action. Rulers not only guarantee the metallic content of the instrument (public coinage), as economists admit, but press the enforcement of this instrument, by pushing it through all transactions; for instance, by establishing (by law) that contracts should be firmed up in the monetary unit, as well as debts should be extinguished or liquidated in national money and/or taxes paid in money. In short, common consent is not always enough, and public action is many times called forth in order to impose a monetary unit, which doesn’t imply Knapp’s or any other author concept of ‘state money’.³⁶

However, the stability of this monetary unit cannot be guaranteed. As a matter of fact, if we think of debasement, the metallic content of the instrument is always at risk. Additionally, the value of money oscillates, be it due to debasements, be it because the values of gold and silver fluctuate. Here lays the temptation to firm up contracts in metal weight (as Harris proposed), or to suppose any contract, although expressed in national monetary standard or in national currency, presupposes determinate weight in pure precious metal (Locke).

Galiani, once more, annuls this illusion: “... *the majority of authors affirms that the devolution of an equal weight is in accordance with natural justice, being the subjects not obliged to obey the prince (whenever the standard changes)*”. These authors are wrong, he proceeds. “*The fact of the intrinsic value being almost as variable as the extrinsic, destroys all equality*”. (Galiani, 1751, p.347). And Galiani adds that, in a hundred years span, all values change – that is, the ordering of commodities itself is mutable. This sort of intrinsic instability of prices and, to some extent, of monetary systems, neither blocks contracting nor unsettles monetary order.

I’ve tried to argue that, however questionable in their logic, arguments about weight, need of a stable measure, unreasonableness of debasement, character of the stamp, etc, are the basis of seventeenth and early eighteenth century monetary economics. I venture these questions project themselves into middle and late eighteenth century economics – Harris is well representative of this guess -, but this is a matter for additional and specific studies. In this paper, I’ve tried to show that these

³⁶ On ‘state money’, see Knapp (1924) and Karimzadi (2013).

disputed questions represented more than theoretical quibbles: they were grounded on the reality of the monetary systems of the times, especially in the ‘ideal money’ / ‘real money’ divide. In the same line, the permanent concern with ‘measure of value’ is not only an Aristotelian reminiscence. It is an exigency of a complex monetary system, that had as a structural element the coexistence of national monetary standards and coins proper, not to mention the fact that gold and silver are commodities that have specific and variable market prices.

If my guesses are correct, we have new clues to understand the inception of monetary economics, and especially, the difficulties of ‘credit theories of money’ (Schumpeter, 1954; Arnon, 2011) imposing themselves in early monetary theory. To put it simply, the admission that credit is money doesn’t efface the complexities of the monetary systems of the times, which comprise unstableness of monetary standards, scarcity of money, mint rate, price of bullion, international flows of commodities and money... These were the complex facts monetary economists of the period 1650-1750 were concerned with.

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