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Would a state monopoly over money creation allow for a reduction of national debt? A study of the 'seigniorage argument' in light of the '100% money' debates

Samuel Demeulemeester

École Normale Supérieure de Lyon (Triangle)

samuel.demeulemeester@ens-lyon.fr.

Abstract

This paper discusses the 'seigniorage argument' in favor of public money issuance, according to which public finances could be improved if the state more fully exercised the privilege of money creation, which is, today, largely shared with private banks. This point was made in the 1930s by several proponents of the '100% money' reform scheme, such as Henry Simons of the University of Chicago, Lauchlin Currie of Harvard and Irving Fisher of Yale, who called for a full-reserve requirement in lawful money behind checking deposits. One of their claims was that, by returning all seigniorage profit to the state, such reform would allow a significant reduction of the national debt. In academic debates, however, following a criticism first made by Albert G. Hart of the University of Chicago in 1935, this argument has generally been discarded as wholly illusory. Hart argued that, because the state, under a 100% system, would be likely to pay the banks a subsidy for managing checking accounts, no substantial debt reduction could possibly be expected to follow. The 100% money proponents never answered Hart's criticism, whose conclusion has often been considered as definitive in the literature. However, a detailed study of the subject reveals that Hart's analysis itself appears to be questionable on at least two grounds: the first pertains to the sources of the seigniorage benefit, the other to its distribution. The paper concludes that the 'seigniorage argument' of the 100% money authors may not have been entirely unfounded.

Keywords

Seigniorage, Public Debt, Money Creation, 100% Money, Chicago Plan, Irving Fisher

JEL Codes

B22; E42; E50; E51; E69 ; H60; H69.

Introduction

The privilege of issuing money is usually regarded as a prerogative of the sovereign. One reason for this is that it gives rise to a form of profit—called 'seigniorage'—which only the state, as embodying the general interest, appears legitimate to claim. In modern monetary systems, however, the exercise of money creation is shared between the (usually state-owned) monetary authority[1], on the one hand, and (usually private) commercial banks, on the other. This implies, of course, that part of the seigniorage benefit is given up by the state. Such consideration led David Ricardo, in his time, to call for a state monopoly over the issuance of paper money, and the transformation of the (then privately owned) Bank of England into a public National Bank. In the 1930s, a similar consideration formed part of the argumentation in favor of the '100% money' proposal put forward by a number of economists in the United States, most notably Henry Simons of the University of Chicago—who mainly designed the so-called 'Chicago Plan' of banking reform—, Lauchlin Currie of Harvard, and Irving Fisher of Yale[2]. These authors argued that the state's issuing monopoly should be extended to all means of payment, including, in particular, transferable ('checking') deposits. Writing in the context of the Great Depression, their main argument for the 100% scheme was that it would put an end to the inherently pro-cyclical behavior of deposit currency, which, they argued, would keep expanding or contracting cumulatively as long as it depended on bank loans. What may be called the 'seigniorage argument', according to which the recapture by the state of the full profit from money issuance would make it possible to reduce the national debt, was a secondary claim of the 100% money proposal. It has nonetheless been discussed and criticized in the literature—in the first place, as we will see, by one of the very co-authors of the Chicago Plan, Albert G. Hart, who argued in 1935 that this claim was wholly illusory because the state, under a 100% system, would have to take on the costs of administering checking deposits. His criticism has been widely endorsed since then, and seems to have become a definite refutation of the seigniorage argument attached to the 100% plan. Yet, as this paper argues, a thorough study of the arguments to be found in the literature reveals that Hart's conclusion itself appears to be questionable. Such a study requires reconstructing—

[1] The function of monetary authority is usually fulfilled by a public institution, typically a state-owned central bank, sometimes acting in cooperation with the Treasury. Even in cases where the central bank is privately owned—such as, for example, the Federal Reserve Banks in the United States—most of the net seigniorage revenue (with allowance for a certain percentage to be retained) is transferred to the Treasury.

[2] See especially Simons *et al*. ([1933] 1994), Currie ([1934] 1968) and Fisher ([1935] 1945). On the history of the 100% money proposal, one can refer in particular to Phillips (1995).

and, to some extent, interpreting—the whole debate about the claim of the 100% money reform to reduce national debt. The views on this matter were often briefly expressed, with no detailed argumentation. Neither the 100% money authors nor their critics provided any clear definition of the seigniorage concept, and even the term *seigniorage* itself was barely used. Nor were the different kinds of benefit stemming from money creation always clearly distinguished. Finally, the criticisms addressed to the seigniorage argument have never been explicitly answered by the 100% money proponents—although, as we shall argue, their writings did contain elements which could have been used to reply to their critics. This paper is organized as follows. By resorting to the more recent literature on seigniorage, we will first endeavor to clarify how seigniorage can be defined, and to whom it initially accrues under the existing monetary system (Section 1). Using this analytical framework, we will then consider the 100% money proposal of the 1930s and its claim to reduce national debt (Section 2), before turning to the refutation of that claim provided by Hart in 1935 (Section 3). Finally, we will consider two kinds of arguments which, in our view, should lead to a reconsideration of the consensus reached on Hart's conclusion (Section 4).

1. Money creation and the seigniorage benefit

This first section, mostly building on recent literature, aims to provide a clear definition of the concept of seigniorage—which was unfortunately missing from the 100% money debates—as well as a formulation of its initial distribution. This will set the analytical framework used in the following sections.

1.1. Defining seigniorage

Seigniorage is usually and broadly defined as the revenue stemming from money creation. It gets its name due to the fact that "it accrued to the *seigneur* or ruler who issued the currency, in early times" (Black 1987, p. 9086, italics in original). Although a majority of economists today agree that most of the money supply is created by private banks, and not by the state and its central bank, the term *seigniorage* generally continues to be used in the narrow sense of the revenue stemming from *base money* creation only. The reason for sticking to this narrow scope is unclear. In this paper, *money* (or *currency*) will be defined as a synonym for means of payment, whether generally or only commonly accepted in the settlement of

transactions, in accordance with Fisher's latest definition[3]. *Seigniorage* will be defined as the financial benefit directly stemming from any type of money creation, whether exercised by public or private issuers. By *directly*, we mean to exclude any profit indirectly stemming from money creation, such as, for example, the revenue gained from an inflation of the general price level following an excessive issuance of money. The so-called *inflation tax* is often confused with the seigniorage revenue. We argue that the two concepts are different. On the one hand, seigniorage—as defined in this paper—does not presuppose any rise in the price level to be positive; it simply requires that the money supply be increased, whether or not this leads to inflation. On the other hand, the inflation tax—defined as the profit gained from wealth transfers caused by a rising price level—does not benefit the issuer(s) of money exclusively, nor does it damage the holders of money exclusively. It more generally benefits what Fisher (1934, p. xxi) called "the debtor and debtor-like classes", who gain from inflation what is correspondingly lost by the creditor and creditor-like classes—and conversely in the case of deflation. The fact that inflation is typically caused by excessive money creation, and that it may benefit the issuer of money more than others (due to a possible 'Cantillon effect'), should not, in our view, preclude distinguishing between these different concepts.

As Reich (2017) has recently argued, different measures of seigniorage should be used depending on the currency regime under consideration. He distinguishes between a *fiat currency* regime, based on "a currency which is supplied through government spending and removed from the market via taxation" (p. 7); a *credit currency* regime, "in which the currency is supplied to the public via lending" (p. 8); and a *commodity currency* regime, "in which a commodity is the basis of a currency which can be minted or coined at will" (p. 9).

The issuing of fiat currency, as Reich (2017, p. 100) notes, "may be done by literally printing the currency or by selling nonredeemable bonds to the central bank, which then creates the currency and transfers it to the treasury's account". In this case, the Government is not only spared the repayment of the bonds in question, but also the corresponding interest charge, the latter being transferred back from the central bank to the Treasury. Fisher ([1935] 1945, pp. 206-207) already noted in his time that, should the monetary authority buy bonds from the Government, "the two opposite payments would be bookkeeping offsets against each other. This would apply to principal as well as interest". In this paper, in line with Fisher's

[3] "Money is any form of property which is commonly used as a means of exchange for other forms of property—in short, as a means of payment. It includes the ordinary 'pocket-book money' and also what may be called 'check-book money'" (Fisher, unpublished paper, dated February 26, 1947, p. 1). Currie ([1934] 1968, p. 11) used a very similar definition.

view, we will consider the seigniorage stemming from the issuance of fiat currency (S_F) to comprise two parts, which we will call *seigniorage proper* (S_{F1})—corresponding to the avoided principal repayment—and *saved interest seigniorage* (S_{F2})—corresponding to the avoided interest charge[4].

Seigniorage proper (S_{F1}) corresponds to the value of money created through spending by the issuer, net of its cost of production[5]. Because the production cost, in the case of fiat currency, is close to zero, seigniorage proper then roughly corresponds to the full value of the issued money—as Ricardo ([1816] 1951:4, p. 114) already observed long ago: "Paper money may be considered as affording a seigniorage equal to its whole exchangeable value". In this case, then, the nominal amount[6] of seigniorage proper stemming from the issuance of fiat currency during a given period t can be considered as equal to the whole net amount of fiat currency issued during this period[7]:

$$S_{F1,t} = \Delta M_{F,t} \tag{1}$$

Saved interest seigniorage (S_{F2}) corresponds to the interest charge saved by the issuer of fiat currency, who can freely spend money which otherwise would have had to be borrowed at interest[8]. Its nominal amount for a given period t can be measured by multiplying the

[4] In this, while following the view expressed by Fisher in the above citation, we differ from Reich (2017, p. 49) and most of the literature on seigniorage, which generally restrict the profit stemming from fiat money issuance to the sole revenue here referred to as 'seigniorage proper'.

[5] This is in line with the traditional definition of seigniorage as "the excess of the face value over the cost of production of currency" (Black 1987, p. 9086). Historically, in the case of commodity currency, seigniorage proper referred to the difference between the commodity value and the face value of minted coins.

[6] We are using nominal values throughout this paper, not only for simplicity, but also because the 100% money proposal, on which the paper focuses, would typically (although not necessarily) be combined with a price-level stabilization policy, which, if successfully implemented, would make nominal values correspond to real values. This is one more reason why the 'inflation tax' issue is not discussed in this paper.

[7] Similar calculation methods, usually expressed in real values, are used, for example, by Cagan (1956, p. 78), Friedman (1971, pp. 848-49), Klein and Neumann (1990, p. 211), Schobert (2003, p. 917), Makinen (2005, p. 357), Buiter (2007, p. 3), Walsh ([1998] 2010, p. 138), Blanchard (2017, pp. 468-69) and Reich (2017, p. 49).

[8] As Ricardo ([1824] 1951:4, p. 277) noted: "It is evident . . . that if the Government itself were to be the sole issuer of paper money, instead of borrowing it of the Bank . . . the Bank would no longer receive interest, and the Government would no longer pay it". Frank D. Graham (1936, p. 434) argued along the same line, in regard to checking deposits: "The government is thus put in the ridiculous position not only of divesting itself of its prerogative in favor of the banks, and of losing the seigniorage profits on the new supply of money, but of actually paying the banks, in interest-bearing securities, for issuing bank-debt money on its behalf". See also Kregel (1996, pp. 655, 666n9) for a very similar remark.

variation in the stock of fiat currency ($\Delta M_{F,t}$) by the rate of interest which would have applied should the corresponding sum have been borrowed (i)[9]:

$$S_{F2,t} = i\Delta M_{F,t} \tag{2}$$

Hence, the total gross seigniorage accruing to the issuer of fiat currency during a given period t may be regarded as equal to the sum of these two gains[10]:

$$S_{F,t} = S_{F1,t} + S_{F2,t} = \Delta M_{F,t} + i\Delta M_{F,t} = (1+i)\Delta M_{F,t} \tag{3}$$

From this total, the costs of operating the monetary system could be subtracted so as to get a measure of the net seigniorage profit (sometimes called *fiscal seigniorage*[11]) actually benefitting the Treasury.

Such fiat currency regime, as we will see in section 2, would fully apply under a 100% money system, under which all new money would be "spent into existence by the state instead of, as at present, being lent into existence by the private companies" (Fisher, letter to President F. D. Roosevelt, May 14, 1937, reprinted in Fisher 1997, Vol. 14, p. 170)[12].

However, under the existing monetary system, money is created partly by spending, and partly by lending or investing, whether by the state or by the banks. To the extent that it is 'spent into existence' by the banks when simply paying for expenses, the same method of measuring seigniorage as the one used for state-issued fiat currency can probably be used[13]. To the extent that it is 'lent (or invested) into existence'—whether by the state or by the

[9] This simple measure, however, supposes that all of the avoided interest charge is saved during period t. Taking account of avoided loans which would have run over several periods would require using a more complex method. In any case, this 'saved interest seigniorage' should not be confused, as is sometimes done, with the seigniorage revenue accruing in the form of interest to the issuer of a credit currency. Fiat currency, indeed, may remain in circulation for an indefinite time period after it has been spent, and should probably not be regarded as affording saved interest seigniorage during its whole existence.

[10] If the state, for example, were to issue $1 million during a given year, thereby avoiding contracting a one-year loan of the same amount at, say, 5% interest, it would have gained not only the $1 million of avoided debt principal repayment (S_{F1}), but also the $50,000 of avoided interest charge (S_{F2}) by year-end. The total seigniorage benefit (S_F) would then amount to the full sum of $1,050,000.

[11] See, for instance, Klein and Neumann (1990, p. 210) or Reich (2017, p. 4).

[12] Of course, part of the money supply, under a 100% system, might still be 'lent into existence' by the monetary authority, if the latter, for example, were authorized to rediscount commercial paper with newly created money. This option, however, was clearly not favored by the 100% money authors, except, possibly, "as a safety valve in cases in which the banks could not themselves readily afford accommodation in sufficient volume or with sufficient promptness" (Fisher [1935] 1945, p. 88).

[13] Of course, checking deposits created by banks may always be destroyed when converted into cash. As with other forms of money, the related seigniorage is then positive only insofar as more money is created than is destroyed.

banks—on the other hand, another method, pertaining to the case of credit currency, should be used.

The seigniorage revenue stemming from the issuing of credit currency corresponds to the profit earned by lending or investing it[14]. For a given period *t*, the nominal amount of *credit currency seigniorage* (S_C) may then be measured as follows:

$$S_{C,t} = iM_{C,t} \tag{4}$$

where M_C represents the outstanding stock of credit currency, and *i* the rate of return on the asset portfolio acquired with that stock[15].

1.2. The distribution of seigniorage: public versus private issuance of money

From the definition of seigniorage given above, it follows that the revenue stemming from money creation is shared between the different issuers of means of payment. Under the existing monetary system—which Fisher ([1935] 1945) called the '10% system'—the total money supply (M) can be regarded as a mix of *state-created money* (M^S), issued by the (usually public) monetary authority, and *bank-created money* (M^B), issued by the banks—that is:

$$M = M^S + M^B \tag{5}$$

As Figure 1 illustrates, M^S corresponds to the set of lawful money (Mo)—including coins, notes, and central bank deposits—partially overlapped by the set of bank deposit currency (M')[16] insofar as checking deposits are covered by reserves in lawful money. M^B then corresponds to the non-covered part of M', created out of loans and investments—that is:

$$M^B = M' - (Mo \cap M') \tag{6}$$

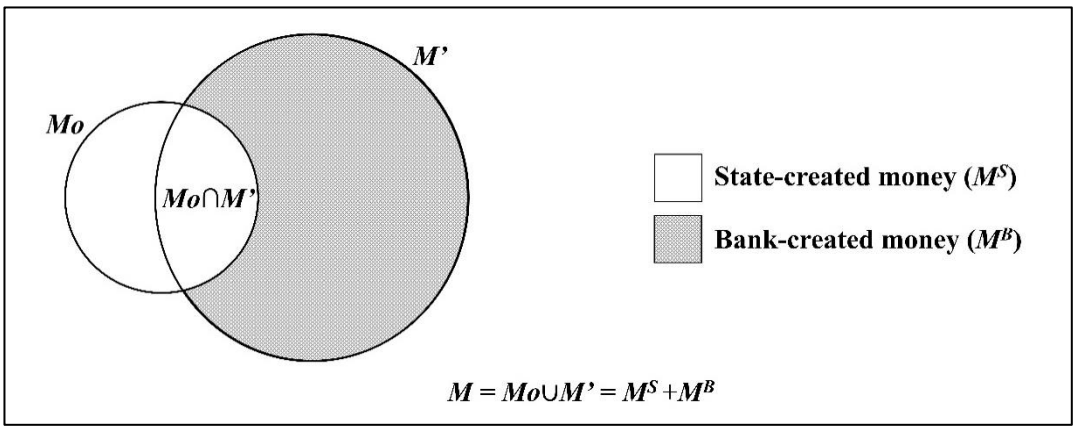
[14] See Reich (2017, p. 82), although he restricts the use of the term *currency* (including *credit currency*) to legal tender money. He concludes his book, however, by asking: "If seigniorage is due to the purchasing ability bestowed upon currency, then is there a seigniorage-like revenue from the supply of current accounts, i.e., the creation of bank money by crediting private accounts? This question will be addressed in future research" (Reich 2017, p. 147). See also Goodhart (1988, p. 21, italics in original) who noted, in respect to bank notes: "Even when private note issues are *not* legal tender, the issuers obtain seignorage, i.e., the margin between the rate of interest, generally zero . . . on the notes and the interest on the (default-free) assets held by the private note issuers against such note liabilities".

[15] Similar calculation methods, usually expressed in real values, and sometimes designating *i* as the (risk-free) rate of interest, are used, for example, by Klein and Neumann (1990, p. 209), Schobert (2003, p. 917), Buiter (2007, p. 3), Walsh ([1998] 2010, p. 139) and Reich (2017, p.82).

[16] Historically, of course, bank money also included private bank notes before note issuance became a state monopoly in most countries.

Figure 1. State-created versus bank-created money under the existing '10% system'

(adapted from Demeulemeester 2018, Figure 1, p. 363)



Along the same line of reasoning, we will designate S^S as the part of seigniorage accruing to the state, and S^B as the part of seigniorage accruing to the banks and their customers. We will thus have, for any given period t:

$$S_t = S^S_t + S^B_t \tag{7}$$

The importance of S^S_t relatively to S^B_t will of course depend on the part of state-created money in the newly created money supply ($\Delta M^S_t / \Delta M_t$)[17].

The portion of seigniorage accruing to the banks and their customers (S^B_t) represents the amount of revenue which, according to the 100% money proponents, could benefit the state instead, if the monetary authority were to exercise a complete monopoly over money creation.

2. The 100% money proposal and its claim to reduce national debt

2.1. The 100% money proposal: making money issuance a monopoly privilege of the state

The issuance of money by private banks has been criticized early on in the literature, on the grounds that only the state should be allowed to benefit from the seigniorage revenue. Such consideration led David Ricardo, from 1815, to question the note-issuing privilege of the Bank of England, then a privately-owned institution:

> I think the Bank an unnecessary establishment getting rich by those profits which fairly belong to the public. I cannot help considering the issuing of paper money as a

[17] According to Cagan (1956, pp. 78-79): "Typically, institutions other than the government also have the authority to issue money. . . . The government's share of total revenue depends on the proportion of money issued by governmental agencies".

> privilege which belongs exclusively to the state.—I regard it as a sort of seignorage . . . (Ricardo, letter to Malthus, September 10, 1815, in Ricardo 1951:6, p. 268)

He went on to argue that "so considerable an advantage might be obtained for the state" if only the latter became "the sole issuer of paper money" (Ricardo, [1816] 1951:4, p. 114)[18]. That would be the essence of his 'Plan for a National Bank', under which independent Commissioners would be appointed, "in whom the full power of issuing all the paper money of the country sh[ould] be exclusively vested" (Ricardo [1824] 1951:4, p. 285; see also [1817] 1951:1, pp. 361-63).

Ricardo's plan, however, stopped short of considering other means of payment, such as transferable bank account balances. The idea of extending the state issuing monopoly to 'checkbook money' emerged later in the 19th century, and would be at the heart of the '100% money' proposal of the 1930s[19]. In the context of the Great Depression in the United States, economists such as Henry Simons of the University of Chicago (Simons *et al*. [1933] 1994; Simons [1934] 1948)[20], Lauchlin Currie of Harvard ([1934] 1968) and Irving Fisher of Yale ([1935] 1945) called for a 100% reserve requirement, in lawful money, behind all bank deposits subject to check. The privilege of issuing money would be exclusively vested with an independent monetary authority (the "Currency Commission" in Fisher's plan, echoing Ricardo's "Commissioners"), which would manage the money supply according to a policy objective to be decided by Congress—such as, typically, price level stability (see Fisher [1935] 1945, pp. 96-97; Simons 1936, p. 21). Unlike Ricardo's plan, the 100% money proposal was not primarily motivated by the consideration of returning all seigniorage profit to the state. Its main objective was rather to stabilize the economy, by divorcing the creation (destruction) of money from the extension (contraction) of bank loans, the association of which was viewed as a source of cumulative processes largely responsible for booms and depressions. Returning the full benefit of seigniorage to the state, however, was clearly

[18] Léon Walras ([1885] 1898a, pp. 47-48, my translation) would also note that, should all private bank notes be replaced by state-created money in the circulation, then "if the circumstances were favorable, one would thereby find a way of amortizing a considerable portion of the public debt" [*"si les circonstances sont favorables, on pourra trouver là le moyen d'amortir une notable partie de la dette publique"*].

[19] One can find this reform idea already expressed by such writers as Charles H. Caroll (writing in 1860, see Mints 1945, pp. 154-56), Léon Walras (1898b, pp. 376-98), Ludwig von Mises ([1912] 1953, p. 408) and Frederick Soddy ([1926] 1933, pp. 171-73). However, it only started being actively discussed in the 1930s.

[20] Simons was the main author behind the 'Chicago Plan' for banking reform, first presented in a series of memoranda privately circulated in 1933, which he co-authored with Garfield V. Cox, Aaron Director, Paul H. Douglas, Frank H. Knight, Albert G. Hart, Lloyd W. Mints and Henry Schultz.

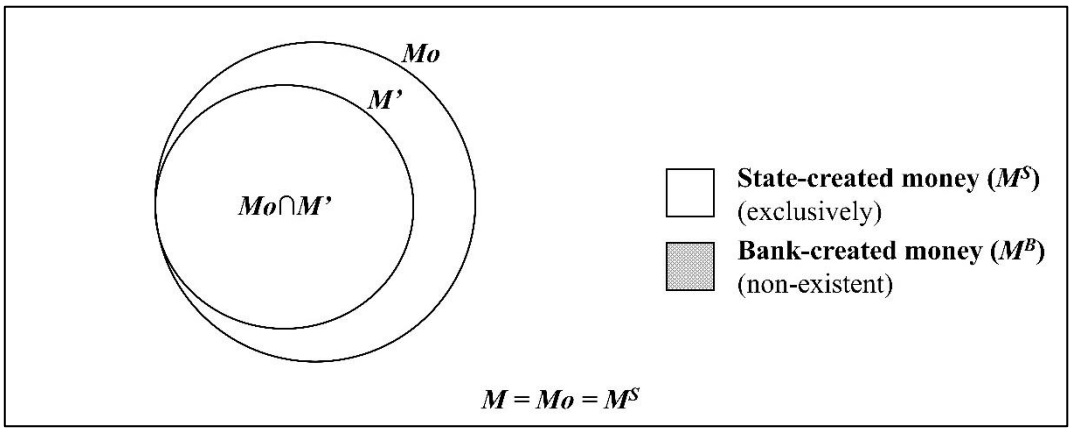
claimed to be an additional advantage of the scheme. As Simons *et al*. ([1933] 1994, p. 38) argued, for example:

> If provision is to be made for continuous injection of new "money", whether in the form of deposits or notes, the scheme must seem preposterous unless the new money is to be created and issued by the government. . . . When new, effective money is "issued", assets will be received in exchange; and there is little sense in any scheme whereby these assets fall to private institutions. We wish to call attention especially to this point. It seems of decisive importance; but it appears never to have occurred to most students of banking and currency policy.

Under a 100% money system, as illustrated in Figure 2, bank deposit currency (M') would be fully covered by reserves in lawful money (Mo), so that the total money supply would then equal the monetary base: $M = Mo \cup M' = Mo$. In this way, the part of state-created money (M^S) in M would be raised to 100%.

Figure 2. The '100% system' consisting of state-created money exclusively

(adapted from Demeulemeester 2018, Figure 2, p. 373)



The 100% money reform, it was argued, would allow the state to increase its seigniorage revenue and thus reduce its debt[21]. Such claim rested on two grounds, which have not always been clearly distinguished in the literature. First (as we will see in Section 2.2), there would be an initial substantial gain (which we call the 'transition seigniorage') to be made by the state during the installation of the new system, as the whole existing stock of bank-created

[21] The claim that the 100% money proposal would increase the net revenue of the state (and thus make it possible to reduce the national debt) was expressed, in particular, by Soddy ([1926] 1933, p. 171), Simons *et al*. ([1933] 1994, p. 33), Simons ([1934] 1948, p. 62; 1946, p. 87), Currie ([1934] 1968, pp. 153-54), Lester (1935, p. 38), Fisher ([1935] 1945, pp. 11, 206-207; 1936, pp. 415-16), Douglas (1935, p. 185), Graham (1936, pp. 430-34), Douglas *et al*. (unpublished memorandum dated July 1939, pp. 26-29), Friedman ([1960] 1992, p. 71) and Allais (1967, pp. 16-25; 1975, pp. 131-32; [1977] 1989, p. 182; 1987, p. 519). More recently, see also Benes and Kumhof (2012, p. 55), Jackson and Dyson (2012, p. 260), Grjebine (2015, pp. 39-48), or Huber (2017, p. 176).

money would be replaced with state-created money. Second (as we will see in Section 2.3), once the system was in place, the state—and only the state—would fully benefit of the whole seigniorage revenue stemming from each subsequent increase in the money supply.

2.2. The 'transition seigniorage' and the claim of substantially reducing national debt by installing the 100% system

The 100% money authors, in arguing that their reform plan would make it possible to reduce the national debt, stressed the particular gain to be realized by the state when installing the new system—as illustrated by the quotations provided below. During the transition phase, an outstanding amount of lawful money would have to be issued to provide the banks with the required 100% reserves behind checking deposits. State-created money (M^S), in other words, would be extended so as to fully displace bank-created money (M^B) in the total money supply (M). If the system were to be installed during period t, the related variation of M^S would then be equal to the outstanding amount of bank-created money at the end of the preceding period t-1:

$$\Delta M^S_t = M_{t-1} - M^S_{t-1} = M^B_{t-1} \tag{8}$$

Using equations (3) and (8), the resulting *'transition seigniorage'* (S_T)—as we propose to call it—might then be measured in the following way:

$$S_{T,t} = (1+i)\Delta M^S_t = (1+i)M^B_{t-1} \tag{9}$$

The 100% money proponents claimed, on this ground, that the adoption of their scheme would allow for a substantial, and almost immediate, reduction of the national debt. Hence, according to the Chicago Plan economists:

> At the end of the transition period, the Reserve Banks should find themselves in possession of additional investment assets (perhaps exclusively bonds) about equal in value to the amount of the present federal debt. Since the earning of the Reserve Banks would belong to the government, the entire burden of the present federal debt might thus be eliminated—without taxation and without inflation! (Simons *et al*. [1933] 1994, p. 33; see also Simons, [1934] 1948, p. 62)

Fisher expressed a similar argument:

> [I]n the midst of a money famine, the Government, due to the same partial reserve system, has sold billions of bonds to banks in order that these banks should manufacture new check-book money and get paid tribute for it into the bargain, the payment being the interest on the bonds. Thus have we moved away from the 100% system and the recapture of sovereign rights . . . One way [to reverse all this] would be to provide the banks with the needed 100% reserve . . . by buying back the

> Government bonds they hold in exchange for the new reserve money. . . . In that way most of the Government debt could be paid almost over night. This would be one of the main immediate advantages of introducing the 100% system. (Fisher, 1936, p. 415; see also Fisher [1935] 1945, p. 206)

However, such rapid (if not immediate) reduction of the national debt on so large a scale, through the purchase of outstanding Government bonds, might prove disruptive for the banks. James W. Angell (1935, p. 11), among others, pointed out that, if the transition were to be implemented in this way, "the commercial banks will be made to 'sell' their most marketable (and much of their best) assets to the Commission", and, as a result, "[t]he protection now given time and savings depositors in the commercial banks will thus be seriously reduced"[22].

For this reason, most proponents of the 100% scheme favored more amenable ways of implementing the transition. One of the solutions proposed by Fisher was to provide the banks with the newly required reserves via a loan from the Currency Commission:

> Perhaps the ideal method of treating the displaced assets would be to regard them as still belonging to the banks but held as collateral by the Currency Commission or Federal Reserve Banks, in consideration of a *loan* to the commercial banks of the new cash. . . . [T]he interest on the loan might be zero and the repayment distributed over a long term, say one tenth each year for 10 years. (Fisher, 1935, pp. 140-41, italics in original)[23]

In this way, although the transition to the 100% system would be immediate, the surrendering of Government bonds by the banks to the Currency Commission, in exchange for the newly required reserves, would only take place gradually. The 'transition seigniorage', however substantial it might be, would then allow for a gradual, rather than immediate, reduction in the national debt. It might even be cancelled out, should the newly required reserves be simply given, instead of lent, to the banks—an option contemplated at some point, for instance, by Fisher (1935, p. 141n2) or Angell (1935, p. 30)[24].

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[22] A similar point had previously been made by Currie ([1934] 1968, p. 153).

[23] A very similar solution was put forward by Angell (1935, p. 30): "I propose that the commercial and Federal Reserve Banks give to the United States government a general prior lien on their total assets equal to the value of the new currency received. This lien will carry no interest, and will be repaid or otherwise extinguished only slowly, if at all".

[24] Fisher repeatedly insisted that the banks should be adversely impacted as little as possible by the reform, if at all. He justified his concern in the following terms: "There are many who might be inclined to ask why any sort of reimbursement is suggested for diminished earning power of the bank. . . . The answers are two. First, so far as possible, any sincere feeling . . . on the part of the bankers that they were being unjustly treated, should be removed. . . . Secondly, not only most professional bankers but all who hold bank shares, the general public, have bought those shares in good faith and have a

But even in this latter case, as we will now see, the 100% reform would still, according to its proponents, allow the state to reduce its debt through increased seigniorage revenue.

2.3. Seigniorage as a regular source of public revenue under the 100% system

The specific 'transition seigniorage' studied in Section 2.2 would only pertain to the *installation* of the 100% money system. Further seigniorage gains, however, would result from the regular *operation* of the system, whenever the money supply needed to be increased.

The monetary authority, under a 100% system, would issue money mainly by buying Government bonds, which would *de facto* be nonredeemable (or automatically renewed) so long as no tightening of the money supply was required. Only in the latter case would the Currency Commission ask the Government for their repayment (or refuse their renewal). But, as Fisher ([1935] 1945, p. 100) argued: "The buying [of securities by the Currency Commission] would predominate in the long run, because the growth of the country and of its business would continually require more money in order to sustain a given price level" [25]. The seigniorage revenue might therefore be expected to remain positive, and, under a 100% system, all of it would accrue to the state.

Under such system, as we saw in Section 2.1, the part of state-created money (M^S) in the total money supply (M) would always be equal to 100%. This implies that, for any positive variation of M occurring during a given period t, the part of the seigniorage revenue accruing to the state (S^S) would be maximized. We would have:

$$S^S_t/S_t = \Delta M^S_t / \Delta M_t = 1 \qquad (10)$$

This led the 100% money proponents to argue that in a growing economy requiring continual injections of new money, the Government would regularly benefit from seigniorage revenue. Hence, according to Currie:

> If the intention of the government were to maintain a stable price level this would probably call for a net addition to the supply of money over a period of years of from two to four per cent annually. This steadily increasing annual addition of money could

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'vested interest' which should be respected . . . They are 'innocent purchasers for value'" (Fisher, [1935] 1945, p. 158).

[25] Currie ([1934] 1968, p. 153) argued, in the same vein: "[A] curious thing is that a liability of the government which serves as money need hardly ever be met. In an expanding economy the quantity of money may be expected to increase indefinitely. Only occasionally will the government need to increase its interest-bearing debt or its taxes in order to extinguish or 'pay off' deposits."

> be used directly for the government expenses and in this way result in relatively lower taxes. (Currie [1934] 1968, p. 154)

In Fisher's view, this would allow the national debt to eventually be extinguished:

> Eventually . . . there would probably be a complete elimination of Government debt. . . . In the end, it is at least conceivable that, with prosperity uninterrupted by any or many great depressions, the Government's main receipts would eventually come from the Currency Commission, merely by virtue of its efforts to prevent deflation by putting new money into circulation as business grows. (Fisher [1935] 1945, pp. 207-208)

Simons (1946, p. 87) expressed very similar arguments[26].

Many commentators, however, denied that any debt reduction, whether immediate or gradual, would follow from the 100% money reform at all. We will now examine their arguments.

3. Hart's criticism, and the refutation of the claim that the 100% money proposal would allow for any reduction of national debt

The 100% money authors, while arguing that their reform plan would make it possible to reduce national debt, specified at the same time that this advantage would probably be limited somewhat, to the extent that the Government would be taking on the costs of administering checking accounts—which the banks could no longer finance out of the seigniorage revenue accruing to them. This consideration, as we will see, would lead one of these authors, Albert G. Hart of the University of Chicago—as well as many commentators after him—, to conclude that the advantage in question should therefore be regarded as wholly illusory.

It would obviously be wrong, of course, to suppose that, under the existing system, the banks are able to retain for themselves all of the seigniorage revenue stemming from bank-created money (designated as S^B in Section 1.2). This could be possible if there were a single bank in a position of monopoly—as was, to some extent, the Bank of England in Ricardo's

[26] "[These measures] would offer a long-term prospect of retiring our interest-bearing debt at a more rapid rate, and within a shorter period, than otherwise would be possible. Suppose that we shall need, for stability at a proper postwar price level, only 100 billion dollars of money and deposits, and that, with rising real income, this amount must be increased secularly at 3 per cent per annum to sustain the price level. It thus appears that (save for nominal 'interest' paid as subsidy for banking services) we might retire our present interest-bearing debt in 30-40 years merely by extra budgetary measures, i.e., without having any net excess of tax revenues over expenditures during that period. Our debt being what it is, the government clearly should reappropriate its prerogative of issuing the country's money."

time in respect to the issuing of bank notes[27]. Under competition, however, the banks are pressured to pass the bulk of this gain over to their customers, as was stressed by the 100% money authors themselves. Hence, according to Fisher:

> [T]he banks' original inherent advantage . . . has long since been exhausted. The really big profit was squeezed out long ago. The very effort, under competition, to get that profit has reduced it—by offering interest on deposits and otherwise. (Fisher, [1935] 1945, p. 155)

Thus, the additional seigniorage revenue gained by the state, should the 100% money system be adopted, would not simply be taken away from the banks. It would rather be gained, to a large extent, from the banks' customers, who can more properly be regarded as the actual beneficiaries of this profit under the present system.

The 100% money proponents—and their critics—have focused their attention on the case of checking depositors. Under the existing system, the seigniorage gained by the banks allows them to offer account management services in exchange for very low fees, if not for free. Under a 100% money system, however, the 100% reserve requirement behind checking deposits would no longer allow these particular deposits to be lent or invested[28]. The banks, therefore, would have to find other sources to cover the costs of administering checking accounts. Two main solutions were usually proposed. The first was to require each checking depositor to "pay a small service and warehouse charge to the bank for keeping his money and for keeping track of its transfers by check" (Fisher, [1935] 1945, p. 153); in this way, "[t]he cost would . . . go where it belongs; that is, those would pay who get the service" (Fisher, 1936, p. 415). The second was to have the costs "borne, in whole or in part, by the Currency Commission on the same principle of public service which has resulted in removing 'brassage' charges at the mint and substituting gratuitous coinage at the expense of the government" (Fisher, [1935] 1945, p. 153n1)—which would typically involve paying the banks a subsidy[29].

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[27] The Bank of England had then been enjoying a partial monopoly since the Acts of 1708 and 1709, which prohibited any other institution of more than six partners from entering the banking business in England.

[28] Under Currie's and Fisher's proposals, however, the banks would remain perfectly free to lend or invest money collected through non-transferable savings deposits. This was a major difference with the Chicago Plan, under which the banks would no longer exert any lending function whatsoever and be replaced, in that regard, with investment trusts. See Demeulemeester (2018).

[29] Fisher ([1935] 1945, pp. 153n1, 156-57) also considered the possibility of "letting the banks continue for awhile to receive the revenues from their displaced assets", by allowing them to temporarily retain part of their Government bonds as reserve. Another option was to have checking

The latter option was generally favored, for a reason explained by one of the co-authors of the Chicago Plan, Albert G. Hart—then a PhD student at the University of Chicago—, who commented extensively on the 100% money proposal in a 1935 article[30]:

> Two inferences may be drawn: that bankers would be willing to carry chequing accounts only subject to heavy service charges, and that they would be strongly tempted to devise means for making "savings deposits" in fact serve as means of payment. Bank customers, to avoid service charges, would be inclined to co-operate . . . [To keep down such practices] it would require a subsidy to bankers who carried chequing accounts, on such a basis as to prevent the growth of service charges to a point which would discourage the use of cheques. (Hart, 1935, pp. 113-14)

Currie[31] and Fisher[32] had themselves noted that, should such a subsidy have to be paid to the banks, the benefit gained by the state in the form of avoided service charges might be cancelled. Hart made essentially the same remark:

> In view of the present state of bank earnings and of the very limited opportunities for economy on expenses, it would probably be considered appropriate to make this subsidy substantially equivalent to the earnings on the assets the banks were obliged to sell. (Hart, 1935, p. 115)

He went further, however, adding in a footnote:

> This is the consideration which, as Professor Jacob Viner has suggested to the writer, destroys the claim that the '100 per cent. system' could be used to wipe out the national debt. (Hart, 1935, p. 115n1)[33]

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accounts administered by Government agencies (Currie ([1934] 1968, p. 151) or by the Post Office (see Hart 1935, p. 106). Still another suggestion, made by Friedman ([1960] 1992, pp. 71-75), was that the Government pay interest on the reserves held by the banks.

[30] Hart was also part, at that time, of the young economists temporarily recruited by the Treasury to work on monetary and banking studies, under the leadership of Jacob Viner – then special assistant to Secretary of the Treasury Henry Morgenthau (Phillips 1995, pp. 94-95). It is in his 1935 article that he coined the term 'Chicago Plan', which passed into posterity. Although he had himself been one of the eight co-authors of the Chicago memoranda of 1933, Hart held in this paper a very critical view of the proposal—but still concluded, at the time, that "reasoned advocacy of the '100 per cent. system' [was] possible" (Hart, 1935, p. 116). A decade later, however, he had changed his mind completely, arguing that "'100 Per Cent Money' should probably be written off as too shocking to be good practical counsel in foreseeable circumstances" (Hart, 1948, p. 449).

[31] "We must not make the mistake of assuming . . . that this represents a net social gain. If the government handles the deposits directly the expense involved must be deducted from the interest saved. If the existing organization is used it must be supported either by the government or by charges on depositors" (Currie, [1934] 1968, p. 154).

[32] "At first it might seem that this compensation would be very great—nearly equal . . . to the earnings from the assets bought by the Currency Commission. In fact, these earnings might seem to be the exact measure of the loss sustained" (Fisher [1935] 1945, p. 152). Fisher then added that the banks, under the improved business conditions which would prevail should the 100% system be adopted, would be likely to increase their profits, thereby reducing the need for a Government subsidy.

For this reason, Hart concluded that the claim that the 100% scheme would make it possible to cancel a large part of the national debt had to be considered as "illusory" and "fallacious" (pp. 105, 115).

The 100% money proponents never responded to this criticism and usually kept maintaining that their reform plan would allow the state to increase its revenue and reduce its debt. In academic discussions, however, many commentators would agree with Hart that, because of the need to subsidize banks for administering checking accounts, no substantial improvement of public finances (if any) could possibly follow from the 100% money reform. In other words, what we may call 'Hart's criticism' (or, perhaps, 'Viner/Hart's criticism') has become a "generally conceded point" in the literature, as G. R. Barber (1973, p. 122) observed[34].

Yet, as we will now see, although Hart's conclusion has not been much challenged, it appears to be questionable on at least two grounds.

4. The limitations of Hart's criticism: the need to consider all sources and beneficiaries of the seigniorage profit

According to Hart, as we saw, the claim that the 100% money scheme would reduce the national debt had to be regarded as wholly illusory, because the interest payments saved by the state (in the process of issuing money against its own bonds) would have to be transferred back to the banks (as a subsidy on checking accounts). Yet, even considering this latter equivalence to hold true—we saw that Currie and Fisher themselves, after all, seemed ready to admit it—, it should be noted that Hart's conclusion rested on two further particular

[33] It is worth noting that Viner, himself a prominent University of Chicago economist, never added his signature to the memoranda on banking reform circulated by his colleagues in 1933, although he thought "there [was] much to be said for the one-hundred-percent-reserve idea" (Viner, letter to Frank Taussig, October 20, 1934, quoted in Allen 1993, p. 710n26). Frank Knight, when addressing the first of these memoranda to the Roosevelt administration in March 1933, commented in his letter: "I think Viner really agrees but doesn't believe it good politics" (Knight *et al.*, letter to Secretary of Agriculture Henry A. Wallace, March 16, 1933, reprinted in Phillips 1995, pp. 191-92). In 1937, however, Fisher complained to Simons that Viner seemed to be an "obstacle" to getting support for the 100% plan in Washington (Fisher, letter to Simons, January 29, 1937, Simons Papers, University of Chicago Library).

[34] Hart's criticism has been shared, for example, by Angell (1935, p. 14), Lehmann (1936, p. 55), Watkins (1938, pp. 41-42), Brown (1940, p. 311), Thomas (1940, p. 316), Higgins (1941, p. 93), Reeve (1943, p. 321), Hansen (1946, p. 71), Chapin (1959, p. A2.13), Tolley (1962, p. 280), Market (1967, pp. 100, 205), Barber (1973, pp. 121-22), McLane (1980, pp. 96-97) and, more recently, Fontana and Sawyer (2016, p. 1346).

assumptions, which, as we will see, appear to be questionable. These pertain to the inflow (the sources) and to the outflow (the distribution) of the seigniorage benefit, respectively.

4.1. The sources of seigniorage: the need to consider all kinds of seigniorage profit

An initial limitation to Hart's criticism, which seems not to have been noted in the literature, relates to the *sources*—and, therefore, the estimated size—of seigniorage under a fiat currency regime. Hart seemed to suppose that the interest saved by the Government on its debt—which we have called *saved interest seigniorage* (S_{F2}) in Section 1.1—represented *all* the seigniorage benefit that would be gained by the state under a 100% money system. He did observe at some point that the avoidance of the debt principal repayment—which we have designated s*eigniorage proper* (S_{F1})—might be taken into account as well, however for some reason he clearly downplayed the significance of that gain:

> It would be possible, by converting the assets bought into government securities, to achieve a nominal cancellation of much of the principal of the debt. But the interest charge, which is the economic substance of the debt, would be replaced by the subsidy on chequing accounts. (Hart, 1935, p. 115n1)

His conclusion, therefore, that no debt reduction should be expected from the 100% money reform at all, only rested on a partial account of the seigniorage benefit Whatever reason led Hart to neglect the significance of S_{F1}, all of the commentators that endorsed his 'criticism' after him (see Section 3, note 34) would completely ignore this first source of seigniorage, and focus on the second source (S_{F2}) exclusively. This contrasted with the view held by the 100% money proponents, according to whom, as we saw in Section 2, the very amount of the newly created money (and not simply the interest charge avoided by its issuance) would add to the revenue of the state[35]. For this reason alone, one may wonder if the conclusion reached by Hart should not be questioned. A further reason, as we will now see, can be added.

4.2. The distribution of seigniorage: the need to consider all beneficiaries of the seigniorage profit

A second limitation of Hart's criticism, which hasn't been stressed in the literature either, concerns the *distribution* of the seigniorage benefit. Hart—and his followers—seemed to

[35] A further quotation by Douglas (1935, p. 185) may be added at this point: "In effect, therefore, the government would be able . . . to save the present interest payments of approximately one billion dollars a year. The government would also make an outright profit upon all fresh purchasing power which was created in addition to the original amount. . . . This would be in addition to savings upon the public debt of an approximately equal amount".

assume that, under the existing monetary system, *all* the seigniorage revenue accruing to the banks was used to cover the costs of administering checking accounts, the holders of which, therefore, were considered to be the sole ultimate beneficiaries of the seigniorage profit. It followed from this view that, should the state bear these costs in place of the banks, no net seigniorage gain would be left for the Treasury.

However, one may question the assumption that, under the existing monetary system, the banks would share the profits of seigniorage with only one part of their customers (i.e. checking account holders) to the exclusion of the others (e.g. savings account holders, borrowers, etc.). This point was made by Maurice Allais, who insisted that the profits stemming from bank-created money were "shared among a large number of participants: *depositors, borrowers and the banks themselves*" (Allais, 1987, p. 495, italics in original; see also 1975, p. 110; [1977] 1989, pp. 167, 182)[36]. Under the existing system, indeed, each class of bank customers may be regarded as benefitting from the seigniorage profit in one of the following ways[37]:

- *Checking depositors* can benefit from underpriced (if not free) services in the administration of their accounts (Allais, 1975, p. 110; [1977] 1989, p. 167). This point, as seen in Section 3, was generally conceded both by the 100% money advocates and their critics.

- *Savings depositors* (and, sometimes, checking depositors as well) can benefit from higher interest payments on their deposits than otherwise (Allais, 1975, p. 110; [1977] 1989, p. 167; 1987, p. 532; see also Fisher [1935] 1945, p. 155).

- *Bank borrowers* can benefit from lower interest rates on their loans than otherwise (Allais 1975, p. 110; [1977] 1989, p. 167; 1987, p. 532)[38].

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[36] Leland Yeager (1962, pp. 20-21) also expressed the view that "[t]he issue of money without 100 per cent reserve backing obviously offers a profitable opportunity to reap seigniorage", and that, under the present system, "competition parcels out the seigniorage on deposit growth among the banks themselves and their depositors and borrower-customers". He further added that "legal reserve requirements transfer to the government or central bank part of the seigniorage that would otherwise go to bank customers and stockholders".

[37] As for the banks themselves, Allais did not specify how, placed in a situation of competition, they might be able to retain part of the seigniorage revenue for themselves.

[38] Allais (1987, p. 532) thus argued that part of the seigniorage stemming from bank-created money benefitted "borrowers, who are charged less than the market rate that would otherwise prevail". He further specified: "But the system is even more complex. If indeed, for example, a firm, owing to the loans granted to it, is able to agree on wage increases higher than those it could otherwise agree on, the real diversion of the country's output, corresponding to the creation of false claims by the banking

This is why, Allais argued, "it would be in the interest of the citizens that the benefit of money creation accrued to the state" ([1977] 1989, p. 192, my translation[39]), and not "to a minority only" (1967, p. 24, my translation[40]). He concluded that, if only for this reason, a 100% money reform should be advocated:

> In fact, two fundamental principles should lie at the root of any efficient reform of the credit system.
>
> (a) The creation of money should be the business of the state, and of nobody else. The state should be in full control of the money supply.
>
> (b) No money should be created outside the monetary base, so that nobody but the state would be entitled to the benefits that attach to the creation of bank money.
>
> (Allais, 1987, p. 525)

Allais further claimed, far from Hart's conclusion—to which he unfortunately made no reference—, that the full return of the seigniorage benefit to the state would bring a net improvement of public finances. This could even be significant enough, in his view, to do away with personal income tax:

> It would be utterly wrong to underestimate the size of the increase in the money supply brought about through the credit mechanism. For example, in France it is of the same order of magnitude as the yield of personal income taxes. This suggests that even at a moderate pace of inflation corresponding to an expansion of the money supply at an annual rate of 8 or 9 per cent, rehabilitation of the state's right to issue money would yield enough to enable personal income tax to be done away with altogether. (Allais, 1987, p. 519)

However excessive Allais's arguments may have been, they certainly had the merit of highlighting the fact that, under the existing monetary system, the seigniorage benefit should be seen as accruing to a large number of beneficiaries, and not simply to the sole checking account holders. If the state were to assume the costs of administering checking deposits, then, contrary to what was claimed by Hart and his followers, the net seigniorage benefit to be gained from a 100% money reform might not be fully exhausted.

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system, accrues in this case, partially at least, to the benefit of the personnel of the firm in question" (Allais, [1977] 1989, p. 167, my translation) [*"Mais le système est encore plus complexe. Si en effet et par exemple une entreprise, en raison des prêts qui lui sont accordés, est en mesure de consentir à ceux qu'elle emploie des hausses de salaires plus élevées que celles qu'elle pourrait consentir autrement, le prélèvement réel sur la production du pays, correspondant à la création de faux droits par le système bancaire, se fait dans ce cas, au moins partiellement, au profit du personnel de l'entreprise considérée."*].

[39] "*. . . il serait de l'intérêt des citoyens que le bénéfice de la création monétaire revienne à l'État*".

[40] "*. . . à une minorité seulement*".

Summary and conclusion

The debates surrounding the 100% money proposal, which have been ongoing since the 1930s, offer an opportunity to study what may be called the 'seigniorage argument', according to which an increase in the part of state-created money in the total money supply (M^S/M), as against the part of bank-created money (M^B/M), would improve public finances. In the case of a 100% money system, the part of state-created money would be raised to 100%, thus maximizing the seigniorage revenue to be gained by the state. This led many proponents of the 100% scheme, such as Henry Simons, Lauchlin Currie and Irving Fisher, to argue that their reform plan would enable a reduction in national debt[41]. However, this claim has been discarded as purely illusory by most commentators of the proposal, following a criticism first expressed by Albert G. Hart (on the suggestion of Jacob Viner) in 1935. Considering that the Government, under a 100% money system, would be likely to pay the banks a subsidy for administering checking accounts—a consideration with which the 100% money authors themselves usually agreed—Hart concluded that no improvement of the state's finances could possibly follow from the 100% money reform. The 100% money authors never responded to Hart's criticism, which has become a largely conceded point in the literature on the subject. Yet, one may wonder if the conclusion reached by Hart, however large a consensus it may have reached, has not been drawn a little too hastily. A careful study of the arguments of the 100% money proponents reveals that it appears to be questionable on at least two grounds. An initial limitation of Hart's analysis relates to the sources of seigniorage. Hart, like most commentators after him, only focused on one component of the seigniorage benefit stemming from the issuance of fiat currency—namely, the avoided interest charge, which, in this paper, we have called 'saved interest seigniorage' (S_{F2}). For some reason, he neglected the other component, amounting to the full value of the newly created money, which we have referred to as 'seigniorage proper' (S_{F1}). A second limitation of his analysis pertains to the distribution of seigniorage. Hart's criticism implied that under the existing monetary system, all of the

[41] It should be noted that the 100% money proposal carries with it another argument pertaining to public debt, which has not been discussed in this paper as it is not relevant to seigniorage. This relates to the chief criticism addressed by the 100% money authors to the present system of bank-created money—viz., that the dependence of deposit currency (M') on bank loans is a source of cumulative processes, causing M' to behave procyclically. Whereas, in the boom phase, too much money tends to be created out of bank loans, the opposite occurs in the depression phase when these loans are being liquidated. Maintaining the volume of means of payment, when the private sector is over-indebted and starts deleveraging, then requires the Government itself to go into debt with the banks. It was argued that under a 100% system, because money would be divorced from loans, the Government would be freed from the need to periodically increase its deficit to maintain the volume of circulating medium. See Fisher ([1935] 1945, p. 105).

seigniorage benefit stemming from bank-created money would ultimately accrue to checking depositors in the form of free account management services. One may doubt, however, that the banks would transfer all the seigniorage profit accruing to them to only one class of their customers and exclude all others. As was argued by Allais, there is reason to believe that this benefit would rather be shared among all classes of bank customers, including, for example, savings depositors and borrowers. Should this view be correct, it follows that if the Government assumed the costs of managing checking accounts, under a 100% money system, the seigniorage benefit to be gained by the state would be far from exhausted. The 'seigniorage argument' of Simons, Currie and Fisher might then be afforded some consideration after all.

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