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The 100% Money Proposal of the 1930s: Conceptual Clarification and Theoretical Analysis

Samuel Demeulemeester

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Samuel DEMEULEMEESTER

The 100% money proposal of the 1930s: conceptual clarification and theoretical analysis

English translation of the original French version:

La proposition 100% monnaie des années 1930 : clarification conceptuelle et analyse théorique

---

Before the jury comprising:

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RUBIN, Goulven	Professor	Université Paris 1 Panthéon Sorbonne	Reviewer
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École Normale Supérieure de Lyon

École Doctorale de Sciences Economiques et de Gestion
Faculté des Sciences Economiques et de Gestion
TRIANGLE – UMR n° 5206 du CNRS

The 100% money proposal of the 1930s: conceptual clarification and theoretical analysis

English translation of the original French version:

La proposition 100% monnaie des années 1930 : clarification conceptuelle et analyse théorique

By Samuel Demeulemeester

PhD thesis in Economic Sciences

Under the supervision of Rebeca Gomez Betancourt and Laurent Le Maux

Public defence held on 6 December 2019

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The 100% money proposal of the 1930s: conceptual clarification and theoretical analysis

Abstract: This thesis studies the 100% money proposal, such as it was formulated in the United States in the 1930s by Henry Simons, Lauchlin Currie and Irving Fisher in particular. The essence of this proposal is to divorce the creation of money from the lending of money: deposits serving as means of payment would be subjected to 100% reserves in lawful money, awarding the state a monopoly over money creation. Because this reform idea is regularly subject to confusion, we endeavour to clarify its concept and study its main arguments. Chapter 1 recalls the history of the plan. In chapter 2, we show that the 100% money proposal ought not to be viewed as a mere avatar of the Currency School ideas: contrary to Peel's Act of 1844, it contains no issuing rule by itself, leaving open the debate "rule or discretion". In chapter 3, distinguishing between two broad approaches to the 100% money proposal, we show that it does not imply abolishing bank intermediation based on savings deposits at all. In chapter 4, we analyse, through Fisher's works, the main objective of the 100% money proposal: that of putting an end to the pro-cyclical behaviour of the volume of money, caused by the dependency relationship between money creation and bank loans. In chapter 5, we study another argument of the 100% money proposal: that of allowing a reduction of public debt, by returning the totality of seigniorage back to the state—an oft-criticised argument, which, as we show, is not unfounded however. While the 100% money proposal has been arousing renewed interest since the 2008 crisis, we thought it was fundamental to clarify these issues.

Key words: 100% money, money creation, Irving Fisher, Chicago Plan, Henry Simons, Lauchlin Currie.

La proposition 100% monnaie des années 1930 : clarification conceptuelle et analyse théorique

Résumé : Cette thèse étudie la proposition 100% monnaie, telle qu'elle fut formulée aux États-Unis dans les années 1930 par Henry Simons, Lauchlin Currie et Irving Fisher notamment. L'essence de cette proposition est de séparer la création de monnaie des prêts de monnaie : les dépôts servant de moyens de paiement seraient soumis à 100% de réserve en monnaie légale, conférant à l'État un monopole de la création monétaire. Cette idée de réforme étant régulièrement sujette à confusion, nous entreprenons de clarifier son concept et d'étudier ses principaux arguments. Le chapitre 1 rappelle l'histoire du plan. Au chapitre 2, nous montrons que le 100% monnaie ne saurait être considéré comme un simple avatar des idées de la *Currency School* : contrairement à l'Acte de Peel de 1844, il ne contient en soi aucune règle d'émission, laissant ouvert le débat « règle ou discrétion ». Au chapitre 3, distinguant entre deux grandes approches du 100% monnaie, nous montrons que celui-ci n'implique nullement d'abolir l'intermédiation bancaire basée sur les dépôts d'épargne. Au chapitre 4, nous analysons, à travers les travaux de Fisher, l'objectif principal du 100% monnaie : celui de mettre fin au comportement procyclique du volume de monnaie, causé par le lien de dépendance entre création monétaire et prêts bancaires. Au chapitre 5, nous étudions un autre argument du 100% monnaie : celui de permettre une réduction de la dette publique, en rendant à l'État l'intégralité du seigneuriage – argument souvent critiqué, dont nous montrons qu'il n'est pourtant pas infondé. Alors que le 100% monnaie suscite un regain d'intérêt depuis la crise de 2008, il nous a paru fondamental de clarifier ces questions.

Mots clés : 100% monnaie, création monétaire, Irving Fisher, Plan de Chicago, Henry Simons, Lauchlin Currie.

To my parents

Note to the reader

The chapters comprising this thesis (with the exception of Chapter 1) have been written in the form of articles independent from one another. For this reason, there is sometimes some repetition from a chapter to the next. We hope the reader will overlook this.

With the exception of Chapters 2, 3, 4 and 5, this thesis has originally been written in French. Any error of translation is our own responsibility.

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GENERAL INTRODUCTION

> "[D]eposits . . . are *bank debt organized into currency* . . . The organizing of debt into currency is the prevailing error of this commercial age."
>
> Charles H. Carroll, merchant of Massachusetts, 1858.

> "Most money today is created by private sector institutions – banks. This is the most serious fault line in the management of money in our societies today."
>
> Mervyn King, former Governor of the Bank of England, 2016.

1. The dependency of money upon banks: a growing source of concern since the 2008 crisis

The recent global financial crisis of 2008 has caught a great many economists unawares. It has brought to light one of the main limitations of mainstream macroeconomic theory: that of not sufficiently accounting for the monetary and financial sphere. As Martin Wolf (2014a, p. 191), chief editor of the *Financial Times*, sums it up: "First and foremost, this is a crisis of economics and particularly of conventional macroeconomics"[1]. Some efforts of renewal have been undertaken since then, but, as many observers have pointed out, these are most of the time just attempts to amend the existing theory at the margins, rather than to question it more deeply. Yet, there are strong reasons to believe that the recent financial crisis will not be the last. As highlighted by the works of Aliber and Kindleberger ([1978] 2015) or Reinhart and Rogoff (2009), for example, monetary and financial crises have been a remarkably recurrent phenomenon during these last forty years. It has become obvious to many that these crises are not simply due to external shocks, but rather to the inherent working of the economy.

The functioning of monetary and financial institutions, and of banks in particular, is regularly underlined. Commercial banks, indeed, are more than mere financial intermediaries. The promises to pay that they issue in the form of chequing account balances are not only claims of their depositors upon them: being used for the settlement of transactions, these

[1] He further specifies: "For the dominant school of neoclassical economics, depressions are a result of some external (or, as economists say, 'exogenous') shock, not of forces generated within the system. The opposite and, in my view, vastly more plausible possibility is that the crisis happened partly because the economic models of the mainstream rendered that outcome ostensibly so unlikely in theory that they ended up making it far more likely in practice" (Wolf 2014a, pp. xviii-xix). Mervyn King (2016), Governor of the Bank of England from 2003 to 2013, argues in the same direction: "Most of the large-scale econometric models used by governments and central banks to make forecasts . . . afford little role for money or banks, a property that has been a source of embarrassment, both intellectual and practical" (p. 305). On the failure of mainstream macroeconomic theory to satisfactorily integrate money and finance, see also Ingrao and Sardoni (2019).

promises to pay are themselves means of payment, comprising today most of the money supply[2]. This dependency of the medium of exchange upon banking activity has been pointed out by observers of recent crises[3]. During boom phases, the creation of money out of bank loans contributes to amplify speculative bubbles developing on these markets where banks lend the most: those for financial securities and real estate, the prices of which are regularly subject to upward spirals[4,5]. When these bubbles burst, the same dependency of money upon banks this time feeds a downward spiral. On the one hand, banks no longer wish to invest in assets the value of which is depreciating, nor to lend to agents the solvency of whom is deteriorating—and seek, in addition, to strengthen their reserves in the face of possible massive withdrawals: the supply of loans decreases. On the other hand, people who went heavily into debt during the boom phase do not wish to get further into debt, nor to invest in goods the value of which is now going down—and prefer, on the contrary, to go out of debt to clean up their balance sheet: the demand for loans also decreases[6].

In such conditions, even extremely low nominal interest rates may not be enough to revive the dynamic of credit expansion. During the recent Great Recession, therefore, to stem the contraction of bank money, central banks had to drastically increase the monetary base through non-conventional measures—especially *quantitative easing*, consisting in massively injecting central bank money in the reserves of the banking system through open market purchases of securities. The monetary base of the countries or groups of countries undertaking this kind of measures (mainly Japan, the U.S., the United Kingdom and the Eurozone) thus

---

[2] There remain disagreements among economists, however, about how money should be defined. We tackle this issue in Chapter 3. In this thesis, the term *money* will generally be used as a synonym of means of payment.

[3] According to King (2016), for instance: "the fragility of our financial system stems directly from the fact that banks are the main source of money creation" (p. 8). "Most money today is created by private sector institutions – banks. This is the most serious fault line in the management of money in our societies today" (p. 86).

[4] Thus, according to Aliber and Kindleberger ([1978] 2015): "Asset bubbles – most asset bubbles – are a monetary phenomenon and result from the rapid growth of the supply of credit" (p. 18). "One theme of this book is that the cycle of manias and panics results from the pro-cyclical changes in the supply of credit, which increases rapidly in good times, and then when economic growth slackens, the rate of growth of credit declines sharply" (p. 20). "The increases in the supplies of credit generally were provided by banks" (p. 341).

[5] One should note that the prices of these assets are generally not included in the price indexes that central banks aim to stabilise, the latter focusing on consumer price indexes only. The question of whether monetary policy should also take account of asset prices continues to be subject to discussion. For a case in this direction, see for example Alchian and Klein (1973).

[6] This consideration lies at the heart of the theory of balance sheet recessions developed by economist Richard Koo (2008).

significantly expanded, allowing the total volume of means of payment to hold up in the face of bank credit contraction[7]. It is therefore not surprising that the 2008 crisis has reinforced, among many observers, the conviction that an in-depth reform of the monetary system was necessary. A certain amount of reflections thus turned toward the question of the connection between money and credit, pointing out the fact that the medium of exchange was largely a by-product of banking activity. In this context, an old reform idea reappeared in the debates: the "100% money" proposal.

2. The essence of the 100% money proposal: making money independent of loans

The 100% money proposal, as we will see in Chapter 1, was mainly advocated in the United States in the context of the Great Depression of the 1930s. Among its theorists were especially Henry C. Simons (1899-1946) of the University of Chicago—the main author of the "Chicago Plan" which he designed with a number of his colleagues—, Lauchlin Currie (1902-1993) of Harvard University, and Irving Fisher (1867-1947) of Yale University. "The essence of the 100% plan", according to Fisher ([1935] 1945, p. xvii), "is to make money independent of loans; that is, to divorce the process of creating and destroying money from the business of banking".

For this reason, the 100% money proposal recommends to entrust the state with a full monopoly over the creation of money, including cheque-book money. The circulation of any other means of payment would be forbidden. The promises to pay issued by banks—especially in deposit form—could thus no longer be used in the settlement of transactions, except on the condition of being 100% covered by reserves in lawful money[8]. To this end, the

[7] Such a monetary interpretation of the 2008 crisis—and of the answers brought to it—is held for example by King (2016, pp. 182-83): "Since most money comprises bank deposits, the fall in deposits meant that the amount of money available to finance spending actually fell. If left unchecked, that threatened a depression. So the task of the Bank [of England] was to ensure that the amount of money in the economy grew neither too quickly nor too slowly. In the particular circumstances of 2009, that meant creating more money. . . . Economists produced convoluted explanations of how and why this extra money might affect the economy through changes in risk premiums and other arcane aspects of the financial system. Ben Bernanke, then Chairman of the Federal Reserve, said in January 2014 that 'the problem with QE is it works in practice, but it doesn't work in theory'. Perhaps there was a problem with the theory."

[8] The authors of the 1930s focused on promises to pay stemming from bank credit. Their analysis is of course transposable to promises to pay stemming from commercial credit (such as promissory notes or bills of exchange) which, similarly, serve as means of payment when they are transferred by endorsement. Endorsable bills of exchange especially played a big part in the monetary circulation of France in the 19th century (see Hautcœur 2011), the cyclical behaviour of which has been analysed in detail by Clément Juglar ([1862] 1889).

"100% authors" generally recommended to split the banks into two departments: a chequing department, whose deposits, used to make payments, would be 100% covered by such reserves (and thus could not be used to finance loans and investments); and a loan department, whose deposits, used to collect savings and finance loans, would remain only fractionally covered by reserves (but could not serve as means of payment)[9].

The creation or destruction of money, under such a system, would be exclusively exercised by the state—more precisely, according to most versions of the plan, by an *ad hoc* monetary authority, independent of the government (such as the "Currency Commission" in Fisher's plan). This monetary authority would be in charge of implementing the objective of monetary policy assigned to it by Congress—such as, typically, an objective of stabilising the general level of prices. Injections of money could be carried out in several ways: either through advances of the monetary authority to the Treasury, the state then injecting these sums in the economy though expenses or tax credit (or even through payment of a benefit to citizens)[10]; or through open market operations. These injections could no longer be carried out through the discount window, except perhaps in case of emergency, as was foreseen by some authors[11]. It should be noted that the first of these modes (advances to the Treasury) would suppose a certain coordination between the monetary authority and the fiscal administration[12], while the last two (open market operations and rediscount) would suppose banks to remain intermediaries in the transmission of the newly created money to the economy.

---

[9] Certain versions of the 100% money proposal, however, went so far as calling for the end of all banking activity based on the fractional reserve principle. Such was the case, in particular, of the Chicago Plan. We deal with this question in Chapter 3. For a presentation of bank balance sheet according to these different kinds of reforms, the reader may refer to Chapter 2 (Appendix 1), Chapter 3 (Section 5) or Chapter 4 (Appendix 1).

[10] In practice, these advances would be non-refundable, or automatically renewed, as long as no contraction of the money supply would be required. In a growing economy, requiring a continuous increase in the quantity of money, the state would thus fully benefit from the seigniorage revenue attached to money creation. On this question, see Chapter 5, Section 2.3.

[11] See for example Fisher ([1935] 1945, pp. 88, 202). One should note, however, that rediscount operations *per se* could be maintained without contravening the principles of 100% money, from the moment they were financed with pre-existing money, not newly created for the purpose. The Currency Commission itself, or the Federal Reserve Banks, could exert this function of bankers' bank, distinct from the function of monetary authority. On this matter, see Chapter 2, Section 4.

[12] Simons ([1934] 1948, pp. 320-21n7), in particular, insisted on this point: "Ultimate control of the currency . . . lies in the management of government expenditure, taxation, and borrowing; and the establishment of a separate monetary authority implies a division of powers which would be workable only with thoroughgoing co-ordination and cooperation. . . . Monetary policy must ultimately be implemented through fiscal arrangements." See also Simons (1936, pp. 22-24, 29-30) and Mints (1946, pp. 63-64).

The 100% money reform proposal is motivated by several arguments. The main one is to prevent the exacerbation of booms and depressions by the creation/destruction of money out of bank loans: making money independent of loans would put an end to the cumulative processes by which any increase in indebtedness brings about an increase in the volume of money, itself bringing an increase in prices and profits, bringing a further increase in indebtedness, and so on—and conversely in any debt reduction phase. Money creation, in other words, would no longer be a source of vicious circles alternately feeding upward or downward spirals in prices. A second argument was of a fiscal nature: by awarding the state the exclusive privilege of money creation, the 100% money proposal would make the public treasury benefit from the whole of the seigniorage profit. Furthermore, the state would no longer have to periodically worsen its deficit to maintain the volume of money in circulation when the private sector is deleveraging: any tendency to the liquidation of bank loans would cease to bring about—*ipso facto*—a destruction of money (moreover, according to the "100% authors", over-indebtedness itself would be made less important during boom phases). There were many more arguments: transaction deposits, being 100% covered by reserves, would become "indestructible" (Fisher 1936a, p. 409), and the payment system would thus be totally secured from banking crises; banking crises themselves would be made less frequent and serious, since they would no longer be caused or aggravated by fluctuations in the money supply; because money would no longer depend on loans, the need for regulating banking activity would be reduced, and threats of nationalisation of the banking sector would be diverted; the monetary authority could focus on its one and only monetary objective (for example, stabilising the value of the monetary unit) without having to supervise the banking sector at the same time (this function, from now on devoid of any monetary significance, could fall to another institution); the rate of interest would cease to be manipulated by the monetary authority (as money creation would no longer depend on loans) and could reach its "natural" level solely determined by supply and demand on the loan market; the increased stability which would prevail under the 100% system would allow the business climate to improve and profits to increase, including for banks; etc. More generally, in the context of the 1930s, the 100% money reform was often presented as a necessary condition for the very survival of capitalism.

3. The 100% money proposal in the history of economic thought

The history of the 100% money proposal, from the 18th century to the present day, is presented in Chapter 1 which complements this general introduction. The idea of putting an

end to the creation of paper money by banks is already to be found in the writings of David Hume and David Ricardo, as well as those of the 'Currency School' writers. The proposal of putting an end to any creation of means of payment (even in cheque-book form) through the mechanism of loans—which constitutes, as we just saw, the essence of the 100% money concept—will appear toward the middle of the 19th century in the United States, under the pen of Charles H. Carroll in particular. In Europe, one may find this idea in the writings of Léon Walras toward the end of the 19th century, then in those of Ludwig von Mises at the beginning of the 20th. The Englishman Frederick Soddy, who in 1926 proposes a 100% reserve system disconnected from any metallic basis, directly foreshadows the proposals of the 1930s. The Chicago Plan, as well as Currie's and Fisher's plans, will be widely discussed in the context of the Great Depression in the United States, where they would inspire several bills (none of which, however, would be passed). Following World War II, the 100% money proposal will reappear in the writings of Maurice Allais and Milton Friedman especially. In the context of the financial deregulation of the 1980s and 1990s, economists such as James Tobin or Hyman Minsky, in particular, will show interest in this idea. Since the 2008 crisis, the 100% money proposal has been the subject of a great many discussions again.

Yet, despite of its renowned advocates, it is clear that the 100% money proposal has not been very much studied in the history of ideas. Except for Joseph Schumpeter (1954)[13], who alludes to it several times, it is completely ignored by most of history of economic thought textbooks: Mark Blaug ([1962] 1997), Lionel Robbins (1998), or Alain Béraud and Gilbert Faccarello (dir.) (2000), for example, fail to devote even a footnote to it. One should rather turn to works dedicated to the interwar economic thought to find discussions of this idea, for example in William J. Barber (1996, pp. 89-95, 105, 107, 129, 134) or David Laidler (1999, pp. 239-42). As for history of monetary thought textbooks, Lloyd W. Mints (1945, pp. 153-55, 175-74, 270-71) discusses, of course, the 100% money proposal—he was himself one of the co-authors of the Chicago Plan—but Charles Rist ([1938] 1951)[*] and Jürg Niehans (1978)

[13] Schumpeter (1954) thus compares the English Bank Charter Act of 1844 to "a '100 per cent reserve plan' for bank notes" (p. 694); he identifies Thomas Joplin as one of the first to have proposed a 100% reserve system (p. 723n15), as well as Walras as a forerunner of this idea (p. 1079), and mentions Fisher's proposal in passing (pp. 872-73). One of his comments (p. 723) gives a hint of what he personally thought of this reform idea: "The recognition of the currency-creating power of banks . . . is as interesting as the recognition of the relation, so strongly emphasized in the United States, between lending and repaying, on the one hand, and expansion and contraction of the circulating medium, on the other—in which relation some of the more naïve American currency doctors saw (perhaps see) the source of all sorts of evil".

[*] Corrigendum: Rist ([1938] 1951, p. 217) very briefly mentions Irving Fisher's 100% money proposal, in a chapter where he discusses the Currency Principle.

make no mention of it, whereas Jérôme de Boyer (2003, p. 128, my translation[a]) only devotes three lines to the proposal, which he regards as "a system inspired by the 'Currency Principle'". The latter however refers to a book by Sylvie Diatkine (2002) on the founding principles of banking theory, in which a whole chapter is devoted to Fisher's 100% money plan, presented as following on from the 1844 Bank Charter Act. Arthur W. Marget ([1938] 1966), in his voluminous study *The Theory of Prices - A Re-Examination of the Central Problems of Monetary Theory*, does not address the subject even once[14].

The 100% money proposal has especially been studied in the works devoted to its various authors. Soddy's version has for example been discussed by Daly (1980); the Chicago Plan's by Phillips (1988), Whalen (1994) and Tavlas (2018; 2019a)[15]; Currie's by Sandilands (1990; 2004); Fisher's by Allen (1993) and Dimand (1993b; 2019, pp. 126-29); Mises's and Rothbard's by Huerta de Soto ([1998] 2012, pp. 716-27); Allais's by Durand (1995) and Gomez (2012); Minsky's by Kregel (2012); whereas Walras's proposals have been discussed by Jacoud (1994). The works dealing with the 100% money proposal in general, however, have long been extremely rare—one of the few exceptions being an article by G. Russell Barber (1973) in *The American Economist*. In this respect, the fascinating book by Ronnie J. Phillips, *The Chicago Plan and New Deal Banking Reform* (1995), has definitely filled a huge gap[16]. The author, after briefly recalling the monetary and banking history of the United States, tells in detail how the 100% money proposal was designed in the context of the Great Depression of the 1930s, how its advocates sought—in vain—to have it incorporated into the banking reforms of the New Deal, and how this reform idea was received within the academic community.

Several PhD theses have also been written on the 100% money proposal. Ned Chapin (*An Appraisal of the One Hundred Per Cent Money Plan*, Illinois Institute of Technology, 1959)

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[a] « un système inspiré du 'Currency Principle' ».

[14] One may note, however, that contemporary monetary theory textbooks sometimes mention the 100% money proposal—but in a manner that may lead to confusion. R. Glenn Hubbard and Anthony Patrick O'Brien (2012, p. 351) thus only make reference to Friedman's and Kotlikoff's proposals, according to which the banks could only invest their own capital. In the *Handbook of Monetary Economics* (B. M. Friedman and F. H. Hahn 1990), the 100% money proposal is briefly discussed, but within a chapter with no direct bearing upon the subject (see Fischer 1990, pp. 1161-62, who deals with the debate "rules versus discretion").

[15] It is remarkable however that the 100% reserve proposal of the Chicago Plan has not been really discussed as part of the extensive controversy—running from the 1950s to the 2000s—on the monetary tradition of the Chicago School. See Leeson (ed.) (2003) for a compilation of the writings related to this controversy.

[16] One may also refer to this author's other works on the same topic: see Phillips (1992; 1994).

carried out a comparative study of Chicago's, Fisher's and Angell's plans, analysing in detail how the 100% reform was to be structured and implemented according to each of them. Donald R. Market (*The Theory of 100 Per Cent Reserve Banking: Historical Development and Critical Analysis*, Louisiana State University, 1967) offered a historical reminder of the 100% money proposals prior to the 1930s, a detailed study of Simons's, Currie's and Fisher's proposals and their criticisms, an analysis of the (then contemporary) proposal by Friedman, and a reflection on the possible implications of the 100% money proposal for the monetary discussions of the time (especially the 'rule versus discretion' debate). Jean-Jacques Durand (*La Création monétaire et la réforme du crédit*, Paris 10 University, [1978] 1979) undertook a study of both historical and contemporary conceptions related to money and credit, followed by a comparative analysis of the 100% money proposals designed by the American writers on the one hand, and by Maurice Allais on the other. Stephen E. McLane (*Improving Monetary Control: The Abolition of Fractional Reserves*, Rutgers University, 1980), analysing the shortcomings of the fractional-reserve monetary system, and building upon the 100% money plans of the 1930s, sought to improve upon the latter so as to answer contemporary needs in terms of monetary control; he then offered his own model of a 100% reserve system. More recently, Patrizio Lainà (*Full-Reserve Banking. Separating Money Creation from Bank Lending*, University of Helsinki, 2018) has analysed in detail the potential benefits of the 100% reserve proposal, as well as its criticisms, and examined it through a stock-flow consistent (SFC) model building upon post-Keynesian theory. Finally, Adrien Vila (*Cycles et instabilité chez I. Fisher : le libéralisme à l'épreuve de la monnaie*, École des Hautes Études en Sciences Sociales, 2018) devoted a thesis chapter to Irving Fisher's proposals to fight monetary instability, including the 100% money proposal.

4. Objective and organisation of the thesis

Considering all the above-mentioned works, the purpose of the present thesis cannot be to detail the history of the 100% money proposal—this has already been done in the remarkable work by Phillips (1995) in particular—, to provide a description of the different proposed plans, nor to study the practical details of implementation of the proposal: all these issues have already been tackled in the various above-mentioned theses.

The purpose of this thesis is to contribute to fill what appears to us as the main gap in the literature on 100% money, which relates to a clarification of the concept and objectives of this proposal. As we explain in detail in Chapter 1, the 100% money proposal has often been

subject to confusion. First, the discussions of the 1930-40s showed a great deal of ambiguity, including within the academic sphere, about the implications of the plan for banking activity in particular. Then, a majority of authors who reclaimed the 100% proposal in the second half of the 20th century had (with the exception of Allais) lost sight of the main argument of the 1930s authors: that of putting an end to the pro-cyclical behaviour of the monetary circulation caused by the tie between money and debt. Then, in the 1980s, the discussions about the narrow banking idea, often likened to the 100% money proposal, introduced a further source of confusion. Finally, the renewal of interest in this proposal following the 2008 crisis did not come up with a clarification of its concept and arguments, quite the contrary. Sometimes likened to the Bank Charter Act of 1844, sometimes to the idea of abolishing banks, sometimes to narrow banking, and even sometimes to a system of state financing of credit, the 100% money proposal appears to be a source of confusion more than ever.

Phillips's book (1995), despite its high quality from a narrative and historical standpoint, unfortunately does not clarify a certain vagueness surrounding the 100% money concept. It implies, for example, that this reform would involve: restrictions regarding the portfolio of assets held by the banks, in the manner of the more recent narrow banking proposals (pp. 7, 186, 189); a separation of commercial banking from investment banking activities (p. 53); direct state intervention in the credit market, via an institution of the kind of the Reconstruction Finance Corporation of the 1930s (pp. 167, 182, 189); a fixed money growth rule (p. 167); less discretion for the Federal Reserve Board (p. 182); or raising the capital requirement ratio for lending institutions to 100% (p. 186). Most of these measures may have been supported at some point by some authors (Simons, in particular, wanted to replace lending banks by mutual funds, while Friedman recommended a fixed money growth rule), but cannot be considered as characterising the 100% money proposal. Phillips (1995, pp. 4, 104, 153) also probably overemphasises the similarity between Simons's, Currie's and Fisher's plans, which, as we will see, showed some significant differences. The need for a conceptual clarification has also been noted by Schiming (1996, pp. 264-65), in a review of Phillips's book. Thus, while building upon the latter's work (to which we owe a lot), we have chosen to further this research and focus our own on analysing the concept and arguments of the 100% money proposal of the 1930s.

The present thesis is organised into five chapters. **Chapter 1**, completing this general introduction, recalls the history of the 100% money proposal from the 18th century to the present day. The body of the thesis is then divided into two parts (each comprising two chapters): a **first part** aiming at clarifying the concept of the 100% money proposal of the

1930s (chapters 2 and 3), and a **second part** aiming at studying two of its main arguments (chapters 4 and 5).

Chapter 2 ("The 100% money proposal of the 1930s: an avatar of the Currency School reform ideas?") aims at differentiating the 100% money proposal from the reform prescriptions of the "Currency School", embodied in the English Bank Charter Act of 1844. The 100% money proposal has too often been presented—including by some of its very authors—as a simple extension of the provisions of this Act to bank deposits. We argue that such an interpretation is a source of confusion, and explain the reasons why. This chapter allows us to address the distinction between an institutional reform of the monetary system, and a normative prescription for monetary policy.

Chapter 3 ("The 100% money proposal and its implications for banking: The Currie-Fisher approach versus the Chicago Plan approach") aims at distinguishing between two broad approaches to the 100% money proposal, one following from the proposals by Currie and Fisher in particular, the other from the Chicago Plan. These two groups of authors differed as to their definition of money, and as to their interpretation of monetary instability. As a result, their respective reform plans were necessarily different, in regard to their implications for bank intermediation in particular. We endeavour to clarify this distinction.

Chapter 4 ("Investigating the 'debt-money-prices' triangle: Irving Fisher's long journey toward the 100% money proposal") studies the main argument of the 100% money proposal of the 1930s: that of putting an end to the pro-cyclical behaviour of the quantity of money, caused by the dependency relationship between money creation and bank loans. We tackle this issue through a specific prism: that of Irving Fisher's works. We endeavour to connect the different theories of monetary instability which he developed throughout his career, and argue that the 100% money proposal constitutes their logical outcome.

Chapter 5 ("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") studies another argument of the 100% money proposal: that of allowing a reduction of national debt, by returning the whole profit stemming from money creation to the state. This argument was largely rejected as purely illusory in the secondary literature. However, a thorough study of its reasoning and criticisms, combined with an effort of clarification of the seigniorage concept building upon recent literature, leads us to question the grounds of rejection of this argument.

From a methodological standpoint, the conceptual clarification and study of arguments which we have conducted in this thesis required a necessary degree of interpretation. In particular, we have not hesitated to use terms, expressions, figures or equations which were not used by the authors themselves, when we thought this was justified to better express their ideas. This obviously involved a certain risk of misrepresenting these authors' thought. To minimise this bias, we endeavoured to conduct as complete as possible a survey of the existing literature, both primary and secondary, and to include a maximum of references and quotations to support our interpretations[17]. The possible mistakes or errors of interpretation contained in this thesis are, of course, our own responsibility.

[17] This research work also led us to study Irving Fisher's archives at Yale University, and Henry Simons's archives at the University of Chicago.

Chapter 1 – History of the 100% money proposal from the 18th century to the present day

This first chapter, completing the general introduction, aims at presenting the history of the 100% money proposal, not only in the United States during the 1930s, but also before and after this period. One already finds forerunners of this type of reform in the 18th century, as well as successors who have continued (and still continue) to support it up until today. This historical perspective will allow us to better comprehend the objective of this thesis: that of a conceptual clarification and theoretical analysis of the 100% money proposal.

1. The 100% money proposal from the 18th century to the First World War: the forerunners

1.1. In Great Britain

One already finds, in the writings of several 18th century authors in Great Britain, a criticism of the creation of money out of the credit mechanism—a criticism which, at the time, tended to be blended with a condemnation of banking itself. As early as 1734, Jacob Vanderlint (?-1740), a Dutch merchant settled in London, denounced the issuing of cash notes by the banks in excess of their specie reserves, for such a creation of "artificial Moneys" would bring about an increase in prices, unfavourable to exports (Vanderlint 1734, pp. 14-15, 94-95n†). This led him to conclude that banking should not be encouraged. The Scottish philosopher David Hume (1711-1776), in his *Political Discourses* published in 1752, called paper-credit "counterfeit money", and condemned its issuance on the ground that it would "increas[e] money beyond its natural proportion to labour and commodities, and thereby heighte[n] their price to the merchant and manufacturer" (Hume [1752] 1906, p. 29). An ideal bank, according to him, would keep all deposited money in reserve, without being able to increase the monetary circulation[1]. Such would be the case, he argued, of a public transfer bank which, on the model of the Bank of Amsterdam, would exert no lending function. Yet, if he condemned

[1] "And in this view, it must be allowed that no bank could be more advantageous than such a one as locked up all the money it received, and never augmented the circulating coin, as is usual, by returning part of its treasure into commerce" (Hume [1752] 1906, p. 29; see also p. 62). As Maria Pia Paganelli (2014, p. 979) recently commented: "Hume seems, therefore, to fit in the large family of economists that proposed the Chicago Plan in the 1930s and narrower banking today." See Luttrell (1975, p. 168) for a similar observation, as well as Le Maux (2014, pp. 963-64) on Hume's suggestion of 100% reserves, and Dimand (2005) on Hume and paper money.

the influence of banking on the medium of exchange, Hume recognised the advantages of bank credit for trade[2]. For this reason, as Paganelli (2014, pp. 976-77) notes, he actually qualified his criticism of paper-credit. The British writer Joseph Harris (1702-1764), King's Assay Master at the Royal Mint, developed in 1757 a criticism very similar to Hume's, also condemning any "artificial" increase in the quantity of money by the issuing of paper credit in excess of metallic reserves (Harris 1757, pp. 95-101)[3].

At the beginning of the 19th century, David Ricardo (1772-1823) would also call for putting an end to the creation of money by banks. As early as 1815, in a letter to Malthus, he noted that the issuing of paper money gave rise to a seigniorage profit, which could legitimately only fall to the state. For this reason, he proposed to grant exclusive issuing rights to public Commissioners, independent of the Government—which would have the further advantage, he said, of putting an end to the excessive issues of the country banks[4]. This proposal, first presented in his *Principles* ([1817] 1951, Vol. 1, pp. 361-63), would be at the heart of his "Plan for a National Bank", written in 1823, under which "[f]ive Commissioners shall be appointed, in whom the full power of issuing all the paper money of the country shall be exclusively vested" (Ricardo ([1824] 1951, Vol. 4, p. 285). Contrary to most of the 100% money authors, Ricardo did not put the stress on the advantage of such a reform for stabilising the value of money: in this respect, according to him, what especially mattered was that paper money always remained convertible into gold and was properly managed, whoever its issuer was. On the other hand, he laid much emphasis on the advantage of his plan for public finances, thereby anticipating another major argument of the 100% money plan (which we will cover in Chapter 5): that of returning all the profits stemming from money creation to the state.

As of 1823, another English economist, Thomas Joplin (c. 1790-1847), would also condemn the issuing of money by banks. According to him, by creating the paper money they lent, the banks would create a capital not previously saved out of income, which would spark

[2] "[T]he increase of industry and of credit . . . may be promoted by the right use of paper-money. It is well known of what advantage it is to a merchant to be able to discount his bills upon occasion; and everything that facilitates this species of traffic is favourable to the general commerce of a state" (Hume [1752] 1906, p. 60).

[3] The fact that Vanderlint, Hume and Harris all favoured a 100% reserve system has been noted by Rothbard (1995a, p. 462).

[4] See his letter to Malthus of 10 September 1815 (in Ricardo 1951, Vol. 6, p. 268). This idea of entrusting money creation to the state seems to have been submitted by Jean-Baptiste Say to Ricardo in 1814, as shown by a reply of the latter to the former (letter from Ricardo to Say, 24 December 1814, in Ricardo 1951, Vol. 6, pp. 165-66).

a price increase; the borrowers of this newly created money would thereby get command over a portion of the society's income, to the detriment of the holders of the money previously in circulation, the value of which would be depreciating (Joplin 1825, p. 28; 1826, pp. 35-36)[5]. The sudden fluctuations in the level of prices caused by these issues would occur both upward and downward, frequently leading to panics (Joplin 1823, pp. 193-98; 1826, pp. 38, 45). They would further alter the proportionality relationship between the monetary circulation of the country and that of London, bringing about internal trade imbalances within the kingdom (1823, pp. 201-14). For all these reasons, Joplin would propose a rather complex monetary reform plan, which apparently consisted, in essence, in preventing all creation of paper money by the banks, and allowing note-issuance, by a government agency, in exchange for bullion only[6]. He affirmed: "Now by this plan, while banks could not manufacture money at pleasure, the currency would dilate and contract in the same manner as with a metallic circulation" (Joplin 1823, p. 264). If he seemed to propose, like Ricardo, entrusting the issuing of paper money exclusively to the state, Joplin differed from the latter about the issuing policy to follow: the monetary authority, under his plan, would itself be subjected to 100% metallic reserves, preventing all management, properly speaking, of the quantity of money[7]. As Viner

[5] As Viner (1937, pp. 190-91) notes, Joplin here clearly anticipates the concept of "forced saving", which would later be developed by Hayek in particular. On Joplin's thought in general, see O'Brien (1993).

[6] Joplin developed his reform plan in many of his writings, from 1823 to the 1840s (see, for instance, Joplin 1823, pp. 262-64; 1826, pp. 63-65; [1844] 1845, p. 44; as well as O'Brien 1993, Chapter 8, for a detailed analysis of his plan and its evolution). The initial version of this plan may apparently be summarised as follows. On the one hand, the total volume of bank notes in circulation at the beginning of the reform would be replaced with notes issued by the government, which the latter would lend to joint-stock banks established all over the country; each bank would be assigned, against payment of an interest charge, a fixed part of the volume of notes proportional to the needs of its own district, which it would put into circulation by way of loans. On the other hand, a Board of Commissioners, in charge of currency management, would be established in London, which would receive in deposit (or purchase) all bullion coming from abroad, in exchange of which it would issue large-denomination notes or certificates; those could then be discounted with any bank of the country, which would issue new notes to this end. The interpretation of this plan (rather confused, one must admit) is subject to discussion. Viner (1937, p. 224) and Schumpeter (1954, p. 723n15) regard it as a 100% reserve proposal, and Fisher ([1935] 1945, p. 221) includes two references to Joplin at the end of his book *100% Money*. O'Brien (1993, pp. 145-47), however, recognising that the plan is not very clear, rather speaks of a control of the banks' issuing power by a government agency. As for Mints (1945, p. 108), he concludes, for his part: "I have found it impossible to discover adequate reasons why Joplin should have thought his schemes would prevent this multiple expansion and contraction [of bank money]". Let it finally be noted that Joplin, although he expressly recognised the monetary character of transferable deposits in his last writings, never included them within the scope of his reform plan.

[7] Joplin (1832, pp. 179-80) actually explicitly criticised Ricardo's proposal on the ground that, instead of being automatic, it would leave discretionary power to the monetary authority. However, his position on this matter would evolve: in 1844, criticising Peel's Act, while maintaining his adherence to the *currency principle*, he would insist on the "absolute necessity" of some discretionary power in the case of panics (Joplin [1844] 1845, p. 58).

(1937, p. 224) notes, Joplin thus seems to be the first author to have advocated the *currency principle*, according to which a mixed money supply, comprising both metallic and paper money, should behave exactly like a purely metallic currency would.

The crisis of 1825 in England would bring out the fact that the sole convertibility of paper money into specie was not a sufficient check to over-issuance. It would also lead some authors to question the adequacy of the criterion advocated by Ricardo—that of stabilising the price of gold—to regulate the issues of money (see, for example, Pennington [1827] 1940, pp. 82-83)[8]. In this context, the *currency principle*, already advocated by Joplin in 1823, would again be recommended by such authors as Henry Drummond (1826, p. 47) or James Pennington ([1827] 1840, pp. 85-88)—the latter generally being considered as the first to have formulated this principle in a clear and organised manner (see Fetter 1965, p. 130; O'Brien 1994a, p. xxi). In a memorandum privately addressed to the English Minister Huskisson in 1827, Pennington stated that if the Bank of England could constrain itself to keep a fixed amount of securities as assets, then any variation of its liabilities (including both its notes and deposits[9]) could only be made possible by a strictly equal variation of its metallic reserves; the Bank, in other words, would be subjected to a marginal 100% reserve requirement. If the Bank, in addition, benefitted from an issuing monopoly, then the monetary circulation of the country would behave exactly as a purely metallic circulation would. At the same time, but apparently independently, this issuing rule (still applying to notes and deposits as a whole) would also be adopted by the Bank of England, without, however, being combined to an issuing monopoly. It would be publicly presented by John Horsley Palmer, governor of the Bank, in 1832—hence its designation as the "Palmer rule" (see Viner 1937, p. 224; Fetter 1965, p. 132). It seems, however, that it was never really followed in practice.

The criticism of the Palmer rule would serve as a starting point for the proposals of the Currency School, a group of authors especially including Samuel Jones Loyd (who would become Lord Overstone in 1850), George Warde Norman (a director of the Bank of England) and Robert Torrens[10]. They advocated a reform plan which would be implemented under the

[8] Let it be reminded, however, that the system proposed by Ricardo in 1823—that of a National Bank entrusted with an issuing monopoly, combined with a policy of stabilising the price of gold—was never tried.

[9] As Viner (1937, p. 226) remarked, the *currency principle* advocated by Pennington applied both to notes and deposits, which he encompassed together under the term "paper circulation"—as Pennington ([1827] 1840, pp. 89-90) would make clearer when publishing his memorandum in 1840.

[10] John Ramsay McCulloch and Mountifort Longfield are often considered to be also part of that school (see for example Schwartz [1987] 2008).

Bank Charter Act (or Peel's Act) of 1844, the essence of which was to apply the *currency principle* to the sole paper money (bank deposits were generally not considered as money by these authors). First of all, the Bank of England would be gradually assigned a monopoly over the issuing of notes in the whole country; then, the Bank would be divided into two departments—an Issue Department, alone authorised to issue paper money, and a Banking Department, authorised to extend loans but without the power of issuing notes; finally, the Issue Department would be subjected to an automatic rule, the *currency principle*. As we will see in Chapter 2, one finds in some writings of that school (those of Loyd and Norman in particular) an expression of the central argument of the 100% money proposal of the 1930s: that of putting an end to the cyclical fluctuations of the money supply, caused by the association between money issuance and banking activity. However, one also finds in these authors' writings, more generally, a rejection of any kind of discretionary monetary management. The *currency principle*, embodied in the Act of 1844, conveys this double rejection: it not only seeks to forbid all creation of (paper) money by the banks, but also to prevent all monetary management by the Issue Department. As we explain in Chapter 2, this is a major difference with the 100% money proposal of the 1930s, which would seek, on the contrary, to facilitate the control (active, if need be) of the money supply—and would, furthermore, take the circulating medium as a whole into account, and not simply paper money[11].

1.2. In the United States

In the United States also, from the beginning of the 19th century, a great many writers would criticise the issuance of paper money by banks, starting with Thomas Jefferson, a "disciple of David Hume" according to Luttrell (1975). He was far from being the only one, if one refers to Rothbard (1962a, p. 129n28; see also 1962b; 1995b):

> During the Panic of 1819, for example—several years before Thomas Joplin's enunciation of the Currency Principle in England—Thomas Jefferson, John Adams, John Quincy Adams, Governor Thomas Randolph of Virginia, Daniel Raymond (author of the first treatise on economics in the United States), Condy Raguet, and

[11] Let it also be noted that, if the Act of 1844 endeavoured to put an end to the creation of paper money by banks, it included none of the two other major proposals of Ricardo's 1823 reform plan: that of returning all seigniorage benefit to the state, by entrusting money creation with a National Bank (on the contrary, the Issue Department, under the Act of 1844, remained attached to the Bank of England belonging to private interests), and that of basing the issuing policy on the criterion of stabilising the price of gold, *de facto* leaving the monetary authority with operational discretion (the Act of 1844, on the contrary, established an automatic rule). Ricardo should therefore not be regarded, as is sometimes the case, as a member of the Currency School.

> Amos Kendall all wrote in favor of either a pure 100 per cent gold money, or of 100 per cent gold backing for paper.

It actually seems that the first proposals aiming at preventing the banks from creating any kinds of means of payment whatsoever, explicitly including cheque-book money—that is, the first "100% money" proposals strictly speaking—appeared in the United States in the second third of the 19th century. One finds traces of this idea in the writings of William M. Gouge as early as 1833[12], then, from the 1850s, in those of such authors as George Dutton (1857, pp. 23-25) or Charles H. Carroll[13]. Carroll (1799-1890), in particular, wrote at length, in a series of articles published between 1855 and 1879, on the problems related to the dependency of the medium of exchange (including deposits transferable by cheque) upon bank-lending activity[14]. According to him, the fact of using bank promises to pay as a means of payment first had the effect of causing an excessive rise in the price level and an exportation of gold, then unavoidably resulting in a liquidation of loans, spelling a contraction of the means of payment occurring along with waves of failures[15]. For this reason, he came to propose a type of bank whose demand liabilities would be 100% covered by reserves, and whose loans would be exclusively funded out of capital or deposits withdrawable after a stipulated time or with

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[12] Gouge ([1833] 1968, p. 122) proposed to establish public transfer banks which, on the model of the Bank of Hamburg, would keep the whole of their cash in reserve, whereas private banks could continue to make loans out of savings deposits: "There is nothing in the constitution to prevent the establishment of public Banks, which shall be mere Offices of Deposit and Transfer. . . . We should have places of deposit safer than the present; for the money deposited in a public Bank by one man would not be lent to another. The business of settling accounts by transfers of credit, would be greatly facilitated. . . . The private Banks, paying interest on deposits, would extend throughout the country the advantages of Saving Banks."

[13] See Mints (1945, pp. 154-56). Other authors of this period, such as John Dix or Amasa Walker, would also keep advocating 100% reserves for notes only.

[14] These texts have been gathered in a volume edited and introduced by Edward C. Simmons (Carroll 1964). According to the latter: "Although almost all writers of the day laid the blame for panics on the banking system, few saw with Carroll that monetary expansion and contraction were the basic cause. . . . Carroll describes in great detail the effects of alternately expanding and contracting the currency, pointing out the effects of price changes on the distribution of wealth and income and also condemning the transfers of property that accompany bankruptcy" (Simmons, in Carroll 1964, pp. xii, xvi).

[15] "[T]he deposits . . . are *bank debt organized into currency* . . . The organizing of debt into currency is the prevailing error of this commercial age. . . . The "promise to pay", whether in the form of note or credit, placed in position to be used as currency in excess of the coin in the country, becomes a degradation of the value of gold and silver . . . [By so doing] we shall infallibly raise the general price of things . . . Now in parting with gold by this degradation of its value . . . we have no capital left in its place—nothing but debt . . . with the certainty of extensive failure, in every bank contraction . . . Whenever the banks contract their loans the means of payment fail and the obligations founded thereon fail likewise—they cannot be paid" (Carroll [1858a] 1964, pp. 87-93, italics in the original). "The debt currency, then, and the banking, which is the machinery of its manufacture, are the cause of the periodical revulsions in the commercial world" (Carroll [1858b] 1964, p. 101).

due notice (Carroll [1860] 1964, pp. 215-17)[16]. In the United States, the idea of imposing 100% reserves behind chequing accounts will reappear in the writings of some little-known authors of the late 19th and early 20th century, such as Isaiah W. Sylvester in 1882 (see Rothbard 1962a, p. 130), Willis E. Brooks in 1908 and John R. Cummings in 1912 (see Bromberg 1939).

1.3. In continental Europe

Continental Europe would also offer its lot of contributions to the topic. Several German authors, such as Johann Ludwig Tellkampf (1842; 1859; 1867; 1873), Otto Hübner (1854) and Philip Joseph Geyer (1865; 1867), would call for divorcing money creation from discount activity by entrusting a note-issuing monopoly to the state, while subjecting the latter to a 100% metallic reserve requirement[17]. In France, Henri Cernuschi, a banker and economist of Italian origin, would condemn all issuing of bank notes not fully covered by metallic reserves (see Cernuschi 1865; 1866), and would suggest in passing the same treatment for current account deposits[18]. Victor Modeste (1866) would similarly condemn the issuing of non-

[16] "This bank [would keep] coin in reserve, dollar for dollar, against the demand liabilities. Such reserve would be on special deposit without interest" (Carroll [1860] 1964, pp. 215-16). Regarding time deposits, he added a further condition, which we will later find in Allais's writings (see below)—that of forbidding that the maturity of the assets be longer than that of the liabilities: "The loans must be so averaged as to time that the receipts shall always precede the demand for payment of the deposits" (Carroll [1860] 1964, p. 216). Carroll, as many writers, does not seem to have differentiated the distinction between demand deposits and time deposits (referring to the maturity period of the deposits) from the distinction between deposits transferable by cheque and non-transferable savings deposits (referring to the possibility of using them as means of payment). On this matter, see Chapter 2, Section 3, note 39.

[17] On these authors, see especially Vera Smith (1936, Chapter 9), who notes, regarding the last-mentioned: "Geyer summarises the faults of the present banking system under two heads: first, that it provides the material for trade crises and production cycles by producing 'artificial capital' up to a point where there is an excessive amount of capital in existence, and, secondly, that having produced the crisis, it intensifies it by contracting credit and causing forced sales. His explanation of the original (*sic*) of the boom came very close to the modern 'over-investment' theories of the Austrian school". Let it also be noted that both Mises ([1912] 1953, p. 323) and Fisher ([1935] 1945, p. 221) would include references to Tellkampf and Geyer in their respective works.

[18] "I would find it desirable that bank current accounts be true deposit accounts and do not appear in the bank's assets" (Cernuschi 1866, p. 57, my translation [*« Je trouverais préférable que les comptes courants à la banque fussent des véritables comptes de dépôt et ne figurassent pas dans l'avoir de la Banque »*]). If current accounts were 100% covered by reserves, he added, discounting could always be performed "[w]ith deposits bearing interest. Then the bank is a debtor, it is no longer a depositary. When I pay interest, I do not keep your gold any longer, I take your capital, and use it as I want" (*ibid.*, p. 59, my translation [*« [a]vec les dépôts qui portent intérêts. Alors la Banque est débitrice, elle n'est plus dépositaire. Quand je paye un intérêt, je ne garde plus votre or, je prends votre capital, et j'en fais ce que je veux »*]). He especially focused his case on notes, however. Let it be noted that both Walras ([1879] 1898b, p. 372) and Mises ([1949] 1963, p. 446) would favourably refer to Cernuschi on this point.

covered bank notes, arguing that such a practice, in addition to being economically dangerous, was patently dishonest. The latter's article, together with Cernuschi's publications, would spark a debate on "false money" in the *Journal des Économistes* in 1866[19].

A few years later, one finds the idea of the 100% money proposal again expressed in the writings of Léon Walras (1834-1910). In a memoir of 1879, he condemned the issuance of bank notes: first, such issuance would disturb the ratio between consumer goods and new capital goods, and would lead to an increase in the general price level[20]; then, the liquidation of those notes would be impossible, except by bringing about a "double monetary and financial crisis" (Walras [1879] 1898b, p. 366, my translation [*« double crise monétaire et financière »*]). He reiterated this position in a memoir of 1885, arguing this time that the replacement of bank notes by metallic money coined by the state would allow, at the same time, to put an end to monetary fluctuations of speculative origin, and to amortise part of the public debt (Walras [1885] 1898b, pp. 46-49)[21]. In 1898, in an article published in the *Revue d'économie politique*, observing that chequing account balances produced the same effects as bank notes, he proposed a "Plan for a Transfer Bank" (my translation [*« Plan d'une Banque*

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[19] The participants to this debate included Victor Modeste, Jean-Gustave Courcelle-Seneuil, Gustave du Puynode and Théodore Mannequin. See Juurikkala (2002) for a summary of these discussions, which he interprets from the point of view of the Austrian school.

[20] "[T]he issuing of bank notes widens the limits of credit, by allowing the banks and bankers to make loans to entrepreneurs without borrowing from the capitalists. . . . A double consequence ensues: first, the proportion of the production of consumable goods and new capital goods is changed, the ones decrease in quantity while the others increase in quantity; and, second, the price of all these products is changed since . . . their total value is increased by the amount of the issue of bank notes" (Walras [1879] 1898b, pp. 348, 350, my translation [*« [L]'émission des billets de banque recule les limites du crédit en permettant aux banques et banquiers de prêter aux entrepreneurs sans emprunter aux capitalistes. […] Il en résulte une double conséquence : en premier lieu, la proportion de la production des revenus consommables et des capitaux neufs est changée, il y a diminution dans la quantité des uns et augmentation dans la quantité des autres ; et, en second lieu, le prix de tous ces produits est changé puisque […] leur valeur totale est augmentée du montant de l'émission des billets de banque »*]). This analysis by Walras, like that of Joplin which we mentioned earlier, clearly evokes the concept of "forced saving", as Arthur Marget (1931, p. 598n68) remarked.

[21] Let it be reminded that Walras, in contrast to the *currency principle*, recommended that money be metallic, but not automatic: under his proposed system of gold monometallism with regulating silver token (*billon d'argent régulateur*), the state would vary the quantity of silver token in circulation so as to stabilise the purchasing power of money, indicated by an index of prices (of the type of those proposed by Jevons) (see Walras [1884] 1898b, pp. 3-11). Just like Ricardo before him and Fisher after him, but unlike most of the above-mentioned authors, he made a case for active monetary management: "I do not share, as for me, this repulsion for the intervention of the state" (Walras [1884] 1898b, p. 11, my translation [*« Je ne partage pas, quant à moi, cette répulsion pour l'intervention de l'État »*]). "Money should have a real value equal to its nominal value . . . [M]oney should not be and will not be automatic" (Walras [1886] 1898b, p. 125, my translation [*« La monnaie doit être d'une valeur réelle égale à sa valeur nominale […]. [L]a monnaie ne doit pas être et ne sera pas automatique »*]).

de virements »]) so as to separate the issuing of cheque-book money from discount activity. This Transfer Bank—a "large establishment, if not state-owned, privileged at least" (Walras [1898a] 1898b, p. 377, my translation [*« vaste établissement, sinon d'État, au moins privilégié »*])—would keep the quasi-totality of the country's cash reserves, and allow making payments on the condition that "the total amount of chequing account balances always lies as money in the till" (*ibid.*, p. 378, my translation [*« le montant total des crédits des comptes courants se trouve toujours en monnaie dans la caisse »*]). It would be subject, in other words, to a 100% reserve requirement. Discount banks and other credit institutions would themselves keep their own cash money at the Transfer Bank, and make their payments through its intermediary (*ibid.*, p. 396). The purpose, once again, was to make sure "that the monetary circulation would not be disturbed by the arrangements of credit" (*ibid.*, p. 395, my translation [*« que la circulation monétaire ne soit pas troublée par les combinaisons du crédit »*]). All of these texts by Walras have been reproduced in his *Études d'économie politique appliquée* (Walras 1898b)[22].

In 1912, in his book *Theorie des geldes und der Umlaufsmittel* (translated in English as *The Theory of Money and Credit* in 1934), the Austrian economist Ludwig von Mises (1881-1973) proposed for his part to extend the provisions of the English Bank Charter Act of 1844 to chequing accounts[23]. This would allow, according to him, "to eliminate as far as possible human influence on the exchange-ratio between money and other economic goods" (Mises [1912] 1953, p. 407). Mises, indeed, was opposed to any form of state intervention in monetary management[24]. His arguments were also based upon his own theory of the cycle: he sought a means of fighting "[t]he possibility of causing temporary fluctuations in the exchange-ratios between goods of higher and of lower orders by the issue of fiduciary media, and the pernicious consequences connected with a divergence between the natural and money

[22] This work has been re-edited as part of Walras's *Œuvres économiques complètes* (see Walras [1898] 1992, Vol. 10). It has also been translated in English, under the title *Studies in Applied Economics*, in two volumes—see Walras ([1898] 1994, Vol. 1; [1898] 1995, Vol. 2).

[23] "The basic conception of Peel's Act ought to be restated and more completely implemented than it was in the England of his time by including the issue of credit in the form of bank balances within the legislative prohibition" (Mises [1912] 1953, p. 408). He would be more precise in 1928 as to the type of deposits concerned, specifying that this provision would apply to "bank balances subject to check" (Mises [1928] 1978, p. 150).

[24] Many years later, in *Human Action*, noting the similarity between his own recommendations and Fisher's 100% money proposal, Mises ([1949] 1963, pp. 442-43) would add: "But Professor Fisher combined his plan with his proposals concerning the adoption of an index-number standard. It has been pointed out already why such a scheme is illusory and tantamount to open approval of the government's power to manipulate purchasing power according to the appetites of powerful pressure groups."

rates of interest . . .” (Mises [1912] 1953, pp. 407-08)[25]. He would reiterate this proposal on many occasions, in particular in his book *Geldwertstabilisierung und Konjunkturpolitik* (English translation: *Monetary Stabilization and Cyclical Policy*) published in 1928 (Mises [1928] 1978, p. 150).

2. The 100% money proposal of the 1930s[26]

2.1. Frederick Soddy, a direct forerunner of the 1930s' reform plans

The experience of the First World War, having brought a suspension of the metallic convertibility of many currencies, would lead an increasing number of economists to regard the gold standard as a “barbarous relic”, according to Keynes's ([1923] 1971, p. 138) famous expression. Such would be the case, as we will see, of most of the “100% money” writers of the 1930s. In this respect, one should first mention the contribution of a Nobel Prize-winner in Chemistry, the Englishman Frederick Soddy (1877-1956)[27]. In his book *Wealth, Virtual Wealth and Debt*, published in 1926, he argued that money creation by banks seriously aggravated the variations in the quantity of money (“we now have a concertina instead of a currency”, Soddy [1926] 1933, p. 330), while depriving the Treasury from important revenues. He concluded that “[t]he State must recover its sole prerogative in the issue of money, and make it impossible for the banks to issue money” (*ibid.*, p. 229), specifying:

> The banks should by law be required to keep national money, £ for £ of their liabilities for customers' “deposits” in current account, and only be permitted to lend money genuinely deposited into their keeping by its owners, who give up the use of it for the stipulated period of the loan. (Soddy [1926] 1933, p. 332)

Writing in a deflationary context, following the return of the pound sterling to its pre-war gold parity in 1925, he also proposed to make money inconvertible into gold, and stabilise its purchasing power by the sole management of its quantity, according to a general index of prices (*ibid.*, pp. 242-45). In many respects, Soddy's proposal directly anticipated that of the 1930s North American authors, and can certainly be considered as the first detailed

[25] This argument as to the natural determination of the rate of interest, an echo of which could be found in the writings of Walras ([1898a] 1898b, p. 396), will also be mentioned by Fisher ([1935] 1945, p. 140): “Under the 100% system the stabilizing function of the Currency Commission would be carried out with far less disturbance to interest rates . . . Interest rates would seek their level in a natural way according to the supply and demand of loans . . .”

[26] This section largely builds upon Ronnie J. Phillips's book, *The Chicago Plan and New Deal Banking Reform* (1995).

[27] Soddy had won the Nobel Prize in Chemistry in 1921 for his works on radioactivity. For a summary of his economic thought, see Daly (1980).

formulation of the 100% money proposal in its modern version, freed from any dependency on gold[28]. In this regard, it is interesting to note that his 1926 book was reviewed—either positively or negatively—by a certain number of economists, some of whom would later support the 100% money proposal in the 1930s[29]. Among those, Frank H. Knight, one of the future authors of the Chicago Plan (then teaching at the University of Iowa), although critical of Soddy's book in many respects, was on the whole in agreement with his monetary reform scheme[30,31]. This led Phillips (1995, p. 46) to argue that "[t]he ideas of the Chicago economists on banking reform were influenced by Soddy". George S. Tavlas (2018), however, strongly disagrees with this idea, noting that both Knight and Simons had denied being influenced by the British man, and affirmed having advocated the 100% reserve idea well before the 1930s[32]. Soddy would publish a second edition of his book in 1933

[28] Soddy ([1926] 1933, pp. 322-26) tended to mix up his arguments with conspiracy theories, implying that the existing monetary system served the domination of a financial elite. He was not, however, in favour of nationalising the banks: "Avoid as the plague schemes for nationalizing banks. The object is to stop private minting and nationalize money itself, not to control legitimate account-keeping or other financial institutions" (Soddy 1934, p. 211).

[29] Daly (1980, p. 471) affirms: "With the significant exception of Frank Knight . . . Soddy's work was ignored by economists". Yet, Soddy's books were reviewed by nearly a dozen economists, including for example James W. Angell, Roy Harrod or Arthur W. Marget.

[30] "The practical thesis of the book is distinctly unorthodox, but is in our opinion both highly significant and theoretically correct. In the abstract, it is absurd and monstrous for society to pay the commercial banking system 'interest' for multiplying several fold the quantity of medium of exchange when (a) a public agency could do it at negligible cost, (b) there is no sense in having it done at all, since the effect is simply to raise the price level, and (c) important evils result, notably the frightful instability of the whole economic system and its periodical collapse in crises, which are in large measure bound up with the variability and uncertainty of the credit structure if not directly the effect of it" (Knight 1927, p. 732).

[31] Another future 100% money advocate, James W. Angell of the University of Columbia, wrote a (very positive) review of Soddy's book in 1927; but, contrary to Knight, he was then not (yet) convinced of the merits of such a reform (Angell 1927, pp. 622-23).

[32] Tavlas especially quotes the following passage from a letter from Knight to Fisher: "I completely disclaim getting the one hundred per cent money idea from Soddy or anybody else, as far as I am personally concerned. I was always skeptical about the theory of pyramiding, and think I have taught practically the one hundred per cent doctrine from the beginning of work as teacher, in 1917" (Letter from Knight to Fisher, September 2, 1937, in Barber *et al.* (ed.) 1997, Vol. 11, p. 4, quoted by Tavlas 2018, p. 16). He also refers to an abstract from a 1934 letter from Simons to Fisher: "Your remark about the Bank of England reminds me that I got started toward this scheme of ours about ten years ago, by trying to figure out the possibilities of applying the principle of the English Act of 1844 to the deposits as well as to the notes of private banks. The Act would have been an almost perfect solution of the banking problem, if bank issue could have been confined to notes" (Letter from Simons to Fisher, January 19, 1934, quoted by Phillips 1995, p. 67, and by Tavlas 2018, p. 15). Fisher himself was criticised by Soddy, who, although Fisher cited him in his book, felt he had not been acknowledged for having formulated the 100% money proposal in the first place (see Dimand 1991, p. 24; 1993b, p. 70).

(introduced by a "Foreword to the American Nation"), and would reiterate his reform proposal in further publications (see especially Soddy 1933a, 1933b, 1934).

2.2. The economists in the face of the "Great Contraction" of 1929-33 in the United States

The 100% money proposal would then reappear in the United States, during the Great Depression of the 1930s which followed the stock market crash of October 1929. Hyman Minsky, in a foreword to Phillips's book (1995, pp. xi-xii), well summarises the U.S. context of that time:

> The Federal Reserve System, which had been created, in the aftermath of the banking panic of 1907, in the belief that a central bank could contain panics, was unable to prevent the collapse of the financial system from 1929 to 1933. Furthermore, it was not the main player in the reopening of the banks. In 1933 the Federal Reserve System, itself, was a failure. As a result . . . the early 1930s was a period of intense and wide debate in the United States, as well as in the rest of the capitalist world, on what had gone wrong to cause the disaster and what could be done to prevent such disasters in the future.

From 1929 to 1933, the quantity of money in the United States (cash and deposits transferable by cheque) fell from 27 to 20 billion dollars (Fisher [1935] 1945, p. 5). This "Great Contraction" (Friedman and Schwartz 1963, p. 299) occurred along with a series of bank failures, of which it probably was both a cause and a consequence. Many factors were put forward to explain this crisis, the severity of which was specific to the United States. Among banking factors, one may mention the atomicity of the U.S. banking system, and the divided character of its regulatory and supervisory framework. Among monetary factors, the inadequacy of the theoretical framework upon which the Federal Reserve was created was often stressed. The Federal Reserve Act of 1913, indeed, was based on the *real bills doctrine*, according to which the issue of money could neither be excessive nor insufficient as long as it rested upon the discount of *bona fide* short-term commercial paper. As many writers pointed out, this led the monetary authority to adopt a pro-cyclical rather than counter-cyclical policy, as the amount of discountable paper increases in periods of inflation (precisely when a monetary contraction would on the contrary be required to stabilise the price level) and decreases in periods of deflation (precisely when a monetary expansion would on the contrary be desirable). As Robert W. Dimand (2003b, p. 114) explains:

> The new central banking system was to act in accordance with the real bills doctrine . . . that discounting by a lender of last resort of bills arising from real economic activity . . . would be neither inflationary nor deflationary. . . . This doctrine dominated economic thinking in the Federal Reserve System in the 1920s . . . Thinking in [these]

> terms . . . the Federal Reserve System looked to nominal interest rates and member bank indebtedness at the discount window as indicators of the ease or tightness of monetary policy, rather than to the quantity of money, price level, or real interest, and so mistakenly believed monetary policy to be easy even in the depths of the Great Contraction of the early 1930s.

The passive attitude of the Federal Reserve Board in the face of the deflationary spiral would be severely criticised by some economists, worried that the money supply was contracting[33]. They were going to make themselves heard. During the summer of 1931, for example, Irving Fisher alerted Eugene Meyer, governor of the Federal Reserve Board, on the danger presented by the contraction of deposits transferable by cheque, of which the latter was obviously far from fully aware[34]. In January 1932, the Hoover administration was to be enjoined, both by a memorandum coming from three young economists of Harvard, and by a telegram signed by 24 economists gathered for a conference at the University of Chicago, to act without delay: it was demanded, first, to widen the range of assets eligible to the Fed, then to conduct a vigorous open market policy, coupled with a high level of public spending, so as to fight deflation (Currie *et al*. [1932] 2002 ; Wright, ed. 1932, pp. 161-63)[35]. Hoover did not stay idle. In December 1931, he took the initiative of setting up a large public institution in charge

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[33] See for example Fisher (1933b, p. 347) or Currie (1934), who anticipated the criticisms formulated much later by Friedman and Schwartz (1963, pp. 407-19). On the Federal Reserve's attachment to the *real bills doctrine* or *commercial loan theory of banking*, see also Currie ([1934a] 1968, pp. 34ff.) and Whitllesey (1935, pp. 3-4). See also, on this matter, the recent book by Humphrey and Timberlake (2019).

[34] See Cargill (1992, pp. 1275-76), who quotes a letter from Fisher to Warburton, dated 23 July 1946, of which the following abstract is revealing: "[I]n the summer of 1931 I called on Eugene Meyer, the chairman of the Federal Reserve Board. I said: 'I am getting alarmed to see demand deposits diminish. It seems to me this may make great trouble.' He said: 'What did you call the figure?' Amazed, I said: 'The full name is individual deposits subject to check without notice.' He rang a bell and asked his assistant . . . In a few minutes the report came in and I pointed and said: 'You see that during the last several call dates there has been a continuous reduction.' He said, 'Yes, I see it.' Of course his main object should have been to see it all along and long before his attention was called to it. He was like a chauffeur going blindfolded and running into the curb because he could not see the direction in which he was driving. Senator Glass, one of the chief founders of the Federal Reserve System was blind in the same way."

[35] On the call from Harvard, see the "Memorandum prepared by L. B. Currie, P. T. Ellsworth, and H. D. White" of January 1932 (Currie *et al*. [1932] 2002, edited by Laidler and Sandilands), one author of which, Currie, will be one of the first to propose a 100% money reform two years later. This memorandum especially insisted on the importance of financing public spending out of debt, rather than taxation, to allow the creation of additional means of payment through bank loans (see Currie *et al*. [1932] 2002, p. 537; Laidler and Sandilands 2002). The call from the 24 economists gathered at the occasion of the conference on "Gold and Monetary Stabilization", organised at the University of Chicago under the auspices of the Norman Wait Harris Memorial Foundation, was sent by telegram to President Hoover on 31 January 1932 (see Wright, ed. 1932). Nine out of the 24 signatories would later support the 100% money proposal: Garfield V. Cox, Aaron Director, Frank H. Knight, Lloyd W. Mints, Henry Schultz and Henry C. Simons of the University of Chicago, Irving Fisher of Yale, James W. Angell of Columbia, and Charles O. Hardy of the Brookings Institution.

of making loans to businesses: the Reconstruction Finance Corporation (RFC) would be created on 22 January 1932. Shortly afterwards, he launched is "anti-hoarding" campaign inviting citizens to increase their spending for the sake of the country—which, however, would end in failure (Barber 1985, p. 141-44). On 27 February 1932, the first Glass-Steagall Act was passed, authorising in particular—at variance with the *real bills doctrine*—the Federal Reserve to issue notes against the purchase of government securities. This enabled the latter to launch extensive open market operations: 1.1 billion dollars of government securities were bought during the six following months (Phillips 1995, p. 25). In April 1932, in a memorandum addressed to Congressman Samuel B. Pettengill, a group of twelve economists from the University of Chicago demanded further injections of purchasing power in the economy through large outlays of public expenditure, ideally financed by direct selling of government bonds to the Federal Reserve Banks (Cox *et al*. 1932; see also Barber 1985, pp. 155-57)[36]. The recovery effect of Hoover's policy, however, was short-lived. A strong advocate of a balanced budget, he had decided as early as the end of 1931 to implement a tax increase, in parallel to the increase in public spending—which was to be validated by the Revenue Act of 1932 (Barber 1985, p. 135 ; Phillips 1995, p. 26). In addition, the Federal Reserve was to stop its open market programme in July 1932. It must be recalled that no mandate, at that time, obliged the monetary authority to intervene to stabilise the price level. The original version of the Owen-Glass Bill—which would become the Federal Reserve Act in 1913, bearing creation of the Fed—yet included, at the request of Senator Owen (who was then collaborating with Fisher), a provision obliging the Federal Reserve to stabilise an index of the price level; but this was rejected at the House of Representatives under the influence of Carter Glass, then a congressman at the House (see Dimand 2003b, p. 108; 2019, pp. 66-67). Many other bills addressing the same purpose, generally backed by Fisher, were similarly rejected in the 1920s. In Spring 1932, Congressman T. Alan Goldsborough—still in collaboration with Fisher—submitted a new bill obliging the Fed to undertake a "reflation", then a stabilisation, of the price level. But the bill, which easily passed the House, was defeated in the Senate, once again under the influence of Glass (see Barber 1985, pp. 160-61; Phillips 1995, p. 26). Free from any obligation to fight deflation, the Federal Reserve would stay idle when a new wave of bank failures occurred at the end of 1932, continuing into 1933

[36] This group included this time seven of the future "Chicago Plan" authors: the six members who had already signed the January 1932 memorandum (see the previous note), plus Paul H Douglas. As Tavlas (2019a, p. 262) remarks: "Douglas played the primary role in developing the view that fiscal deficits, and not open-market operations or re-discounting, should be used to effectuate monetary expansion during depressions".

(Barber 1985, p. 186). On 3 March 1933, bank holidays had been declared in more than half of the States, and when the new President Franklin D. Roosevelt took office on 4 March, "the banking system in the United States teetered on the edge of total collapse" (Phillips 1995, p. 37).

2.3. The national bank holiday and the Chicago memorandum of March 1933

Roosevelt's first act as President was the proclamation, on 5 March 1933, of a national bank holiday: all the banks would have to remain closed until they were examined, and only those deemed to be sufficiently sound would be allowed to reopen. Following the Emergency Banking Act which was voted on 9 March, the banks started to reopen on 13 March. The runs had then practically stopped (Phillips 1995, pp. 41-42). During the following days, a group of eight University of Chicago economists—Garfield V. Cox, Aaron Director, Paul H. Douglas, Albert G. Hart, Frank H. Knight, Lloyd W. Mints, Henry Schultz and Henry C. Simons[37]—started to privately circulate a six-page memorandum, a copy of which was sent to Secretary of Agriculture Henry A. Wallace on 16 March (Phillips 1995, pp. 47-48). A letter of introduction, written by Knight and signed by all eight members, specified that they had been seeking to formulate a reform programme "both for emergency relief, and for permanent banking reform" (Knight *et al*. [1933] 1995, p. 191). They sought to make sure that another similar depression could not happen again. To this end, the memorandum contained a radical reform proposal, which would later come to be known as the "Chicago Plan of banking reform", according to the expression coined by Hart (1935). On the one hand, the state would be entrusted with the exclusive privilege of creating money: the Federal Reserve Banks would be taken over by the federal state and their notes declared full legal tender, whereas bank deposits "subject to check or to payment on demand" would be taken in charge by a new type of institutions ("Deposit-Banks"), "which shall be required to maintain reserves of 100% in lawful money and/or deposits with the Reserve Banks", and would be remunerated "solely from service-charges" (*ibid.*, pp. 193-95). One finds there the essence of the 100% money proposal such as we described it in the general introduction[38]. On the other hand, the Chicago

[37] All these members were already among the signatories of the memorandum addressed to Pettengill in April 1932 (except for Hart), and of the telegram sent to Hoover in January 1932 (except for Douglas and Hart).

[38] There were some features specific to the Chicago Plan however: (i) existing banks would be dissolved and replaced by new institutions, whereas in other proposals they would be maintained, and simply split into different departments; (ii) the 100% reserve requirement would here apply to deposits transferable by cheque or "payable on demand", whereas in other proposals only transferable deposits would be concerned; (iii) the function of monetary authority would here be exercised by the

economists would put an end to bank-lending activity, and replace the banks, in their function of allocating savings, by investment trusts (or "Lending Companies") which would be allowed "to lend or invest only the funds invested by [their] stockholders (and, perhaps, bondholders)" (*ibid.*, p. 195)[39]. Under this system, money would mainly be issued against the purchase of Treasury bonds, and the gold standard would be abandoned (*ibid.*, pp. 196-97). These measures, according to their authors, would "provide a permanent solution of the banking problem, and bring about marked improvement in production and employment" (*ibid.*, p. 197). The memorandum concluded with an unsettled question: that of the objective of long-term monetary management, about which the authors had divergent opinions. They agreed, however, on the criterion of price-level stabilisation "as a short-run expedient" (*ibid.*, p. 198). In April 1933, according to Phillips (1995, p. 52), Simons would bring further details on this point, especially insisting on the fact that the monetary authority, although reinforced, should be deprived of any discretionary power. The Chicago memorandum of March 1933 aroused a certain interest within the federal administration, as shown by the very favourable comments by Wallace in a letter to Roosevelt, dated 23 March[40]. It also sparked a number of comments from economists, including Fisher[41]. This memorandum, as Phillips (1995, pp. 52-53) points out, was distributed at the very moment when discussions about bank reform legislation were beginning, and one purpose of the Chicago economists was to prevent the nationalisation of banks, then considered as a real possibility.

2.4. The Chicago memorandum of November 1933 and the Cutting Bill

The Banking Act of 1933—also known as the second "Glass-Steagall Act"—, passed in June 1933, separated investment banking from commercial banking, turned the Federal Open

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nationalised Federal Reserve Banks; in other proposals, this function would be entrusted to a new monetary authority specially created for this purpose.

[39] This provision was specific to the Chicago Plan; it would be neither part of Currie's nor of Fisher's proposals (see Chapter 3 on this matter).

[40] "The memorandum from the Chicago economists which I gave you . . . is really awfully good" (Letter from Wallace to Roosevelt, March 23, 1933, quoted by Phillips 1995, p. 198). The Chicago memorandum of 16 March 1933, together with Knight's enclosed letter, and the letter from Wallace to Roosevelt of 23 March, are reproduced in an appendix to Phillips's book (1995, pp. 191-99). The latter specifies that Roosevelt's own opinion of the Chicago Plan is unknown (*ibid.* p. 53).

[41] Fisher commented: "I realize that you offer this as an academic rather than a practical proposition but I am extremely glad that you are doing so. If it can be made practical I would, I think, favor it and I have been thinking along those lines myself" (Fisher to Simons, March 19, 1933, Simons Papers, quoted by Phillips 1995, p. 50)". As William R. Allen (1993, p. 704) noted, it would not take long for Fisher to support the plan: "He was not an instant convert—not quite—but within a few months he had eagerly adopted the proposal and become its most enthusiastic and conspicuous proponent".

Market Committee—until then informal—into an official body, and established a deposit insurance system (Phillips 1995, p. 56). As Phillips (1995, p. 58) notes, if this Act succeeded in putting an end to bank runs, it did not address the other major preoccupation related to banks—that of reviving the dynamic of credit expansion—and other reforms were deemed to be necessary. In November 1933, the University of Chicago authors of the March memorandum circulated a new and more detailed version of 15 pages ("Banking and Currency Reform"), together with a 6-page appendix ("Banking and Business Cycles") and an 8-page "supplementary memorandum" ("Long-time objectives of monetary management")[42]. These texts were mainly written by Simons[43]. This time, the stress was no longer put on the safety of banks: this issue had been largely dealt with, in the meantime, by the adoption of the deposit insurance scheme. Two other arguments were put forward. On the one hand, the existing system of "'free banking' with respect to deposit currency" was blamed for bringing about "a regulation or manipulation of currency which is totally perverse. Money is created when it should be destroyed, and destroyed when it should be created" (Simons *et al*. [1933] 1994, p. 31). This analysis was detailed in the appendix "Banking and Business Cycles" (*ibid.*, pp. 45-49), in which it was specified that, because of the great sensitivity of the monetary circulation to changes in business profits, coupled with the rigidity of production costs (wages in particular), the supply and the demand for loans greatly increased when profits were rising, and greatly decreased when they were falling, causing cumulative variations in the velocity of circulation of money (V). Because of the dependency relationship between the quantity of money (M) and bank loans, cumulative variations in M would aggravate the process. This is why it was proposed to separate money creation from credit activity. On the other hand, the existing system was viewed as leading to the appropriation of the profits stemming from money creation by private actors, and it was deemed "preposterous", for this reason, that any new money should not be issued by the state itself (*ibid.*, p. 38). It was added that the issuing of money required during the transition to the new

[42] These three documents have been published for the first time in the journal *Research in the History of Economic Thought and Methodology*, Archival Supplement 4, 1994, pp. 31-40. We refer to this edition for page numbers.

[43] Beardsley Ruml, dean of the University of Chicago, specified in a letter to Fisher: "The memorandum is the result of months of group discussions. It represents a sort of revision and extension of the memorandum circulated not very widely last Spring over the signatures of F. H. Knight, Paul Douglas, Garfield V. Cox, W. Lloyd Mints, Aaron Director, Henry C. Simons. The present memorandum has been prepared by Mr. Simons with generous assistance and criticisms from others named above and from Mr. C. O. Hardy, of Brookings. Mr. Douglas, while endorsing the proposals with reference to banking, has not participated in formulating the recommendations for long-run monetary management" (Ruml to Fisher, January 9, 1934, Fisher Papers, Yale University).

system (involving massive purchases of government securities from the banks so as to provide them with the 100% reserves required on their chequing accounts) would allow to significantly reduce (or even cancel) the national debt (*ibid.*, p. 33). For all these reasons, the memorandum called for the "[a]bolition of private-bank credit as an element in the circulating medium" and the "[e]stablishment of a completely homogeneous circulating medium, controlled as to quantity by a governmental agency" (*ibid.*, p. 39). It was added that the latter control should be carried out "under precise, mechanical rules prescribed explicitly in legislation" (*ibid.*). This referred to the preference of most of the Chicago economists for an automatic monetary policy rule, such as fixing the quantity of money, over a price-level stabilisation rule which would leave the monetary authority with a certain margin of discretion[44]. The reasons for this preference were detailed in the supplementary memorandum, "Long-time objectives of monetary management" (*ibid.*, pp. 41-45). The Chicago memorandum of November 1933, Phillips (1995, pp. 66-75) notes, was more widely distributed than that of March, and aroused interest (and criticisms) among economists, both within the academic sphere and the Roosevelt administration. It was particularly discussed within the Department of Agriculture, where Rexford Tugwell, Assistant Secretary, and especially Gardiner Means, assistant to Tugwell, were themselves working on reform proposals aiming at separating the deposit-keeping and lending functions (Phillips 1995, pp. 68-72)[45]. The memorandum also found interest in Congress, especially among the Republican Progressives (*ibid.*, p. 72). Among those, Bronson Cutting, Senator from New Mexico, suggested the Chicago authors translated their ideas into a bill (*ibid.*, pp. 73-74). Simons met with Cutting in March 1934, but, feeling he was not qualified enough to draft an entire bill, he only wrote an outline, out of which the bill was drafted by Robert H. Hemphill, a monetary and financial expert who had himself been advocating the 100% money principle for many years (*ibid*, p. 79)[46]. In June 1934, the bill was introduced in the Senate by Cutting, and in the

[44] Douglas, however, did not share this position, and favoured a price-level stabilisation rule (see Tavlas 2019a, p. 162). On this matter, see also Tavlas (2019b), who contrasts the position of the Chicago economists with that of Fisher.

[45] As Phillips (1995, p. 68) explains: "In late 1933 and early 1934, the administration debate over the Chicago plan was centered within the Department of Agriculture. This is not surprising given the concern over the debt situation of farmers. Henry Morgenthau was the head of the Farm Credit System, and Rexford Tugwell was Assistant Secretary of Agriculture; both had a strong interest in reform of the financial system."

[46] Hemphill (1876-1941) was a financial writer, who had been the first credit manager of the Federal Reserve Bank of Atlanta. He testified in favour of the 100% money reform during the Congressional hearings on the 1935 Banking Act, and wrote the "Foreword by a Banker" to Fisher's book *100% Money* ([1935] 1945). The latter specified in the preface of his book: "Robert H. Hemphill . . . has, he tells me, advocated the 100% principle for many years" (Fisher [1935] 1945, p. xii).

House of Representatives by Congressman Wright Patman of Texas (*ibid*, p. 81). Phillips (*ibid.*, p. 81-82) summarises its content as follows:

> [T]he bill proposed to (1) segregate demand from savings deposits; (2) require the banks to keep 100 percent reserves against their demand deposits; (3) require them to keep 5 percent reserves against their savings deposits; (4) set up a Federal Monetary Authority with full control over the supply of currency, the buying and selling of government securities, and the gold price of the dollar; (5) have the FMA take over enough of the bonds of the banks to provide 100 percent reserve against their demand deposits; and (6) have the FMA raise the price level to its 1926 position and keep it there by buying and selling government bonds.

One finds here the core of the Chicago proposal, with only two notable differences: banks could continue to exercise their financial intermediation function using their savings deposits, and the criterion chosen for monetary policy was that of price-level stabilisation. On these two points, the Cutting Bill was much closer to the version of the plan which would be developed by Fisher. Phillips (1995, pp. 82-83) notes that the introduction of the bill only aimed at placing the 100% reserve proposal on the political agenda; it was clear that, at this moment, it had very little chance of being passed.

Simons further supported the 100% reserve idea in a pamphlet published in 1934 (Simons [1934] 1948). From January 1934 on, however, he would show an increasing preoccupation for an issue which, according to him, put the efficiency of such a reform into question: that of the creation of substitutes to money, not only as means of payment, but especially as liquid stores of value[47]. According to him, the creation (destruction) of liquid assets by financial institutions, through the issuance of short-term debt contracts in particular, had the effect of significantly increasing (decreasing) the velocity of circulation of money (V), even if the quantity of means of payment (M) remained unchanged[48]. For this reason, in his eyes, the risk that serious episodes of booms and depressions might develop remained quite real. From then on, Simons would be particularly reluctant to advocate the practical implementation of the 100% plan, as long as no answer would be provided to this question. Keeping his distance from bill drafting, he would keep supporting the 100% money idea on a purely academic ground, insisting that such reform, to be truly effective, should be coupled with the interdiction of all kinds of debt contracts (Simons 1936, pp. 6-7; 1946, p. 89). At the same time, he would give up his recommendations of an automatic money management rule (which

[47] See for example his correspondence with Douglas, Fisher or Hayek, quoted by Phillips (1995, pp. 89-92). On the exchanges between Simons and Fisher, see also Barber *et al*. (1997, Vol. 14, pp. 126-29).

[48] On this point, his analysis differed from that of Fisher, according to whom V tended to significantly vary only if M significantly varied also. We deal with this question in Chapter 3.

he would keep considering as ideal, but only in theory), and support price-level stabilisation as the best monetary policy objective achievable in practice (Simons 1936, p. 21).

2.5. Currie's and Fisher's plans and the making of the Banking Act of 1935

Fisher, for his part, was quickly to become one of the most fervent advocates of the 100% money reform. As Allen (1993, pp. 707-08) notes: "By the end of 1933, Fisher had actively entered the lists in support of 100 percent reserves. He helped to spread awareness of the Chicago memoranda, and he repeatedly acknowledged his indebtedness to Simons and to others for his introduction to the general plan." As early as January 1934, the Yale economist had been preparing the first draft of a bill aiming at establishing a 100% reserve system, as well as speech notes, for Congressman Goldsborough. This was only the beginning of a long series of works on the subject: "[B]eginning in 1934 and through the rest of his life, Fisher produced a flood of output . . . and became the central figure in the debate" (Allen 1993, p. 708). During the year 1934, Fisher sent the manuscript of his book *100% Money*, then in preparation, to more than 150 people—mostly economists and bankers—so as to receive a maximum of criticisms.

Starting from 1934, another author was to develop independently the idea of a 100% money system. The Canadian-born economist Lauchlin Currie, then a teaching assistant at Harvard, published in that year a book which attracted much attention, *The Supply and Control of Money in the United States*, in which he provided a detailed analysis of the defects of the existing system in terms of monetary control. He especially criticised the "perverse elasticity of the Federal Reserve System", under which "on the upswing of the business cycle the supply of money automatically tends to expand, and on the downswing to contract" (Currie [1934a] 1968, pp. 130-31). In a chapter on the "ideal conditions for control", he argued that "the most perfect control could be achieved by direct government issue of all money, both notes and deposits subject to check" (*ibid.*, p. 151), and then detailed his own version of the 100% money proposal[49]. Contrary to the Chicago Plan, but similarly to Fisher, he proposed 100% reserves on the sole deposits transferable by cheque, leaving the banks free to use (non-transferable) savings deposits to finance their loans and investments (*ibid.*, p 152). A distinctive feature of his proposal was to require 0% reserves behind savings deposits (*ibid.* p. 163); another was to contemplate a monetary authority (under his plan, the Federal Reserve

[49] Currie was then not aware of the Chicago memoranda. As he specified in a footnote: "As these pages were going through the press Mr. A. G Hart called my attention to a mimeographed report on Banking and Currency Reform prepared by a group of economists in the University of Chicago" (Currie [1934a] 1968, p. 156n1).

Board) which would not necessarily be independent from the government[50]. In June 1934, Currie was invited by Jacob Viner—then special assistant to Secretary of the Treasury Morgenthau—to join the "Freshman Brain Trust" in Washington, where he was asked to reflect upon an ideal monetary system[51]. In September 1934, he submitted a report taking over and developing his version of the 100% plan (Currie [1934b] 1968), which, although "quietly buried" by Viner, made a strong impression upon the latter (Currie [1953] 2004, p. 202)[52]. In November 1934, Currie moved to the Federal Reserve Board to follow Marriner Eccles, who had just been appointed as the Board's new president (Sandilands 2004, p. 175). Together, Currie and Eccles would draft what would become the Banking Act of 1935 (Sandilands 1990, pp. 62-66; 2004, p. 176-77; Phillips 1995, pp. 101-04, 115-17; Meltzer 2003, p. 415). By the end of the year 1934, the reform of the Federal Reserve System had become a priority of the Roosevelt administration (Phillips 1995, p. 93).

In this context, Fisher intensified his lobbying in favour of the 100% plan. In January 1935, together with Hemphill, he met with Roosevelt at the White House (Barber *et al.* 1997, vol. 14, p. 94)[53]. In addition to many speeches and press articles, he supported this reform idea during the Congressional hearings on the Banking Act (see Fisher 1935a). In April 1935, the first edition of the book he had been preparing for over a year was published, the full title of which summarised the advantages he attributed to the proposal: *100% Money, Designed to keep checking banks 100% liquid; prevent inflation and deflation; largely to cure or prevent depressions; and to wipe out much of the National Debt*. Fisher put strong emphasis on the fact that his plan did not aim at nationalising *banking*, but *money* (Fisher [1935] 1945, p. 18). The book opened with a "Foreword by a Banker" (Hemphill) and concluded with "Comments of Two Bankers" (the president and vice-president of the Plaza Bank of St. Louis), whereas

[50] "Personally I feel that no government can delegate to an independent body such a supremely important factor for good or ill as the control of the monetary system" (Currie [1934a] 1968, p. 155).

[51] Currie ([1953] 2004, p. 201) thus recalls in his memoirs: "Secretary Morgenthau suggested to Professor Jacob Viner that he assemble the best young brains he could find in the fields of monetary theory, public finance and banking legislation, give them an absolutely free rein and see what they could come up with. . . . Thus the Freshman Brain Trust of 1934 was born. . . . My assignment, complete liberty to develop the most perfect monetary system in the world, was a challenge to which I responded eagerly. For three months I was completely absorbed in my work elaborating in considerable detail what I called the 100 percent Reserve System, which I had suggested in my book on money". About Currie's history, see especially Sandilands (1990).

[52] "Although Viner quietly buried my report, he was sufficiently impressed with my work to ask me to remain at the Treasury as his assistant – an opportunity I jumped at" (Currie [1953] 2004, p. 202).

[53] About the many exchanges between Fisher and Roosevelt during the New Deal period, see Allen (1977); about Fisher's campaign in favour of the 100% money plan, see Allen (1993) and Dimand (1993b).

the preface mentioned many other bankers who approved the plan[54]. In order to stress the feasibility of his plan, Fisher abundantly referred to the English Bank Charter Act of 1844, which, in his eyes, embodied the same principles as the 100% money proposal[55]. Contrary to the Chicago Plan (but this difference was not stressed by Fisher), there was no question for Fisher to take away from the banks their lending activity, but rather to sharply separate the deposits fulfilling a means of payment function (subjected to 100% reserves) from those fulfilling an investment function (remaining only fractionally covered by reserves, but with no possibility of being used as means of payment) (*ibid.*, pp. 12-13). Money would be issued and regulated by a "Currency Commission", independent both from the banks and from the Government, and subjected to a mandate to be defined by Congress (*ibid.*, pp. 9, 206). Consistently with his ideal of a stable purchasing power of the dollar, Fisher favoured a price-level stabilisation policy, insisting that the recent successful implementation of a similar policy by Sweden showed that it was perfectly feasible (*ibid.*, p. 86). Just like Simons ([1934] 1948, pp. 55-56), Fisher saw in the 100% money reform one of the best safeguards of capitalism, which at the time was increasingly threatened in the Western world[56].

2.6. The passage of the Banking Act of 1935 and the failure of the 100% money plan to be adopted

The bill which was going to become the Banking Act of 1935—largely written by Currie with substantial input from Eccles (Sandilands 1990, p. 64; Phillips 1995, p. 116)—was made up of three titles. The first, which established a permanent federal deposit insurance system, and the third, which mainly contained technical specifications, were not particularly subject to controversy. As Phillips (*ibid.*, p. 119) notes: "The debate over the bill centered on Title II which sought to give greater powers to a revised Federal Reserve Board whose members would be appointed by the president". For the supporters of the 100% money reform, Section

[54] The banking profession, indeed, was not systematically hostile to the 100% money proposal, as shows a review of Fisher's book by the banker Harvey E. Fisk in *The American Economic Review*: "The plan itself is simple, and apparently the mechanics of its operation also is simple; but, after all, it is a radical proposition. However, coming from Fisher after he has discussed it for over a year with economists and bankers of standing, it should not lightly be brushed aside" (Fisk 1935, p. 569).

[55] However, we criticise this comparison in Chapter 2.

[56] "I am convinced that, without stable money, the private profit system will some day go. This means that the bankers, as long as they insist on operating or are permitted to operate, their 10% system, will be playing with fire. The best available safeguard against the overthrow of capitalism is the 100% system, combined with money management, to give us a stable dollar. Of all people, bankers should, therefore, favor this proposal if only in self-defense. Otherwise, by the irony of fate, they may some day be the ones to upset capitalism" (Fisher [1935] 1945, p. 219).

209 of Title 2, in particular, was of special importance. It contained the following provision (quoted by Phillips 1995, pp. 116-17):

> "[T]he Federal Reserve Board, in order to prevent injurious credit expansion or contraction, may by regulation change the requirements as to reserves to be maintained against demand or time deposits or both by member banks in any or all Federal Reserve districts and/or any or all of the three classes of cities referred to above".

As Sandilands (1990, p. 66) specifies: "It had been Currie's intention to give the Board unlimited powers to alter reserve requirements, with a view eventually to achieving the 100 percent reserve system". A revised version of the bill—but including this Section 209 unaltered—was voted by the House of Representatives on 9 May. But, in the Senate, the second title of the bill, as a whole, would meet the fierce opposition of Glass, "violently opposed to the legislative changes which overhauled the system he had put in place in 1913" (Sandilands 1990, p. 64). Glass had been particularly upset not to have been consulted by Roosevelt about the appointment of Eccles at the head of the Federal Reserve Board (Sandilands 1990, p. 64), as well as not to have had the bill in his hands before it was introduced in Congress (Phillips 1995, p. 120). He did his best to empty Title 2 of its substance. The following addition was thus brought to Section 209, concerning the possibility for the Board to modify reserve requirements:

> "but the amount of the reserves required to be maintained by any such member bank as a result of any such change shall not be less than the amount of the reserves required by law to be maintained by such bank on the date of enactment of the Banking Act of 1935 nor more than twice such amount" (quoted by Phillips 1995, pp. 126-27).

As Phillips (*ibid.*, p. 127) notes: "This effectively prohibited any move to raise reserve requirements to 100 percent"[57]. Meanwhile, Senator Cutting had reintroduced his bill (aiming at creating a Federal Monetary Authority and establishing 100% reserves) on 4 March, but he

[57] The possibility offered by the Banking Act of 1935 to double reserve requirements would still be welcomed by Fisher ([1935] 1945, p. vii), in the second edition of his book published in 1936, as "a step in the direction of the 100% idea". The Federal Reserve Board would use this new power as soon as July 1936, doubling the required reserve ratios within a few months (Meltzer 2003, pp. 502-09). This decision would be interpreted by some as the cause of the 1937-38 recession (see especially the interpretation by Friedman and Schwartz 1963, pp. 517-34), whereas Eccles and Currie rather ascribed it to the simultaneous tightening of budgetary policy (see Currie [1938] 1980; Friedman and Schwartz 1963, p. 534; Sandilands 2004, pp. 178-85). In any case, this type of action—"increasing reserve requirements *without* provision of additional reserves" (Dimand 1993b, p. 73, italics added)—should not be likened to an implementation (even partial) of the 100% money plan, which would consist, on the contrary, in increasing reserve requirements on chequing accounts *with* provision of the required additional reserves. Be that as it may, as Dimand (*ibid.*) notes, "[t]his episode did nothing to foster confidence in higher reserve requirements as an aid to macroeconomic stability".

tragically died in an airplane crash on 6 May (*ibid.*, pp. 122, 125). A last attempt at introducing a 100% reserve provision in the Banking Act of 1935 would be defeated in July (*ibid.*, p. 126).

The endeavours of the 100% money reform advocates to incorporate their proposal into the Banking Act of 1935 were thus unsuccessful. Phillips (*ibid.*, p. 134) puts forwards at least four arguments to explain this failure: "(1) administration blunders in the handling of the banking legislation; (2) an ill-informed public; (3) the death of Senator Bronson Cutting; and (4) a belief that the Banking Act of 1935 would not be the final New Deal banking legislation". The first of these reasons refers to the fact that the administration omitted to consult with Glass. The second, as Phillips (*ibid.*) specifies,

> was a misunderstanding of the implications of the 100 percent reserve plan. Despite the efforts of Irving Fisher to educate the public, there was a characterization of the plan as one to end private banking (Allen 1993). This view was fueled by articles such as that written by Bronson Cutting titled "Is Private Banking Doomed?"—which he answers with a resounding "yes".

There actually seemed to be an important gap between Cutting's speeches on the one hand, and his bill on the other hand—which, be it recalled, had been drafted by Hemphill over an outline from Simons. The proposal embodied in the Cutting Bill aimed at establishing a 100% money system—which had been devised, by its theoreticians, as the best alternative to the nationalisation of banks[58]. In its public comments, however, Cutting held a totally opposite stance:

> Cutting thought that bankers were responsible for the severity of the depression . . . and lamented FDR's failure to nationalize the banks in March 1933. . . . On May 19, 1934, [he] gave a speech to the People's Lobby in which he announced his intention to introduce a bill to create a national bank that would have a monopoly of credit and consequently prohibit private bankers from making profits through lending activities. (Phillips 1995, pp. 80-81)

More generally, Phillips (1995, pp. 77-78, 118) notes that the discussions, both in Congress and in the press, often tended to confuse money and credit, and were frequently mistaken as to the purposes of the 100% plan.

Be that as it may, its failed attempts at adoption at the time of the 1935 Banking Act was far from putting an end to the discussions on the 100% money proposal, "which really began to generate widespread academic interest after 1935" (Phillips 1995, p. 136)—as we will see

[58] Thus, according to Fisher ([1935] 1945, p. 203): "So far from nationalizing the banks, the 100% system might afford the banks the only escape from nationalization". See also Simons ([1934] 1948, pp. 319-20n6) or Currie ([1934b] 1968, p. 198).

in the next section. Nor did it put an end to the efforts aiming at getting the plan adopted. Currie—who remained an adviser to Eccles at the Federal Reserve from 1934 to 1939, before serving as administrative assistant to President Roosevelt on economic affairs from 1939 to 1945 (Sandilands 1990; 2004, p. 187)—proposed a new version of his 100% plan in a memorandum of August 1938 (Currie [1938] 2004); but, as he would later comment: "The Plan was greeted within the Reserve System with thunderous silence. It was recognized that the Plan would have no chance of adoption, which is perhaps the reason why nobody bothered to criticize or even discuss it" (Currie [1953] 2004, p. 207). Fisher, for his part, continued to work on bills for a 100% money reform with the Democratic representatives Charles G. Binderup of Nebraska and Wright Patman of Texas in 1937 and 1938 (Barber *et al*. 1997, Vol. 14, p. 171), then, from 1939, with Jerry Voorhis, Democratic representative of California. Until the end, he would keep trying to convince Roosevelt of the soundness of the plan, as evidenced by the numerous letters he addressed to the President (see Allen 1977, 1993; Barber *et al*. 1997, Vol. 14). As of 1939, he joined forces with others in collective endeavours, collaborating to the writing of a memorandum ("A Program for Monetary Reform") with five other economists—Paul H. Douglas of the University of Chicago, Frank D. Graham of Princeton University, Earl J. Hamilton of Duke University, Willford I. King of New York University, and Charles R. Whittlesey of Princeton University[59]. This programme, very "Fisherian" in spirit, was sent to a thousand economists in February 1939. In March 1939, Fisher affirmed having received the general approval of 150 of them (Barber *et al*. 1997, Vol. 14, p. 195). In the same month, the Program was sent to Roosevelt (*ibid.*, p. 197). A revised version, including the additional signature of John R. Commons of the University of Wisconsin[60], was sent to Congress in August 1940, and to Roosevelt in January 1941; it was mentioned that the programme was now supported by about 400 economists (Fisher *et al*. 1940; see also Barber *et al*. 1997, Vol. 14, p. 206). In 1944, Fisher sought to rally Keynes to his cause. In a letter congratulating the latter for his Bretton Woods speech, he added, in reference to the 100% plan:

> If you are familiar enough with this plan to favor it and later to press for it in England, I think it quite possible it could, after the war, be put over for America and other countries, as the best *national* plan to interlock with the *international* plan you are now trying to put over. We could then avoid great inflation and deflation in future over

[59] The initial version of this memorandum, dated February 1939, is reproduced in the editorial postscript to Barber *et al*. (1997, Vol. 11, pp. 301-06). There also exists a much longer and more detailed version, dated July 1939 (Fisher *et al*. 1939).

[60] To understand how the 100% money proposal articulates with Commons's institutionalism, see Dutraive and Théret (2017) and Théret (2018).

> a wide area. (Letter from Fisher to Keynes, July 4, 1944, reproduced in Barber *et al*. 1997, Vol. 14, p. 218, italics in original)

Keynes, however, was not convinced:

> On the matter of 100 per cent money I have, however, as you know, some considerable reservations. Possibly they may relate more to British conditions than they would to American conditions; but however that may be it prevents me from coming forward as an advocate. . . . I am afraid of your formula because I think it would, certainly in England, have a highly deflationary suggestion to a great many people. Apart from that, I am satisfied that in British conditions anyhow there are means by which we can obtain complete control over the quantity of money by means much less capable of exciting unfavourable comment and opposition. . . . (Letter from Keynes to Fisher, 7 July 1944, reproduced in Barber *et al*. 1997, Vol. 14, pp. 218-19)

Fisher was far from giving up for all that, quite the opposite. In July 1945, he solicited the members of the American Economic Association about the "Program for Monetary Reform", affirming shortly afterwards to have received 496 approvals out of 695 replies (Barber *et al*. 1997, Vol. 14, p. 239). In December 1946, he totalled about 1200 approvals received (*ibid.*, p. 240). At the same time, he was working on a new bill with Representative Voorhis[61]. Meanwhile, a third edition of *100% Money* was published in 1945 (an exact reproduction of the second—sold out—edition, plus a new preface and an addendum), whereas Fisher had in mind the project of a fourth revised edition[62]. As Allen (1993, p. 715) noted:

> His prodigious efforts continued almost to the moment of his death on April 29, 1947—while in a terminal stay in a hospital, he wrote a long letter to President Harry S. Truman on March 27 urging "a law which will sever the tie that now binds bank loans to the volume of checkbook money".

2.7. The academic discussions of the 100% money proposal in the 1930s-40s

The discussions about the 100% money proposal in academic journals, as we already noted, only began in 1935. They were especially launched by an article by Albert G. Hart (1935) on "The 'Chicago Plan' of Banking Reform", published in *The Review of Economic Studies* in February, completed by an article in the same issue by Charles H. Walker (1935), on the opportunity of applying such a reform plan to England. Hart—himself one of the co-authors of the Chicago Plan—summarised the main advantages of the 100% reserve proposal, compared its various existing versions, and provided a critical appraisal. The publication of

[61] On this occasion, he published a leaflet, "Answers to Objections to the 100% Plan" (Fisher 1946), also reproduced in the editorial postscript of Barber *et al*. 1997, Vol. 11, pp. 308-11.

[62] As testified by the instructions for revision of his book, which he left to a collaborator shortly before he died (Letter from Fisher to Allen K. Deeds, March 19, 1947, Fisher Papers, Yale University Library).

Fisher's book, *100% Money*, in April of the same year, was to give a further impetus to the discussions[63]. In November, a long article by James W. Angell (1935) of Columbia University, in *The Quarterly Journal of Economics*, commented on the 100% reserve proposal, criticising the implementing provisions of the plan such as proposed by Fisher in particular. But Angell—who, let us recall, had rejected the idea of the plan in his 1927 review of Soddy's book—was this time convinced of the general purpose of the proposal (Angell 1935, p. 29), and himself offered suggestions for improving its implementation[64].

Frank D. Graham, of Princeton University, took his turn in supporting the 100% money proposal in a September 1936 article in *The American Economic Review*. He placed much stress upon the monetary character of demand deposits (Graham 1936, pp. 431-33), and on the fact that money issuance, if only in virtue of the seigniorage profit it afforded, should be made a state monopoly (*ibid.*, pp. 430-31, 434). Time deposits, on the other hand, not being money, did not have to be so restrained, but it mattered to legally forbid their use as means of payment; such prohibition, Graham argued, would prove sufficient to prevent the development of monetary substitutes in transactions (*ibid.*, pp. 435n12, 438). Within the same journal, in March 1937, an article by Lin Lin of Ohio State University questioned the difference of nature established by certain authors (Currie and Fisher in particular) between demand deposits and time deposits, together with the idea that money could be defined as a synonym of means of payment (Lin Lin 1937)[65].

In England, the *Journal of the Royal Statistical Society* offered the opportunity of a brief exchange of views between Ralph G. Hawtrey and Fisher. Hawtrey (1936, p. 389), reviewing the latter's book *100% Money*, pointed out the limitations of open market operations in particular, which, under Fisher's proposal, would serve as the main instrument of the Currency Commission[66]. He personally favoured rediscount operations, offering in his view a

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[63] In 1935, the 100% money proposal was also advocated by Paul H. Douglas of the University of Chicago in his book *Controlling Depressions* (1935, pp. 184-88), as well as by Charles R. Whittlesey (1935) and Richard A. Lester (1935; see also 1939, pp. 291-92, 298; 1941, p. 260), both from Princeton University.

[64] This would lead Fisher to reproduce a whole abstract from Angell's article as an appendix to the second edition of *100% Money* (see Fisher [1935] 1945, pp. 238-46).

[65] The terms "demand deposits" and "time deposits", although they should not be understood as synonymous, respectively, with "deposits transferable by cheque" and "savings deposits", were unfortunately often employed indifferently in discussions, both by the "100% authors" and their critics. We tackle the issue of defining money in Chapter 3, Section 3.

[66] Other more direct monetary injection methods (for example through public spending, or tax credit) were yet considered, both by Fisher ([1935] 1945, pp. 208-09) and by the Chicago authors (Simons *et al*. [1933] 1994, p. 38).

better elasticity, but incompatible with the proposed system. Fisher, in his reply note, nonetheless ignored this criticism, focusing on an error of interpretation made by Hawtrey: that of supposing that the "primary purpose" of the 100% plan was "to safeguard the depositors, and so to guard against panics" (Fisher 1937b, p. 296). According to Fisher, "[i]f that were all, the 100 per cent. plan would scarcely be worth writing about, especially as to-day deposits are safeguarded in other ways" (*ibid.*). What were "by far" the most important advantages of the plan, in his eyes, were "the cessation of inflation and deflation of our circulating medium, and so the mitigation of booms and depressions" (*ibid.*).

This main argument in favour of the 100% system actually was to be discussed in a series of articles of *The American Economic Review* at the beginning of the 1940s, sparked off by the "Program of Monetary Reform" which Fisher and his five co-authors were then circulating (Barber *et al*. 1997, Vol. 11, p. 306). Harry Gunnison Brown (1940, pp. 312-14) of the University of Missouri[67], Rollin G. Thomas (1940, pp. 317-20) of Purdue University, and Benjamin Higgins (1941, pp. 92-93) of Harvard, all pointed out that the requirement of 100% reserves behind the sole chequing accounts would not put an end to the fractional reserve system as far as savings accounts were concerned, that the latter would still be exposed to runs, and that hoarding or dishoarding movements, affecting these accounts, would still have deflationary or inflationary consequences[68]. Thomas (*ibid.*, pp. 317, 319-23), in Simons's vein, considered for this reason that, to be effective, the 100% money reform should be coupled with the abolition of savings deposits, and even of all forms of short-term debt contracts. Frank D. Graham, answering these criticisms in the same journal, conceded that "[t]he 100 per cent reserve system [could] affect monetary velocity only through volume", specifying that it was actually designed "to prevent those perverse expansions or contractions of volume which today greatly intensify the influence of hoarding and dishoarding" (Graham 1941, p. 339). The other discussants, however, tended to consider that, even for controlling the volume of money, the 100% system would not be more effective than the existing system[69].

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[67] Brown presented in his article a virulent criticism of the 100% money plan, which might have seemed somewhat surprising, considering the fact that he had been one of the very few students to write his PhD thesis under Fisher's supervision at Yale, and had assisted the latter in the writing of *The Purchasing Power of Money* (Fisher [1911] 1913). See Dimand (1993b, p. 71).

[68] This question, as we mentioned already, was a major source of preoccupation for Simons, and constituted a point of divergence between the latter and Fisher—as we will see in more detail in Chapter 3. Brown, however (contrary to Thomas), made no reference to Simons.

[69] They did not agree with each other though. Brown (1940) attributed no merit to the 100% plan whatsoever. Thomas (1940, p. 321) considered that "the 100 per cent plan offers little or no

Friedrich A. von Hayek, then at the London School of Economics, briefly commented on the 100% money proposal in his book *Monetary Nationalism and International Stability* (1937). More particularly referring to Simons's version of the plan, Hayek (1937, p. 81) considered that it was "the most interesting suggestion on Banking Reform which has been advanced in recent years". Such a scheme, he said, "would do away effectively with that most pernicious feature of our present system: namely that a movement towards more liquid types of money causes an actual decrease in the total supply of money and *vice versa*" (*ibid.*, p. 82). But the main limitation of the reform, he added, was that it could not prevent the development of "new forms of money substitutes", which would undermine its effects (*ibid.*, p. 83). He seemed especially to have in mind the development of substitutes to money as a store of value: "[C]an we even to-day draw a sharp line between what is money and what is not? Are there not already all sorts of 'near-moneys' . . . which satisfy at any rate the demand for liquid reserves nearly as well as money?" (*ibid.*, p. 83). On these questions, Hayek mostly shared Simons's analysis, making many references to one of the latter's articles (Simons 1936)[70]. Somewhat surprisingly, however, at no point did Hayek seem to have discussed the implications of the 100% money proposal—which would compel investment to be financed out of prior savings—for his own theory of cycles, precisely based upon the excess of investment over savings, caused by the creation of money by the banks[71]. On this issue, he obviously distanced himself from Mises (see above).

The academic discussions also included some exchanges between Currie (1935) and Benjamin M. Anderson (1935a; 1935b), chief economist at the Chase National Bank, as well as between Fisher (1936d) and Fritz Lehmann (1936a; 1936b) of the New School for Social

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improvement in limiting credit expansion in boom times . . . Its only valid claim . . . lies in the possibility that it will afford a means of avoiding deflationary shrinkage in the volume of money during depressions". Higgins (1941, pp. 93, 96) held, on the opposite, that the 100% plan "[could] not stimulate expansion in depression. . . [but it would] aid materially in the control of booms".

[70] Phillips (1995, p. 91) actually provides several quotations of an exchange of letters between Hayek and Simons in December 1934, illustrating the similarity of views between these two authors.

[71] This connection would yet be stressed by Higgins (1941, p. 91), for example: "[I]t is my opinion that the chief argument in favor of the 100 per cent plan rests upon the monetary theory of the trade cycle, and that the peculiar feature of the scheme is that it appears to provide an automatic check to investment in excess of voluntary savings", adding that he had in mind "the sort of theory that traces depression to over-expansion of credit in the boom, with accompanying over-investment and distortion of the capital structure. Perhaps the best known presentations of this theory are by Hayek . . . and Robbins".

Research; a pamphlet by Walter E. Spahr (1938) of New York University[72]; a detailed study of the proposal by Leonard L. Watkins (1938) of the University of Michigan; articles by George B. Robinson (1937) and Andrew M. Neuman (1937), as well as many reviews of Currie's and Fisher's books[73]. Like Hayek, a certain number of economists of the time commented on the 100% money proposal within various works[74].

The attention devoted to the 100% money proposal, however, would be relatively short-lived. As Dimand (1993b, pp. 72-73) noted:

> Above all, the attention of the economics profession was diverted by two events: the publication of Keynes's 'General Theory' . . . and the outbreak of the Second World War . . . Insulation of the medium of exchange from the risks and fluctuations inherent in financial intermediation vanished from the economics literature. . .

Allen (1993, p. 716) shared this observation: "At the time, what most caught the fancy of politicians and professors was not seemingly arcane monetary analyses and banking proposals but the income analyses and fiscal proposals associated mainly with J. M. Keynes". The discussions on the 100% money proposal were thus not pursued at the time[75].

What can be drawn from these debates? In the main, among the opinions expressed in academic journals, it seems that a large minority was frankly enthusiastic about the idea of the plan, that another minority, probably smaller, was fiercely opposed to it, whereas a large

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[72] Spahr especially condemned the fact that the 100% money proposal would do away with the gold standard. Let it be noted, in this respect, that a 100% gold reserve proposal was formulated, in 1934, by Elgin Groseclose (1934, p. 273) (see Rothbard 1962a, p. 130).

[73] Many of the criticisms aroused by Fisher's book *100% Money* have been gathered by Dimand (ed.) 2007, Vol. 3.

[74] Alvin H. Hansen (1938, pp. 113-16), of Harvard University, considered that the 100% money plan followed from the ideal of a "neutral money", of which he disapproved. He more particularly rejected the versions of the plan coupled with the recommendation of a fixed (or automatically regulated) money supply—such as formulated by Simons and Angell in particular—which in his view "would place the community in a monetary strait jacket" (*ibid.*, pp. 115-16). The Austrian economist Fritz Machlup, in a book published in 1931, had explained that, in order to prevent an inflationary expansion of bank credit, one would have to subject demand deposits to a 100% marginal reserve requirement. He nonetheless specified, in an English translation of this work, that this did not make him an advocate of the 100% money reform, which he regarded, for different reasons, as radical and impracticable (Machlup [1931] 1940, p. 240n6). Willford I. King, of New York University, considered on the contrary that the inconvenience related to the installation of the 100% plan would be "a very small price to pay" in comparison with its advantages (King [1938] 1941, pp. 293-94). Let it also be noted that, in Germany, a 100% money reform would be advocated in a book by Friedrich Lutz (1936, p. 31) of the University of Freiburg (see Bernholz 1989, p. 200).

[75] Even though the proposal was still occasionally commented: see for example Reeve (1943, pp. 317-25) or Hart (1948, pp. 447-49).

group was torn between interest and scepticism[76]. Many commentators, while recognising merits in the plan, wondered about the feasibility of its application. The question of how to remunerate the service of keeping and transferring transaction deposits, for example, regularly came up in the discussions. Above all, the debates revealed a need for clarification on a lot of issues. There were of course disagreements on the definition of money, and on the type of assets to be included (or not) in the money supply. These disagreements, however, were not always clearly identified, and a certain confusion ensued in the discussions, about the risk of the development of monetary substitutes in particular[77]. There were also many ambiguities as to the implications of the 100% reform for the banking sphere: it was not clear, for example, if the purpose of the plan was (or should be) to put an end to the fractional reserve principle in general (preventing in fact all lending activity out of deposits) or only to the application of this principle to deposits transferable by cheque[78]. Moreover, many commentators argued that keeping fractional reserves behind savings deposits (not covered by the 100% reform), which exacerbated the movements of hoarding or dishoarding of money, would remain a source of deflationary or inflationary risk. They concluded, for this reason, that requiring 100% reserves on the sole chequing deposits would be insufficient to prevent (or even mitigate) booms and depressions. This amounted to ask whether, in the equation of exchange, V could still be subject to sharp fluctuations whereas M remained stable—but the question was seldom put in these terms, which could have facilitated the discussions. There was also, sometimes, a certain ambiguity as to the main objectives of the plan, as revealed by Fisher's reply to Hawtrey which we mentioned earlier. Many of these issues have remained non-clarified, which, as we saw, constitutes of the main motivations of the present thesis.

3. The 100% money proposal from the Second World War to the end of the 20th century

Although the academic discussions on the 100% money plan largely faded away after the Second World War, a minority of economists kept supporting the proposal. Maurice Allais (1911-2010), professor at the *École des Mines de Paris* and future "Nobel Prize" winner in

[76] We thus do not completely agree with Phillips (1995, p. 151), according to whom "the discussions were for the most part sympathetic to the plan".

[77] Indeed, the question of the substitutes to money as a means of payment should not be confused with that of the substitutes to money as a store of value. This distinction, which we address in Chapter 3, seldom appeared in the discussions.

[78] As we will see in Chapter 3, the answer to this question actually depended upon which version of the plan was taken into consideration. The "100% authors" themselves were responsible for some confusion on this head.

Economics in 1988, was regularly to advocate this idea in his writings, from 1946 until the end of his career[79]. In his book *Économie et Intérêt* (Allais 1947)[80]—which he dedicated to Irving Fisher—, he developed a theory of economic cycles based on two main causes: "the possibility for the banks to issue non-covered cheque-book money and the possibility for economic agents to hoard money" (Allais 1947, p. 365, my translation[a]). Like the 1930s authors, he emphasised that, under a system of money creation by the banks, there existed "a double cause-and-effect relationship between deposits and the volume of discounted bills" which led "to their reciprocal determination", source of cumulative developments (*ibid.*, p. 279, my translation[b]). Contrary to these authors, he put forward in his explanations the distinction between the pure rate of interest on the financial market (i_F) and that on the money market (i_M), and postulated the crisis to be triggered by the apparition of a disparity between these two rates (i_F - i_M), source of an increase in investment, in spending and in the price level (*ibid.*, pp. 359-60). But his explanation of the development of the cycle, once this initial cause had been triggered, was similar to that of his predecessors: any increase in the price level would lead to an increase in bank loans, synonymous to an increase in deposits and therefore in the volume of money, leading in turn to a further increase in prices, and so on, whereas the dishoarding of cash aggravated the process (*ibid.*, p. 360). Thus, Allais (*ibid.*, p. 361, my translation[c]) noted, "the initial disparity (i_F - i_M), far from diminishing, only increases", until the boom stops and the depressions starts. Then stressing the limits of rediscount policy under such conditions (*ibid.* pp. 402-04), he concluded (*ibid.*, p. 404, my translation[d]):

> The true solution would be, according to us, to completely forbid the issuance of non-covered cheque-book money by the banks, the 100% money proposal already advocated by I. Fisher. Such a policy, if implemented, would in no way prevent the discounting of commercial and credit bills, but these operations would be done with

[79] See for example Allais (1947; 1967a; 1967b; 1975; [1977] 1989; 1987; 1999).

[80] The bulk of this work had initially been published in the issues from March to November 1946 of the *Annales des Mines et des Carburants* (according to Allais 1947, p. 3n1).

[a] « la possibilité pour les banques d'émettre de la monnaie scripturale à découvert et la possibilité pour les agents économiques de thésauriser la monnaie ».

[b] « une double liaison de cause à effet entre les dépôts et le volume des effets escomptés » ; « à leur détermination réciproque ».

[c] « la disparité initiale (i_F - i_M) loin de diminuer ne fait que croître ».

[d] « La véritable solution serait, à notre avis, l'interdiction absolue de l'émission de monnaie scripturale à découvert par les banques, le 100% Money déjà préconisé par I. Fisher. Une telle politique, si elle était appliquée, n'empêcherait en aucune façon l'escompte des effets de commerce et de crédit, mais ces opérations seraient faites avec des capitaux remis aux banques, soit par leurs actionnaires, soit par leurs prêteurs, à ces fins. »

> capital handed over to the banks, either by their stockholders, or their lenders, to this end.

A specificity of Allais's proposal, such as would be developed in his later writings in particular, was that, in addition to imposing a 100% reserve requirement on chequing accounts, he would prevent the lending banks from performing maturity transformation: "The lending banks would continue to trade in promises to pay just like today, but their management rule . . . would be that any loan of a given maturity would have to be financed out of a borrowing of at least an equally long maturity" (Allais 1975, p. 139, my translation[e]). He also insisted that a 100% money reform would allow "making all citizens benefit from the advantages attached to the creation of money, rather than offering these advantages to a minority only" (Allais 1967a, p. 24, my translation[f]).

Shortly after Allais, another future "Nobel Prize" winner in Economics, Milton Friedman (1912-2006) of the University of Chicago, would also support the 100% money proposal, starting in 1948 and on multiple occasions throughout his career[81]. Placing himself in line with Mints and Simons[82], Friedman took on the initial Chicago Plan, except for a technical detail: "I shall urge that interest be paid on the 100% reserves. This step will . . . render the system less subject to the difficulties of avoidance that were the bug-a-boo of the earlier proposals" (Friedman [1960] 1992, p. 66). He assigned two main defects to the existing system:

> Our present fractional reserve banking system has two major defects. First, it involves extensive governmental intervention into lending and investing activities that should

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[e] « Les banques de prêts assureraient comme aujourd'hui le négoce des promesses de payer, mais la règle de leur gestion […] serait que tout prêt d'un terme donné devrait être financé à partir d'un emprunt de terme au moins aussi long ».

[f] « de faire bénéficier l'ensemble des citoyens des avantages correspondant à la création de monnaie, au lieu de dispenser ces avantages à une minorité seulement ».

[81] Friedman would especially support the 100% money proposal in articles of 1948 and 1951 (Friedman 1948, p. 47; 1951, pp. 211-13), as well as in the Millar Lectures he gave at Fordham University in 1959, the content of which would be published in *A Program for Monetary Stability* ([1960] 1992, see pp. 65-76). He still supported this idea in a new preface for the tenth printing of this work, written in 1992: "Had it been adopted, the savings and loan crisis and the crisis threatening the FDIC could not have arisen. Unfortunately, the proposal was completely neglected for decades. More recently, it has been revived under a new name, narrow banking . . . I very much fear that the revived version is no more likely to be adopted than the earlier" (Friedman [1960] 1992, p. x). He would express his support to the 100% plan on many other occasions (see for example Friedman 1967, pp. 3-4; 1976, pp. 2156-57).

[82] "As a student of Henry Simons and Lloyd Mints, I am naturally inclined to take the fractional reserve character of our commercial banking system as the focal point in a discussion of banking reform. I shall follow them also in recommending that the present system be replaced by one in which 100% reserves are required" (Friedman [1960] 1992, p. 65).

> preferably be left to the market. Second, decisions by holders of money about the form in which they want to hold money and by banks about the structure of their assets tend to affect the amount available to be held. This has often been referred to as the "inherent instability" of a fractional reserve system. (Friedman [1960] 1992, p. 66; see also 1951, p. 212)

These two defects had been pointed out by the 1930s authors. But in regard of the "inherent instability" of the fractional reserve system, Friedman's criticism was much less far-reaching than that of his predecessors. Friedman only assigned one single cause of instability to this system, relating to the fact that the choices by the agents, as to the *form* in which they would keep their cash balances, would lead to unintended changes in the total volume of money[83]. The 1930s authors, while stressing this point, went much further: the main cause of instability of the existing system, in their view, was that it gave rise to *cumulative interactions* between the level of prices (and profits), the volume of bank loans, and the monetary circulation[84]. It was, above all, to put an end to this cumulative sequence that they demanded that the creation of money be separated from the lending of money. However, there is no trace of such argument in Friedman's writings[85]. If one could explain the system's instability only by the differences of reserve requirements applying to the different forms of money, then an alternative solution, radically opposed to 100% money, could also be considered—that of allowing banks to issue notes as well as deposits:

> To keep changes in the form in which the public holds its cash balances from affecting the amount there is to be held, the conditions of issue must be made the same for currency and deposits. This can be done by assimilating either the conditions for issuing currency to those that now prevail for deposits, or, conversely, the conditions for issuing deposits to those that now prevail for currency. The first solution would involve permitting banks to issue currency as well as deposits subject to the same

[83] "[A] decision by a holder of money to convert deposits into currency tends to produce a decline in the total stock of money; a decision to convert currency into deposits, a rise. . . The same problem arises with respect to shifts among categories of deposits having different reserve requirements . . . Similarly, a change on the part of banks in the fraction of their assets they wish to hold in the form of high-powered money affects the number of dollars of deposit money per dollar of high-powered money and so alters the total stock of money. These effects on the amount of money are unintended and incidental to the aims of the holders of money or the individual banker" (Friedman [1960] 1992, p. 67; see also 1951, p. 212).

[84] This is what we call the "debt-money-prices triangle" in Chapter 4. See also, on this matter, Chapter 3, Section 4.

[85] Friedman (1967), discussing Simons's theory of cycles, particularly disagreed with the latter on simplifying and limiting the range of financial instruments (Friedman 1967, p. 4), as well as on the role to be ascribed to the variations in *V* as compared to those in *M* (*ibid.*, p. 12). On these two points, he would probably have agreed more with Fisher. However, as we observe in Chapter 3 (Section 4), he did not take on Fisher's theory of cycles any more than that of Simons. As far as monetary policy was concerned, Friedman (*ibid.*, pp. 3, 13) also reproached Simons for having given up his initial advocacy of a rule defined in terms of the quantity of money, for a rule defined in terms of a price index.

> fractional reserve requirements . . . The alternative, which seems far preferable, is to assimilate the issue of deposits to that of currency. . . . that is, to have 100% reserves. (Friedman [1960] 1992, pp. 68-89; see also 1951, p. 213)

Moreover, if the problem of the "inherent instability" of the fractional reserve system could be deemed secondary as compared to the first problem—that of the state's intrusion into the financial sphere—, then a third solution could yet be considered:

> An alternative way to eliminate governmental intervention that Gary Becker has persuaded me has merit is to move in the opposite direction, to keep currency issue as a governmental monopoly, but to permit "free" deposit banking, without any requirements about reserves. . . Such a system . . . would not, however, solve the problem of "inherent instability". (Friedman [1960] 1992, p. 108n10)

This latter idea, as much radically opposed to the 100% money principle, was to be occasionally supported by Friedman afterwards[86]. Asked about the possible existence of a contradiction on this matter, he would answer:

> [L]et me clear up my position on one-hundred reserves and zero percent reserves. . . . In my opinion, either extreme is acceptable. I have not given up advocacy of one-hundred percent reserves. I would prefer one-hundred percent reserves to the alternative I set forth. However, I believe that getting the government out of the business altogether or zero percent reserves also makes sense. The virtue of either one is that it eliminates government meddling in the lending and investing activities of the financial markets. . . . (Friedman, letter to John Hotson, dated February 3, 1986, quoted by Phillips 1995, p. 174)

In any event, Friedman's advocacy of the 100% money reform obviously constitutes a very specific case in the history of the plan, and cannot be considered as representative of the general case in its favour.

The 100% money proposal would still be occasionally discussed. It featured, for instance, among the reform ideas studied during a series of lectures held at the Thomas Jefferson Center for Studies in Political Economy of the University of Virginia in 1960, whose contributions would be gathered in the book *In Search of a Monetary Constitution* edited by Leland B. Yeager (1962a). The 100% money proposal was re-examined on this occasion by George S. Tolley, an agricultural economist of the North Carolina State College. He listed four advantages attributed to the plan: reducing the risk of bank failures; avoiding that the

[86] See for example Friedman (1985, p. 10), who advocated both allowing the banks to issue notes and suppressing all reserve requirements: "first, freeze high-powered money; then, after a period, eliminate reserve requirements and other remaining regulations, including the prohibition on the issuance of hand-to-hand currency by private institutions." He specified in the same article: "I approve of Professor Hayek's proposal to remove restrictions on the issuance of private moneys to compete with government moneys" (*ibid.*, p. 9; see also 1984, pp. 43, 46).

decisions by the agents at to the proportion of their cash balances kept in the form of currency might change the total volume of money[87]; making the control over the money supply more direct; and allowing a reduction of national debt (Tolley 1962 pp. 278-79). Just like in Friedman's case, however, the central argument of the 1930s authors—putting an end to the cumulative interactions between loans, money and prices—was lost sight of. Tolley yet defended the soundness of the proposal, and added a suggestion: that of keeping all transferable deposit balances directly on the books of the central bank, so as to eliminate the distinction between *reserves* and *deposits 100% covered by reserves*[88].

Within the same series of lectures, Murray N. Rothbard (1962a, p. 94), an economist of the Austrian tradition, defended the proposal of "a 100 per cent gold dollar". He considered the fractional reserve system to be not only a source of economic instability, but also to be blameworthy from a legal and moral point of view: any issue of promises to pay on demand not 100% covered by reserves amounted, according to him, to "legalized counterfeiting" (Rothbard 1962a, p. 114). His proposal for a fully metallic reserve, contrary to the plans of the 1930s, aimed at definitely excluding the possibility of any state intervention in the monetary system[89]. This type of reform would continue to be supported both by Rothbard and by other economists following the same tradition[90].

In the 1970s-80s, the idea of a 100% reserve requirement would be occasionally mentioned as part of reflections on improving monetary control (see, for example, Poole 1976; Kaminow 1977; Sherman *et al*. 1979; Baltensperger 1982). Baltensperger (1982, p. 205) thus

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[87] Tolley (1962, p. 279) seemed to consider this to be the only source of cyclical instability: "with deposit insurance there would be little reason for cyclical shifts between deposits and paper money". Fisher (1937b, p. 296), in his reply to Hawtrey, had yet insisted that *even with the elimination of the risk of bank runs* allowed by deposit insurance, the dependency of money upon loans would remain a source of instability: "Even without such withdrawals or deposits of cash, the total volume of deposits is subject to great fluctuations owing to the fluctuations in loans and investments".

[88] "Let the deposit liabilities of the commercial banks be transferred to the Federal Reserve banks. If 'reserves' are defined in the usual way, as Federal Reserve liabilities connected with deposit money, there would be 100 per cent reserves in the sense that deposit money and reserves would be identical. The physical arrangements in the use of money could be continued as at present, located in the commercial banks with servicing expenses paid for on a contract basis by the Federal Reserve banks" (Tolley 1962, pp. 299-300).

[89] He insisted on this important difference: "I advocate 100 per cent reserves in gold or silver, in contrast to the 100 per cent fiat paper standard of the Chicago School. One-hundred percent gold, rather than making the monetary system more readily manageable by government, would completely expunge government intervention from the monetary system" (Rothbard 1962a, p. 114n19).

[90] References to the main works by Rothbard on the subject, as well as those of other writers sharing the same reform idea (such as Hans-Hermann Hoppe, Joseph T. Salerno, Walter Block or Mark Skousen) are provided by Jesús Huerta de Soto ([1998] 2012, p. 728n15), who himself advocates a 100% gold reserve system (*ibid.*, p. 739).

summarises those works: "In all of these studies, the focus is almost exclusively on money stock control. Generally speaking, their results support the 100 percent reserves idea, though such a scheme is usually seen as infeasible for political or institutional reasons, leading to recommendations to set requirements as high as possible against deposits included in the money stock, subject to whatever constraints of this nature are perceived." The idea that the development of monetary substitutes would be fatal to a 100% money reform was again occasionally expressed[91].

Shortly afterwards, in the context of the financial deregulation of the 1980s in the United States, another reform idea presenting some similarities with the 100% money proposal would re-emerge: that of *narrow banking*, aiming at compartmentalising the banks and imposing that their liabilities serving as means of payment be fully covered by safe assets[92]. Such reform was advocated, for example, by Henry Wallich of Yale University (1984; he was then a member of the Federal Reserve Board), James Tobin, also of Yale and future "Nobel Prize" winner in Economics (1985; 1987a; 1987b, p. 3484), John H. Kareken of the University of Minnesota (1986) or Robert E. Litan of the Brookings Institution (1987)[93]. The main objective of narrow banking was to secure the payment system, in a context in which the principle of deposit insurance was increasingly questioned. Occasionally, it was mentioned that such reform would aid in controlling the money supply (see for example Tobin 1985, p. 19). But no trace is to be found, among these writers, of the central argument of 100% money: that of putting an end to the pro-cyclical behaviour of the money supply, by severing the tie between money and loans. The narrow banking proposal does not specifically aim at divorcing money from loans, but rather at securing money from *risky* loans. It is sometimes mentioned that deposits serving as means of payment would be subjected to "100% reserves" (Kareken 1986, pp. 39-40); but in this case it would be a question of reserves in *safe assets*, typically such as Treasury bonds, and not necessarily of reserves in central money[94]. Narrow banking would thus not put an end to the creation or destruction of means of payment by the banks.

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[91] Thus, according to Poole (1976, p. 137), "banks or bank-like firms would likely be successful in inventing deposit-like liabilities that would effectively destroy a 100 percent required reserves system".

[92] If the expression *narrow banking* was new, the idea wasn't. One finds it already expressed, in particular, by some authors writing in the 1930s, such as Ernst Wagemann (1932, pp. 26-27) of the German Institute for Economic Research.

[93] Phillips (1995, pp. 175-80) discusses this proposal and mentions other contributors.

[94] Tobin (1985, p. 25) does propose the creation of a type of deposits which apparently would be 100% covered by reserves in central money exclusively (which he calls *deposited currency*), but such deposits would not be the only ones to serve as means of payment: other types of segregated funds,

In the 1990s, the 100% money proposal would somewhat unexpectedly reappear in the writings of Hyman P. Minsky (1919-1996), then a researcher at the Jerome Levy Economics Institute of Bard College, where Phillips was conducting his research on the history of the Chicago Plan. A former student of Simons, Minsky had always acknowledged the latter's influence—coupled with that of Keynes and Fisher—on his own theory of financial instability[95]. Yet, as Phillips (1995 pp. 171, 208) notes, Minsky did not go as far as following Simons and Fisher in their recommendation for 100% reserves, advocating other kinds of reforms instead (based upon the discount window and capital ratios in particular). In the foreword (dated June 1994) which he wrote for Phillips's book, Minsky (in Phillips 1995, pp. xi-xiv) showed an interest in the proposal, but without supporting it yet. He was about to take this step shortly afterwards, however, in a series of working papers dedicated to the need for reforming the banking system (see especially Minsky 1994, pp. 18-21; 1995, pp. 10-13), stating for example:

> Thus, as the 21st century is about to be ushered in, an idea which was on the table during the 1930's discussion of reform can once again be on the table. One virtue of the 100% money scheme is that it separates the two functions that the monetary and banking system has to perform: the provision of a safe and secure means of payments, and the capital development of the economy. (Minsky 1994, pp. 20-21)[96]

Contrary to the above-mentioned narrow banking supporters, Minsky explicitly referred to the writings of Fisher and Simons. Just like them, however, he seemed to support this type of reform with the sole purpose of securing the payment system, and, probably for this reason, also tended to propose that transferable deposits be 100% covered by reserves either in central money *or in government debts* (Minsky 1995, pp. 8-11)—which, although protecting the

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invested in Treasury securities in particular, could also perform this function (*ibid.*, pp. 27-28). Still, Tobin (1987a, p. 168) expresses the idea that "[w]e need to . . . maintain the sovereign power and responsibility of the federal government, under the Constitution, to 'coin money and regulate the value thereof'."

[95] "The fundamentals of a theory of financial instability can be derived from Keynes's *General Theory*, Irving Fisher's description of a debt deflation, and the writings of Henry Simons" (Minsky 1986, p. 192; see also p. 10n7). On the Minsky-Simons connection, see especially Whalen (1994) and Toporowski (2010).

[96] Jan Kregel (2012, p. 7), commenting upon Minsky's advocacy of a 100% money reform (or narrow banking reform, with no distinction been made between these two concepts), maintained that "Minsky eventually gave up his support for narrow banking". No trace of such a change of opinion is yet to be found in Minsky's writings. Contacted on this matter, Kregel explained to us, in private correspondence, that it was not so much that Minsky ever discarded this reform idea explicitly, but rather that the whole evolution of his thought, from the 1980s to the 1990s, showed by itself a movement away from the narrow bank proposals. Ronnie J. Phillips, also questioned on this point, replied to us that he personally didn't think Minsky ever changed his mind on this matter much, although he certainly did not, for all that, consider 100% money as a cure-all.

money supply from the risk of bank failures, would not eliminate all possibility of fluctuations of the money volume in relation with loans and investments.

The 100% money proposal would again be supported by various authors in the last part of the 20th century, and at the very beginning of the 21st [97]. It would especially arouse renewed interest, however, in the aftermath of the 2008 global financial crisis.

4. The renewal of interest in the 100% money proposal since the 2008 crisis

Some of the actors participating in the renewal of interest for the 100% money proposal following the 2008 crisis already called for such a reform at the end of the 20th century. In England, the New Economics Foundation (NEF), a think tank created in 1986 by the leaders of The Other Economic Summit (TOES)—a counter-summit to the G7 meetings—, had published in 2000 a book calling for a type of 100% money reform, co-authored by Joseph Huber, a professor of Economic and Environmental Sociology at the Martin Luther University of Halle-Wittenberg in Germany, and James Robertson, an independent British writer and co-founder of NEF (Huber and Robertson 2000). Huber (1998) had already called for such a reform in a book called *Vollgeld* (literally "plain money" in German), which, as we will see below, would give its name to a monetary reform initiative in Switzerland about fifteen years later[98]. In June 2010, the British Government launched an independent commission to inquire into possible reforms of the banking sector following the 2007-08 crisis. Building upon the book by Huber and Robertson, a proposal calling for a "full-reserve banking" system was jointly submitted by NEF, Positive Money[99] and Richard A. Werner, a professor of International Finance then teaching at the University of Southampton[100] (Dyson *et al*. 2011). This proposal was to be more detailed in a book published in 2013 by two members of Positive Money (Jackson and Dyson 2013), introduced by a foreword by Herman E. Daly who recalled that the idea was not new: "The main ideas go back to the leading economic

[97] See, for example, Pahlke (1970, according to Huber 1999, p. 31), Gocht (1975, idem), Chuilon (1981; 1987), Hotson (1987; 1994), Schemmann (1991), Huber (1998; 1999), Huber and Robertson (2000), Zarlenga (2002, pp. 671-74).

[98] See Huber (1999) for an English summary of this book. See also Robertson (2012) and Huber (2017) for more recent reformulations of this reform idea by these authors.

[99] Positive Money is a British non-for-profit organisation, created in 2010, aiming at enlightening politicians, the media and the general public on the functioning of the fractional reserve monetary system.

[100] A German economist, Werner is especially known for having coined the expression "quantitative easing" in 1995, at the time when he was working on the Japanese economy.

thinkers of 50 to 75 years ago, including Irving Fisher, Frank Knight and Frederick Soddy" (*ibid.*, p. 11)[101]. In Iceland, an essentially similar proposal, inspired by the works of Huber and Robertson (2000) and Jackson and Dyson (2013), was to be recommended in a report commissioned by the Prime Minister (Sigurjónsson 2015, with a foreword by Adair Turner). In France also, the 100% money proposal would again be brought up by various authors, including Christian Gomez (2010), an economist, banker and former student of Maurice Allais—who was himself, let us recall, still advocating this reform idea by the end of the 1990s (Allais 1999)[102].

In general, all of these proposals are supported on the ground that they would secure the payment system, put an end to the pro-cyclical character of money-creation—and especially to its role in feeding financial and housing bubbles[103]—, and return the whole seigniorage benefit to the state. As far as financial intermediation is concerned, the proposals we just mentioned rather fall in line with the plans proposed by Currie or Fisher: only transaction deposits would be fully covered by reserves in lawful money (or would be replaced with cheque-book money directly held on the central bank's accounts), whereas the banks could still use savings deposits to finance their loans and investments.

Some proposals following the Chicago Plan approach instead on this matter have also been put on the table. Laurence J. Kotlikoff (2010, pp. 123-54), economist at Boston University, for example, advocates what he calls *limited purpose banking*: a monetary and financial system under which means of payment would be 100% covered by reserves in base money, whereas the financing of the economy would be exclusively provided by mutual funds, letting

[101] However, Huber (1999, pp. 27-28), Huber and Robertson (2000, pp. 22-23) and Jackson and Dyson (2013, pp. 24-25), despite including some references to the 100% money proposal of the 1930s, all claim to significantly differ from it, for a reason well summarised by Dittmer (2015, p. 9n2, italics in original): "Some present-day authors reject this design [of the old 100% reserve proposals] as 'backward-looking, actually conserving the obsolete reserve system' with its distinction between commercial bank money and central bank money, and propose instead a system in which deposit banks would only be agents of the central bank, managing people's accounts *held at the central bank* (Huber and Robertson, 2000: 23). Rather than a full-reserve system, this is labeled a 'plain money' or 'sovereign money' system, in which there is 'just one integrated quantity of money circulating among banks and non-banks alike' (Jackson, 2013)". As we saw, such an idea had already been suggested by Tolley (1962, pp. 299-300). And, as Wolf (2014b) and Dittmer (2015, p. 9n2) noted, this distinction, although it has its importance, cannot be said to constitute a fundamental difference with the proposal of the 1930s.

[102] See also Gabriel Galand (2012), Gaël Giraud (2012) and André Grjebine (2015).

[103] This is a change of focus in comparison with the 1930s authors, who mostly concentrated on the instability of retail and wholesale prices of consumer goods. The recent authors put more stress on the instability of real estate and financial asset prices, arguing that money creation today largely takes place on these markets. For a similar criticism of the existing system, see also Turner (2015, pp. 61-73).

the shareholders bear all the risk themselves[104]. An essentially similar proposal has been formulated by Adam J. Levitin (2016), professor of Law at Georgetown University. John H. Cochrane (2014), a researcher of the Hoover Institution at Stanford University, also advocates such a reform, except that all fixed-value and run-prone financial contracts (such as bank deposits or money market funds) would be fully invested not in base money, but in short-term Treasury securities instead: one finds here one of the characteristics of the *narrow banking* idea, which has also been brought up again, for example by John Kay (2009).

In 2012, two economists of the International Monetary Fund, Jaromir Benes and Michael Kumhof, have published a much-noticed report, *The Chicago Plan Revisited*, in which they offered to test the hypotheses of the "Chicago Plan" (under which term they referred to the 100% money plan in general) with a DSGE model (Benes and Kumhof [2012] 2013). Although it is rich in historical references, their paper is also rich in confusion[105]. In particular, their DSGE simulation is based upon an institutional system very remote from what the "100% authors" generally proposed. On the monetary side, transferable deposits would be fully covered by reserves: this is indeed the core of the 100% money plan. But on the financial side, financial institutions would be exclusively funded (in addition to their equity) by loans granted by the state ("full government funding of credit", *ibid.*, p. 30). They affirm (*ibid.*, p. 29): "This option is considered in the government versions of the plan formulated by Means (1933) and Currie (1934[b]), and also in the academic proposal by Angell (1935)". They probably refer here to the fact that both Currie and Angell (among others) recommended that the monetary authority lend the banks the required reserves so as to bring the coverage ratio of their chequing accounts to 100%. But such a loan (possibly non-refundable) would have constituted just a one-off and transitory measure, related the installation of the new system. In no case did the 1930s authors imagine a system under which the state would be financing lending banks: on the contrary, one of the plan's arguments was

[104] It may be noted, however, that Kotlikoff's proposal (like Cochrane's which we mention below) is only motivated by considerations of banking and financial stability, not of monetary stability. The order of priorities is clearly reversed in comparison with the traditional 100% money advocates, as illustrated by this quotation: "A by-product of 100 percent-reserved checking accounts is that the government would gain full control of the M1 money supply" (Kotlikoff 2010, p. 134). Kotlikoff (*ibid.*, p. 135) actually explicitly rejects the monetary interpretation of the Great Depression such as put forward by Friedman and Schwartz (1963).

[105] One may read, for example, that Simons and Fisher "advocated more governmental control over the money creation process *via more control over bank lending*", that both of them "advocated a fixed money growth rule", and that they advocated a system "limiting and regulating private debt funding (but not equity funding)" (Benes and Kumhof [2012] 2013, p. 32, italics added). All these assertions are wrong insofar as Fisher is concerned, and only the last (and to some extent the second) is true in Simons's case.

precisely to offer an alternative to state intervention in the financial sector! The only one to have considered a reform approaching this concept was the third mentioned author, Means, Tugwell's assistant at the Department of Agriculture, in an internal memorandum of 1933 which was never published (Means 1933, discussed by Phillips 1995, pp. 69-70). The IMF authors also follow a recommendation specific to Simons (which the latter developed in his individual writings from 1934): that of significantly reducing (if not eliminating) the supply of short-term loans. In their system, lending institutions could apparently finance only long-term productive investments, which they justify as follows:

> In another respect our proposal remains very close to Simons: . . . credit to households can in net aggregate terms be completely eliminated, as can short-term working capital credit to firms. This is because credit is no longer needed to create the economy's money supply, with both households and firms replacing debt-based private money with debt-free government-issued money. The only credit that remains is lending for productive investment purposes. (Benes and Kumhof [2012] 2013, p. 31)

Their DSGE simulation, based upon the application of such assumptions to the U.S. economy, leads them to the conclusion that the adoption of the Chicago Plan would have significant positive effects[106].

All of these proposals formulated in the aftermath of the 2008 crisis, as we can observe, are far from homogenous: they sometimes differ as to their purposes, and often differ as to their implications for financial intermediation. As these differences are generally not clearly distinguished by the authors themselves, a certain confusion necessarily results, which is to be found in many discussions of the reform ideas in question[107]. The 100% money proposal—often exaggeratedly likened to the "Chicago Plan", or designated by the ambiguous expression "full-reserve banking"—has been discussed by a great number of commentators of the 2008 global crisis. In England, Martin Wolf, chief editor of the *Financial Times*, Adair

[106] "The Chicago Plan could significantly reduce business cycle volatility caused by rapid changes in banks' attitudes towards credit risk, it would eliminate bank runs, and it would lead to an instantaneous and large reduction in the levels of both government and private debt. It would accomplish the latter by making government-issued money, which represents equity in the commonwealth rather than debt, the central liquid asset of the economy . . . One additional advantage is large steady state output gains due to the removal or reduction of multiple distortions, including interest rate risk spreads, distortionary taxes, and costly monitoring of macroeconomically unnecessary credit risks. Another advantage is the ability to drive steady state inflation to zero in an environment where liquidity traps do not exist . . ." (Benes and Kumhof [2012] 2013, p. 68).

[107] A conceptual distinction between these different types of plans has been attempted by Patrizio Lainà (2015) of the University of Helsinki, who offers a historical survey of all 100% money proposals (or other resembling proposals) "from David Ricardo to Martin Wolf". His classification, however, is not irreproachable: he, for example, classifies Irving Fisher among the authors recommending that banks could no longer lend from their deposits (Lainà 2015, p. 3).

Turner, chairman of the Financial Services Authority from 2008 to 2013, and Mervyn King, governor of the Bank of England from 2003 to 2013, all showed a keen interest in this idea (see especially Wolf 2014a, pp. 209-13, 234-37, 348-51; Turner 2015, pp. 187-90; King 2016, pp. 261-68). One unfortunately finds in their works a great confusion—probably caused, in part, by the IMF report to which each of them refers—on the consequences of the plan for the financial sphere: the 100% money proposal is considered as necessarily forbidding any lending of money out of bank deposits. Wolf (2014a, p. 210) thus wonders: "If reserves backed deposits 100 per cent, what would finance lending to the economy?" King (2016, p. 262) asks the same question: "So far, so good. But who would perform the many functions that banks carry out today, especially lending to businesses and households, so enabling them to build factories and purchase homes?" As for Turner (2015, p. 187), he sums up the 100% money proposal by the slogan "Abolishing banks"[108]. It is therefore not surprising that Turner and King, although interested, express great reservations about this reform idea[109], even though Wolf (2014a, p. 237, see also p. 350), for his part, believes it would be "fascinating" to see it experimented. This will to experiment the 100% money proposal has actually led, in Switzerland, to a popular initiative called "For crisis-safe money: Money creation by the National Bank only! (Sovereign Money Initiative)" (in German "Vollgeld Initiative", and in French "Initiative Monnaie pleine"), launched in 2014 by Modernisation monétaire (MoMo), a non-profit organisation backed by a scientific council comprising about twenty personalities[110]. This initiative has led to the organisation of a referendum on 10 June 2018, during which, not surprisingly, the "no" won by 75.7%. The adoption of a 100% money reform nevertheless continues to be demanded by many non-profit organisations in a great number of countries.

The 100% money proposal is also arousing renewed interest in academic journals. In the *Cato Journal*, "Nobel" laureate in Economics James M. Buchanan (2010a, p. 255), of George

[108] Dow *et al.* (2015, p. 17) similarly consider that this proposal would amount to "eliminate banking".

[109] One also finds, in their commentaries, the idea that the 100% money proposal is directed against the banks. King (2016, p. 262) thus observes, about the '100% authors': "Interestingly, John Maynard Keynes was not part of this group", adding: "Keynes was nevertheless scathing about bankers" (*ibid.*, p. 262n15). But the 100% money authors, although denouncing the dependency of the monetary system upon banking activity, were far from holding an "anti-bankers" discourse. Fisher (1936e) stated, for instance: "I would be the last to question these good intentions [of the bankers]. . . . Individually they are above the average citizen in integrity . . . [I]t is the banking system as a whole which is at fault". This kind of discernment, which one already finds in Carroll's writings ([1858a] 1964, p. 94), was commonplace among these writers.

[110] Including for example Joseph Huber, Christian Gomez, Josh Ryan-Collins (NEF), Sergio Rossi (Freiburg University) or Steve Keen (Kingston University). See especially Huber (2014) for a reasoned description of the Sovereign Money reform.

Mason University, has called for putting an end to the creation and destruction of money by the banks, arguing that such a function should only be exercised by the issuing authority[111]. In the *Journal of Economic Behavior & Organization*, Carl Chiarella *et al.*[112] (2012, p. 410) have studied the idea of coupling "a Fisherian 100 percent reserve ratio for checkable deposits" with "the ban for commercial banks from trading in stocks and other financial assets", while Robert E. Krainer (2013) of the University of Wisconsin recommends, for his part, to combine Milton Friedman's 100% money proposal with selective credit controls on various markets. In the *Journal of Monetary Economics*, V. V. Chari and Christopher Phelan (2014, p. 1), of the University of Minnesota and the Federal Reserve Bank of Minneapolis, have argued that, because of the risk of bank runs, the costs of the fractional reserve system exceeded its benefits, and that a 100% reserve ratio would be optimal. Ed Nosal (2014), of the Federal Reserve Bank of Chicago, has critically commented on their suggestion in the same journal. In the *Journal of Economic Dynamics & Control*, Edward C. Prescott (2014, p. 110), of Arizona State University, has proposed imposing 100% reserves on transaction deposits—thus becoming the fifth "Nobel" laureate in Economics to support this idea—as well as eliminating all intermediation between lenders and borrowers by limited liability businesses (see also Prescott and Wessel 2016). In the *Cambridge Journal of Economics*, the 100% money proposal has been the subject of a debate opposing the members of Positive Money (Dyson *et al*. 2016) to several post-Keynesian economists (Fontana and Sawyer 2016; 2017; Nersisyan and Wray 2016; 2017), whereas Lainà (2019) has recently shared his research results in this journal. The *Journal of Economic Issues* has also published a critical article of the proposal (von der Becke and Sornette 2017). Even the journal *Ecological Economics* has recently devoted an article to the topic, with Kristofer Dittmer (2015), of the Autonomous University of Barcelona, criticising the environmental arguments put forward in favour of the 100% plan by Daly and Farley ([2003] 2010, pp. 285-98) in particular. In the journal *Economic Thought*, finally, the article by Lainà (2015)—which we have mentioned already—has been followed by a critical comment by Meinhard A. Jensen of the University of Copenhaguen and Charles A. E. Goodhart of the London School of Economics, who see in the renewal of interest for 100% money a resurgence of the "Currency School" ideas (Goodhart and Jensen 2015). There is little doubt that the proposal will continue to be discussed.

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[111] See also Buchanan (2010b), as well as an article by Scott Burns (2016) who discusses the link between the Chicago Plan of the 1930s and Buchanan's advocacy of a "constitutional money".

[112] C. Chiarella of the University of Technology of Sydney, P. Flaschel of Bielefeld University, F. Hartmann of the University of Osnabrück, and C. R. Proaño of the New School for Social Research.

PART 1 – THE 100% MONEY PROPOSAL:

CONCEPTUAL CLARIFICATION

Chapter 2 – The 100% money proposal of the 1930s: an avatar of the Currency School reform ideas?*

Chapter's abstract

Since the 2008 global financial crisis, discussions have re-emerged about the '100% money' reform idea proposed in the 1930s by such authors as Henry Simons of the University of Chicago, Lauchlin Currie of Harvard, and Irving Fisher of Yale. This proposal rested on the argument that the intermingling of the money-issuing and money-lending functions, through the creation of chequable deposits by banks, was a major cause of monetary instability. The solution, therefore, was to divorce these two functions, by subjecting deposits subject to cheque to a 100% reserve requirement. This idea was reminiscent, of course, of the English Bank Charter Act of 1844, which, following the Currency School doctrines, had separated the issuing of notes by the Bank of England from its lending activity, by dividing the Bank into two departments. Although the resemblance between these two proposals has been duly highlighted, both by the 100% money authors themselves and their critics, no detailed comparative analysis seems to exist in the literature. This paper aims to fill this gap.

Introduction

The 2008 global financial crisis has given rise to renewed concerns about the stability of monetary systems and financial institutions. In this context, discussions have re-emerged about the '100% money' reform idea proposed in the 1930s by such authors as Henry Simons of the University of Chicago (the main designer of the 'Chicago Plan' of banking reform), Lauchlin Currie of Harvard, and Irving Fisher of Yale[1]. The 100% money proposal mainly

* An initial version of this chapter has been submitted for publication to a journal in September 2019 (following which no report has yet been received to this day). This paper had previously been presented during the 23rd Annual Conference of the European Society for the History of Economic Thought (ESHET), at the Université de Lille (France) in May 2019 (Demeulemeester 2019b); I thank Bruna Ingrao for her comments received on this occasion. The paper has also greatly benefitted from comments by Laurent Le Maux, who I would like to thank as well. However, all the views expressed in this paper are my own, and any errors of interpretation are my entire responsibility.

[1] The Chicago Plan was first presented in a series of memoranda privately circulated in 1933 by a group of University of Chicago economists including Garfield V. Cox, Aaron Director, Paul H. Douglas, Frank H. Knight, Albert G. Hart, Lloyd W. Mints, Henry Schultz and Henry C. Simons (see especially Knight *et al*. [1933] 1995, and Simons *et al*. [1933] 1994), and appeared again in several works by Simons in particular. Currie's plan was presented in a book chapter (Currie ([1934a] 1968, pp. 151-156) and several memoranda. Fisher's plan was detailed in his book *100% Money* ([1935] 1945) and other papers; see also the (very Fisherian-like) 'Program for Monetary Reform' which he co-authored with Paul H. Douglas, Frank D. Graham, Willford I. King, Earl J. Hamilton and Charles R. Whittlesey (Fisher *et al*. 1939; a 1940 version further included John R. Commons among the signatories). Yet another proponent was James Angell (1935). Phillips (1995) provides a historical account of the 100% plan. For other relevant references in the secondary literature, see Demeulemeester (2018, p. 358n4) [Chapter 3 of this thesis, Section 1, note 4].

rested on the argument that the money supply's dependence on bank loans was a cause of cumulative variations of deposit currency, largely responsible for the severity of booms and depressions. The solution was therefore to divorce the process of creating and destroying money from the expansion and contraction of bank loans. To this end, the power of money creation would rest exclusively with an independent monetary authority, issuing lawful money against the purchase of Government bonds, in accordance with a policy objective to be decided by Congress (such as, for example, stabilising the price-level). Under most versions of the plan, commercial banks would be divided into two departments: a cheque department, dealing with (transferable) chequing deposits fully covered by reserves in lawful money, and a loan department, dealing with (non-transferable) savings deposits only fractionally covered by reserves[2].

Of course, this idea of separating the issuing of money from the lending of money is reminiscent of the English Bank Charter Act of 1844, which, following the Currency School's recommendations, had divided the Bank of England into an Issue Department, responsible for the issuance of notes, and a Banking Department, dealing with the Bank's lending activities[3]. This resemblance has been duly stressed in the literature, first and foremost by the 100% money authors themselves. According to Fisher *et al*. (1939, p. 34), for instance: "The splitting of the two functions of lending and the creation of money supply would be much like that of 1844 in the Bank of England which separated the Issue Department from the Banking Department"[4]. Some of these authors explicitly traced the origin of their reform idea to reflections about the English precedent[5]. However, despite numerous references to the Act of

[2] Under the Chicago Plan, however, the banks' loan departments would be replaced by investment trusts.

[3] The Currency School included a large group of authors, particularly Robert Torrens, Samuel Jones Loyd (who in 1850 became Lord Overstone) and George Warde Norman (a director of the Bank of England). The Banking School, to which they were opposed, included Thomas Tooke, John Fullarton and John Stuart Mill. For general discussions of the controversy between the two schools, one can refer in particular to Gregory (1928), Viner (1937), Rist ([1938] 1951), Wood (1939), Mints (1945), Fetter (1965), O'Brien (1994a, 1994b) or Arnon (2011). The present paper does not discuss this controversy; only occasional references will be made to the Banking School writings.

[4] See also, for example, Fisher ([1935] 1945, pp. 19, 27, 29; 1936a, p. 412; 1937a, pp. 6-7; 1937b, p. 298) or Graham (1936, p. 431). As Allen noted, "Fisher was to allude many times to the English precedent, partly to emphasize that 'the 100 per cent proposal is the opposite of radical'" (Allen 1993, p. 706, quoting Fisher 1934b, p. 160).

[5] Simons thus made the following comment in a letter to Fisher: "Your remark about the Bank of England reminds me that I got started toward this scheme of ours about ten years ago, by trying to figure out the possibilities of applying the principle of the English Act of 1844 to the deposits as well as to the notes of private banks. This Act would have been an almost perfect solution to the banking problem, if bank issue could have been confined to notes" (Simons to Fisher, 19 January 1934, Fisher Papers, Yale University Library).

1844 itself, none made any reference to the Currency School writings[6]. This similarity has also been stressed in the secondary literature on the 100% money proposal[7], including the most recent—Goodhart and Jensen (2015, p. 20), for example, interpreted the post-2008 renewal of interest in the 100% scheme as the sign of an "ongoing confrontation" between the Currency and Banking schools. Beyond this resemblance, however, the Currency School proposals of the 19th century (embodied in the English Bank Charter Act of 1844) and the 100% money proposals of the 1930s (which have never been implemented) appear to be far from identical, and actually present significant differences. Because no detailed comparative analysis of these two sets of proposals can be found in the literature[8], this paper aims to fill this gap.

This paper is organised as follows. Section 1 stresses the major point of agreement between the Currency School writers and 100% money authors, on the need to divorce the issuing of money from the lending of money. Section 2 covers an initial important difference between them, in relation to monetary policy: while the 'currency principle' was an essential part of the Currency School proposals, the 100% scheme was devised independently of any policy prescription whatsoever. Section 3 highlights a second major difference, relating to the scope of their respective reform plans: the Currency School's proposals only applied to the issuing of bank notes, while the 100% money proposals considered the circulating medium as a whole. Section 4 deals with the question of central banking and its place in a system of separate monetary and banking functions, discussing how this issue was addressed by the two groups of authors.

1. Divorcing the issuing of money from the lending of money: a point of agreement between the Currency School and the 100% money authors

The Currency School generally ascribed monetary instability to two causes: the first related to the intermingling of the money-issuing and money-lending functions (which is the main focus of this section), the other to the level of discretion granted to the monetary authority in the

[6] Currie ([1931] 2004, pp. 235-238) had briefly discussed the Currency School-Banking School controversy in the first chapter of his PhD thesis, but he did not refer to it in his advocacy of the 100% plan.

[7] See, for example, Hayek (1937, pp. 81-83), Hansen (1938, p. 112), Watkins (1938, p. 16), Schumpeter (1954, p. 694), Allen (1993, pp. 704-706) or Phillips (1995, p. 3).

[8] With the exception, to some extent, of a book chapter by Sylvie Diatkine (2002, pp. 133-153), which focuses on their similarity in particular.

absence of an automatic rule of action (which we will deal with in Section 2)[9]. As far as the first of these questions is concerned, a definite similarity with the views of the 100% money authors must be stressed. Both groups held a *monetary* interpretation of business fluctuations, in which the circulation of money played a key role in exacerbating (however *not* as causing) booms and depressions of trade, and both regarded the linking of the money-issuing and money-lending functions as the key explanatory factor in this connection[10]. The extent of this similarity is limited, of course, by the fact that they disagreed about the scope of the 'money' aggregate: while the 100% money authors would include under this term all that constituted the circulating medium[11], the Currency School writers restricted it to include only coins and notes (as we will see in Section 3). This major difference notwithstanding, each group argued that the issuance of what they respectively called 'money' should be divorced from bank-lending activities.

For the Currency School, this referred to the issuing of bank notes, which they regarded as problematic not only when exercised by the country banks (and Scottish banks), but also by the Bank of England itself, insofar as it was conducting a profit-oriented banking business. They drew a sharp distinction between the *monetary* and *banking* functions exercised by these institutions. The *issuing* of money, on the one hand, was viewed as a non-profit oriented

[9] Loyd (1840a, p. 85) actually distinguished three causes, the first two of which referred to the dependence of note circulation on the bank-lending activity (source of a perverse causality running from prices to money), and the third to the absence of a strict policy rule: "The improper fluctuations in the amount of the paper currency of England arise from three circumstances. First, That currency is issued under the influence of competition, which necessarily tends to produce excess. Second, It is issued in the form of advances for commercial purposes. A rise of prices is therefore accompanied by an increase of issues, and a fall of prices by a diminution of issues; and thus greater fluctuations take place than would occur with a metallic currency. Third, The issuers generally are not placed under a direct obligation to provide themselves with the gold requisite to meet the demands upon them, and therefore have no sufficient inducement to look to the state of the exchanges in regulating the amount of their issues."

[10] Neither the Currency School nor the 100% money authors claimed that their respective proposals would do away with trade (or business) cycles altogether; they only claimed that such cycles would no longer be aggravated by the over-expansions or contractions of bank-created money. Loyd ([1840a] 1857, p. 167) put much emphasis on this point: "Fluctuations in the amount of the currency are seldom, if ever, the original and exciting cause of fluctuations in prices and in the state of trade. . . . The management of the currency is a subordinate agent; it seldom originates, but it may, and often does, exert a considerable influence in restraining or augmenting the violence of commercial oscillations". Norman (1838, pp. 39-40) shared this view. See also the comments by Schumpeter (1954, pp. 745-746) and O'Brien (1994a, p. xxiv). Fisher ([1935] 1945, p. 134) also conceded that his proposed plan would only make booms and depressions "vastly less severe".

[11] Some 100% money writers, like Mints and Simons in particular, even extended the 'money' concept to include liquid assets not usable as means of payment, such as non-transferable savings deposits. See Demeulemeester (2018, pp. 364-365) [Chapter 3 of this thesis, Section 3.2].

function to be performed by a dedicated body—that of providing the economic community with the means of payment needed to perform its transactions:

> A Bank of Issue is entrusted with the *creation* of the circulating medium. . . . [Its] sole duty . . . is to take efficient means for issuing its paper money upon good security, and regulating the amount of it by one fixed rule. (Loyd 1837, p. 43, italics in original)

The *lending* of money, on the other hand, was viewed as a profit-oriented activity to be performed by private banking businesses—that of serving as intermediary between savers-lenders and enterprisers-borrowers:

> A Bank of Deposit and Discount is concerned only with the *use*, *distribution*, or *application* of that circulating medium. . . . [Its] principal object and business . . . is to obtain the command of as large a proportion as possible of the existing circulating medium, and to distribute it in such manner as shall combine security for repayment with the highest rate of profit. (Loyd 1837, p. 43, italics in original)

Echoing a famous statement made by David Ricardo in his *Plan for the Establishment of a National Bank*[12], Loyd (1837, p. 43) argued that these two functions were "perfectly separate and distinct" and that there was "no connexion between them which render[ed] it necessary that they should be administered by the same parties". Whereas Ricardo sought to make the state the sole beneficiary of the seigniorage profit stemming from paper money issuance, Loyd (1837, p. 44) insisted that the issuing and the lending of notes were "conflicting duties" leading to monetary instability. A banker himself, he held that the banks *could not help*, even if they wanted to, issuing notes when prices and profits were rising, and destroying notes when they were falling—thereby feeding the trade cycle. After summarizing the cyclical stages of the state of trade—"quiescence, — next improvement, — growing confidence, — prosperity, — excitement, — overtrading, — convulsion, — pressure, — stagnation, — distress, — ending again in quiescence" (Loyd 1837, p. 44)—, he thus explained:

> Now during the progress of trade through this circular course, what is the necessary situation and the inevitable conduct of the Banker? . . . When confidence is increasing, . . . when prices are rising, profits increasing, and every merchant or tradesman . . . is desirous of extending his operations,—the Banker is looked to by his customers to act in concert with them . . . It would be difficult to show that it is not his duty, properly understood, to obey this call, and to assist the expanding energies of trade; at all events it would be practically impossible for him to act otherwise . . . A Banker cannot contract his accommodation at a period when the whole trading and mercantile world are acting under one common impetus of expansion. If under these circumstances the Banker, in addition to what may be properly called his ordinary and

[12] "The Bank of England performs two operations of banking, which are quite distinct, and have no necessary connection with each other: it issues a paper currency as a substitute for a metallic one; and it advances money in the way of loan, to merchants and others" (Ricardo [1824] 1951, Vol. 4, p. 276).

> legitimate resources, is also entrusted with the power of issuing paper-money *ad libitum*; is it not inevitable that he should abuse that power? (Loyd 1837, pp. 44-46)[13]

He concluded:

> The effect, of course, of such an application by the Banker of his power to issue will be to give a further stimulus to the existing tendencies of the trading world, and ultimately to aggravate the convulsion to which they must lead. Such we conceive to be the inevitable consequence of combining the issue of paper money with ordinary banking functions; and probably much of the intensity which characterises the commercial convulsions of this country may be justly attributed to this cause. (Loyd 1837, pp. 46-47)

Norman (1841, pp. 30-31) argued, along the same lines, that such perverse expansions or contractions of the circulating medium were bound to continue as long as the issuing of money (supposed to follow "currency principles") was linked to the lending of money (supposed to follow "banking" principles)[14].

Loyd and Norman's analysis rested on the fact that, from the moment that money was issued through loans, the causality running from money to prices would be coupled with a reverse causality running from prices to bank-created money, conferring upon the latter a perverse pro-cyclical behaviour[15]. One reason for separating money-issuing from banking was thus to prevent this feedback loop from occurring. As Loyd ([1840b] 1857) put it:

> A change in the amount of the circulation must always have a tendency to produce a corresponding effect upon prices . . . (p. 203)
>
> Now this is the vital objection to our country issues, that they expand and contract *with prices*, contrary to what ought to be the result upon sound principles, and would be the result with a metallic circulation. (p. 222, italics added)[16]

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[13] To compare with Fisher ([1935] 1945, p. 78, italics in original): "And the banks cannot help it. The public is quite wrong when, in the depression, they blame the individual bankers. It is the banking system—the 10% system—which is at fault. *Under this system, the bankers cannot help destroying money when it should be created, namely in a depression; while in a boom they create money when it should be destroyed.*"

[14] See also Norman (1841, pp. 29-30, 71-72). Of course, the Currency School writers had one very specific currency principle in mind, which would become known as '*the* currency principle', as we will see in Section 2.

[15] Torrens does not seem to have shared this aspect of Loyd and Norman's analysis. He only ascribed monetary instability to the mismanagement of their issues by the directors of the Bank of England (as has also been noted by Schwartz [1987] 2008, p. 7). As he put it: "When they cease to inflict disease, they will no longer be required to administer remedies" (Torrens 1837, p. 44; see also 1840, p. 31). Loyd and Norman also blamed the Bank directors, of course (as we will see in Section 2), but this was not their sole argument for splitting the Bank into two departments.

[16] The only causal relationship from prices to money which the Currency School accepted as natural was that of the price-specie flow mechanism, by which an *increase* in prices led, through an outflow

The cumulative interplay between bank-created money and prices, already hinted at by Henry Thornton as early as 1802[17], would be more fully described by late 19th and early 20th century neoclassical economists such as Marshall, Wicksell and Fisher (see Laidler 1991)[18]. Contrary to the Currency School, they included chequable bank deposits in their analyses. But, despite the fact that their respective cycle theories all rested on the creation of money through loans, these authors usually did *not* (or did not yet, in Fisher's case) call for a separation between the money-issuing and money-lending functions. An important exception among neoclassical economists, however, was Léon Walras, who insisted that no money should be created out of loans, whether in the form of bank notes ([1879] 1898b, pp. 373-374; [1885] 1898b, pp. 46-48) or chequable deposits ([1898a] 1898b, pp. 378-380)[19]. Then, among Austrian economists, Ludwig von Mises, building upon Wicksell's distinction between the natural and money rates of interest, proposed to extend the provisions of the English Act of 1844 to deposits subject to cheque, particularly so as to prevent this gap between the two rates from appearing (see Mises [1912] 1953, pp. 407-408; [1928] 1978, p. 150). But, apart from these and a few other precursors of the 100% money scheme[20], the idea of such a separation of functions would only re-emerge in the context of the U.S. Great Depression of the 1930s. It was precisely to put an end to the cumulative interplay at work between the volume of loans, the volume and velocity of money, and the levels of prices and profits, that such authors as Simons, Currie and Fisher came to propose divorcing the creation of money from the extension of loans[21].

The 100% money authors thus agreed with the Currency School that, more than *banking practices*, it was above all the *monetary system* (intertwined as it was with the banking

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of bullion, to a *decrease* in the money supply, and conversely in the opposite case. This they regarded as an equilibrating, not a perverse, mechanism.

[17] See Thornton ([1802] 1939, pp. 237-238, 256, 336-337, 342), who had also noted the reciprocal causality between bank-created money and prices (*ibid.*, p. 198).

[18] On the evolution of Fisher's analysis in this respect, and how this led him to eventually endorse the 100% money proposal, see Demeulemeester (2019a) [Chapter 4 of this thesis].

[19] Walras argued that "ownership titles to the circulating capital should not serve as money" ([1885] 1898b, p. 47, my translation ["il ne faut pas que les titres de propriété du capital circulant servent de monnaie"]), and condemned the issuing of means of payment out of bank loans, on the ground that it would disturb the ratio between consumer goods and new capital goods, increase the general level of prices, and ultimately bring about monetary and financial crises.

[20] One may in particular mention Charles H. Carroll (1964) in the United States, writing between 1855 and 1879, and Frederick Soddy ([1926] 1933) in England, who directly anticipated the U.S. proposals of the 1930s.

[21] See, for example, Simons *et al*. ([1933] 1994, pp. 31, 46-47), Currie ([1934a] 1968, p. 131), or Fisher ([1935] 1945, pp. 78, 181). Their respective analyses of monetary instability, with relevant quotations, are discussed in Demeulemeester (2018, pp. 365-370) [Chapter 3 of this thesis, Section 4].

system) which was at fault. Both groups therefore called for a separation of the two conflicting functions of issuing and lending money. Their *institutional* reform proposals—to be distinguished from their *policy* reform proposals, which will be covered in Section 2—showed some considerable resemblance.

Insofar as the *issuing function* was concerned, the Currency School proposed, firstly, gradually replacing the note circulation of country banks by Bank of England notes, so as to eventually confer an issuing monopoly to the latter establishment[22]. They also proposed dividing the Bank of England itself into two departments, one of which—the Issue Department—would be exclusively tasked with issuing notes[23]. Both suggestions would be implemented by the Bank Charter Act of 1844 (usually known as Peel's Act), applying to England and Wales, completed by separate Acts of 1845 applying to Scotland and Ireland (see Fetter 1965, pp. 194-197). Under the 100% money proposals, the privilege of issuing money (whatever its form) would lie exclusively with a dedicated state-owned monetary authority (the "Currency Commission" in Fisher's plan), independent both from the banks and from the Government[24].

The *lending function* would, under all proposals, be left to profit-guided businesses. Under the Currency School proposals (and, again, as actually implemented under Peel's Act), a Banking Department, within the Bank of England, would compete with other private banks in providing money-lending services, but without the possibility of issuing *notes* (it could still, however, like other banks, create transferable deposits—as we will see in Section 3). Under the 100% money proposals, private banks would typically offer both deposit-keeping-and-transferring and deposit-lending services to their customers[25], but without the possibility of issuing any kinds of means of payment whatsoever.

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[22] Torrens (1837, pp. 44-55), however, considered that country bank notes would usually be kept in a fixed ratio to Bank of England notes, making it unnecessary to restrict their issue. On this point he was explicitly refuted by Loyd (1840, pp. 63-69).

[23] The Issue Department, under the Act of 1844, remained part of the privately-owned Bank of England. However, as Fetter (1965) notes, Torrens favoured "a State Bank as the sole note issuer" (p. 157), while Loyd "had no objection to separating the Issue Department from the Bank and making it a State agency. This he felt would make no substantive change as the Issue Department 'is nothing more than a department of the State, worked mechanically and clerically by the clerks of the Bank of England; but it is essentially a department of the State'" (p. 254, quoting Loyd [1857] 1858, p. 13).

[24] The only exception here was Currie ([1934a] 1968, pp. 151-156), who would have entrusted this function to a Government-dependent agency.

[25] Here, however, the Chicago Plan—reflecting the views of Simons—was a major exception: because the velocity of circulation of money (*V*) was regarded as an independent factor of instability, and because the very existence of fractional-reserve banking (even if conducted with non-transferable

To some extent, the Currency School and 100% money authors thus used a similar argument for divorcing money from loans. In the case of the Currency School, however, the separation of functions rested on further grounds: it was also—and perhaps mainly—a precondition for implementing their prescribed policy rule, the 'currency principle'.

2. The 'currency principle' as an automatic policy rule: a specificity of the Currency School

The second major cause of monetary instability for the Currency School related to the conduct of monetary policy. In their view, no adequate regulation of the money supply could possibly be achieved, as long as the Bank of England was left with any kind of discretionary powers in the exercise of its issuing function. To this end, they had a very specific policy rule in mind, as we will now see.

At the time of the Currency School writings, gold (or silver as a possible alternative) was still largely believed to offer the best practical standard for regulating the value of money. Since the crisis of 1825, however—which had followed shortly after the resumption of cash payments by the Bank of England in 1821—, it had become increasingly clear that the simple convertibility of bank money into gold was not a sufficient condition of monetary stability (see Fetter 1965, p. 111). For this reason, many had become convinced of the need to submit the issue of bank money to a definite principle of action. This led to the formulating of the 'currency principle', according to which the total volume of a mixed monetary circulation, comprising both metallic currency and bank money, should behave exactly as a purely metallic circulation under similar circumstances would, expanding or contracting to the same extent as the monetary metal would flow into or out of the country[26].

A first attempt at implementing this principle was made with the 'Palmer rule', adopted by the Bank of England in 1827, and first explained by its governor, John Horsley Palmer, in 1832 (see Viner 1937, p. 224; Fetter 1965, p. 132). This rule, according to Fetter (1965, pp.

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savings deposits) was viewed as exacerbating the variations in *V*, the lending function would be entirely taken away from the banks, and performed instead by investment trusts, working with their own capital exclusively. See Demeulemeester (2018) [Chapter 3 of this thesis].

[26] The 'currency principle' can be found in the writings of Thomas Joplin (1823, p. 264), Henry Drummond (1826, p. 47) and James Pennington (see his 1827 memorandum to Huskisson, reprinted in Pennington 1840, pp. 85-88). Pennington, who is usually considered the first to have stated this principle in a clear and organised manner (see Fetter 1965, p. 130, and O'Brien 1994a, p. xxi), would have applied it to all bank liabilities, comprising both notes and deposits (see Viner 1937, p. 226). As we will see, this was similar to the Palmer rule, which, according to Viner (1937, p. 224), was adopted "[a]t the same time, although apparently wholly independently".

132-133), "was that the Bank, when the circulation was 'full'—that is, when the exchanges were just on the point of becoming unfavorable—should have a specie reserve equal to about one third of notes and deposits", and "starting from this situation all fluctuations in the Bank's notes and deposits should, 'excepting under special conditions', be equal to the changes in the Bank's holding of specie". In other words, this amounted to subjecting both the notes *and* deposits of the Bank of England to a marginal 100% reserve requirement. If applied to *all* deposits of the Bank, however, the Palmer rule would have placed a drastic restriction not only upon its money-issuing, but also upon its money-lending activity. Probably for this reason, the rule was never really followed in practice. And, also for this reason—as we will see in Section 3—the Currency School authors rejected it.

They thus proposed applying the 'currency principle' solely to *paper* money[27]. Loyd (1844, pp. 20-21) insisted that following this rule was a condition of monetary stability:

> Without this rule, all must be left to the irregularity and uncertainty of individual discretion. The manager of the circulation must undertake to foresee and to anticipate events, instead of merely making his measures conform to a self-acting test.
>
> In the exercise of such a discretion, the manager of the circulation . . . will, in nine cases out of ten, fall into error; whilst the interests of the whole community, and the fate of all mercantile calculations, will be dependent upon the sound or unsound discretion of some individual or body; instead of depending upon their own prudence and judgment, exercised under the operation of a fixed and invariable law, the nature and provisions of which are equally known to every body.

The desire to suppress all discretion in regard to note-issues was thus a *further* reason why the Currency School wanted to divide the Bank of England into two departments. While the first reason—putting an end to the inherently pro-cyclical behaviour of bank-created money (see Section 1)—called for a division of functions as an end in itself, the separation, this time, was viewed as an institutional prerequisite to a specific policy objective: putting the 'currency principle' effectively into practice. The Currency School tended to treat these two issues as joint matters, as did the Bank Charter Act of 1844: on the one hand, the Bank of England was divided in two departments (Title 1 of the Act), and, on the other, the Issue Department was subjected to a strict policy rule, aiming to apply the 'currency principle' to bank notes (Title 2). It was stipulated that, beyond a fixed fiduciary issue of notes of £14 million, made against the purchase of Government debt, all additional note issues should be made only against the

[27] The soundness of the 'currency principle' as a proper guide for monetary policy was, of course, at the heart of the Banking School-Currency School controversy, which does not fall within this paper's scope of discussion.

receipt or purchase of bullion—which effectively amounted to a 100% marginal reserve requirement for notes[28].

In contrast, the 100% money authors would treat the questions related to the monetary *system* and to monetary *policy* as separate rather than joint matters. As Fisher ([1935] 1945, p. 96) stated, "the 100% system is, theoretically, entirely independent of any particular monetary policy". The adoption of a monetary policy criterion, under all 100% plans, was to be decided by Congress independently from the proposed institutional reform. This, in itself, was a major difference with the English Act of 1844, which had jointly enacted both an institutional reform and a specific policy rule.

For sure, this did not prevent the 100% money authors from expressing their own preferences regarding monetary policy objectives. In this respect, it is of course largely irrelevant to compare their views with those of the Currency School writers, considering how much the state of monetary economics had evolved between the two periods. Advances had been made, for example, in credit cycle analysis, in "the refinement of the quantity theory" (Laidler 1991, p. 2) and in the practice of measuring the purchasing power of money through index numbers of prices (see Laidler 1991, pp. 172-178). These, combined with historical events which had allowed new experiences of inconvertible currencies to take place, had led to the "eventual destruction" of the gold standard and the increased acceptance of "the notion of a managed money . . . capable of producing a better economic environment than one tied to gold" (Laidler 1991, p. 20). By the 1930s, more and more economists—and this was clearly the case of the 100% money authors—held that priority should be given to the internal stabilisation of money in terms of domestic purchasing power, over the "minor problem" (Fisher 1934a, p. 396) of its external stabilisation in terms of foreign exchange. This was of course at odds with any gold-based rule such as the 'currency principle'[29].

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[28] This 100% marginal reserve requirement applying to the note issues of the Issue Department, however, should not be likened to the 100% reserve requirement applying, under the 100% money proposal, to the cheque departments of commercial banks. In the latter case, the 100% reserve requirement aims at making *the cheque departments of the banks* (which, as appears in Appendix 1, had no equivalent under the 1844 reform) mere 'warehouses' for depositors' money, but the monetary authority itself would be subjected to no kind of reserve requirement at all. In the former case, in contrast, the marginal reserve requirement aimed to constrain *the monetary authority itself* (the Issue Department) in its issuing activity. Confusion between these two kinds of reserve requirements seems to explain why the 100% money system is sometimes mistakenly likened to a 'currency board' (see, for example, Diatkine 2002, p. 151). Fisher himself undeniably caused confusion by over-emphasising the resemblance between the Act of 1844 and his own reform plan.

[29] As Robbins (1958, p. 252n1, italics in original) commented: "It is perhaps tempting to see in the Currency School the forerunners of the talented advocates in our own day of 100 per cent. money. But the likeness does not go very far. . . . The Currency School were concerned to preserve convertibility

Beyond this general consensus, however, the 100% authors differed as to which specific criterion, or criteria, they personally favoured. Some of them shared the Currency School's preference for an automatic rule leaving no place for discretion whatsoever. This was the case, in particular, of Henry Simons. The early versions of the Chicago Plan, written under his leadership, agreed that the criterion of price-level stabilisation should be retained "as a short-run expedient" (Knight *et al*. [1995] 1933, pp. 197-198), but favoured a more automatic rule—such as fixing the money supply—for the long run (Simons *et al*. [1933] 1994, p. 37)[30]. However, there was no consensus among the Chicago economists on this point[31]. As for Fisher, his own preference was for a stable price-level objective, although he considered other possible criteria as well (Fisher [1935] 1945, pp. 26-27, 96-99; see also Fisher *et al*. 1939, pp. 10-16)[32]. Simons (1936, p. 21) himself would later come to recommend price-level stabilisation as the best feasible (although not ideal) monetary policy objective. As for Currie ([1934a] 1968, p. 154), he did not specify what kind of policy he would have favoured, but price-level stabilisation was clearly a consideration. The proponents of price-level stabilisation sometimes stressed the distinction between the *ends* of monetary policy, to be guided by a specific criterion, and its *means* of implementation, for which some discretion was deemed necessary[33]. In any case, for most 100% money writers, their reform scheme was

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by maintaining *external* equilibrium. The advocates of 100 per cent money are hardly concerned with external equilibrium at all. Their main object is to prevent the annihilation or creation of internal purchasing power by internal banking operations. In so far as they have interested themselves in considerations of external balance they have tended to recommend equilibration by means of a floating rate—which . . . is a very long way from the position of the Currency School." Robbins, however, might have somewhat underestimated the similarity between the two groups of authors, as at no point did he discuss Loyd and Norman's analysis of the pro-cyclical behaviour of bank-created money, which we discussed in Section 1. This might be explained by the fact that his own study focused on Torrens, who, as we already noted, held no such argumentation.

[30] Angell (1935, p. 26) also argued that the quantity of money should be held "substantially constant". Hansen (1938, p. 115) would severely criticise Simons' and Angell's proposals on the ground that they would "place the community in a monetary strait jacket".

[31] Douglas (1935, p. 208), for example, favoured the criterion of a stable general price level. On this point, see Tavlas (2019a, p. 262). See also Tavlas (2019b) for a discussion of the views respectively held by the Chicago economists and Fisher in regard to policy rules.

[32] Fisher ([1935] 1945, pp. 24, 100-101, 177-181, 186, 214), in contrast to Simons, repeatedly insisted on the need for active monetary management and elasticity. Referring to the automatic policy rule "proposed by these economists at Chicago", he commented: "Personally, I would prefer to have some discretion enter in order to get a higher degree of stabilization. This is like running your automobile with a robot instead of with a chauffeur. I would rather have a chauffeur and give him a little discretion, although he would be told where he is to go" (Fisher 1935a, p. 542).

[33] See, in particular, Fisher *et al*. (1939, p. 18, italics in original): "The Monetary Authority should, of course, have the widest possible discretion with respect to the *methods* it might find most suitable for attaining the objectives laid down in the mandate. That is, it should be absolutely free to use any or all of its powers over money and the banks according to its own best judgment; but, as has been stressed

meant to *serve* monetary management, rather than to prevent any such kind of management from taking place at all[34]. This, again, was a major difference with the Currency School. In this regard, Fisher (1937b, p. 298) clearly forced the resemblance between his own proposal and the English reform, when arguing that "[t]he 100 per cent. plan would do for deposits, or cheque-book money, exactly what the Bank Act of 1844 did for Bank of England notes, pocket-book money". He overlooked the fact that the Act of 1844 was not only about institutional reform, but further contained, with the 'currency principle', an automatic policy rule clearly at odds with his own policy preferences.

Let us now turn to yet another point of divergence between the Currency School and 100% money writers, relating to the scope of their respective separation plans.

3. Applying the separation of functions to the circulating medium as a whole: a specificity of the 100% money proposal

The Currency School only sought to insulate *part* of the circulating medium—bank notes—from the money-lending business. They were of course perfectly aware that bank deposits, as well as other credit instruments such as cheques or bills of exchange, insofar as they were endorsable, could also serve as means of payment for the settlement of transactions. But, for different reasons, they refused to treat them in the same way as notes.

Loyd and Norman, on the one hand, forcefully denied such instruments the qualification of money. In a somewhat contradictory manner, they argued at the same time that deposits were an "auxiliary currency" (Loyd [1840b] 1857, p. 201) performing "monetary functions" (Norman 1841, pp. 51, 67), but that they should only be regarded as "banking expedients for economizing currency" (Norman 1841, p. 47; see also Loyd 1840b, p. 281). According to Loyd ([1840b] 1857, p. 201):

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before, the Monetary Authority should not be free to deviate from the mandate given to it by Congress." Their position was somewhat similar to that of Ricardo ([1824] 1951, Vol. 4), whose chosen policy objective (in his case, stabilising the price of gold) also required active monetary management on the part of commissioners left with operational discretion. The same went for Walras, who advocated stabilising a multiple price index (of the kind proposed by Jevons), and insisted, for this reason, that money should not be made automatic (see Walras [1884] 1898b, pp. 3-11; [1886] 1898b, p. 125).

[34] This difference with the English Act of 1844 has been duly noted by Hart (1935, p. 104n3) and Watkins (1938, p. 16). This, of course, would not prevent other authors, such as Friedman ([1960] 1992), from proposing combining the 100% money system with an automatic policy rule, precisely to do away with any kind of monetary management whatsoever.

> Deposits, debts owing, indeed Credit in any form, may be made the means of purchasing and paying, of adjusting transactions; and they may therefore, in one sense, be considered as forming a part of what has been called "Auxiliary Currency". But the whole superstructure of "Auxiliary Currency" forms a subject, distinct from that of the management of the circulation.

Asked by a parliamentary committee why he did not include deposits in his definition of the circulation, Loyd started to explain why he regarded bank notes as money:

> The precious metals, converted into coin, constitute the money of each country. That coin circulates sometimes in kind; but in highly advanced countries it is *represented*, to a certain extent, by paper notes, promising to pay the coin to bearer on demand; *those notes being of such a nature, in principle, that the increase of them supplants coin to an equal amount*. Where those notes are in use, the metallic coin, together with those notes, constitutes the money or currency of that country. (Loyd 1840b, p. 212, italics added)

He then added:

> Now, I conceive, that neither deposits nor bills of exchange in any way whatever possess [the] qualities [of money]. In the first place, the amount of them is not determined by the laws which determine the amount of the precious metals in each country; in the second place, they will in no respect serve as a common measure of value, or a standard by reference to which we can measure the relative values of all other things; and in the next place, they do not possess that power of universal exchangeability which belongs to the money of the country. (Loyd 1840b, p. 212)

He thus seemed to hold the view that bank notes were to serve as certificates of deposits, representing coins kept in custody and circulating in their place, rather than as credit instruments, used to acknowledge receipt of savings intended to finance loans and investments. Only under such conditions could notes be regarded as obeying the same laws as precious metals. But this, of course, was a prescriptive approach indicating what bank notes *should be*, not a descriptive one indicating what they actually were. The very same point could have been made in regard to deposit balances, which in practice served similar functions to notes. Loyd's last argument—that deposits, contrary to notes, were not *universally* accepted as a means of payment—was not very convincing either. Norman (1840, p. 143), asked a similar question by the same committee, provided a similar answer (see also Norman 1841, pp. 35, 54, 58). These explanations didn't weigh much in face of the Banking School's argument that, because bank deposits (and bills of exchange) performed essentially the same functions as bank notes, there was no justification for treating them any differently (see for example Tooke 1844, pp. 17-33).

Torrens (1837, pp. 6-12), on the other hand, insisted that bank deposits subject to cheque *were* money[35]. He also argued, at some point, that these deposits could be subject to unwanted expansions or contractions[36]. But then, in the rest of his work, for some reason, he seemed to suppose the existence of a fixed reserve-deposit ratio (just like he also supposed, as we saw, the existence of a fixed ratio between Bank of England notes and country bank notes)[37]. In his view, therefore, any given variation in the monetary base (made of metallic and paper money) would normally produce an exactly proportional variation in the volume of bank deposits, making it unnecessary to include them in the separation plan. Torrens thus focused his criticism on the mismanagement of Bank of England notes exclusively. Only in his later writings would he fully acknowledge the inherent instability of the reserve-deposit ratio (Torrens 1858, pp. 267, 271-276); however, at the same time, yielding to Loyd's insistence, he now refused to regard deposits as money (Torrens 1858, pp. 264-266)[38]. This in fact prevented him from having to recognise that the 'money' supply remained subject to sharp fluctuations under the workings of the Bank Charter Act.

The Currency School, as a matter of fact, was at a loss to explain why deposits should be treated any differently than bank notes. It appears that the only alternative they contemplated was either to include *all* bank deposits in the reform, or to include *none* of them at all—the latter option being of course much more preferable and also more applicable than the former. To prevent the banks, already deprived of the right to issue notes, from issuing liabilities in the form of deposits, would have meant nothing less than the end of banking[39]. This is precisely the reason why Loyd rejected the Palmer rule. This rule, as we saw, would have

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[35] "To a merchant who has, in a solvent bank, a deposit against which he can draw his checks, that deposit is *money*" (Torrens 1837, p. 7, italics in original).

[36] "In periods of confidence and high commercial credit, a small amount in coin and bank notes, may serve as the basis of a large amount of bank deposits. It follows, that in such periods, the circulating medium may expand, without any increase in the amount, either of coin or of bank notes; and that, while the amount of coin and notes remains undiminished, the circulating medium may suffer contraction" (Torrens 1837, pp. 11-12).

[37] See, for example, Torrens (1837, pp. 19-21), and the comments by O'Brien (1994a, p. ix). James Pennington (in Tooke 1838, p. 369) pointed out this flaw in Torrens' analysis: "It never occurred to me, as appears to have been supposed by Colonel Torrens, that every million of notes issued by the Bank of England forms the basis of five millions of deposits; and that every million withdrawn from circulation, by the Bank, occasions a five-fold diminution of those deposits. . . . Colonel Torrens . . . appears to have fallen into some misapprehension on this head."

[38] On Loyd's influence on Torrens on this matter, see O'Brien (1994a, pp. viii-ix).

[39] As Robbins (1958, p. 141) commented, "an extension of the Currency principle from notes to deposits—i.e. what has come to be called 100 per cent banking" would be in fact "the extinction of banking as we know it". He was certainly right in this assertion, but wrong, however, if by "100 per cent banking" he meant to refer to the 100% money proposal—as we will see.

severely restricted the Bank of England's ability to issue promises to pay both in the form of notes *and* deposits. Loyd, who argued that the issuing of notes should be divorced from banking and submitted to the 'currency principle', strongly opposed any similar treatment for deposits:

> But when the same rule is further applied to the regulation of its conduct as a banking concern, it is necessarily found to be wholly impracticable. It is in the nature of banking business that the amount of its deposits should vary with a variety of circumstances; and as its amount of deposits varies, the amount of that in which those deposits are invested (viz. the securities) must vary also. It is therefore quite absurd to talk of the Bank, in its character of a banking concern, keeping the amount of its securities invariable. The reverse must necessarily be the case. (Loyd 1837, p. 11)

The 100% money authors of the 1930s would find another way to deal with these difficulties. They proposed to fully differentiate between two kinds of deposits: *(transferable) chequing deposits*, fulfilling a payment function, and *(non-transferable) savings deposits*, fulfilling an investment function[40]. Only chequing deposits would be separated from bank-lending activities: they would be fully covered by reserves in lawful money, so that only the monetary authority would be allowed to increase or decrease the circulating medium in amount. However, under most proposals, savings deposits could still be freely multiplied by the banks in the process of collecting savings and making loans, as long as they could not be used as means of payment[41]. To this end, in addition to separating the issuing of money (entrusted with an independent monetary authority) from the lending of money (left with the banks), the 100% money authors proposed a further separation, within the banks, between a *cheque department* dealing with the keeping and transferring of chequing deposits (subject to a 100% reserve requirement), and a *loan department* dealing with the collecting and lending out of

[40] The distinction between transferable and non-transferable deposits is, of course, not the same as the distinction between demand deposits (payable immediately) and time deposits (payable at a later date, or after notice). Some deposits may be convertible 'on demand' without being, at the same time, transferable by cheque. The 100% money authors were aware that the two distinctions did not necessarily overlap (see, for instance, Currie [1934a] 1968, p. 14). However, they unfortunately showed a lack of rigor in the terminology they employed, sometimes speaking of *demand* and *time* deposits when they obviously meant to distinguish between *chequing* and *savings* deposits. This, of course, inevitably led to some confusion.

[41] Again, the specific Chicago Plan proposal must here be mentioned as a major exception. As already explained, it would put an end to the very practice of lending from deposits, and turn lending banks into investment trusts. However, this was not due to a failure to distinguish between transferable and non-transferable deposits, but rather to the very specific interpretation of monetary instability held by Simons in particular (see Demeulemeester 2018 [Chapter 3 of this thesis]).

savings deposits (only fractionally covered by reserves). Such a separation had no equivalent in the Currency School reform proposals[42].

Possibly because they never came up with a similar distinction, the Currency School writers were not able to solve the delicate question of bank deposits, and chose not to include them within the scope of their separation plan at all[43]. As such, under the Act of 1844, the Issue Department of the Bank of England was only vested with the privilege of issuing notes; no such provision was made for the issuing of deposits subject to cheque. This Act therefore rendered *paper money* independent of the bank-lending activity, and fully secured its convertibility into gold. But, because other means of payment were left out of the reform, the Act did not put an end to the dependence of the circulating medium *as a whole* upon banking activity[44]. This flaw would only be addressed, as we have seen, by the 100% money proposal. And, because the circulating medium at large, under the 1844 system, still largely depended upon banks, it was all the more important that banking activities remain regulated in some way. This now leads us to the question of central banking.

4. Central banking's place within a system of separate monetary and banking functions

The Currency School writers, convinced as they were that their reform plan would completely divorce the issuing from the lending of money, argued that lending could—and should—be left "perfectly free" (Norman 1838, p. 34)[45]. However, they went so far as to apply this

[42] A comparative presentation, including balance sheets, of the monetary and banking systems under the respective Currency School and 100% money proposals (exemplified by Fisher's plan), is provided in Appendix 1.

[43] Fisher, observing that the Act of 1844 "overlooked the fact that bank deposits could be used as money" (1936a, p. 412), argued that the 100% plan was "merely to finish the job undertaken by Sir Robert Peel" (1937a, p. 293). At no point did he notice, however, that the distinction between chequing deposits and savings deposits, which was so central to his own proposal (and so obvious to him), needed to be established first, if the provisions of the Act of 1844 were to be extended to deposit currency. Only a few British writers of the time seem to have come up with a distinction of this kind, such as Gilbart (1841, p. 100), who held: "Those deposits only are thus transferred which are payable on demand. This class of deposits, therefore, can only be considered as currency".

[44] Pennington (1840, p. 211)—described by O'Brien (1994a, p. xxiii) as "a 'semi-detached member' of the Currency School"—, at least, was aware of this limitation: "But in all this, the operation and influence on the prices of commodities, and on the foreign exchange, of that medium of interchange – call it credit, auxiliary currency, or by any other name – which is so largely employed in this country, in addition to bank notes and the coin of the realm, is wholly overlooked. The promissory note circulation may indeed be limited in the way proposed, but such a limitation of the paper would not alone be sufficient to put an end to those alternations of excitement and depression which it is so desirable, if possible, to prevent, or at least mitigate."

[45] One would usually find the same argument expressed by the 100% money authors. See, for example, Fisher (1936a, p. 412, italics in original): "The Government should take away from the

reasoning to the Banking Department of the Bank of England itself, which they argued was "only an ordinary banking concern on a large scale; its business must be conducted and regulated upon ordinary banking principles" (Loyd [1857] 1858, p. 219)[46]. They did recognise that part of the "true business of a banker" was to keep "a fund ultimately available in cases of unusual emergency", and that "[i]f this [was] the case with respect to bankers generally, it [was] so in a much greater degree with regard to the Bank of England" (Loyd [1840b] 1857, p. 225)[47]. But this did not seem to imply that the Bank should keep more than ordinary reserves:

> One difficulty will probably be anticipated as likely to arise from the diminished power which the Bank under this arrangement will possess of relieving commercial pressure and extending support to public credit. This evil, however, will probably prove to be much less than many persons apprehend. . . . We may further observe that the banking resources of the Bank will remain unimpaired and unfettered; and the only respect in which the Bank will be restricted . . . will be in the exercise of her improper and dangerous power of creating money beyond the amount which ought to exist. (Loyd 1840a, pp. 113-114)

They did anticipate that, should such reserves prove insufficient, the note-issuing restrictions applying to the Issue Department could be temporarily suspended, allowing it to come to the Banking Department's rescue[48]. However, convinced as they were that their reform plan would efficiently put an end to monetary and banking instability, they did *not* develop any theory of central banking, by which the Banking Department could be made to behave as a *non-profit oriented* lender of last resort[49].

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banks all control over *money*, but should leave the *lending* of money to bankers. We could leave the banks free, or at any rate far freer than they are now, to lend money as they please, provided we no longer allowed them to manufacture the money which they lend." See also Fisher ([1935] 1945, p. 171).

[46] References to this and other similar statements by Loyd and Norman are provided by Le Maux (2018, p. 552n9). The 100% money writers would not go this far. According to Fisher ([1935] 1945, p. 159): "Any private-profit motive in central banking is always a source of danger. This is especially true under a 10% system. A central bank, in order to serve other banks, must often take a course exactly opposite to that which would be the most profitable one for itself. The private-profit motive of central banks has, consequently, become subordinate, even in the Bank of England, which ostensibly has always been a private bank entitled to private profits."

[47] See also Torrens ([1848] 1857, pp. 77-78).

[48] According to Fetter (1965, p. 276), "Norman had suggested a provision, rejected by Peel, that on the authority of three ministers the [Issue Department] could exceed the fiduciary issue set in the act." See also Loyd (1844, p. 53), who recognised that emergency would justify the Government "exercising special interference" in that regard.

[49] According to Fetter (1965, p. 205): "The supporters of the act in large part had disposed of the problem of the Bank's responsibility by assuming that it would no longer arise under the new legislative dispensation". This confidence clearly appeared, for example, in Torrens' *Letter to Thomas Tooke* (Torrens 1840, p. 10): "The difference between us is this: you contend that the proposed

Not surprisingly, after the Act of 1844 was passed, the Banking Department, relieved from any duty in respect to note-issues, was to behave as if it no longer bore any public responsibility whatsoever[50]. The crisis of 1847 that followed soon after was so severe that the provision of the Act of 1844 had to be suspended. As Fetter (1965, p. 201) notes: "However, the developments that culminated in that crisis had their origin not in any specific provision of the act of 1844, but in the apparent belief of the Bank management that the act had freed them from certain restrictions which public opinion had previously imposed on them". He further commented: "The Bank of England certainly was less a central bank in 1845 than it had been in 1825, and probably less than it had been in 1793" (Fetter 1965, p. 258). The Act would again have to be suspended during the crises of 1857 and 1866[51]. It is true, as some commentators have noted, that "the freedom which the Act left to the Bank in the conduct of its banking business included the freedom to conduct it as a central bank", as it had sometime done in the past (Whale 1944, p. 109; see also Viner 1937, pp. 263-264, and Fetter 1965, p. 205.). But for the Banking Department to fully accept lender of last resort responsibility, one would have to wait for the "victory of the Bagehot principle" in the 1870s (Fetter 1965, p. 257). As Laidler (1991, p. 36) commented:

> [T]he 1850s and 1860s saw the slow but sure re-establishment of the predominance of the Banking School view that the Bank of England had a special position in the monetary system; and the publication of Bagehot's *Lombard Street* in 1873 completed the edifice of classical monetary economics with a theory of central banking.

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separation of the business of the Bank into two distinct departments, would check overtrading in the department of issue, but would not check overtrading in the department of deposit; while I maintain, on the contrary, that the proposed separation would check overtrading in both departments." Torrens (1858, pp. 275-281), however, would hold a diametrically opposed position many years later, after the Act of 1844 had to be suspended for a second time in 1857. But, by that time, as we mentioned already, he had ceased to regard deposits as money.

[50] According to Viner (1937, p. 255): "When the Act of 1844 came into effect, the Bank at once proceeded to act as if the freedom from external control which the act left to the banking department had also rendered unnecessary any internal control". On the consequences of the Act of 1844 for the money market and the financial sphere, see Le Maux (2018).

[51] Fisher (1937a, p. 294) would provide the following interpretation of the suspension procedure: "[T]he deposit currency, wholly overlooked in the law of 1844, soon began to make trouble. In 1847 . . . the 'Banking Department' . . . was confronted with a run . . . With the approval of the Government . . . it borrowed cash of the Issue Department. This cash was new money, specially manufactured for the purpose . . . This 'Suspension of the Bank Act' as it is misleadingly called . . . has been followed in subsequent crises. Its success has been so invariable that its essential nature has been little analyzed. It is a further step toward the 100% plan. Both the permanent set-up of the Issue Department and the emergency set-up of the Banking Department are plans to strengthen reserves, one reserve being gold (now Government paper) behind the Bank's note liabilities, the other reserve being notes behind the Bank's deposit liabilities." See also Fisher *et al.* (1939, pp. 34-36).

However, if the *banking* functions exerted by the Banking Department now included *central banking* responsibilities, the dividing line with the *monetary functions* exerted by the Issue Department was maintained[52]. Or, to put it perhaps more appropriately, the division was maintained between the explicit and acknowledged money-issuing function performed by the Issue Department (insofar as paper money was concerned) and the implicit and less acknowledged money-issuing function still performed by the banking sector at large (insofar as cheque-book money was concerned), the latter being increasingly placed under the responsibility of the Banking Department, acting therefore in the dual role of (explicit) central bank and (implicit) monetary authority[53]. Despite the three temporary suspensions of the Act, at no point was the monetary system inherited from 1844 brought into question, nor was its obvious inconsistency resolved: the note-issuing monopoly of the Issue Department was *not* to be extended to the circulating medium as a whole. As Fetter (1965, p. 212) commented:

> From the point of view of modern banking theory and practice the case for treating all of the Bank's liabilities alike . . . is so strong that it is hard, without sensing the crosscurrents of opinion of the time, to understand why no change was made.[54]

He further added (*ibid.*, p. 224):

> The apparent understanding . . . that the question of the control of deposit banking was taboo resulted in a theoretical sterility in much of the discussion. The more firmly the Government stated the principle of the absolute right of the State over the note issue, the more completely it seemed to abdicate any claim to regulate, or even to ask for information about, deposits.

One possible answer to this puzzle, as we have suggested already, was the lack, in 19th century British discussions, of any conceptual distinction between deposits fulfilling a

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[52] As Diatkine and De Boyer (2008, p. 205) explain: "According to Bagehot, it was the Bank of England's Banking Department that was the lender of last resort, not its Issue Department. The lender of last resort would lend money exogenous to it – a loan of last resort did not equate to an issue of money". This, of course, did not preclude the important (but not always recognised) fact that, besides lending these exogenous notes, the Banking Department could also—like any other bank—issue monetary liabilities in the form of its own deposit balances (*ibid.*, p. 206).

[53] It should also be noted that, while the Issue Department remained tied to the 'currency principle' as a policy rule, the Banking Department remained free to use discretion in its operations. Laidler (1988, p. 98) specifies that "by the 1870s, it was accepted that suitable discretionary conduct on the part of the Bank of England, within the institutional framework created by that Act, was required to deal with cyclical problems".

[54] As Laidler (1988, p. 100n28) also commented: "Though the suppression of a competitive note issue, along with the maintenance of competition in deposit banking made sense in terms of Currency School doctrine, which attached undue significance to notes *per se*, it is hard to defend those writers such as Jevons who supported the Bank of England's note issue monopoly while simultaneously recognising the importance of competitively provided deposits in the circulating medium."

monetary function as compared with those fulfilling an investment function, a distinction which, as we saw, would be central to the 100% money proposals of the 1930s.

What was less clear with the 100% money proposals, however, was how this division of functions would result, at the top, in a distinction between the functions of a *monetary authority*, in charge of issuing money and regulating its supply, and those of a *central bank*, in charge of providing centralising and rediscounting facilities to the banks' *loan* departments and assisting them in case of emergency. Even if the total separation between the issuing and the lending of money were to result in greater stability, this would not necessarily do away with the case for centralising reserves—if only for consideration of economies of scale[55]—, nor would it necessarily obviate the need for a lender of last resort in case of runs on savings accounts. Fisher showed awareness of the latter consideration. Under his proposed plan, while the Currency Commission would be vested with a total money-issuing monopoly, the twelve U.S. Federal Reserve Banks would be maintained as *non-issuing* central banks—comparable, in some respect, to the 'post-Bagehot' Banking Department of the Bank of England. On the one hand, these Reserve Banks would serve as an intermediary between the Currency Commission and the banks' cheque departments for the administering of chequing accounts (Fisher [1935] 1945, pp. 61-65); on the other hand, they would provide the banks' loan departments with rediscounting facilities (Fisher [1935] 1945, pp. pp. 82-89, 141-142). And so could, possibly, the Currency Commission itself, even though it would, "if rediscounting were allowed at all, function chiefly as a safety valve in cases in which the banks could not themselves readily afford accommodation in sufficient volume or with sufficient promptness" (*ibid.*, p. 88, see also p. 202)[56]. Apart from Fisher, however, none of the other 100% money

[55] This aspect of the reasoning for a central bank, according to Laidler (1991, pp. 184-185), was missing from Bagehot's analysis, which gap was to be filled by Edgeworth's 'Mathematical theory of banking' (1888).

[56] Fisher ([1935] 1945, p. 89), however, preferred to have the monetary authority resort to open-market operations rather than rediscounting: "For myself, I would prefer not to endow the Currency Commission with any rediscount power whatever. We could accomplish substantially the same purpose simply by buying and selling Government bonds". He also made it clear that such central banking operations needed not interfere with monetary considerations. As he specified with respect to rediscounting: "evidently this would not necessarily require any increase in circulating medium; for as fast as the Currency Commission rediscounted, i.e. bought promissory notes, it could, if it wished, sell bonds. The buying of one and the selling of the other would offset each other so far as affecting the volume of money is concerned. Thus, the compulsory exercise of its rediscount function need not interfere with its function of controlling the volume of money" (Fisher ([1935] 1945, p. 203n1). Obviously, a simpler solution than such sterilization operations would have been to split the Currency Commission itself into an Issue Department and a Lending (or Central Banking) Department; but Fisher did not make any such suggestion.

authors offered any discussion of central banking functions as distinct from monetary authority functions[57].

Conclusion

The 19th century Currency School writers and the 100% money authors of the 1930s agreed on one major point: that the intermingling of the issuing of money and the lending of money was a major source of instability, imparting on bank-created money an inherently pro-cyclical behaviour (explained by the reciprocal causality, under such system, between bank money and prices). In their views, this required a separation of these two functions. The similarity between the two groups, however, does not go much further. The separation plan of the Currency School was motivated by an additional reason, entirely extraneous to the 100% plan *per se*: that of putting a specific policy rule, the 'currency principle', effectively into practice, by subjecting the monetary authority *itself* to a 100% marginal reserve requirement. The 100% money scheme, on the contrary, was put forward only as an *institutional* reform plan, independently from any specific *policy* consideration, and would *not* have required any kind of reserve requirement for the monetary authority itself. As a matter of fact, the 100% plan was primarily designed to *serve* monetary management, whatever monetary policy objective might be decided by Congress. Another major difference related to the scope of the respective reform plans: while the Currency School only sought to insulate the issuing of *bank notes* from the lending of money, the 100% money authors sought to insulate the circulating medium *as a whole* from loans. The 100% plan, however, did not consist in extending the separation of functions to 'deposits' in general. Its main innovation, in this regard, was to offer a distinction between two kinds of deposits: *chequing deposits*, serving as a means of payment, and *savings deposits*, serving as credit instruments. Only the former would be placed under the issuing monopoly of the monetary authority, while the latter would remain (except in the specific case of the Chicago Plan) at the free disposal of the banks. The lack of any similar distinction in the Currency School writings might help explain why these authors were never able to suggest any adequate treatment of deposits. The English Act of 1844 only

[57] Under the Chicago Plan, the Reserve Banks would be nationalised and charged, under supervision of the Federal Reserve Board, of the issuing of money (Simons *et al*. [1933] 1994, pp. 32-33)—thus fulfilling the role ascribed to the Currency Commission in Fisher's plan. Moreover, there would be no lending banks in their scheme (these being replaced, as we already mentioned, with investment trusts). Possibly for this reason, there was no discussion of central banking functions as distinct from monetary authority functions in their writings. Nor was there any such discussion by Currie, who further assumed (somewhat unrealistically) that no reserve would need to be kept behind savings deposits at all (see Currie [1934b] 1968, p. 199; [1938] 2004, pp. 360-361).

dealt with bank notes, leaving deposit currency entirely dependent upon the banking business. It was thus all the more important that the Bank of England remain ready to exert central banking responsibility when needed, a role it would come to fully endorse by the 1870s. In contrast, under a 100% money system, the banks would be left with no money-issuing power whatsoever, and the central bank (as distinct from the monetary authority), would therefore exert no monetary (as distinct from banking) responsibility. All these reasons lead us to conclude that the 100% money proposal of the 1930s *cannot* simply be regarded as an avatar, extended to deposits, of the Currency School reform proposals as embodied in the English Act of 1844. Nor should the recently renewed interest in the 100% money idea merely be read, in our view, as a revival of the confrontation between the Currency School and the Banking School. It rather partakes to a reflection, not only on the causes of monetary and banking instability, but also on the ways in which the monetary system, whatever policy objective is to be pursued, could best be designed to serve monetary management.

Appendix 1. The monetary and banking systems under the respective Currency School and 100% money proposals

Figure 1. The English system under the Bank Charter Act of 1844 (embodying the Currency School proposals):

Royal Mint:

Free coinage of **metallic currency**

Issue Department of the Bank of England (BoE):

Assets	Liabilities
Government securities (in fixed amount) 100% marginal metallic reserve	**Bank notes**, to be *automatically regulated* by the variations in the metallic reserve ('currency principle')

Banks (including the Banking Department of the BoE):

Assets	Liabilities
(Fractional) reserves	Equity
Loans & investments	Deposits (including **transferable deposits**)[1]

The items underlined in bold indicate the locations of the power of creating means of payment. Under the English Act of 1844 (Figure 1), this power was shared between the Mint, the Issue Department of the Bank of England, and the banks (including the Banking Department of the Bank of England). Under Fisher's 100% money proposal (Figure 2), on the other hand, this power would be fully concentrated in the hands of the Currency Commission.

[1] To be more complete, Figure 1 should also include country bank notes, which, although increasingly restricted by legislation, still formed part of the monetary circulation at the time—as did bills of exchange and cheques, to the extent that they circulated by endorsement.

Figure 2. The proposed U.S. system according to Fisher's version of the 100% money proposal[2]:

Currency Commission (CC):

Assets	Liabilities
Government bonds	**Lawful money** (CC notes & deposits), to be *managed* according to a policy criterion (to be decided by Congress)

Banks[3]

Cheque department: Lawful money in custody		*Loan department:* Assets	*Loan department:* Liabilities
100% reserves in lawful money	Transferable ('chequing') deposits	(Fractional) reserves Loans & investments	Equity Non-transferable ('savings') deposits

[2] These balance sheets are adapted from the ones presented in Fisher's book (see Fisher [1935] 1945, pp. 63-67).

[3] Very similar balance sheets would apply to the twelve Federal Reserve Banks (FRBs), although Fisher did not specify whether they would themselves be divided into two departments. In his balance sheet illustration, "member bank deposits in Federal Reserve Banks" and "Federal Reserve notes" would be fully covered by reserves (implying that the former would consist in chequing deposits only), while the FRBs' other assets ("U.S. Securities", "Etc.") would be matched by "Capital, etc." (Fisher [1935] 1945, p. 63).

Chapter 3 – The 100% money proposal and its implications for banking: The Currie-Fisher approach versus the Chicago Plan approach*

Chapter's abstract

The literature on the 100% money proposal often reveals some confusion when it comes to its implications for the banking sphere. We argue that this can be partly explained by a failure to have distinguished between two divergent approaches to the proposal: the 'Currie-Fisher' (or 'transaction') approach, on the one hand, which would preserve banking; and the 'Chicago Plan' (or 'liquidity') approach, on the other hand, which would abolish banking. This division among 100% money proponents stemmed, in particular, from different definitions of money, and different explanations of monetary instability. The present paper attempts to clarify this divergence of views.

1. Introduction

The 100% money proposal has aroused renewed interest, following the 2007-8 global financial crisis and ensuing recession, as a potential solution to improve monetary control and stabilize the economy. Its advocates, viewing money creation out of bank loans as a major source of instability, would make all issuance of money (including checking deposits) a monopoly privilege of the state. This proposal was first widely discussed in the context of the Great Depression of the 1930s, when it was supported by different authors, in various versions[1]. One was embodied in the so-called 'Chicago Plan' for banking reform, exposed in

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[1] The idea that private banks should be prevented from creating money can be found in the writings of David Ricardo already, as well as in the Currency School arguments which led to the adoption of the English Bank Charter Act of 1844. All those writers, however, focused on the issuance of bank notes, without considering transferable bank deposits as money. The proposal for a 100% reserve requirement behind checking deposits appeared in the United States, in the mid-19th century, with authors such as Charles H. Carroll (see Mints 1945, pp. 154-6). Léon Walras, in 1898, also suggested

a series of memoranda co-authored by a group of Chicago economists in 1933[2] and, subsequently, in the writings of Henry Simons (from 1934). Other versions were designed, at that time, by Lauchlin Currie (from 1934), Irving Fisher (from 1935), or James Angell (1935), while several bills calling for a 100% money reform were introduced in the U.S. Congress in the 1930s and 1940s. The proposal was later advocated by Maurice Allais (from 1947), Milton Friedman (from 1948), James Tobin (from 1985) and Hyman Minsky (from 1994), and has kept appearing in new versions up till today[3]. The history of all these reform plans has been well documented, particularly in a book by Ronnie J. Phillips (1995)[4]. The concept of 100% money, however, still requires clarification, especially when it comes to its implications for the banking sphere—as was revealed, for example, by a review of Phillips's book by Schiming (1996, p. 265). The recent literature on the subject, in particular, shows a great deal of confusion in that respect. We argue that this is partly due to a failure to have distinguished between two divergent approaches to the proposal, insofar as banking activity—defined here as the activity of financing loans and investments out of collected deposits[5]—was concerned. Two groups of authors can indeed be distinguished, who, beyond their points of agreement, adopted opposite conclusions on this specific issue. The first group, following the views of Lauchlin Currie and Irving Fisher, supported a 100% money proposal which would leave the proper banking sphere largely untouched—banks would remain free to perform financial

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that all checking accounts be kept in a central "Transfer Bank" ["*Banque de virements*"], with 100% reserves behind them, so that "monetary circulation would not be disturbed by the arrangements of credit" [*"que la circulation monétaire ne soit pas troublée par les combinaisons du crédit"*] (Walras [1898a] 1898b, pp. 376, 395, my translation). Early 20th century advocates of 100% reserves included Frederick Soddy ([1926] 1933, pp. 229-31), whose proposal, based on a 'fiat' currency, might have influenced the Chicago Plan directly (Phillips 1995, p. 46).

[2] This group included Garfield Cox, Aaron Director, Paul Douglas, Frank Knight, Albert G. Hart, Lloyd Mints, Henry Schultz, and Henry Simons. They circulated three memoranda in 1933 (see Phillips 1995, pp. 47-68): the first in March (Knight *et al.* [1933] 1995), the second—a revised version of the first by Simons—in April (unpublished), and the third—mainly the work of Simons—in November (Simons *et al.* [1933] 1994). As noted by David Laidler (1999, p. 231), the term 'Chicago Plan' was coined by Hart (1935), whereas '100% money' was Fisher's phrasing.

[3] See, for example, Huber and Robertson (2000), Kotlikoff (2010), Benes and Kumhof (2012), Jackson and Dyson (2013), Sigurjónsson (2015), Levitin (2016), or Huber (2017). Patrizio Lainà (2015) has recently provided a historical overview of what he terms "full-reserve banking proposals".

[4] One can also refer to Phillips (1988) and Whalen (1994) for discussions about the Chicago Plan; to Sandilands (2004) about Currie's plan; and to Allen (1993), Dimand (1993b) and Barber *et al.* (1997, Vol. 11, editorial content) about Fisher's plan.

[5] 'Banking' could be more properly defined as consisting of two sets of activities, one related to the administration of the payment system (deposit-keeping and transferring), the other to the intermediation between savers-depositors and investors-borrowers (deposit-lending). In this paper, however, we tend to use the term to refer to this latter activity specifically.

intermediation by collecting and lending out savings deposits. The second group, following the views of the Chicago Plan, called for a drastic transformation, if not the complete abolition, of banking—banks would be replaced, in their intermediation function, by equity-financed institutions such as investment trusts. These diverging attitudes, as we will see, mainly stemmed from different definitions of money and different explanations of monetary instability. The conflict between the two approaches, however, has not been clearly identified and discussed in the literature. Although Phillips was aware of these differences, he chose not to look into them in his book:

> Though both Fisher and the Chicago economists would be classified as adherents to the Quantity Theory of Money (QTM), they had differences of interpretation. A careful analysis of the respective interpretations would undoubtedly provide insight into their differences over stabilization schemes. Because it goes beyond the intent of the present study, comparisons of their views will be restricted to correspondence between Fisher and Simons . . ., and no attempt to compare and contrast their somewhat different versions of the QTM will be attempted. (Phillips 1995, p. 206)

The purpose of the present paper is precisely to take over Phillips's work on this question, and elucidate the confrontation between those two approaches to the 100% money proposal—which we call the 'Currie-Fisher approach' (or 'transaction approach') on the one hand, and the 'Chicago Plan approach' (or 'liquidity approach') on the other hand. To this end, after having presented the common features of the two approaches, we will study their divergences on three different levels: the definition of money, the explanation of monetary instability, and the treatment of banking[6]. Finally, we will see how the lack of distinction between the two approaches in the literature has led to recurrent misconceptions about the 100% money proposal, including in the most recent and still ongoing discussions of the idea[7].

2. Common features of the two approaches

2.1. The creation of means of payment out of banking activity viewed as a major factor of economic instability

All 100% money proponents shared a major criticism of the existing monetary system, in which bank promises to pay (deposits), covered only fractionally by reserves in lawful money, were used as means of payment. Such a system, they said, was inherently unstable:

[6] One can refer to Table 5, in the concluding section, for a summary of these divergences.

[7] These divergences between the 'transaction' and 'liquidity' approaches can also be found in the proposals for 'narrow banking' which appeared in the 1980s (see, for example, Litan 1987).

the expansion of bank loans would lead to excessive money creation in the upswing phase of business, producing a boom, while their contraction would lead to excessive money destruction in the downswing phase, producing a depression. The situation could then be further aggravated by bank failures, as the great monetary contraction of 1929-33 illustrated. Of course, as those authors generally conceded, booms and depressions could theoretically be prevented if adequate countercyclical action was taken by the monetary authority. But such action, in the existing system, was particularly uneasy as it always had to be exercised 'against the wind'. Moreover, even if successful, it would come at the price of a manipulation of the rate of interest by the central bank, which, it was argued, could cause severe market disturbances. For these reasons, the 100% money proponents recommended a drastic change of the monetary system.

2.2 A 100% reserve requirement on bank deposits subject to check

As summarized by Fisher ([1935] 1945, p. xvii[8]), "[t]he essence of the 100% plan is to make money independent of loans; that is, to divorce the process of creating and destroying money from the business of banking". The core of the reform, common to both approaches, was to require the banks to keep 100% reserves in lawful money behind their deposits subject to check, fulfilling a payment function. These transferable deposits would be kept in a check department, or check bank, which would act as a mere 'warehouse' for funds, providing their depositors with payment facilities. In no case could these funds be used by the bank to finance loans or investments. This provision, beyond allowing direct control over the volume of checking deposits by the monetary authority, would offer the additional advantage of securing the payment system from bank runs. As to the question of how the administration of checking accounts should be remunerated, various options were suggested, such as applying service charges to account holders, subsidizing the banks, or transferring this activity to public agencies, like the postal savings system or even the central bank itself[9]. But apart from these technical (though important) considerations, all versions of the proposal agreed on the treatment to be given to checking deposits. They disagreed sharply, however, on the treatment to be given to savings deposits, fulfilling an investment function—as we will see in section 5.

[8] The page numbers of the original edition are reproduced at the top of the pages of the 1997 re-edition by Barber *et al.* (1997, Vol. 11).

[9] For discussions regarding the implementation of the 100% money proposal under its various versions, one can refer, for example, to Hart (1935), Watkins (1938) or G.R. Barber (1973).

At any rate, financial intermediation would remain a prerogative of the private sphere, as avoiding the nationalization of banks was a motivation common to all versions of the plan[10].

2.3 A monetary authority responsible for all money issuance

Under all 100% (fiat) money proposals[11], the function of creating or destroying money would become an exclusive privilege of the state[12]. This would apply to all means of payment, including checking deposits, as the latter would be fully covered by reserves in lawful money. The money supply, under most proposals, would be regulated by an independent monetary authority, subject to a rule of objective to be adopted by Congress (such as a price-level stabilization rule). Some proposals would submit the monetary authority not only to a rule of objective, but also to an automatic rule of action, while others insisted that it should be awarded discretionary powers of implementation. Discussing these questions of monetary policy, however, is beyond the scope of this paper. As for the practical modalities of money injection, most proposals recommended that the monetary authority regulate the volume of money exclusively by buying or selling government securities in the open market. These securities could be either existing bonds, or new bonds issued by the Treasury[13]. In the latter case, the new money might be spent directly by the government, credited to taxpayer accounts, or even distributed to citizens in the form of a social dividend. Under most plans, the discount window would be abolished. Again, discussing these modalities is beyond the scope of our present study.

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[10] For Fisher (as for Simons), the stakes were even higher: "[t]he best available safeguard against the overthrow of capitalism is the 100% system, combined with money management, to give us a stable dollar. Of all people, bankers should, therefore, favor this proposal if only in self-defense. Otherwise, by the irony of fate, they may someday be the ones to upset capitalism" (Fisher [1935] 1945, p. 219).

[11] Those should be distinguished, however, from the 100% gold reserve proposals, which have been developed by economists of the Austrian school in particular—see, for example, Ludwig von Mises ([1912] 1953, p. 408) or Murray Rothbard (1962a). One can refer to Jesús Huerta de Soto ([1998] 2012, pp. 715-35) for a historical overview of the 100% gold reserve theory—which, although its analysis of economic instability is most interesting, falls outside the scope of this paper.

[12] The 100% money idea should not, either, be confused with the 'modern monetary theory' (MMT) expounded by authors such as L. Randall Wray ([2012] 2015). Indeed, while stressing the monetary role played by the state, MMT insists that the banks should remain involved in money creation too.

[13] Because the state, via its monetary authority, would be buying its own bonds, it was usually argued that the public debt would not be aggravated—and could even be reduced—by money injections.

3. Divergences about the definition of money

3.1 The Currie-Fisher approach: Money as means of payment, and only means of payment

The first point of divergence among the authors discussed in this paper concerns the very concept of money itself. Currie and Fisher, in their advocacy of the 100% money proposal, used a strict definition of money, the perimeter of which was clearly delimited. They basically included in the money supply *all* means of payment, and *only* means of payment.

These two authors first questioned the narrow perimeter of the traditional definition, limited to "what is generally acceptable for goods", as Fisher himself used to describe money in earlier writings ([1911] 1913, p. 8). Under the new definition he provided, the adjective 'generally' was replaced by 'commonly':

> 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 1947, p. 1)[14]

Currie, dedicating a whole book chapter to defining the concept of money, argued in the same direction: "[t]he words 'generally acceptable' exclude any instruments acceptable only in particular circumstances, such as debt due an individual by a banker which may be transferred by order of the individual" (Currie [1934a] 1968, p. 10). He thus proposed to widen the meaning of the term, "so as to make it synonymous with means of payment" (*ibid.*). He went on to stress the character of money as a debt-paying instrument:

> [T]he distinguishing characteristic of money [is] the power of settling transactions. . . . Our definition of money, then, is those instruments possessed by the public by delivery of which debt contracts and price contracts are discharged. (Currie [1934a] 1968, p. 11)

As for the cash and the central bank deposits that were held by the banks, Currie noted that, "strictly speaking", they "constitute[d] means of payment" (*ibid.*, p. 13). However, insofar as they were used as reserves behind checking deposits, they should be excluded from the money supply compilation, because including both those deposits and the reserves backing them "would obviously involve double counting" (*ibid.*, p. 12). Hence, if we extrapolate from

[14] This definition was implicitly contained, but not explicitly formulated, in his book *100% Money*.

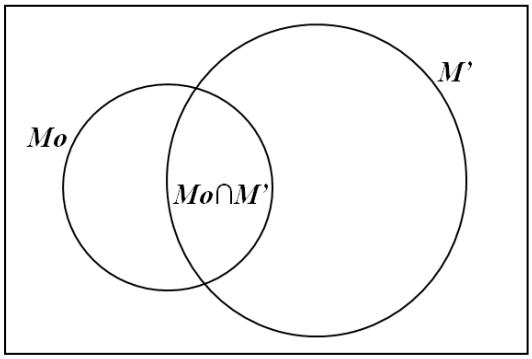
Currie's logic, the total money supply (M) could be regarded as the union of two sets of means of payment, lawful (or 'base') money (Mo) and bank money (M')[15], such as:

$$M = Mo \cup M' \tag{1}$$

This is illustrated in Figure 1. The intersection of the two sets ($Mo \cap M'$) would represent the part of bank money covered by reserves in lawful money[16]. Those units should only be counted once in the money supply, to avoid double counting. The total number of monetary units would thus be equal to:

$$|M| = |Mo \cup M'| = |Mo| + |M'| - |Mo \cap M'| \tag{2}$$

Figure 1 The total volume of means of payment under the fractional-reserve money system



However, although they virtually included all means of payment in their definition of money, Currie and Fisher categorically refused to include assets that could not directly fulfil this payment function, even those presenting the highest level of liquidity. Savings deposits, in particular, even if available 'on demand', were not regarded as money. According to Currie:

> It is claimed, and quite rightly, that banks practically never invoke the privilege of postponing payment of time deposits and that therefore they are, in effect, actually payable on demand. From this fact certain writers have been led to the conclusion that time deposits, from the point of view of their owners, may be regarded as the equivalent of cash. There is, however, an important distinction between means of payment and what may be regarded by individuals as *equivalent* to means of payment. Time deposits, in this respect, do not differ essentially from holdings of government securities, call loans, or, indeed, any property possessing good marketability which by sale can be converted into means of payment. (Currie [1934a] 1968, p. 14, original italics)

[15] For the sake of simplification, we limit our analysis here to those two kinds of money. Historically, however, other instruments have been used as means of payment, such as various kinds of commodities, commercial paper, shares of money market mutual funds, or, more recently, cryptocurrencies.

[16] This quantity of reserves used by the banks to cover their checking deposits (equal to $Mo \cap M'$), however, does not represent the totality of bank reserves, insofar as part of those are kept for other purposes—for example, as reserves behind savings deposits, or for the banks' own transaction needs.

He went on:

> If we are to include with means of payment all factors which contribute to economy of means of payment, it is difficult to see where we should stop, and the concept of money would become so broad as to be useless. (*ibid.*, p. 18)

Fisher developed a similar analysis:

> It can scarcely be too much emphasized that a savings deposit, without the checking privilege, is vitally different from a checking deposit. . . . A savings deposit ought not to be called a deposit at all. It is not money, and is not ordinarily used as money. It is merely a 'quick asset' like a Liberty Bond which can be more readily sold than ordinary assets. (Fisher [1935] 1945, pp. 168-9)

Both authors, therefore, held a strictly delimited concept of money.

3.2 The Chicago Plan approach: The concept of money extended to liquid assets

In contrast to Currie and Fisher, the authors of the Chicago Plan rejected any definition of money as limited to means of payment. Simons severely criticized Currie on this point, in a review of the latter's book:

> On several crucial points. . . . Dr. Currie's position is, to the reviewer, highly unsatisfactory. He contends that only actually circulating media should be regarded as money. (Simons 1935, p. 556)

Simons, however, did not provide any alternative definition of his own. He seemed to extend the concept of money to whatever assets that were easily convertible into means of payment, like savings deposits, but with no clear boundary to be drawn:

> At all events, it seems likely that we shall make substantial progress . . . only by facing squarely the task of working with that concept of money which Currie describes as "so broad as to be useless". . . . We must see that there is little significant difference between demand deposits and savings accounts, and that all institutional borrowing and lending at short term presents the same problems and anomalies as does deposit banking. The criterion of "effective circulation", like legal tender and "general acceptability", must not be taken too seriously. (Simons 1935, p. 557)

Other 100% money proponents, such as Angell (1935, p. 2) and Friedman ([1960] 1992, pp. 90-1), also included savings deposits in their broad concept of the money supply. So did Maurice Allais, who held a position close to that of Simons:

> In my view . . . the quantity of money held by an operator is the portion of his assets he rightly or wrongly believes he can use to make his payments immediately and without restriction. (Allais 1987, p. 502; see also 1975, pp. 120-1)

He went on to extend his concept of money to a very wide range of assets:

> Creation of money is not limited to the uncovered portion of demand-deposits; a share of time deposits also enters the process. . . . Similar remarks can, of course, be made about the other assets held by operators, ranging from treasury bills (almost fully liquid) to real estate (perhaps the most

> illiquid form of all). To each may be ascribed a substitutability ratio defining its ability to be considered as potential cash balances. (Allais 1987, pp. 507-8)[17]

Allais recognized, however, that so broad a definition complicated the calculation of the money supply: "From this standpoint the money supply M is largely a *psychological* concept, and, therefore, seems to escape objective evaluation" (*ibid.*, p. 509, original italics). The issue raised by Currie, of deciding where to stop once one started to include liquid assets into the money supply, was thus left unsolved under this approach.

4. Divergences about the leading causes of monetary instability

4.1 The Currie-Fisher approach: The creation of means of payments through banking as the one leading factor of monetary instability

All proponents of the 100% money reform, as we mentioned earlier, viewed the dependence of the medium of exchange upon banking activity as a source of inherent economic instability[18]. Such dependence, they argued, tended to produce either a cumulative expansion or a cumulative contraction of the money supply, which, unless counteracted, would lead to alternations of booms and depressions. Thus, according to the Chicago economists:

> [Such a system] gives us an unreliable and unhomogeneous medium; and it gives us a regulation or manipulation of currency which is totally perverse. Money is created when it should be destroyed, and destroyed when it should be created. (Simons *et al*. [1933] 1994, p. 31)

Fisher described the cumulative processes affecting the money supply in the following terms:

> [The tie between money and debt] causes the banks, by means of business debts, to keep everlastingly tinkering with our currency and so causes unnatural inflations and unnatural

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[17] Allais thus defined the money supply as: $M(t) = M_1(t)+\int_t^{\theta} \sigma^*(t, \theta)p^*(t, \theta)d\theta + \sum_i \sigma_i(t)q_i(t)$, "where $M_1(t)$ is the volume at time t of the basic money in circulation *outside the banking system* plus demand deposits *held by private individuals*; $p^*(t, \theta)d\theta$ is the volume of time deposits at time t whose term lies between θ and θ+dθ; σ^*(t, θ) is the average of the corresponding substitutability ratio, and the $q_i(t)$ are assets other than deposits at time t with rates of substitutability against cash of $\sigma_i(t)$" (Allais 1987, pp. 508-9, original italics; see also 1975, p. 126).

[18] With the exception, however, of Milton Friedman, whose arguments for 100% reserves fell under neither of the two approaches discussed in this paper. Friedman assigned the "inherent instability" of the fractional-reserve monetary system only to the "decisions by holders of money about the form in which they want[ed] to hold money and by banks about the structure of their assets" ([1960] 1992, p. 66). He further criticised that system for "involv[ing] extensive governmental intervention into lending and investing activities" (*ibid.*). But he was not specifically opposed to the creation of money out of bank loans. Indeed, alternatively to 100% reserves, he was ready to consider completely opposite solutions: either to allow the banks "to issue currency as well as deposits" (*ibid.*, pp. 68-9), or "to permit 'free' deposit banking, without any requirements about reserves" (*ibid.*, p. 108).

> deflations. For, under the 10% system[19] it is true, as we have seen, that an increase in business, by increasing commercial bank loans, and so increasing the circulating medium, tends to raise the price level. And, as soon as the price level rises, profits are increased and so business is expanded further. Thus comes a vicious circle in which business expansion and price expansion act each to boost the other—making a "boom". Reversely if business recedes, loans and prices also recede, which reduces profits and so reduces business volume—again causing a vicious circle, making a "depression". (Fisher [1935] 1945, pp. 180-1)

By calling *P* the general level of prices[20], *D* the volume of bank loans (debt), and *M'* the total of bank money, we could summarize these cumulative processes in the following way:

In the boom phase: $\uparrow P \rightarrow \uparrow D \rightarrow \uparrow M' \rightarrow \uparrow P$, and so on.

In the depression phase: $\downarrow P \rightarrow \downarrow D \rightarrow \downarrow M' \rightarrow \downarrow P$, and so on.

Hence, with such chain reactions, the causality between variations in *M* and variations in *P* appeared to be reciprocal, "with new money raising prices and rising prices conjuring up new money" (Fisher *et al.* 1939, p. 4). It also followed, from this analysis, that the reserve-deposit ratio (and, more generally, the *Mo/M'* ratio[21]) would never be constant; it would tend to decrease in boom phases, and to increase in depression phases. This would make the control of the total money supply by the monetary authority very challenging, as Currie noted:

> [I]t is possible to generalize that on the upswing of the business cycle the supply of money automatically tends to expand, and on the downswing to contract. The automatic forces, in other words, tend on balance to operate against the customary central bank policy, thus rendering the task of control more difficult. In so far as this is true we may say that the supply of money under the Federal Reserve System displays a perverse elasticity. (Currie [1934a] 1968, p. 131)

For all these authors, the problem needed to be tackled at source. The tie between *D* and *M'* had to be severed, so that the chain of reactions described above could no longer develop into cumulative processes. This required divorcing the creation and destruction of checking deposits (*M'*) from the extension and contraction of bank loans (*D*), by subjecting these deposits to a 100% reserve requirement (see section 5). Beyond this point of consensus, however, a divergence would appear among the 100% money proponents. For the Chicago Plan economists, the tie between *D* and *M'* only represented one major factor of instability, but another factor of equal importance—the tie between *D* and *V* (the velocity of 'effective

[19] Fisher referred to the fractional-reserve money system as the '10% system', in contrast with the '100% system' he was calling for.

[20] With *P* here representing *all* prices (including, for example, asset or house prices), although, in practice, Fisher usually recommended the use of "a fixed index of the cost of living" as a criterion of stability (Fisher [1935] 1945, p. 97).

[21] The constant instability of this ratio had been noted by Fisher in 1911 already ([1911] 1913, pp. 55-73).

money')—still had to be dealt with (see section 4.2). For Currie and Fisher, on the contrary, the creation of means of payment through banking represented the one *leading* cause of monetary instability, which alone they endeavoured to tackle.

Of course, both Currie and Fisher were aware that other factors came into play in causing business cycles. Fisher thus listed nine variables explaining booms and depressions, which tended to interact with one another: "debts, the volume of circulating medium, its velocity of circulation, price levels, net worths, profits, trade, business confidence, interest rates" (Fisher [1935] 1945, pp. 121-3). But he assigned a leading role, above all, to the variations of *M'*, insisting that, in the case of a depression, "practically *all the events listed occur[ed] through* a contraction of check-book money" (*ibid.*, p. 123, original italics). In sharp contrast with Simons (see section 4.2), Fisher was not obsessed with the risk of variations in the velocity of money (*V*). He certainly recognized that such variations could be an important factor of disturbances, when large hoarding or dishoarding movements took place. The banking crises of the early 1930s, after all, had largely been the results of runs on savings or time deposits, which were not subject to check (Fisher [1935] 1945, p. 167). But, according to him, "the runs on savings banks usually follow[ed] contraction of the medium of exchange and the appreciation of the dollar", and, "given stability of the dollar, runs on savings banks would be extremely rare" (*ibid.*, pp. 166, 170). In other words, the changes in *V* tended to follow and aggravate the disturbances occasioned by the changes in *M*, rather than to cause those disturbances in the first place[22]. Fisher thus seemed to consider that major banking crises could not happen independently from monetary crises. Of course, sudden shifts in desired money holdings, even if less severe, could still occur under a 100% system. But even in this case, he argued, variations of *V* could always be compensated by adequate variations of *M*:

> [Under the 100% system], the velocity of circulation might still be subject to various untoward disturbances. For instance, after a period of over-indebtedness and speculation, there might still be a stampede of distress selling and therefore increased hoarding; that is, there might be a slowing of

[22] On this point, Fisher's position would find support in empirical works. Clark Warburton, studying velocity changes over the period 1919-47, concluded: "Factual information for the period since 1919 does not support the assumption that variations in monetary velocity are an initial factor in business depression. The data do, however, indicate that in some cases a declining velocity of money has accompanied and in other cases has followed downward deviations from trend in the quantity of money. In fact, after a business recession has run for a time and the quantity of money has been reduced, there is almost uniformly a slowing down in velocity, relative to trend, which is reversed only when the shrinkage in the money supply is known, or believed, to have been stopped. There is no evidence that disturbances to economic equilibrium originate in an erratic rate of use of money, but there is much evidence that such disturbances result in, and are in turn intensified by, variations from trend in the rate of use of money" (Warburton 1949, p. 91). Milton Friedman and Anna Schwartz (1963, p. 682), studying the period 1867-1960, reached convergent conclusions.

> velocity. The effect of this on the price level, however, would be much smaller than if the volume of circulation were also affected; and even the velocity effect on the price level could probably be offset by a suitable increase in volume. (Fisher [1935] 1945, p. 102)

Such "suitable increase in volume", moreover, could be achieved much more easily under the 100% system than under the present bank-money system (*ibid.*, p. 108)[23]. On all these matters, Currie's analysis appeared to be close to Fisher's (see Currie [1934a] 1968, p. 143).

It follows from these authors' viewpoint that, if one could prevent the sharp variations in the volume of checking deposits from happening, then sharp variations in the volume of savings deposits would also, most likely, be prevented. This explains why, as we will see in section 5, savings deposits would not be affected under Currie's and Fisher's reform plans. The full coverage of checking deposits would suffice, by itself, to mitigate—if not to abolish—the "*great* booms and depressions", Fisher argued ([1935] 1945, p. 151, original italics). This conclusion was not shared, however, by the authors of the Chicago Plan.

4.2 The Chicago Plan approach: The creation of liquidity through banking as another leading factor of monetary instability

The Chicago Plan authors, as we have seen, similarly held the view that the creation of means of payment out of bank loans led to cumulative maladjustments in the money supply. Contrary to Currie and Fisher, however, they also attributed a leading role, and not simply an aggravating one, to the variations of the velocity of 'effective money' in causing business cycles. In their November 1933 memorandum, they thus insisted that "monetary changes merely on the velocity side might produce substantial cyclical fluctuations" (Simons *et al.* [1933] 1994, p. 42)[24]. To illustrate this fact, the Chicago economists started their explanation of cumulative processes by focusing solely on the link between debt and velocity:

> [A]ny general change in business earnings will affect promptly the speculative temper of the community. Larger profits breed optimism; they stimulate investment and induce dishoarding . . . Producers will become more anxious to borrow . . . Lenders will have fewer misgivings about the

[23] Fisher insisted that some discretionary powers of action should be left to the monetary authority, allowing it to successfully stabilise the general price level (Fisher [1935] 1945, p. 24). He thus advocated what we would call today a 'constrained discretion' for the Currency Commission.

[24] However, there did not seem to be a complete consensus among the authors on this point, as the following passage indicates: "some of us are inclined to feel that the disturbances occasioned merely by changes of velocity are unlikely to be of serious magnitude" (Simons *et al.* [1933] 1994, p. 42). Friedman (1967, p. 12) would also disagree with Simons on this issue: "The movements in velocity—which Simons took as an independent source of instability—come later than the movements in the quantity of money and are mild when the movements in the quantity of money are mild. They have been sharp only when there have been sharp movements in the quantity of money".

> ability of borrowers to repay. People generally will increase their lending and investment at the expense of their idle reserves of cash. In a word, the velocity of circulation will increase. But this change, in turn, means a larger volume of business and higher product-prices, and thus still larger earnings. The further increase of earnings, moreover, will induce further increase in the velocity of money. And so on and on. . . (Simons *et al.* [1933] 1994, p. 46)

This chain of reactions, involving business earnings (π), debt (D) and the velocity of the circulating media (V), may be summarized in the following way:

In the boom phase: $\uparrow\pi \rightarrow \uparrow D \rightarrow \uparrow V \rightarrow \uparrow\pi$, and so on.

In the depression phase: $\downarrow\pi \rightarrow \downarrow D \rightarrow \downarrow V \rightarrow \downarrow\pi$, and so on.

Hence, according to the Chicago Plan authors, business cycles could develop even without any change in the volume of means of payment: "So far. . . [w]e have impliedly assumed an economy with a fixed (or independently variable) quantity of effective money" (*ibid.*, p. 46). Only then did they introduce the creation and destruction of means of payments through banking in their analysis, describing the following cumulative processes (*ibid.*, p. 47):

In the boom phase: $\uparrow\pi \rightarrow \uparrow D \rightarrow \uparrow M' \rightarrow \uparrow\pi$, and so on.

In the depression phase: $\downarrow\pi \rightarrow \downarrow D \rightarrow \downarrow M' \rightarrow \downarrow\pi$, and so on.

Thus, while in the Currie-Fisher analysis, the link between D and M was given precedence over the link between D and V, the Chicago Plan authors seemed to put both links on the same footing. They turned their attention, therefore, to what they considered a chief cause of exacerbation of the changes in V: the creation of liquid assets (or 'near monies') by the banks, in the form of savings deposits not subject to check. Through the means of saving deposits, indeed, the banks could, at the same time, provide their savers-depositors with assets claimable at short term and at a fixed nominal value, and finance loans and investments of a longer term and a riskier nature. This double transformation of risks and maturities enabled the banks to attract idle savings, thereby increasing V. But this also meant, in return, that V would sharply fall, should these claims be massively exercised at once. This led the Chicago economists, and Simons in particular, to put into question the very essence of banking:

> There is likely to be extreme economic instability under any financial system *where the same funds are made to serve at once as investment funds for industry and trade and as the liquid cash reserves of individuals*. (Simons [1934] 1948, p. 320, original italics)

> What matters is the character of the financial structure which banking creates—and the fact that, in the very nature of the system, banks will flood the economy with money-substitutes during booms and precipitate futile efforts at general liquidation afterward. (Simons 1936, pp. 9-10)

The condemnation of the creation of liquidity by banks, through their performing of risk and maturity transformation, was implicitly contained in all the schemes which called for the "abolition of deposit banking" (Simons *et al.* [1933] 1994, p. 32), and the replacement of banks, as lending institutions, by equity-financed investment trusts (see section 5.2). Such analysis obviously underlay the Chicago Plan memoranda of 1933. Other writers, globally sharing this approach, would condemn more explicitly either the practice of maturity transformation (Allais 1987, p. 508), or of risk transformation (Minsky 1994, p. 20)[25]. In contrast to Currie and Fisher, all those authors held, in common, the view that banking would still represent a source of systemic risk, even though banks' fractionally-covered deposits would be denied the possibility of circulating as means of payment.

From 1934, however, Simons developed a somewhat different explanation of economic instability, which led him to advocate still more radical proposals. While he kept condemning the creation of liquidity by banks working with savings deposits, he now argued that "[a] major source of instability [was] also to be found in the widespread practice of borrowing at short term" (Simons [1934] 1948, p. 320). He further made it clear that, in his view, financial instability did not ensue so much from the practice of maturity transformation (borrowing short and lending long) as it did from the mere short-term duration of debt contracts (borrowing short and/or lending short)[26]:

> Anyone who is not something of an economist can see that banks, acquiring funds subject to call, should lend only upon promise of early repayment; but the notion, while plausible, is entirely spurious. Indeed, the adherence to this cardinal rule of conservative lending serves (would serve), not to mitigate the affliction of banking, but to compound it; for banks thus increase the volume of short-term debts, not merely in acquiring funds, but in lending them as well. (Simons 1936, p. 10)

This analysis, which appeared to be very specific to Simons, eventually led him to suggest the abolition of all kinds of debt contracts, as we will see in section 5.2.

[25] According to Charles J. Whalen (1988, p. 541), "the cycle theories of Minsky and Simons share a number of essential features", even though they are "not identical". One difference is that "[u]nlike Simons, Minsky expresses his analysis without reference to the equation of exchange" (*ibid.*, p. 536).

[26] This evolution of Simons's analysis seems to have escaped Friedman, who regarded "[w]idespread borrowing on short-term in order to finance long-term obligations" as the "key to instability" in Simons's view (Friedman 1967, p. 5).

5. Divergences about banking reform

5.1 The Currie-Fisher approach: Keeping (fractional-reserve) banking

The common denominator of all 100% money proposals, as we saw in section 2.2, was to divorce the creation and destruction of means of payment from the business of banking, by imposing a 100% reserve requirement on bank deposits subject to check. This one measure, it can be argued, would not amount to altering banking practices, but, rather, to changing the *social convention* deciding what was acceptable or not as a medium of exchange. It was proposed that only lawful money, issued and controlled by the state, could be used as means of payment—or banks' promises to pay (deposits), provided that they were fully covered by reserves in lawful money[27]. This is summarized in Table 1.

Table 1 The 100% money reform as a change of the monetary social convention

Existing social convention	Proposed new social convention
Both lawful money and banks' promises to pay (in the form of demand deposits) can be accepted as means of payment	Only lawful money (or banks' promises to pay covered at 100% by lawful money) can be accepted as means of payment

For the Chicago Plan economists, as we will see in section 5.2, such reform would only be a first step to regain control over the whole creation of 'money' as broadly defined. But, for Currie and Fisher, who defined money as synonymous with the means of payment, this change of social convention would be sufficient, by itself, to render the money supply entirely exogenous: the total volume of money (*M*) would become equal to the volume of lawful money (*Mo*), as the part of bank money (*M'*) covered by reserves would be raised to 100%[28].

[27] Of course, there were certainly very good reasons why, historically, promises to pay (issued either by banks or businesses) came to be used as means of payment—if only, to bring elasticity to the volume of money, which a metallic currency was ill-suited to provide. It follows that a major challenge for the monetary authority, under a 100% money system, would be to adjust the money supply flexibly enough to the volume of transactions. Otherwise, economic agents might be pressured to break the law and devise alternative means of payment. Discussing this essential issue, however, is beyond the scope of our present study.

[28] The distinction between *Mo* and *M'* could even completely vanish, if all checking accounts were held on the books of the central bank directly—leaving place to a simple identity: $M \equiv Mo$. This was suggested by George Tolley (1962, pp. 299-300): "Let the deposit liabilities of the commercial banks be transferred to the Federal Reserve banks. If 'reserves' are defined in the usual way, Federal Reserve liabilities connected with deposit money, there would be 100 per cent reserves in the sense that deposit money and reserves would be identical. The physical arrangements in the use of money could be continued as at present, located in the commercial banks with servicing expenses paid for on a contract

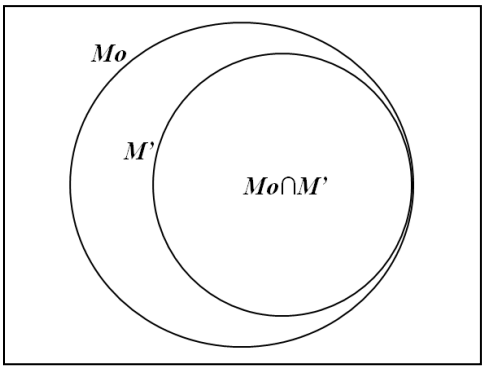
The following equalities would, under the Currie-Fisher approach, express the 100% money condition (as illustrated in Figure 2):

$$Mo \cap M' = M' \tag{3}$$

$$\boldsymbol{M} = Mo \cup M' = \boldsymbol{Mo} \tag{4}$$

$$|\boldsymbol{M}| = |Mo \cup M'| = |Mo| + |M'| - |Mo \cap M'| = |\boldsymbol{Mo}| \tag{5}$$

Figure 2 The total volume of means of payment under the 100% money system



The banks, under this approach, would remain perfectly free to issue and multiply promises to pay beyond their cash reserves, as long as those promises were not allowed to circulate as means of payment:

> Of course the volume of loans can exceed the volume of money just as sales do. The same money can negotiate one loan after another just as it can negotiate one sale after another. It can even come back to the same savings bank and be relent. So long as the loans are made out of real money and not out of money manufactured by the lender, for the purpose, they will not violate the principles of the 100% system. (Fisher [1935] 1945, p. 90)

Thus, Currie insisted, "[b]ankers will continue to be concerned with what they have always considered their chief function, the making of loans" ([1934b] 1968, p. 222). Fisher affirmed, in the same vein: "[a]ll I would do is to take over the *monetary* work of banks, leaving real banking to bankers" (Fisher 1934b, p. 157, original italics; see also [1935] 1945, p. 202). By this 'monetary work', Currie and Fisher implied the *creation of means of payment*, which, in their view, should be a prerogative of the state (Currie [1934a] 1968, p. 152; Fisher [1935] 1945, p. 19). They did not, however, aim to restrain the *circulation* of these means of payment by the banks, or the creation of *liquid assets* in the form of savings deposits, as long as those

basis by the Federal Reserve banks." Many of the most recent 100% money proposals have adopted this suggestion, although with differing practical arrangements.

were not subject to check[29]. Because they did not consider the variations of *V* to play a *leading* role in monetary instability, they did not seek to alter traditional banking practices[30]. Under their proposed system, the loan departments of banks would remain able to perform both maturity and risk transformation. The principle of fractional-reserve banking would still apply for deposits fulfilling an investment function: "savings or time deposits would, as at present, normally be covered only fractionally by cash reserves" (Fisher *et al.* 1939, p. 32)[31]. The reserve requirements for those deposits, if any, would be fixed by banking regulation, independently from the proposed monetary reform[32]. Currie and Fisher's aim was not to remove all risk from the activity of banking, but, rather, to shelter the volume of money from this (necessarily risky) activity. Their main point of concern, regarding the loan departments of banks, was thus to make sure that the liabilities they created (i.e. savings deposits) could not be used as means of payment. To this effect, they recommended a legal prohibition of the use of money substitutes in transactions (Currie [1934b] 1968, p. 199; Fisher [1935] 1945, pp. 23, 165), as well as prudential rules aiming to somewhat limit the liquidity of savings deposits[33]. But the fundamentals of banking would be left largely unchanged. Fisher even affirmed that "[i]f demand deposits were backed 100%, almost all other legal regulations of

[29] As one could have expected, the proposal was understood quite differently by the bankers in general, although several of them endorsed the plan. As Robert Dimand (1993b, p. 70) reported: "The banking community remained, however, generally hostile. Such writers as Robinson (1937) and Hackett (1945) viewed deposits from the standpoint of the banks whose liabilities they were, instead of concentrating on which deposits could serve as means of payments. Chequing and savings deposits both enabled fractional-reserve banks to channel savings to borrowers, so Robinson and Hackett saw no case for treating the two types of deposits so differently."

[30] It seems, moreover, that had Fisher considered the variations of *V* as a leading factor of instability, his proposed solution would still not have been the abolition of banking. Instead, he would have considered a system of taxing the currency, on the stamp scrip model, so as to increase or decrease its velocity of circulation (see Fisher [1935] 1945, p. 102). When asked if the *'V'* in the equation of exchange had not been neglected in his 100% plan, Fisher replied: "This is quite true. I, at one time, tried to introduce into the plan a tax method to control the influence of 'V'. But I left it out as soon as I found that 'V' is really nearly constant under conditions which would prevail if the 100% plan were in operation" (Fisher, letter to Theodore Morgan, September 25, 1945, in Fisher 1997, p. 242).

[31] For this reason, it is obviously misleading to refer to the 100% money concept as 'full-reserve banking'. Fractional-reserve *banking*, under the Currie-Fisher approach, would still exist; only, there would be full-reserve *money*, separated from banking.

[32] Fisher would, personally, have these requirements strengthened somewhat ([1935] 1945, p. 13), while Currie would have them reduced to zero (Currie [1934b] 1968, p. 199; [1938] 2004, p. 361).

[33] Fisher *et al.* (1939, p. 32), for example, recommended that savings deposits "should be withdrawable only upon adequate notice". See also Currie ([1934b] 1968, p. 200) and Fisher ([1935] 1945, pp. 165-6) for other suggested safeguards.

banks could be abolished" (1935, p. 171). The typical balance sheet of a bank, under this approach, is shown in Table 2 (see Fisher [1935] 1945, p. 65; Currie [1938] 2004, p. 360):

Table 2 Typical bank balance sheet under the Currie-Fisher approach

Check department	
Deposits in custody	
100% reserves in lawful money	Transferable ('checking') deposits
Loan department	
Assets	Liabilities
(Fractional, or zero) reserves	Equity
Loans, investments, etc.	Non-transferable ('savings') deposits

The same conditions would apply to the banks' own transactions, as Fisher specified: "The loan department. . . . would deposit its own cash in the check department and would transfer it by check just like any other depositor" (Fisher [1935] 1945, p. 69)[34]. Very similar 100% money schemes, insofar as financial intermediation was concerned, would be supported by Richard Lester (1935 p. 37) and George Tolley (1962, p. 304)[35], and suggested by James Tobin (1987b, p. 3484)[36].

[34] Of course, those deposits held by the loan department should be included in the money supply calculation, if one defined M as $Mo \cup M'$. But they would be excluded if, instead, one restricted M to currency in circulation plus checking deposits held by the non-bank public. Such limited definition led Robinson (1937, pp. 442-5) and Watkins (1938, p. 440) to consider that M would still vary endogenously, under a 100% system, whenever money would be transferred to or from savings accounts.

[35] The old 19th century proposals seem to have followed this approach as well. Carroll, in 1860, had called for 100% reserves behind demand deposits, "but he would not have interfered with the operation of savings departments" (Mints 1945, p. 156). Under Walras's plan for a Transfer Bank, too, private banks would still finance loans and investments out of savings deposits: "Discount banks would receive interest-bearing deposits of a fixed term of one month, three months, one year, and have in their portfolios all the securities of the circulating capital; their cash balances as short-term credit entrepreneurs would be kept at the Transfer Bank" [*"Les banques d'escompte recevraient des dépôts à intérêt à échéance fixe de un mois, trois mois, un an, et elles auraient en portefeuille tous les titres du capital circulant ; leur encaisse d'entrepreneurs de crédit à courte échéance serait à la Banque de virements."*] (Walras [1898a] 1898b, p. 396, my translation).

[36] However, Tobin's proposals for a 'deposited currency', which he developed in other writings (Tobin 1985; 1987a), followed more specifically the concept of narrow banking, rather than that of 100% money. Under his plans, indeed, the liabilities attached to segregated funds, invested in eligible safe assets (other than cash), would still be allowed to circulate as means of payment (Tobin 1985, p. 27; 1987a, p. 173). The main objective of Tobin's proposals—like those of narrow banking—was to secure the payment system. In contrast, the main objective of the 100% money proposal was to end the

Under this Currie-Fisher approach to the 100% money reform, the banks would not be the actors most affected. The major change would rather concern the monetary authority, who would be vested, under this plan, with the responsibility of directly providing the economy with all the means of payment needed. This explains why, as Stephen McLane remarked, Fisher focused his attention on this issue:

> Throughout his plan, Fisher is more concerned with the central banking structure than with alternatives to commercial banks. Where the Chicago Plan drastically changed private banks . . ., Fisher directed his emphasis toward the creation of a new monetary authority, the Currency Commission. . . . Fisher envisioned some nonspecific restriction on the convertibility of time deposits, but saw no need to break up existing financial institutions. (McLane 1980, p. 89)

5.2 The Chicago Plan approach: Toward the end of banking

The authors of the Chicago Plan, as we have seen, extended their definition of money to liquid assets, and considered the creation of liquidity by banks to be as problematic as their creation of means of payment. They could not, therefore, be satisfied with a simple change of the social convention deciding what was acceptable as a medium of exchange. In their view, the link between banking and velocity (which they related to the supply of 'near monies') also had to be broken. This required a structural change of banking institutions:

> More striking is the fact that Currie's narrow definition of money seems to explain his characterizing as ideal . . . a system which would represent only a small first step toward an ideal financial structure. . . . To argue that the functions of commercial banks might be assumed without much disturbance by savings banks, amounts almost to recommending drastic changes on the grounds that their intended effects would never be realized. (Simons 1935, p. 557)

Hence, what the Chicago Plan authors aimed to achieve was "the outright abolition of deposit banking on the fractional-reserve principle" (Simons *et al.* [1933] 1994, p. 32). Under their plan, banks would be stripped of their lending function, and confined to the administration of checking accounts. Their lending activity would be taken over by other kinds of institutions, which would not be allowed to collect deposits (see Table 3)[37]:

> A second type of institution, substantially in the form of the investment trust, would perform the lending functions of existing banks. Such companies would obtain funds for lending by sale of their own stock; and their ability to make loans would be limited by the amount of funds so obtained. (Simons [1934] 1948, pp. 64-5)

'perverse elasticity' of the money supply; "safeguarding depositors" was seen by Fisher (1937b, p. 296) as a major benefit of the reform, but of "secondary importance".

[37] If one followed this approach, then a case could also be made for eliminating all "government facilitation of 'safe asset' creation by the shadow-banking sector", which assets tend to be regarded as "free of credit risk and hence deposit-like", as Adam Levitin (2016, pp. 417-8) recently argued.

Table 3 Typical balance sheets of banks and investment trusts under the Chicago Plan

Deposit banks	
Deposits in custody	
100% reserves in lawful money	Transferable ('checking') deposits
Investment trusts	
Assets	Liabilities
Loans, investments, etc.	Equity

Charles Whittlesey (1935, p. 22), Milton Friedman ([1960] 1992, p. 70)[38] and Hyman Minsky (1994, p. 20)[39] would advocate essentially similar schemes, in which lending banks were replaced by equity-financed institutions, such as investment trusts or mutual funds. In contrast to savings deposits, which have a finite maturity and a fixed nominal value, shares of equity are neither "matured (demand)" nor "maturing" obligations (in Simons's language, 1936, p. 11), and have "contingent" values, "based upon the market value of a portfolio" (Minsky 1994, p. 20). They were not viewed, therefore, as liquid 'near monies' created out of maturity and risk transformation. Other authors, globally sharing this approach, would nevertheless maintain the banks in their lending function, provided only that the transformation of maturities be restricted. James Angell, for example, suggested that savings deposits be "converted into negotiable interest-bearing time obligations maturing serially, say not more than 20 per cent within three months nor more than 40 per cent within a year" (Angell 1935, p. 31). Maurice Allais, for his part, would still allow lending banks to offer savings deposits accounts, but on the condition that maturity transformation be specifically forbidden:

> *Lending banks* would, as today, trade in promises to pay, but—in contrast to the present situation—they would be managed on the principle that all lending for a given term would be financed by borrowing of at least the same term. In other words, whereas banks now borrow short to lend long, they would borrow long to lend short. (Allais 1987, p. 525, original italics; see also 1975, p. 139; [1977] 1989, p. 202)[40]

[38] The paradoxical fact that Friedman, despite his analytical divergences with Simons, came to support an essentially similar banking scheme, was noted by Phillips (1995, p. 208).

[39] In a later text, however, Minsky (1995, p. 8) would—like Tobin—tend to assimilate the concept of 100% money with the idea of backing checking deposits with safe assets (that is, narrow banking).

[40] Allais (1987, p. 498), designating by $A^*(t, \theta)$ "the total amount at time t of the asset items maturing *at or before time* θ", and by $P^*(t, \theta)$ "liability items at time t falling due *on or before* θ", formalized his proposed rule as the following: $P^*(t, \theta) \leq A^*(t, \theta)$, for any t and θ (*ibid.*, p. 525).

The Chicago Plan economists and the other above-mentioned authors, therefore, despite their differences, all called for drastic reforms of banking practices, so as to prevent risk and/or maturity transformations and their destabilizing effects[41].

Henry Simons, however, went further, and eventually suggested that restrictions should also be placed on the asset side of financial intermediaries' balance sheets. From 1934, as we saw in section 4.2, he started to condemn all kind of short-term borrowing as a major source of instability. Therefore, he presented the ideal financial system as the following:

> An approximately ideal condition is fairly obvious—and unattainable. The danger of pervasive, synchronous, cumulative maladjustments would be minimized if there were no fixed money contracts at all—if all property were held in a residual-equity or common-stock form. With such a financial structure, no one would be in a position either to create effective money-substitutes . . . or to force enterprises into wholesale efforts at liquidation. (Simons 1936, pp. 6-7)

Although he recognized that "[t]o propose abolition of all borrowing, or even of all borrowing at short term, [was] merely to dream" (*ibid.*, p. 16), he nonetheless called for a "drastic limitation on the formal borrowing-powers of all private corporations" (*ibid.*, p. 30). The abolition of debt contracts became, in his view, a corollary of the 100% money concept:

> In its more important, converse aspect, 100 per cent reserve banking is simply 100 per cent equity financing of all incorporated enterprise. (Simons 1946, p. 85)
>
> Thus we might arrive at or approach an economy where all private property consisted in pure assets, pure money, and nothing else. This, along with fiscal stabilization of the value of money, is the financial good-society. (*ibid.*, p. 89)

Table 4 shows the balance sheets of financial institutions under Simons's ideal reform plan:

Table 4 Typical balance sheets of deposit banks and investment trusts under Simons's 'financial good society'

Deposit banks	
Deposits in custody	
100% reserves in lawful money	Transferable ('checking') deposits
Investment trusts	
Assets	Liabilities
Government consols, corporate common stock, or real assets	Equity

[41] With the exception, once again, of Friedman (1967, p. 3), who, despite his advocacy of the Chicago Plan reform scheme, seemed to regard this transformation activity favourably.

6. The lack of distinction between the two approaches and its consequences

The divergences between the two approaches to the 100% money concept presented in this paper, which we referred to as the Currie-Fisher and the Chicago Plan approaches respectively, are fundamental. Their distinction, however, has not been clearly established in the literature. It seems that the very designers of the various plans, themselves, tended to underestimate the differences between them. Of those writing in the 1930s, only Simons seemed to be aware of their importance, as revealed his correspondence with Fisher:

> In fact, I am more and more convinced of the importance of the point on which we seemed somewhat to disagree. . . Little would be gained by putting demand-deposit banking on a 100% basis, if that change were accompanied by increasing disposition to hold, and increasing facilities for holding, liquid 'cash' reserves in the form of time-deposits. The fact that such deposits cannot serve as circulating medium is not decisively important; for they are an effective substitute medium for purposes of cash balances. The expansion of [time] deposits[42], releasing circulating medium from 'hoards', might be just as inflationary as expansion of demand deposits—and their contraction just as deflationary; and the problem of 'runs' would still be with us. (Simons, letter to Fisher, July 4, 1934, in Fisher 1997, p. 128)

Fisher, however, did not seem to understand Simons's point. He apparently thought that the latter's concern was only about the risk that savings deposits might be used in transactions:

> It seems to me quite preposterous to consider savings deposits as on all fours, or very similar to, deposits subject to check. . . . The statistical fact is that anything held for interest does not circulate as fast as what bears no interest. . . . [W]e can iron this out further perhaps but I have not seen anything in any of your statements so far which would seem to me to justify your fears in regard of savings accounts. (Fisher, letter to Simons, December 14, 1934, in Fisher 1997, pp. 129-30)

Fisher, as Phillips (1995, p. 92) commented, thus failed to correctly address Simons's concerns. This misunderstanding was all the more unfortunate as, in academic discussions, the fundamental divergence of views between the two groups of authors would be largely ignored, or downplayed. Many commentators seemed to consider that the allowance of fractional-reserve banking, under Currie's and Fisher's 100% plans, resulted from some kind of 'omission' in their analysis. It was often considered that they had failed either to recognize the monetary nature of savings deposits[43], or to realize that such deposits, under a 100% system, could still be exposed to runs and occasion sharp variations in the velocity of money[44]. Some critics even implied that Currie and Fisher were not aware that fractional-

[42] Here, Simons wrote "demand deposits", but this was obviously a typing error.

[43] See Neuman (1937, p. 62), Robinson (1937, p. 42), and Reeve (1943, p. 324).

[44] See Lehmann (1936a, p. 44), Neuman (1937, p. 61), Robinson (1937, p. 440), Watkins (1938, p. 442), Brown (1940, p. 312), Thomas (1940, p. 315), and Reeve (1943, p. 324).

reserve banking would still occur under their proposed plans[45]. These opinions could certainly be explained, in part, by the fact that their writings sometimes showed some ambiguity. Fisher, for example, did imply on many occasions that he was condemning the fractional-reserve principle *per se* (see, for example, Fisher [1935] 1945, pp. 7-8, 19, 36, 155), while he actually accepted this principle for deposits as long as they could not be used in transactions. At any rate, the preservation of (fractional-reserve) banking under Currie's and Fisher's proposals was, usually, simply viewed as a mistake, rather than being reconciled with their own theories of money. As a result, while the Chicago Plan's proposition to replace lending banks with investment trusts was widely regarded as dangerous[46], it was nevertheless often viewed as a necessary measure should the plan stand a chance to meet its objective[47]. This may help explain why, as Whalen observed, "the concept of '100 percent' money has often been (sometimes still is) referred to as the 'Chicago Plan'" (Whalen 1994, p. 27).

The idea that the 100% money proposal necessarily involves replacing the banks by equity-financed institutions would appear again in later debates. Douglas Diamond and Philip Dybvig, for example, when discussing the concept in the 1980s, held the following view:

> [The 100% reserve proposal] specifically restricts banks from entering the transformation business (they cannot hold illiquid assets to transform into liquid assets), and therefore the proposal precludes banks from performing their distinguishing function. (Diamond and Dybvig 1986, p. 65)

This assimilation of the 100% money proposal to the kind of reform specifically advocated under the Chicago Plan approach led them to conclude that it was a "dangerous proposition" (*ibid.*, p. 66). A recent study by the International monetary fund, entitled "The Chicago Plan revisited" (Benes and Kumhof 2012), while advocating the 100% money reform idea, also regarded it as necessarily implying the end of banking. Its authors, unfortunately, somewhat misrepresented the views of the originators of the proposal. They wrongly affirmed, for example, that Simons and Fisher advocated "more [governmental] control over bank lending", and implied that both of them suggested "eliminating private debt funding (but not equity funding) of banks' residual lending business" (*ibid.*, p. 19). The view that Fisher and the Chicago economists alike would impose 100% reserves behind *all* deposits has been

[45] See Robinson (1937, p. 442), Brown (1940, p. 312-3), and Higgins (1941, p. 94).

[46] See Lehmann (1936a, p. 43), Neuman (1937, p. 62), Robinson (1937, p. 439), Watkins (1938, p. 445), and Thomas (1940, p. 317).

[47] See Neuman (1937, p. 61), Robinson (1937, p. 440), Thomas (1940, pp. 315, 323), and, more recently, Goodhart and Jensen (2015, p. 23).

recently carried on by other writers[48], sometimes relying on this IMF study for their own discussions of the 100% money idea. This lack of differentiation between the two kinds of plans may have, to some extent, biased the discussions regarding the merits and limits of the proposal[49].

7. Conclusion

The 100% money proposal would have very different implications for the banking sphere, depending on how money was defined, and how monetary instability was explained. Two broad approaches to the concept may be distinguished along these lines.

Under the Currie-Fisher approach (or 'transaction approach'), the money supply was defined as including virtually all means of payment, and only means of payment. Monetary instability was primarily explained by the variations in the volume of money (*M*) which, as long as it depended on bank loans, would obey cumulative processes. These authors did recognize that sharp variations in the velocity of money (*V*) could also occur. But they considered that such variations only played a secondary, aggravating role in economic fluctuations, not a leading one. They argued, moreover, that the changes in *V* could always be compensated by adequate changes in *M*. For this reason, the reform plans that they proposed only sought to control the volume of money, by changing the social convention deciding what could be used, or not, as a means of payment—only lawful money issued by the state, or bank deposits fully covered in lawful money, could fulfil that role. This fundamentally *monetary* reform did not imply, for Currie and Fisher, any drastic reform of the proper *banking* activity. Banks, as financial intermediaries, would remain perfectly free to issue promises to pay beyond their cash reserves, and to create liquidity by performing risk and maturity transformation—as long as those same promises were not allowed to circulate as means of payment. Under the Currie-Fisher approach, 100% money would spell the end of fractional-reserve money, but not of fractional-reserve banking.

[48] See, for example, Wolf (2014a, p. 210), Turner (2015, p. 10), King (2016, p. 262), or Glasner (2017, p. 32). An opposite confusion—that the Chicago Plan would, like Fisher's Plan, still allow banks to lend from savings deposits—can be found in Allais (1987, pp. 523-4) and Levitin (2016, p. 419).

[49] The 100% money idea has been criticized, for example, by Adair Turner (2015, pp. 188-90) mainly on the ground that it would prevent the banks from performing maturity transformation, and by Mervyn King (2016, pp. 262-4) mainly on the ground that it would prevent them from performing risk transformation.

Under the Chicago Plan approach (or 'liquidity approach'), the money supply was defined as including not only means of payment, but also liquid assets, such as savings deposits. The variations in the volume of means of payment (*M*) were not regarded as the sole primary cause of monetary instability. Sharp variations in their velocity of circulation (*V*), induced in particular by variations in the quantity of 'near monies' (liquid assets), were attributed a leading role too, capable in itself to generate cumulative processes. The activity of banking, therefore, was viewed as inherently dangerous for the whole economy, not only because the banks' promises to pay could be used in transactions, but also because banks created liquidity when performing risk and maturity transformation. For this reason, in addition to changing the monetary social convention, the Chicago Plan would abolish banks as lending institutions working with savings deposits, and replace them with investment trusts working with equity shares. Under the Chicago Plan approach, 100% money would not only spell the end of fractional-reserve money, but also the end of banking—and, potentially, the end of all kinds of debt contracts, if one followed Simons's reasoning to its logical conclusion.

Table 5 Summary of the divergences between the Currie-Fisher and the Chicago Plan approaches to the 100% money proposal[50]

	Currie-Fisher (or 'transaction') approach	**Chicago Plan (or 'liquidity') approach**
Definition of money	Means of payment	Means of payment + liquid assets
Leading factors of instability[51]	Instability of *M*	Instability of *M* + instability of *V*
Reform proposals	Monetary reform	Monetary reform + banking reform

Although the divergences between these two approaches (summarized in Table 5) are fundamental, they have not been clearly identified and discussed in the literature. This lack of differentiation might help explain why, in many instances, the 100% money proposal has been assimilated to the specific Chicago Plan for banking reform, and considered as

[50] Of course, this distinction should not be interpreted too rigorously, and any classification of 100% money proponents according to the two approaches should be made carefully. Indeed, some authors, while following one or the other approach about banking reform, would at the same time rather follow the opposite approach when it comes to defining money or explaining monetary instability.

[51] With *M* representing here the volume of the means of payment, and *V* their velocity of circulation.

necessarily involving the ‘end of banking’. One may wonder if such confusion has not, to some extent, biased the discussions regarding the merits and limits of the proposal.

PART 2 – THE 100% MONEY PROPOSAL:

THEORETICAL ANALYSIS

Chapter 4 – Investigating the 'Debt-Money-Prices' Triangle: Irving Fisher's Long Journey Toward the 100% Money Proposal*

Chapter's abstract

This paper aims to show how the 100% money proposal, which Irving Fisher came to support in his 1935 book *100% Money*, can be connected to the rest of his work on monetary instability—in particular, to his early analysis of credit cycles developed between 1896 and 1911, and to his debt-deflation theory presented in 1932-33. We argue that, behind these respective analyses, a common explanatory pattern of short-run monetary fluctuations can be identified. We call this the 'debt-money-prices' triangle, designating the cumulative interplay between three key variables: the debt-volume, the volume of deposit currency, and the general price level. Using this pattern, we endeavor to show how Fisher's explanations of short-run monetary instability evolved between 1896 and 1935, and how the 100% money proposal came to be a logical conclusion of this long analytical journey.

Introduction

In his book *100% Money*, published in 1935, Irving Fisher offered his own version of a reform idea that had been put forward by a group of University of Chicago economists in 1933[1]: that of divorcing the creation and destruction of money from the extension and contraction of bank loans, by imposing a 100% reserve requirement in lawful money behind transferable bank deposits. Up until his death in 1947, the Yale economist would make this '100% money' proposal—his own wording for the basic Chicago Plan idea—his hobby horse for stabilizing the dollar and mitigating the severity of booms and depressions. His relentless efforts to rally supporters to the plan and to try to have it translated into law have been well documented in the literature (see, for instance, Allen 1993; Dimand 1993b; Phillips 1995).

* A version of this chapter has been submitted to a journal in February 2019 (following which no report has yet been received to this day). A preliminary version of this paper had previously been presented at the 22nd Annual Conference of the European Society for the History of Economic Thought (ESHET), held at the Universidad Complutense de Madrid (Spain) in June 2018; a more advanced version has then been presented at the 46th Annual Conference of the History of Economics Society (HES), held at Columbia University in New York City (USA) in June 2019 (Demeulemeester 2019a); I would like to thank Lucy Brillant and James Forder for their comments received on these occasions. The paper has also benefitted from comments by Rebeca Gomez Betancourt, Laurent Le Maux and Adrien Vila, who I also would like to thank. Any error of interpretation is of course my own responsibility.

[1] The so-called 'Chicago Plan' for banking reform was first presented in a series of memoranda circulated in 1933, mainly written by Henry C. Simons (who would further elaborate on the plan in later writings) in cooperation with Garfield V. Cox, Aaron Director, Paul H. Douglas, Frank H. Knight, Albert G. Hart, Lloyd W. Mints and Henry Schultz (see Phillips 1995).

Relatively little has been said, however, about the place and importance of this reform idea in Fisher's monetary theory. As exemplified by Joseph Schumpeter's account of Fisher's works, the theoretical development underlying the 100% money proposal of 1935 has often been overlooked, leaving the impression that Fisher's analysis of monetary instability ended with his 'debt-deflation' theory of 1932-33[2]. Whether it is because the 100% money idea did not originate with Fisher in the first place, or because it might have seemed to present chiefly a practical rather than theoretical interest, its connection with Fisher's overall monetary thought does not appear to have been clearly established. It must be conceded, for sure, that Fisher himself clearly did not overemphasize the theoretical contribution of *100% Money*: this was only to be detailed more than halfway through the book, in Part III ("The Significance of the 100% System"), where he finally asked: "We have now seen how the 100% system would work. But the question remains: what good would it do?" (Fisher [1935] 1945, p. 119). Only then did he state the connection between his new analysis of the monetary system and his debt-deflation theory developed a few years earlier[3]. The purpose of the present paper is to bring such a connection more fully to light—and to stress, also, how Fisher's debt-deflation theory of 1932 was itself connected to his earlier credit cycle analysis of 1911, on which junction Fisher did not put much emphasis either. We agree with Schumpeter (1948, 231), at least, that Fisher's major contributions – to which we would definitely add *100% Money* – can be seen as "the pillars and arches of a temple that was never built. They belong to an imposing structure that the architect never presented as a tectonic unit." The paper attempts at putting part of the puzzle together, insofar as monetary instability analysis is concerned. We first argue, while recalling some constant features of Fisher's analysis of short-run monetary

[2] When reviewing "Irving Fisher's Econometrics", Schumpeter (1948, p. 220n3) thus specified in a footnote: "We shall not consider books addressed to the general public (notably, *The Money Illusion*, 1928; *Stable Money*, 1934; and *100 Percent Money*, 1935)". More recently, even such a comprehensive study of "Irving Fisher's Monetary Macroeconomics" as that of Dimand (1999a) only made passing mention of the 100% money proposal. While Fisher's advocacy of the plan as a practical solution for monetary control has been discussed, for instance, by Allen (1993), Dimand (1993b; 2019, pp. 126-29), Phillips (1995) and Loef and Monissen (1999), its theoretical significance has not received, in our view, sufficient emphasis.

[3] See especially Chapter 7 ("Booms and Depressions"). Of course, Fisher ([1935] 1945, pp. 11-14) had already succinctly presented the advantages of the plan at the beginning of the book. But, as a review of his work by Hawtrey (1936) made him realize, the order in which he had presented them was misleading: "The reviewer says, 'The primary purpose is to safeguard the depositors, and so to guard against panics'. This is a mistake, though a very common one. . . . It may be that, in the book, I did not sufficiently emphasise the distinction which I am now making, though I did try. For instance, I said (2nd edition, p. 14) referring to eight advantages of the plan, 'Advantages '6' and '7' are by far the most important, *i.e.* the cessation of inflation and deflation of our circulating medium, and so the mitigation of booms and depressions'" (Fisher 1937b, p. 296).

fluctuations, that all his successive explanations rested upon a common pattern, which we call the 'debt-money-prices' triangle (Section 1). We then proceed, using this pattern, to study the evolution of Fisher's analysis through its successive stages: his early explanation of 'credit cycles' developed between 1896 and 1911 (Section 2); his 'debt-deflation theory' of great depressions presented in 1932-33 (Section 3); and, finally, his '100% money' proposal of 1935 (Section 4), which came, in our view, to be the logical outcome of this long analytical journey.

1. Fisher's analysis of monetary instability: some constant features

Before dealing with the evolution of Fisher's specific explanations of monetary instability, it seems important to recall some of his general views on the matter, which he expressed in a long series of works from the 1890s to the 1940s. Several globally constant features can be noted, regarding the largely *monetary nature* of the business cycle (Section 1.1), the *real effects* of short-run monetary instability (Section 1.2), and the *global explanatory pattern* that he used to account for such instability (Section 1.3). The *specific causes* of short-run monetary instability, about which his views changed the most, will be dealt with in the later sections of the paper.

1.1 A monetary interpretation of booms and depressions

Fisher assigned fundamentally different effects to monetary factors, depending on whether the long run or the short run was concerned. His reasoning was based, in both cases, on the equation of exchange, $MV=PT$, with M representing the volume of money, V its average velocity of circulation, T the real volume of trade, and P the general level of prices[4].

Over the 'long run'—i.e., insofar as static analysis comparing two states of equilibrium was concerned—Fisher viewed money as neutral: any change in M, having only temporary

[4] In his earlier writings (e.g., in Fisher [1911] 1913; 1920), Fisher reserved the use of the term *money* for lawful money only (the circulating part of which he designated by M), and used a distinct abbreviation for deposit currency (M') in the equation of exchange, which then read as $MV+M'V'=PT$. In his later writings (e.g., in Fisher 1928, 1932c, [1935] 1945), he included both sets of means of payment in the *money* supply and simplified the equation of exchange accordingly—it became $MV=PT$. Throughout this paper, unless specified otherwise, *money* will refer to any commonly used means of payment, in accordance with Fisher's later definition. We will designate M as the total money supply, Mo as the volume of lawful money (including all money directly issued by the monetary authority, whether in the form of coins, notes, or deposits), and M' as the volume of bank deposit currency—i.e., all transferable ('checking') deposits held on the books of commercial banks.

effects upon *V* and *T*, would ultimately lead (assuming the absence of independent changes in *V* and *T*) to an exactly proportional change in *P*. That, of course, was the essence of the 'quantity theory of money', which Fisher famously restated in his classic work of 1911, *The Purchasing Power of Money* (Fisher 1911; [1911] 1913)[5].

However, over the 'short run'—i.e., insofar as dynamic analysis of transitional or cyclical disequilibrium was concerned—Fisher viewed money as definitely non-neutral: variations in *M* (and more particularly in *M'*) were considered to be not only an active factor, but even more so, in most cases, the *main* disturbing factor affecting *T*. This was the essence of his analysis of transition periods, and of his view of the business cycle as "largely a dance of the dollar" (Fisher 1923)[6].

Business cycles, made of alternate booms and depressions of trade, were thus seen as corollary to credit cycles, made of alternate inflations and deflations of deposit currency[7]. Fisher, it should be noted, was always careful to integrate non-monetary factors into his analysis. For example, he typically held that *any* type of factor—whether monetary or real—might cause the *initial disturbance* starting off a boom or depression sequence, and explained at length how multiple real factors (such as changes in profits, net worth, interest rates, or business confidence) combined to *amplify* the cyclical movement, once started. But all these factors generally remained, all in all, of secondary importance. He assigned a significant amplifying role to the velocity of circulation of money as well, but usually considered that great changes in *V* would *not* occur *independently* of great changes in *M*. In the end, the key driving force behind business cycles was, invariably, the volume of deposit currency.

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[5] Comparative static analysis particularly applies to the lasting effects of *one-off* changes in the volume of money, such as exogenous changes in the monetary base. Fisher thus resorted to the quantity theory to counter the popular argument, used in particular during the Bryan presidential campaign of 1896, according to which the monetization of silver could, in addition to raising the price level, bring lasting real benefits to the economy (see Dimand 1999a; 2011). On Fisher's restatement of the quantity theory, see also Laidler (1991, pp. 68-84; 2013) and De Boyer des Roches and Gomez Betancourt (2013a).

[6] Dynamic analysis can be applied either to the temporary effects of *one-off* changes in the volume of money (such as occurring during 'transition periods' between two states of equilibrium) or to the effects of *cumulative* changes in that volume (such as occurring during 'credit cycles'). Fisher ([1911] 1913), however, did not really distinguish between these two cases: he typically viewed short-run monetary disturbances as both *initiated* by a one-off change in the metallic monetary base, and *amplified* by cumulative changes in the volume of deposit currency. He thus tended to treat 'credit cycles' and 'transition periods' as the same thing.

[7] As summarized by Fisher ([1933] 1934, p. 21): "The key to the business failures, and therefore the key to the depression, is the deflated price level; the key to the deflated price level is monetary deflation; the principal kind of money which deflates is our checking accounts at the banks".

Fisher also sought to find empirical verification for his interpretation. A series of statistical studies led him to find that the rapidity of change of the price level was highly correlated with changes in the physical volume of trade and in the volume of employment. This confirmed him in his conclusion that "alternate booms and depressions are due to alternate inflation and deflation" (Fisher 1925, p. 180)[8]. The advent of the Great Depression—which, according to him, was primarily due to a "money famine" (Fisher 1936b, p. 104)—did not alter his view on the matter.

1.2 The real effects of monetary instability: undue transfers of wealth and a net loss to society

Fisher, as we just saw, was consistent in holding short-run monetary instability—and more particularly the cumulative variability of *M'* during credit cycles—responsible for the severity of booms and depressions. His description of *how* monetary instability impacted real activity also displayed consistency. He argued that any change in the purchasing power of the dollar (i.e., any change in *P*), whether upward or downward, was bound to have harmful redistributive effects—except, of course, under the highly hypothetical assumption of a proportional and immediate adjustment of *all* individual prices (including interest rates) and contracts expressed in money terms (such as wages, rents, or debts). To him, the "primary evil" of unstable money was thus "social injustice, a sort of subtle pocket picking" affecting, alternately, the debtor and debtor-like groups, and the creditor and creditor-like groups (Fisher 1920, p. 76; see also 1928, pp. 60-61). The second evil was "social inefficiency", that is, "irregularity in business, industry, and employment" (Fisher 1928, pp. 106, 98). This was not only because business was "always injured by uncertainty" (p. 87), but also because an unstable dollar, by playing havoc with bookkeeping values, would spell profit losses and failures (Fisher [1933] 1934, p. 74)[9]. The third evil, inevitably following on from the first two,

[8] Using the method of distributed lags, which he originated, Fisher found that the rapidity of change of the price level showed a correlation of 94.1% with changes in the volume of business over the period 1915-1923 (Fisher 1925), and of 90% with changes in the volume of employment over the period 1915-1925 (Fisher 1926). See Dimand (1993a).

[9] Such had been the cause of many business failures in the early 1930s: "When the dollar became a swollen dollar, it increased *all* debts. . . . It measured things wrong, and measured them more wrong every day. . . . The dislocation was primarily a bookkeeping phenomenon. It changed the appraisals; and a changed appraisal is fatal to solvency. . . . After 1929, money lied in the account books; and this bookkeeping lie went on spreading, until society's whole machinery of production and distribution was nearly wrecked" (Fisher [1933] 1934, pp. 44-45, italics in original). The fact that deflation, by increasing the real value of outstanding debts, often led to business failures, had already been noted by Fisher ([1911] 1913, p. 335) long before he presented his 'debt-deflation theory' in 1932-33.

was "social discontent" (Fisher 1928, p. 98), leading to class hatred and violence, while "the *real* culprit—the dollar" (Fisher 1933a, p. 66, italics in original) usually remained unsuspected because of the 'money illusion'—that is, "the illusion that money is always fixed in value, that 'a dollar is a dollar'" (Fisher 1920, p. 36). For all these reasons, far from having only redistributive effects, monetary instability always led to a "net loss" to society as whole, whether in the case of a rising or a falling price level (Fisher 1928, p. 102)[10]. In the context of the Great Depression, Fisher also came to stress the fact that changes in *MV*, if particularly severe, could even affect *T* directly, without waiting for a change in *P* to do so[11]. It is not surprising, therefore, that his primary objective was always monetary stability—stabilizing, through control of its quantity, the purchasing power of money—, upon which, in his view, the prosperity of business and maintenance of employment depended[12].

1.3 A constant explanatory pattern: the 'debt-money-prices' triangle (or 'instability triangle')

Although Fisher's *specific* explanations of short-run monetary instability would evolve over time—as we will see in the subsequent sections—they all shared one remarkably constant *global* pattern, to which we will now turn. Fisher argued early on that, in the short run, the variations in the general price level (*P*) and in the volume of deposit currency (*M'*) would tend to keep reacting on each other, in a cyclical manner. He described such cumulative movements as "credit cycles", because, as he noted, they were "connected with the banking system" (Fisher [1911] 1913, p. 321). Indeed, acting as an intermediary link between *P* and *M'*, a third variable played a crucial role in his analysis: the nominal volume of debt (which

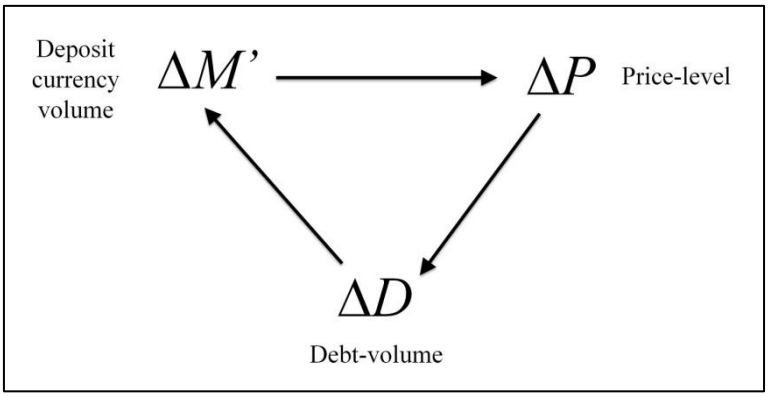
[10] "But we now find the losses exceed the gains, owing to the indirect harm of uncertainty, depression, unemployment, discontent, strikes, lock-outs, sabotage, riots, violence, Bolshevism. These can only mean a dead loss to the general public. The loss is felt whether the price level is rising or falling" (Fisher 1928, p. 103).

[11] He thus insisted on "the direct lessening effect on trade caused by a lessened circulating medium and its lessened velocity. That is, a shortage of money such as the recent shortage of 8 billion dollars of check-book money, *slows down trade at once without waiting to do so through a falling price level*" (Fisher [1935] 1945, pp. 123-24, italics in original; see also 1932c, p. 32; 1933b, p. 342).

[12] Throughout his career, Fisher devoted considerable time and energy to enlighten the public on the advantages of a stable purchasing power of money (see in particular Fisher 1920; 1928; 1934a, Chapter 4); to establish what kind of price-level index would best allow measuring this purchasing power (see in particular Fisher [1911] 1913, Chapters 9-10; [1922] 1927; see also Dimand 1998; 2019, Chapter 6); to devise how such index might best be stabilized in practice (see Dimand 2019, Chapter 5, for an overview of Fisher's various stabilization plans); and to advocate the legislative adoption of a price-level stabilization policy criterion, so as to duly mandate the monetary authority to preserve the purchasing power of the dollar (see Fisher 1934a, Chapters 5-6, for an overview of the many bills he actively supported from 1913 on).

we will, thereafter, designate by the letter *D*), associated in particular with bank loans[13]. The cumulative interplay between these three variables—*P*, *D* and *M'*—which Fisher ([1910] 1912, p. 363) called "the circle of inflation, loans, deposits, and inflation again", would be the common basis for all his successive explanations of monetary instability. We will call this pattern the 'debt-money-prices' triangle, or 'instability triangle', as illustrated in Figure 1.

Figure 1. The 'debt-money-prices' triangle.



This interplay can be decomposed into three specific relations of causality, corresponding to the three sides of the triangle:

- The *P*-to-*D* causality, by which an increase (a decrease) in the general price level brings about an increase (a decrease) in the nominal volume of debts (including, crucially, the debts related to bank loans)[14];
- The *D*-to-*M'* causality, by which an increase (a decrease) in bank loans brings about an increase (a decrease) in the volume of deposit currency;
- The *M'*-to-*P* causality, by which an increase (a decrease) in the volume of deposit currency brings about, other things equal, an increase (a decrease) in the general price level.

Underlying Fisher's evolving analysis of monetary disturbances was a search for the main causal factor responsible for this cumulative interplay. As we will see, he would first focus his attention on the *P*-to-*D* causality (Section 2), before turning to the broad *D*-to-*M'*-to-*P* causality (Section 3), and, finally, to the specific *D*-to-*M'* causality (Section 4).

[13] Let it be noted that Fisher himself never used any kind of abbreviation to designate the debt-volume, as we do here. Throughout the paper, *D* may refer to the volume of debt or to the volume of loans, which are, of course, two sides of the same coin.

[14] This causality particularly involves the variations of profits as an intermediate stage between the variations in *P* and the variations in *D*. Hence what we present here as a triangle could perhaps be more fully presented as a square.

2. Fisher's early analysis of credit cycles (1896-1911): focusing on the *P*-to-*D* causality

Prior to the Great Depression, Fisher would look for the main cause of short-run monetary disturbances on the *PD* side of the 'instability triangle'[15]. He would locate the starting point of credit cycles in any change in the price level (*P*), "whatever [its] first cause may be" (Fisher [1911] 1913, p. 60), and argue that any such variation in *P* would lead, not simply to a proportional, but to a *greater*, variation in the volume of loans (*D*). This would itself, via its effect on the volume of deposit currency (*M'*), bring a further increase in *P*, and so on and on[16]. This over-reaction of *D* to an initial change in *P* was, in his view, the key relationship behind credit cycles, which he set himself the task of explaining.

Fisher's first explanation of this *P*-to-*D* causality would rest upon the particular behavior of the rate of interest. As early as 1896, in *Appreciation and Interest*, he argued that an inequality of foresight existed between debtors and creditors, the former being prompter than the latter to notice a change in *P*, which led to a lag in the adjustment of the rate of interest (Fisher 1896, pp. 76-77; see also Dimand and Gomez Betancourt 2012). As a result, the demand for loans would be unduly stimulated by a rising price level, and unduly discouraged by a falling price level, providing, in Fisher's view, an explanation for credit cycles[17]. At that time, Fisher chose not to detail the reverse causality running from *D* to *P*, via *M'*, possibly because he was so convinced of having found the main anomaly behind credit fluctuations[18].

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[15] For general discussions of Fisher's early analysis of credit cycles, one can again refer to Laidler (1991, pp. 91-95; 2013, pp. 183-87) or Dimand (1993a, pp. 162-65; 1999a, pp. 44-47).

[16] In 1911, as we already noted, Fisher typically held that short-run price-level disturbances had their *origin* in an exogenous maladjustment of the monetary base, and were then *amplified* by the endogenous variations of deposit currency. He implied, therefore, that credit cycles could be prevented if only the maladjustments of the monetary base were corrected in the first place (see, for example, Fisher 1920, p. 229). Hence his long-time advocacy of gold control through his 'compensated dollar' plan, first presented in 1911, the idea of which was to periodically vary the gold content of the dollar so as to keep its purchasing power constant (on this subject, see Patinkin 1993, or De Boyer des Roches and Gomez Betancourt 2013b). Only in the 1920s would Fisher come to increasingly emphasize the importance of credit control as a complement to gold control.

[17] "What has been said bears directly on the theory of 'credit cycles'. In the view here presented periods of speculation and depression are the result of *inequality* of foresight. . . . It therefore happens that **when prices are rising**, borrowers are more apt to see it than lenders. Hence, while the borrower is willing to pay a higher interest than before for the same loan, lenders are willing to loan the same amount for the same interest. That is, the 'demand schedule' will rise while the 'supply schedule' remains comparatively unchanged. This will of course raise the rate of interest. But it will also cause **an increase of loans and investments**" (Fisher 1896, pp. 76-77, italics in original, bold emphasis added to highlight the *P*-to-*D* causality).

[18] As he pointed out: "Nor is this the place to treat fully the reaction on prices themselves. But it can scarcely be doubted that the mal-adjustment of interest is a central feature in the whole movement. . . .

The thrust of this 'inequality-of-foresight' theory was again presented in *The Rate of Interest* (1907, p. 284-87), and would be at the heart of Fisher's explanation of credit cycles in Chapter 4 of the *Purchasing Power of Money* (Fisher 1911; [1911] 1913). In the latter work, he endeavored, this time, to fully describe the triangular interplay between *P*, *D* and *M'*. He summarized the upswing phase as follows:

> 1. **Prices** rise (whatever the first cause may be; but we have chosen for illustration an increase in the amount of gold).
>
> 2. The rate of interest rises, but not sufficiently.
>
> 3. Enterprisers . . ., encouraged by large profits, expand their **loans**.
>
> 4. **Deposit currency (*M'*)** expands relatively to money (*M*)[19].
>
> 5. **Prices** continue to rise, that is, phenomenon No. 1 is repeated. Then No. 2 is repeated, and so on.
>
> In other words, a slight initial rise of prices sets in motion a train of events which tends to repeat itself. Rise of prices generates rise of prices, and continues to do so *as long as the interest rate lags behind its normal figure.*
>
> (Fisher [1911] 1913, p. 60, italics in original, bold emphasis added to highlight the *P*, *D* and *M'* variables)[20]

But, as this passage illustrates, Fisher kept identifying the 'lag in interest', occurring within the *P*-to-*D* sequence, as the central factor behind the whole cycle, explaining both the upswing and downswing spirals, and the turning points[21]. He had been stating a little earlier, after all, that "the chief object of this chapter is to show that the peculiar behavior of the rate of interest during transition periods is largely responsible for the crises and depressions in which price movements end" (p. 56). On this very point, however, his theory would meet with strong criticism, leading him to somewhat adjust his views.

Interest, rather than credit, appears as the chief independent variable, objectively speaking, though behind it all is imperfection of foresight" (Fisher 1896, p. 79).

[19] Let it be recalled that, at this stage of his career, Fisher used the term *money* to designate lawful money only.

[20] The downswing phase was symmetrically summarized on page 68, while more detailed summaries of both phases, including the variations in the velocities of circulation (*V* and *V'*), were provided on pages 63 and 69.

[21] Fisher ([1911] 1913, pp. 64-65) thus described the downturn of the cycle: "Evidently the expansion coming from this cycle of causes cannot proceed forever. . . . The check upon its continued operation lies in the rate of interest. . . . The rise in interest, though belated, is progressive, and, as soon as it overtakes the rate of rise in prices, the whole situation is changed. . . . The banks are forced in self-defense to raise interest because they cannot stand so abnormal an expansion of loans relatively to reserves. As soon as the interest rate becomes adjusted, . . . the demand for loans ceases to expand. . . . This check to loans is, as previously explained, a check to deposits also".

Indeed, many reviewers or critics of *The Purchasing Power of Money*, such as O. M. W. Sprague (1911, pp. 143-44), Wesley C. Mitchell (1912, p. 164) and Minnie Throop England (1912), saw no reason for isolating the rate of interest from other production costs (such as wages, salaries and raw materials), the adjustment of which was just as (if not more) likely to be lagging behind changes in the price level—thus providing as good an explanation for the increase in profits and in borrowings under a rising price level. England (1912, pp. 98-101), basing her criticism on empirical studies of her own, thus invited Fisher to modify his theory accordingly. The latter, who most likely had received similar criticisms beforehand[22], did make such changes in his books *Elementary Principles of Economics* ([1910] 1911; [1910] 1912) and *Why Is the Dollar Shrinking?* (1914). In these works, the chapters dedicated to 'transition periods', in sharp contrast with Chapter 4 of *The Purchasing Power of Money*, no longer presented the lag in the rate of interest as the one central cause of credit cycles[23]. In the upswing phase, whereas sequences 1, 3, 4 and 5 remained unchanged, sequence 2 now read as follows:

> (2) "Enterprisers" . . . get much higher prices than before, without having much greater expenses (for interest, rent, salaries, etc.), and therefore make much greater profits.
>
> (Fisher 1914, p. 77; see also Fisher [1910] 1911, pp. 174-75; [1910] 1912, p. 187. A similar change was made to the description of the downswing phase—see Fisher [1910] 1911, pp. 174-75; [1910] 1912, pp. 189; 1914, p. 81.)

The concluding line was amended accordingly: "Rise of prices generates rise of prices and continues to do so as long *as the enterprisers' profits continue abnormally high*" (Fisher 1914, p. 78, italics in original; see also Fisher [1910] 1911, p. 175; [1910] 1912, p. 187). From then on, Fisher would usually be careful enough to include production costs in general (such as "rent, salaries and wages—not to mention raw materials"), along with interest, as responsible for the "lagging of total expenses behind total receipt" (Fisher 1925, p. 180; see also, for example, 1920, p. 66; 1923, p. 1025; 1926, p. 787; 1936c, p. 496). However, he did not make any such changes in the second edition of *The Purchasing Power of Money*

[22] Unfortunately, a study of Fisher's correspondence at the Department of Manuscripts and Archives of the Yale University Library has not allowed to elucidate this point.

[23] The first experimental edition of Fisher's *Elementary Principles of Economics* (a textbook intended to serve as teaching material), appeared in 1910 under the title *Introduction to Economic Science* (Fisher 1910). The chapter on transition periods was then very similar to Chapter 4 of *The Purchasing Power of Money*. It would be noticeably changed, however, in the second experimental edition, published in September 1911 (Fisher [1910] 1911)—that is, even before the criticisms of Sprague, Mitchell and England appeared in published form—and in the third and final edition (Fisher [1910] 1912). The fact that Fisher ever modified his description of transition periods has, to our knowledge, never been pointed out in the literature so far.

published in 1913, for a reason that he revealed in the preface[24]; and, in subsequent writings, he would occasionally again assign a primary importance to the maladjustment of the rate of interest (e.g., in Fisher 1914, pp. 84-86; 1923, p. 1024; 1930, pp. 43, 411-16). It is thus difficult to assess the extent to which he really adjusted his views on the subject. In any case, after he developed his debt-deflation theory in 1932-33, Fisher would consider both the rigidity of production costs in general, and the lagging behind of the interest rate in particular, as insufficient explanations, by themselves, of booms and depressions[25]. From that moment, he would come to focus on another sequence of the 'instability triangle', as we will now see.

3. The debt-deflation theory of great depressions (1932-33): shifting the focus toward the *D*-to-*M'*-to-*P* causality

The Great Depression of the 1930s made Fisher tackle the issue of monetary instability from a different angle. Until then, as we have seen, he had held the view that credit cycles originated with an initial disturbance of the general price level (*P*), from which the whole cumulative interplay between *P*, *D* and *M'* was set off. In the boom years preceding the Great Depression, however, the *commodity* price level had remained fairly stable—the *general* price level did rise, but its inflation was concentrated in the stock market[26]. Possibly for this reason, Fisher

[24] "I have endeavored to avoid disturbing the plates of the first edition more than was absolutely necessary. Otherwise . . . I should have liked to modify somewhat the statement of the theory of crises in Chapter IV and in Chapter XI to make use of the helpful criticism of Miss Minnie Throop England, of the University of Nebraska, in *The Quarterly Journal of Economics*, November, 1912" (Fisher [1911] 1913, p. xiii). The largely shared view, however, that Fisher never took any account of England's criticism whatsoever—expressed, for example, by Barber *et al*. (1997, Vol. 4, p. 565) or Dimand (1999a, p. 48; 1999b, p. 109; 2011, p. 137)—should probably be qualified somewhat. It is true that Fisher never explicitly responded to England. Nevertheless, as we saw, he certainly did, in some works at least, modify his explanation of credit cycles along the very lines of her criticism.

[25] "Profits" and the "rate of interest" would be treated, respectively, as the "fifth" and "ninth" main oscillating factors in *Booms and Depressions* (Fisher 1932c, pp. 30, 38). As Rebeyrol (1988, p. 115) noted, Fisher now classified his "inequality-of-foresight theory" among those which, despite containing "some grain of truth", were insufficient "to explain *big* disturbances" (Fisher 1932c, p. 62; 1933b, p. 340, italics in original).

[26]About the 1923-29 boom, Fisher noted, in retrospect: "The effect of this borrowing fever was steadily and enormously to inflate the deposit currency. Corporate profits rose, and the price level in the stock market rose. These were ominous signs. . . . One warning, however, failed to put in an appearance—the *commodity price level did not rise*. The index of wholesale commodity prices, therefore, is not always an infallible index of monetary and business trends. In 1923-29, an index half-way between the level of commodity prices and the steep up-tilt of stock market prices would have been nearer the truth" (Fisher 1932c, pp. 74-75, italics in original). He further noted: "Whatever happened to the commodity price level, the stock market price level sky-rocketed enough for two" (Fisher [1933] 1934, p. 40).

would thereafter take the debt-volume (*D*) as the new starting point of his credit cycle explanations, noting that the Great Depression had originated with "a state of over-indebtedness" (Fisher 1932c, p. 25). From then on, he would focus his analysis on the broad *D*-to-*M'*-to-*P* sequence of the 'instability triangle'.

Fisher's new approach to booms and depressions was presented in a series of speeches and writings between 1931 and 1935—more particularly in his monograph *Booms and Depressions* (1932c), and in an article, "The Debt-Deflation Theory of Great Depressions", published in the first volume of *Econometrica* (1933b)[27]. The whole theory, Fisher (1932c, p. vii) announced in the preface of his book, sought to highlight how some "nine main factors" combined to explain business cycles. However, he quickly focused on the first three of them in particular, which he singled out in a specific chapter: the debt volume, the deposit currency volume, and the price level (pp. 8-28). We find here, once again, the 'instability triangle'—*D*, *M'*, and *P*. The "remaining six factors"—which included "net worth", "profits", "production", "trade and employment", "optimism and pessimism", "the velocity of circulation", and "the rate of interest" (pp. 29-43)—were presented as secondary than primary factors, mostly reacting to a falling price level (the 'Dollar Disease'), and were treated, as a reviewer observed, "in a cursory manner" (Arakie 1933, p. 485). There was nothing really new in this list[28], nor in the fact that Fisher maintained, as always, a monetary explanation of booms and depressions[29].

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[27] As Fisher (1933b, p. 350) recalled: "This debt-deflation theory was first stated in my lectures at Yale in 1931, and first stated publicly before the American Association for the Advancement of Science, on January 1, 1932". It was also presented before Congressional committees (Fisher 1932a, pp. 347-68; 1932b, pp. 126-30). Further insight into Fisher's new approach to booms and depressions can be gained from his books *Inflation?* (1933a, Chapter 6), *After Reflation, What?* ([1933] 1934, Chapter 3) and *100% Money* ([1935] 1945, Chapter 7); see also Fisher ([1934] 1935, reprinted in Dimand 2003a) on the international transmission of booms and depressions. On the debt-deflation theory, see, for example, Dimand (1994), Challe (2000), Assous (2013) and Gomez Betancourt and Vila (2018).

[28] Indeed, all nine factors already appeared more or less explicitly in *The Purchasing Power of Money* (see Fisher [1911] 1913, pp. 67-70, 335; on the role of profits, see also Fisher [1910] 1912, pp. 186-89).

[29] As Arakie (1933, p. 485) remarked: "From the short introduction it becomes clear that we are to be presented with a monetary theory of the trade cycle". Schumpeter (1954, p. 1122), however, surprisingly argued that the debt-deflation theory was "in essence not monetary at all", basing his contention on the fact that Fisher identified real factors, such as "new technological and commercial possibilities", as important debt starters (for a similar interpretation, see, for example, King 1994, pp. 429-30). It is true that, as we have mentioned already, Fisher held that *any* cause, monetary or real, could start off a boom or a depression. But the fact that he primarily ascribed the *cumulative development* of the cycle to monetary causes can hardly be denied. Indeed, as he himself stated: "Invention or discovery *alone* need not carry up the aggregate indebtedness very high, if the price

The novelty of Fisher's new theory—which, when applying it to the downswing phase, he termed the 'debt-deflation theory'—has to be found elsewhere, and, first of all, in his analysis of the interrelations between the three main factors, *D*, *M'*, and *P*. In contrast with his former analysis of credit cycles—in which, as we saw, Fisher had focused on the *P*-to-*D* causality in particular—he now focused on the broad *D*-to-*M'*-to-*P* sequence, emphasizing how a decrease in *D* led, through a contraction of *M'*, to a decrease in *P* (and conversely in the upswing phase)[30]:

> When over-indebtedness . . . is discovered and attempts are made to correct it, distress selling is likely to arise. . . . This excessive eagerness on the selling side of a market may seem enough to explain how distress selling tends to lower the price level; but it is not the fundamental influence. (Fisher 1932c, pp. 13-14)
>
> The really most important reason for this fall in the price level is the contraction of the currency that comes about. There is always a contraction of currency when people pay their debts to a commercial bank faster than new debts are created in the commercial bank. That is a point very few people realize, but it is the key to the whole situation. (Fisher 1932a, p. 352; see also 1932b, p. 687; 1932c, p. 14)
>
> Thus, the volume of the most important circulating medium is tied to the volume of debts, especially debts at the banks . . . so that a sudden disturbance of this **debt-volume** is passed on to the **currency-volume** and consequently passed on to the **general price level**. (Fisher 1932c, p. 17, bold emphasis added to highlight the *D*-to-*M'*-to-*P* causality)

Then, with the following *P*-to-*D* sequence, the process would come full circle, and repeat itself cumulatively—producing, alternately, booms and depressions:

> *Upward*: If business borrowing becomes excessive, it automatically inflates the volume of checks which dart about as a part of the country's circulating medium; these raise the price level, the price level raises profits, and the raised profits lure business men into extending themselves by further business borrowing, which further raises the price level and increases profits, which further lure business into over-extension—and so on and on.
>
> *Downward*: If liquidation, for some reason, gets into a stampede, it wipes out (*i. e.*, deflates) credit currency, which lowers the price level and reduces profits, which force business into further liquidation, which further deflates the credit currency, which further lowers the price level and reduces profits, which force business into further liquidation—and so on and on: a tail spin into depression.

---

level promptly refuses to follow up the lure of invention or discovery with the lure of profits *not due to the invention or discovery* but to credit inflation" (Fisher 1932c, p. 121, italics in original).

[30] To be sure, what was new was not so much the description of this *D*-to-*M'*-to-*P* sequence in itself—which could already be found, for example, in Fisher ([1911] 1913, Chapter 4)—but rather the emphasis laid upon it. As Von Peter (2005, p. 4) noted: "One book review of 1933 argued the theory was not novel . . . This may well be because the effect of deflation on the burden of debt was well understood at the time, while the reverse was not recognised as important".

(Fisher 1933a, pp. 78-79, italics in original)

Fisher further specified that, owing to their special role in the money-supply mechanism, "commercial bank debts" were "the only kind of debts directly involved" in the debt-deflation process, although other debts played an aggravating role (Fisher 1932c, p. 15; see also 1933a, p. 81; [1933] 1934, p. 39). Yet, however much the tie between money and debt was central to his analysis, Fisher stopped short, at that time, of putting the monetary system into question. He even sometimes pushed the volume of deposit currency (*M'*) into the background of his explanations, turning the spotlight on *D* and *P*:

> Of these three depression tendencies, *the second (currency contraction) is important only as a connective process* between the other two—which two should be called
>
> *The Debt Disease* (too much debt)
>
> *The Dollar Disease* (a swelling dollar)
>
> (Fisher 1932c, pp. 26-27, first italics added, further italics in original)

The *D*-to-*M'*-to-*P* sequence of the triangle was thus sometimes treated simply as a *D*-to-*P* sequence, with the *M'* variable apparently accorded a secondary importance[31].

Above all, Fisher came to stress another new feature of his analysis—which he would later term the "Debt Paradox" (Fisher 1936a, p. 407)—pertaining to the case of particularly *great* booms and depressions: the "theory that when over-indebtedness is so great as to depress prices faster than liquidation, the mass effort to get out of debt sinks us more deeply into debt" (Fisher 1933b, p. 350). That is, if the reduction in the *nominal* debt-volume (*D*) led to a *more than proportional* reduction in the price level (*P*), then the increase in the real value of outstanding debt units would overcome the decrease in the number of these units, and *real* indebtedness would actually increase:

> Nominally, of course, any liquidation must reduce debts, but really . . . it may swell the unpaid balance of every debt in the country, because the dollar which has to be

[31] This was especially the case in Fisher's 1933 *Econometrica* article. He then referred to "two dominant factors, namely *over-indebtedness* to start with and *deflation* following soon after", on the one hand, and seven "secondary variables", into which he now relegated the "circulating media", on the other hand (Fisher 1933b, p. 341, italics in original). For some reason, the role of *M'* was clearly downplayed in this paper, in contrast with all of his other writings from that period (see, for instance, Fisher 1932a, p. 352; 1932b, p. 687; 1932c, Chapters 1, 2, 10; 1933a, p. 78; [1933] 1934, pp. 36-37). Could this be because Fisher, writing in an academic journal, perhaps even sought to find a receptive audience among the opponents of a monetary interpretation of business cycles? As it turned out, Joseph Schumpeter—one of the very few of Fisher's contemporaries to have discussed his debt-deflation theory—would particularly praise his 1933 article, precisely because of the stress put on real factors as important debt starters (see Schumpeter 1939, p. 146; 1948, p. 231; 1954, p. 1122).

> paid may increase in size faster than the number of dollars in the debt decreases. (Fisher 1932c, p. 25)[32]
>
> Then we have the great paradox which, I submit, is the chief secret of most, if not all, great depressions: *The more the debtors pay, the more they owe*. (Fisher 1933b, p. 344, italics in original)

Thus, whereas Fisher had until then considered price-level variations as tending to be "self-corrective" (Fisher [1911] 1913, p. 70), he now argued that under certain circumstances, if left to themselves, they could become self-defeating instead.

But an "important corollary" of the debt-deflation theory, on which Fisher (1933b, p. 350) put strong emphasis, was that "great depressions are curable and preventable through reflation and stabilization". Indeed, the Federal Reserve System could always forestall the contraction of deposit currency (*M'*) by acting on the monetary base (*Mo*) and using "credit control" instruments, such as open market operations, the rediscount rate, or reserve requirements, in a countercyclical way (Fisher 1932c, pp. 121-31)[33]. Other measures, such as gold control or velocity control, could also be resorted to in complement (pp. 136-41). In any case, Fisher (1932b, p. 690) tended to regard the prevention of booms and depressions as an easy task: "It can always be done, because the price level is the one thing that is easy to control".

The stability of the price level would still be better achieved, however, if only the cumulative interplay between *P*, *D* and *M'* could be prevented from occurring in the first place. This would be the aim of the 100% money proposal, which Fisher would soon come to advocate.

4. The money-debt tie analysis and 100% money proposal (1935): finally focusing on the *D*-to-*M'* causality

With his debt-deflation theory, as we have seen, Fisher had come to focus on the broad *D*-to-*M'*-to-*P* sequence of the 'instability triangle'. He occasionally stressed the decisive

[32] Symmetrically, the opposite would occur in a great boom, starting from "a state of *under*-indebtedness", "The burden per dollar may even diminish faster than the nominal amount of the debts increases, thus diminishing the total real burden of the debts, despite their accumulating numbers" (Fisher 1932c, pp. 41-43, italics in original).

[33] Fisher thus blamed Federal Reserve officials for having failed to prevent the monetary contraction of 1929-33: "I myself believe very strongly that this depression was almost wholly preventable, and that it would have been prevented if Governor Strong had lived, who was conducting open-market operations with a view of bringing about stability. When I say 'prevented', I mean to a large extent. We would have had a stock-market recession, but not a subsequent depression" (Fisher 1935a, p. 517; see also 1933b, p. 347; [1935] 1945, p. 129).

importance of the specific *D*-to-*M'* causality but without, at the time, questioning the dependence of the money supply upon bank loans[34]. This step would finally be taken in his book *100% Money*, first published in 1935 (Fisher 1935b), in which he proposed—following the idea put forward in the 'Chicago Plan' of 1933—"to raise reserve requirements against checking deposits from 10%, or thereabouts, to 100%" (Fisher [1935] 1945, p. xi). The aim was to "make money independent of loans; that is, to divorce the process of creating and destroying money from the business of banking" (Fisher [1935] 1945, p. xvii)[35]. The existing system of bank-created money was now held directly responsible for the severe contraction of *M'* (from 23 to 15 billion dollars) between 1929 and 1933: "This destruction of check-book money was not something natural and inevitable; it was due to a faulty system" (Fisher [1935] 1945, p. 7).

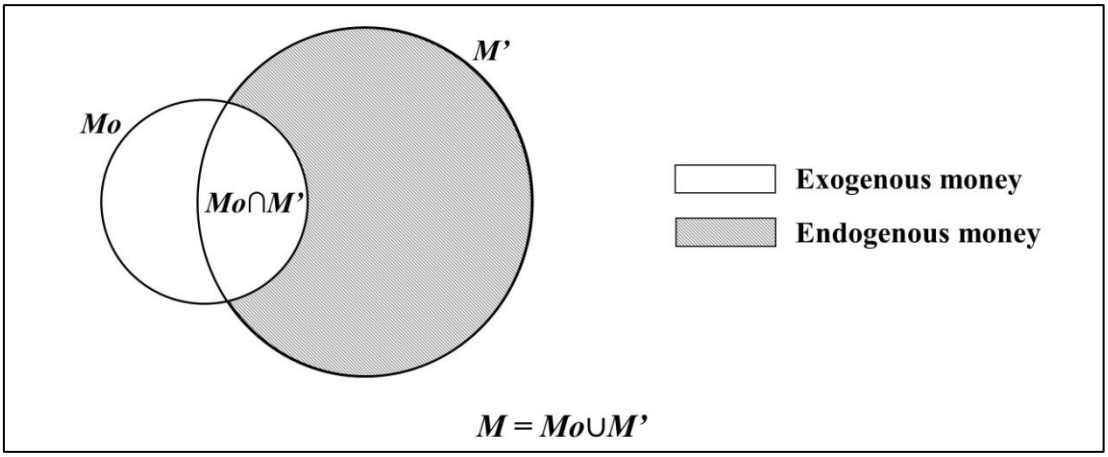
Fisher called this mixed monetary system, in which only a fraction of deposit currency (*M'*) was covered by reserves in lawful money (*Mo*), the "10% system" (Fisher [1935] 1945, p. 7), which we illustrate in Figure 2.

[34] Some passages of his 1932-33 writings, however, seemed to anticipate his later endorsement of the 100% money idea. In his book *Inflation?*, for instance, Fisher held that "[t]he leading role in these recent cases [of booms and depressions] has been played by credit currency, which (as few people are aware) constitutes nine-tenths of the circulating medium of the United States. . . . Credit currency develops an evil tendency of its own—a tendency which is fortunately denied to other forms of money. This tendency of credit currency (once it starts moving) is *to perpetuate its own motion in a sort of vicious circle, or rather a vicious spiral*—upward or downward as the case may be" (Fisher 1933a, p. 78, italics in original). And in *Booms and Depressions*, after all, his discussion of over-indebtedness had started with the very remark that "[d]ebts are tied in with the money mechanism" (Fisher 1932c, p. 8).

[35] Fisher had embraced the 100% money idea by the end of 1933, and was already campaigning for the plan in early 1934 (see Allen 1993, pp. 707-08). He later explained that "the quest for non-dependence of money on loans was what started the present writer on the 100% system" (Fisher [1935] 1945, p. 58). As he further recalled: "I was stimulated to it partly by [Congressman] Goldsborough asking me if it was not possible to get up a system by which the money of this country could be created and controlled without somebody having to go into debt to create it. And then I discovered that a memorandum on the subject had been prepared at the University of Chicago by a half dozen economists there . . ." (Fisher 1935a, p. 534). From the 'Chicago Plan', Fisher ([1935] 1945, p. xiii) claimed to have obtained "many of the ideas" embodied in his own proposal. A detailed account of the history of these plans is given by Phillips (1995). Regarding Fisher's proposal in particular, see also Allen (1993) and Dimand (1993b).

Figure 2. The 10% money system.

(Adapted from Demeulemeester 2018, p. 363 [Chapter 3 of this thesis], Figure 1)



The total money supply (*M*) is here represented as a combination of two distinct sets:

(i) *Exogenous money*, corresponding to *Mo*, includes all money created by the (usually state-owned) monetary authority—either in the form of coins, notes, or deposit balances—in accordance with its non-profit oriented policy objectives. The part of bank deposit currency (*M'*) covered by reserves in lawful money (*Mo*∩*M'*) is included here: in this case, *M'* simply substitutes for *Mo* in the circulation, without adding to *M*.

(ii) *Endogenous money*, corresponding to *M'*-(*Mo*∩*M'*), includes the part of bank deposit currency *not* covered by reserves in lawful money—that is, the part of *M'* created out of profit-oriented bank loans and investments[36].

The endogenous part usually represented the bulk of *M'*: "Typically . . . some nine-tenths of the depositors' [checking] deposits can be made out of their own promises, with the help of the bank" (Fisher [1935] 1945, p. 41). The resulting "constant trombone of expansion and contraction" of deposits subject to check, "tied, as they now are, to bank loans", was, according to Fisher, "the chief cause of both booms and depressions" (Fisher 1935a, p. 522; [1935] 1945, p. xviii). He insisted that the *D*-to-*M'*-to-*P* causality—which, as we saw, was

[36] It should be noted that the terms *exogenous* and *endogenous*, which we choose to use here, were not employed by Fisher. Also, it is sometimes argued that lawful money, insofar as it is created in response to the demand emanating from commercial banks, has to be regarded as endogenous. It is true that, in the existing monetary system, as Fisher ([1935] 1945, p. 51) himself noted, "[a] member bank may create a part of its reserve by 'rediscounting'". But even in this case, the monetary authority still decides, in accordance with its non-profit oriented policy objectives, on the price at which this reserve will be extended. It is in this sense that we speak of an 'exogenous' supply of lawful money.

central to his debt-deflation theory—was only made possible by this "mistaken tie" (Fisher [1935] 1945, p. 177):

> We ought to know that one of the chief reasons why changes in business bring about changes in the price level is the 10% system. This causes the banks, by means of business debts, to keep everlastingly tinkering with our currency and so causes unnatural inflations and unnatural deflations. . . . But, take away the 10% system and you take away these unfortunate associations between business and the price level. (Fisher [1935] 1945, p. 181)[37]

Hence, the 100% money proposal was more than just a practical reform plan. Its theoretical aspect was to identify the "tie between money and debt" (Fisher [1935] 1945, p. 177), by which the creation and destruction of money was linked to the extension and contraction of bank loans, as the main causal factor of monetary instability. The money supply, therefore, had to be made wholly exogenous.

The practical aspect of the plan was as follows. *Checking deposits* (*M'*), fulfilling a payment function, could no longer be created or destroyed out of bank lending activity. They would have to be fully covered by reserves in lawful money (*Mo*), the volume of which would be regulated by a duly mandated Currency Commission, independent of the government[38]. In this way, the tie between *D* and *M'* would be severed, putting an end to the whole 'debt-money-prices' cumulative interplay—as illustrated in Figure 3[39].

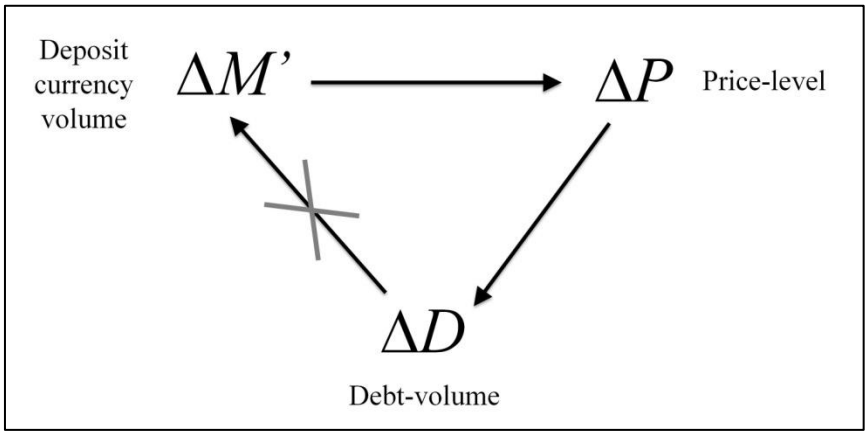
---

[37] See Fisher ([1935] 1945, p. 181) for a fuller statement of how the 10% system, by allowing the *D*-to-*M'*-to-*P* interplay to take place, brings about "a vicious circle in which business expansion and price expansion act each to boost the other" in a boom, and reversely in a depression. He also insisted that individual bankers had no responsibility in this respect: "The public is quite wrong when, in the depression, they blame the individual bankers. It is the banking *system*—the 10% system—which is at fault. *Under this system, the bankers cannot help destroying money when it should be created, namely in a depression; while in a boom they create money when it should be destroyed*" (Fisher [1935] 1945, p. 78, italics in original).

[38] That is, the money supply, freed from the cumulative behavior of bank-created money, would now solely depend upon the one-off adjustments of *Mo* produced by the monetary authority. The Currency Commission would create (destroy) money mainly by purchasing (selling) government bonds—newly issued if need be—according to a policy criterion to be adopted by Congress. Fisher, not surprisingly, favored the criterion of a stable purchasing power of the dollar. He would endow the Currency Commission with some discretionary powers of implementation, so as to enable it to take action proactively whenever the price level threatened to vary (see Fisher [1935] 1945, Chapter 6). He further argued that, insofar as government securities would be purchased by the state itself, through its Currency Commission, the public debt would be reduced accordingly (pp. 206-08).

[39] Apparently Fisher thought this point was not sufficiently emphasized in his book. Shortly before he died in 1947, when leaving instructions for an ultimate revision of *100% Money*, he specified: "I also would like to have the book emphasize, wherever it is possible to bring it in, the most important point of all, namely, that the 100% plan would cut the fateful tie now binding our money supply to the volume of bank loans and investments" (Fisher, letter to Allen K. Deeds, March 19, 1947, Fisher Papers, Yale University Library).

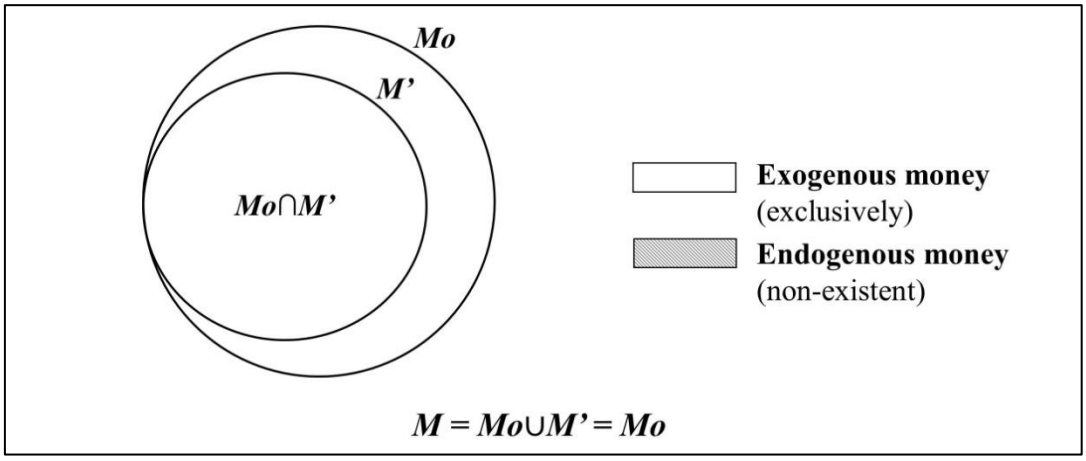
Figure 3. Proposing to end the *D*-to-*M'* causality.



The total money supply *M* would always be equal to *Mo*, under full direct control of the monetary authority, as illustrated in Figure 4[40].

Figure 4. The 100% money system.

(Adapted from Demeulemeester 2018, p. 373 [Chapter 3 of this thesis], Figure 2)



Savings deposits, on the other hand, fulfilling an investment function, could still be freely used by the banks to finance loans and investments (and thus remain only fractionally covered by reserves), but would not be allowed to serve as means of payment[41].

[40] And, because the money supply would no longer depend on bank loans, the monetary authority would no longer need to manipulate the price of loans: "It should also be noted that, even when the price level is, for a time, successfully stabilized under the 10% system, the very effort to accomplish this by manipulating the rates of interest, in the face of the handicaps of that system, necessarily requires some distortion of the rate of interest from normal, that is, from the rate which the mere supply and demand of loans would have produced" (Fisher [1935] 1945, p. 139). Hence, Fisher claimed that not only would monetary control be freed from bank lending considerations, but, similarly, bank lending would be freed from monetary control considerations (p. 205). He went so far as to argue that "[i]f [checking] deposits were backed 100%, almost all other legal regulations of banks could be abolished" (p. 171).

Hence, however much the amount of bank loans and the volume of debt (*D*) could be varying, the volume of money (*M*) would no longer be directly affected thereby[42]. That, according to Fisher, was a precondition for having a true elastic currency:

> The 100% system, with a Currency Commission, provides for expansion and contraction *in proportion to the national need*—that is precisely the meaning of a steady price level. On the other hand, under the 10% system, the business-expansion and debt-expansion are *not* in proportion, nor are the two contractions in proportion. Booms and depressions prove the contrary. It is quite true that money should expand and contract as business expands and contracts. That is the main concern of this book. But we need a more genuine matching of money and business than the debt-deposit tie-up can ever give us. (Fisher [1935] 1945, p. 177, italics in original)

Fisher explicitly linked his new monetary analysis to his debt-deflation theory, providing, in Chapter 7 of *100% Money*, an updated summary of his 1933 *Econometrica* article. This time, he gave the 'money-debt tie' its due emphasis, noting that "an underlying cause (or pre-condition) of great booms and depressions is the 10% system itself" (Fisher [1935] 1945, p. 120)[43]. Over-indebtedness, he now argued, would be much less likely to occur in the first place, should money creation be divorced from loans:

> Moreover, under the 100% system, the depression could never get so big a start since the preceding boom and over-indebtedness would not be so great. This does not mean that, under the 100% system, there would be no booms and depressions whatever. It means simply that they would be vastly less severe. (p. 134)

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[41] On this point, a key difference must be noted between Fisher's proposal and the Chicago Plan, under which the banks would be deprived of their lending function and replaced, in that regard, with investment trusts. Indeed, Henry Simons viewed the velocity of circulation (*V*) as an independent cause of monetary instability, and argued that fractional-reserve banking, even if conducted with non-transferable savings deposits, had to be abolished because of its dangerous potential to exacerbate the changes in *V*. Fisher, on the other hand, would still have the banks perform financial intermediation with (fractionally-covered) savings deposits, provided they were not allowed to be made transferable by check or otherwise. On this divergence between Simons and Fisher, see Demeulemeester 2018 [Chapter 3 of this thesis]. See also Appendix 1 for an illustration of a typical bank balance sheet under the respective 10% and 100% systems.

[42] Indirectly, however, an increase in bank loans, insofar as it led to an increase in *T*, would (unless *V* increased in proportion) bring about a downward pressure on *P*, prompting the Currency Commission to increase *M*: "The monetary authority . . . should therefore be authorized and directed, on the slightest signal of deflation, as registered by an index number, to issue more new money" (Fisher 1937a, p. 294). In the end, then, although the whole mass of means of payment would be exogenously *supplied*, its volume would remain endogenously *determined* by the level of economic activity.

[43] Also, whereas the 1933 article held that "*all the fluctuations listed come about through a fall of prices*" (Fisher 1933b, p. 344, italics in original), the 1935 summary stated, this time, that "practically *all the events listed occur through* a contraction of check-book money" (Fisher [1935] 1945, p. 123, italics in original).

The endorsement of the 100% money proposal marked the end of the evolution of Fisher's monetary-instability analysis. The Yale economist would continue to advocate his reform plan, and would try to get it enacted into law, for the rest of his life[44].

Summary and conclusion

Irving Fisher assigned a primary responsibility for the woes affecting the economy to short-run monetary instability. Throughout his long career, he kept arguing that variations in the value of the monetary unit, whether upward or downward, would be a cause of social injustice, social inefficiency and social discontent, resulting in a net loss to society as a whole. In particular, he closely associated booms and depressions of trade with inflations and deflations of deposit currency. Hence his view of the business cycle as "largely a dance of the dollar", which his interpretation of the Great Depression as a "money famine" only confirmed. When it came to explaining short-run monetary disturbances, his analysis evolved substantially over time, as has been well noted in the literature. Yet, as the present paper has attempted to show, a common explanatory pattern can be identified throughout his writings, corresponding to what we have called the 'debt-money-prices' triangle (or 'instability triangle'), illustrating the cumulative interplay between three key variables: the nominal debt volume (*D*), the volume of deposit currency (*M'*) and the general price level (*P*).

In his early analysis of credit cycles, mainly developed between 1896 and 1911, Fisher derived this whole triangular interplay from an initial maladjustment in *P* and focused on the *P*-to-*D* causality in particular. His explanation of why the debt-volume would increase with a rising price level (and conversely decrease) rested on the correlation between inflation and rising profits, which he would successively—or, rather, alternately—attribute to the lagging behind of the rate of interest in particular, and/or to the rigidity of production costs in general.

With his 'debt-deflation theory', developed in 1932-33 in reaction to the Great Depression, Fisher now regarded the triangular interplay as typically started by a maladjustment in *D*—such as a state of 'general over-indebtedness'. He thus shifted the focus of his analysis toward the broad *D*-to-*M'*-to-*P* sequence, by which a debt-liquidation movement led, through

[44] As Allen (1993, p. 715) noted: "His prodigious efforts continued almost to the moment of his death on April 29, 1947—while in a terminal stay in a hospital, he wrote a long letter to President Harry S Truman on March 27 urging 'a law which will sever the tie that now binds bank loans to the volume of checkbook money'". On Fisher's unremitting efforts to get the plan adopted, see also Phillips (1995, pp. 153-64).

monetary contraction, to a deflation of the price-level (and conversely in the upswing). He chose especially to emphasize, at the time, what he called the 'debt paradox': the fact that, should the debt-deflation process be severe enough and left to itself, the fall in *P* could dominate the fall in *D*, and result in an increase of real indebtedness—which he regarded as the "chief secret" of many depressions.

Fisher's analysis, far from stopping there, would shortly afterward take a final turn. In 1935, he offered his own version of the '100% money' reform idea, requiring the banks to keep 100% reserves in lawful money behind their checking deposits. Focusing this time on the specific *D*-to-*M'* causality, he now regarded the dependence of deposit currency upon bank loans, under the existing ('10%') monetary system, as the main cause of the inherently pro-cyclical behavior of *M'*. Only because of this dependence, indeed, could the three main factors of instability—*D*, *M'* and *P*—cumulatively interact. Severing the tie between money and debt was the essence of the proposed '100% system', which Fisher would keep advocating for the rest of his life.

Fisher's endorsement of the 100% money proposal can arguably be regarded as the logical outcome of a long journey of investigation of what we have called the 'debt-money-prices' triangle, during which he sought to identify the central cause of short-run monetary disturbances. In our view, the successive theories of instability that he came to develop over time showed a definite consistency, which has been under-appreciated in the literature. It may well be that, as Patinkin (1993, p. 27) argued, by the 1930s, "the Chicago school had become a leader on questions of monetary policy, and Fisher a follower—as exemplified by his acknowledgment to Henry Simons and his colleagues in his 1935 book *100% Money*". What we have endeavored to show, however, is how, by endorsing the 100% money idea, Fisher was also very much following his own line of thought.

Appendix 1 – Typical bank balance sheet under the respective 10% and 100% money systems

Table 1. Typical bank balance sheet under the existing '10% money' system

Assets	*Liabilities*
(Fractional) reserves	Equity
Loans, investments, etc.	Checking deposits
	Savings deposits
	Other liabilities

Table 2. Typical bank balance sheet under the proposed '100% money' system

(Adapted from Demeulemeester 2018, p. 37 [Chapter 3 of this thesis], Table 2)

Check department

Deposits in custody	
100% reserves in lawful money[45]	Transferable ('checking') deposits[46]

Loan department

Assets	*Liabilities*
(Fractional) reserves[47]	Equity
Loans, investments, etc.	Non-transferable ('savings') deposits
	Other liabilities

[45] Under Fisher's plan, designed for the United States, the twelve Federal Reserve Banks (FRBs) would be kept as intermediary agents between the Currency Commission and the member banks, and would themselves be subjected to a 100% reserve requirement behind their checking deposits (see Fisher [1935] 1945, Chapter 4). The check departments of member banks would keep their reserves either in the form of vault cash or checking accounts with the FRBs, themselves keeping their reserves in vault cash or checking accounts with the Currency Commission. The Commission's assets would mainly consist of government securities.

[46] The costs of handling checking deposits could be covered, for example, out of service charges paid by depositors, or out of a public subsidy paid by the state (Fisher [1935] 1945, pp. 152-153).

[47] Fisher ([1935] 1945, p. 69) specified that "[t]he loan department . . . would deposit its own cash in the check department and would transfer it by check just like any other depositor". He also explained that the loan departments with a demand for loanable funds could still obtain them from other banks or from the FRBs (see Fisher [1935] 1945, pp. 82-89, 142). Presumably, then—although Fisher was not explicit about this—each FRB would itself be divided into a check department (subject to 100% reserves) and a loan department, the latter providing lending and rediscounting facilities to the loan departments of member banks. Such central banking practices would, of course, remain fully consistent with the 100% money proposal as long as they did not involve any creation or destruction of transferable deposits, outside of those performed by the Currency Commission. The Commission, Fisher ([1935] 1945, p. 202) specified, could possibly still be allowed to perform rediscounting itself, but "only as a safety valve".

Chapter 5 – 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*

Chapter's 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.

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.

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[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

This implies, of course, that part of the seigniorage benfit 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—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

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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 ([1934a] 1968) and Fisher ([1935] 1945). On the history of the 100% money proposal, one can refer in particular to Phillips (1995).

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

[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 ([1934a] 1968, p. 11) used a very similar definition.

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 (1934a, 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 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].

[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'.

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, Vol. 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 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]:

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[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, Vol. 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.

[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.

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

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

[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.

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:

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

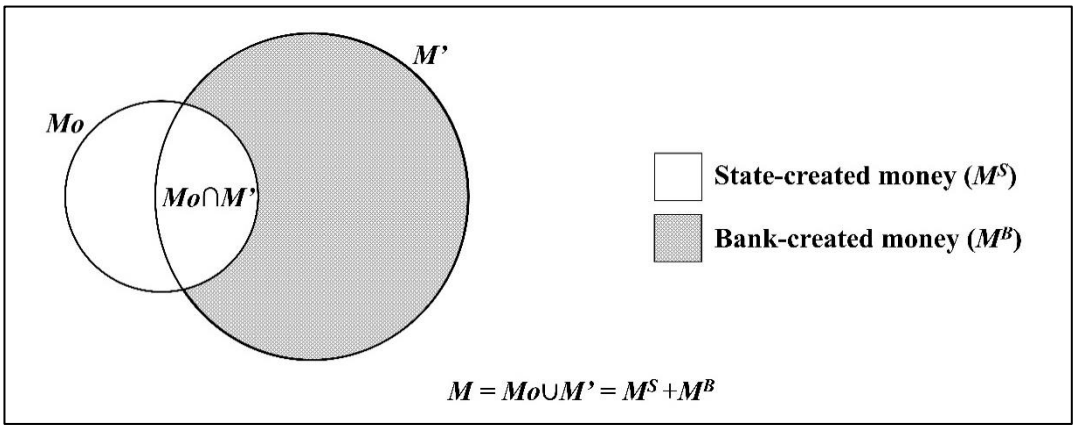
[14] See Reich (2017, p. 82), although he restricts the use of the term *currency* (including *credit currency*) to legal tender money. He concludes his book, however, by asking: "If seigniorage is due to the purchasing ability bestowed upon currency, then is there a seigniorage-like revenue from the 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 [Chapter 3 of this thesis], 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, Vol. 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, Vol. 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, Vol. 4, p. 285; see also [1817] 1951, Vol. 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 ([1934a] 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] 1898b, 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 ([1898a] 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.

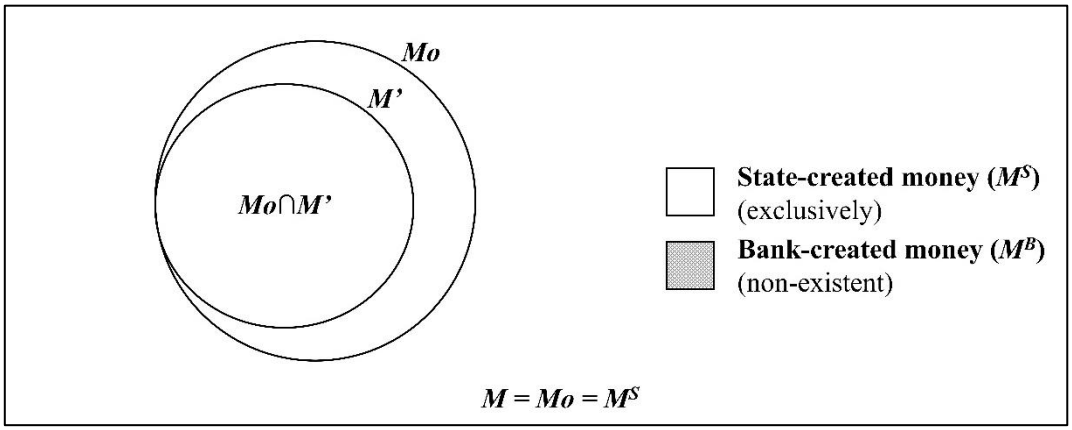
claimed to be an additional advantage of the scheme. As Simons *et al*. ([1933] 1994, p. 38) argued:

> 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 [Chapter 3 of this thesis], 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 ([1934a] 1968, pp. 153-54), Lester (1935, p. 38), Fisher ([1935] 1945, pp. 11, 206-207; 1936a, pp. 415-16), Douglas (1935, p. 185), Graham (1936, pp. 430-34), Fisher *et al*. (unpublished memorandum dated July 1939, pp. 26-29), Friedman ([1960] 1992, p. 71) and Allais (1967a, 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 (2013, 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 1936a, 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 1935b, 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 (1935b, p. 141n2) or Angell (1935, p. 30)[24].

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[22] A similar point had previously been made by Currie ([1934a] 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 ([1934a] 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 [1934a] 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 1936a, 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) [Chapter 3 of this thesis].

[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

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 interest 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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temporarily retain part of their Government bonds as reserve. Another option was to have checking accounts administered by Government agencies (Currie ([1934a] 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 [1934a] 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

[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). Viner himself obviously held Fisher in very low esteem, viewing him as a "crank propagandist" (Viner, letter to Taussig, October 20, 1934, quoted in Allen 1993, p. 710n26).

[34] Hart's criticism has been shared, for example, by Angell (1935, p. 14), Lehmann (1936a, 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).

to admit it—, it should be noted that Hart's conclusion rested on two further particular 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.

[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".

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 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).

[36] Leland Yeager (1962b, 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.

- *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].

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" (1967a, 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)

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[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 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*".

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.

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

[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 pro-cyclically. 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).

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 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.

GENERAL CONCLUSION

1. Our research results

This thesis started from the observation that the 100% money proposal, such as it was formulated in the 1930s by Henry Simons, Lauchlin Currie or Irving Fisher, was frequently subject to confusion. After recalling the history of this proposal (Chapter 1), we thus endeavoured to clarify its concept (Part 1, made up of Chapters 2 and 3) and to study two of its main arguments (Part 2, made up of Chapters 4 and 5), which led us to the following results.

In **Chapter 2**, we have shown that the 100% money proposal should not be considered as a mere extension of the "Currency School" recommendations—such as embodied in the English Bank Charter Act of 1844—to deposits subject to cheque (and even less to "deposits" in general). It is true that these two types of reform agree on one essential point: that of considering the association between the creation of money and the lending of money as a source of instability, and of proposing to separate these two functions. But the Act of 1844 goes further than a simple institutional reform: it also—and perhaps especially—contains a very specific issuing rule (the "currency principle") aiming at constraining monetary policy. On the contrary, the 100% money proposal by itself implies no issuing rule: it *only* pertains to an institutional reform. It especially intends to facilitate the conduct of monetary policy, whatever objective is assigned to it, and whatever degree of discretion is left to the monetary authority. We feel this distinction is important, because the 100% money proposal is sometimes wrongly considered as necessarily constraining monetary policy to the following of an automatic rule, if not likened to the recommendation of a currency board on the model of the 1844 Act.

In **Chapter 3**, we established a distinction between two broad approaches to the 100% money proposal, fundamentally different as to their implications for the banking sphere. According to the first approach—which we have called the "transaction" approach, followed by Currie and Fisher in particular—, money is defined as a synonym of means of payment, and monetary instability is explained, above all, by the variations in the quantity of money (then aggravated by the variations in its velocity of circulation). It is thus simply suggested to impose a 100% reserve requirement on transaction deposits, serving as means of payment. According to this approach, the banks would still collect and invest loanable funds through savings deposits, serving as credit instruments: banking activity based on the fractional reserve principle would be maintained, but the medium of exchange would no longer be affected thereby. The banks, in other words, would continue to multiply their promises to pay

beyond their cash reserves, but these promises to pay could no longer be used as means of payment (as for chequing account balances 100% covered by reserves, those would correspond to "certificates of deposits" more than to "promises to pay"[1]). According to the second approach—which we have called the "liquidity" approach, followed in particular by the Chicago Plan authors—, the concept of money is extended to liquid assets (easily exchangeable for means of payment), and monetary instability is explained by the variations in the velocity of circulation of the medium of exchange, as much as (if not more than) by the variations in its volume. The fractional reserve banking system is here condemned in its very existence: it creates liquid assets (deposits with a fixed nominal value and claimable at short term) which, even without being usable as means of payment themselves, will exacerbate the hoarding and dishoarding movements of money. It is therefore proposed not only to put an end to the creation and destruction of means of payment by the banks, but also to prohibit any bank intermediation (implying risk and maturity transformation) based on savings deposits. Loans would be exclusively financed by mutual funds, investing their own capital only. We believe that the distinction between these two approaches is fundamental, because the 100% money proposal is often rejected on the sole ground that it would necessarily put an end to banking.

From **Part 1**, comprising these two chapters, emerges an overall conclusion as to the nature of the 100% money proposal. This proposal fundamentally consists, according to us, in reforming the *social convention* deciding on the means of exchange of the community. It is proposed to leave the existing convention, largely based on the monetary use (as means of payment) of promises to pay issued by the banks, to enter into a new convention, based on the sole use of means of payment issued by the state. This would mean moving from a mixed to a homogenous monetary circulation. Such is the common denominator of the various versions of the proposal. The latter, by itself, neither implies any reform of the *banking system*, based on the reinvesting by the banks of funds collected through deposit contracts, nor any prescription related to *monetary policy*, deciding on the objectives to be assigned to money issuance. The fact that the 100% money proposal may be combined with such reforms should not preclude precisely defining the essence of its concept. The reasons for making such a change of the social monetary convention have been the subject of the next two chapters.

[1] As some authors have pointed out, this would amount to making the monetary and banking system correspond to what a large part of the public thinks it is already, often believing that money creation is an exclusive privilege of the state (or of the central bank), and that only savings accounts (but not chequing accounts) are used by the banks to finance their loans and investments.

In **Chapter 4**, we have studied the main argument of the 100% money proposal of the 1930s—that of putting an end to the inherently pro-cyclical behaviour of bank money—through the specific prism of Irving Fisher's works. As we have shown, all of the theories of monetary instability that he developed throughout his career rested upon a consistent scheme, which we have called the "debt-money-prices triangle" (or "instability triangle"), designating the cumulative interaction between the volume of loans, the volume of bank money, and the general level of prices. Hence, Fisher's theory of credit cycles which he developed in 1911, his debt-deflation theory presented in 1932-33, and his money-debt tie analysis of 1935 (underlying the 100% money proposal) may be read as so many stages of a long analytical journey, of which the 100% money proposal would constitute the logical outcome. Beyond offering to consistently put together Fisher's theories of instability, the point of this chapter has been to stress the fact that the 100% money proposal is not just a *practical* reform plan aiming at facilitating monetary control. It also implies a *theoretical* proposal, identifying the dependency relationship between money and loans as the main causal factor of monetary instability. We felt this all the more needed to be stressed, as this argument has often been lost sight of in the discussions on 100% money, even among writers who themselves supported this reform plan while insisting on other benefits (such as securing the payment system).

In **Chapter 5**, we dealt with another major argument of the 100% money proposal: that of allowing the state to reduce its debt (or increase its revenue) by making the Treasury benefit from the whole profit stemming from money creation. This "seigniorage argument" was largely rejected in the secondary literature, following what we have called "Hart's criticism", around which a broad consensus was formed. Because the state, under a 100% money system, would be likely itself to bear the costs of administering chequing accounts, it was considered that the seigniorage benefit would be entirely cancelled, preventing any reduction in national debt by that means. We endeavoured to show that Hart's criticism itself should be questioned, on the ground that it rested upon a very partial analysis of seigniorage, ignoring at the same time part of its sources and part of its beneficiaries. We came to the conclusion that the seigniorage argument put forward by the 100% money authors was far from being unfounded—which is everything but trivial, considering how much public indebtedness is a major concern nowadays.

From **Part 2**, comprising these last two chapters, emerges an overall conclusion as to the interest of a 100% money reform. It is too often considered that the primary purpose of such a reform is to protect depositors from the risk of bank failures. However, if the securing of the

payment system undeniably constitutes one of the benefits attributed to this proposal, it is, according to its very authors, neither its chief benefit, nor even a benefit specific to it, as other kinds of measures (such as deposit insurance) may serve the same purpose. We thus focused on two arguments specific to the 100% money proposal: that of putting an end to the inherently pro-cyclical character of the creation of money through the credit mechanism, and that of returning the whole revenue stemming from money issuance to the state. It emerges from our study that these two arguments would both deserve to be considered with greater attention than they have received in the literature until now: the first, because it constitutes, according to us, the logical outcome of all of Irving Fisher's works on monetary instability, as we have endeavoured to show in Chapter 4; the second, because it has been too hastily discarded on non-valid grounds in academic discussions, as we have endeavoured to show in Chapter 5.

Our **general conclusion** on this whole thesis is that the 100% money proposal of the 1930s clearly deserves to be rediscovered and further discussed. We believe to have shown, through our study, that a number of criticisms regularly addressed to it were based on misperceptions. We felt it was all the more important to carry out this work of conceptual clarification and theoretical analysis as the 100% money proposal, as we mentioned, has been arousing renewed interest since the 2008 crisis. The current debates often show great confusion when reference is made to Fisher's or Chicago's plans. And the modern advocates of this reform idea actually make rather little reference to the 1930s writers, the works of whom are yet enlightening in many respects. We hope to have shown how much these authors of yesterday may contribute to the debates of today. To this day, no 100% money system has ever been implemented yet, and many consider, like Martin Wolf, that it would definitely be worth experimenting it[2]. Yet, as interesting as may be the perspective of experimenting on this kind of reform, it is clear that its examination, as far as theoretical analysis is concerned, is far from having been exhausted. Evidently, the 100% money proposal has been very little studied in the history of ideas after all. This is another element of conclusion in itself: although the works of the authors who designed this proposal provide a wealth of insights, this wealth is still largely to be exploited. This leads us to the question of the limitations of this thesis, and of the research paths it allows to open.

[2] "Experiment is essential. The Chicago Plan or variants upon it is *definitely* an experiment worth making" (Wolf 2014a, p. 213, italics in the original).

2. Limitations of the present thesis and research paths to further explore

A first obvious limitation of the present thesis, which we must acknowledge, is that it is far from having exhausted its subject: that of a conceptual clarification of the 100% money proposal of the 1930s and a theoretical analysis of its arguments. We have compared the 100% money proposal to the "Currency School" reform ideas, and stressed the divergences between Currie's and Fisher's plans on the one hand, and the Chicago Plan on the other. The 100% money proposal is however subject to other kinds of confusion, which we could not address in detail. It is for example often likened, as we have noted already, to the narrow banking proposal which was formulated in the 1980s, and is still advocated by some authors. A comparative analysis of the two types of proposals remains to be done[3]. We have then studied two of the 100% money proposal's arguments: that of putting an end to the cumulative character of money creation out of bank loans, and that of returning the whole seigniorage to the state. Yet, other arguments of this proposal would deserve to be addressed in detail. As we explained earlier, we chose not to insist in this thesis on the advantage of the 100% money system in terms of safeguarding chequing depositors and securing the payment system, for different reasons: this argument was deemed to be relatively secondary by the 1930s authors themselves; its purpose could be achieved by other means; and, of the advantages of the proposal, it is probably the one which received most attention in the literature. For all that, it would undoubtedly be very useful to rediscover the arguments of the "100% authors" on this issue, which remains eminently topical—as shown by the numerous difficulties in terms of banking regulation and the limitations of the deposit insurance system. A comparative study of the 100% money and narrow banking proposals would actually offer a perfect opportunity to tackle this topic; it would also allow studying more in detail the works of some authors, such as Tobin or Minsky, which have been only briefly mentioned in this thesis. We haven't overly insisted either on the argument according to which the 100% money system would allow facilitating and improving monetary control. Such an advantage, indeed, would mainly result from the fact that the inherently pro-cyclical behaviour of bank money would come to an end—an argument which we have studied in Chapter 4. But this

[3] The resemblance between the 100% money and narrow banking proposals has been noted by various authors, such as Phillips (1995, pp. 174-80) and Diatkine (2003). Their differences, however, have been little stressed.

sole consideration is far from exhausting the 100% money proposal's arguments in respect of monetary control; on this matter, also, there certainly is still much to be written[4].

We have also left aside the argument according to which the 100% money system would allow the rate of interest to be determined in a "natural" manner, by the sole supply and demand for loanable funds, without any money creation by the banks or any interest rate manipulation by the monetary authority. This argument was rather little developed by the authors upon whom our thesis has focused; as we have already mentioned, it especially echoes the works of another group of economists, including for example Mises or Allais (we will return to this below). Finally, we haven't dealt with an important objection sometimes expressed against the 100% money system: that according to which such system would prevent the quantity of money—or the quantity of loans, these two aspects been sometimes confused—to adapt elastically to the needs of trade. The question of whether money creation should be endogenous or exogenous relates to an important literature, which we would like to address in a future research work[5]. Let's simply recall here that the 100% money proposal, by itself, only seeks to make the *supply* of money exogenous: this would be fully provided by a public monetary authority, external to the market. However, nothing would prevent the *determination* of the volume of money (*M*) to be endogenous, resulting from the needs of the economy. Such would be the case if it were decided, for example, to assign the monetary authority the objective of stabilising the general price level (*P*), as was advocated by Fisher in particular. According to him, any growth in the real volume of trade (*T*) would bring, everything's equal, a downward pressure on *P*, compelling the monetary authority to increase *M*. In other terms, the (exogenous) "supply" of money would be constantly adjusted to adapt to the (endogenous) "demand" for money, expressed by the variations in the general price level (*P*). Such was, as we saw, the concept of an elastic money supply according to Fisher ([1935] 1945, pp. 110-11, 177), who insisted on the importance for the Currency Commission to follow as wide a range of indicators as possible, allowing to anticipate at best any variation

[4] Our research work actually was initially directed toward studying this argument, through a paper—not included in the present thesis—presented at the 16th international conference of the Charles Gide Association at Strasbourg University in April 2016, as well as at the 43rd annual conference of the History of Economics Society at Duke University in June 2016 (Demeulemeester 2016). However, we soon realised that tackling this question first required conducting a conceptual clarification of the 100% money proposal, and studying in detail its main argument regarding the pro-cyclical behaviour of bank money. Now that this groundwork is laid, we plan to return to this study in the near future.

[5] This question already was a point of divergence between the authors of the Currency School and those of the Banking School. The narrow scope of discussion of Chapter 2 has unfortunately not allowed us to address this controversy in detail.

in *P* and adapt *M* at the earliest. Let's finally recall that the stabilisation of *P*, according to this author, was not simply a means of making the money supply elastic: it would above all allow stabilising the purchasing power of the monetary unit, a condition for an optimal functioning of the exchanges.

Another limitation of this thesis relates to the scope of its subject itself. By focusing on conceptual clarification and theoretical analysis, we chose to leave aside the questions related to the practical implementation of the 100% money proposal. It is true that the authors of this proposal themselves especially endeavoured to elaborate its reasoning, feeling they were not the most qualified to design the details of its implementation. Simons, as we already noted in Chapter 1, felt he was not able to write an entire bill, and Fisher, although he himself very actively contributed to the drafting of many bills, was also aware of his own limits[6]. These writers however discussed at length some difficulties related to the implementation of their respective reform plans, and part of the academic debates actually focused on those questions. Many commentators, for example, wondered about how the service of managing chequing accounts (subject to 100% reserves) could be remunerated, or about how to practically prevent the use of money substitutes proscribed by law. Although these questions fall out of the scope of the present thesis, they are nonetheless fundamental, and we hope to deal with them in future works. Moreover, by focusing on the 100% money proposal "of the 1930s", we haven't dealt in detail with the works of the authors having formulated this kind of proposal before or after this period. There are certainly insights to be gained from a more extensive study of this whole literature.

Widening the scope of our research would allow us to tackle a large range of issues. The 100% money proposal, as we saw, was above all conceived by its 1930s theorists as a way of putting an end to the inherently pro-cyclical behaviour of bank money, source of upward or downward spirals in prices. It would be interesting to compare their analyses with the theories of monetary instability developed by such authors as Marshall, Wicksell or Hawtrey, for example. We also mentioned earlier the argument according to which, under a 100% money system, the rate of interest could be "naturally" determined merely by market forces. The supply of loans by the banks would mainly depend on the amount of prior savings collected from their depositors, and could not be increased by the creation of means of payment by the

[6] "Actually to crystallize the 100% system into law and to combine it with a plan for stabilizing the purchasing power of the dollar will require the attention of those better fitted than I to choose between the available alternatives and to formulate the legal specifications necessary to carry out any detailed plan" (Fisher [1935] 1945, p. xvi).

banks themselves. Moreover, because the creation of money would no longer depend on loans, the monetary authority would no longer have to interfere with the price of loans to regulate the quantity of money: interest rate manipulation would cease. This argument, although it was noted by Fisher ([1935] 1945 pp. 139-140), was not particularly developed by the "100% authors" of the 1930s. It was however at the heart of the recommendation of such a reform by Mises, whose theory of cycles was largely based on the gap between the natural rate of interest and the bank rate of interest. This distortion of interest rates was also central to Allais's theory. Here again, there are certainly connections to be made, not only with Wicksell's analysis of cumulative processes, but also with the theory of *forced saving*, such as it was developed, after Mises, by Hayek in particular. It would also be interesting to study, in relation with the 100% money proposal, the question of the *spot of injection* of money creation, and its impact on the structure of relative prices. This questioning, which goes beyond the sole considerations pertaining to the rate of interest, relates to an abundant literature going back at least to Richard Cantillon[7]. When issued by the banks, the newly created money necessarily reaches the economy *where the banks lend*, and it is legitimate to wonder to what extent this may contribute to phenomena of sectoral inflation—on asset and housing markets in particular—that are not necessarily reflected in the price indexes used by the central banks[8]. The latter, when injecting "central bank money" in the economy—whether through conventional or unconventional measures—themselves impact the structure of relative prices, not only by manipulating interest rates, but also by choosing on which markets they will intervene. An abundant literature thus has recently questioned the redistributive effects of monetary policy and its impact on inequalities[9]. Fisher himself, as we noted (Chapter 4, note 26), was perfectly aware that inflation could develop on the stock market in

[7] Laidler (1988, p. 90) thus mentions a long list of authors—including Cantillon, Thornton, Malthus, Cairnes, J. S. Mill and Hayek—according to whom "an injection of money into the economy would have significantly different real consequences depending upon the particular markets through which it first came into the hands of the public". Some modern advocates of a 100% money reform have included this type of reflection into their arguments (see for example Huber 2017, p. 124).

[8] On this matter, see for example the study by Jordà, Schularick and Taylor (2016) on the ever-increasing concentration, since the mid-20th century, of bank credit on the housing market—a phenomenon they have called "The Great Mortgaging". As Wolf (2014a, p. 199) also observes about the 2008 crisis: "The implicit answer of the pre-crisis official orthodoxy was that central banks would stop the excess credit expansion in time . . . by responding to rising inflation in the prices of goods and services. But that signal would fail if rising asset prices and expanding credit were not closely related to inflation. That is precisely what happened in the 2000s. Thus, the period before the crisis saw . . . a lack of inflationary pressure in the world as a whole . . . But asset prices – house prices, above all – rose substantially".

[9] See for example Furceri *et al*. (2018), Doepke *et al*. (2019), El Herradi and Leroy (2019).

particular, while the consumer price level remained unaffected. The consideration of the impact of monetary policy on the structure of relative prices was not entirely absent from his writings either (see for example Fisher [1935] 1945, p. 112). Yet, one may regret that he never devoted much attention to the question of the spot of injection of money. For, in this respect, the 100% money proposal potentially contains another strong argument: it offers the possibility of a more homogenous injection of money throughout the whole economy, which would minimise its disruptive effects on the structure of relative prices. This would depend, of course, of the chosen mode of injection—another issue which we could not tackle in detail in the present thesis[10]. In any event, there are numerous arguments according to which, *even when the consumer price index is kept stable*, the existing monetary system would exert important distorting effects on the economy. Articulating these reflections with the works of the "100% authors" undeniably opens up several research paths in the history of economic thought. All these issues also invite to question the *neutrality* of money, which economic theory often takes for granted. The 100% money proposal insists, on the contrary, that the existence of such neutrality cannot be taken as a postulate, and first requires an in-depth reform of the social monetary convention to be realised. Many economists, one may be tempted to think, reason as if a 100% money system was already in place[11]. It is, however, far from trivial that two of the main theoreticians of general equilibrium, Walras and Fisher, both insisted on the importance of preventing promises to pay to be used as means of payment themselves, and that each of them recommended a type of 100% money reform, for lack of which the system would be unstable, the exchanges biased, and the equilibrium seriously

[10] Thus, an injection through tax credit benefitting all taxpayers, or through payment of a benefit to all citizens, would assuredly be more homogenous than an injection through public spending or open market operations, by which money would only enter into existence on some specific market segments. One may further note that, with a more homogenous monetary injection, the consumer price index might more accurately register the variations in the *general* price level, and the lag in the effect of monetary policy on this index could become less acute an issue. Let's recall in this respect that the Chicago Plan authors (Simons and Mints in particular) put much stress on the importance of combining monetary policy with fiscal policy, so as to make it more effective (see for example Simons *et al*. [1933] 1994, p. 38).

[11] This had been noted by Kregel (1996, pp. 658-59) already: "[M]odels of monetarist inspiration presume that the money supply is subject to exogenous determination . . . The textbook IS-LM approach . . . also presumes that the money supply may be exogenously fixed and subject to control by the monetary authority. . . It seems that the only way out of this contradictory treatment of the supply of money is to presume that there is only outside or central bank money . . . This is equivalent to 100 per cent reserves on commercial banks; modern theory thus seems to reason as if it had already been introduced!"

disturbed[12]. Here again, there certainly is a matter for further reflection. It would of course be interesting, finally, to reflect upon how the 100% money proposal (and all the analysis it contains) might be contrasted and considered against Keynes's "General Theory". About the limitations of the rate of interest as a coordinator of saving and investment decisions, or the inefficiency of monetary policy when nominal interest rates approach the zero lower bound, the 100% money proposal evidently has arguments to put forward, by offering, on the one hand, to free the loan market from the interferences of monetary policy, and, on the other hand, to free monetary policy from the interferences of the loan market. As to the justification of a budget deficit to help the economy recover, we saw what interpretation was held by the "100% authors": as long as money creation depends on loans, the state will have to periodically worsen its deficit, so as to prevent the volume of money from contracting when the private sector deleverages. Comparing this interpretative framework with the one proposed by Keynes, however, remains to be done.

All these questions definitely provide a ground for an extensive research programme, which we hope to conduct in the years to come.

[12] Let it be recalled that Fisher ([1892] 1925), in his doctoral thesis, developed the theory of general equilibrium independently from Walras's works. See Ben-El-Mechaiekh and Dimand (2012) and Dimand (2019, chapter 2).

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