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THE GESELL CONNECTION DURING THE GREAT DEPRESSION

BY
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In the current recession, the proposal of negative nominal interest has received widespread attention, not only in the academic world. The negative interest rate issue was originally developed by Silvio Gesell (1862–1930), a German merchant, self-taught economist, and social reformer. In his main work, The Natural Economic Order, *Gesell offered a theoretical basis for the practical implementation of the negative interest rate. This proposal, generally known as the "stamped money plan," was favorably commented upon by two outstanding twentieth-century economists, Irving Fisher and John Maynard Keynes, and put into practice during the Great Depression. In this paper I propose a reading of Gesell's theory of money from the point of view of quantity theory, giving prominence to elements of affinity with Fisher's monetary theory. This re-examination entails revision of the opinion on the analytical contribution made by Gesell, who was generally tagged as a typical monetary crank, and proves that his place in the history of economic thought is less marginal than previously thought, reinforcing critical appreciation of him.*

I. INTRODUCTION

In the current recession, economists are showing a renewed interest in the problem of the "liquidity trap," and the proposal of negative nominal interest has received widespread attention, not only in the academic world, but also among policymakers and monetary authorities.[1] Particularly interesting is the position taken by Gregory

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[1]In April 2017, the central banks of Japan, Sweden, Norway, Denmark, Switzerland, Hungary, and the European Central Bank of Euro Area (countries representing almost a quarter of the world's GDP) have

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Mankiw, who, in an article in the *New York Times*, reflected on the negative interest proposal as a possible way to get through the present credit crisis (Mankiw 2009, 2015; see also Goodfriend 2000; Buiter and Panigirtzoglou 2003; Buiter 2009; Fischer 2016). Recently, some local money initiatives have been activated in Germany (Regionalgeldexperiment Chiemgauer), in Austria (Waldviertler), France (Abeille), and the United Kingdom (Stroud Pound) as practical applications of this idea, in the context of complementary currencies (Godschalk 2012; Lucarelli and Gobbi 2016).

The negative interest rate issue (also called "demurrage"; i.e., reduction over time in the intrinsic value of a currency) has a long tradition in the history of economic thought (Godschalk 2012). In this respect, we owe an original formulation to Silvio Gesell (1862–1930), a "strange unduly neglected prophet" (Keynes 1936, p. 353), a German merchant, self-taught economist, and social reformer. In his main work, *The Natural Economic Order*, Gesell offered a theoretical basis for the practical implementation of the negative interest rate.

This proposal by Gesell, generally known as the "stamped money plan" (also called "taxing of money"), was favorably commented upon by two outstanding twentieth-century economists, Irving Fisher and John Maynard Keynes, and put into practice with some positive results during the Great Depression.

In particular, some significant similarities can be found between Gesell and Fisher in terms of their views on the effects of hoarding and deflation as major characteristics of economic crisis. This affinity between the two authors is shown by their common adhesion to quantity theory and the mainstream approach to the function of money as a medium of exchange.

The theoretical affinity between Fisher and Gesell has been neglected by historians of economic thought.[2] Since the 1940s, the focus of research on Gesell has concentrated on the relationship with Keynes, in an attempt to stress theoretical affinities, particularly with the 'liquidity trap' (Seccareccia 1987, 1988) and political philosophy (Darity 1995). Pursuit of this angle followed two main routes of analysis: through the Pierre-Joseph Proudhon–Gesell–Keynes connection,[3] proposed by Dudley Dillard and Charles Rist (Dillard 1940, 1942a, 1942b; Rist 1955; see also Schumpeter [1954] 2006, pp. 1118, 1131; Allais 1977, p. 275; Chick 1987; Ferreira 2010), and through the analytical forerunners of Keynesian monetary theory, particularly Knut Wicksell (Herland 1987, 1992), and the influence of Frederick Soddy (Daly 1980) and Nicholas

adopted unconventional monetary policy, moving their interest rate on bank reserves below zero, to provide additional monetary stimulus against deflationist pressure. See McAndrews (2015), Bech and Malkhozov (2016), Jobst and Linand (2016), and Draghi (2016). For a critical view, see Palley (2016).

[2]Gerardo della Paolera and Alan Taylor recognize that Gesell "anticipated Fisher's ideas on tight money, interest rates, and the problem of the debt-deflation trap, and even the ideas of later scholars such as Robert Mundell and Thomas Sargent on the importance of regime changes, expectations, and the impact of monetary policy via the real interest rate" (della Paolera and Taylor 2001, p. 31), but they do not provide analytical support for this thesis. An attempt in this direction has been recently made by Minozzi and Parisi (2012), but the comparison is limited to analysis of the consequences of Fisher's and Gesell's stamped plan proposals in the theoretical framework of IS-LM model. Another analytical attempt, merely outlined, is made by Comelli (2012).

[3]Gesell presented himself as a follower of Pierre-Joseph Proudhon, the French economist and libertarian socialist. In particular, Gesell followed Proudhon's anti-Marxist social philosophy, re-proposing the central theme of interest coercion in the monetary economy (Proudhon 1840).

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A. L. A. Johannsen (Seccareccia 1987; Rühl 2000). Recently, this perspective of research has been outlined by Guido Preparata, according to whom Keynes's theory of money was strongly inspired, if not borrowed, from the early insights of Silvio Gesell (Preparata 2002). However, despite these similarities, two main features of Gesell's thought—the nature of money as a medium of exchange and the quantity theory—are totally extraneous to Keynes's monetary theory.

This paper aims to make an in-depth re-examination of Gesell's stamped money scheme and its influence on Fisher's policy proposal during the Great Depression. We propose a reading of Gesell's theory of money from the point of view of quantity theory, giving prominence to elements of affinity with Fisher's monetary theory. Also, as will be shown below, re-examination of the theoretical roots of stamped money, as well as policy implications, may cast further light on the working of the monetary system and the evolution of monetary theories during the 1930s. This re-examination entails revision of the opinion on the analytical contribution made by Gesell, who was generally tagged as a "typical monetary crank" (Garvy 1975, p. 392), and proves that his place in the history of economic thought is less marginal than previously thought, reinforcing critical appreciation of him (see, above all, *Cahiers de Decta* 1987; Ilgmann 2009).

The next section provides an overview of Gesell's thought on the nature of money and crisis; section III outlines the stamped plan and its implementation in Europe and America; sections IV and V discuss the connection among Gesell, Fisher, and Keynes. Finally, the conclusions show the centrality of Gesell's monetary thought during the Great Depression.

II. THE NATURE OF MONEY AND CRISIS IN SILVIO GESELL'S THOUGHT

By the end of the nineteenth century, when Silvio Gesell[4] wrote his first contributions, economic science had achieved broad agreement on the nature and the function of money, although other theoretical elements of monetary orthodoxy, inherited from classical economics, were subjected to thorough critical revision (Laidler 1991, p. 7).

[4]Silvio Gesell was born in 1862 in St. Vith, Germany, but lived for many years in Argentina, where he successfully ran an import-export firm. His interest in economic and social reform developed in the 1890s, after he had witnessed the consequences of a severe depression largely caused by monetary deflation (Baring Crisis in Argentina, 1890–91), after a period of foreign investment boom (on the Baring Crisis in Argentina, see della Paolera and Taylor 2001; and Mitchener and Weidenmier 2006). His first work, *Die Reformation im Münzwesen als Brücke zum sozialen Staat,* was published in Buenos Aires in 1891, followed in the same year by another book, *Nervus Rerum,* in which he presented his fundamental ideas on money. At the end of the century he retired from business and returned to Europe, settling in Switzerland (in the Canton of Neuchâtel) and in Berlin. During this period he wrote his major works: *Die Verwirklichung des Rechtes auf den vollen Arbeitsertrag*, published in 1906, and *Die neue Lehre vom Zins*, published in 1911. In 1916 these works were collected in one volume, entitled *Die Natürliche Wirtschaftsordnung* (published in six editions; references in this paper are made to the 1958 English translation of the book [Gesell 1958], a revision of the first English translation based on the sixth German edition [Gesell 1929]). In these works Gesell proposed a combined reform for the abolition of private property in land and abolition of monetary interest in the context of the restoration of the Physiocratic *droit naturel* or natural social order. In 1909 the first formal organization of supporters of Gesell's "free economy" theory, called the

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This mainstream view was grounded on the thesis that money serves the essential function of a medium of exchange (Laidler 1991, p. 8), and the functions of measure of value and store of value "must not be attributed to money as such, since these are of a merely accidental nature and are not an essential part of the concept of money" (Menger [1871] 2007, p. 280).

The theoretical context in which Silvio Gesell completed his formation (his first work, *Die Reformation im Münzwesen als Brücke zum sozialen Staat,* was published in 1891) clearly influenced his opinion on the nature and origin of money.

Gesell approved of the "orthodox thesis" that money is essentially a means of payment: money is a product of the division of labor and it is the means to solve the difficulties of barter, guaranteeing fast and cheap intermediation of goods (money is no more than a simple medium of exchange). Following, again, the traditional view, not all commodities are able to perform the important function of means of payment efficiently: indeed, consumption goods cannot, because the salt, tea, flour, etc. received in exchange did not circulate; "they never returned to their start-point, the port at which they were unloaded: they were bought because of their material properties, and consumed" (Gesell 1958, pp. 166–167).[5]

A form of money replaces another when it has become inefficient in facilitating exchanges; thus, gold replaced silver, and gold would eventually be replaced by banknotes and paper money (Gesell 1958, p. 378). Paper money, Gesell argued, is the best instrument of exchange, because it is useless for any other purposes beyond the needs of exchange; its only utility coincides with its function as an instrument of exchange (Gesell 1958, p. 175). This property does not belong to precious metals, which have their own utility as normal goods, as distinct from their monetary function. In these terms, Gesell anticipated the general diffusion of the fiat money system, fully guaranteed by the state.[6]

Despite this particular nature—i.e., its sole utility as means of exchange—paper money remains a commodity,[7] even though special, and, like other goods, its price is determined by reciprocal interaction between demand and supply. This principle is evident for paper money, but it equally applies to metal money.

The demand for money derives from the need to exchange goods. Exchanging future money for present money does not represent *demand* for money: it is *desire* for money.

Physiokratische Vereinigung (Physiocratic Association), was founded in Berlin and Hamburg, bringing together land reformers, individualist-anarchists, and anarcho-syndicalists. The association's journal, *Der Physiokrat* (*The Physiocrat*), fell victim to censorship during the First World War and Gesell moved to Switzerland. After the war, in April 1919, Gesell took part in the government of the Münchner Räterepublik (the Munich Council or Commune), led by Ernst Niekisch, as a member of the Socialization Commission and then as People's Representative for Finances. After only one week, the republic fell, and Gesell, after a period of detention for several months, went back to his studies and propaganda for his monetary reform (Onken 2000). For biographical aspects, see also Schmid (1954), Pavanelli (2002), and Echevers (2014).

[5]Monetary circulation in conditions of highly developed division of labor is defined by the Marxian formula $M – C – M'$ (money – commodities – surplus money), which Gesell regards as the exact representation of monetary exchanges (Gesell 1958, p. 374).

[6]Only paper money can be guaranteed by the state with the legal right of compensation. The legal position of the paper money holder is much stronger than in the case of metal money. "The State," said Gesell, "cannot deprive paper money of the privilege of money without compensating the holder. By issuing paper money the State has received something for which it is in the holder's debt" (Gesell 1958, p. 187).

[7]The identification of money as a commodity constitutes another affinity between Gesell's approach and mainstream theory with the principle that "wares can be exchanged only for wares" (Gesell 1958, p. 170).

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The demand for money is formulated only by sellers; the desire for money characterizes speculators and usurers.[8] These different motivations (generally confused) affect the determinants that regulate its evolution, because the desire for money is regulated by interest, while the demand for money is regulated by prices (Gesell 1958, pp. 204–205). If the demand for money is determined by the needs of exchange, it necessarily coincides with the stock of goods on the market (Gesell 1958, p. 215).[9] Coinciding with the stock of goods, the demand for money is conditioned by all the causes that change production: variation of the population and division of labor, technical and commercial progress, distribution of property, social conflicts, etc. (Gesell 1958, pp. 209–216). In particular, credit exercises a dominant influence on the demand for money, because it reduces the amount of goods exchanged with monetary means.[10] Credit instruments render money superfluous for transactions (Gesell 1958, p. 214). Barter has an analogous effect on the demand for money.

Similarly, the money supply coincides with the demand for goods and is defined by the stock of money in circulation[11] and the velocity of circulation of money (Gesell 1958, p. 221).[12]

On the market, the supply of money (or the demand for goods) has an advantage over the demand for money: by virtue of its material nature (metal or paper), money can be withdrawn indefinitely from the market without entailing any storage costs, unlike goods, which may be perishable or involve costs and losses if stored in a warehouse. Thanks to this asymmetry between money and goods exchanged, the holder of money can derive benefit, a kind of tribute, from forgoing liquidity, compelling the holder of wares[13] to make him a special payment in return for refraining from holding back his money (Gesell 1958, p. 374).[14]

[8]"The merchant who asks the bank for money exchanges nothing; he gives nothing but his promise to repay; he borrows, he does not exchange. He gives money for money; there is no question of commerce and prices, but one of interest. Nor does the State create with its loans a demand for the medium of exchange; it offers nothing in exchange either. It changes today's money for tomorrow's money. This is not demand for the medium of exchange; it is not a demand for money compatible with its purpose" (Gesell 1958, p. 204).

[9]This identification between supply of goods and demand for money was defined in similar terms by John Stuart Mill: "As the whole of the goods in the market compose the demand for money, so the whole of the money constitutes the demand for goods. The money and the goods are seeking each other for the purpose of being exchanged. They are reciprocally supply and demand to one another" (Mill 1871, pp. 509–510).

[10]This conception of credit as an instrument alternative to money, not identical with it, is another analytical element of affinity between Gesell's thought and mainstream theory, distancing him from heterodox views that identify credit with money.

[11]Gesell points out that the supply of money is not dependent upon the stock of money in a metal money system, as "crude" quantity theory assumes. The stock of money often remains unaltered when the supply of money is subjected to great variation (Gesell 1958, p. 259).

[12]Exchange, clearing-houses, cheques, and bills of exchange are the factors that increase the velocity of circulation (Gesell 1958, p. 220).

[13]"The products of divided labor are not goods for immediate consumption by the producer, but wares, things useful to the producer only as means of exchange" (Gesell 1958, p. 146). The word "ware" (same word in German language) refers to "goods for sale"; it was favored by the English translator as more appropriate than the common English term "goods," but the most congenial translation is "commodity" (I thank an anonymous referee for this suggestion).

[14]Gesell mentions François Véron Duverger de Forbonnais and Joseph Freiherr von Sonnenfels as forerunners of his theory of interest (Gesell 1958, p. 421; see also Forbonnais 1755, p. 58; and Sonnenfels 1769).

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This special payment constitutes the interest, which, as we know on the evidence of thousands of years of experience, amounts to about 4% or 5% of the sum of money involved (Gesell 1958, p. 389) and is to be distinguished from normal commercial profit (Gesell 1958, p. 384). The interest paid adds to the other remaining costs of exchange, obstructing the normal flow of commerce like a tribute, comparable with the tolls exacted in the Middle Ages by robber barons, and until lately by the state for the use of roads (Gesell 1958, pp. 385–386). To pay this tribute, the consumer must always spend more money than he receives as producer. This surplus is obviously delivered to money capitalists for their personal use (Gesell 1958, p. 389).

Gesell calls this interest "basic interest" (*Urzins*); it is a form of monetary interest that coincides with a premium required by the money holder to forgo liquidity. It is a monetary phenomenon, made possible only by market conditions and not correlated with temporal preference or capital productivity (Dillard 1942a, p. 350). It is not interest on a loan, or determined by demand for supply, but it is an exchange transaction exacted because the possessor of money can refuse or allow the exchange (Gesell 1958, p. 389).

This form of interest is in contrast with return on real capital, which has a natural tendency to fall to zero, following the law of diminishing marginal productivity (Keynes did not hesitate to call it "marginal efficiency of capital" [Keynes 1936, p. 355]), but real capital "must therefore necessarily yield interest equal to the tribute which money can impose as basic interest upon the exchange of wares," otherwise money remains inactive and investments fall (Gesell 1958, p. 390). Basic interest becomes the point of equilibrium around which interest on all forms of real capital must oscillate (Gesell 1958, p. 394). Interest on real capital stimulates saving and accumulation, and the higher the interest, the greater the incentive to save, because the capitalist's surplus is proportionally greater. Every rise in interest on real capital above basic interest automatically causes an increase in the new production of real capital. Under the pressure of increasing supply, the interest soon falls back to the point of equilibrium represented by the basic interest level: the greater the fall in interest, the greater the amount of real capital created. No economic or psychological obstacles can interfere with this automatic process (Gesell 1958, p. 397).

Money can also be called "basic capital," because it paves the way for real capital and prepares the market conditions that enable real capital to exact interest equal to basic interest. Only by spending a sum of money can real capital, just like wares, generate interest. Exclusive control of money creates an artificial limitation of the production of real capital, keeping its supply constantly below the demand (Gesell 1958, p. 292). Consequently, this monetary system inevitably creates unemployment (proletariat) and waste of economic resources.

Another two components must be added to basic interest: a risk premium and an inflation premium, which Gesell calls "Hausse-premium" (*Hausseprämie*) (Gesell 1958, pp. 431–436).

The claim to basic interest is based on the scarcity of money supply determined by the asymmetry between the holder of wares and the seller. Money interest is limited only by competition from the other forms of non-monetary exchange, such as barter, bills of exchange, and subsistence/autarchic production.

If monetary exchange is too expensive for the amount of basic interest, it is convenient to resort to several forms of autarchic production, barter, or credit (bill of exchange),

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which reduce monetary exchanges (Gesell 1958, pp. 377–379). So, the rise and fall of interest are not determined by competition among money lenders, but only by these direct substitutes for money (Gesell 1958 p. 382).

Basic interest has a clear influence on the real economy, because it constitutes the minimum premium for foregoing liquidity. Real assets have to yield at least as much as the basic interest to induce the money holder to forgo liquidity. In Gesell's view there is an interaction between the real and monetary sector; this constitutes an affinity between his theory and Knut Wicksell's (Herland 1987, 1992; Blanc 2002).

Demand or regular supply of money for goods, Gesell argued, exists only when the market conditions guarantee money holders both sufficient security against loss and the payment of a tribute for money.

The asymmetry between money holders and sellers of goods undermines the unity between purchases and sales. Even if not directly cited, this unity is represented by Say's Law, which Gesell thus implicitly refuted (Ferreira 2010, p. 216).

The tribute influences every type of exchange in which money plays a role. In particular, on the commodity market this tribute is determined by the difference between purchase price and sale price that the buyer expects to realize (Gesell 1958, p. 230).[15] In periods of prosperity, when average prices rise, the tribute can easily be paid and expectations are fulfilled. In a period of depression, when the average prices fall, the exchanges become "mathematically impossible," because the tribute is not feasible.

If the demand for goods (money supply) is greater than the supply (demand for money), the price level rises. In other terms, an ample supply of money determines good growth in prices.[16] A general rise in the prices of goods means, for the possessor of money, a loss exactly proportionate to this rise; the only way to avoid this loss is to offer the money in exchange for goods. In this situation the circulation of money is compulsory and losses are avoided (Gesell 1958, p. 381).

The prices rise also because the credit sales increase, "since the quantity of wares offered in exchange for money decreases by the amount of these credit sales, and since demand and supply—the ratio in which money and wares are exchanged—determine price" (Gesell 1958, p. 233).

The phase of expansion is characterized by an elevated velocity of circulation of money and an increased level of credit, bringing about a very high level of activity in economic life (Gesell 1958, p. 240). The banks' reserves disappear and the rate of

[15]Together with the tribute, another condition for renouncing liquidity is sufficient security against loss (Gesell 1958, p. 230).

[16]"How does the possessor of money act when prices rise? He expects, or knows, that what he has bought today can be sold tomorrow at a higher price. He knows that rising prices make everything, from the merchant's viewpoint, cheap and that by turning over his money he can gain increasing profits. He buys therefore as much as he can, that is, as much as his money and credit allow. And merchants obtain credit as long as prices are rising and the selling price exceeds the cost price of merchandise. The optimistic feeling among merchants caused by rising profits also makes them more inclined to purchase; they do not turn a piece of money over ten times before deciding to spend it. Money circulates then more rapidly; during a trade-boom the circulation of money attains the maximum velocity which the existing commercial organization allows" (Gesell 1958, pp. 235–236).

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interest rises.[17] Thus, a high price level and high interest level are the signs that characterize economic booms.[18]

To account for this apparent contradiction, Gesell refers to a particular component of the interest rate, besides basic interest, dependent on variations in the general level of prices, which Gesell calls "Hausse-premium."

When a general price rise is expected, in trade boom or business prosperity, borrowed money can be paid back with extra profit, a surplus, above the legitimate profit of commerce realized on the market. This surplus provokes a "universal appetite" for buying proportionate to the degree of certainty in the expected rise of prices (Gesell 1958, p. 431). In this situation the possessor of ready money and claims on ready money (government loans, mortgage, etc.) is threatened with loss, for he will see the commodities obtainable with his money steadily dwindling (holders of securities with fixed interest rates have much to fear with price rises). The only way the possessor of money can protect himself against losses is to sell securities and, with the money brought in, buy industrial shares, commodities, and other real assets whose prices are expected to rise.

Expectations of a general rise in prices will boost the demand for money loans, and the holder of money is consequently in a position to exact a higher rate of interest (Gesell 1958, p. 433):[19] "what the possessor of money loses through a rise of prices has then gone over into the rate of interest" (Gesell 1958, p. 432). The increased amount of interest reduces the profit from transactions and induces downward readjustment of expectations: "in this way a kind of equilibrium is established" and "the appetite for money disappears" (Gesell 1958, p. 432). There is no stimulus to purchase, and money finds its way back into the banks; consequently, the rate of interest falls and the Hausse-premium disappears from the rate of interest.

If price expectations are pessimistic and prices show a general downward trend, there will be market stagnation and unemployment, and the economic system will collapse in a period of depression. According to Gesell, the crisis then takes on the form of generalized deflation.[20] "The phenomenon of a commercial crisis," Gesell argued,

[17]"It is a fact that money collects in the banks, that the rate of interest falls, because there is a lack of money; and it is also a fact that the banks are emptied, that the rate of interest rises, because the supply of money is too great" (Gesell 1959, pp. 231–232).

[18]Gesell observes the phenomenon known as "Gibson's Paradox" (Keynes 1930, 2, p. 198), which consists of a positive correlation between interest rates and prices, analyzed by Knut Wicksell (Wicksell 1907, p. 216), but this relationship was emphasized by financial journalist Alfred Herbert Gibson (Gibson 1923, pp. 15–34; 1926, pp. 595–612). Keynes called this phenomenon "Gibson's Paradox" because it contradicts the prediction of classical monetary theory that the interest rate is determined by loanable funds and is independent of the price level, which is determined by the money supply as described by the quantity theory of money (Sargent 1973, p. 386; Abdullah 2013, p. 1). Like Wicksell and Keynes, Gesell proposed a solution to the paradox based on the role of the banking system. Fisher offered an alternative view, proposing a different solution based on the role of inflationary expectations (Fisher 1930, p. 400). Both explanations, argued Friedman, are "proved unsatisfactory [and] the Gibson paradox remains an empirical phenomenon without a theoretical explanation" (Friedman and Schwartz 1976, p. 288).

[19]"It is not the realization of a rise of prices, but the hope of a future rise of prices that stimulates people to purchase commodities, to invest their money in new enterprises and to besiege the bank with requests for loans" (Gesell 1958, p. 434).

[20]"Economic crises, that is, stagnation of the market, unemployment and the accompanying phenomena, are conceivable only with falling prices" (Gesell 1958, p. 242). Gesell rejects the naive version of quantity

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"so ridiculous to the onlooker, must have a ridiculous cause. Demand becomes smaller because it is already too small, and supply becomes larger because it is already too large" (Gesell 1958, p. 232).

Prices can fall for three reasons:

1. when the production of gold is insufficient and the money supply does not adapt to the supply of goods (Gesell 1958, p. 242);
2. when the production of goods is increasing and the rate of interest on real capital falls, and consequently the formation of new real capital falls too. So the capital goods market, which is an important component of production, stagnates (Gesell 1958, p. 242); and
3. when production and prosperity increase, and metal money obtained in exchange for products is melted down and disappears from circulation (Gesell 1958, p. 242).

In these circumstances, the production of goods rises more than proportionally with respect to changes in money supply, and prices decrease. The price reduction leads to a period of economic stagnation and an additional reduction of money supply (velocity of circulation and credit tend to fall); consequently, the demand for goods decreases (Gesell 1958, p. 242). In economic stagnation "prices fall, demand withdraws, money is hoarded" (Gesell 1958, p. 233).

The effect of the crisis is an increase in liabilities in proportion to assets, and those who have entered contracts to deliver money (bills of exchange, bonds, rents, insurances, etc.) now consider their commitments unfavorable, given the falling price of commodities. In this situation suspension of payments sets in (Gesell 1958, p. 234). Gesell outlines a debt-deflation process in these pages.[21]

Overproduction determines a fall in interest on real capital, and the employers cannot pay the interest on the use of savings. Money remains in the saving banks, sales dwindle, and prices fall further (Gesell 1958, p. 248). There is no mechanism to restore equilibrium: "the equilibrating forces, of which so much is written, never come into play. The evil is intensified, not mitigated; there is no sign of any compensatory tendency" (Gesell 1958, p. 234).

III. THE "FREE MONEY" SOLUTION

In Gesell's view, the solution and, above all, the prevention of crises require a radical reform of the monetary system, going off the gold standard with the use of paper money, offered in all possible circumstances, even when interest on money and real capital falls (Gesell 1958, p. 243). Gesell's reform proposal is a particular contribution

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theory, which identifies the stock of money with money supply (Gesell 1959, p. 259). On deflation in historical perspective under various specie standards, see Bordo and Filardo (2005). For a systematic survey of classical deflation theory, see Humphrey (2004).

[21] "If money gets more expensive, debts increase in exact proportion to the rise in the cost of money. Nominally nothing changes, but materially the debt load increases. With the prospect of having to pay triple what one received, who will dare go into debt to start a new industry in the country? … The increase in the value of money is the common cause for all the country's economic troubles" (Gesell 1909, pp. 20–23, quoted in della Paolera and Taylor 2001, p. 115).

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to the debate on the need to establish a system of managed money, considered more suitable in ensuring macroeconomic stability than a pure gold standard regime (Laidler 1991, p. 2).

In a metal money system (gold standard), in fact, expansion of the money supply supporting a moderate and constant rise in prices[22] is not feasible, given the exogeneity of the stock of precious metals. However, even a managed fiat-money system controlled by the state would be inadequate. If the state controls the amount of money issued, but neglects the direct control over its circulation, all anomalies revealed in the functioning of the metal money system will continue to exist (Gesell 1958, p. 245).[23]

Specifically, the issue of paper money, as in the case of the discovery of gold, increases credit and the velocity of circulation of money, raising demand and prices. The rise in prices stimulates production, and abundant investment depresses the rate of interest on real capital. The production of goods increases out of proportion to the increase of money, and prices begin to fall, bringing the economic system back to stagnation.

When money is withdrawn from circulation, the state can print new money and advance it to employers, reducing the rate of interest on money. But this remedy proves ineffective. The state replaces only hoarded money and stimulates new production, causing a fall in the rate of interest on real capital. Many savers, especially smaller ones, prefer to keep their savings at home, foregoing interest. Soon, a large number of savers find little profit in taking their money to savings banks, considering it safer in their own possession than under the control of the banks. In this situation a stream of money flows from the banks of issue into millions of saving boxes (Gesell 1958, p. 251). Finally, when the market is saturated, and interest on real capital is close to zero, everyone will keep their savings in their own possession. This is de facto a liquidity trap situation.

If interest disappears, bills of exchange also become useless for trade purposes. The state can issue an equivalent amount of money to purchase bills of exchange, mortgages, and other securities, but "money is a medium of exchange, and as such should be issued only against wares" (Gesell 1958, p. 253). If the state issued money only for mortgages, promissory notes, and bills of exchange that bore no interest, no ready money could be recalled. Gesell argued, "The State misunderstood the functions of money when it advanced to the employers the money refused them by the savers" (ibid.). This action facilitates speculation: "the rise of prices would

[22]"The commercial circulation of money is impossible," Gesell argued, "if money is not supplied in a quantity sufficient to prevent a fall of prices" (Gesell 1958, p. 231). According to Bernd Widdig, Gesell's theories had a great influence in the cultural context of Weimar inflation (Widdig 2001, pp. 101–102).

[23]According to Gesell, the role of the state is essential for the existence of money: "because a medium of exchange, by its very nature, is only possible as State money, or at least social money" (Gesell 1958, p. 169). He said, "The medium of exchange always has the nature of a State institution and this is equally true of coined metal, cowry-shell or banknote" (Gesell 1958, p. 165). This opinion on the role of the state is the only point of contact with the theory of Knapp and his German pupils. Gesell rejects nominalistic theory (*valor impositus*) or the "fallacy, that since price-tickets can be substituted for money within the walls of a department-store, money is therefore equivalent to these tickets" (Gesell 1958, p. 147n).

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immediately bring speculators for a rise of prices upon the scene, and once they had pocketed their first gains from the differences in price-levels there would be no holding back the flood of paper-money. Any action by the State would then come too late" (Gesell 1958, p. 254). Any new issue of money starts a sequence of events that promotes speculation:

> the merchants who believe prices are about to rise buy more than they immediately require. They obtain the money for these purchases by offering interest to the savers of money. These savings, coming into circulation, now make the rise of prices reality. This stimulates new borrowing and new speculative purchases. So the process would proceed, step by step, until all the money from the saving-box had been drawn into circulation by the upward movement of prices. (ibid.)

That is the inevitable effect of a monetary reform that leaves untouched the use of money as a medium of saving.

To achieve the aim of the managed money principle and to avoid speculation, it is necessary to completely separate the function of the instrument of exchange from the function as a store of value: "money was not made to be saved!" (Gesell 1958, p. 248). The demand for money must be separated from human desires, from the state of the market, and from business projects (Gesell 1958, p. 205).

An increase in money supply, through a new issue of currency, is ineffective if the interest differential remains unvaried. An effective increase in money supply to stimulate a rise of prices can be obtained only through an increase in the velocity of circulation.

This aim can be achieved by realizing a means of exchange "subject to a material, inherent compulsion to circulate" (Gesell 1958, p. 246), because currency is based on a built-in depreciation mechanism that over time reduces its intrinsic value (ibid.).[24] If the supply is under compulsion, as is inherent to the nature of goods, a similar compulsion must be imposed on the demand. In this way the demand for goods would always meet an interrupted money supply, which adapts to commercial necessity.

This purpose, according to Gesell, is realized through the instrument of "free" money (*Freigeld)*, initially determined by the scheme of "tabular" (or table) money (*Die Reformation im Münzwesen als Brücke zum sozialen Staat*, 1891a) and subsequently by the stamped money plan *(Die Verwirklichung des Rechts auf den vollen Arbeitsertrag durch die Geld- und Bodenreform,* 1916*),* suggested by Swiss merchant George Nordmann.

Free money, in the material form of paper money, loses its face value 5% annually (the holder must keep the notes at their face value by attaching the currency stamps to them; Gesell 1958, pp. 273–274). The purpose of free money is to break the unfair privilege enjoyed by money (Gesell 1958, p. 274).

Free money is an inconvertible currency issued by a government institution (the National Currency Office). Its peculiarity is that it is subject to a periodic "tax" in the form of a stamp, which has to be attached weekly to the back of the note.

[24]This mechanism is defined also as "demurrage," or "money demurrage-based," or "rusting money." For different synonyms, see Godschalk (2011, p. 3).

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The cost of the stamp is minimal (one-thousandth of the face value of the banknote), but in Gesell's view this amount (which corresponded to an approximately 5% yearly depreciation of the currency) would be sufficient to discourage hoarding and to increase the velocity of circulation: each agent has an obvious interest in spending the scrip rapidly so as not to pay the tax. Every year the fully stamped banknotes would be replaced by new ones, and the process would continue indefinitely.

After the introduction of free money, basic interest will disappear, and interest on loans will be exactly determined by interest on real capital. Borrowers of money will no longer pay interest as tribute on the goods, but because demand for loans will exceed the supply (Gesell 1958, p. 414). The offer of savings will not be interrupted: "saving is practiced throughout nature without the incentive of interest…. If a person saves, that is, produces more wares than he consumes, and finds someone to whom he can lend his surplus on condition that after a certain period his savings are to be given back without interest but without loss, the saver has concluded an extraordinarily advantageous bargain" (Gesell 1958, p. 405).

Furthermore, contrary to the gold standard, free money could be managed with the purpose of stabilizing prices. By adopting a simplified version of the quantitative approach,[25] Gesell maintains that notes should be "issued or withdrawn in accordance with index numbers of prices, with the aim of stabilising the general level of prices" (Gesell 1958, p. 273). The similarities between this proposal and Fisher's stabilization plans are indeed striking (Fisher 1920).

A plan of "aging money" was proposed also by Nicholas A. L. J. Johannsen (1913), another German amateur economist, in his currency reform called "Marktaler," a variant of the free money mechanism, which has in common with Gesell's approach the idea of devaluation of paper money, to overcome the danger of a saving glut in times of crisis.[26]

Gesell's ideas became remarkably popular during the interwar period, and not only in German-speaking countries (Suhr 1989, pp. 98–101; Seccareccia 1997). *Die Natürliche Wirtschaftsordnung* was re-edited several times, and associations aimed at propagating the principles of free money and free land, such as a Freiwirtschaftsbund (Free Economic League), were founded in 1919 in Germany, Austria, and Switzerland

[25]"General prices are exclusively determined by the amount of money offered for the existing stock of goods" (Gesell 1958, p. 274).

[26]According to Johannsen (also under the pseudonym of J. J. O. Lahn; see Lahn [1903a, 1903b]), the problem is not just with the excessive desire for cash versus physical goods, but also with the excessive desire for a complete array of objects of liquidity and its effect on aggregate demand conditions (Johannsen 1908, pp. 86–87). For his critique of Gesell, see Johannsen (1913, pp. 209–214). Keynes mentioned the German economist in *Treatise on Money* (Keynes 1930, p. 90), regarding his doctrine of "impair savings," but the influence of Johannsen's ideas was much more relevant for the *General Theory* (Klein 1947, pp. 143–147; Hagemann and Rühl 1990). I thank an anonymous referee for these suggestions. On Johannsen, see Rühl (2000, pp. 327–334). For a different view, see Ogden O. Allsbrook, Jr., who asserts: "In citing the cause of recession, Johannsen was a monetarist, and the evidence is abundant. In citing the real effects on the depth and duration of recession, Johannsen was a bold precursor of Keynes" (Allsbrook 1986, p. 431).

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to promote Gesell's theories and proposals.[27] However, harsh criticism was also expressed, especially in academic circles (Gaitskell 1933). In Great Britain and the United States, instead, the entire scheme remained practically unknown until 1929, when an English translation of Gesell's book was published (Gaitskell 1933, p. 385).[28] The onset of the Great Depression dramatically created the conditions for a renewed interest in Gesell's ideas, and in Europe, the United States, and Canada, various practical schemes were implemented (Greco 2001; Gatch 2006; Warner 2008, 2010; Dow 2016; Godschalk 2012, pp. 63–64).[29]

Different methods of applying the plan of free money are shown in tables 1 and 2.[30]

Table 1. Methods of Applying the Plan of Free Money

Method	Characteristics	Practical Implementation
Tabular Free Money	This was the earliest proposal suggested by Gesell in 1891. The face value of free money notes (called also "rusting banknotes") decreases from 100 at the beginning of the year to 95 at the end (losing 5%). The current value of the note is shown in a timetable printed on it, with the date of depreciation. This mechanism was also proposed by the German economist N. Johannsen (1913) in his currency reform named "Marktaler."	*Tauscher* in Germany (1931) and in USA, in Lakewood (Ohio) and Salt Lake City (Utah) (1932–33)

Continued

[27]Gesell's anti-Marxist and anti-finance positions attracted the attention of several political movements in the Germany of the Weimar Republic, not only among left-wing parties. Gottfried Feder, chairman of the Economic Council of the National-Socialist Party, shared an anti-capitalist view, but in contrast to Gesell and the Gesellian movement. The abolition of "interest slavery" was one of the 25 Points Plan in the Nazi party political program (Dillard 1942b, p. 350; on Feder, see Widdig 2001, p. 225). Feder and the Nazi party hated the Jews and wanted them to be expropriated and exterminated. By contrast, Gesell was no anti-Semite; he wanted only to change the institutional structure of money without any ill effects for Jews or other minorities. His theory was not embraced in opposition to Jewish finance, as in the case of Ezra Pound (see Parker 1982, p. 108; see also Lanteri 2010, 2011), but only in opposition to monetary institutions, which are unjust for all people. I thank an anonymous referee for this suggestion on the relations between Gesell and Feder.

[28]San Antonio in Texas became the center of the American Gesellian movement and was the location of the Free-Economy Publishing Company, which published a periodical entitled *The Way Out,* as well as an English-language translation of Gesell's *Natural Economic Order* in 1936 (Darity 1995, p. 32).

[29]The ideas of Clifford Hugh Douglas played a central role in the movement for monetary reform in Canada; see Douglas (1924).

[30]For the evolution of Gesell's concept for practical implementation of "free money," see Godschalk (2012), p. 62, table 1.

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Table 1. *Continued*

Method	Characteristics	Practical Implementation
Stamped Free Money (*Schwundgeld*)	Suggested by George Nordmann, a Swiss merchant, and adopted by Gesell in 1916.[31] In the course of a year, fifty-two ten-cent stamps must be attached to the note. Instead of losing 5% of their face value, like tabular free money, the notes would be kept at their full face value by weekly or monthly stamping at the holder's expense.	In Germany (at Schwanenkirchen, Bavaria) in 1931 by private initiative of Hans Timm and by the mining entrepreneur Max Hebecker (Timm's Wära,[32] Wära Model). In Austria by public initiative of Michael Unterguggenberger, the Mayor of Wörgl town in 1932 (Wörgl System, based on the issue of a local currency, called "Bestätigter Arbeitswerte"). Between 1932 and 1935, in the many later experiments throughout the United States, with what was known as "depression scrip" (Fisher 1933b). In the Canadian province of Alberta, and the city of Ottawa, in 1936 (with the "velocity dollar") and in Reval (Estonia) in 1934. Other limited attempts, based on the Wära model, in Switzerland (in Biel, in 1932, and in Hofstetten, in 1933), Provence, France, (called "valor") in 1934, in Spain (Puerto de la Selva) in 1935.
Serial Free Money	Each denomination of the currency notes is issued in four or more series distinguished by a number and bold marking (for example, 1–4 red bars across the note) or by color. At set intervals, one of the series (or colors), drawn by lot, ceases to be legal tender but is exchanged for a fresh series by the currency office, after deduction of the legal depreciation for all four series.	

Continued

[31]"During the search-project of practical implementation of the Free Money-idea, Gustav Simons (1861–1914) played an important role … Gesell stated fairly that it was Simons' idea to improve table money by listing surcharging rates and to change the concept from table money to stamped money" (Godschalk 2012, p. 62).

[32]The Wära is the earliest stamp scrip, issued in 1926 in Germany by Wära-Tauschgesellschaft, a Gesellian organization. See Bartsch (1994, p. 78). See also Fisher (1933b).

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Table 1. *Continued*

Method	Characteristics	Practical Implementation
Supplementary Free Money	The legal depreciation is offset in each transaction with a supplementary payment by the holder of the note, like application of a purchase/sales tax (transactional-based model).	In USA, Hawarden (Iowa) in October 1932 on the private initiative of Charles J. Zylstra, a Dutch immigrant businessman (changed to time-based scrip in April 1933; Godschalk [2012, p. 68]).

Sources: P. M. A. Pye, "Methods of applying the principle of Free-Money," in Gesell (1958, pp. 445–447); Onken (1983); Hubert (2004, p. 107); Gatch (2008); Godschalk (2012).

Only the stamped money scheme was implemented in practice, but these different projects were stopped by legal interdiction imposed by the national monetary authorities in Europe and in America.[33] All local projects terminated with the redemption of all the scrip money issued.

IV. FISHER ON THE "STAMPED MONEY" SOLUTION

In October 1929, two days before the Wall Street Crash, a headline in the *New York Times* proclaimed "Fisher Says Prices of Stock Are Low" (McGrattan and Prescott 2004, p. 991). This erroneous prediction by the eminent Yale economist Irving Fisher eclipsed his role as a theorist, and in the stock market crash he lost between \$8 and \$10 million, a "sizable sum, even for an economics professor" (Galbraith 1977, p. 192).

Fisher's wrong prediction, based on the evidence of the value of intangible assets, and in particular on the great expansion of spending on scientific and technological research (McGrattan and Prescott 2004, p. 991), led to his isolation in the scientific community in the following decade.

The Great Depression focused Fisher's attention on a new theoretical explanation of the economic cycle. The result of this research was the definition of the well-known new model of debt deflation, elaborated in 1932–33 (Assous 2013).

According to Fisher, the crisis is caused by interaction between overindebtedness and a process of deflation. This interaction is summarized in a nine-step process.

> Assuming, that, at some point of time, a state of over-indebtedness exists, this will tend to lead to liquidation, through the alarm either of debtors or creditors or both. Then we may deduce the following chain of consequences in nine links: (1) *Debt liquidation* leads to *distress selling* and to (2) *Contraction of deposit currency,* as bank loans are paid off, and to a slowing down of velocity of circulation. This contraction of deposits and of their velocity, precipitated by distress selling, causes (3) *A fall in the level of prices,* in other words, a swelling of the dollar. Assuming, as above stated,

[33]One national plan for stamp scrip appeared in Congress (Bankhead-Pettengill Bill) in February 1933, but without receiving serious consideration.

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Table 2. Characteristics of Stamp Plans Implemented (1930–1936)

Issuing procedure	Methods of coverage and purposes
Local money is issued on the basis of conventional currency (Wörgl System, Fisher Stamped Plan), or on the basis of the commodities produced by private companies (redeemable for coal in Wära Model, or for goods or services in Larkin Merchandise Bond System, reputational scrip, barter, and self-help scrip, issued by individual companies and corporation organizations, as in Tenino, Washington; New Bedford, Massachusetts; Fort Wayne, Indiana; Grand Rapids, Michigan; Tulsa, Oklahoma; and in California.	Local money is based upon private funds (Wära Model, Larkin Merchandise Bond System, reputational scrip, barter, and self-help scrip in USA), bank loans, bank deposits (USA: Wisconsin, Tennessee, Ohio, Illinois, and Missouri), portfolio assets, tax anticipations (USA: Evanston, Illinois; Knoxville, Tennessee; and also in New Jersey, Michigan, and Ohio), covered by guaranty of public authority (Wörgl System).
Local money is brought into circulation in paying workers' wages, partially or entirely (Wörgl System, Wära Model, Larkin Merchandise Bond System), or as a "gift" on the basis of citizenship or unemployment status (Fisher Stamped Plan). The scrip can be dated, if the stamps are affixed periodically and a redemption date is given (Wörgl System, Fisher Stamped Plan), or can be linked to transactions (Hawarden Model, Iowa, prevalent in the United States, 72% of total), if the stamps are affixed with each transfer of the scrip (in this case the redemption date is undetermined). Only seven towns in the USA realized a pure time-based scrip according to the Gesellian-inspired ideas of Fisher and Cohrssen. In the United States stamp scrip is designed to be self-liquidating.	Local money is used: —for paying public works or public employers by local authorities; —as a clearing certificate in a barter labor system to swap labor, services, and goods through local clearing arrangements; —as the medium of exchange to replace ordinary legal tender hoarded by a panicky public; —as an asset to compensate depositors for part of their losses in case of bank failures; —as a device for funding the budget deficits resulting from falling tax receipts; —as a general stimulant to business, as unemployment relief; and —as a weapon against chain stores, or as a means of municipal finance.

Sources: Fisher (1933b); Brown (1941); Mitchell and Shafer (1984); Greco (2001); Gatch (2004, 2006, 2008, 2012); Hubert (2004); Elvins (2012).

> that this fall of prices is not interfered with by reflation or otherwise, there must be (4) *A still greater fall in the net worths of business,* precipitating bankruptcies and (5) *A like fall in profits,* which in a "capitalistic," that is, a private-profit society, leads the concerns which are running at a loss to make (6) *A reduction in output, in trade and in employment* of labor. These losses, bankruptcies, and unemployment, lead to (7) *Pessimism and loss of confidence,* which in turn lead to (8) *Hoarding and slowing down still more the velocity of circulation.*

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> The above eight changes cause (9) *Complicated disturbances in the rates of interest,* in particular, a fall in the nominal, or money, rates and a rise in the real, or commodity, rates of interest. (Fisher 1933a, pp. 341–342; emphasis in original)

The essence of crisis dynamic is deflation, "the root of almost all evils" (Fisher 1932, p. 39). Repayment of banks and loss of confidence cause banks and the public to hoard cash, and consequently the velocity of circulation of money slows down, contracting the money supply without the monetary base having fallen (Dimand 1994, p. 98). "Hoarding, once introduced, becomes a tremendous factor in the vicious spiral, and can continue it with or without over-indebtedness. Hoarding lowers the price level. The lowered price level hurts business (debts or no debts); hurt business increases fear, and the fear increases the hoarding" (Fisher 1932, p. 36).

In the case of deflation, an increase in money supply, to replace money hoarded, might fail to raise the price level: "for a prompt boost of the price level, a mere increase in *M* [volume of money] might prove insufficient, unless supplemented by some influence exercised directly on the moods of people to accelerate *V* [velocity]—that is, to convert the public from hoarding" (Fisher 1932, p. 140).

In his *Booms and Depressions* (1932), Fisher proposed different policies designed to accelerate the velocity of money as the key to solving the crisis; in particular, the Yale economist focused his attention on the stamped money plan, considering it an "ingenious scheme" (Fisher 1932, p. 226). In a footnote, Fisher ascribed the paternity of the plan to Silvio Gesell, citing as his source an article on the Wära Model published by Hans Cohrssen, a young activist of the Freiwirtschaft movement, in *The New Republic,* a liberal American magazine (Cohrssen 1991, p. 825).[34]

In the following years, Fisher became an active supporter of the stamped money plan. In collaboration with Cohrssen, the Yale economist published a handbook (*Stamp scrip*, Fisher 1933b, also with the collaboration of Fisher's brother, Herbert Wescott) on the issue of stamp scrip, an emergency currency issued in the United States by cooperatives, associations, municipalities, companies, and ordinary citizens during the financial and economic crisis of the 1930s.[35] This experiment involved 450 communities, in particular Pennsylvania, which asked Fisher "to personally supervise the issuance of $100,000 of such scrip" (Cohrssen 1991, p. 826; see also Cohrssen 1933, 1989; Gatch 2004, 2006, 2008).

[34] "I have learned that essentially this plan was proposed by Silvio Gesell of Argentina in 1890. It was, in effect, actually used locally in Germany in 1931. See an article, 'Wara,' by Hans R. L. Cohrssen in *The New Republic,* August 10, 1932" (Fisher 1932, p. 226n1). See also Fisher (1933b, pp. 17–18; and Gatch (2009).

[35] The first appearance of a stamp scrip plan in the United States dated to early 1932, in Hawarden (Iowa), organized by Charles J. Zylstra, a Dutch immigrant businessman. This system is transaction-based (Fisher 1933b, ch. VII); see Elvins (2005); Warner (2005, 2010). The effects of a transaction-based system are contrary to the date-type system (Gesellian system): in the transactional system, over time the note increases in value after each transaction, by the rising of the funds for redemptions (Warner 2005, pp. 165–168; Godschalk 2012, p. 68). Fisher disapproved of this system, preferring the date-type European plan: "the omission from the Hawarden plan of the set dates for stamping was, I think, ill-advised. It would naturally weaken the speed motive and might even reverse it, since it costs 3 cents to transfer the scrip instead of costing 3 cents not to transfer it!" (Fisher 1933b, p. 31). A hybrid form, combining both ideas (stamps have to be affixed per transaction or per week), was gradually implemented (in the amount of 16% of total in USA; see Godschalk 2012, p. 68).

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In *Booms and Depressions*, Fisher proposed the issue of special dollar bills, the reverse side of which was divided into twelve spaces, each the size of a one-cent postage stamp and each space dated on the first day of twelve consecutive months. One hundred of these special dollars would be given as a "gift" to each citizen, or confined to the unemployed, and utilized as legal tender. Each dollar bill required a one-cent stamp on it each month to preserve its status as legal tender. After all the twelve stamp spaces had been filled, the dollar bills could be redeemed by another of the same kind or by an ordinary dollar (Fisher 1932, pp. 226–227). "If the stamped dollar," Fisher argued, "runs for nine years (108 months), the funds for this redemption will have already been provided to the government by the public in the 108 cents paid for the affixed stamp, with 8 cents in excess" (Fisher 1932, p. 227). If $100 were given to forty million people, this excess would amount in all to $320 million revenue for the government. So this plan would operate as a stamp tax on hoarding, because no holder would be likely to keep this special dollar more than one month for fear that it would cost him another stamp. The effect of this plan is the increase in the velocity as well as the quantity of money, and it would help solve two problems at once: unemployment and deflation (Fisher 1932, pp. 227–228).

In his handbook *Stamp scrip,* Fisher illustrates in detail the main characteristics of this instrument:

1. The scrip is an emergency issue, temporary (dated type), small in amount, and short in duration, redeemable in any form of legal tender (Fisher 1933b, ch. VII).[36]
2. Despite its local implementation, a nationwide application is desirable, "still in quantities as small, proportionately to the size of the nation," but with uniform typology based on the Wörgl System (time-based or hybrid form time/transaction; Fisher 1933b, ch. VII).
3. It is an instrument to increase the reduced volume of business caused by deflation ("the crux of the depression" (Fisher 1933b, ch. VIII).
4. It cannot raise the price level if confined to localities, because if prices try to go up in a locality, buyers will promptly forsake that locality (Fisher 1933b, ch. VIII).
5. It is an effective instrument of reflation; i.e., "degree of controlled inflation which is needed to compensate for recent, fast, and big deflation. Reflation is not inflation starting from the threshold and aiming at the sky—it is inflation starting at the bottom of the pit and aiming back at the threshold. It is a corrective process, like the turns of the steering wheel that keep you on the road" (Fisher 1933b, ch. VIII; Dimand 1994, p. 98).[37]

In his subsequent book *After Reflation, What?* (Fisher 1934b), Fisher again assigns the major responsibility for stabilizing the price level to Federal Reserve monetary policy, within the analytical framework of the equation of exchange (Fisher 1934b, chs. 7, 8; Fisher 1934c; Patinkin 1993, p. 22).

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[36]"Fisher believed that in normal times there would be no need to have recourse to this system but that if the need for it became evident, it could be introduced with beneficial effect" (Allais 1968, p. 481).

[37]Fisher proposed a policy of influencing the price level by what he called "velocity control" (Fisher 1932, pp. 140–141). This was to be based on Silvio Gesell's plan of issuing "stamped money," which (Fisher said) "would operate as a stamp tax on hoarding—increasing the velocity as well as the quantity of money" (Fisher 1932, pp. 226–228, quoted in Patinkin 1993, p. 22).

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Fisher's attempt to influence political decisions was fruitless (Allen 1977) and his search for political support was illusory, and it was in fact the political powers that would soon call a halt to the experiment of stamped money in the United States and in Europe.[38] His scientific isolation certainly contributed to the fact that the reform project fell into oblivion (Dimand 1994, p. 93).[39]

Indeed, Fisher's reflation policy was in contrast with the subsequent literature that, on the contrary, saw deflation as a stabilizing mechanism, strongly influenced by the Pigou effect or real balance effect. According to Arthur Cecil Pigou, deflation, by increasing the real value of wealth, stimulates consumption and aggregate demand (Pigou 1943). Pigou's approach emphasized the gains of the creditors, while Fisher's argument focused on the losses of the debtors (Gotz 2005, p. 5). This hypothesis, reinforced by Don Patinkin (1948, 1965), became a relevant argument in the neoclassical synthesis, favoring rehabilitation of the classical "self correcting" mechanism.

Debt-deflation theory was largely ignored until it was revisited and re-evaluated by James Tobin (1980), another Yale economist.[40]

> Irving Fisher had reached a diagnosis precisely the opposite of Pigou's. Fisher thought that *re*flation, not deflation, was the remedy. He was struck by the increased burden that lower prices imposed on debtors-corporations, proprietors, home-owners, farmers. Debt squeezes, defaults, and bankruptcies, he thought, intensified and spread the slump in economic activity. He urged measures—monetary expansions, devaluation, marking up gold prices—designed to restore commodity prices to pre-Depression levels. For Fisher in 1932–3, more even than Keynes in 1936, raising prices was a step indispensable to recovery, not just an incidental byproduct of other measures. (Tobin 1980, p. 9)

According to Tobin, Fisher's debt deflation dominates Pigou's wealth effect, because the propensity to spend is higher for debtors than for creditors, "even by a small amount" (Tobin 1980, p. 10).[41] Moreover, the drop in prices, reducing the value of capital stock and equity, makes consumption and investments less attractive (Tobin 1975).

Deflation is an intensifier of depressions rather than the cure for recessions and depressions, as shown in the Pigou effect:

> Deflation in real time—unless engineered by governmental fiat rather than by markets—may generate expectations of further deflation. Now expected deflation increases the demand for money, making it more attractive relative to others' assets, particularly to goods and equities in goods. This effect counters the price *level* effect and may be stronger.

[38] More attention was reserved for Fisher's proposal for the adoption of 100% money; see Reeve (1943, p. 88).

[39] Frank Dunstone Graham elaborated a variant of the stamp scrip plan, based on the Emergency Employment Corporation (EEC), established by the federal government for issuing scrip based on labor hours. See Graham (1932); Rothbard (1972, p. 311); Warner (2012, p. 2).

[40] I thank an anonymous referee for this suggestion.

[41] Before Tobin's critique, Michael Kalecki noted, against Pigou, that deflation raised the burden of the debts as much as the real value of the assets, so "the adjustment required would increase catastrophically the real value of debts, and would consequently lead to wholesale bankruptcy and a confidence crisis. The adjustment would probably never be carried to the end; if the workers persisted in their game of unrestricted competition, the Government would introduce a wage stop under the pressure of employers" (Kalecki 1944, p. 132).

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> If so, deflation does not correct the initial deficiency in aggregate demand that triggered it. The deflation has no stopping point. The symmetrical case is hyper-inflation, in which the velocity of money rises astronomically. (Tobin 1980, p. 18; emphasis in original)

Tobin reconsidered Fisher's debt-deflation theory at the beginning of the 1980s, disapproving of the disinflation policies adopted in the United States and United Kingdom (Tobin 1983, p. 297). According to Tobin, in times of unexpected disinflation and high rate of interest, the real burden of debt increases, causing underproduction and unemployment, as Fisher's theory shows.[42]

This "Yale approach" to deflation is further developed by Hyman Minsky (1982), who explores the role of asset price, focusing the effect of financial distress on asset prices, price level, and aggregate spending.[43] Distress selling to raise money for repaying debt reduces asset prices on financial markets, and the resulting losses exacerbate the level of indebtedness, causing further distress selling (von Peter 2005, p. 6).[44]

Another variant of the debt-deflation theory was developed by Ben Bernanke (1983), who focuses his contribution on the connection between debt deflation and widespread bankruptcy.[45] According to Bernanke, borrower default and bank runs raise the costs of financial intermediation, causing a credit contraction; thus, the debt crisis is "added to the banking crisis as a potential source of disruption of the credit system" (Bernanke 1983, p. 267). The credit contraction depresses aggregate demand, further protracting the economic depression (Bernanke 1983, p. 257).

Subsequent to the financial crisis of 2008 and the resulting recession, these arguments against deflation have no longer been only theoretical: as chairman of the Federal Reserve, Bernanke has operated on the presupposition that price deflation and depression are strictly linked, and his monetary policy has been designed to avoid the vicious cycle of deflation, using unconventional tools such as the quantitative easing program, already experimented with in Japan.[46]

V. KEYNES'S CRITICISM

In chapter XIII (paragraph VI) of *The General Theory of Employment, Interest and Money*, Keynes recognizes that the theory of this "strange, unduly neglected prophet"

[42]"The forces which lower money wages and prices are slow and weak, and those which translate deflation or disinflation into greater real demand are uncertain" (Tobin 1980, p. 19).

[43]Minsky's elaboration of debt deflation is strictly linked to the theoretical nucleus on which Charles Kindleberger bases his history of financial crisis in terms of cycles of speculation (Kindleberger 1978).

[44]"Once a situation exists where debt payments cannot be made either by cash from operations or refinancing, so that assets have to be sold, then the requirements imposed by the debt structure can lead to a fall in the prices of assets. In a free market, the fall in asset prices can be so large that the sale of assets cannot realize the funds needed to fulfill commitments" (Minsky 1982, pp. 383–384).

[45]Bernanke argues, "Irving Fisher was the first economist to emphasize the potential connections between violent financial crises, which lead to 'fire sales' of assets and falling asset prices, with general declines in aggregate demand and the price level" (Bernanke 2002, p. 4).

[46]Since 2002, Bernanke, on the experience of Japanese stagnation, has stressed the point that "prevention of deflation is preferable to cure," proposing as a main remedy a substantial "injection of money into the economy" and resorting de facto to the reflation policies (Bernanke 2002, p. 5). On quantitative easing and unconventional monetary policy, see Joyce, Miles, Scott, and Vayanos (2012).

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contains "flashes of deep insight ... [but he] only just failed to reach down to the essence of the matter" (Keynes 1936, p. 353). Gesell's main work, *The Natural Economic Order*, according to Keynes, "is written in cool, scientific language; though it is suffused throughout by a more passionate, a more emotional devotion to social justice than some think decent in a scientist" (Keynes 1936, p. 355).

In Keynes's opinion, Gesell's main contributions to the theory of money and interest are as follows (Keynes 1936, pp. 355–357):

1. There is a clear distinction between the rate of interest and the marginal efficiency of capital.
2. The interest rate sets a limit to the growth rate of real capital. This brake has to be removed, allowing an unlimited expansion of real capital with a zero money rate of interest.
3. The interest rate is a purely monetary phenomenon.
4. The peculiarity of money as a means of storing wealth entails negligible carrying charges, unlike a stock of commodities.
5. The rate of interest, unlike most commodity rates of interest, cannot be negative.

In spite of these merits, Keynes argues, Gesell "has constructed only half a theory of the rate of interest" (Keynes 1936, p. 355), because he does not prove why the money rate of interest is positive, and "he fails to explain why the money-rate of interest is not governed (as the classical school maintains) by the standard set by the yield on productive capital" (Keynes 1936, p. 356).

These shortcomings in Gesell's theoretical contribution, according to Keynes, are the result of his failure to grasp the notion of liquidity preference (Keynes 1936, p. 356). Indeed, for Keynes, Gesell's theory is limited to the liquidity premium attached to money, overlooking the fact that "money was not unique in having a liquidity-premium attached to it, but differed only in degree from many other articles, deriving its importance from having a *greater* liquidity-premium than any other article" (Keynes 1936, p. 357; emphasis in original).[47]

This difference between Gesell and Keynes on the liquidity preference is an important analytical point.

For Keynes, the propensity to hoard money (or the state of liquidity preference) depends on uncertainty about the future.[48] It is the characteristic of money as a store of wealth, usually overlooked, that offers a shield against fear of uncertainty. Changes in the rate of interest affect the propensity to hoard, because "[t]he rate of interest measures—just as the books on arithmetic say it does—the premium which has to be offered to induce people to hold their wealth in some form other than hoarded money (Keynes 1937, p. 216).

[47]Against this criticism, Maurice Allais asserts: "It has been objected that anyone wishing to hoard would not be prevented from hoarding land, precious stones, or precious metals, but from a monetary viewpoint this is not a valid objection: what is at issue is how to avoid generalized overproduction by rendering it undesirable to hoard money" (Allais 1968, p. 481).

[48]"Our desire to hold money as a store of wealth is a barometer of the degree of our distrust of own calculations and conventions concerning the future…. The possession of actual money lulls our disquietude; and the premium which we require to make us part with money is the measure of degree of our disquietude" (Keynes 1937, p. 216).

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In Gesell's theory, the function of money as a store of wealth is completely unheeded ("money was not made to be saved!" [Gesell 1958, p. 248]), and the propensity to hoard money is not caused by uncertainty about the future, but only by deflation, which, on the market, reduces or annuls the premium required by the money holder to forgo liquidity. For Gesell, it is the changes in the price level, and not the variation of interest rate, that affect the propensity to hoard. The relation between interest and money is superficially sketched in the concept of "desire of money," the exchange of future money for present money (Gesell 1958, pp. 204–205), which, according to Gesell, does not represent demand for money.

Keynes's criticism of Gesell's theoretical contribution can be explained on the basis of different hypotheses on the nature of money. Gesell shared the mainstream approach according to which money is primarily a medium of exchange, while Keynes argued the "money of account comes into existence along with debts, which are contracts for deferred payment, and price lists, which are offers of contracts for sale or purchase … [and] can only be expressed in terms of a money of account" (Keynes 1930, p. 3; see also Wray 2006, p. 11).

For this different conception of money, extraneous to the commodity money approach, Keynes definitively rejects the quantity theory, which, on the contrary, constitutes a central element in Gesell's theoretical system. According to Keynes, as we know, the equation of exchange $MV=PT$, though formally correct, does not explain that the determination of the level of prices occurs in the sphere of production. In the *General Theory*, Keynes definitively rejects the link between money supply and price level, establishing a new, more complex relation between monetary wages, production level, and prices (Keynes 1936, chs. XIX, XXI). These significant theoretical differences account for Keynes's marked skepticism regarding Gesell's policy proposals.

Keynes criticizes the measure of reflation, because he considers that the velocity of money depends on "many complex and variable factors" (Keynes 1936, p. 299),[49] and, at any rate,

> an increased income-velocity of money may be a symptom of a decreased liquidity-preference. It is not the same thing, however, since it is in respect of his stock of accumulated savings, rather than of his income, that the individual can exercise his choice between liquidity and illiquidity. And, anyhow, the term 'income-velocity of money' carries with it the misleading suggestion of a presumption in favour of the demand for money as a whole being proportional, or having some determinate relation, to income, whereas this presumption should apply, as we shall see, only to a *portion* of the public's cash holdings; with the result that it overlooks the part played by the rate of interest. (Keynes 1936, p. 194; emphasis in original)

Moreover, if expectations remain pessimistic, a considerable part of the new money issued may be held as an inactive balance.

[49]Also in Fisher's systematic theory, "the definition of the velocity of circulation, cannot be verified; all that the statistics can demonstrate is the compatibility of the different estimates of the velocity of circulation" (Allais 1968, p. 478).

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In the end, although the theory underlying the stamped money plan is correct,[50] Keynes argues that Gesell's suggestion of an actual charge equivalent to 5.2% per annum is not feasible because it is too high "in existing conditions" (Keynes 1936, p. 357). According to Keynes, the correct application would be found by trial and error, implemented on a limited scale, and "it should be roughly equal to the excess of the money rate of interest (apart from the stamps) over the marginal efficiency of capital corresponding to a rate of new investment compatible with full employment" (Keynes 1936, p. 357).

Despite these differences, there are several important affinities between Keynes and Gesell on the nature of monetary economy. With Gesell, Keynes shares the following opinions:

1. Money has an elasticity of substitution nearly equal to zero: "as the exchange value of money rises there is no tendency to substitute some other factor for it" (Keynes 1936, p. 231).
2. The utility of money "is solely derived from its exchange-value" (Keynes 1936, p. 231).
3. Money has low (or negligible) carrying costs (Keynes 1936, p. 233; Suhr 1989; Darity 1995).[51]
4. Crisis is caused by the dominance of demand for money stock (inactive funds) that stops the flow of money (active funds) and keeps the economy stagnant.

VI. CONCLUSIONS

Silvio Gesell, generally tagged as a typical monetary "crank" and derided as a proponent of economic absurdity (Allais 1968, p. 481), had no marginal role in the evolution of monetary theories during the 1930s, and his main proposal of negative nominal interest has received widespread attention.

Re-examination of Gesell's analytical contribution from the point of view of commodity money approach and the quantity theory shows the elements of affinity with mainstream theory, and in particular with Irving Fisher.

Indeed, Fisher's theoretical analysis of crisis and his policy conclusions (explained in the debt-deflation theory) are convergent with those outlined by Gesell (whom Fisher called a "quasi economist" [Fisher 1933b, p. 17]); this is one of the few cases in the history of economic thought in which a policy proposed by an outsider economist is accepted by a notable member of the academic establishment.

This convergence between Gesell and Fisher is determined by the substantial analytical affinity regarding the common framework of the quantity theory, although

[50]"Those reformers, who look for a remedy by creating artificial carrying-costs for money through the device of requiring legal-tender currency to be periodically stamped at a prescribed cost in order to retain its quality as money, or in analogous ways, have been on the right track; and the practical value of their proposals deserves consideration" (Keynes 1936, p. 398).

[51]Are these affinities an effect of being "bombarded" by Gesell's works, to which Keynes was subjected in the years before the publication of the *General Theory* (Keynes 1936, p. 353)?

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Fisher rejects Gesell's theory of interest,[52] and totally neglects the separation of the function as instrument of exchange from the function as store of value**,** the main theoretical nucleus of Gesell's thought.

On the basis of this same theoretical approach, both stress the deflationary character of the crisis and propose as a feasible solution a measure of reflation with an increase in money supply and velocity of circulation (Cot 2013). For Fisher, as for Gesell, adoption of a reflation policy to restore the price level to its pre-Depression level was the decisive remedy, and the stamp scrip proposed would constitute immediate purchasing power to reactivate the circuit of exchange as a temporary device to overcome the crisis. Like Gesell, Fisher "was an apostle of managed money" (Allais 1968, p. 476).

This affinity between Fisher and Gesell has been neglected by historians of economic thought, the focus of research on Gesell being concentrated on the relationship with Keynes, in an attempt to stress theoretical affinities.[53] However, despite these similarities, two main features of Gesell's thought—the nature of money as a medium of exchange and the quantity theory—are totally extraneous to Keynes's monetary theory.

Moreover, rejecting quantity theory, Keynes showed marked skepticism regarding the measure of reflation, and subsequent Keynesian literature (particularly the neoclassical synthesis) considered deflation a stabilizing mechanism, strongly influenced by the Pigou effect or real balance effect. Only at the beginning of 1980s did the Keynesian James Tobin reconsider Fisher's debt-deflation theory, to contrast disinflation policies adopted in the United States and United Kingdom. This reconsideration implicitly rehabilitates Gesell's contribution, within the Keynesian approach.

These various connections with two, opposing, theoretical approaches (Fisher's and Keynes's) undoubtedly show the (neglected) centrality of Gesell's monetary thought during the Great Depression.[54]

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[52]"There is much in Gesell's philosophy," wrote Fisher, "to which as an economist I cannot subscribe, especially his theory of interest" (Fisher 1933b, p. 17). Gesell considered Fisher's impatience theory an application of the general theory of abstinence (Gesell 1958, p. 328n). Gesell had probably read Fisher's treatise on interest (on the reception of Fisher's monetary theory in the German-language area, see Hagemann 2013. See also, on the German debate about quantity theory, Ellis 1934, chs. VIII and IX). According to Gesell, these theories incentivizing savings lead to overproduction when implemented (Gesell 1958, pp. 424–426).

[53]della Paolera and Taylor highlight the affinity among Gesell, Fisher, and the monetarist school (Friedman, Sargent, Mundell) regarding the importance of regime changes, expectations, the impact of monetary policy via the real interest rate, and optimum monetary policy for setting a target of stable prices (della Paolera and Taylor 2001, pp. 31, 117, 203), but no analytical proof is provided to support this hypothesis. Contrary to della Paolera and Taylor's opinion, the monetarist approach, unlike Gesell's, asserts that market economies are inherently stable in the absence of unexpected fluctuations in the money supply (while, in Gesell's opinion, they are intrinsically instable), that velocity is generally stable (unstable, in Gesell's opinion), and that monetary policy must be non-discretionary (while Gesell proposes a system of managed money with an inflationist attitude).

[54]Gesell's proposal has influenced different projects on negative nominal interest and its variants; see Lederer (1931 and 1932); Allais (1947, called "dépréciation de la monnaie circulante"); Graham (1932); Lietaer (1999, 2001, called "community currency"). On the different projects, see Suhr (1989, pp. 102–104); Greco (2001); Hubert (2004, pp. 31–103).

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In the current recession, monetary policy, with ample theoretical consensus, has been designed to avoid the vicious cycle of deflation, using unconventional tools.

For the present economic crisis with a liquidity trap and low or even negative interest rates, it could be possible to actualize Gesell's old-fashioned stamp scrip by applying modern digital technologies (Goodfriend 2000; Buiter 2009). And, in view of the ecological crisis, it may also be worth ascertaining where Gesell's money and land reform theory could be helpful in developing solutions to these problems (Löhr 2012, 2014).[55]

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