

# The surprising origins and legacy of Irving Fisher's crankish ideas

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The Great Depression awakened the interest of the general public in economic issues. In the 1930s, it was not uncommon for economists – usually working the shades of academia – to gain visibility and focus their efforts on actively promulgating their views to inform the public and influence policies. Perhaps the texts of Keynes, collected in *Essays in Persuasion* (Keynes, 1932), are the most remarkable example of this engagement in public debate.

This renewed interest in economics also had the side effect of giving popular legitimacy to radical criticism of economic science, which, in a period of Kuhnian stability, would have been ignored or dismissed by professionals. Instead, in the 1930s, academics were unusually open to a debate with so-called cranks, and many crankish ideas found consideration and attention in the public debate, and sometimes they were even embraced by professional economists (Dimand, 1991).

Irving Fisher is an example of this openness. He is often remembered as one of the fathers of mathematical economics (\*\*\*\*), but his contributions to dismal science were more varied than this. During the 1930s and up until his death in 1947, he proposed an original interpretation of the causes of the crisis and several possible fixes. His propositions were radically different from the mainstream, orthodox narratives of his time and were partly inspired by the work and insight of so-called cranks, in particular that of Silvio Gesell and Fredrik Soddy. The works of the late Fisher were an interesting syncretism between the most orthodox quantitative theory and the most eccentric methods. The aim of the paper is to show the continuity and coherence of Irving Fisher's thinking throughout his life. His later works, often described as a *delusional* development of his thought are, in fact, very consistent with his early work on the quantity theory of money.

The paper is structured as follows: in the first part, I will briefly introduce the reader to the personality of Irving Fisher, and I will put his work into a historical context. I will talk about the early American banking system to contextualize Fisher's monetary ideas. After that, I will introduce the seeds of his theory of the crisis, as presented in *The Purchasing Power of Money* (Fisher & Brown, 1911), and I will talk briefly about his Dollar Compensated Plan. In *Boom and Depression* (Fisher, 1932), he describes the policies he proposed to solve the crisis and stabilise the dollar: the Reflation Plan, the full reserve banking (Fisher, 1935) and Stamp Scrip (Fisher, Cohnsen, & Fisher, 1933).

The aim of the paper is to show the strong theoretical coherence between those three heterodox policy proposals and his previous theoretical work. I will emphasise the affinity of Fisher's integral reserve proposal with Fredrik Soddy's theory of money as energy, and how Fisher's proposal on alternative currencies (Stamp Scrip) builds on the work of the Swiss social reformer Silvio Gesell. I argue that those ideas were strictly coherent within the quantitative theoretical framework that he delineates in *The Purchasing Power of Money*. In the final part of the paper, I will follow the legacy of his thought in an attempt to track how his ideas were developed, and by whom.

### **1. Irving Fisher, the *Gadgetter***

The path and the thought of Irving Fisher cannot be fully understood without some reference to his personality and formative years. He obtained his PhD in 1892 under the supervision of the physicist and mathematician Willard Gibbs. His dissertation was entitled, "Mathematical Investigations in the Theory of Value and Prices" (Fisher, 1925). He developed an economic model of prices using mechanical and physical analogies, and he was one of the first to use a similar approach in United States. He did not limit himself to describing the model theoretically; what perhaps reveals more of his personality is that he actually built the "model" into a composite hydraulic machine with cisterns, pumps and pipes to illustrate the principle of general equilibrium in economics: water seeks its level (\*\*\*\*). During his long life, Fisher invented many different gadgets applied to the most diverse fields, from healthcare to geography. Brainard and Herbert E. Scarf (Brainard & Scarf, 2005) list among his contraptions an "elaborate tent for the treatment of tuberculosis"; a "mechanical diet indicator that permitted easy calculation of the daily consumption of fats, carbohydrates and proteins"; and an "icosahedral world globe with triangular facets that when unfolded was allegedly an improvement on the Mercator projection". Also, his creativity paid: he invented and patented a rotating archive to store and display documents, or an "index visible filing system". This system was incredibly successful and was part of the standard office furniture of that time, making him very rich. He sold his invention to the Rand Company for \$1 million (Allen, 1993). Besides those inventions, his inventive spirit enriched the field of economics. He worked for a number of years on *Index Numbers*, a set of statistical indicators aimed at tracking price changes (Fisher, 1922a),

and he developed the statistical techniques needed to work with such indexes. Another idea he had long before others was to study the relationship between inflation and unemployment, long before the “Philips curve” (Fisher, 1973).

He was also an activist. He was involved with many different causes in order to improve society and human life: he was an prohibitionist (Fisher, 1927), he supported eugenics (Fisher, 1921b), he wrote several books about healthy lifestyle (Fisher & Fisk, 1917), he campaigned for a simplification of English spelling (Paine, 1920), he proposed a calendar reform for a year with 13 regular months (Fisher, 1930), he pushed for the diffusion of the Esperanto conlang, and he theorised the necessity of a “league of nations” to promote peace and friendship among countries (Fisher, 1923). He founded at least three different societies: a statistical society to collect index numbers, a society to instruct people about healthy living (Life Extension Institute), and a society that lobbied for stable money (Stable Money Association).

As Patinkin (Patinkin, 1993) sarcastically remarked, Fisher was a *gadgetter*, and it was with this approach that he tried to solve human and economic problems, advocating original and quirky solutions.

Like many economists of that time, he did not see the 1929 crisis coming, which seriously compromised his public. Even today, Irving Fisher is mostly remembered for his infamous statement of the autumn of 1929, “Stock prices have reached what looks like a permanently high plateau”, just before the catastrophic Wall Street crash. According to his bibliographers (Allen, 1993), the crisis affected significantly the life of Fisher in a number of different dimensions: he lost all his fortune and wealth on the market, and he was forced to sell his home to Yale university, where he continued to live for a nominal rent. He started intense work on the origins of the crisis, aimed at understanding the reasons behind it and suggesting a practical fix. Despite all his efforts, however, he attracted little attention from the policymakers, and the fact that he proposed radical alternatives to the established economic discourse did not help his cause.

## **2) Context: 1800–1900 From Free Banking to the Fed**

The United States has a troubled monetary history: after the War of Independence, the American banking system was quite anarchic. At a formal level, the system accepted the gold standard, but in reality there was no control or rule to enforce it. The system was basically composed by many independent banks, public or private, that were also emission banks; in other words, they issued their own money. Many of those banks were public banks (*charter banks*) created in order to finance public work such as construction of infrastructure. The different states of the confederation were lacking a clear and coherent regulation of the banking sector. The first federal central Bank of the United States (BUS) was founded in 1791 by Congress (Sylla, 2010). It was no different from a classic commercial bank, except that it was charged with the task of managing government money and keeping its deposits. This bank had several branches in different states, which provided liquidity to local commercial banks that used money issued by the central bank reserve. This practice had the indirect effect of influencing and loosely regulating the quantity of money in circulation. The contract between this first proto-central bank and Congress expired in 1811, thanks to the lobbying of commercial and charter banks arguing that the BUS violated the constitution because of its dominant position. After the closure of the first central bank, the number of issuer banks grew from 242 in 1810, to 392 in 1818, and the quantity of issued money/credit increased considerably (Matson). Seeing the tumultuous development of the banking sector, Congress tried for the second time to regulate the system with the creation of a second central bank with a contract of 20 years. Eventually, the second BUS met the same fate as the first. President Andrew Jackson (in office from 1829 to 1837) was particularly vocal against a central bank that he considered “the embodiment of unfair privilege” (O’Connor, 2010). For the second time, after a short delay, free banking was again the standard in the United States. Many different non-governmental organizations tried to assure the mutual solvability of the banks, such as the “Suffolk banking system” and the “New York safety found system”. Other banks used a more creative approach: they opened branches very remote places, so the convertibility of their currency was not discussed, because it was hard to check; these banks were known as *wildcat banks* (Rolnick & Weber, 1982). The problem caused by the lack of a common currency and the lack of a central bank were numerous: there was no control over the integrity of money; and there were many counterfeiters. During the Civil War, Congress issued “An Act to provide a National Currency” (\*\*\*\*), to put an end to the mess of having too

many concurring currencies. During the Civil War, the gold standard was suspended, and for the first time in the northern states, a fiduciary currency was issued. At the end of the war, two schools of thought debated the nature of money: the *Greenbackers*, who were in favour of keeping the fiat money used during the war, against the bullionists, who promoted the return of the gold standard. For the Greenbackers, money was clearly a product of social relations, and nothing else, as clearly expressed by Carruthers and Babb:

*In money, the social relationships among human beings have been reduced to a thing, a mysterious, glittering thing the dazzling radiance of which has blinded the vision of so many economists when they have not taken the precaution of shielding their eyes against it* (Carruthers and Babb, 1996 p. 1556).

Wray remarked how the conflict between the bullionists and the Greenbackers was substantially a class conflict. For the Greenbackers, money had to be democratically controlled and used to reduce inequality:

*Greenbackers explicitly recognised that money is an institution, whose value is socially determined. They emphasised the role played by convention in choice of a money. Further, they argued that choice of the gold standard gave power to the few, while use of a paper money could spread power and reduce inequality* (Wray, 2004 p. 213).

In the end, the bullionists won the argument, and in 1879 the gold standard was re-established, and the free banking regime was still intact. And after the banking crisis of 1907, Congress decided in 1914 to establish for the third time a central bank, with the idea of supervising the banking system thanks to a lender of last resort. The Fed was born, with 12 branches. Commercial and chartered banks were forced to “pool reserves in regional reserve banks where they could be used to make rediscounts to member banks” (Phillips, 1995). The main objective was still to stabilise the gold standard.

**3) *The Purchasing Power of Money, 1911: The equation of exchange and stable money.***

It is in this context that Fisher published in 1911, three years before the founding of the Fed, his *magnus opus*, *The purchasing power of Money* (Fisher, 1963). The book is arguably the most important contribution of Fisher to *economic textbooks*: his equation of exchange is often used even today in economic classrooms to explain the basics of monetary policy. Unfortunately, this great success has somewhat overshadowed the real purpose of the book, which was plainly expressed in the title: reconceptualization of money not as a unit of value, but as a measure of purchasing power. In this part, I will briefly expose his quantitative theory, his first theory of the crisis, and his first methods to avoid it (the compensated dollar).

### **3.1) The Equation of Exchange**

Israel and Ingrao argue in *The Invisible Hand* (Ingrao & Israel, 1990) that the ambition to use mechanics as a paradigm for economics was the most important innovation brought by mathematical economics of that time, and that it had the sociological consequence of legitimizing economics as a hard(er) science. Fisher accomplished in United States of America what the Lausanne School of Leon Walras and Vilfredo Pareto had accomplished in Europe: to reformulate economic science with mechanics and Newtonian physics as an analogy. Ragnar Frisch, talking about the work of the early Irving Fisher, said that “there can be no doubt about the fact that this work was epoch-making when it introduced into this field the equilibrium way of thinking” (Frisch, 1947). The equation of exchange is nothing more than a reformulation of Hume’s classic quantitative theory of money, through the prism of equilibrium. In the book, Fisher use many times the picture of a balance to exemplify the equation  $MV = PT$ .

In his equation, M is the quantity of money (deposit currency, bank deposit, paper money, and gold), which is a stock; and V is the velocity of circulation (which in plain language is how often money changes owner during a specific period) and a flow (the year expenditure divided by the stock of money). The relationship between those two dimensions gives us the total quantity of money in an economy. The first part of the equation determines the second: PT, where P is the average level of prices, and T is trade, the sum of the quantity of exchanged goods in the economy. The interaction between those four factors produces three consequences:

- If  $V$  and  $T$  remain constant while  $M$  varies, the level of prices,  $P$ , will follow the variations of  $M$  (e.g., if we add two zeros overnight to all banking accounts, the next morning all the prices will also have two additional zeros);
- If  $M$  and  $T$  remain constant while  $V$  varies, the level of prices,  $P$ , will follow the variations of  $V$  (if the same amount of goods is moved faster, their price will rise);
- If  $M$  and  $V$  remain constant while  $T$  varies, the level of prices,  $P$ , will vary in the opposite direction (if the quantity of money remains the same, but commerce is booming, prices will be lower: more demand means lower prices).

Exactly as in the classical quantitative theory, money is—in an ideal world—neutral, and this is explained in the first point: if we increase the amount of monetary, prices tend to rise accordingly, but this change should have no consequences on trade and commercial activity: real wealth remains the same.

As Steindl (Steindl, 2000) remarked, Fisher's formulation of the quantitative theory through the equation of exchange was very mechanistic, but *The Purchasing Power of Money* is far from a reductionist or a dogmatic book. The quantitative theory of money and its neutrality is to be interpreted as a tendency to reach equilibrium the long run; but in real life, those adjustments take time. After having specified how the equation of exchange works in the first three chapters of the book, Fisher's attention is then focused on those adjustment periods, which could take a short time or go terribly wrong. It is here that we can observe the origin of his theory of the crisis, later developed in *Booms and Depression* (Fisher, 1932).

### **3.2) The first seeds of his theory of the crisis**

As we have seen, *The Purchasing Power of Money* became famous in particular for the theoretical reformulation of the classic quantitative theory through the equation of exchange, but its author was a lot more concerned about how to keep the purchasing power of money constant in order not to feed disequilibrium, namely inflationary or deflationary tendencies, that could lead to a crisis. Schumpeter, in his monetary treatise *Das Wesen des Geldes* (Schumpeter & Messori, 2005) (that to date has never been



translated in English<sup>2</sup>), argues that in order to understand the nature of money it is fundamental to understand what interests are at stake when we talk about monetary policy. For Schumpeter, monetary policy was politics *tout-court* (“La politique monétaire est politique” p. 40); economic science can try to describe and explain the trends of a monetary system, but cannot—on its own—set a final objective or decide what is good or bad, or what is right or wrong. This is the role of politics<sup>3</sup>, and is decided by those who aspire to impose their organized interest over other visions. Schumpeter argues that the essence of monetary policy is how to deal with the value of money: the purchasing power of money. He explains that in the end, there are only three ways to manage monetary policy: “there are no more than three monetary policy ideals: ideal growth, decrease, and stability of the purchasing power of money”<sup>6</sup> (p. 44). As we have seen, the choice of one over another has important political consequences:

- The slow growth of purchasing power of money (caused by deflation) is the direct interest of the creditor class, the savers, the capitalists, and in part of those with a fixed wage. As we have seen with the equation of exchange, this will entrain a fall in the level of prices, giving the impression of more wealth. But as wages are prices too, the price of work, this will be detrimental for those with a fixed wage, and will favour only creditors and capitalists.
- The slow fall of the purchasing power of money (caused by inflation) is favourable to those who borrow, and is hostile to those who own the capital. But at the same time it is very positive for entrepreneurs who can liquidate their debt quickly.
- The third policy is the stability of the purchasing power of money: the desire to stop economic fluctuations. The problem with this policy is that it is very hard to achieve in the real world. The old recipe of the Banking School to obtain stable

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<sup>2</sup> Marcello Messori explain why (Messori, 1997), I based my citations on the French translation by Claude Jaeger et Odile Lakomski-Laguerre published by L'Harmattan in 2005. Another translation available is in Italian, translated by Messori and published by ESI in 1999.

<sup>3</sup> “C'est pourquoi l'analyse scientifique peut expliquer les réalisations, les effets, les tendances du système monétaire et les conditions monétaires—elle peut "expliquer la réalité"—de là aussi préciser ce qui doit être considéré comme *instrument* de la politique monétaire pour atteindre des *objectifs donnés*, mais elle ne peut fixer aucun objectif "final" à la politique” (p. 40).

money was to peg the value of money to the value of gold. Schumpeter cites Fisher as one of the main modern contributors to this vision (p. 45).

For Fisher, disequilibrium of purchasing power was the real root of the crisis. In the fourth chapter of *The Purchasing Power of Money* he explains how the *transition periods* could develop into a crisis. “The transition periods may be characterised either by rising or falling prices ... the study of these acclivities and declivities is bound up with that of the adjustment of interests rates” (p. 56). As we have seen in the second chapter, Fisher was still writing in a context where interest rates were not yet influenced by a central bank; individual banks were choosing their own rates of interest, based more on habit and customs than a statistical analysis of the state of the economy. Fisher describes a transition period as a vicious cycle where an augmentation of the quantity of gold injects more money into the economy. This creates an imbalance in the equation of exchange and M rises, so the level of prices increases as well, making the activities more profitable. This rise in profitability encourages entrepreneurs to borrow more money in order to produce more; the general interest rate rises, but not enough, because at the time it was sticky and defined by customs more than an analysis of prices. Over-borrowing tends to increase the level of prices. In this example, it is easy to spot the distributional consequences of this augmentation of prices: following the classification of Schumpeter, we know that those with a fixed wage and savers will suffer, but that it would be good for entrepreneurs.

*As prices rise, profits of business, measured in money, will rise also, even if the costs of business were to rise in the same proportion ... Of course such a rise of prices would be purely nominal, as it would merely keep pace with the rise of price level ... But as a matter of fact, the business man's profits will rise more than this because the rate of interests he has to pay will not adjust itself immediately ... Consequently, he will find himself making greater profits than usual, and be encouraged to expand his business by increasing his borrowings (Fisher 1911, p. 59).*

This kind of cycle that he described in 1911, already sums up all the explanations completed after the Great Depression in *Booms and Depressions* in 1932. In his description of over-borrowing, it should be noted that the behaviour of the investor is

seen as completely rational in the sense that actors try to maximise their utility—this behaviour is based more on calculation than animal spirit. Borrowing is perfectly rational at the individual level, but the aggregated effect of this abundance of new debt would lead to an “*unhealthy increase*” in trade. Fisher remarks on how this augmentation of trade is exclusively based in the augmentation of currency and the velocity of money:

*. . . but the amount of trade is dependent, almost entirely, on other things than the quantity of currency, so that an increase of currency cannot, even temporally, very greatly increase trade ... The increase of currency of a “boom” period cannot, of itself, increase the population, extend invention, or increase the efficiency of labour.*

The increase of commerce has a natural limit in the present society, so the price and trade increase due completely to a monetary phenomenon cannot proceed forever. The equilibrium in the equation of exchange has to re-establish itself: the monetary side of the equation (MV) cannot increase if the “real” side of it (PT) does not also increase. Those are the crises of inflation. But the reverse scenario is also problematic: when a growing real economy is suffocated by the lack of money, and those are the crises of deflation or austerity. As we have seen in the historical overview, money at that time was tied to gold, so when the level of credit exceeded the level of the gold reserve, the equation of exchange is a state of structural disequilibrium: the monetary side of the equation is fixed, but the real side obviously not. That is why a rise or fall of purchasing power alone would engender significant and unfair distributional consequences. Axel Leijonhufvud recently remarked how, in his work, Fisher always paid attention to avoiding “arbitrary distribution of income and wealth” (Leijonhufvud, \*\*\*\*) as outcomes of a faulty monetary system, and in particular as outcomes of inflation and deflation. As Schumpeter remarked, the classical theory tried to achieve this stability by tying the value of money to that gold. The main innovation of Fisher, though, lies here.

### **3.3) Stable Money and Dollar Compensated.**

As we have seen in the previous part, Fisher thinks that disequilibrium in the equation of exchange (what he calls *transitions periods*) could develop in a vicious circle, leading

to a crisis by inflation or deflation. In the final few pages of *The Purchasing Power of Money* he proposed a reform of the gold standard that would have resolved, or at least mitigated, the problem of monetary instability. His idea was ingenious and—in a context dominated by the gold standard—his reform carried an epistemological redefinition of what money is about. The gold standard was introduced to try to keep the value of money constant, but, as we have seen, it was perhaps one of the elements that destabilised it the most. Later, Fisher said that “the reverence for gold, as if it were something ultimately stable, is a form of ancestor worship”. According to Calder (Calder, 1999), the use of credit was a necessity in United States during the nineteenth century exactly because cash, while tied to the gold standard, was a relatively rare resource. In the historical introduction we have seen how poorly coordinated banks were, and how the gold standard was systematically violated. It was a necessity: a rigid application of the gold standard would have tended to have a deflative effect on the economy, and tight money would dangerously limit economic life. So banks extended credit, but if the bank’s borrowing exceeded the gold reserve, the economy could face systemic instability. At the epistemological level, under the gold standard money was intended to be a unit of measure and a reserve of value more than a transaction mean. The clash between bullionists and Greenbackers over the nature of money was centered on the role of money: for capitalists and savers, money is more a measure of value, while for Greenbackers the social nature of money was more important. This was an epistemological clash at first, which had important political consequences.

With his Dollar Compensated Plan, Fisher proposed a new interpretation of money, different both from the bullionists’ and Greenbackers’ arguments. If the bullionists cared to maintain the gold standard to protect the value of their savings and capital, their aim was constantly challenged by reality: commerce needed credit to develop, and borrowing had the side effect of diminishing the value of money and creating instability. Conversely, the lack of money depressed the economy. Fisher was also against the arbitrary issue of money. His idea was to tweak the gold standard with a new system. He argued that the gold standard did not have to remain fixed, but instead should vary according to the need of the real economy. In other words, the monetary side of the equation of exchange should adjust when the real part fluctuates, and money should

follow the increasing or decreasing of prices in order to avoid both boom and depression.

For him, the real value of money was not in an arbitrary value attached to gold, but in its role as a medium of exchange, or more clearly, in its purchasing power. So the value of money cannot be set once and for all, what matter is not how much money there is, but how much it can buy. His objective was to shift the focus from keeping a constant value of money as a reserve tool, to keeping a constant value as a *buying* tool. This would have limited the manipulation of value and kept the purchasing power stable:

*The purchasing power of money has always been unstable because a unit of money, as at present determined, is not a unit of purchasing power, but only a unit of weight (Fisher, 1921a).*

His plan was to track the level of prices thanks to the index numbers. The level of prices would then define the quantity of gold used to back money value. So the real value of money would always equal the nominal value:

*Instead of a gold dollar of constant weight and varying purchasing power, what is needed, he contends, is a dollar of constant purchasing power, and, therefore, of varying weight. (Fisher, 1921a)*

If prices tend to rise, then banks could lower the price of gold, thus extending the quantity of money, and more money would be injected to rebalance prices in a case of deflation, or the contrary in a case of inflation. With the gold standard, the monetary side of the equation of exchange is fixed, thus causing disturbances in the real side of the equation; whereas with the dollar compensated standard, the monetary side would follow the real side, and it would be possible to alleviate both inflationary and deflationary movements. Keeping money stable would help avoid imbalances and crises. Technically, Fisher thought of building a consumer price index of a sample of common products and giving it the value of 100. If the index rises by one unit, banks would reinforce the dollar by one per cent against gold. His plan required a central entity in order to run the index and determinate the price of gold. The project had the ambition to avoid monetary crises for their redistributive consequences. It was a

matter of social justice to avoid them—he talks explicitly of injustice and is not reluctant to talk about class and social division:

*When prices are rising—in other words, when the purchasing power of the dollar is falling—the creditor and the creditor-like classes suffer injustice. The sufferers include savings-bank depositors, bond-holders, salaried classes and wage-earners. In the great upheaval of prices—i.e., in the United States, depreciation of the dollar—which took place between 1896 and 1921 such injustice amounted to over a hundred billion dollars. On the other hand, when prices fall, as they did between 1873 and 1896, it is other classes—debtors, stockholders, farmers and independent business men generally—which suffer the injustice. The indirect effects of falling or rising prices—i.e., of a rising or falling dollar—are equally bad. These indirect effects include industrial discontent (either over the “high cost of living” or unemployment) and economic crises and depressions.(Fisher, 1921a)*

In the next part, I will describe Fisher’s reformulation of the theory of crisis in the context of the Great Depression, and of his methods to attenuate the effects.

#### **4) The 1930s Boom and Depression: Theory of the Crisis**

In the 1930s, Fisher dedicated all his intellectual efforts to understanding the causes of the crisis and questioning himself over possible remedies. The book that better shows his thoughts about the crisis is *Boom and depression*, first published in 1933.

Since the first version of *The Purchasing Power of Money* of 1911, which contained the first draft of his theory of crisis, many institutional settings had changed. As we have seen, perhaps the most important was the creation of the Fed in 1914, as the United States could finally rely on a central bank; on the other hand, the historical context were deeply impacted by the First World War. According to Fisher, the American engagement in the war was largely financed by debt. War pushed technological innovation and research, and at the end of the war many of those technologies were used for peaceful purposes, improving productivity and economics. The international context was full of optimism; Europe was to rebuild and this would have lead to peace and prosperity; as Fisher puts it, “Everybody was encouraged about everything”. The financial industry

also changed its way of financing strategies “from 1921–29, as the boom developed, the new corporate issue took more the form of stocks instead of bonds”, which had two effects: the first was freeing enterprise from the burden of debt, but the second effect was the shift of debts from corporations to stockholders. In fact, the stock market promised high gains and many people were buying stocks on credit. A financial industry arose from this innovation: “the newer trend was further intensified by the formation of investment trusts whose express business was to invest the money of their clients in diversified stocks” (p. 73). Fisher noted that the system pushed salesmen to sell those financial packets quite aggressively: “among the chief inciters to over-indebtedness for investment were high-pressure salesmen of investment bankers”. The bankers showed “inexperience, incompetence, negligence, and bad faith”, and in order “to feed a ravenous public”, they issued debt regardless of the debtor’s ability to pay”. The general optimism developed an enthusiasm for the new wonders of finance and “millions of people, who before the war had never known what an ‘investment’ was, suddenly become the proud possessors of securities, often bought with borrowed money”. Also, mortgages between 1910 and 1928 increased more than threefold, and the housing market was booming.

So the “debt starters”, the historical reasons for the development of debt, are many, from bad business practice, to technological innovation, from over-confidence, to the excessive public debt of a foreign country and innovation in corporate financing. This over indebtedness started a vicious circle, as we have already seen in the previous section of the paper. In *Boom and Depression* Fisher is much more analytical and distinguishes nine steps:

1. Debt liquidation
2. Currency contraction
3. Dollar growth
4. Net-worth reduction
5. Profit reduction
6. Lessened production, trade and employment
7. Pessimism and distrust

## 8. Retarded circulation

## 9. Lowered money interests—but raised real interest

Debt repayment (1) reduces the quantity of circulating money, because when credit is issued, it creates money, but when debt is repaid, money is wiped out: “The more the debtors pay, the more they owe. The more the economic boat tips, the more it tends to tip. It is not tending to itself, but is capsizing”. (2) as the money is rarer, the value of money rises; (3) the lack of demand pushes down trade and profits; (5, 6) and, for the same reasons, employment cannot be sustained; (6) investors become cautious; (7) the velocity of money slows down; (8) central banks push the interest rates to a minimum; (9) but they are still too high.

Fisher acknowledged that this order is just for pedagogical purposes, and that reality is much more nuanced and does not necessarily follow this exact path. Reading these nine points through the lens of the equation of exchange,  $MV=PT$ , we can see that (1) and (2) are about the shrinking of the quantity of money ( $M$ ); (3) is about rising prices (at least real prices—nominal prices may actually go down); (4), (5), (6) and (7) are about the fall of trade,  $T$ , and (8) is about the fall of the velocity of money,  $V$ .

The third and the ninth point demand our attention. How is it possible that when the monetary side of the equation falls, prices rise? And how is it possible that with low interest rates, money is so high? Fisher calls it “The Monetary Illusion”.

Fisher remarks that people tend to think about money in nominal terms, using the face value of money. A dollar is a dollar, just as a centimetre is a centimetre. Unfortunately, as we have seen in paragraph 3.3, money is a “relational measurement”, and its value is always relative to the quantity of things it can buy: when money is rare, its real value is higher, whereas when it is abundant, its value will be lower. So, in a condition where the purchasing power of money is not kept constant, the nominal value of money is not a measure at all, but is a source of illusion. In spite of that, society works with money prevalently in nominal terms: most contracts are signed using the face value of money, as if it were something stable. As Fisher says, “few people realise, for instance, that the depression dollar of 1929, become really a dollar and two thirds”. The same holds true with interest rates. In order to try to stimulate the economy, the central bank would lower interest rates, but a low nominal rate does not necessarily



mean easy money. In fact, it depends on the severity and amount of debt to liquidate. During the great depression low interest rates were a signal that money is too tight, not that money is too easy. This point is central for Fisher, though. During the crisis, Fisher engaged in a struggle over this point with Republican senators and commentators, who saw the low interest rates of the Fed as one of the causes of the crisis, as easy money financed too much debt.

The same point was made years later by the monetarist Milton Friedman, talking about the great contraction in Japan: “After the U.S. experience of the Great Depression, and after inflation and rising interest rates in the 1970s, and deflation and falling interest rates in the 1980s, I thought the fallacy of identifying tight money with high interest rates and easy money with low interest rates was dead. Apparently, old fallacies never die” (Friedman, 1998).

To cope with the crisis, Fisher wanted to identify policies that would target the cause of the crisis, and those policies that are just palliatives. The former are monetary policies, as debt deflation is a monetary phenomena. I would like to make a brief review of what he describes as the palliatives, policies that could help to alleviate the crisis without addressing its causes (\*\*\*\*). Fisher understands the necessity to protect workers from unemployment through stimulus plans and welfare measures, but as the crisis is not a product of unemployment, it would not have direct effects on the nature of the crisis. The second measure he labels as a palliative is improving efficiency in business; he considers that the improvements are quite small scale compared to the magnitude of the dollar disease. As a third measure, law can be used to improve debt flexibility and debt scaling: he cites a proposal to “Stop Foreclosures”, as foreclosures “are [an] unduly expensive means of collecting debt and hurt the values of the property foreclosed as well as that of neighbouring property”. Another palliative is “debt haircut”. Fisher notes regarding a policy of austerity that “to insist, even successfully, on full payment would only aggravate the process of deflation and make your taxes more, as measured in *real* dollars”, and that debt cancellation alone is not enough, but could help to relax the bite of debt deflation. He cites the case of Germany as an example of debt cancellation: “The great remedial effort yet proposed along this line is the Lausanne Accord between Germany and her creditors” that reduced Germany’s debt from 132 billion marks to 3 billion marks. Debt haircut could be helpful, but is not “at

any rate preventive”. In a 1922 newspaper article in *The Evening Independent*, Fisher was already talking about the German and European situation: “sound economics demand that America should make further loans to Europe instead of haggling over war debts (...) we are trying foolishly to suck blood from a stone—and keep Europe sick” , and he added about German inflation: “Germany, Poland and Austria have inflated currency because they cannot balance their budget politically. Their governments are too weak to impose taxes; their expenses are so terrific and they are so poor. Germany’s reparation problem is the key to the world situation (...) such a policy holds disasters, engendering hates and possibly involving the world in another war” (Fisher, 1922b).

The only way to escape a depression caused by money is to intervene with monetary policy. And in a particular with a crisis created by the lack of money, the logical consequence is to inject more money. This is the basis of his reflation plan.

#### **4.1) Reflation Plan**

Fisher’s idea of a reflation plan stems straight from his interpretation of the quantity theory of money as operationalized with the equation of exchange. His idea is to adjust the monetary side of the equation in order to keep in step with the real economy. Using the equation of exchange  $MV = PT$ , his idea would be to increase  $M$ . As the velocity remains constant, the nominal level of prices would rise, but real prices would decrease. Deflation was meant to target the nominal price level in order to reduce its real value, which would make debt repayment cheaper and improve debt liquidation and thus recovery.

Fisher’s strategy is to target a nominal growth of trade using the growth of precedent years taken as a guide. If in the years before the depression there were 3 per cent growth in commerce, the supply of money should be increased by 3 per cent per year “to meet the expected requirements of business”. In others words, Fisher aims to set a nominal inflation target in order to reduce the burden of the real value of money.

Technically, he proposed three techniques to put reflation into action—the first was to regulate the quantity of credit “through the rediscount rate”. He proposed that the central bank could manipulate interest rates at which they lend to the member banks. To the contemporary eye, this seems quite straightforward, because interest rate

manipulation is the conventional way to do monetary policy, but at the time it was quite a courageous policy, as interest rates were meant to be fixed:

*. . . in some places the rate stay at 6 per cent through good times and bad. In a western town I saw “4 per cent” engraved in inflexible stone on the walls of a new bank building. Even in New York, where interest is more elastic than anywhere else in America, it is not elastic enough.*

To the general public, manipulation of interest rates were a factor that introduced an additional layer of confusion to economic calculations, but more importantly, a fixed interest rate avoided an extreme situation of usury, and provided a safe and accessible way to provide credit to anyone. Fisher was clear about that:

*The human race should forget its primitive notions about interests. One of the greatest of all economic reform would be, on the one hand, to get rid of the popular prejudice against raising , promptly and drastically, rate of interests when condition justify; and, on the other hand, to get rid of the inertia which keeps rates high when conditions call for reduction.*

The second way to reflate is with “open market operations”. The central bank would buy things in the open economy in order to inject money and raise prices, and as buying durable goods would be inefficient, those operations would consist of buying government or private company bonds: “by operating not only the discount rate, but also the open market policy, the 12 Reserve Banks can powerfully regulate the volume of the country’s deposit currency”.

A third technique was the Dollar Compensated Plan that we have already seen. Obviously, reflation was not fully understood at this time, and there was fear that such policies would lead to an excessive amount of inflation. Hoover, president of the United States until 1933, enacted a shy increase in nominal spending to counteract the crisis. The federal budget in 1929 was \$3.1 billion, while his last budget in 1933 was \$4.6 billion. That was not enough to counterbalance deflation. Roosevelt took the reflation plan more seriously. Fisher corresponded regularly with President Roosevelt (Pavanelli, 2004b) and played a role in shaping and promoting the first monetary policies of the

first period of the new deal<sup>4</sup>. In particular, members of the Republican party were afraid of hyperinflation similar to the one that Germany had experienced 15 years before, between 1921 and 1924, with the Weimar republic. Fisher had to explain multiple times in the press what this plan was about, and tried to debunk the mystical fear of inflation that many had. In the newspapers, Fisher defended Roosevelt's monetary policy with vigour. For example, in an interview with the *Pittsburgh Press* on 30 January 1934, he says:

*It is commonly taken for granted that our government debt has been getting worse since Mr Roosevelt took office—growing say from \$21,000,000,000 to \$24,000,000,000, or about 15% per cent since March 4, But no one is a sound accountant who merely counts up the dollars involved. Besides counting the dollars you have to measure each dollar. Twenty-four billion dollars, instead of being more than the \$21,000,000,000 of an earlier vintage, will come out substantially less than the earlier billions, if each individual dollar is sufficiently smaller in value. And the fact is each dollar today is about 23 per cent less valuable than the dollar of March 4, thus making the real government debt of today about 12 per cent less than the real government debt of March 4.*

Unfortunately, the argument was not well received, and the newspapers<sup>5</sup> talked about a Congress “Inflation mania”; Republicans senators Reed and Walcott issued a statement on how a reflation plan would “bring no permanent prosperity” and how it “violates the most elementary principles”. It is probably as a result of this pressure that Roosevelt shifted from monetary policies to labour policies.

#### **4.1.1 Legacy**

The legacy of the reflation plan is quite important, and with the crisis of 2008, the plan gained a lot of attention. Two prominent reformulations of Fisher's idea of reflation are

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<sup>4</sup> “President Roosevelt intently scanned his monetary charts today and found satisfactory the rise in prices and purchasing power which he intends to keep closely managed to avoid the peaks and valleys of violent fluctuations. He intensified his studies for a managed currency in a conference with Secretary Woodin and Prof. Irving Fisher of Yale” from the *Pittsburgh Post-Gazette*, Aug 10, 1933, pag. 3

<sup>5</sup> The Daily Times, apr 22 1933

<sup>6</sup> The Evening Independent, Apr 22, 1933

those of Ben Bernanke and Scott Sumner. Both Bernanke and Sumner dedicated a lot of work to understanding the reasons for the Great Depression, and devoted several works to the subject.

Ben Bernanke used the same analytical framework as Fisher to understand the crisis, the debt-deflation theory, but updated and refined the argument:

*In my 1983 paper, I argued that non-indexation of financial contracts may have provided a mechanism through which declining money stocks and price levels could have had real effects on the U.S. economy of the 1930s. I discussed two related channels, one operating through 'debt deflation' and the other through bank capital and stability. The idea of debt deflation goes back to Irving Fisher (1933). (Bernanke, 2000)*

Bernanke understands how the distributional consequences of the crisis can actually deepen the crisis and are not neutral:

*. . . a debt deflation that unexpectedly redistributes wealth away from borrowers is not a macroeconomically neutral event: To the extent that potential borrowers have unique or lower-cost access to particular investment projects or spending opportunities, the loss of borrower net worth effectively cuts off these opportunities from the economy. (Bernanke, 2000)*

As the chairman of the Fed, Bernanke put into action a policy of bailout and quantitative easing that closely resembled the “open markets operations” proposed by Fisher, namely the purchase of government, as well as private bonds.

Scott Sumner of Bentley University is another scholar that devoted an important part of his career to understanding the great crisis. The work of Sumner is sophisticated and deep, but neither very systematised nor published in a coherent way.

According to Sumner, the crisis of 2008 has been misdiagnosed by many economists, just as the crisis of 1930 was misunderstood at the time.

*Monetary policy was seen as being very accommodative during the 1930s. Interest rates were cut repeatedly between 1929 and 1933, bringing them to very low levels. The monetary base increased sharply. This led to a perception that*

*monetary policy is ineffective during depressions, as there are few willing borrowers when demand is weak. (Scott Sumner cited in Beckworth, 2012)*

Sumner gives the same argument as Fisher and Friedman that in the 1930s money was tight, but to the public and to economists was seen as expansionary. According to Sumner, the subprime market crash had little responsibility for the magnitude of the crisis; using Fisher's terminology, it was just a "starter", but due to the lack of monetary stimulus, "a common cold had quietly turned into a pneumonia". The core of his solution is reflation through NGDP (Nominal Growth Domestic Product) targeting. He prefers NGDP targeting to inflation targeting, because the definition of inflation is ambiguous. Different policies should be adopted in case the of case of inflation by greater aggregate demand than those for inflation by adverse supply shock. Also, the measurement of inflation is problematic: while house prices were bubbling, the inflation index reported a rise, and the NGDP already showed a fall.

Without entering into details, the proposition of Sumner uses the same framework as Fisher, but refined.

#### **4.2) Stamp Scrip**

As we have seen, Fisher's Reflation Plan was about to augment M in his equation of exchange  $MV = PT$ . He thought that a rise in M would increase the general level of prices. But soon it became clear that an increase in the quantity of money was not enough. In *The Purchasing Power of Money*, Fisher had already noticed that the velocity of money is a product of seasonality, the structure of the banking system, and customs. Pavanelli (Pavanelli, 2004a) remarks how "Fisher, therefore, was basically satisfied with the assertion that in equilibrium, the causes affecting the velocity of money were exogenous, and specifically that both V and V' were 'independent of the quantity of money or of deposits' (respectively M and M'; Fisher, 1911, p. 154).

After the crisis of 1929, in *Booms and Depressions* Fisher understands that the effects of pessimism and expectations on the velocity of circulation play an important role in perpetrating depression. He says: "under the head of deflation, we have considered only the contraction of currency (meaning deposit currency). But now we come to the slowing of currency, the loss through pessimism" (Fisher 1932 p. 35). He

understands how the velocity of money is a mirror of the mood of the population: "Housewives and their breadwinners then become distrustful of everything except money. Bills and coins are confined to stockings or mattresses, or are put underground, or (in a larger way) stored in a safety deposit vault. Credit deposits may be hoarded too. If such banks are considered safe, large credit deposits will be kept, but kept idle" (Fisher 1932 p. 35).

As the monetary side of the equation is a product of the quantity of money and its velocity ( $M \cdot V$ ), Fisher saw the necessity not just to augment the quantity of money, but also to increase the velocity of money. With Hans Cohnsen, he wrote a book about *Stamp Scrip*, another monetary system that could have helped to overcome the problem.

Hans Cohnsen was in New York when he lost his job. He lived in an apartment with six roommates, and they shared a common interest in the teachings of the monetary reformer Silvio Gesell (1862–1930). Cohnsen was a member of the "Free Economy League", a group committed to spreading Gesellian ideas, and his interest in monetary economics led him to frequent the library of the Stable Money Association, an association founded by Fisher in the early 1920s to promote the cause of stable money. Through Cohnsen, Fisher became aware of the idea of Stamp Scrip (Cohnsen, 1990).

Gesell, an autodidact businessman, saw the lack of money as the reason for unemployment and economic downturns, and according to his theories money is scarce because, unlike other goods, it can be saved and leveraged with interest. His solution to the scarcity of money is to prevent money being saved; like any other goods, money depreciates with time. His ideas are not that far from the classification of Schumpeter we have seen before: "all controversy about currency can only be question of the price of money". Those theories were fully expressed in his book *The Natural economic Order* (Gesell, 1934). The cause of inequality and depression are in the unequal and unfair distribution of money. In other words, he is advocating for money with a negative interest rate. A negative interest rate would stimulate people to get rid of money as fast as possible, thus increasing the velocity of circulation and economic productivity.

Gesell was preaching an economic order where work and merit were the only criteria of success, and the idea of depreciating money is to avoid any form of capital accumulation and all the inequalities and power that comes along with it. Saving would

not be profitable, and people would use money just as a means of transaction and not a store of value. His idea was to keep the market, but without capitalism.

*Proudhon asked: Why are we short of houses, machinery and ships ? And he also gave the correct answer: Because money limits the building of them. Or, to use his own words: "Because money is a sentinel posted at the entrance to the markets, with orders to let no one pass. Money, you imagine, is the key that opens the gates of the market (by which term is meant the exchange of products), that is not true-money is the bolt that bars them.*

Gesell was also against the accumulation of land, which—as the accumulation of money—gave an unfair advantage to those who owned it against those who did not.

During the great inflation, the theory of Gesell was tried, in particular in Europe. Many local currencies were used alongside the inflated currencies, as in the case of Woergl, a little municipality in Austria, which, thanks a complementary currency, had a boom in occupation and production in times of crisis and hit the headlines of the day. Fisher and Cohnbrsen tried to apply the same recipe to the United States, but Roosevelt blocked any plan of local currencies. Cohnbrsen writes:

*Altogether some 450 communities wanted to issue stamp scrip as a means of easing their dire financial situations. One of them, Reading, Pennsylvania, had asked Fisher to personally supervise the issuance of \$100,000 of such scrip. He sent me. We had the bills and stamps printed, and properly dated on the back. The Chamber of Commerce acted as sponsor. The labour unions agreed to cooperate, and so did the banks, the business community, and the organized farmers. All was ready to start early in March 1933. But on March 4th, in his Inaugural Address, Roosevelt closed the banks and forbade the issue of money substitutes. I returned to New Haven. (Cohnbrsen, 1990)*

Fisher describes Stamp Scrip like a quasi-money medium with important characteristics: “First: It is like money, because it can be banked OR invested OR spent. Second: It is unlike money, because IT CANNOT BE HOARDED”. We see again how his intention was to increase circulation and stop over-saving. In his book *Stable Money* (Fisher & Cohnbrsen, 1936), Fisher recognises the role of Gesell in understanding the importance of



velocity: “Gesell’s work (...) seems to have been the first who considered the problem of controlling the velocity of circulation for the purpose of influencing the value of money”.

Increasing the quantity of M is not helpful if banks just augment the reserves (or people their savings) and money stays idle. The velocity of money is very important to the reprise.

#### **4.2.1) Legacy**

It is with the crisis of 2008 that a central bank successfully tried to implement the idea of negative interest rate. The central bank of Sweden applied a negative interest rate on the reserves held by member banks: “The decision on the repo rate will apply with effect from Wednesday, 8 July 2009. The deposit rate is at the same time cut to –0.25 per cent”<sup>7</sup>. The measure encouraged Swedish banks to lend money instead of hoarding it.

The idea of negative interest rate has been reprised several times, both by orthodox and unorthodox economists. Willem Buiter (Buiter, 2009a) is for sure one that takes the idea more seriously, even if the reception was mixed: “I spent yesterday in Frankfurt at the European Central Bank to meet people and give a presentation on negative nominal interest rates (the ‘zero lower bound problem’). For reasons I do not understand, this topic generates almost as much heat and emotion as a critical piece on Obama. His purpose is to “eliminate a silly asymmetry in the monetary policy arsenal”: the zero bound should not represent an obstacle for central bankers.

As currency bears zero interest rates, different forms of depreciation could be used to signal the depreciation; if before the idea was to stamp it, the suggestion of Buiter is to eliminate currency altogether. A digital-only currency would permit both positive and negative interest rates easily.

*Because of the existence of currency with a zero nominal interest rate, the interest nominal rate on all financial assets is constrained to be no lower than zero<sup>6</sup> . . . So when inflation threatens, our monetary masters can raise the official policy rate (OPR) to any level they deem appropriate. When deflation and recession threaten, they can only cut the OPR to zero. After that, it is quantitative*

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<sup>7</sup> <http://www.riksbank.com/templates/Page.aspx?id=32047>

*easing, credit easing and other unconventional monetary policy measures.  
(Buiter, 2009b)*

Many other works are dedicated to the subject of alternative currencies or local currencies, and there are several associations and even one journal completely dedicated to the subject. Among this abundance, I would like to highlight the text of Bruno Thérêt, which proposes for the euro crisis a solution very similar to Stamp Scrip. Thérêt proposes what he calls monetary federalism. To overcome the crisis of the euro, he proposes national complementary currencies alongside the euro:

*. . . each state would put into circulation in its own territory a complementary currency guaranteed by tax revenue and pegged to the euro, what we call a “fiscal currency”. This parallel currency would be a “popular” currency, issued as bills in small denominations and intended for day-to-day purchases. The euro would continue to be used for large transactions, transactions occurring at the European level, and for savings.*

*The kind of monetary federalism we propose would end the private banking system’s monopoly on currency issuance. Alongside a common currency regulated by European monetary authorities, it would create complementary national currencies subject to individual governments. At the same time, it would offer a response to the current crisis, though its scope is not limited to the problems afflicting the Eurozone’s “peripheral” countries.(Kalinowski & Thérêt, 2012)*

#### **4.3) 100% Money**

With the paragraph on the Reflation Plan, we have seen the necessity to increase the quantity of money, and with Stamp Scrip, we have seen why and how to increase the velocity of circulation. All this was coherent within the quantitative framework found in the first works of Irving Fisher. The next step is how to maintain the equilibrium between the monetary side of the equation and the real side and avoid swindling the purchasing power of money.

The project of 100% reserves is nothing new in the history of economic thought. It has been advocated many times, and it is particularly tied with the history of the quantitative theory of money. The first currency school advocated the full reserve. The policy gained official status in the United Kingdom with the Bank Charter Act of 1844, also known as the Peel Act. The Peel Act was meant to put a limit on the emission of paper money by the banks, with the creation of a single national currency. The main objective of the policy was to enforce the gold standard. And, as we have already seen, a similar debate came later in the United States with slightly different terms.

In march 1933, a group of economists at the University of Chicago wrote a tiny memorandum proposing to keep a full reserve in banks in order to avoid, once and for all, all kinds of banking panics. According to those authors, economic instability is due to the nature of the banking system. Their considerations were not dissimilar to Fisher's; they thought that banks tend to over-lend in boom periods, and they under-lend in periods of crisis, crashing the economy as a consequence. Their proposition was to eliminate this mechanism by banning the banks from lending more of their own money. The plan caught Fisher's attention by the plan: "if it can be made practical, I would, I think, favour it; and I have been thinking along this lines too"<sup>8</sup> he says in a letter to the Chicago economists. A few years later, in 1935, Fisher published a book on the topic, expanding the proposal.

The difference in the project of Ricardo and the project of Fisher concern the role of gold. Fisher no longer aims to enforce any form of gold standard, and neither does he do so in his dynamic version developed with the *Dollar Compensated Plan*. With *100% Money*, Fisher wants to institute a *Currency Commission* that has the task of converting all bank assets into money: if a bank has a capital of \$90 billion divided among securities, shares, and obligations, they have to be converted into money as long as their capital is not composed of 100% money. Then the role of the commission would be to track the changes in prices through index numbers and adjust periodically the quantity of money needed by the economy, trying to keep the purchasing power of money stable.

The schema proposed by Fisher was meant to change the nature of banking. If before, the profits of banks were made on extending the credit over the reserves, under Fisher's plan, banking is limited to the management of deposits and the management of money. In Fisher's plan, banks are still the main lender to particulars, but this lending

activity must be carried out using real money and not leverage. Fisher's plan was essentially a plan to nationalise money, just as the Peel Act was a plan to nationalise currency.

This is because with a system based on fractional reserve, it is difficult to control the quantity of money circulating. The quantity of money is not completely determined by central banks, and it is not the complete responsibility of private banks. It is a hybrid solution; instead, the

*100 per cent banking [...] would give the Federal Reserve absolute control over the money supply. Recall that under the present fractional reserve system of depository institutions, the money supply is determined in the short run by such non-policy variables as the currency/deposit ratio of the public and the excess reserve ratio of depository institutions. (Fisher, 1935)*

Fisher's idea was to transform those "non-policy variables" into policy variables controlled directly by the central bank (the Currency Commission, or the Fed).

As with all Fisher's innovations, his 100% Money plan had also epistemological implications for money. With the implementation of the fractional reserve system, the border between different types of money were becoming blurred. Credit is commonly understood as being money, because it is used as money, because it shares the unit of account of money, and because contracts are written in monetary terms. But new credit issued by a fractional reserve is an ambiguous entity; it is not only a transfer of money, but also creation of money. But the money created this way does not have the same *statute* as the money created by a central bank, because once the debt is repaid, the money is destroyed.

Twenty years before Fisher, a Nobel prize winner for chemistry (for his research in radioactive decay) was doing exactly the same work as Fisher and the economists of the *Chicago Memorandum*, and proposing the same policies. In *100% Money*, Fisher cited Soddy as a precursor of the 100% Plan several times.

Soddy had written several books on monetary issues (Soddy, 1926; Soddy, 1931; Soddy, 1933; Soddy, 1934). But his style and his intellectual foundation were very far from the standard economics of his time. He also used a physical analogy, but instead of

the mechanistic equilibrium oriented paradigm used by economists since Walras, his was based on thermodynamics. To him, money was like energy, and energy is not free. Energy can be transformed, but we cannot use energy to produce more energy; that would be a perpetual motion machine and would violate the laws of thermodynamics, and would thus be physically impossible.

Soddy argued that the monetary system was, in fact, violating those basic rules, as the banks can extend credit without constraints—debt tends to inflate, bubbles burst, and crisis are then a consequence of those excesses. According to Soddy, giving banks the freedom to extend credit, and thus the monetary base, is against the law of conservation of energy. Energy is transformed, but it cannot be created; banks are given an unfair advantage in creating and managing such an important public commodity as money. To maximise profits, banks have the tendency to create an overload of debt that will trigger the economy into crisis. Soddy thought the same about interest rates. He found the logic of interests profoundly detrimental for the whole of society. Interest will push people to save. Thus storage of energy is impossible, and excessive hoarding will eventually create poverty and disequilibrium. He came to distinguish two forms of energy in economic life: wealth (money) and virtual wealth (debt). The former follows the natural rules of physics, whereas the latter follows arbitrary mathematical logic decided by humans.

Soddy, even with a language and with a theoretical framework very distant from Fisher, formulated—years before Fisher—the central point of Fisher's 100% Money plan: achieve a clear distinction between money (real wealth) and debt (virtual wealth). Soddy was well aware of the work of Fisher, and Fisher knew the work of Soddy. The objective of Soddy's intellectual effort was to give stability to the purchasing power of money, and he clearly cited Fisher as a vanguardist in doing so:

*Professor Irving Fisher, among orthodox economists, has been foremost in calling attention to the evils of a variable monetary standard, and has done much to get the importance of the question more generally recognised. (Soddy, 1926)*

Moreover, Soddy utilised the same social justice framework as Fisher to justify his theoretical framework: “A variation in the value of money, in terms of wealth arbitrarily

robs one class in the community for the benefit of others” (Soddy, 1926) There was even the same idea about issuing a national money:

*My proposal is that new National Money, to the extent created by the banks, should be issued to the banks eventually in exchange for the equivalent of national debt securities, which would be cancelled, and that henceforth the banks should be required to be solvent and keep against their liabilities to their clients in respect of current account deposits, withdrawable by cheque, pound for pound of National Money, instead of, as now, only a trifling proportion of this liability. (Soddy, 1934)*

Unfortunately, the ideas of Soddy were ignored, and the language and the theoretical framework puzzled many. The law of thermodynamics were a new thing and were not yet fully understood. One of the few positive reviews of the work of Soddy was by the American Economist Frank Knight, who said:

*. . . 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 “interest” for multiplying several fold the quantity of medium of exchange”. (cited in , 1995)*

Others, such as Henry Simons, called Soddy a “presumptuous charlatan”.

Those names are important to our story, because they were the economists who later proposed the Chicago Memorandum.

#### **4.3.1 Legacy**

The legacy of the 100% money idea is quite important. A young Milton Friedman, in a book entitled *A Program for Monetary Stability*, wrote:

*As a student of Henry Simons and Lloyd Mints [The author of the Chicago Plan, and one of his subscribers ndr], 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, 1959)

Friedman articulated his position that even if it had some difference from the original plan, it was very close to it. A significant achievement of Friedman's rhetoric is to put a plan for the nationalisation of money in an anti-government agenda. He wrote:

*Our present fractional reserve banking system has two major defects. First, it involves extensive governmental intervention into lending and investing activities that should 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 lent.*  
(Friedman, 1959)

Brad DeLong wittily remarked on how Friedman was used to this kind of counter-intuitive rhetoric:

*In the 1950s and 1960s and 1970s Milton Friedman faced a rhetorical problem. He was a laissez-faire libertarian. But he also believed that macroeconomic stabilisation required that the central bank be always in the market, buying and selling government bonds in order to match the supply of liquid cash money to the demand, and so make Say's Law true in practice even though it was false in theory.* (DeLong, 2011)

As a marketing tactic, this was a great success.

Another proponent of 100% money was the French Nobel prize winner for Economics, Maurice Allais. He had—as Fisher and Soddy—a background in physics, and he later self-learned economics. He says that there is no real difference between banks and the “*faux-monnayeurs*” (counterfeiters); the only difference is that banks are accepted. But there is not a rational background to this:

*Plus la quantité de monnaie augmente dans un système de couverture fractionnaire de dépôts, plus elle est désirée. L'offre de monnaie ne satisfait jamais la demande: elle ne fait que l'exciter.* (Allais, 1977)

In several books (Allais, 1977; Allais, 1991; Allais, 1999), he restates a theory of the crisis very similar to Fisher's, and he argues for a banking system with full reserves. Even if his academic career is quite orthodox, he is very polemic with the establishment and the status quo. He regret the lack of courage and imagination in reformulating a new monetary system not based on the creation of credit by private entities:

*Particulièrement significative est l'absence totale de toute remise en cause du fondement même du système du crédit tel qu'il fonctionne actuellement, savoir la création de monnaie ex nihilo par le système bancaire et la pratique généralisée de financements longs avec des emprunts à court terme.*

With the crisis of 2008, the 100% Money plan saw a renewed interest, and several attempts to redraw the plan have been made (Kotlikoff, 2010) (Ryan-Collins, Greenham, Werner, & Jackson, 2011). Perhaps the most interesting comes from an IMF working paper written by Jaromir Benes and Michael Kumhof, entitled "The Chicago plan revisited". They write in the abstract:

*Irving Fisher (1936) claimed the following advantages for this plan: (1) Much better control of a major source of business cycle fluctuations, sudden increases and contractions of bank credit and of the supply of bank-created money. (2) Complete elimination of bank runs. (3) Dramatic reduction of the (net) public debt. (4) Dramatic reduction of private debt, as money creation no longer requires simultaneous debt creation. We study these claims by embedding a comprehensive and carefully calibrated model of the banking system in a DSGE model of the U.S. economy. We find support for all four of Fisher's claims. Furthermore, output gains approach 10 per cent, and steady state inflation can drop to zero without posing problems for the conduct of monetary policy. (Benes & Kumhof, 2012)*

## **5) Conclusions**

We have seen how and in what context the ideas of Fisher were born and developed. Until the end of his life, he keeps using his original framework rooted in his reformulation quantity theory of money with the equation of exchange.



This necessarily brief introduction to the crankiest ideas of Fisher poses several questions of a sociological nature about how social science is undertaken. Why are certain ideas more likely than others to be accepted, even when those ideas are seen as valid and rational over time? How an orthodoxy is created? And why economics does have an orthodoxy when other social sciences as sociology do not?

This conflict is embedded in the relationship between the social sciences and politics, and *rationality* is not enough to succeed. Fisher's ideas and suggestions, and those of his followers, are necessarily based on a political and normative vision of society that may or may not be shared by others. As Schumpeter reminds us, monetary policy is first and foremost politics. Forgetting this particular aspect could lead to serious misunderstandings about the role of social science in society and give rhetorical power to technocratic narratives and an illusion of *alternativlos*.

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