LUND UNIVERSITY
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Master programme in Economic History

From Anarchy to Central Bank Policy

- Silvio Gesell, Negative Interest Rates and Post-Crisis Monetary Policy

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Abstract: The dawn of negative interest rates has drawn much attention to the German economist and libertarian socialist Silvio Gesell (1862-1930) who proposed the measure in the early 20th century. Although the attention has led to countless mentions in economic journal articles and speeches conducted by central bankers, often, no further effort is made of going deeper into his work. This paper intends to do so. It presents his radical analysis of capitalism, which stands opposed to that of Karl Marx and links his remedy of depreciating currency to his theory of interest so perfectly aligned with the one presented by John Maynard Keynes more than 20 years later. Furthermore, it shows how the evolution of banking has transformed the way negative interest rates is applied and how deep negative rates could be implemented to affect deposits of both corporations and households. Finally, assessing the preliminary experience from the application in Denmark, it shows that negative interest rates, which conventional monetary theory had always deemed impossible, are indeed possible, and that some of the economic dynamics desired by Gesell could be within reach.

Key words: Silvio Gesell, negative interest rates, history of economic thought

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Table of Contents

Table of Figures

From Anarchy to Central Bank Policy

- Silvio Gesell, Negative Interest Rates, and Post-Crisis Monetary Policy

"*It has always been conventional wisdom that one cannot have negative interest rates. We have then shown that actually one could.*" – Lars Rohde, governor of Danmarks Nationalbank.[1]

1. Introduction

1.1 Overview

Since the Great Financial Crisis (GFC) interest rates has been dropping to record-low levels in most western economies. Eventually these rates has turned negative, and today five central banks have gone into negative territory including Sveriges Riksbank in Sweden (BoS), Danmarks Nationalbank in Denmark (DNB), Swiss National Bank (SNB), Bank of Japan (BoJ), and the European Central Bank (ECB) managing the interest rate of all the countries in the Euro Zone.

According to conventional wisdom and most economic textbooks, going below the zero lower bound is not possible due to the zero nominal interest rate on cash, but experience has proven otherwise. Today the main question regarding negative rates is no longer whether central banks will choose to go negative but rather how low they can go (Haldane 2015). As central banks reduces their policy rates trying to find the answer, much established monetary theory is turned on its head, and in January 2016 the vice chairman of the Federal Reserve, Stanley Fischer (2016: 5) touched upon this new development in a speech for the American Economic Association at its annual meeting:

[1] Qoute from the online magazine Zetland (Mosbech 2016) translated from Danish by the author.

> "*Our colleagues in Europe are busy rewriting economics textbooks on this topic* [negative interest rates] *as we speak – and also helping us to remember earlier discussions of negative interest rates by Keynes, Irving Fisher, Hicks and Gesell.*"

The arrival of negative interest rates has resulted in a renewed interest in the historical proponents of the idea. Primarily the early 20th century German economist Silvio Gesell (1862-1930) who presented the idea in its, then most complete form, in his main work *Die Natürliche Wirtschaftsordnung* (NWO) published for the first time in 1916.

While negative interest rates are slowly being implemented by a rising number of central banks, and the theory behind it is getting more attention, Gesell is found mentioned in a growing number of journals, financial outlets, and central bank reports. This new development poses an interesting undertaking for scholars interested in the history of economic thought. Not only because Gesell is fairly unknown to most economists and economic historians, but also because of the radical basis on which his theory is founded. In fact the theory is so radical that one must suspect the majority of central bankers and economists, so frequently mentioning Gesell, of not being completely aware of it.

As an economic idea that was founded as an attack on capitalism by a man inspired, and cooperating with, libertarian socialists and anarchists, it seems appropriate to explore how he ended up on the lips of so many influential economists. In other words it should be investigated how the theoretical effort of a libertarian socialist became a point of departure in central bank policy.

Probably the answer is not to be found in a sudden, drastic shift in the political minds of civil servants engaged in central banking. Rather it should be found in an economic development forcing central banks to reduce interest rates to historically low levels in an attempt to preserve the functions of prevailing monetary policy-tools. This, however, does not mean that Gesell and the intellectual history of negative rates become irrelevant when related to the functions of the modern economy and present monetary policy. Instead it means that the economic dynamics deemed attractive to the historical proponents of the idea becomes even more interesting to trace within the present monetary framework.

Just as the theories and normative reflections leading economists to advocate negative interest rates have changed over time the role of central banks has changed as well. From trying to control the amount of credit issued by banks in the 1970's and early 80's under the principle of monetarism, today central banks tries to manage the development in consumer prices through controlling the price of base money (M0). At the same time they have moved from merely filling out the function as "lender of last resort" to a function of so-called "dealer of last resort" (Mehrling 2011). This means that central banks today are not only making loans available to banks during times of economic stress, but that they also act in a role of securing the value of important financial assets. One way of doing this is with the unconventional monetary policy tool of so called asset purchase programs also known as quantitative easing (QE). A policy conducted by the ECB since the beginning of 2015.

The effectiveness of the tools used by central banks so far has been very modest. In the build-up to the crisis in 2008 the ECB raised interest rates without getting inflation down to the target of 2%, and after the GFC tools seems insufficient to ensure genuine recovery. Just as the high interest rates before 2008 did not succeed in keeping inflation sufficiently low, low positive interest rates combined with QE, does not fight off the deflationary threat which has now loitered above the European economy since 2013.

The seemingly impotent effect of both the conventional policy of altering interest rates in positive territory and the unconventional policy of asset purchasing has made central banks look at going below the zero lower bound as a new tool to secure policy objectives. This is where we stand today and the reason why Gesell is suddenly attracting an unprecedented amount of mentions in the 21st century.

1.2 Aim and Purpose

The increased attention attributed to Gesell and his monetary reform proposal in connection to the dawn of negative interest rate policy (NIRP) makes his legacy a relevant topic for closer scrutiny. However, in order to understand negative interest rates as they were proposed by Gesell his theory must first be understood in its contemporary economic context.

With respect to the above, the purpose of this paper is to bring the proposals of Gesell into the present setting by examining how the idea of negative interest rates was transformed over time by economic development and how they have been applied to the present monetary framework.

The prospect of negative interest rates has far-reaching consequences for monetary theory and fundamentally challenges the way we are used think about money as well as the concepts of saving, borrowing, and capitalism. Hopefully this paper will provide a valuable contribution to the debate regarding negative rates, reminding its participants of their historical legacy and radical ideological foundation.

1.3 Existing Literature

The relevant literature for our examination can be divided into two parts. The first part consists of writing done by experts on Gesell who work mainly within the range of the history of economic thought. These scholars have sought to analyze Gesell's proposals with the aim to explore its theoretical implications including its connection to the theories of other economists. In particular the connection to John Maynard Keynes, who attributed several pages to Gesell in his *General Theory of Employment Interest and Money* (1970).

Among these writers is Dudley Dillard[2] (1914-1991) who already in the early 1940's carried out studies on Keynes, including thorough studies on its similarities with the work of Gesell, and the even more interesting similarity between Proudhon and Keynes (1942b). A general review of studies on Gesell shows a great consensus that Gesell's theory of interest actually went prior to that of Keynes which has made some scholars speculate whether it was in fact appropriated from Gesell by Keynes. This was proposed by Guido Giacomo Preparata[3] in his article "On the Art of Innuendo" (2002) in which he accuses Keynes of plagiarism in, "*having appropriated Gesell's insights into the nature of money and interest, and stripped them from their radical implications…*" (2002: 217). It is not within the scope of this paper to inspect such

[2] Dudley Dillard would later go on to write *The Economics of John Maynard Keynes* (1949) and *Economic Development of the North Atlantic Community* (1967).

[3] Preparata is the author of the most comprehensive academic studies treating the ideological and economic implications of Gesellian economics. See Preparata (2002; 2006 and 2010) and Preparata and Elliot (2000 and 2004).

accusations, but the literature makes it clear that a study seeking to bring Gesells ideas into the present needs to take account of not only Gesell's, but Keynes' writing as well.

The second part of the literature has been written by influential economists and central bankers who advocate low negative rates, and actively try to influence present debate on monetary policy. Although these economists rarely show any deeper knowledge regarding Gesell's economic philosophy and its theoretical implications they have made it a persistent habit to mention his work whenever they write on the subject. Among the most prominent of these are the chief economist for Citigroup, Willem Buiter, the chief economist at Bank of England, Andrew Haldane, the Harvard economist, Kenneth Rogoff and Michigan economist, Miles Kimball. Their work provides valuable insights when considering the new challenges and opportunities for a successful implementation of negative rates in the present economy.

When studying the transformation and current implementation of negative interest rates since the writing of Gesell, it becomes apparent that there exists a gap between these two parts of literature. The first part analyzes Gesell's work only in its contemporary context. The second part merely mentions Gesell and takes his prescriptions into the present without accounting for the economic development and the change in the function of banking which have taken place since the time of his writing.

The research that carries most resemblance to the study we will be undertaking has been done by Cordelius Ilgmann et al. who have written, and partially written, articles linking Gesells proposal to the introduction of NIRP. His article "Silvio Gesell 'A strange, unduly neglected' monetary theorist" (2015) stands out today as one of the concise studies of Gesell's economic theory and remedy of taxing money. In "Reducing the Lower Bound on Market Interest Rates" (Ilgmann, van Suntum & Kaptan 2011) and "Negative nominal interest rates: history and current proposals" (Ilgmann & Menner 2011) the present attempt to overcome the zero lower bound with the help of negative interest rates is discussed while linking the endeavor to the work of Gesell. However, the two articles do not present the implications that changes in the economic structure since the time of Gesell have had for the way negative interest rates is applied today. Furthermore the articles are written too early to include actual cases implementation of negative interest as well as many of the new proposals of how to effectively implement a deep negative policy rate.

1.4 Structure and method

The paper will be divided into three main sections. In the first section we will present Gesell's economic theory in its contemporary context and take a closer look at the formation of his reform proposal. We will do this by exploring the antecedents of his idea and the intellectual debate that surrounded it. This will take us back to the historical discussions regarding the nature of capitalism between the self-proclaimed anarchist (2008: 205) Pierre Joseph Proudhon (1809-1865) and Karl Marx in the mid-nineteenth century. Using a combination of existing secondary literature and primary sources we will present Gesells view on surplus value, rent, and interest which broad him to his conclusions and radical proposal of nationalizing land rent and introduce a negative interest rate on money. The presentation of the theoretical basis will bring us on to a discussion of Gesell's theory as it was seen by Keynes who gave Gesell's proposals his partial endorsement and seemed to adopt a theory of interest similar to that of Gesell. To finish the section we will take a quick look at the experiments that was introduced with local depreciating currencies. The section will establish the foundation of our study with which we can move on to examine the transformation of the idea that took place in step with economic development.

In the second section we will try to answer how the idea of negative interest rates was transformed by economic development after the time of Gesell. As his idea was formed in the late 19th and early 20th century it is expected that the solutions proposed by Gesell has needed a technical update in order to fit into a modern financial setup. An implementation of negative interest rates today has to take account of the evolution of money and banking as well as the new role of central banks which have undergone fundamental changes throughout the 20th century. In specific, the transformation of negative rates is issue to a concept which the former governor of Bank of England, Mervyn King, has termed the alchemy of banking (2016: 104) and finance (2016: 5) – *the creation of extraordinary financial powers that defy reality and common sense.* After this section it will become clearer how this so called alchemy has changed banking and how it changes the reasoning behind the application of negative interest rates today. In the light of this transformation we will discuss some of the modern proposals of how to effectively apply negative interest rates, not only to base money, but also to the bank deposits of the public.

Third we will look at a case of actual implementation of negative interest rates in a modern economy. By presenting the case of Denmark and descriptive statistics from the preliminary Danish experience we will be evaluating the early steps in the application of negative interest rates in a country that introduced this new measure, as the first in the world, already in 2012.[4] By investigating the Danish experience it will become clear that negative rates is indeed possible and that a scenario where the public pays money for keeping money on deposit is not unrealistic. We will finish the paper with a short assessment of the extent to which the spirit of Gesell's analysis and proposal can be said to be present in the lower rates which are potentially waiting in the future.

2. Formation

2.1 The source of exploitation

When economists and central bankers are mentioning Gesell they do not, at the same time, touch on the radical monetary theory the idea of negative interest rates was founded upon. This could be due to the fact that his theory does not play very well with the established monetary theory of today; however, it could also be explained by a simple lack of familiarity with his line of thought. In the following we will take a deeper look at Gesell's economic and monetary entry-point.

Silvio Gesell coined himself a socialist but to end the classification at that would be strongly misleading seeing that his analysis of capitalism[5] was strongly opposed to that of Karl Marx. Opposite Marx, Gesell was a great believer in the autonomy of market forces and was very much against state collectivization or nationalization of the means of production. He saw the aim of every type of socialism as the abolishment of unearned income (Gesell 2009: 9) in any form of surplus-value stemming both from land rent and interest

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[4] Sweden did introduce negative interest rates on marginal deposits in 2009-2010 but the amount of deposits influenced was small and the move did not affect the rates on the inter-bank market.

[5] Gesell defined capitalism simply as an economic condition in which the demand for loan-money and real capital exceeds the supply and therefore gives rise to interest (Gesell 2009: 195n).

on both real- and financial capital.[6] In the words of Dudley Dillard (1942a: 348) his objective was, "*to attack rentier capitalism and to substitute in its place an interest-free society.*" It was regarding the question of which method would most effectively defeat capitalism that Marx and Gesell stood opposed.

To create a foundation upon which a free play of market forces could be established, and the full proceeds of labor could be granted the worker land would first have to be made the collective property of all. As for light and air, land would have to be made unsellable (Onken 1999: 29). The inspiration for this reform came from the land reformer Henry George, who in his main work *Progress and Poverty* (1992) saw the private ownership of land, and particularly land rent, as the reason why progress was always accompanied by the presence of poverty.

Practically Gesell's land reform meant that the state would administrate the ownership of land and make it available to citizens through specified time contracts auctioned to the dwellers willing to pay the highest rent. The former owners (possibly the present tenants) would be fully compensated with newly issued government bonds financed through the income from the rent on land now attributed the state (Gesell 2009: 73-76). Rent, the unearned income associated with ownership land and speculation in land values would be a thing of the past.

To Marx exploitation took its form mainly through private ownership of the means of production, and consequently he explained the existence of surplus-value primarily as a function of the private ownership of real capital. This stands contrary to the theory of Gesell who, in addition to the private ownership of land rent, saw exploitation as a consequence of the functions of the monetary system, not the structure of ownership as such. To Gesell, surplus value was established through exchange rather than through production.

The exploitation of labor, according to Gesell, was mainly a result from a structural defect in the monetary system (Onken 1999: 7) that caused the demand for money and real capital to exceed the supply thereby allowing the existence of interest (Gesell 2009: 195). This structural defect was seen by Gesell as a consequence of the imperishable quality of money compared to the perishable quality inherent in goods.

[6] Throughout this paper we will be using Gesell's definition of real capital which is the translation of the German word *Sachgüter*. Here real capital means houses, machinery, factories, ships etc. Not land or various types of financial assets.

Unlike money, goods are subject to gradual decay and will therefore lose its value over time. In contrast, money is imperishable and therefore the possessor of money will only part with his financial asset if he is payed a special premium that Gesell called *urzinz* or in English, basic interest.[7] This was nothing but a tribute payed to the possessor of money in order for him to exchange his imperishable asset with a perishable one and could only exist due to the paradoxical quality inherent in money. A paradox that according to Aristotle consisted of money on one side being a means of exchange used for everyday transactions, and on the other, a means of saving, which can be hoarded and used to dominate market forces and influence economic development (Onken 2000: 610).

At the time Gesell published NWO the debate whether the existence of surplus value was rooted in the sphere of production or in the sphere of exchange was nothing new. It was a discussion that took place between Marx and the self-proclaimed anarchist Pierre Joseph Proudhon more than half a century earlier, and one in which Gesell explicitly sided himself with Proudhon (Gesell 2009: 3-9). Proudhon, as well as Gesell, saw the existence of monetary interest as a tribute taken by the capitalist for parting with their liquidity and to allow money to be engaged in the production of goods and services (Dillard 1942b: 70). To them, interest did not have any connection to the private ownership of the means of production which can be contrasted to the theory of Marx who saw monetary interest as stemming from the interest on real capital (Blaug 1980: 298-299), a theory that does not differ significantly from that of Böhm-Bawerk (Blaug 1980: 254). Proudhon and Gesell saw real capital as carrying interest simply through the fact that money does and saw it as a tribute which is paid to the capitalist *via* the producer, not *to* the producer. The producer would have to include the monetary interest (basic interest) in his retail prices and only a greatly reduced amount of money would stay with the producer as commercial profits after the payment of interest on the money borrowed to establish production:

[7] Gesell explicitly divided interest upon a loan into three parts: 1) Basic interest which is nothing but a tribute paid to the possessor of money. 2) A premium for risk to insure the bank against the risk of borrowers not paying back their loans. 3) An inflation offset which Gesell called a "hausse premium" which compensates the creditor in accordance to the expected rise of general prices during the maturity of the loan. According to Gesell, by removing basic interest, according to Gesell, the rate of interest paid for a loan would drop to a level very close to zero.

> "*Wares collect basic interest from the consumer, not for the producer but for the possessor of money (medium of exchange) somewhat as a postman collects the price of a cash-on-delivery parcel.*" (Gesell 2009: 337).

Or as understood by Ilgmann (2015: 543):

> "*Gesell argued that interest was nothing but a fee for immediate purchase that would be incorporated in the price of goods, the selling price being production costs plus the rate of interest. Interest was thus being channeled from the consumer via the producers and merchants to the possessor of money because producers and merchants would have to include the costs of borrowed capital in their retail price.*"

Through this reasoning the capitalist would no longer be the producer (the owner of the means of production) but the possessor of money alone who did nothing but to make his money available for exchange through taking a tribute which Gesell called basic interest. This basic interest would place an, "*interest barrier*" (Preparata 2002: 219) to the growth of the real capital stock making it scarce and in turn giving it its positive yielding quality (Ilgmann & Menner 2011: 387). A central notion that made Darity Jr. (1995: 27) recognize Gesell as the source of, "*Keynes' adoption of the position that the monetary system and the rate of interest function as a barrier to prosperity…*". This recognition will be examined further, later in our examination.

In addition to the nationalization of land rent Gesells solution to the problem of capitalism was simple and based on the ideal of unobstructed market interaction. To secure this objective the hindrance to the free flow of money, basic interest, would have to be removed or at least greatly reduced. Like the state should secure the smooth flow of traffic within the public infrastructure the state should also ensure the unproblematic flow of goods and services on the market by securing the free flow of the means of exchange (Gesell 2009: 200). This would be done by undermining the function of money as a means of saving, making it unattractive to hoard, and strengthening the function of money as a means of exchange. To achieve this Gesell recommended a tax on money, a negative interest rate. This should be around 5% (Gesell 2009: 244) and would be implemented through what John Maynard Keynes later termed "stamped money" (1970: 234, 357-8).

Practically it would be accomplished by equipping paper currency with fields that would have to be stamped each month in order for the note to maintain its status as legal tender. The price of the stamps, which should be applied to the notes on a monthly basis, would set the nominal negative interest rate of the money. Thus with a negative interest rate of 6% a hundred dollar bill would have to be stamped each month with a stamp worth 50 cents to maintain its function as money. The innovation would, according to Gesell, make money perishable and so place it alongside the perishable goods it was created as a means of exchange for. This would strip money of its ability to yield basic interest thereby making it no more advantageous to accumulate than goods. General demand for goods would attain a much more stable pattern creating a more stable economy liberated from arbitrary political, financial, or natural conditions (Gesell 2009: 241).

This was what Proudhon had tried to achieve through a different scheme namely his public exchange banks. For him, as well as for Gesell, it was the scarcity of money maintained by the existence of interest which allowed the hindrance of genuinely free commerce and production (Proudhon 2007: 189) which in turn had the power to defeat capitalism.

At the exchange banks producers would be able to exchange their products for universally acceptable public credit, and borrowers at the exchange banks would only be charged the interest rate necessary to carry the costs of operating the banks[8] (Proudhon 2007: 182). Gesell saw Proudhon as being on the right track with the establishment of the public exchange banks with which he attempted to construct an economic system where money and goods was broad to a common level. But Proudhon missed one essential fact regarding the nature of money:

[8] Proudhon assumed that an interest rate of between ½% and ¼% would be sufficient to carry the costs of running the banks (Proudhon 2007: 177)

> "*Proudhon had overlooked the fact that that money is not only a medium of exchange, but also a medium of saving, and that money and potatoes, money and lime, money and cloth can never in any circumstances be looked upon as things of equal worth in the chests of the savers. A youth saving against old age will prefer a single gold coin to the contents of the largest warehouse."* (Gesell 2009: 8)

Placing a negative interest rate on money would solve the problem Proudhon had tried to solve, and end the artificial scarcity of money upheld by basic interest. According to Gesell this simple monetary innovation would bring the economic ideals of Proudhon into the future.

In April 1919 Silvio Gesell was called into office in the very short lived libertarian socialist Bavarian Soviet Republic in Munich which, according to Sebastian Haffner (1971: 156), was led by a group of intellectuals blessed with both bravery and ambition but also some political naivety. The call to office happened on the recommendation of his personal friend, the anarchist Gustav Landauer (1870-1919). Gesell took office but had to leave after only one week when the newly formed Government was ousted.

8 years earlier Landauer had noted the idea of placing a negative interest on money as being an excellent addition and update to the economic visions presented by Proudhon 60 years earlier. In *For Socialism* he wrote:

> "*…Silvio Gesell's suggestion is valuable, namely to find a form of money that does not, like today, gain value with the years, but on the contrary from the beginning progressively loses value, so that the person who obtains a piece of currency in exchange for his commodity will have no more pressing interest than to exchange it again for a product as soon as possible, etc. Silvio Gesell is one of the very few who have learned from Proudhon, recognized his greatness, and, based on him, arrived at further ideas independently. His description of how this new money brings lively movements into the flow of circulation, how each one can have no other interest in production and in obtaining the means of exchange except consumption, sprang completely from the spirit of Proudhon who taught how the rapid monetary circulation would introduce joy and vitality into*

private and public life, while a stoppage in the market and the slow circulation of permanent money also cause our energies to stop and our soul to stagnate." (Landauer 1978: 119)

Although Gesell described himself as having been, "*led into the path followed by Proudhon*" (Gesell 2009: 7) and stood very much opposed to the state socialism as prescribed by Marx in which he saw, "*the abominable rule of officials, the death of personal freedom, personal responsibility and independence*" (Gesell 2009: xx) it would not be entirely correct to describe the NWO as the work of an anarchist. In the reform proposals presented in his main work land would be nationalized, and the revenue from the land rent administered and redistributed by the state as well as the issue and control of the money supply. Gesell, therefore, in relation to his main work which is most often cited by economists today, should only be seen as a libertarian socialist with some idiosyncratic qualities. However, when Gesell later in 1924 wrote the program for the so called, *Physiokratische Kampfbund* (Bartsch 1989: 20) and wrote *Der abgebaute Statt* (1995c) in 1927, calling for a (non-violent) dismantling of the state, no doubt could longer remain whether Gesell had turned into a full blown anarchist. A fact which makes it no less peculiar that Gesell's name is found mentioned in such a great number of economic journal articles and central bank papers.

2.2 The Keynes connection

Six years after the death of Silvio Gesell, John Maynard Keynes attributed no less than five pages to an exposition of Gesell in his famous work *The General Theory of Employment, Interest and Money* published in 1936 (1970: 353-358).[9] He expresses admiration for Gesell's work in its fundamentals and calls him a, "*strange, unduly neglected prophet … whose work contains flashes of deep insights and who only just failed to reach down to the essence of the matter*" (1970: 353). He labels Gesells work as a type of, "*Anti-marxian socialism*" (1970: 355) and writes that, "*the future will learn more from the spirit of Gesell than from that of Marx.*" (1970: 355).

[9] Mentions of Gesell and his work are also found elsewhere in the book (Keynes 1970: 32, 234, 371 & 379).

That Keynes included Gesell's work in his *General Theory* might be an important factor in explaining how the work of, what George Garvy (1975: 392) called, "*a typical monetary crank*", found its way into the writings of noticeable economists today. Not least because Keynes was very sympathetic to the solution proposed by Gesell saying: "*The idea behind stamped money is sound. It is, indeed, possible that means might be found to apply it in practice on a modest scale.*" (Keynes 1970: 357). He went on, writing that:

> "*…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 1970: 234)

Looking deeper into the connection between Gesell and Keynes' undoubtedly shows close resemblance and according to Darity Jr. (1995: 27), "*So much of Keynes' monetary outlook is closely aligned with Gesell's that the resemblance is more than uncanny.*" In their review of the literature linking up the work of Gesell to Keynes' *General Theory*, Ilgmann (2015: 552) writes that: "*revisiting the link between the Cambridge academic and the autodidactic German anarchist provides unexpected insights.*" while Preparata (2002: 219) expounds: "*none other than Gesell's 'theory of interest' has set in motion the so-called "Keynesian revolution*".

As we have seen above Gesell's idea of introducing stamped money was based on a particular theory regarding interest as nothing more than a monetary phenomenon. He saw interest as nothing but a condition that would have to be fulfilled in order for money to offer its service as a means of exchange thereby sustaining its scarcity. This scarcity would in turn leave real capital scarce thereby giving it the same interest bearing quality. Exactly the same reasoning is at play in Keynes' *General Theory* (1970: 213):

> "*…the only reason why an asset offers a prospect of yielding during its life services having an aggregate value greater than its initial supply price is because it is* **scarce***; and it is kept scarce because of the competition of the rate of interest on money.*" (Keynes' emphasis).

And as Keynes rejected the explanation of interest as stemming from abstinence (1970: 166-174) he was forced to follow the logical path of his argument:

> "*Interest to-day rewards no genuine sacrifice, any more than does the rent of land. The owner of capital can obtain interest because capital is scarce, just as the owner of land can obtain rent because land is scarce. But whilst there may be intrinsic reasons for the scarcity of land, there are no intrinsic reasons for the scarcity of capital.*" (Keynes 1970: 376)

The above statements makes it comprehendible why Keynes saw Gesell as being on the right track, and why he saw his currency reform plans as containing, "*the essence of what is necessary*" (1970: 356-357). However, although much theoretical agreement was established Keynes' still saw the proposed remedy of taxing money through a stamped money scheme as an insufficient tool for securing abundance in the supply of real capital. According to Keynes different substitutes would take over the role of money because stamped money is not the only thing in the economy having attached to it what he called a liquidity preference.

The term liquidity preference[10] coined by Keynes in his *General Theory* plays an essential role in his macroeconomic undertaking and was created to describe the preference of people to hold their wealth in the most liquid form possible. Gesell saw money as holding an unfair advantage compared to goods and commodities because of its imperishable quality, posing a liability for the unproblematic circulation of money, goods and services. For Keynes, however, it is the preference for holding liquid assets in times of economic uncertainty that poses the greatest threat to stable economic development not merely the imperishable quality of money. Keynes points out a row of different substitutes that has a liquidity preference attached to it and therefore, potentially, could undermine the monetary authority of stamped

[10] Dillard (1942b: 69) points out the striking similarities that exists between Proudhon's concept "constituted value" and Keynes' "liquidity preference" and comments: "*Each writer is quite pretentious concerning his theoretical innovation. Upon a basis of the idea denoted by his novel concept, each proclaims the superiority of his theory over that of any predecessor. The advocacy of practical policies is closely connected with each writer's central theoretical concept.*"

money should the tool be introduced: "*bank-money, debts at call, foreign money, jewelry, precious metals, and so forth*" (1970: 358).[11] At a later stage, however, Keynes would propose a system facilitating international trade which would contain none of the above challenges for the implementation of negative interest rates.

During World War II Keynes was given the assignment of creating the British proposal for the post-war international trading system. His proposal was centered on the establishment of an international clearing union (ICU) and a new currency, the bancor, in which all trade would have to be conducted and recorded. According to his plan all international trade and transactions would have to pass through the ICU via the national central banks of each member country. Instead of using accumulated currency reserves or debt, primarily denominated in US dollars and used in bilateral trade, trading, along the lines of Keynes' plan, would take place on the basis of deficit- and surplus quotas at the ICU. Countries accumulating deficits above its designated quotas would have to pay a penalty interest rate to the ICU but the true uniqueness of his plan was in the handling of surpluses. No interest would be paid on deposits of bancor in the ICU, but countries running a trade surplus beyond its designated surplus-quota would have to pay a negative interest rate on the part of its surplus exceeding its given quota, in order to rebalance international accounts and avoid the building up of large trade surpluses. In his very first drafts, surplus countries would have to pay a negative interest of 5% on the part of its surplus exceeding 25% of its quota and pay a negative rate of 10% on the part of the surplus exceeding 50% of its quota (Keynes 2014: 37).[12]

Keynes doubted the effectiveness of stamped money on a national basis but with all transnational trade conducted through a single clearinghouse on the basis of, "*the necessary equality of … assets and liabilities*" where, "*no credits can be removed outside the system but only transferred within it*" (Keynes 2014: 44), negative interest, apparently, could become part of a viable strategy.

Many scholars writing on the intellectual foundation of negative interest rates do not include Keynes' work in connection to the talks that took place prior to the Bretton Woods conference. As a consequence

[11] The mentioning of bank-money will be discussed later in this paper as it touches upon a central issue when considering the implementation of negative interest rates within a modern economy.

[12] Keynes was later forced into a more realistic proposal setting the rates at 1% and 2% respectively although the 1% negative interest would be paid on the entire surplus up to 50% of a countries designated quota. Thus the 1% negative interest payment on surpluses would be inescapable (Keynes 2014: 79).

they often overlook that his inspiration from Gesell seems not only to take its form in academic endeavors, but also in his political work as director of Bank of England, and head of the British delegation in its negotiations with the US regarding the trading-system of the post-war world.[13]

2.3 Early experiments

Silvio Gesells ideas lived on, not only in Keynes' *General Theory*, but also in the free economy movements established in Europe and America. In America the prominent economist Irving Fisher found great use for the idea of a depreciating currency.

While Fisher based his theory of interest on time preference (1930) and could not accept Gesell's explanation of the existence of interest, he saw the introduction of stamped money as a potential way out of the Great Depression (1933a) as well as a way to fend off the debt-deflation phenomenon (1933b). He engaged himself in the establishment of local stamped money currencies all over USA during the economic crisis (Bordo & Rockoff 2013: 172) and his assistant R. L. Cohrssen counted around 450 US municipalities wishing to issue stamped money[14] (Ilgmann 2015: 539; Ilgmann & Menner 2011: 387). At the same time local stamped money-schemes had been implemented on a local level in Germany and Austria.

In the South German town of Schwankenkirchen the local currency *Wära* was introduced and helped revitalize trade and reduce unemployment (Onken 1997: 38-41). In the Austrian town of Wörgl a similar currency was introduced by the local authorities with similar positive effects on trade and unemployment (Onken 1997: 63). Both currencies consisted solely of paper-notes with Gesells prescribed fields for the fixing of stamps.

The most successful project was the one in Wörgl, a town that was hit hard by the economic depression in the early thirties. The mayor of the town, Martin Unterguggenberger was aware of the successful project that had taken place in Scwankenkirchen and in 1932 on the 31st July he issued a new currency 100%

[13] Keynes' so called Bancor-Plan did not see much serious consideration with the American counterparts and so the Bretton Woods System included none of the mentioned radical ideas included in the British proposal.
[14] In USA this type of money was called 'stamp scrip'.

backed by 32.000 Austrian schillings (Schwarz 2011: 55; Blanc 1998: 476). The money was put into circulation through partial payment of wages for public workers and circulated in the small local economy solely in physical form without the help from a banking system and its ability to conduct transfers.

Both the currency in Schwankenkirchen and in Wörgl received much attention both nationally and abroad but before they had the chance to spread and develop local trade in the surrounding regions the currencies were forced to shut down by the national governments (Blanc 1998: 475-6).

3. Transformation

3.1 From paper currency to bank-money

During the time of Gesell's writing, private banks of issue had the privilege of issuing banknotes. After the implementation of Gesell's reform this privilege would be given only to a so called national currency office. This newly established government body would exchange all national metal and paper money with stamped money exposed to negative interest through stamping. He explicitly called for a monetary regime with state money, issued by the national currency office, as the only type of money circulating in the economy and the sole role of the currency office would be to manage the general level of prices by managing the amount of stamped money in circulation (Gesell 2009: 246-249). He expected this to be a fairly simple task as the total money supply would automatically contract at an annual rate of 5% per annum as a consequence of the negative interest attached to it. Should this prove insufficient to stabilize prices during an upward pressure, the currency office could also retain money from taxes and naturally a downward pressure on prices could be mitigated by the issuance of more currency or a reduction in the rate of tax. The quantity theory of money would hold true even in its most crude form.

Gesell saw in his reform a way of making the paper currency of the state the only means of exchange used in commerce ending the use of bills of exchange and checks in everyday transactions (Gesell 2009: 259). His proposals, despite being introduced on a very small scale in local stamped money experiments, were never introduced on state level and so positive interest rates prevailed as well as the continued use of alternative means of payments. These alternative means of payment would evolve and eventually constitute the backbone of present day modern banking.

In the beginning of the 20th century exchange was conducted not only with paper currency but also to a very large extent with bills of exchange and checks. The use of these types of credit as a means of payment made it possible for people to trade without the use of paper currency created by the banks of issue or, later, the central bank. Whenever anyone deemed worthy for credit wished to take up a loan, in order to purchase assets, this person would not be given the borrowed amount in paper-currency. Instead new credit-money would be created and added to the total money supply which would then be transferred to the seller of an asset either via direct bank transfer or indirect bank transfer via check, without any need for paper currency to change hands. Through this development trade became less reliant on paper money as a means of exchange which meant that an increasing amount of the total money supply existed only as liabilities in the books of the private banking system.

When Keynes wrote his *General Theory*, six years after the death of Gesell, he was very explicit concerning credit created by banks circulating via transfer within the banking system. He termed this type of credit, bank-money and saw in this money a possible substitute which could potentially undermine the effect of a stamped money reform. Consequently he wrote that such a reform, in order to be effective, "*would clearly need to apply as well to some forms at least of bank-money*" (1970: 357).

To Gesell the rise of checks as a means of payment did not pose any danger to his stamped money reform. He was convinced that the amount of such means of exchange[15] would be strictly limited to the amount of stamped money issued by the currency office (1995a: 230). He also stated that checks, after his reform, at some point in circulation, would have to be cashed and transformed into stamped money because these could be used for small scale, everyday transactions as opposed to the check (1995b: 35). As we shall see later, the evolution of money and banking throughout the 20th century would make these assumptions false, however, it would not make the implementation of negative rates impossible.

[15] In German this type of money was termed *Bargeldlosen Verkehr* by Gesell and his contemporeries.

3.2 The alchemy of banking

To Gesell the primary role of banks was to intermediate money directly from savers to borrowers, not to give credit to borrowers through extensions of their balance sheets. By focusing on paper currency as the main medium of exchange Gesell consequently ended up explaining booms and depressions through the behavioral pattern of the *possessor of money* excluding the behavioral pattern of the *creator of money* – the private banks. According to Irving Fisher and his theory of debt deflation, however, crisis could not be explained solely through circulation in commerce. To him crisis was caused by over-indebtedness followed by deflation, which became much more severe because booming investments had taken place on the basis of money borrowed into the economy in the form of credit (Fisher 1933b: 341). When the state of over-indebtedness had been reached debts would be liquidated, and loans would be paid off in an exceeding amount. This would lead to a sudden contraction of the total money supply and drop in the velocity of circulation thus leading to a fall in the general level of prices, so called debt deflation.

To Fisher the essence of the great depression was the creation and subsequent destruction of bank money, which Fisher called check-book money, to \$22 billion in 1929 down to \$14 billion in 1933 (Allen 1993: 711-712). The process of money actually being eradicated through the balancing of the balance sheets of bank in times of economic distress had escaped Gesell because he saw banks primarily as institutions facilitating payments and intermediating paper money (or representation of paper money) from possessors to borrowers of money. Not as an essential source of new money created in the form of credit.

The Debt Deflation-Theory of Fisher would later be refined by the economist Hyman Minsky in his Financial Instability Hypothesis (1992) which in his own words, "*takes banking serious as a profit-seeking activity*" (1992: 6). According to Minsky (1992: 4-5):

> "*In the modern world, analyses of financial relations and their implications for system behavior cannot be restricted to the liability structure of business and the cash flows they entail. Households (by the way of their ability to borrow on credit cards for big ticket consumer goods such as automobiles, house purchases, and to carry financial assets), governments (with their large floating*

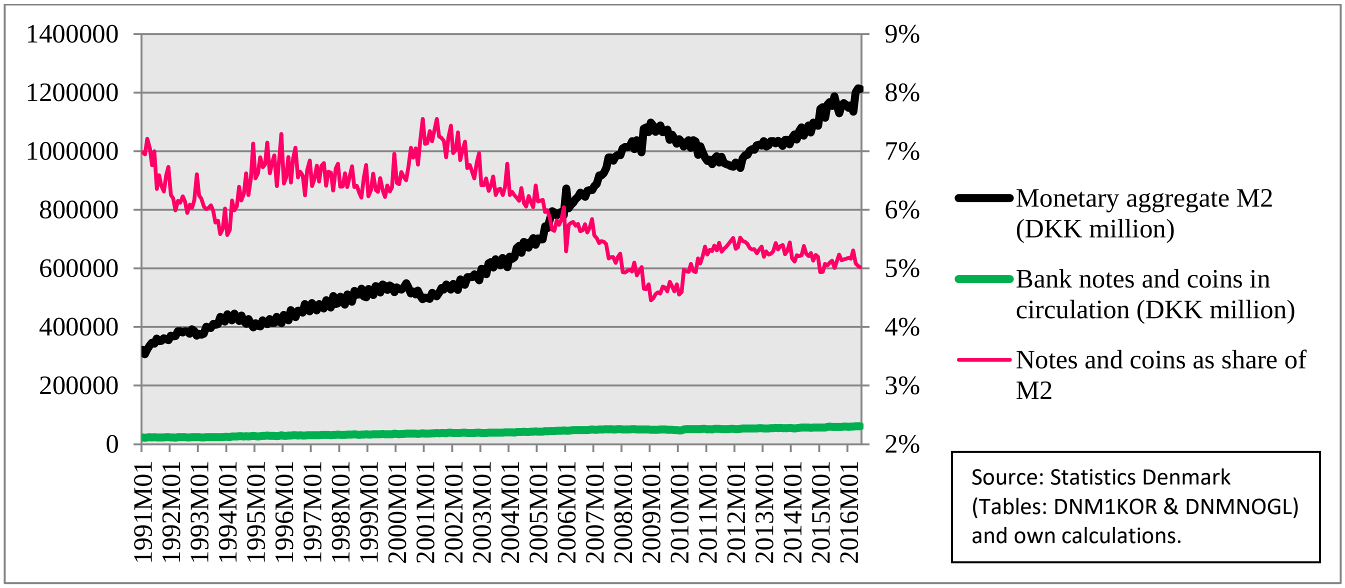
and funding debts), and international units (as a result of the internationalization of finance) have liability structures which the current performance of the economy either validates or invalidates."

Bank money is created as interest bearing debt by banks when they issue loans, take positions in assets[16] or as Hyman Minsky put it (2008: 250): "*Money is created as bankers go about their business*". This money exists only on the balance sheets of banks with deposits registered as a liability of the bank and the loans to customers registered as an asset. The assets correspond to the liability structure of the private, public and foreign sectors mentioned by Minsky above.

In most developed economies two types of money is used by the public to perform transactions: Cash which consists of the notes and coins issued by central banks or treasuries, and bank-money existing as liabilities in the books of the banking system. The notes and coins are accessed through the teller at private banks or via ATM's and in most western economies the share of the money supply consisting of cash rarely exceeds 10%. In the case of Denmark the share of the money supply (M2) consisting of cash is about 5% while liabilities in the books of private banks makes up the rest (see figure 1). Historically this type of money was transferred by means of the check while transfers today work through modern digital payment systems.

[16] For an excellent exposition of banking as the function of creating money (and debt) through extensions of their balance sheets see Werner (2014a; 2014b).

Figure 1 – Composition of the Danish money supply 1991-2016 [17]



The composition of the money supply in modern economies stands out as fundamentally different from the ones in Europe in the beginning of the 20th century and radically different from the one envisioned by Gesell in his proposal for monetary reform. Instead of the issuance of money being a monopoly of the state it has become the profit-seeking business of banks. This had led the economy to become endlessly sensitive to the phenomenon of deflation as it does not only mean a reduction in the velocity of circulation, but an actual destruction of money threatening the entire system of banking. It is the potential ability of negative interest rates to protect the economy from deflation that led central banks to consider "Gesell's solution" today. Thus the implementation of negative rates has not been motivated by a sudden opposition to modern financial capitalism. Rather it has been seen as a way to mitigate the catastrophic effects of deflation after a process of realizing that both record low positive rates and QE has not been able to do the job.

On the surface the alchemy of banking could look as a challenge to the application of negative interest rates but taking a more thorough look at modern money reveals that negative rates are still very much a

[17] The Danish M2 consists of notes and coins, money on demand deposits and money on time deposits.

possibility. In the next section we will take a look at some of the modern proposals of how to effectively apply negative rates to the modern system of finance.

3.3 The modern proposals

The zero lower bound became a problem because real interest rates have to be able to fluctuate both up and down in order for central banks to stabilize the economy over the business cycle (Goodfriend 2000: 1010). For the last 20 or 30 years central banks have attempted to do this on the basis of the so called transmission mechanism. This theoretical framework sets to explain the effect of adjustments in the policy rate via five transmission channels.[18] In short, however, the main aim of a reduction in the policy rate is to deter saving and promote borrowing and consumption thereby avoiding deflation. The move to break the zero lower bound has not changed this reasoning and although new dynamics are likely to come into play in negative territory the expectations of central banks to the workings of the transmission mechanism has not changed after going below zero.

For many, going into negative territory has been seen as a financial atrocity, however, in his *Theory of Interest* (1930: 192) Irving Fisher, who would later promote stamped money, stated:

> "…*there is no absolutely necessary reason inherent in the nature of man or things why the rate of interest in terms of any commodity should be positive rather than negative*."

A message that has been carried on into the future by Willem Buiter[19] who is one of the main proponents of negative interest rates today and the chief economist of Citigroup:

[18] A reduction in the policy rate by central banks is expected to increase GDP growth via five channels of transmission: 1) By making banks more willing to extend credit to the real economy (the credit channel). 2) To increase the valuation of assets (the asset valuation channel). 3) By forcing investors away from safe assets such as government bonds and into more risky ones (the portfolio balance and risktaking channel). 4) By lowering the value of a given currency (the exchange rate channel). 5) By stimulating inflation and avoid a debt-deflationary spiral (the reflation channel). A more thorough description of the expectations to the five channels of transmission after the introduction of NIRP can be found in Hannoun (2015).
[19] Willem Buiter stands out today as one of the most outspoken and productive advocates of negative interest rates (see: Buiter 2005; 2007; 2009a; 2009b; 2015; 2016; Buiter & Panigirtzoglou 2003 and Buiter & Rahbari 2015).

"*There is nothing unnatural about a negative nominal interest rate. All it means is that the price of money today is less than the price of money tomorrow. There is no economic logic that supports the view that a dollar today has to be worth more than a dollar tomorrow.*" (Buiter 2016)

To apply negative interest rates today the rate on the electronic reserve balances that the private banks keep on its accounts with the central bank must be lowered (the policy rate). This rate sets the lower bound on inter-bank interest rates and anchors the short side of the yield curve for government bonds. When the policy rate is set at a sufficiently low negative level, inter-bank rates, short and average term government bond rates will become negative. This, in turn, affects the rate on financial assets throughout the economy subsequently influencing general economic development.

The move into negative territory opposes established economic theory that deems nominal negative interest rates irrelevant or impossible. By neglecting any costs associated with holding money, one of the most influential economists of the 20th century, John Hicks (1937: 154-155) stated that, "*it will always be profitable to hold money rather than lend it out, if the rate of interest is not greater than zero. Consequently the rate of interest must always be positive.*" The view was carried through the ages thus establishing the zero lower bound as an impenetrable financial iron curtain enforced by the zero nominal interest rate on cash (eg. Blaug 1980: 674; Fisher, Dorbusch & Startz 2008: 254; Humphrey 2015: 1; Asterlind et al. 2015: 1; Bech & Malkhozov 2016: 41; Guha 2009). Conventional theory had always assumed that negative rates would lead to banks demanding cash instead of keeping their money within the accounting systems to avoid paying the negative interest. However, these assumptions, based solely on theory, did not take into account the carry costs and technical inconveniences associated with the storing of large amounts of cash. With negative rates presently established at still somewhat subtle levels above -1%, breaking the zero lower bound has proven quite unproblematic (Cæuré 2014: 2) although the demand for cash should be expected to rise as policy rates go deeper.

A move into deeper territory will undoubtedly force the banking system (unless it keeps all its central bank reserves in the form of cash) to push the expenses on to its customers meaning that they will have to pay negative rates on their deposits as well. At some point this will lead customers to demand cash to avoid the burden of the negative rate. Therefore, different solutions to the 'cash-problem' have been suggested in order to protect the ability of central banks to conduct monetary policy, and press on with even deeper policy rates:

1. *Abolishing cash*: Probably the simplest solution to the cash-problem would be to abolish cash altogether, and the solution has been proposed formally by the Harvard-economist Kenneth Rogoff (2015). Abolishing cash would begin in a process of first abolishing the large denominations which has the lowest carry-costs per currency-unit. The existence of the lowest denominations, for instance the 50 kroner and 5 euro-note, could be maintained as the carry-costs for these would be too high to create a demand large enough to challenge the ability of central banks to conduct monetary policy. In the Eurozone the first step along this path was taken when the ECB announced a discontinuation in the production of the 500 euro-note (ECB 2016). Another more indirect way of, if not abolishing cash, then render the use of them unattractive, would be to allow retailers not to accept cash-payments and, at the same time, rise, considerably, the fees associated with depositing and handling cash.
2. *Stamped money*: A more complex method to solve the cash-problem is to introduce Gesells solution described above of applying stamps to notes, what Keynes called stamped money. The method was proposed by Willem Buiter (2005) and other prominent economists have forwarded suggestions carrying close resemblance to the idea. Mankiw (2009) has proposed an idea where the central bank would, "*pick a digit from 0 to 9 out of a hat*" and all currency with a serial-number ending in that digit would no longer be eligible for payment, leading to a negative interest rate of 10%. Goodfriend (2000) suggested adding a magnetic strip to all notes making it possible to tax money at the moment of transaction while others (Humphrey 2015) have suggested simply adding fees on cash-withdrawals in some fashion balancing the established negative interest rate on deposits.

3. *Electronic money as the unit of account*: A third solution proposed by Kimball (2015) and Agarwal and Kimball (2015)[20] involves to let the exchange-rate of cash float in terms of electronic bank-money. Electronic money, deposited at negative interest at the bank, would be "the real thing" while the value of cash would fluctuate. The difference in values would be netted when cash is deposited in the central bank by private banks. This would essentially be a move from a paper standard to an electronic standard much as the move from the gold standard to the 'fiat' paper standard.
4. *"Digital cash" issued by central banks*: A more spectacular proposal is one to offer any legal citizen an account at the central bank for the use in daily transactions. This would be to compensate companies and citizens for the loss of cash in turn giving them access to "digital cash" issued by the central bank. The idea has seen the light of day in different contexts for instance in September 2015 in a speech on negative interest rates by the chief economist of Bank of England, Andrew Haldane (2015: 11-12):

> "*One interesting solution … would be would be to maintain the principle of a government-backed currency, but have it issued in an electronic rather than paper form. This would preserve the social convention of a state-issued unit of account and medium of exchange, albeit with currency now held in digital rather than physical wallets. … Although the hurdles to implementation are high, so too is the potential prize if the ZLB* (Zero Lower Bound) *constraint could be slackened. Perhaps central bank money is ripe for its own great technological leap forward, prompted by the pressing demands of the ZLB.*"

A similar proposal and view was presented by Buiter already in 2009 (2009b: 224), in 2015 (2015), and again in 2016:

[20] This proposal is actually based on an old idea presented by Eisler (1932) and was originally meant as a measure to protect the savings of citizens against inflation.

”*To compensate people and companies for the loss of cash, every legal resident age 12 or older and every legal entity could be given a free bank account with the central bank. Deposits in these accounts -- eCash -- would be legal tender and would pay the official policy rate, positive or negative. Each account would come with a debit card and a cash-on-a chip card. … These accounts could be operated on behalf of the central bank by existing banks and other financial institutions*” (Buiter 2016).

An important element concerning the potential abolishment of cash is the challenge then posed to the continued existence of seignorage which so far has been the source of central bank and/or government revenues, and not least the financial independence of central banks. (Buiter 2009: 224; Rogoff 2015: 7-8). Given that steps would be taken to further cut rates and to discontinue the issuance of cash it is therefore not unlikely that central banks will look into the possibilities of issuing “digital cash” essentially opening up its balance sheets to the public.

The macroeconomic consequences of giving citizens universal access to the balance sheet of the central bank is examined in detail in a Bank of England working paper by Barrdear and Kumhof (2016).

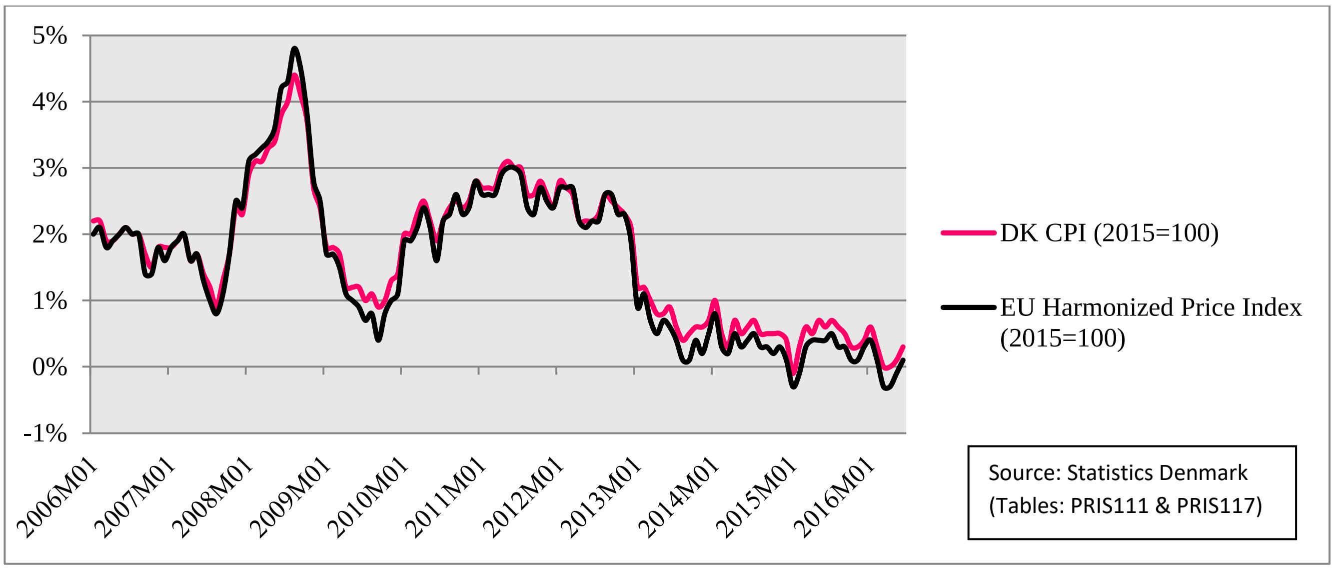
4. Application

4.1 Danish monetary policy

The financial development both before and after the GFC showed that conventional monetary policy tools available to central banks did not have the expected effects. A great rise of policy rates in Denmark and the EU from 2005 up until the crisis in 2008 did not prevent a rise in consumer price inflation above the 2% target. Likewise the drop in policy rates after the crisis did not bring inflation up to target, and the European economy today is moving along the edge of deflation on its third year even though central banks have used, and widened, their repertoire to quite a considerable extend.

As part of the EU, Denmark runs an open economy but although the country is not part of the euro and has its own currency, the Danish krone, it does not operate an independent monetary policy. Instead DNB maintains a peg to the euro fixed in a 2,25% band around the target exchange rate of 7,46038 krone per euro, and changes in Danish monetary policy measures normally follow the measures employed by the ECB. This means that movements in the Danish CPI follows the general harmonized price index of the EU (see figure 2).

Figure 2 – Price development in Denmark and EU. (Change in comparison to same month the year before).



After the collapse of the Bretton Woods system and throughout the 1970's and 80's, the financial sectors of most modern Western economies was transformed by liberalization and deregulation. In the same period central banks shifted their strategies from trying to limit expansions in the money supply, by controlling the creation of credit by banks, to a strategy of trying to control the price of credit via the policy rate (Greenham et al. 2015: 48-52; Goodhart 2009: 824). Danish attempts to control the creation of bank money through the use of quantitatively defined reserve requirements were dropped in the middle of the 1980's (Bang-Andersen, Risbjerg & Spange 2014: 77).

The Danish policy rate (the rate on certificates of deposits with DNB) sets the lower bound for interest rates on the money market thereby influencing rates on financial assets throughout the economy. The effect that is evidently taking place (DNB 2009: 86) through changes in the policy rate makes up the backbone in the ability of DNB to chase its preferred monetary policy, that is, maintaining the peg to the euro.

4.2 Implementation of negative rates

In 2012 Denmark became the first country in modern times to implement a negative policy rate meaning that banks now had to pay to keep money at the central bank. With the Danish policy rate, at the moment of writing (July 2016), stabilized at -0,65% the demand for cash has not yet increased (Moselund & Spange 2015: 59).[21]

In Denmark where the policy rate is used to maintain the peg to the euro, rates were on the lowest in the beginning of 2015 at -0,75% when a speculative attack against the Danish krone was taking place. The attack followed a successful attack on the Swiss franc under which the Swiss National Bank decoupled its peg to the euro allowing the franc to appreciate. A combination of a major intervention on the currency markets, a discontinuation in the issuing of government bonds, and a significant reduction of the policy rate allowed Denmark to maintain its peg.

The transmission from DNB's policy rate to the 3 month inter-bank rates and market leading 2 year government bond yield is preserved after breaking the zero lower bound meaning that the ability of the central bank to pursue monetary policy is still intact after moving into negative territory (see figure 3).[22] In addition to the short government bonds going negative, 10 year and average bond yields has moved very close to, or below, 0%, and the yield on mortgage bonds have also been affected by the negative policy rate.

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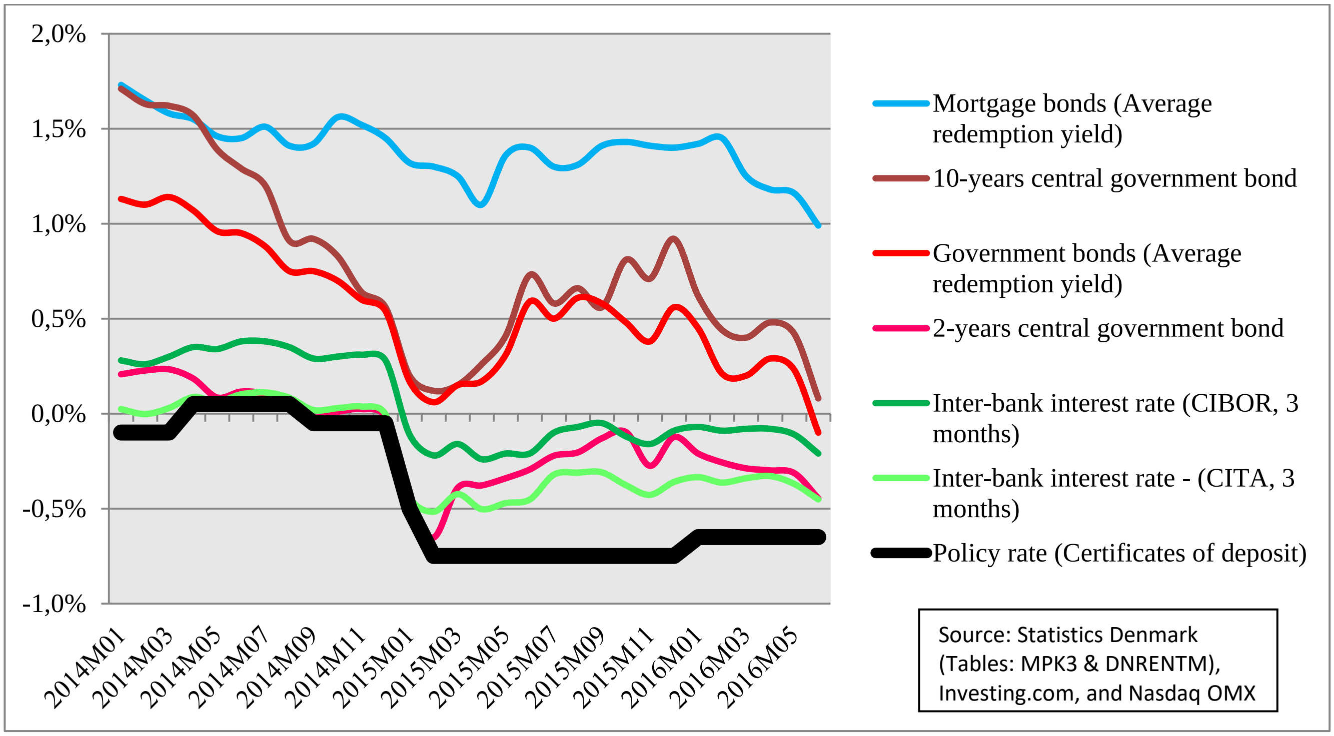
[21] No increased demand for cash has taken place in Switzerland either where the policy rate, at the moment of writing is set at -0,75% (Bech & Malkhozov 2016:41).

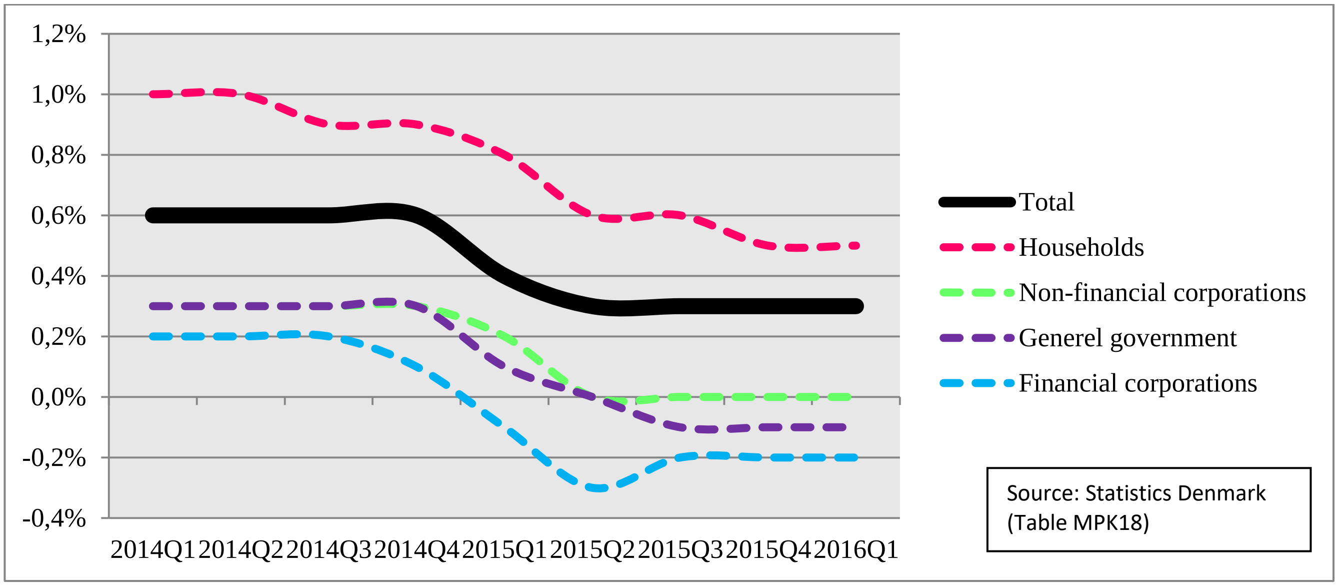
[22] The same is the case for the Eurozone and other countries that have broken the zero lower bound: Japan, Switzerland, and Sweden (Bech & Malkhozov 2016: 37-38; DNB 2016: 15-16).

Figure 3 – Danish policy rate, inter-bank rates, and bond rates.



The negative rates have not broken through to the deposits of private households although it can be argued that the fees connected to running a bank account makes it out as a quasi-negative interest rate on deposits. But, on average, public institutions and financial companies *are* paying negative interest to keep money on deposit and the deposits of non-financial companies are currently carrying no interest. In total, banks are paying an average 0,3% on all money deposited which is a 0,3% reduction compared to the period before the DNB's rate cut in the beginning of 2015 (see figure 4).

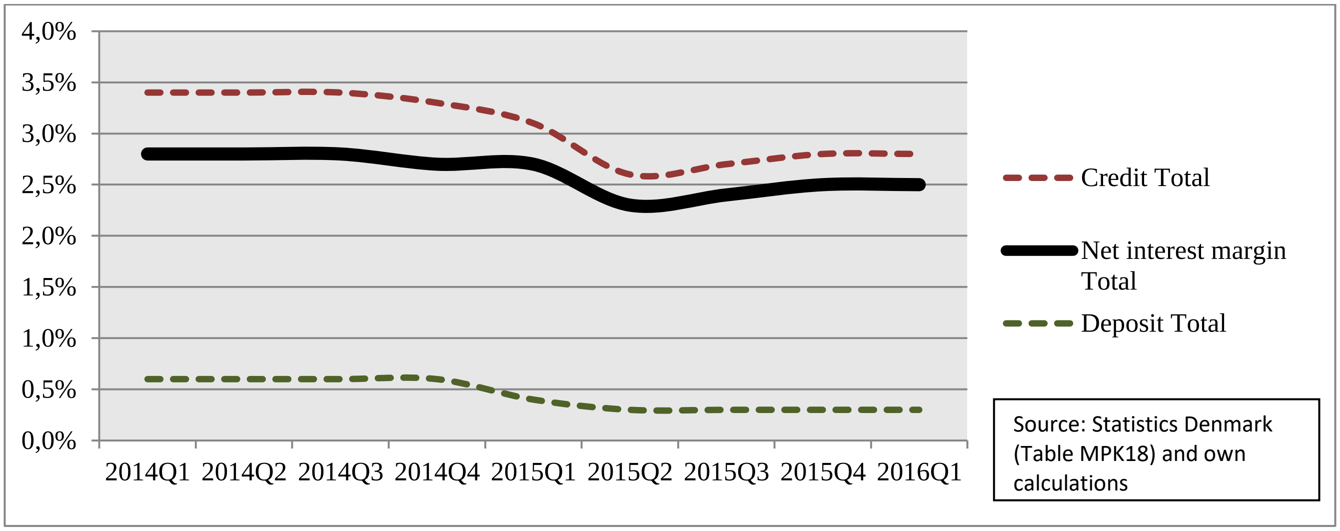
Figure 4 – Danish average interest rates on deposits by sector.



Experience gathered so far from negative territory shows that a reduction in the policy rate is associated with a reduction in inter-bank rates and the rates of central financial assets in turn leading to reductions in deposit rates. The continued effect of reducing the policy rate is still potentially hampered by the existence of cash, especially the high denominations. However, the significance of this problem looks to be reduced in the future as the Danish authorities are presently looking to limit laws forcing retailers to accept cash payments (Betalingsrådet 2016). What the experience also shows is that further reductions in the policy rate is likely to eventually break through to the deposits of households leading to a de facto tax on holding money.

When rates on deposits turn negative, the possessor of money will have to pay to keep money on deposit meaning that the accumulation of money will no longer be profitable. Banking continues to be a lucrative enterprise and negative rates have not worsened bank profitability (Jobst & Lin 2016: 18-19). The main source of profits in banking continues to be the net interest margin, or spread, which is influenced primarily by market conditions internally within the banking system. Danish banks have seen a slight compression of average interest margins in connection to the drop in the policy rate from roughly 2.75% in 2014 to 2.5% in 2016 (see figure 5).

Figure 5 – Danish average interest rates for all sectors on loans (credits) and deposits within the private banking system including the total average net interest margin.



The reduction in the interest margin is explained by the Danish financial service authority as hesitation of banks to let the transmission from the policy rate through to the deposits of customers. It has not led to a reduction in the profitability of banks as they compensate themselves for the loss from interest by increasing fees. Danish banks today are as profitable as before the GFC in 2008 (Finanstilsynet 2016: 5-6).

As we have seen the transmission from the Danish policy rate to the rates on the inter-bank market and short government bonds is intact in negative territory. In case the economic development leads the ECB to further loosen monetary policy DNB is likely to further reduce its policy rate. In order for banks to maintain their current structure of business they would then have to either increase their fee-charges or let the transmission of negative interest rates through to the deposits of not only financial and non-financial corporations and public institutions, but also the deposits of households. This could trigger an increase in the demand for cash in turn prompting increased debate regarding the employment of the modern proposals for the application of negative interest rates presented above.

Negative interest on the deposits of households would lead to a new economic situation that could let completely new financial behaviors and dynamics come into play. Negative rates might lead to financial currents similar to those seen with stable inflation and a rising popularity of more risky investments (World

Bank 2015: 8), but under all circumstances expectations will have to rest upon some degree of qualified speculation as the phenomenon is unprecedented.

4.3 Adding Gesell to post-crisis monetary policy

As negative policy rates have been implemented Gesell has attracted more mentions from prominent economists and central bank officials than ever before. However, as previously stated, NIRP has not been introduced because of a sudden attraction to the ideals of a monetary heretic. Rather it exists today due to a kind of path dependency inherent in the theoretical framework used by central banks in times of economic stress. NIRP is therefore not an attempt to challenge the system but instead an attempt to maintain it in its current form with the help from the usual medicine prescribed to low growth economies by the transmission mechanism: Reductions in the policy rate and into negative territory if necessary. But even though reductions in the policy rate is normal when the economy is wandering along the edge of recession, paying money for having money on deposit and for holding financial assets is not, and such a situation is more than likely to bring new dynamics into the economy.

Gesell stated that a depreciation rate on money of roughly 5% per annum would be sufficient to achieve the aims he prescribed. The policy rates today are not anywhere near levels that will make rates on deposits that low, but further reductions in policy rates could very well take place in the future. Already in 2009 (Guha 2009) an internal study at the FED concluded that the ideal policy rate for the US economy at that time was -5% and speculation of that kind has continued up till today while central banks have broken the zero lower bound. In the beginning of 2016 an internal study by J.P. Morgan argued that policy rates could go down as low as -4,5% at the ECB (Kennedy 2016) which would mean that policy rates would have to drop even lower in countries like Denmark. Such a scenario would most definitely lead to a transmission breakthrough to the rates on the deposits of households, and a rising demand for cash forcing policymakers to consider the different solutions to the cash problem presented above. Judging on the reaction to the reduction in the Danish policy rate in the beginning of 2015 (see figure 4 above) such a scenario could send rates on deposits for Danish households down as low as -3% and even lower for corporations. At the same time most of the yield curve for government and mortgage bonds would sink below the zero bound (see figure 3 above), but most importantly the average loan rate and real interest rate would drop to a level very close to, or near, zero. This could be expected to generate some of the effects that Gesell sought to achieve through his monetary reform.

Positive interest rates are good for savers and bad for borrowers but as we have seen this order can be turned on its head creating an economy where the opposite holds true. If the interest rate would be dropped as low as in the scenario above, as to set the loan rate close to zero, the barrier to prosperity as defined by Gesell, and later Keynes, could be effectively challenged. Under such circumstances real capital would no longer be under the obligation to yield interest and an important obstacle standing in the way for supply on its way to meet demand by way of competition would be removed. Although negative rates was not a proposal prescribed by Keynes such conditions would lead to a realization of one of the main objectives of his *General Theory* (1970 221):

> "*If I am right in supposing it to be comparatively easy to make capital-goods so abundant that the marginal efficiency of capital is zero, this may be the most sensible way of gradually getting rid of many of the objectionable features of capitalism. For a little reflection will show that enormous social changes would result from a gradual disappearance of a rate of return on accumulated wealth. A man would still be free to accumulate his earned income with a view to spending it at a later date. But his accumulation would not grow.*"

Once the cash problem would be solved Keynes' critique that other liquid assets might undermine the authority of the main medium of exchange would no longer be as persuasive. The medium of exchange in the modern economy circulates much in the way that it would have done under his ICU which, as we have seen, included a negative interest rate on surpluses. The most liquid and least risky financial assets, such as government and mortgage bonds, would not pose a great threat either as these would also yield a negative rate.

The velocity of circulation could most probably be expected to rise because of the increased costs associated with keeping money on deposit. Money would be under the compulsion to circulate which would force savers into various types of assets with less negative or even positive yields. Assets yielding a positive interest stemming from land rent would presumably be the most attractive and this leads us to an important issue regarding the other half of Gesell's reform proposal.

Gesell's NWO explicitly called for a nationalization of land rent. It did so because land, much in the same way as money, is scarce and therefore yields a surplus value in the form of rent. Ending the scarcity of money would not end the scarcity of land therefore, the compulsion of money to circulate could be expected to increase prices on land, real estate and assets with yields based on land rent.

Although there might be a chance that negative interest on deposits can become an element in the near future economy it is doubtful that a nationalization of the rent on land is. Thus we must concede that even though the future might carry with it the shadow of Gesell, post-crisis monetary policy does not bring about the entirety of his natural economic order.

5. Conlusion

Silvio Gesell's idea of negative interest was part of a radical economic proposal to defeat capitalism by eradicating unearned income, surplus value and interest. He saw capitalism simply as an economic condition in which the supply of real capital and money did not satisfy the demand therefore, giving rise to interest. To alter this condition Gesell proposed nationalization of land and exposing money to a rate of depreciation of roughly 5% forcing it to circulate, in turn ending its inherent scarcity.

Although Gesell was a socialist he stood very much opposed to the notion of Marxian state socialism and any idea of the state taking over the ownership of the means of production. Instead he took inspiration from the French 19th century anarchist and political reformer Pierre Joseph Proudhon who advocated free market competition and who, like Gesell, looked to end capitalist exploitation through changes in the functions of money and exchange rather than in production. The German anarchist Gustav Landauer endorsed Gesell's economic ideas and throughout his life Gesell would develop himself from being a libertarian socialist, during the writing of his *Natürliche Wirtschaftsordnung*, towards becoming an all-out anarchist in the end of his life. A rather uncharacteristic ideological observation for a man attracting so many mentions in contemporary economic journal articles, central bank reports and speeches conducted by central bankers.

The seemingly high familiarity with Gesell's name should perhaps be explained by the partial endorsement, and relatively substantial account, that he received from John Maynard Keynes in his main work "*The General Theory of Employment , Interest and Money* from 1936. Keynes was attracted by the kind of anti-Marxian socialist philosophy characteristic of Gesell's main work and shared with him his call to end unearned income and profits from the sole merit of accumulation so well aligned with his "*euthanasia of the rentier*" defined as "*the euthanasia of the cumulative oppressive power of the capitalist to exploit the scarcity-value of capital.*" (Keynes 1970: 376).

Nevertheless Keynes would not fully endorse Gesell's idea because he thought that money substitutes would undermine the function of stamped money. Later, however, Keynes himself would propose an economic system for international trade, The Bancor Plan, which contained the concept of negative interest on monetary surpluses.

After the death of Gesell in 1930 the spirit of his monetary thinking lived on in the local currency experiments, the most successful of which were shut down by the German and Austrian governments. It should be a long time until the idea of negative interest rates would be seen again.

The way Gesell envisioned his monetary reform is significantly different from the way negative interest rates are applied to the modern economy. Gesell called for the issuing of money to be a centralized function of the state. The issuing body, the national currency office, would control the amount of money in the economy thereby, ideally, managing the general level of prices maintaining enduring economic stability. However, his proposals were never introduced on state level and when serious discussions concerning negative rates were seen again it was within a financial framework significantly different from the one described in Gesell's writing.

In fact already throughout the 1920's what the former governor of Bank of England, Mervyn King, calls the alchemy of banking, had taken a firm grip in Western economies. Gesell's economic theory did not contain any complete theory on banking and he did not discipline his analysis of finance with balance sheets.[23] Thus the process by which money is created and subsequently destroyed by banks escaped him.

By adding Irving Fisher and Hyman Minsky's analysis of debt-deflation and banking to Gesell's the idea of negative interest rates is transformed. From working in a cash based economy negative rates today have to work on the basis of an economy dominated by bank money created by private banks in the form of interest bearing credit. But as it turns out though, negative rates are both highly relevant and, more importantly, possible, in the present economy.

In order to successfully apply negative interest under the current financial system low enough to trigger effects interesting from a Gesellian viewpoint, what we in this paper have termed the cash problem, needs to be solved. This has led various contemporary economists to come up with different proposals. Most likely deeper policy rates will be followed by a process of gradually reducing the accessibility of cash. A rather paradoxical transformation of Gesell's proposal as cash in the form of stamped money would play the dominant role in his version of implementation.

The preliminary Danish experience with the application of negative rates shows that negative policy rates, which conventional economic theory had deemed impossible, is indeed possible. The transmission from the policy rate to inter-bank rates and rates on important financial assets is intact in -0,65%-deep negative territory. The rate is not low enough for banks to introduce negative rates on the deposits of Danish households but it *is* low enough for banks to have placed negative rates on the deposits of financial corporations and public institutions. Preliminary experience also indicates that solving the cash problem and lowering the policy rate even further will effectively reduce deposit rates and loan rates because this is a fundamental condition for banks to maintain their current profitability.

Although the potential scenario of lower negative interest rates probably will not signal the end of financial capitalism some interesting effects carrying with them the spirit of Gesell could very well be

[23] A proponent of Modern Money Theory, Randall Wray, writes in his book, *Why Minsky Matters* (2016: 88): "*When I was Minsky's student, he would always warn me, "discipline your analysis with balance sheets." He insisted that every economic unit (firm, household, or government) has a balance sheet and if we begin with assets, liabilities, and net worth of each, we have a better chance of getting the analysis correct. Unfortunately most people – including economists – do not think in terms of balance sheets. Economists often begin with the assumption that "money is dropped from helicopters" – it falls into your hands as an asset.*"

within reach. The occurrence of deeper rates leading to effective transmission breakthrough would automatically answer central questions regarding negative interest rates: How will the cash problem be solved? Where is the lower bound triggering an increase in the demand for cash? And, will deep negative rates lead to central banks considering opening up their balance sheets to the general public? It will also make further study highly relevant: What will be the effect on the real interest rate and the marginal effectiveness capital? And, will the continued existence of the private ownership of land rent neutralize the positive effects from negative interest rates?

In any respect deeper negative rates will fundamentally change the way we are used to think of the economy. It will challenge the economic virtue of accumulation, turn established monetary theory on its head, and remind us of the classical debates between Pierre Joseph Proudhon and Karl Marx which live on in the radical writing of the world famous economist, John Maynard Keynes and the heretic, Silvio Gesell.

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