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DOES DEMURRAGE MATTER FOR COMPLEMENTARY CURRENCIES?

Hugo Godschalk*

Affiliation

ABSTRACT

Currency with demurrage is a theoretical concept for a reform of the monopolistic issued state money originated by Silvio Gesell. Until now it has never been implemented the way it was originally intended. Based on the theory of Irving Fisher and the practical experiences during the Great Depression a demurrage-based CC could be helpful as a temporary steering instrument during economic depressions to stimulate economic activity by increasing the velocity of money (of CC and indirectly of conventional money), probably only if issued state-wide. The level of the demurrage-rate of the local issued depreciated money seems to be (based on the available data) not crucial for the economic results within the meaning of usage, turnover and velocity.

* Email: hgodschalk@paysys.de

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INTRODUCTION

"Demurrage" (defined as built-in reduction over time in the intrinsic value of a currency) is a remarkable feature of complementary private currencies since the Great Depression. The idea of "rusting" money with a built-in depreciation is based on the "free money" theories of the German monetary reformer Silvio Gesell. Although the concept was developed as a monetary reform for the state-issued (monopolistic) currency, self-help initiatives took over the idea for local currencies during the Great Depression in Germany, Austria, Switzerland, USA and Canada. Most of these demurrage-initiatives were based on cash, scrip notes with stamps to be affixed ("stamp scrip"). In Europe most of the pilot projects were prematurely stopped by legal actions of the monetary authorities. However, the demurrage-based and other local money initiatives in the USA were not hindered by serious legal constraints. The era of Depression Scrip in the USA was an interesting experimental field of different concepts for local money. Some of them were very successful, others failed shortly after start.

After 70 years we see a renaissance of demurrage within complementary currencies not surprisingly again in Germanic countries. Many of the so-called Regiogeld-experiments are in some way based on demurrage. But even some local money initiatives in France and the UK picked up the demurrage idea (eg. Abeille and Stroud Pound). So again we have to consider the theoretical and practical validity of the reasons behind demurrage. Is demurrage an essential feature of a complementary currency to ensure the optimal circulation and to prevent hoarding?

DEFINITION

"Demurrage" in the context of Complementary Currencies (CC) is meanwhile a current expression for the built-in preprogrammed depreciation of the nominal value of a currency. The depreciation process should be durable in time, like a negative (not compound!) interest. Usually the depreciation rate is a fixed amount as a percentage of the original nominal value, e.g. 1% per month. It is set by the issuer as a revenue (if the money is issued by a certain institution) and should be immediately assigned to the holder of the money. The depreciation is to the detriment of the money-holder for the whole time of holding the money or at the date of depreciation, if there is no continuous deprecation (intervals without depreciation).

CONVERSION

The depreciation should be – as ideal solution - a continuous process on a daily (or even shorter) basis like interest on a savings account, which is feasible in case of scriptural money (book money; bank money, deposits) or digital money stored on an electronic device (e-money).

In case of other traditional means of payment, like coins or paper money it is more difficult to implement an efficient depreciation. The issuer of coins could use a built-in chemical process which decomposes the metal or other material like iron which will be rusted by the end of the issuance period. It must be difficult and it has never practiced in the past. However, with paper money it is much easier to implement depreciation. The issuer could print a time table on the backside of the note with the dates of depreciation of the nominal value. This way every user (payer and payee) can check the value of the note at the moment of usage for payments. This kind of "table money" is not very convenient, because the payer and payee have to solve the problem of change. They need a different medium of payment with lower value denominations, based on the incremental amount of the depreciation rate. Within a CC environment this problem was usually solved by using the small-value coins of the state-issued money. The table money concept is based on an ongoing depreciation of the nominal value of the note.

Figure 1: Table money "Tauscher" (issued in Germany 1931)

The most common way to implement the depreciation was "stamp scrip". The nominal value remains constant only if the holder has to pay a 'liquidity fee' related to the depreciation dates. The holder could restore the nominal value of the note by affixing little stamps on squares which are corresponding with the periodical depreciation dates, printed on the backside of the note. The holder of the note has to buy the stamp (from the issuer or his agency), of which the value was exactly the depreciation rate. Within the intervals the holder of money was not charged and he could use the note at par value. Without paying the fee, the nominal value of the note was depreciated at the rate of the value of the missing stamp(s). The only differences between the two concepts are the fee revenue stream to the issuer and the possibility to restore the nominal value in case of stamp scrip. This so-called time-based stamp scrip is practised since the private currencies of the Great Depression until today by several CC-issuers in the Germanic countries ("Regiogeld") and recently also by issuers in France and the UK. The liquidity fee is usually not paid by CC but with the state currency, so the CC-money supply remains unchanged and the issuer uses the fee income to cover the costs of the system. Within a nation-wide monetary system based on stamp scrip, the issuer (monetary authority or central bank) should prevent the shrinking of the money supply by permanently issuing fresh money in value of the fee income, like Gesell suggested in his Free Money system.

Some observers (like Rösl, 2006) are including scrip with a limited period of validity (e.g. one year) - combined with a remarkable discount if the user wants to redeem the note to the central bank money - within the concept of demurrage-based CC (Cf. Rösl 2006:9). Today a lot of private currencies have this mechanism and even in medieval German-speaking areas a state-issued monetary scheme was based on this concept ("bracteates"). The reasons behind this concept of "expiry money" and practical effects could be the same as depreciative currencies (preventing hoarding, increase of velocity), but there is no pre-programmed ongoing depreciation declared to the users, even if the possibility of redemption at the expiry date would be lacking. Only within a theoretical case of full transparency to the users of these notes the market will anticipate the not-communicated depreciation rate during the period of validity of the note. Without this condition the notes could (and would probably) be used at par value until the expiry date and only the last remaining unlucky holder may have the financial loss. Therefore this kind of money is not considered within the context of demurrage-based CC of this paper.

SYNONYMS

Besides the temporary expression "demurrage-based" money many other expressions are used to label this special kind of money: Free Money (Gesell), rusting money (Gesell), shrinking or shrinkage money (Gesell), melting money, disappearing money, stamped money or stamp scrip, cost-bearing money (Suhr), neutral money (Suhr) and anti-capitalistic money (Gesell). Gesell did not coin the term "demurrage", as often as it is disseminated by CC-researchers. The depreciation rate is also named negative interest, carrying costs (Keynes), ambulatory tax (Fisher) or demurrage fee. Within the concepts mentioned above there are slight differences, the quintessence is the same: pre-programmed, built-in and periodical depreciation during the circulation time.

Although the expression "demurrage" (or "demourage") and "demurrage fee" is now common within the CC-context, it is not exactly covering the principle as described above. The term "demurrage" is used in the transport industry, especially commercial shipping, for the time a transport equipment in excess of the contracted laytime (to load or unload cargo) is used. A demurrage fee (usually paid per hour) has to be paid as a penalty fee for the extended period. The intention of demurrage-based money is similar; a penalty fee for the laytime by not using money for payment transactions by hoarding money. But the mechanism is different. The demurrage fee within the transport industry will not be levied within the contracted period of laytime ("hoarding") and can therefore be evaded. Within the monetary circulation the fee is from a theoretical perspective levied anyway to all users as continuous revenue stream to the issuer, theoretically only evaded by an immediately passing on to the next user (infinite velocity).

THEORETICAL BACKGROUND

The German monetary and social reformer Silvio Gesell (1862-1930) was the first person who proposed the idea of a monetary concept (Free-Money) based on a built-in depreciation and also made a practical suggestion for implementation. The German economist N. Johannsen analysed the negative effects of savings activity within an economy during crises and proposed – like Gesell - a built-in depreciative curreny (as table money) too, but he published his depression theory a few years later in 1903 under the pseudonyme J.J.O. Lahn (in Germany and in the USA). In 1913 he proposed his currency reform named "Marktaler" as table money. (Cf. Lahn 1903a/1903b and Johannsen 1913. See also Suhr 1989:100). The principle of a hoarding fee for money was practised before Gesell but without transmitted concept. The giro system in Ptolemaic Egypt (322 – 30 BC) was probably the first demurrage-based monetary system backed by grain storage. The depositors could transfer their claims of grain without using the grain directly as medium of exchange. To compensate the natural loss of the grain in the storehouse (mould & mice), the holder had to pay a storage fee (Godschalk 1986:64). Within a context of money, backed by goods with a natural intrinsic depreciation rate over time, demurrage is a logical consequence, a theoretical concept is superfluous. If money is backed by stable and durable goods like gold (as the case Gesell started 1891 his first reflections about shrinkage money) there is no systemic need anymore for the money supplier to levy a depreciation fee on the outstanding money. "The purpose of Free-Money is to break the unfair privilege enjoyed by money. This unfair privilege is solely due to the fact that the traditional form of money has one immense advantage over all other goods, namely that it is indestructible."(Gesell 1958:273). "Only money that goes out of date like a newspaper, rots like potatoes, rusts like iron, evaporates like ether, is capable of standing the test as an instrument for the exchange of potatoes, newspapers, iron and ether."(Gesell 1958:269). But even in case of monetary system based on fiat money – as today - money does have per definition a superiority compared to goods, based on his intrinsic liquidity attribute, created by social agreement of all its users or by coercion of the state (legal tender). Only assets with a certain liquidity can be money (economists would say "money is what money does"). Keynes stressed later this liquidity-premium of money in his General Theory as basic point of his interest theory (Cf. Keynes 1936: 225-244). If money should play a neutral role as facilitator of economic exchange processes of supply and demand of goods the liquidity benefits of its holder should be equalised by a durable depreciation rate or liquidity fee (like Gesell suggested) or goods should have the same degree of liquidity as money (jumping-off point of Proudhon´s concept of exchange banks). Therefore Keynes supported the idea of carrying costs of Gesell explicitly ("the idea behind stamped money is sound" (Keynes 1936: 357)), although he criticized "many difficulties which Gesell did not face" (Keynes 1936: 358) (e.g. the rise of money substitutes (near money) with a lower liquidity-premium than the stamped currency, like gold, silver, cigarettes, lunch vouch-

ers etc.). The pros and cons of the need for carrying costs from a theoretical point of view is already often discussed in literature (Cf. Suhr 1989, Myers 1940) and recently brought on the agenda as solution for central bank policy by economists like Buiter, Goodfriend, Mankiw and others (Cf. Buiter 2009, Buiter & Panigirtzoglou 2003, Goodfriend 2000, Mankiw 2009, Ilgmann & Menner 2011), but it is not subject of this paper.

So the reason behind the original concept of Gesell was a reform of the monetary system of a national economy and not the introduction of a demurrage-based complementary currency besides the conventional currency. A central currency-office should issue the new currency as paper money without any gold or other asset backing. The issuance volume should be linked to price index numbers to prevent inflation. Gesell and today also some of his "hard-core" disciples are still convinced that only cash is representing the real money stock, so the concept of Free-Money only considered cash and not bank money (deposits) (Cf. Myers 1940: 36). The state was supposed to issue notes but no coinage. With an exclusive status of legal tender, the notes could be able to edge out the former gold and silver coins as medium of exchange. His initial suggestion for the depreciation rate was about 5% annually, which would be a regular revenue stream ("tax on hoarding") to the Currency Office besides the seigniorage-income. To avoid the depreciation the money holder could deposit the notes on his savings account.

Gesell advocated a single and homogeneous money, paper-based and issued by the state and got its de facto monopoly by legal coercion as legal tender. A dual monetary system (one or more complementary currencies besides the conventional state-issued money) or even competition between denationalised currencies (Hayek) would be rejected by Gesell and is rejected until today by dogmatic Gesellians. During lifetime he did not support early activities of some followers to initiate CC based on his ideas. So Gesell can really not be seen as "Spiritus Rector" of complementary currencies. So why is his idea of depreciating money still popular within CC-initiatives since 1926 until today? The motives for the feature "demurrage" of the historical CC were varied. Historical CC were initiated

- to demonstrate the expected positive effects of demurrage at a limited (local) scale as additional practise-based argument for monetary reform at national level,
- to start Gesellian monetary reform already at local level as grassroot pilot projects in order to become a mass movement,
- as (temporary) self-help project during an economic depression.

Under the assumption that the need for a CC is not a temporary instrument to change a single conventional system A into a new single homogeneous system B, only the third reason is important for the theoretical relevance of demurrage for CC. Here the American economist Irving Fisher (1867-1947) delivered some theoretical foundations. To understand Fisher´s point of view, we have to be aware of his previous perspective of stamp scrip within the Great Depression. During this period (especially in the year 1933) a huge variety of private local money (called "Depression Scrip") entered into release as result of the shortage of conventional money, which was hoarded. People and communities tried new ways and products. One "basic" innovation in the early period of depression scrip was stamp scrip (first trial was probably in January 1932 in Anaheim/California), but it was the so-called transaction-based stamp scrip without any Gesellian characteristics and probably without any origins with European stamp scrip (see appendix).

Fisher was aware of the idea of Gesellian stamp scrip and the European projects especially by his later German assistant Hans Cohrssen, an immigrant and follower of Silvio Gesell[1]. Fisher and Cohrssen observed the phenomenon of the "wrong" stamp scrip in the USA. They tried to steer it into the "right" direction by editing a kind of manual, how to issue stamp scrip in the "right" way (with demurrage), reflecting the former European experiences (Cf. Fisher 1933). As remedy against the crisis they turned the American stamp scrip into Gesellian stamp scrip by replacing the trigger for sticking the stamp from "transaction" into "date". Before the lobbying activities of Fisher/Cohrssen no time-based stamp scrip was found in the USA. The result was a really "american-sized" self-liquidating scrip with a total loss of value (!) after 1 year (weekly depreciation rate of 2% of the face value) compared to the moderate rate of 5.2% as suggested by Gesell. So the main reason behind the high level of demurrage was the funding of the scrip by conventional cash within a year and not the prevention of hoarding, which could be reached by a lower level. Fisher did not address the key differences between the American and European demurrage-based stamp scrip. For him it was the same idea, "invented in Europe and now spreading in America" (Fisher 1933: 7).With this (new) concept of demurrage based stamp scrip in mind, Fisher proclaimed this monetary innovation as instrument of economic policy. Tax on hoarding would increase the velocity of circulation of money in times of depression, stimulate economic activity and elevate the price level (in case of deflation). The effect of depreciating money on the velocity of money circulation was already recognised by Gesell (E.g. Gesell 1899: 278), but more as a permanent operation than a "supplementary means of monetary control" (Fisher 1934: 133)

1 Cohrssen published in August 1932 an article about the German stamp scrip trial "Wära" in the US journal The New Republic of 10th August 1932, which attracted the interest of Irving Fisher. Cf. Warner (2010), p. 34. But Fisher had already knowledge of the Gesellian stamp scrip idea before his first contact to Hans Cohrssen. Fisher suggested a time-based stamp scrip with a moderate demurrage-rate of 1% per month in his book "Booms and Depressions" which was issued in summer 1932 (Cf. Fisher 1932, pp. 227-230). To the role of Fisher within the stamp scrip movement see also Gatch (2009).

and temporary instrument to steer velocity ("speed control").

Unlike Gesell, Fisher regarded stamp scrip as a temporary measure due to a crisis, to be issued as a complementary currency at national (state) level. "It could be used to help forestall the great emergencies by being periodically applied and withdrawn in normal times, like other money regulators." (Fisher 1934: 103) Stamp scrip could be issued in a small volume. "Its ultimate usefulness is not its own volume or even its own speed, but rather its eventual effect on the credit currency which has gone dead. The scrip, as it were, primes the pump of the credit currency." "What the scrip does is to furnish the business men with the spectacle of customers walk in." (Fisher 1934: 103). Not only consumers will be discouraged from hoarding cash but it will also "discourage the banks from hoarding cash – "to keep liquid", as they prefer to express it." (Fisher 1934: 168). Unlike Gesell, Fisher proposed to extend the demurrage-principle to bank money (deposit currency).

So for the first time, with Irving Fisher we have a theoretical background for the usage of demurrage within a CC-environment.

DESIGNING OF DEMURRAGE BY GESELL

During his lifetime Gesell changed his mind about the concept for implementation of his Free-Money by improving the efficiency of the practical money handling. His initial idea (1891) was table money where a table printed on the front side shows the relevant value for every week of the year after issuance. He improved this concept 1911 slightly by replacing the value list by a list of surcharges to be paid by the payer to the merchant, who has priced its goods usually at round amounts. At the same time multiplication-tables should be delivered to merchants and other payees to calculate the total surcharge-amount at the till. The depreciation rate is a fixed amount per week of 1‰ of the nominal value, which results in a 5.2% loss of value at the end of the year. The notes expired after one year and had to be re-issued. If the depreciation loss is a fixed amount per week, the holder has to be aware of a compound negative interest effect. At the end of the first week of January (issuance at January 1) the loss of value is 1‰, in the last week of December the loss is 1.054‰. Gesell was aware of this effect (Cf. Gesell 1906): 97).

To solve the problem of change, he introduced several concepts, like the print of small value notes (instead of coins) and in series with different colours ("series money"). Each year one colour was chosen (by lot). This series lost its total value immediately. Another solution for change has already the characteristics of stamped money. The lowest denomination of the currency unit (1 Mark) was issued as two different notes. One note was like the other denominations (with a depreciation table), the other note was equipped with 100 gummed squares of 1 Pfennig, which could be cut out as change money. The merchant could affix the unnecessary "stamps" on a special sheet for completion of the stamps again to 1 Mark for redemption at the issuer (within a year against a 5% discount).

Years of publication	Depreciation Method	Change money solution
1891, 1987, 1899	**Table Money** with shrinking value list	Series Money
1906	**Table Money** with shrinking value list	Additional sheet of lowest denomination with 100 gummed squares
1911, 1916	**Table Money** with a list of surcharges (based on the idea of Gustav Simons)	Additional sheet of lowest denomination with 100 gummed squares
1916	**Stamped Money** (based on the idea of Gustav Simons). Stamps can be obtained as part of the low-value notes; no separate stamp selling	Not clearly specified. The low value notes would have a kind of stamps section
Since 1919	**Stamped money** Additional selling of a stamp sheet with different stamp denominations	Usage of the stamps also as change money

Table 1: Evolution of Gesell´s concept for practical implementation of Free-Money

During the search-process of practical implementation of the Free-Money-idea Gustav Simons (1861 – 1914) played an important role. As one of the earliest followers of Gesell, he was his sparring partner in finding a practical solution during the period between 1911-1914, where both Gesell and Simons were living in the co-operative community of Eden-Oranienburg (near Berlin). As baker he had to be not only familiar with the practical issues of change money as well as with the discount-stamps which became very popular in Switzerland and Germany exactly in the same period of the first design of stamp scrip as specimen for the Swiss Franc note, published by Gesell in 1916 in Switzerland. Gesell stated fairly that it was Simons` idea to improve the

table money by listing surcharging rates (Cf. Gesell 1911: 153) and to change the concept from table money to stamped money (Cf. Gesell 1916a: 91). By taking over the stamp-idea of Simons, Gesell expected a higher acceptance in those countries where discount stamps were common: "The concept will encounter less resistance in countries where people are used to such sticking practices for other purposes" (own translation (Gesell 1916a: 91)). At that time (1916) Gesell probably advocated the stamp idea only for such countries. In the first and second edition of his principal publication "Die natürliche Wirtschaftsordnung" (1916), Gesell still proclaimed the table money solution (Cf. Gesell 1916b: 98-105). As Minister of Finance of the few days existing Bavarian "Räterepublik" during the revolution of April 1919, Gesell prepared the issuance of a new currency issued by the Bavarian state as stamped money (Cf. Gesell 1919: 280). From 1920 onwards Gesell changed in later editions of "Die Natürliche Wirtschaftsordnung" definitely to the stamped note, however without mentioning the originator of the stamp idea, Gustav Simons. Notes would be issued in the usual denominations of the currency unit (e.g. 1, 5, 10 etc.), so different denominated stamps were needed to be distributed as a postage-stamp booklet ("Kleingeldzettel"). These stamps should also replace the coinage (nickel or copper money) for all low-value transactions. So the search for a solution of the change money problem lead to the evolution of table money to stamped money concept, inspired by the contemporary discount stamp hype in Switzerland and Germany.

Within a decimal currency and with an expiration period of 1 year for each note, a deprecation rate of 1‰ per week (5.2% loss p.a.) as suggested by Gesell could be realised by 52 squares for stamps of 1 sub-units (like Cents or Pfennige) on the backside of 10 Unit banknote. For lower denominated notes a weekly depreciation would only be possible by issuing stamps below the value of the sub-unit of the currency or by a depreciation-free period longer than a week (e.g. five times a year for a one-currency-unit note, as suggested by Gesell). But the introduction of different depreciation-free periods between the denominations would lead to disparity within the concept. A fixed rate of 1% (of the denominated value) per week and a rate of 4% per 4 weeks would result to the same loss of value at the end of a certain period (e.g. 48% after 48 weeks) if no stamps are stuck. But for the holder(s) of this note, who have to pay this tax, the net present value (NVP) of the tax burden decreases if the depreciation period increases[2]. As already discussed, from a theoretical point of view a short or even no depreciation-free period would be optimal, but a daily sticking of a stamp on each banknote is not very convenient. Another restriction is the space available on the backside or inside (folded scrip) and the minimal size of the stamps. The shortest depreciation-free period in the history of (dated) stamp scrip was a half-week (Cadillac/ Michigan USA 1933). Another extreme was the state-wide issued stamped 1 dollar note of Alberta (Canada 1936) with squares for 104 tiny stamps of 1 cent per week (expiration period 2 years).

Since the latest design of stamped money by Gesell there are no basic improvements or amendments of the concept or even new ways to realise the idea of shrinking money for paper-based currency. The concept of Table Money has not gained acceptance. Only a few examples during the Great Depression are known. Partisans introduced a depreciation list on their notes during 1945 in Montenegro (Yugoslavia). It is interesting to see that the first movers within the recent demurrage-based CC in Germanic countries started again with Table Money[3], but Stamped Money prevailed again.

HISTORICAL IMPLEMENTATION OF DEMURRAGE

For the original purpose as single state-issued national currency, the idea of depreciating money of Silvio Gesell has never been put into practice. It is a fascinating theory, but without practice. Most of his followers are still waiting for an implementation, although the chance is not very realistic.

As already mentioned during the Great Depression demurrage-based CC became popular as emergency money, first in Europe (Germany, Austria, Switzerland, France) and later in the USA and Canada (Onken 1983). In Europe most of the issues had a depreciation rate of 1% per month, which was much higher than the 1‰ per week, proposed by Gesell. In the USA most of the time-based stamp scrip initiatives introduced a demurrage rate of 1% per week in order to make the scrip self-financing after 1 year (see appendix). Although the rate in the U.S. was four times higher than in Europe, the level of depreciation had obviously no significant impact. On both sides of the ocean we see success stories and failures. In some cases some empirical data relating to the economic relevance are available. For example, the economic results of the scrip issuance (hybrid version) of Mason City/Iowa (1933-1934) of an additional local GNP of 0.5m US Dollar, generated by stamp scrip, was quite comparable to the famous economic revival of Wörgl in Austria (1932-1933) (Godschalk 2001: 15-16). It seems that the level of demurrage was not crucial. All demurrage-based scrip projects of the Depression era were terminated sooner or later. The issuance of private stamp scrip was prohibited in Germany and Austria (not in Switzerland!). In the USA the local projects were usually terminated after the redemption of all scrip, which was initially issued. An issu-

2 The effect is depending on the assumed interest rate for liquidity. Gesell did not perceive this difference or neglect this effect because within a Gesellian monetary economy interest as liquidity premium would disappear. But it will play a role, if the tax (stamps) has to be paid within a CC-environment.

3 The first „contemporary" demurrage-based CC was the „Phoenix" in Arnstadt, issued during a few months in 1999. Another Table Money named "Roland" was realised in Bremen since 2001. But the Roland initiators removed the table money scrip after a few years and transformed the system to an account-based LETS although the demurrage was maintained (1% per month on positive and negative balances).

Location	Santa Cruz	Okmulgee	Mason City	Carmel
State	California	Oklahoma	Iowa	California
Type of stamp scrip	tx-based	tx-based	hybrid	tx-based
Total issuance (No. of 1-Dollar-notes)	1,050	3,000	10,000	1,200
No. of samples	76	66	44	21
Samples in % of total	7.2%	2.2%	0.4%	1.8%
First day of issuance	April 11 1933	Febr. 1 1933	May 6 1933	Febr. 2 1933
Last day of issuance	June 10 1033	Apr 30 1933	July 1 1933	July 28 1933
Total stamps needed (max. no. of transactions)	50	35	52	36
Transaction fee (USD Cents)	2	3	2	3
Av. no. of transactions	48.7	33.3	52.0	32.6
Av. no. of days of circulation	365.9	204.6	320.1	229.8
Av. sales turnover per year (USD) = VELOCITY	51.8	97.1	60.6	56.6

Table 2: Empirical evaluations of some stamp scrip projects in the USA (1933), based on original scrip notes

ance as a continuous long-term process was not focused, although the economic depression was still there.

The demurrage within the local private money schemes in Europe and in the USA could have increased its own velocity as primary effect, stimulating local economy during a period where traditional money was hoarded. The level of the demurrage fee obviously played a negligible role. Since the money was never released to any significant extent in a larger region (e.g. state-wide), the secondary effect of stamp scrip as macroeconomic steering instrument Fisher had hoped for had not been empirically demonstrated.

DOES DEMURRAGE MATTER?

The question is therefore legitimate whether demurrage has ever played a crucial role at all in economic relevance, in terms of sales volume generated by CC.

More than 500 towns issued private money during the Great Depression era in the USA. Also in Europe other private money (without depreciation) was issued, like the J.A.K.-notes in Denmark (1931-1933) or the depression scrip in Hofstetten in Switzerland (1933). Was time-based stamp scrip more successful than other local scrip?

Within a CC environment it is difficult to measure the economic activity of paper money, if the scrip is not immediately redeemed after each transaction, but used by individuals as means of payment in a long transaction chain from hand-to-hand. In this case there are only indicators, such as the acceptance in stores, the wear of the used notes, the duration of the project, the testimony of contemporaries, etc.

The transaction-based stamp scrip was an ingenious idea to build up reserve funds for redeemability after the circulation period, but not an implementation of the Gesellian demurrage concept, by taxing transactions instead of a time-based liquidity fee. But some of these "self-liquidating" scrip projects are delivering unique information by tracking all the transaction data, documented on each note. If the first date of issuance and the date of redemption was written on the stamps or printed on the note, the sales turnover generated by this note and its velocity are exactly tracked. The notes are even showing the initials of the persons and shops during the whole transaction chain. Some of the initiatives of stamp scrip did not destroy the redeemed and cancelled notes, but sold them to collectors. A relatively high number of still existing notes, which are fully or nearly fully affixed by stamps, could be an indication for a successful project. Evaluation of velocity is possible for the stamp scrip issued during the Great Depression, which was successful and a certain number of notes are still available, like the notes from Santa Cruz (California), Okmulgee (Oklahoma), Mason City (Iowa) and Carmel (California).

Figure 2: Front –and backside of the scrip issued in Mason City (1933)

In Santa Cruz and Mason City the value of the stamp was 2 cents, so the fee was 2% of the nominal value of the one-dollar-scrip. After 50 (or 52) transactions the scrip had to be redeemed at the issuer for one "real" US dollar. In Ok-

mulgee and Carmel the initiators had chosen a higher fee of 3 cents, limiting the number of transactions at 35 or 36. The scrip issued in Mason City was (as result of the publications of Fisher & Cohrssen) hybrid (time- and transaction-based), so the stamp had to be affixed with each transaction or each week. Analysing its velocity the results are comparable to the transaction-based only scrip issuances. Although the transaction fee was 50% higher (3 ct. compared to 2 ct.) the velocity of the Okmulgee scrip accelerated to almost 100 almost twice as high as Santa Cruz or Mason City. During the Great Depression the velocity of the dollar (M1) decreased dramatically from 3.42 (1929) to 2.19 (1933) (Cf. Friedman & Schwartz 1971: 493ff.). A velocity of transaction-based scrip of 50 or even more indicates that this kind of local scrip worked very well in these areas compared to the striking conventional money during this economical crisis. There are no hard facts available about other local scrip. Maybe its results would be the same, better or worse. Besides price conditions, other parameters have basically influenced the economic results of the CC. From a theoretical point of view the scrip subject to an additional fee load for each transaction would not be an optimal initial condition for success. But in some locations it obviously worked very well.

CONTEMPORARY IMPLEMENTATION OF DEMURRAGE

After the wave of LETS (1993 – 1998) became more saturated in Germany, a new wave of CC based on paper-money came up at the beginning of the new millennium. The Bavarian Chiemgauer (started 2003) was not the first one, but its successful concept and marketing became a benchmark within the "Regiogeld"-movement and the concept was taken over by a lot of following projects. The Chiemgauer is stamped money, issued against the exchange of Euros with a demurrage fee of 2% per quarter. The origin of the implementation of demurrage at the Chiemgauer with stamp scrip was the theory of Silvio Gesell and the success of Wörgl in Austria (1932-1933). The depreciation loss of 8% per year was pragmatically chosen. This rate results into a round sum per quarter and it is an average value between Gesell´s proposal of 5.2% and the historical rate of 12% of Wörgl. At the time being about 55% of the approx. 40 German Regiogeld-initiatives[4] had taken over the demurrage-concept of the Chiemgauer. Most of them implemented the 8% demurrage rate of the Chiemgauer. The new German concept of demurrage is already exported to Austria ("Waldviertler"), France ("Abeillle") and UK ("Stroud Pound"). Within the Chiemgauer, which is not only issued as paper money but also as bank money (current account), the demurrage is also implemented to the cashless Chiemgauer accounts with a fee of 0.02% per day (with a negative-interest-free period of 90 days).

The reasons behind demurrage are safeguarding and stimulation of the money circulation in order to generate more local business: "Money that never slows down circulation"; "The advantage is that everybody keeps money going"; "The velocity of money or the speed of money is faster." (Gelleri 2009: 69). Demurrage or other ways to safeguard the circulation is promoted by the German Regiogeld-Association. Every initiative, which is member of the association, is committed to the quality criteria. One of the criteria is: To support a sustainable financial system by determining and controlling the amount and velocity of the money issued.

The velocity of the Chiemgauer (yearly sales turnover divided by the average outstanding money stock) is estimated at 10.6 (2009). Although after the introduction of the Euro no domestic figures are available anymore, the velocity will be much higher than the velocity of conventional money (M1), which was approx. 3.5 of the former German DM in 2000 (before the introduction of the Euro). Figures of the velocity of other German CC are rare. The velocity of the "Langenegger Talente ", a local CC without demurrage in Austria (Vorarlberg) is estimated at only 4 (2009). However, the velocity of the traditional "Bethel Geld" (without demurrage), issued in Bielefeld as CC since 1908, is approx. 14 (Cf. Godschalk 2008: 198). The empirical data does not yet allow conclusions on the effects of implementing demurrage on the velocity within the Regiogeld-scenery in Germany. However, the velocity of CC is probably much higher than the "speed" of traditional currency.

THE SWISS CHW (WIR FRANKEN): A SUCCESSFUL CC WITHOUT DEMURRAGE

Although the implementation and handling of demurrage at a cashless currency (by a negative interest mechanism) is much easier compared to a cash-based currency, the account-based Swiss WIR-system still has and never had demurrage (except for a tiny experiment of issuance of low value stamp scrip notes during 1938-1948). The WIR was set up in December 1934 by Werner Zimmermann and Paul Enz, who were followers of Silvio Gesell, but the concept is not based on his idea of shrinking money. The origins of the Swiss WIR were the so-called "Ausgleichskassen" (compensation schemes) in Germany. The Ausgleichskassen (later also called "Arbeitsgemeinschaften") were local cashless credit systems within a system of closed-loop accounts of the participants (Cf. Godschalk 1986: 71-73). Contrary to traditional barter exchanges the creation of money (positive balances on the accounts) was not generated by over-

4 It is difficult to draw a clear boundary line between contemporary Regiogeld and other private issued means of paper money in Germany. A criterion could be the membership of the Regiogeld-Association ("Regiogeld e.V."), but some initiatives are not member. The numbers mentioned here are based on initiatives, who are issuing paper money in more than one denomination, which should be long-term used as means of payment from hand-to-hand. So for example local gift vouchers are not included. Within the Regiogeld different concepts are used. Most of them are issued against the exchange of Euro (backed by Euro); others are issued by the participants as credit backed by their products and services (backed by output). Some of the Regiogeld-issues are based on time instead of Euro as unit of account and exchange.

drafts of member accounts (like traditional barter exchanges or LETS, where the total balances are zero), but by initial loans granted by the system to some participants as debtors. The local Ausgleichskasse acted like a central bank issuing its own cashless money by granting zero-interest credit to its participants (SME, farmers, unemployment & relief initiatives, private persons). The system was closed-loop without a possibility to exchange the CC into the national state-issued currency. These CC-systems were quite successful in Germany during the Great Depression since 1931. After the success of the first Ausgleichskasse in Rendsburg (started in summer 1931) these cooperatives expanded rapidly throughout the German Reich. At the end of 1932 approximatively 40 Ausgleichskassen were listed as registered cooperatives and other legal entities in Germany. The German government tried to stop this "subversive" money creation by several laws. In the end the national-socialist regime was successful by a specific law in 1934, which definitely stopped this "abuse of cashless payments" by the Ausgleichskassen. The basic idea was exported to other European countries, like Austria and Denmark. In Denmark the issuance of private scrip notes of the J.A.K. co-operative (Jord-Arbejde-Kapital), practised since 1931 was just prohibited by law in 1933. The J.A.K.-founder Kristiansen looked for alternative solutions, picked up the idea of the zero-interest credit clearing of the Ausgleichskassen and started its cashless currency of the J.A.K.-clearing "Afregningscentrale" in the beginning of 1934. The WIR-founders visited Denmark twice in 1934 to study the J.A.K.-clearing system before starting their own system at the end of 1934. Their main goal was interest-free loans and deposits and not Gesellian melting money. Therefore, the initiative was not supported (and even criticized) by the Swiss organisation of Gesell followers (SFB), whose target was a nation-wide monetary reform based on "Freigeld" and not a regional (later nation-wide) CC-project (Cf. Schärrer 1983: 201-205).

The WIR system is a cashless account-based circuit. In 1938 it started a dated stamp scrip (WIR Verrechnungs-Schein) in a small denomination of 5 WIR-francs as additional medium of exchange only for small-value payments between participants and for payments to non-participants without an account. This scrip should attract non-members to join the system. The demurrage fee was 2% per month. It was not successful and eventually terminated in 1948. There is no information available about the volume, but it must be edited in a very small volume and neglectful compared to the cashless monetary volume of the WIR. Studer (1998: 16) suggested that demurrage was generally implemented within the WIR system until 1948 by a misleading statement. Demurrage was only relevant for a small amount of additional scrip notes. In the late 40s the WIR board discussed the introduction of demurrage on the WIR-Franc balances, but it was never realised. The basic idea of Gesell of shrinking money played a neglected role in WIR´s history. So the WIR as system was never a Gesellian institution as suggested by Studer (Cf. Studer 1998: 18). Its roots go back to the anti-interest theories of the mutual exchange socialists and the cash- and interestless systems of the Ausgleichskassen in Germany of 1931 – 1933. Since 1929 the followers of Gesell were involved in several demurrage-based stamp scrip projects in Germany, Austria and Switzerland (eg. Wära, Tauscher), but without personal or ideological connections to the parallel movement of the Ausgleichskassen in Germany. The Ausgleichskassen and the Gesellian stamp scrip projects were at that time two parallel strings within the history of practical monetary reform projects in the Germanic countries.

CONCLUSIONS

Currency with demurrage is a theoretical concept for a reform of the monopolistic issued state money originated by Silvio Gesell. Until now it has never been implemented the way it was originally intended. Based on the theory of Irving Fisher and the practical experiences during the Great Depression a demurrage-based CC could be helpful as a temporary steering instrument during economic depressions to stimulate economic activity by increasing the velocity of money (of CC and indirectly of conventional money), probably only if issued state-wide. The level of the demurrage-rate of the local issued depreciated money seems to be not crucial for the usage, turnover and velocity.

A theory behind the implementation of demurrage within a durable CC without the evidence of an economic crisis is lacking. Its main goal is to prevent hoarding and to increase the velocity of the issued CC. Until now there are no hard figures of contemporary CC proving this effect compared to other CC without demurrage. The Swiss CHW (WIR Franken), the oldest and most successful CC in the world, is a currency without demurrage. Demurrage probably does not matter if the usage, turnover and velocity are the benchmarks.

Based on historical and contemporary experiences, the velocity of CC is usually much higher than the conventional money. Even a CC with an additional transaction fee can not prevent its extremely high level of velocity.

The main driver behind the higher level of velocity of CC is probably Gresham´s law: Bad Money drives out good money (if they exchange for the same price). Most CC are issued with a fixed exchange rate to the national currency. Due to its restricted liquidity CC is per definition "bad money" compared to the conventional state-issued money as legal tender within the whole territory of issuance. From a user´s point of view a demurrage-based CC (if paper-based) is more complex and less convenient. By fixing stamps at the right time the transaction and information costs seems to be higher than other less complex CC. On the other hand demurrage could be a revenue source besides seigniorage. In the Depression era the revenue stream of demurrage fee could even create a reserve for 100% backing of the CC by conventional money.

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APPENDIX: TRANSACTION-BASED STAMP SCRIP IN THE USA

The original stamp scrip issuances in the USA were quite different from the Gesellian concept and issues in Europe. Stamps had to be affixed with each transaction (without time-based parameter) by the user (seller or buyer). The scrip note, fully filled with stamps, could be redeemed at its face value against traditional cash. The redemptions fund is automatically built up by the revenues of the sold stamps. The stamps had to be paid in cash by every user in the transaction chain, who benefitted from the additional trade turnover. At the end of the day the scrip, initially issued as fiat money, was 100% backed by conventional money ("self-liquidating" or "self-financing" scrip). Usually the value of the needed stamps exceeded 100% in order to create a small surplus for coverage of the handling and printing costs of the scrip issuance. This transaction-based stamp scrip has (besides the sticking of the stamps) nothing in common with the basics of of the Gesellian time-based stamp scrip: depreciation and preventing hoarding. Even the effects are contrary: instead of a built-in depreciation as incentive for quick usage, the payer (or payee) has to pay a fee for usage. Contrary to the shrinking money concept of Gesell we see a credit note, which becomes over time more valuable after each transaction by the rising of the funds for redemptions. About the origin of this American-type of stamp scrip-idea there is rarely any indication. Like Irving Fisher, the Gesellians in Europe believed that it was a misunderstanding or deliberate modification of Gesell´s idea. Charles Zylstra was the great promoter of transaction-based stamp scrip in the USA (first issuance in Hawarden/Iowa in October 1932 as transaction-based scrip, changed by Zylstra to time-based scrip in April 1933), but he was not the first one and therefore in any case not the (first) inventor of the idea. The first (not very successful) launch of stamp scrip in the USA was probably in Anaheim (California) in January 1932, initiated by Joe Elliott. "Elliott himself claimed that he had thought up the idea of stamped money himself, but its similarity to Gesell´s ideas makes one wonder if there might have been some (possibly unconscious) awareness of Gesell´s work" (Warner 2008: 310). The second town that followed the concept of Anaheim (1 Dollar-note with 25 stamps of 4 Cents) was probably Merced (California) in August 1932 (see figure 3).

The mechanism of a certain target amount to be reached by collecting and affixing stamps was popular at that time within discount stamps schemes and savings plans. It is likely that the idea originated more here.

Stamp scrip and other scrip with depreciation (like table money) were issued (or planned, but not issued) in at least 133 towns and regions within 28 states of the USA during the Great Depression. The majority (72%) was still transaction-based, taking over the original idea of Anaheim or the concept of Zylstra. Usually transaction-based scrip was 100% self-financed by the stamps to be affixed. Within a few scrip issues the users were not obliged to affix a total number of stamps corresponding with the nominal value of the note, like the "self-liquidating" scrip. These issues had only a few stamps, therefore called "limited stamp scrip" (e.g. the well-known scrip of Fostoria/Ohio). Only 7 towns realised a purely time-based scrip according to the Gesellian inspired ideas of Fisher/Cohrssen. Especially in Michigan the hybrid type was very popular by combining both ideas (stamps had to be affixed per transaction or per week).

Figure 3: Front- and backside of the early transaction-based stamp scrip issued in Merced (1932)

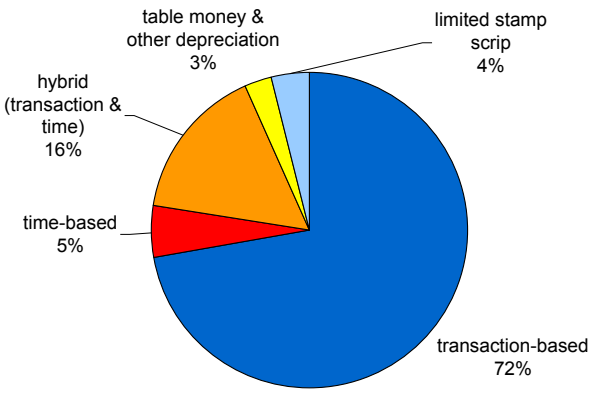

Figure 4: Stamp scrip and other scrip based on depreciation, issued in the USA during the Great Depression (based on Mitchell & Shafer 1984)

The last USA issued transaction-based stamp scrip during the Great Depression period was probably issued in San Luis Obispo (California) or in Chicago (United Trade Dollar Exchange) in 1939. It seems that this ingenious idea was never picked up again although it could be an interesting concept for CC, where a backing in the conventional currency is an important condition for acceptance by avoiding a prepaid way of issuing.

Stamp Scrip during the Great Depression	Transaction-based (USA)	Time-based (Europe)
First issuance (as far as known today)	January 1932 (Anaheim/California)	1926 (WARA) (Germany)
Booming period	1933	1930-1931 (Germany) 1932-1933 (Austria)
Legal pressure	No prohibition	Prohibition in Germany and Austria (not in Switzerland!)
Fee (stamp)	Per transaction (usually 2% or 3% of face value)	Per time unit (usually 1% per month)
Product variety	Time-based scrip and hybrid variations (time & transaction) after lobbying of Fisher & Cohrssen	Table money (e.g. Tauscher in Germany 1931)
Funding/Backing	Self-financing	Usually backed by conventional money
Redemption into conventional currency	Usually after full term (all stamps affixed); sometimes a clearing house was installed for premature redemption against a discount by payees (retailers)	In most cases, but with disincentives (e.g. redemption against discount)

Table 2 : Stamp Scrip during the Great Depression era