**The Curious Case of the Disappearing Money:**

Demurrage-Based Currencies in Theory and Practice

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In 1932, Germany and Austria could hardly be considered shining beacons of prosperity. After the disastrous hyperinflation of the mark, both countries were deep in the throes of agonizing depression that would grip the whole world. However, two cities seemed to defy the norm, namely Wörgl in Germany and Schwanenkirchen in Austria. These cities were able to halt rising unemployment, restore the confidence of their businesses, and fill their public coffers to overflowing. However, in defiance to nearly all schools of economic thought, they did not accomplish this feat through deregulation, through stimulus, or through monetary expansion. Rather, they issued a currency that people paid to use. While the paradox of the shrinking currency has largely been relegated to an economic footnote, interest in self-depreciating currencies has been growing over the last two decades. Unfortunately, there has been little critical appraisal of the effects of such currencies in economic literature. This paper is intended to examine the long and short-term effects of demurrage-based currencies, such as those seen in the 1930s. Other writers have dealt with the question of whether these currencies are sustainable under normal market conditions, so I will leave this question to them and simply focus on the ramifications of imposing demurrage on an economy.[[1]](#footnote-1)

Demurrage-based currencies have appeared in various forms over the last century, concentrated principally in Germany and Austria and to a lesser extent in the United States and Canada during the great depression (Fisher, 1932). While they have gone by a number of names, such as *freigeld* (free-gold)*,* *schwundgeld* (shrinking money), orGesellian currencies, all demurrage based currencies have one common characteristic: a periodic loss of value that is designed to keep the currency in circulation. In a system of dated stamp scrip, as was used in Wörgl and Schwanenkirchen, the holder of the money must purchase a stamp worth a certain percentage of the note’s face value at the end of a given period which range from weeks to quarters. Other currencies used a printed table to determine the note’s worth at any given point in the year. Perhaps the most creative suggestion was to have notes of different colors with a lottery at the end of the period to determine which color lost all of its face value (Gesell, 1918, p. 204).

The most widely successful formulation of demurrage was the dated stamp scrip. Not only did this system avoid the complexity of requiring merchants to calculate the value of a note at any point or the uncertainty of potentially losing much of one’s cash holdings, dated stamp scrip provided the added benefit of producing revenue for the issuing government (Ibid, p. 124). The stamp payments acted as an additional revenue stream that would finance the operation of the new monetary system. By tying the value of the currency to having current stamps, issuing governments essentially made the system self-enforcing, since merchants knew that if they accepted currency without the stamps, they may be liable to pay the owed currency tax before they could spend the newly received money. Thus, every seller would act as an *ad hoc* tax enforcer. [[2]](#footnote-2)

1. **Intellectual History of Demurrage**

The first theorist to propound a system of demurrage-based currency was Silvio Gesell, a heterodox economist living at the turn of the 20th century. He observed a difference between money and all other goods, which he thought drove much of the economic turmoil he saw in the world. With few exceptions, goods decay and consequently need to be replenished regularly. Money had an opposing nature as it maintained constant value throughout time and therefore can be hoarded. In his words:

Each product is threatened by a particular enemy-iron by rust, furs by moths, glass by breakage, livestock by disease; and with these particular enemies are allied common enemies, water, fire, thieves and the oxygen of the air, which slowly but surely burns everything away. …The only way in which an owner of wares can protect himself against such losses is to sell them. He is compelled by the nature of his property to offer it for sale. If he resists this compulsion he is punished, and the punishment is carried out by his property, by the wares in his possession.

He goes on to write that:

Gold neither rusts nor decays, neither breaks nor dies. Neither frost, heat, sun, rain nor fire can harm it. The holder of money made of gold need fear no loss arising from the material of his possession. Nor does its quality change. Gold which has lain buried for a thousand years remains unconsumed.

Because of this disparity between goods and money, individuals can hoard money without fear of substantial losses – withdrawing it from circulation and slowing the economy to a halt. Gesell never makes any distinction between savings, cash balances, and hoarding and seems to argue that any withdrawal of money from consumptive uses would lead to these ills.

 In addition to believing in the need for money to be constantly circulating, Gesell also opposed banks on general principle. Interest on loans, he believed, was unearned income that banks unjustly took for the use of depositors’ money. Since the loan would allow the recipient of the funds to improve the standard of living of everyone in the community, Gesell did not believe that any publically minded individual would need to be paid interest for the use of their funds. Ideally, loans would be issued between individuals with no intermediary and no interest charged. Additionally, Gessel believed that a positive rate of monetary interest prevented enterprises with rates of return below the money rate of interest from getting the funds they need (Blanc, 1998, p. 473). This, in turn prevented the full utilization of resources throughout the economy by forestalling many areas of production

 To correct these two perceived ills, Gesell proposed his system of demurrage based money or *freigeld* (free-gold). He suggested attaching some sort of carrying cost to money, though he was not particular on what form it ought to take. Such a system would bring money into alignment with all other goods and eliminate any gains to be had by speculation and hoarding. *Freigeld* would have the additional advantage of driving interest rates down to zero and very likely eliminating the banking industry or, at minimum, radically change it from its current form. It is no surprise to determine that demurrage based currencies would essentially destroy the savings and investment infrastructure in the economy that adopted them, since that was, in large part, the original intent.

 The next theorist to adopt the idea of *freigeld* was the American economist, Irving Fisher. Given Gesell’s oddities, if his ideas had not been adopted by a high-profile academic such as Fisher, concepts such as dated stamp scrip would likely have languished as historical footnotes. While Fisher was not particularly impressed with much of Gesell’s work, he observed the experiments at Woergl and Schwanenkirchen and became enamored with the idea of stamp scrip. Demurrage, particularly as implemented in a dated stamp scrip system, fit nicely with Fisher’s monetary theory. Under normal circumstances, the velocity of money in the economy is something which cannot be meaningfully influenced by policymakers, which leaves changes to the money stock as the only tool available to change either the overall price level or the quantity of goods and services in the economy. However, if a carrying cost was attached to money, Fisher believed that it would induce individuals to spend more and frequently, independently changing velocity and having all the beneficial effects of inflation without the costs.

 Fisher’s quantity theory framework provided the foundation for most later theorists. Contemporary proponents of demurrage based currencies tend to rely on the concept of velocity of circulation as their principle justification for how demurrage could increase prosperity for a region. Broadly speaking, modern theorists on this subject can be divided into two camps – those who support demurrage as a basis for community-based currencies and those who see the potential for application to economic stimuli. The modern community currency movement is surprisingly strong, with private monetary systems operating across much of Europe and even in parts of the United States. While not all of these currencies use demurrage, several of the largest examples do. Demurrage is typically a secondary focus of these theorists who see the main purpose of community currencies as that of encouraging local spending to prevent movement of resources out of the economy.

 Of more interest to more mainstream academics, the application to stimulus comes from the ability of demurrage based currencies to allow policy-makers to break the zero-interest bound. The zero bound on interest rates has profound implications for economies where the central bank has kept discount rates at or near zero for a prolonged period of time and is therefore restricted from reducing them further (Wolman, 2005). This problem has generated a substantial and growing body of literature on optimal policies for monetary authorities operating under low-interest rate conditions (see Eggertson and Woodford, 2003). Under normal economic circumstances, policymakers who wish to encourage spending and expand the money supply through credit expansion are restricted by consumers’ well-founded reluctance to place their savings in accounts bearing nominally negative interest rates. However, if a currency is structured in such a way that held money will incur a *de facto* negative interest rate, central banks can offer effective or nominally negative interest rates on saved money, further lower offered loan interest rates and expand the money supply in a less restricted fashion (Buiter and Panigirtzoglou, 2003).

1. **Past Implementation of Demurrage-Based Currencies**

 By far the most high profile instances of apparently successful *freigeld* systems were the experiments in Woergl and Schwanenkirchen. In both of these cities, local governments were able to implement a system where self-depreciating currency operated as the principle unit of exchange within their region for an extended period of time. Not coincidentally, both of these cities operated on a dated stamp scrip system where individuals were required to purchase a stamp worth a certain percent of the currency every month in order to maintain face value. Purportedly, these cities were able to dramatically reduce unemployment, improve local commerce, and fill the city government’s coffers to overflowing, all without significant negative consequences. **During 1931-32, 1500 individuals in Woergl were unemployed, out of a population of 4300 (Fisher, 1932).** Since both of these iterations were shut down by the central bank within three years of their implementation, there is little information available on the long-term consequences of the system.

 Many cities in the United States also experimented with demurring currency during the Great Depression, though none of these cases were particularly successful. In large part, this can be traced to two factors. First, the cost-carrying currencies were competing with a robust dollar that did not have the same stigma as the post-hyperinflation mark. With a competitive complementary currency, it is no surprise that individuals and businesses preferred the low-cost alternative. Additionally, most implementations of stamp scrip in the US utilized an exchange-stamp system rather than a dated-stamp system. Each time an individual made a purchase, they were required to purchase a stamp worth a portion of the currency. Since this was tantamount to a conventional sales tax, it had the opposite of the intended effect – taxing, and consequently discouraging, exchange rather than discouraging holding excess cash balances.

 Demurrage fell out of vogue for roughly sixty years after the Great Depression until it saw a resurgence in contemporary Germany where twenty-eight complementary currencies operate in tandem with the Euro as of 2008 (Gelleri, 2009). The largest of these, the Chiemgauer, is a private currency established in 2002 that operates across two districts with roughly 8% annual demurrage. It was founded principally as a local currency, aimed at encouraging local spending through increases in the velocity of money (Ibid). While there are a significant number of complementary currencies currently operating in Germany, most have extremely low volumes of circulation with the total value of alternative currency estimated at roughly €200,000 (Rösl, 2006). Given that there are roughly €15.7B Euro currently outstanding, the quantity of alternative currency is negligibly small and cannot reasonably be expected to have a significant economic effect.

1. **Theoretical Analysis of Demurrage Based Currencies**

To analyze the effect of Gesselian currencies, I will be hypothesizing a framework similar to the examples of Wörgl and Schwanenkirchen, where demurrage is implemented in the principal currency of a region through a dated stamp scrip system where a stamp must be purchased at the end of every month, totally 10% demurrage over the course of the year.[[3]](#footnote-3) Additionally, to simplify the analysis, I will assume that the depreciating currency is the only monetary unit in circulation for the region. In such an arrangement, Gesselian currencies would cause a quasi-inflationary boom and subsequent bust with effects similar to that of a credit expansion. In a later section I will analyze the case where there are multiple monetary systems in use for the same polity.

1. *Demand for Money and the Purchasing Power of Money*

 The immediate effect of the implementation of a demurring currency is to decrease the demand for money in the economy. Under normal conditions, the real costs to holding additional money are negligible and equivalent to the opportunity cost for foregoing the purchase of an equivalent amount goods. The addition of a carrying cost to money changes this dramatically. With demurrage, money held over the payment deadline results in a decrease in both real and nominal wealth for the owner of the cash. With the increased cost to holding money, the marginal utility for units of held cash will decrease relative to other goods on an individual’s preference rank, leading individuals throughout the economy to decrease their cash balances so that they can hold other goods instead. In other words, the supply of held money exceeds the demand for held money. A sudden increase in the number of eager buyers of goods will bid up the price of goods and services as those products become more valuable to consumers than holding an equivalent amount of cash (Rothbard, 2009, p. 762). With a rise in price, the purchasing power of money (PPM) falls by definition. Individuals will continue do draw down their excess cash balances until the marginal utility gained from holding cash balances equilibrates with the opportunity cost of foregoing other goods. Once demand for cash balances had equilibrated, the PPM would stabilize at a new lower level.

 Such a shift in demand will be felt most strongly in reservation demand, as money demanded in transactions is relatively less costly, since businesses would see higher cash turnover rates than individuals. A simple example suffices to establish this: Suppose a small business earning annual revenues of $3,000,000 which keeps $300,000 in cash reserves at any given time. The annual demurrage costs for this business would be $30,000 or 1% of total revenue, far lower than most municipal sales taxes. Assuming that this company is already maximizing revenue, any attempt to raise prices would result in a decrease in both quantity of their product demanded and total revenue. This means that a company could neither shift costs forward to their customers nor could they avoid significant demurrage costs by increasing prices or lowering their transaction demand for money.

 This analysis is broadly consistent with the reported historical evidence from the 1930s. Fisher reports that there was a significant increase in the volume of commerce immediately after the institution of the Wara in Schwanenkirchen, largely because individuals, banks, and businesses desired to avoid incurring carrying costs by holding the currency (1932, p. 12). A similar phenomenon was reported in Wörgl (Ibid, p. 15). While little inflation was observed in either city, prices in areas where the Wara circulated tended to be higher than in the rest of Germany where deflation tended to be the norm (Cohrssen, 1932, p. 339). Similarly, contemporary examples of Gesellian currencies such as the Chiemgauer indicate that the decrease in demand for money is unique to the demurring currencies. Gelleri reports that the Chiemgauer has experienced a velocity up to three times that of the euro (2009, p. 64).

1. *Interest Rates and Credit Expansion*

 In addition to the effects on demand for money and the PPM, institution of a demurrage based currency would have dramatic effects on interest rates and investment patterns across the economy. Rothbard rightly points out that changes in the demand for money have no necessary effect on interest rates since social time preference may remain unchanged. However, in this case, the pressure of a *de facto* 10% negative interest rate on held money would induce banks to lower offered interest rates which would create the appearance of a dramatic decrease in time preference across society. In order to remain in operation, banks would have to decrease nominal interest rates on both saved and lent capital. If banks were to continue offering interest at equilibrium rate before the institution of the new currency system, the real interest rate would increase by 10% since the cost of renewing all cash held in bank savings accounts would be transferred from the saver to the bank. The new cost on holding saved capital would reduce banks’ demand for savings, giving further reason for them to decrease the offered interest rate on savings, possibly into nominally negative interest rates. Moreover, savers would be willing to accept these lower rates since a -8% percent interest rate on savings is still preferable to a -10% rate. Historical evidence indicates that interest rates on savings declined to par value, though did not reach nominally negative rates in either Wörgl or Schwanenkirchen (Cohrssen, 1932, p. 339).

 A similar, though more complex, effect would occur with bank loans. Since banks would incur significant costs on all reserves, they would attempt to decrease reserves held in excess of the legal reserve requirement. The easiest way to accomplish this would be through lowering the interest rate to expand the number of loans issued. In this case, the rate of interest would be moderated by an increase in demand for loaned funds. If the recipient of the loan spends the funds soon after the loan is issued, the debtor will not incur substantial costs due to demurrage, so one would not expect the demand for loans to be negatively affected by adding a carrying cost to money. However, businesses and individuals who desire to make significant purchases stand to gain from making those purchases using credit rather than through their own savings. If a business desires to purchase an expensive piece of capital equipment, saving the funds themselves would require them to bear the costs for demurrage every time the currency stamps need to be renewed, potentially reaching significant losses as large amounts of cash are accumulated. If that same business takes out a loan to make that same purchase, they are only required to accumulate the funds to make the required payments on their debt, incurring a lower cost each renewal period. Essentially, a loan allows a company to amortize the demurrage cost of their purchase over the entire life of their loan rather than paying a significant sum initially. The net result of these two effects cannot necessarily be determined by economic theory, since the increase in the quantity of loans supplied and demanded will be dependent on the circumstances of the case. However, based on the historical circumstances, it appears that the increase in loans tended to outweigh the effects of the increased demand for loans (Cohrssen, 1932, p. 339).

 The third mechanism through which demurrage decreases interest rates is through an increase in demand for bonds. Since social time preference remains unchanged, the economy-wide reduction in cash balances will be channeled into both consumption and investment, at roughly the same ratio as before the new currency was established. This alone would increase demand for bonds as an investment instrument. Additionally, demand for highly liquid bonds may increase as a mechanism of maintaining the value of savings, since holding low-yield bonds that may be easily exchanged for cash would be an easy way for a consumer or business to maintain a reserve of cash-equivalents without incurring the cost of holding actual money. As the increase in demand drives up the price of bonds, yield will fall accordingly through two processes. Actual yield on outstanding bonds will fall as the price rises relative to the constant level of return. Additionally, companies that issue bonds after the establishment of the currency face a sellers’ market where bond buyers are willing to accept lower yields for the same quality of debt.

 The cumulative effect of these three processes will be to drive down long-term interest rates throughout the economy and to create a one-time expansion of credit. As banks loan out excess reserves and individuals and banks move come of their cash holdings into direct investment, the quantity of credit issued in the economy would rise. The lower interest rates would increase the quantity of loans demanded even in excess the rightward shift in demand for loans described earlier. This creates the appearance of a decrease in social time preference with banks acting as if they have received a significant influx of saved capital, signaling that long-term production projects are more viable than under prior conditions. This sets in process a credit expansion boom that is not driven by any monetary expansion by the monetary authority. As in the case of a normal credit expansion, this process is not sustainable. The lowered interest rates are not supported by any change in time preference and once cash holdings equilibrate the supply of cheap money will evaporate. This credit expansion is only enabled by economic agents consuming their supply of excess monetary capital and once that supply is exhausted, the process necessarily will reverse.

1. *Regulatory Effects*

The final distortionary effects on the economy are independent of the two classes of effect. These effects stem from attempts by economic agents to evade the costs of demurrage. Since the cost of holding currency is imposed at discrete moments in time, rather than a constant decrease in value, individuals could plausibly change their behavior to minimize the burden of the demurrage. However, since sellers and buyers of goods face opposite incentives in how best to evade the tax, many of these effects would balance out.

As repositories of cash, banks would be most subject to attempts to evade what could otherwise be crippling payments of demurrage. Increasing the number of loans issued could in many respects be considered merely as a tactic to avoid what amounts to a tax on held money. Beyond this action, it is unclear what paths banks could take to forestall evasion. Imposing a constant negative rate of interest would be vulnerable to gaming, since individuals could deposit held cash late in the month and withdraw shortly after the deadline, effectively shifting much of the cost to the bank. Other methods face similar problems. Regardless of what solution bankers are able to reach, any action they take will divert resources that were previously allocated to productive ends to coping with the imposed burden of a self-depreciating currency and preventing abuse of the system. This will necessarily build inefficiencies into the banking system, increasing their cost structure from what it would be in an unhampered market.

For businesses and consumers, held money becomes progressively more of a liability as the renewal deadline approaches since cash balances early in the cycle have a greater possibility to be spent at full value before payment becomes due. Conversely, as the end of the month approaches, the ability to dispose of excess cash decreases. For this reason, businesses would prefer to hold inventory rather than cash at the end of the month, subject to any limitations from perishable stock. Assuming there are not major costs to holding inventory, we would therefore expect businesses to attempt to move significant expenditures toward the end of the period and income toward the beginning of the period. This would allow them to have the largest cash balances when they have the most opportunity to use the funds and hold the largest inventory when cash becomes a liability. Individuals would want to have their income moved toward the beginning of the period so that they do not face demurrage costs on their full income as would occur if they were paid later in the period. Further, they would desire to shift their expenditures later in the period.

In this case, the incentives of businesses and individuals are precisely opposed to each other. Businesses would want to renegotiate labor contracts to pay salaries later in the month, but individuals want to move payment earlier in the month. Buyers would want to move their purchases toward the end of the month, but sellers want those purchases at the beginning. In most cases, the financial pressures on both parties of the exchange would tend to counter each other fairly equally. However, this assumes reasonably equal negotiating power between the two parties. It is possible in cases where individuals are more constrained in their employment opportunities than businesses are constrained in their hiring opportunities that the employer would be able to wield disproportionate influence in determining when pay will be distributed since the employee would prefer to take a slight penalty in their pay by receiving it later in the month than to have to bear the search costs of finding a different employer with a more favorable offer.

Other possible evasion mechanisms would include small scale shifts to payment in-kind or barter to eliminate the monetary transfer entirely. Given the costs associated with barter, this would appear to be something of a disproportionate response to the costs of demurrage. However, both the rise of demurrage systems in modern Germany (Rösl, 2006, p. 3) and in the depression-era United States (Fisher, 1932, p. 4) was associated with a parallel rise in barter and exchange societies. This shift is likely due to other factors such as an emphasis in community exchange that is associated with most modern complementary currency movements[[4]](#footnote-4) and liquidity crises in many areas during the great depression (Fisher, 1932, p. 4). However, the coincidental rise of both of these systems should not be overlooked. A less costly method of eliminating monetary exchange would be through payment in account, especially between businesses that make frequent bilateral transactions such as banks.

The one party that would not face any incentive to evade the costs of holding the currency would be the issuing government, which can simply print stamps at minimal cost. This raises the possibility of the state as a means of releasing any excess cash that cannot be easily disposed of through other transactions. If an individual owes back taxes and wishes to avoid the costs of demurrage, they can partially pay down their balance owed, knowing that the funds will be due at some point in the future. This explains the influx of tax receipts into the governments of Wörgl and Schwanenkirchen, which went from facing severe deficits and significant outstanding tax receipts to having overflowing coffers (Fisher, 1932, p. 16). However, this outlet would only exist as long as businesses had tax accounts outstanding. Once all accounts were current, businesses would no longer have incentive to give their excess cash to the government rather holding it at a slight penalty or exchanging it for goods that hold real value for them.

1. **Boom and Bust**

The distortionary processes outlined over the previous section would set in motion a chain of entrepreneurial error similar to that of a credit expansion and its subsequent boom and bust. The boom would occur in two paths, first through the expansion of lower-order production from an immediate increase in consumption spending and second in higher-order production as lower interest rates signal the profitability of long-term projects. As the cheap money disappears and consumers demand for cash holdings stabilizes, these effects will reverse leading inevitably into the bust. However, unlike the case of a business cycle driven by credit expansion, this scenario will have lasting effects on the productivity of economy.

As individuals seek to reduce their excess cash holdings through consumption, industries lower in the chain of production will experience increases in revenue and profitability. These effects will be concentrated in consumer production, but will diffuse up the chain of production as consumer retailers increase their demand for higher order goods and factors of production, which bids up the price of higher order goods and services. As under normal economic conditions, the effect becomes weaker as it moves up the chain of production. The ultimate effect of this shift will be an increase in the price of factors of production as additional value is imputed from the increased value of consumer goods. The price change will likely be felt most strongly in labor. Since hiring additional workers does not require the same level of savings as capital accumulation, it would incur lower costs from demurrage than either saving for an expensive capital good or taking out a loan of an equivalent amount. This would increase wage rates and drive down unemployment, creating the appearance of prosperity.

 The credit expansion that results from individuals and businesses moving their excess cash balances into investment projects and banks loaning out excess reserves would expand higher-order production. Lower interest rates always have a disproportionately large effect on long-term projects, since any change in interest rates is compounded over the lifetime of the enterprise. Dramatically lowered interest rates would signal that many enterprises that were not supported by social time preference before the new currency system are now profitable and would draw investment into long-term projects such as housing development. These effects would, for all intents and purposes, be identical to a conventional credit expansion boom.[[5]](#footnote-5)

 As established before, these changes are necessarily unsustainable and will reverse once demand for money has reëquilibrated at a lower level. At this point, banks lose access to easy money as individuals draw down their savings, decreasing the available reserves for banks to pyramid new credit above. Once the new equilibrium is established, malinvestments made during the boom will begin to be realized. Lower order production that was established under the assumption that consumption spending will continue to rise will fail once lower order spending stabilizes. Long term projects will face rising interest rates that render them unsustainable and cause a rash of failures as the businesses that no longer are supported by time preference are revealed to be faulty. This would likely result in moderate deflation as bank credit shrinks with the liquidation of malinvestment.

 It cannot be emphasized enough how catastrophic the bust phase would be for the banking system. Under a normal credit expansion bust, there is already a tendency for large numbers of banks to fail as the economy systematically overextends credit which must be liquidated in the bust. With demurrage, banks face the additional burden of a 10% annual cost on all held money. Since this would be tantamount to a substantial tax on a bank’s entire inventory, it would be extremely difficult for banks to remain solvent once the cheap money runs out. They would need to recover extraordinarily high interest payments on loans received in an environment where interest rates are being pushed close to zero. Given Gesell’s aversion to the entire banking system, it is no surprise that this system he proposed would strain banks, but the extent to which this is the case seems to have escaped most theorists including eminent scholars such as Irving Fisher.

 The greatest difference from a business cycle driven purely by credit expansion is that in the case of demurrage, the economy will settle into a less productive, more labor intensive pattern of production that cannot be escaped as long as the demurrage is in effect. With credit expansion, assuming the government does not continue to inflate the money supply at an accelerating rate, once the malinvestments are liquidated, the economy can settle back into normal operation with a lower PPM with social time preference still determining levels of savings and investment. With demurrage, the effect of discouraging capital accumulation remains as long as the monetary system is in effect. This will prevent businesses from increasing the capital stock and improving their productivity and will force producers to remain with less productive, more labor intensive methods of production regardless of whether that is what would be supported in the unhampered market.

1. **Demurrage in Complementary Currency Systems**

All the analysis up to this point has assumed that the self-depreciating currency is the only monetary unit in circulation for simplicity of analysis. However, in many real-world cases, this assumption does not hold. All contemporary currencies that operate with demurrage are used in tandem with a more established and widely accepted currency such as the Euro (Rösl, 2006, p. 2). When this is the case, the economic effects of demurrage are dramatically reduced, nearly to the point of disappearance. Individuals hold non-depreciating currency for uses that require accumulation of capital such as long-term savings and can exchange the Gesellian currency for small, regular expenditures. To prevent this from happening, demurrage-based systems often impose a penalty for conversion into other currency units (Gelleri, 2009, p. 71) (Fisher, 1932, p. 15). The economic effects of demurrage will vary with the extent to which the currency is widely accepted and the ability of the penalty to deter conversion to alternative monetary systems.

In the case of Wörgl and Schwanenkirchen, the Wara was able to become the principle medium of exchange and remain as such until it was shut down despite circulating in tandem with the reichmark. This was likely due to a number of factors such as lingering distrust of the mark following the hyperinflation in the 1920s and liquidity crises due to deflationary policies by the German and Austrian governments, both of which would lead individuals to hold Wara rather than the reichmark. Such circumstances would provide the conditions for the economic effects laid out in this paper to be fully realized despite the possibility of shifting between currencies. These are the conditions that would be likely to prevail in a state where the national currency uses demurrage but neighboring currencies do not. The ability to freely move between currencies would be hampered by the ability to obtain foreign currency at little cost and by businesses’ willingness to accept foreign monies. If either of these conditions hamper consumers’ ability to use a non-depreciating currency, the full effects of demurrage will be worked out in the economy.

1. **Demurrage in a Market Economy**

While all of the preceding analysis has assumed that the currency is operating in a system of fiat money with a fractional reserve banking system, it is theoretically conceivable for demurrage to be implemented in a 100% reserve banking system. However, that must be accompanied by the caveat that it is extremely unlikely that any consumers would accept such currency when it is in competition with fully backed money. If such a currency were to arise, it would likely operate similarly to the Chiemgauer where the issuing organization sells the currency at a discount to charitable organizations who then exchange it at face value with consumers who could then use it as any normal currency. The sale of stamps to renew the currency would enable the bank to recover the cost of initially selling the notes for below face value. If consumers valued the charitable function of the currency highly enough, they may be willing to use the Gesellian currency on a limited basis to support these enterprises. However, it is inconceivable that these currencies could become accepted widely enough that they become the general unit of account.

Moreover, since these currencies would arise endogenously from the banking system and be voluntarily accepted, the economic distortions would be eliminated entirely. Banks would face no costs to holding reserves since the reserves would be commodities rather than depreciating notes and since they are the issuing body, there would be no cost to them to printing stamps to renew any notes that they hold. Additionally, since the consumers accept the depreciating notes voluntarily and would – in this hypothetical – prefer them to ordinary gold certificates, by necessity, the demurrage must exist in accordance with the time preference of the individuals using the note. All this discussion is rather academic since, with no economic effects to speak of, the issuance of demurring currencies in a free banking setting would be a merely cosmetic change from an actual issuance of fully redeemable notes.

Consequently, while it is theoretically possible for such currencies to exist in an unhampered market setting, it is unlikely that any business would choose to do so and if they could manage to get the currency established, all economic effects from its creation, both positive and negative would be erased. Only in cases where the monetary system is imposed by some central authority against the tendency of the market could Gesellian currencies become the principle medium of exchange for a given economy. In this case, one would face all the distortions that I laid out in the earlier sections of this paper.

1. **Conclusion**

While Demurrage-based currencies have some appeal from the perspective of Fisherian quantity theory and for encouraging local economies, the actual effects of their implementation would be disastrous. The twin distortions in short and long-term production would create substantial clusters of entrepreneurial error that would initially have the appearance of a boom, but which must necessarily prove unsustainable. The resulting bust would essentially destroy the banking sector as banks are stretched with lower levels of savings, but high levels of costs due to demurrage that would be difficult to recover from their loan operations. Attempts to evade the costs of demurrage would build further distortions into the economy, further reducing the efficiency of production. The final result would be a less productive economy with permanent distortions and a lower standard of living for everyone. The experiments at Wörgl and Schwanenkirchen were not miracles at all but rather preludes to disaster.

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1. See Rösl, 2006 and Goodwin, 2013 for the issue of sustainability. [↑](#footnote-ref-1)
2. Also see Gelleri, 2009 for a discussion of the use of stamp proceeds to finance a private currency system in contemporary Germany. [↑](#footnote-ref-2)
3. Other systems, such as table currency, are expected to have the same overall effect of discouraging savings and causing a quasi-inflationary boom and subsequent bust, but may have some nuanced differences in their effects on nominal interest rates and whether/how businesses and individuals could act to avoid the costs. These systems will not be dealt with in this paper and may prove fertile ground for future research. [↑](#footnote-ref-3)
4. For a discussion of the philosophy behind these currencies see Gelleri, 2009. [↑](#footnote-ref-4)
5. For a discussion of these effects, see Rothbard, 2009 or De Soto [↑](#footnote-ref-5)