

scope, transactionally too complex, and too risky to satisfy the macroeconomic desires of money creation for prosthetics. Of course, during the heyday of merchant credit money, the necessity of prosthetics was also mostly not as perceivable as it would become in modern capitalism when the modern master drama accentuated.

Section 3. Expansive prosthetics funded with private bank credit money creation

Fractional reserves bank credit money creation in commodity money regimes

A first artificial money creation gland being born

The invention of bank fractional reserve credit money creation was of the utmost historical importance as it gave birth to a first powerful money creation gland. It was in banking, not in laboratories and by chemistry, where the dream of the alchemists was fulfilled. No test tubes, no fire, and no bizarre technology was needed for the purpose, only bookkeeping and the printing of statements of accounts (or bank notes or, albeit to a less relevant extent, the embossing of aluminum, iron, or other low value metal token money).

The gland of banks' money creation enabled the creation of something to which people would attribute tremendously more value-in-exchange than the costs of its production. This pushed down the costs of the generation of new value-in-exchange to about the costs of generation of debt, of mere paperwork. We have seen that commodity money and state fiat money have no trace of debt in them. That is different with merchant credit money. Like merchant credit money, private bank credit money, involves debt. It is, indeed, the offspring of a noble and privileged segment of merchants: Bank credit money creation works by the state allowing this segment, banks, to *sell some of their debt as money*.¹³

acceptor. How the law on bills of exchanges and merchant practices deal with this, in a way, resembles how bank codes regulate banks.

- 13 Luhmann (1988) page 145: "Die Banken haben das Zentralprivileg, ihre eigenen Schulden mit Gewinn verkaufen zu können...". "Geldschöpfung seitens der Banken" erfolgt, sagt Schumpeter, "durch Konstituierung von Forderungen gegen sich selbst." Schumpeter (1912) page 202. Schumpeter also quotes Fetter saying that a bank is "a business whose income is mainly derived from lending its promises to pay" (page 203). This insight, which would probably still irritate a significant percentage of otherwise well-educated people, is widely accepted in economics. "...our money mostly consists of the transferrable debts of banks to account holders" (Wolf, The threat and the promise of digital money, in: *Financial Times* of 23 October 2019). Wolf also writes "What makes banks special is that their liabilities are money – a universally acceptable IOU" (Wolf, Fear of hyperinflation is a delusion of the ignorant, in: *Financial Times* of 11 April 2014).

There are *two forms* of debt involved in bank credit money creation: the entry of a *credit on the bank-customers' deposit account* (this bank-debt to the customer is already money and is transmutable into other forms of money, such as bank notes, central bank notes, or token coins)¹⁴ and the entry of a *debit on the customers loan account*, which remains the customer's normal bastard debt to the bank.

The activities of banks connected to merchants' promissory notes, to bills of exchange or to bank checks, remained far less important than the monetary activities that banks would, in parallel or later, develop in the new field of bank notes, bank deposits, and token coins. As we are still in the world of commodity money, if banks wrote out bank notes, entered credits on deposit accounts, or issued token coins, then the positions gained by bank-customers were still comparable to promissory notes (thus "*bank note*"); they conveyed a hard claim against the bank for the delivery of gold or silver.

Credit money without money creation: The early Wisselbank

We shall look in greater detail at when bank credit money involves money creation. The premier way for credit money to come into being in the world of commodity money was for customers to pay gold or silver money "into" their own accounts with a bank, as they did with the *Amsterdam Wisselbank* (founded 1609), allegedly the first modern bank. This first allowed cash-free transfers between customer with accounts with the same bank. Customers who had physically carried gold or silver money (coins or bullion) to the Wisselbank received "receipts". These receipts were evidence for a claim against the bank for the money deposited and could be used to make payments like with bank notes. There was, thus, initially no differentiation yet between a ledger evidencing a claim against the Wisselbank and its banknotes.¹⁵ For the bank,

14 Banks, of course, also have conventional "bastard debt", e.g., they may owe rent to landlords or salaries to their employees. Even then, though, they can normally honor that debt by paying with self-created money – through entering a credit on the landlord's or the employees' account.

15 Similarly, already in T'ang China a practice had developed to deposit goods or money in shops against "certificates of deposit". Early in the 11th century, the state established a private monopoly for accepting such deposits but shortly afterwards took over this monopoly itself as a "Paper Money Office". This office soon confused this Wisselbank-like loaning-business with the creation of naked or somewhat blurred state fiat money, but, by the middle of the 13th century, failed. They later Yüan dynasty (1279–1368 AD) and the Ming dynasty (1368–1644 AD) also experimented with fiat money, but largely failed, too. Luckily as from the 16th century, significant volumes of European silver, from increased mining in Europe itself, and South American silver, either via the Pacific and Manila or Spain or Portugal, found its way to China and enabled the necessary (commodity money) creation (as unminted silver). That did not help further efforts of the state to introduce state fiat money. Obviously, the monetary evolution in China never nearly as much as in Europe discovered private banks' fractional reserves credit money creation as a tool. See *Golas*, The Sung fiscal

the receipt of commodity money was a balance sheet extension; the incoming gold or silver extended their assets side, the claim of the depositor, evidenced by the receipt, extended the bank's liabilities' side.

At first, although credit money was issued at the Wisselbank, *no* money was created. The Wisselbank *generated credit money* that entered circulation, but as, by the same token, it *withdrew the same amount of commodity money* from circulation, which was brought to rest in the bank's vaults,¹⁶ the aggregate volume of money was not increased.

We now leave the Wisselbank and look at banks in general: If a customer wants to make a payment from his deposit account with a bank, and if the intended recipient has an account with the *same bank*, then the first customer's account with the bank is debited and the recipient's account credited, but all customers' physical balance of gold or silver money with the bank remains untouched. If a customer wants to make a payment to a customer from another bank, the first bank can either physically forward commodity money to the second bank or there has to be some other institution in which both banks have accounts. Such institutions can be other banks, clearing houses, or the central bank. Still, much like before, as long as the commodity money remains blocked at the first bank and the bank credit money only moves to another balance sheet, then no new money is created. This situation could be captured by the image (which sometimes laymen have anyhow) that for each bank note, deposit account, or token there is a physical box in the bank with the number of the note, deposit account, or token on it, in which the gold or silver "covering" the note, token, or account is safeguarded and from which account-related money is moved to other boxes or to another bank after transfers or which is given to the customer if he presents his banknote or token coin for conversion. *Von Mises*, in this sense, compared keeping a physical reserve of commodity money with "coat tokens" handed out by a cloakroom attendant for coats deposited. This highlights the crucial macroeconomic point: The coat is either with the coat owner or in the cloakroom, but no doubling of coats takes place. This is the same when the bank note circulates instead of the commodity money; no money is doubled as the holder of the bank note cannot use the commodity money in the vaults while he holds the banknote.¹⁷ Banks may

administration, page 210 et seq. and *Atwell*, Ming China and the emerging world economy c. 1470–1650, page 381 et seqs.

16 *Ferguson* (2008) page 49.

17 The comparison is not perfect from a legal point of view. The holder of a note or depositor of an account, even if they qualify as money certificate, are *not the owner* of the commodity money, to which it entitles. Without the – quite atypical and constructed – assumption that the legal claim of the note holder or depositor is completely independent of the debtors' economic fate, including insolvency, the claim represented by a note or account would also be less secure than the claim of the depositor of the coat. Even if a bank held a 100 % reserve of commodity money for every unit of commodity money owed because of an issued

of course, as they usually do, put all gold and silver money *together in one big vault* instead of allocating individual gold or silver coins to bank notes, deposits, or tokens by putting them into separate boxes. As long as they ensure that the volume of money in the commonly used vault remains equal to or higher than the credit money issued, then no money is created.¹⁸

Credit money involving money creation

Things, however, change fundamentally – from a microeconomic and macroeconomic perspective – if the bank gives away the gold or silver money for which it has issued notes or tokens or for which it has entered credit on deposit accounts, *even while these notes or credit entries or token coins are still outstanding*. Imagine that banks buy wealth assets with such gold or silver or lent it out. Then, the commodity money and the credit money, which conveys a claim for the commodity money, are *both used at the same time*. Commodity money and the credit money representing it are both simultaneously operative, a doubling of circulating money and money creation takes place.

Moreover, money creation can also take place if the bank keeps the commodity money in the vaults and simply issues more credit money – by bank notes, credit entries, on deposit accounts or token coins – *than its reserves in commodity money*. In this case, the amount of credit money created over the stock of commodity money sitting in the bank's vaults is newly created money.¹⁹ In von Mises' terms, the bank exceeds the limits of a "money certificate" or of a "money substitute" and brings a "fiduciary media of exchange" or "circulation credit" into being.

bank note, credit entry or token, as it would normally also be liable with that commodity money to other creditors, the commodity could be lost if the bank suffers losses, in part or in whole. That would then only be credit money, no longer a money certificate in the sense of von Mises.

- 18 While a museum visitor would be alienated if he receives another coat for his token, it does not matter for bank customers which gold or silver pieces they get back.
- 19 Myers/Wang, *Economic developments, 1644–1900*, page 629, report that Chinese banks of the late 18th century, e.g., in Ningbo, applied both practices (to loan out the silver or cash deposits or to increase issued notes beyond deposits). Both methods involved money creation. Yet, while China even used "paper money", which was, in fact, fiat money, already in the Sung and Yüan dynasties, the potential of money creation, credit and fiat money, did not nearly evolve as dynamically as in Europe. This had already been true with regard to merchant credit money creation, which suffered from China's withdrawal from maritime trade after glorious times of Zheng He under the Sung. The record with regard to private banks' fractional reserves credit money creation is by no means better. Banking, and, thus, private credit money creation, was only made a material factor by colonial powers, in particular by the U.K. after 1840. The first central bank of China opened not before 1908. The underdevelopment of the monetary and credit system massively contributed to China economically falling back against the West in the 19th century.

To repeat, if fractional reserve credit money is issued, then money is created in the excess of the issued bank credit money over the gold or silver money held in the reserve.²⁰ Money creation by banks, while it involves exceeding the commodity money in their reserves by issuing credit money (which could be easily noted by an observer with full information after a bit of math), may remain invisible to the public for a while. For instance, the aforementioned Amsterdam Wisselbank could, ultimately, not withstand using its initially extremely good standing to later greatly exceed its reserves by issuing credit money; that was punished and it had to be dissolved.²¹

A cycle of credit money creation

Banks are M–C–M'–players motivated by profit themselves, more specifically M–M'–players. When they still only issue receipts (as initially the Wisselbank) or bank notes, for which full reserves are held, they learn quickly that it is normally²² highly unlikely for a great number of receipt holders or banknote holders or other depositors to simultaneously demand conversion of their claims into deposited gold or silver money. It may be advisable to look at this process (which is basically the same for bank money creation in fiat money regimes) in greater detail: When banks create money by issuing credit money, “paying out” a loan, as we saw, normally only means *making two bookkeeping entries*, a credit in favor of the customer on their deposit account with the bank and a debit on their loan account with the bank; together, they are a balance sheet extension for the bank. On the side of the credit customer, there is a balance sheet extension too. If the loan finances purchasing a house and the seller of the house also has an account with the same bank, then the loan is “paid out” by deleting the credit on the buyer-customer's deposit account and by entering a credit of the same amount on the seller-customer's deposit account. This is an exchange of liabilities for the bank and its balance sheet remains as extended as before; it now has a debt to the seller-customer (rather than to the buyer-customer), but still a loan repayment-claim against the buyer-customer. If everything goes well, then the buyer-customer, uses parts of his income to “re”-pay the loan as time goes by, e.g., of rent

20 “Breaking the link between money creation and a metallic anchor has led to an unprecedented monetary expansion...” See *Ferguson* (2008) page 63. This can apply either to the introduction of fractional reserve banking or fiat money.

21 From 1609 to 1672, Sismondi tells us, the bank continued to execute “religieusement ses engagements, et à conserver intact, dans ses coffres, le dépôt immense qui lui avait été confié.” In the middle of the 18th century, however, it began to abuse its credit and “à prêter le capital qui était mort dans ses coffres à la Compagnie des Indes, aux provinces de Hollande et de West-Frise, et à la ville d' Amsterdam”. When the French invaded in 1794, it had to disclose the “secret longtemps caché” and went bankrupt. (*Sismondi* (1827) page 79).

22 The opposite is true in stampede-like bank runs.

he collects for the house. He could do this by actually carrying gold or silver money to the bank; the bank would then put this commodity money in its vaults and reduce the buyer-customer's debit on the loan account. What is more likely, though, is that the buyer-customer will receive bank transfers from other bank-customers, which are credited to his deposit account, and which they will use to run down the debit on the loan account. If the loan is fully repaid, then the bank may have partially more commodity money in its vault, partially less debt to other customers, and partially more claims against other customers. The new money was born with the extension of the credit side on the buyer-customer's deposit account and on the debit side of their loan account. The credit on the deposit account "wandered" into the seller-customer's deposit account and the debit on the loan account disappeared via reductions of credits on other customers' deposit accounts, increase of their debts on accounts, or by increased gold or silver in the bank's vaults. In addition, the bank has a profit left in the amount of the interest (plus fees etc. minus operating costs), which the buyer-customer also paid over the years as part of their annuities.

The course of events would not be much different if the seller has an account with another bank. If only a basic cooperation between banks exists, then the buyer's bank would not carry gold or silver money to the seller's bank, but the account of the seller's bank with another bank, a clearing house, or the central bank would be credited and banks would only pay peak amounts that remain after offset in gold or silver, if they pay anything at all.

The banks' power to create money, to repeat, is based on their stunning and miraculous capacity to *pay bastard debt, including their own bastard debt, with other own debt* of a special type and this is possible as this second and special type of their *debt is accepted as credit money*. The bank fulfills its legal obligation, one debt (the bastard debt) to pay "out" the loan by simply assuming *another* debt, first to its loan customer, then to other customers or other banks, with a little luck, without having to touch one ounce of commodity money. As the banking system proliferates and gets more mature, this *shifting around of bank debt* can go on for a long time without ever touching gold or silver.²³

The security of credit money

So far, we have looked at bank credit money from the macroeconomic perspective of whether and when it involved money creation, which was the case when its amount exceeded reserves. As stated in the Foreword, the microeconomic question of the *value and security of bank credit money*, or of the value and security of a claim against a

23 Non-bank units, e.g., normal bank customers, conversely, cannot act the same way, of course. A non-bank unit, in order to relinquish payment debt, cannot generate other debt from itself; it has to either procure bank debt, which is bank credit money, or to deliver hard gold or silver.

bank for conversion of bank notes or credits on deposit accounts etc. in commodity money, is a different story. The person who holds commodity money in kind (like gold or silver coins or bullion), thanks to the possibility to sell it as demonetized gold or silver, enjoys the simplest imaginable downside-protection. In order to assess the minimum value of their commodity money, it only has to follow the market for the money-thing, which his commodity money is or what it carries "piggyback".²⁴ As long as the commodity money's value as money is higher, i.e., it is still traded at its nominal value with a seignorage, then he will continue to use it as commodity money; if not, he will de-monetize it and use it as simple gold or silver.

The holder of credit money in a commodity money regime, however, enjoys no such downwards-protection. Only if the bank is fully solvent, then the credit money holder can convert his credit money into commodity money and from there everything is as it was before. If the bank is only partially solvent or is insolvent, the credit money holder will lose a part of the amount at which the credit money was issued. The important point to grasp is that whether 100 % of reserves are held by the bank against the issued credit money or not does *not conclusively spell whether the bank is also solvent to honor the conversion claims or other claims of credit money holders*. Money creation depends on whether simultaneously with issuing credit money the same amount of commodity money is put to rest in vaults, solvency depends upon the relationship of the *aggregate of the assets side* to the *aggregate of due liabilities*. Solvency does *not* depend on whether there is an amount of gold or silver somewhere that adds up to amount of freshly created money.²⁵ While it seldom harms anyone to own gold or silver, holding 100 % reserves for issued credit money is, thus, no guarantee for credit money's security. Conversely, a bank may be highly solvent even if it holds gold and silver reserves well short of the credit money created.²⁶ This is so, at least, as long as the public trusts in this banks credit money – as long as this trust is there, its credit money is as good as the commodity money in its vaults.

Bank runs and bail-outs in commodity money regimes

Yet, fractional reserves banks in commodity money regimes still ultimately rely on the convertibility of their credit money into commodity money. If too many customers demand payment in commodity money, typically because they doubt, often even mistakenly, the bank's liquidity or solvency, then this is called a "bank run".

24 See on page 70 et seq.

25 See on page 72 et seq.

26 In monetary debates, economists who are critical of bank credit money creation mostly use both arguments and sometimes confuse them, e.g., the British Bullionists in their debate with Anti-Bullionists around 1810, who argued in favor of the convertibility of bank credit money into gold money, or the Currency School in its debate with the Banking School, who argued in favor of limiting the issuance of bank credit money to gold held in reserves.

Note that this may hit banks, which are perfectly solvent, hence, whose assets by far exceed their debts. Yet, they only have the problem that their credit money exceeds their commodity money – and this problem, they have by definition – because they are “fractional reserves” banks. This is when central banks come into play with bail-outs. Bail-outs classically took the form of commodity money lending, with the central bank acting, in the often-quoted words of *Walter Bagehot*, as the “lender of last resort”. In bail-outs, private banks receive commodity money loans from central banks, secured by assets, which are obviously not commodity money, as collateral. The interest rate applied and the conditions reflect the availability of commodity money for central banks, the views on the risk of the general economic situation, and the views on the special risks of the assets that the bailed-out bank provides as collateral and of this bank.

The most critical problem of bail-outs in commodity money regimes, of course, was the commodity money; gold and silver was even scarce for the central bank.²⁷ Bailing-out private banks in a commodity money regime, accordingly, was not only a question of will, but crucially mainly a matter of available means. Central banks could be lucky, though, and the creditors of the troubled bank might accept credit money issued by other private banks or by the central bank. Nevertheless, the ultimate limit for central bank bail-outs was set by the volume of commodity money somewhere available. Therefore, the principle applied, as *Walter Bagehot* has famously put it in 1873, was that central banks should *lend freely but at a penalty*. This way, banks would be sanctioned for over-aggressive “over-lending”.²⁸ The principle worked its way backwards into preventive regulation and policing of private banks’ credit money creation and private banking in general. States knew that private banks’ profit motive would drive them to over-use their money creation gland and did not want to risk the precious commodity money reserves on altruistic emergency missions in favor of overly greedy banks too often. The central bank had rather to maintain its lending power in commodity money for more urgent national missions, such as wars. On the other hand, states highly appreciated private banks’ money creation gland – nothing got them closer to their alchemistic goal for the time being. It was, thus necessary to come up with calibrated ideas of how to regulate private banks’ money creation properly, without strangling them too much, but also without leaving their reckless greed too great liberties. This calibrated view

27 State’s commodity money was often pre-committed for warfare. E.g., in 1543, 65 % of Charles V of Spain’s revenues were committed to interest payment on old sovereign debt. In the last years of Elisabeth I., around 1600, two third of state expenditure went into either interest or new military spending. See *Kennedy* (1987) page 102, 126. A similar situation existed for Phillip II. of Spain (loc. cit.).

28 Quoted after *Ferguson* (2008) page 56.

was to substitute the UK-politics erring back and forth between a 100 % reserves requirement or full suspension on gold convertibility, e.g., as necessitated by the costs of the Napoleonic wars (on 27 February 1797 by Act of Parliament). This calibration occurred in two famous debates.

Two famous English debates on private bank's credit money creation

After the Napoleonic wars had been won, a famous discussion between the Bullionists and the Anti-Bullionists arose. The *Bullionists*, amongst them Ricardo, Henry Thornton (1760–1815), and John Wheatley (1772–1830) requested the reintroduction of gold convertibility in order to avoid inflation. *Anti-Bullionists*, with Henry Boase (1763–1827) and Sir Coutts Trotter (1767–1837), supported their positions with Adam Smith and James Steuart (1713–1780), and argued against the reintroduction of gold convertibility. No inflation and no crisis were to be feared, they proposed, as long as loans were given to creditors with sufficient wealth only (Real Bills-doctrine). Inflation from 1800 to 1814 seemed to support the Bullionists and, indeed, the *Resumption Act* of 1821 reestablished gold convertibility. Subsequent deflation and crisis (1825, 1836/37, 1839), though, kept the debate alive. Twenty years later, the controversy was reproduced and deepened in the equally famous clash between the Currency School and the Banking School. The *Currency School* was led by Lord Overstone (1796–1833) and continued to argue for the Bullionists' view. The *Banking School* was mainly represented by Thomas Tooke, John Fullarton, and John Stuart Mill and basically followed the Anti-Bullionists' argument that has been presented previously.

The controversy was politically decided upon by Sir Robert Peel's (1788–1850) *Bank Charter Act* (or *Peel's Act*) from 1844, allegedly once more in favor of the more restrictive view, hence of the then Currency School. The *Bank Charter Act*, in particular, took away the right of private banks to issue bank notes and established a monopoly of bank note issue for the Bank of England. Yet, *fractional reserve money creation by credit entries on deposit accounts* remained with private banks and largely unrestricted.²⁹ Furthermore, the Bank of England was obligated to maintain, (according to the credence of the Currency School) 100 % reserves. But, while this appeared to spell the conservative and restrictive view of the Currency School, it was allowed to hold reserves not only in gold but also in sovereign debt. The practical result of the Bank Charter Act, thus, consisted in allowing private banks to continue to create all the money they dared to create as long as they did not print bank notes

29 Partly as a reaction to the expropriation of their power to create credit money *via banknote issuance*, the period after the Bank Charter Act saw many mergers between provincial private banks. The establishment of larger units increased private bank's remaining factual money creation power. The fewer banks there were, the more transactions could be consummated *within* a bank without the issuance of bank notes – and the more could private banks still create credit money and profit therefrom.

and in allowing the Bank of England to print all the money they state needed as long as it at least received IOUs signed by the state in return. If the central bank continued to be legally obliged to exchange its banknotes into gold, the created money remained credit money, i.e., *central bank credit money*. While mainstreams historiography still holds that the more restrictive Currency School won the controversy, in fact, money creation was, first, generally upheld as fully legitimate and institutionalized at the level of private banks *and* of the central bank. Second, the restrictive arguments of the Currency School were largely used to appropriate the most valuable power creation powers of private banks (through the issuance of bank notes) by the central bank acting in conjunction with the government and to generally strengthen the grip of the central bank and the state over private banks in order to control and to police their money creation.³⁰

The contribution of private banks' money creation to capitalist development by productive firms

Fractional reserves credit money creation allowed banks to create more money than merchants' promissory notes, bills of exchange, and bank checks and redistributive lending ever could have made available. Being able to create money *ex nihilo* also induced banks to being *much more generous in giving away credit money for longer periods, to allow loans to be rolled over, progressive debt build-up, and the total of outstanding debt to reach heights that were previously unthinkable* (when money was scarcer and when only redistribute loans were possible).³¹ And, of course, the profit motive drove banks to make use of this possibility at large scale. Increased bank profit is, normally, a direct function of increased bank credit issued; hence, bank profit grows with the multiple of the credit money issued over the held gold or silver reserves. When, in the second half or the 19th century, most European capitalist states established structures similar to the English example, which allowed for significant fractional reserves credit money creation by private banks, this enabled long-time credit expansion throughout Europe and contributed to significant employment-generating spending for the productive economy, and greatly pushed financing in-

30 In crises, the Bank Charter Act even allowed the Bank of England's banknote issuance to surpass the limits of the sum of gold and government debt held by it. This exceptional power encouraged overall money creation as its allowed to bail out private banks, which had created private bank credit money and were hit by bad luck. It goes without saying that states never seriously considered the libertarian concept of "free banking", which would have subjected banks to competitive discipline and taught the public to critically observe the competing banks' reserves and their solvency. That would have been the opposite of what states wanted, i.e., of banks with extended credit money creation possibilities, for prosthetics and the military.

31 See page 405.

dustrial growth, the infrastructure and the military.³² Germany's economic development between 1871 and 1914 (Germany's first catch-up-period), in particular, was strongly supported by expansive fractional bank credit money creation money.³³ The story repeated itself in Germany's reconstruction in its second catch-up period after 1945.³⁴ Equally, outside of Europe, Japan and Korea and other developing countries financed their growth-drives post World War II or after the Korean war largely with money creation through fractional reserve bank credit money; bank credit money was also widely used in the French post World War II "planification".³⁵ States often also gave guidance and supported certain investments, e.g., by tax advantages, selectively lowering banks' reserve requirements, by guaranteeing repayments or the like.

The contribution of private banks' money creation and wealth owner's debt

Wealth owners' consumer credit and wealth owners' consumer debt was already a significant factor in commodity money regimes; wealth owners especially used loans to successively convert their defunct feudal wealth into cash, smearing the economy with employment-generating consumptive spending. Country estates and castles served as collateral and were later sold in slices to nouveau-riches or turned into factories; this took place from the English countryside to St. Petersburg and up to Kazan. Fractional reserves bank credit money creation, e.g., by John Law's *Banque Royale*, already financed asset bubbles in the wealth economy.³⁶ Britain saw bank crises since the 18th century,³⁷ partially based on asset bubbles. Germany had its first major asset bubble in the "Gründerkrach" shortly after its first unification in 1871, i.e., in 1873.³⁸ Finally much later, asset bubbles massively contributed to the Great Depression, the Asian Crisis of 1997, the dot-com-bubble, and the financial crisis of 2008, etc.

Workers take out no debt in commodity money regimes

Consumptive loans to workers, though, were hardly a factor in commodity money regimes. One could imagine that banks simply felt too class-conscient and arrogant to consider workers as loan customers; they mostly did not even have deposit accounts and picked up their salaries in a paper envelope with their handwritten name on it (and were mostly trade-unionists and social democrats, etc.). Alternatively, one

32 Turner (2016) page 32, page 57–60. Moments of state fiat money creation became more and more visible over time.

33 Turner (2016) page 54 with reference to Gerschenkron (1962).

34 See Schröter (2005) page 369 et seq.

35 Again: Even while moments of state fiat money creation became more and more visible.

36 Turner (2016) page 61–73.

37 See Kiehling (1991) page 24, et seq and Mackay (1841), and de la Vega (1688).

38 See Kiehling (1991) page 72 et seq.

could surmise that workers were unacceptable as loan clients for their lack of collateral, as the legal system was not prepared to litigate and execute claims from mass loans, or as the banks did not have and not want to create the clerk capacities for the low volume, mass-business. Yet another view could take the lack of fiat money as a cause for the non-existence of mass bank loans to working class people. Anyhow, banks' consumer loans to workers only rose to importance after fiat money had substituted commodity money as the base money. Even if workers remained mostly excluded as loan-recipients, private banks' money creation greatly supported productive investment of firms and other employment-generating spending of wealth owners and the state. It was a major factor of prosthetic circuit closure right from its inception.³⁹

The dilemmas of funding prosthetics with fractional reserves bank credit money creation in a commodity money-regime

Limits to money creation capabilities

Even if a first money creation-gland is discovered – fractional reserves bank credit money creation –, which conveys much more power than redistributive lending without money creation, some relationship between the created credit money and the barren mass of gold or silver money in the banks' vaults must be maintained. The stubborn requirement of convertibility of credit money into scarce precious metals does not go away and it, of course, microeconomically restricts banks' ability to create money. This ratio, fraction, or, looked at from the other side, the multiple of credit money created against the commodity base money, can be stretched and was sometimes over-stretched, but it remains a burden that still fetters the financing of prosthetic spending to a country's possession of gold and silver macroeconomically.⁴⁰ The shortage of money is not yet finally overcome and the prosthetic program

39 "Aggregate demand" Keen writes, "is...aggregate supply *plus the change in debt*." (Keen (2011) page 219 et seq., page 337 et seq.) referring to Schumpeter and Minsky. Schumpeter speaks of the credit structure as not only projecting "beyond the existing gold basis, but also beyond the exiting commodity basis" (*Schumpeter*, The theory of economic development, 1934, page 101, quoted after Keen (2011) page 220 et seq.). Minsky is saying that growth is financed by "emitting debt *or selling assets*"⁹⁷⁵ (*Minsky*, Can it happen again? page 6 quoted after Keen (2011) page 219 et seq., italics added). This allows a simple explanation of crises that would arise in the future – even after state fiat money had become an option: "The collapse of debt financed aggregate demand was the key factor behind both the Great Depression and the Great Recession." (Keen (2011) page 352 see also page 300).

40 While banks are desirous to lower the fraction of commodity money held, they are also at least careful enough to consider risks for their solvency following excessive credit money creation. Banks' microeconomic self-interest, which, on the one hand, drives money creation (to increase profit by interest revenues) thus might also occasionally set limits to such an increase (by the fear of bankruptcy).

to artificially increase employment-generating spending often hits the barrier of too little ammunition. The circle of potential borrowers is limited and this keeps interest rates high, whereby the circle of prospective borrowers who use loans for employment-generating spending is once more narrowed.

Furthermore, and not at all surprisingly, money creation by banks' fractional credit money proved insufficient where exceptionally large amounts were needed, which often slowed down peace time economic expansion in western economies and, more so, in always gold and silver-scarce underdeveloped countries. It also posed a heavily felt restriction on the wars waged by states with commodity money regimes. Apart from greater or lesser access to voluminous capital markets, such warring states that had the better cards who were the quickest to suspend the convertibility of bank and central bank notes, and who succeeded best at managing emergency state credit money creation, central bank credit money creation or even exceptional interim state fiat money creation, and to, thereby detach the financing of the war efforts from the available commodity money.⁴¹

Credit not used for employment-generating spending

The second dilemma of commodity money regimes is what *Adair Turner* refers to – with a view to present fiat money regimes – as the “wrong sort of credit”⁴² being issued. Whenever banks create money, including in regimes of commodity money, they decide how the money is used together with the credit-applicant, specifically about whether it goes into employment-generating or sterile spending. Now, unfortunately, fractional reserves credit money creation is all too often used for prosthetic *sterile* spending. This is so as already in commodity money regimes numerous sound microeconomic motives push into this direction. It is much easier to anticipate the cashflows from an existing sterile asset than from a newly created asset, which is typically the result of a productive investment. Another strong motive for banks to prefer to finance the purchase of pre-existing, old debt, real estate, or stocks is that *these assets are already there* and can be used as a security and possess a core-value-in-exchange. Many productive investments are utterly different in the negative. The value-in-exchange of a newly set up plant will be its business value; it depends on future profitable sales of products over a significant period. However, if the loan turns sour, they will mostly do this because no such business value has been created. Then,

41 Interim state fiat money regimes work in a twofold way. First, they create the exceptional additional state fiat money and, second, this extends the base over which private banks can create additional fractional reserves credit money (as soon as it is accepted as the bank's reserves).

42 *Turner* (2016) page 61 et seq. As *Arnold* reports, Mario Draghi, after his time as ECB-President, also began to distinguish between “good debt”, which is “used for productive purposes” and “bad debt” which is used for unproductive purposes (*Financial Times* of 19. August 2020 page 2).

only the remnants of the failed business – real estate, equipment, inventories, etc. –, which can be sold separately, represent some value-in-exchange. Furthermore, banks will often find their hands chained in crises: If they spot an attachable asset of a sizable value, for instance, account receivables or cash, this execution itself may ultimately trigger insolvency. Execution in a momentary value in a newly created asset often destroys the value of the overall asset...

Another reason why banks may prefer to give “the wrong sort of credit”, results from the effects that credit financing of a new productive venture has on the profits in the market of the venture and on the value of the financed venture itself. As touched upon previously, the arrival of a new productive investor, who founds a new automobile firm, for example, will increase competition and *typically lower the profitability of the firms in the market*; it will generate negative feedback, including on the new productive firm. On the contrary, the arrival of new sterile investors in bonds, real estate, stock or commodities, etc., markets, will *typically bet up prices* and generate positive feedback. In product markets, arriving new investors are bad news, while leaving investors are good news. In asset markets, arriving investors are good news and leaving investors are bad news. Banks, thus, drive up their collateral's value-in-exchange by financing sterile investments in asset markets. These dilemmas, which are inherent in commodity money regimes, even with private bank credit money creation, have driven the evolution to state fiat money.