Free Banking and the Free Bankers

Jörg Guido Hülsmann

The literature on free banking has expanded dramatically in the last two decades. A young generation of economists has regained interest in questions of money, banking, and currency that, for a very long time, had disappeared from broad discussion. This renewed interest was partly sparked by poor results from government regulation of the money supply by central banks, as well as other legal devices and restrictions. Such failures have undermined the once-common belief that blessings can flow from government monetary meddling. Because free banking was the historical predecessor of and natural alternative to monetary interventions, the theory and practice of free banking has attracted a great deal of interest.

It is common for people eager to fight for a specific cause to employ intellectual means unfit to serve their ends. As a result, they may achieve the opposite of their intentions, undermining the ideals and ideas they are seeking to promote.

Such is the case with free banking. The case for authentic free banking has been obscured by the strongest defenders of free banking.[1] In defending views that are not only unrelated to free banking but even fallacious, the free bankers do much harm to their case, inadvertently adding weight to the critique of free banking offered by advocates of central banking and government money.

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[1]Kevin Dowd, David Glasner, Steven Horwitz, A. J. Rolnick, Larry Sechrest, George Selgin, Lawrence White, and Richard Timberlake. I shall concentrate my discussion on the works of Dowd, Selgin, and White. It is here that the doctrine is elaborated. By contrast, the contribution of Sechrest consists of a formal, i.e., mathematical, expression of their tenets; Glasner and Horwitz base their works heavily on Selgin's *Theory of Free Banking*; and Rolnick and Timberlake have contributed applications of free banking theory to historical episodes.

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We can divide the advocates of free banking into two groups. The first group proceeds from the assumption that the money and banking sector can operate with virtually no money at all. Within this group, there are additional disagreements. They concern the questions of whether *laissez-faire* would only be efficient in a situation in which no money is used[2] or whether free banking would even actively bring such a situation about.[3]

The internal dispute within this first group is not essential to understanding a more fundamental fallacy of its theory. The hope of a high degree of division of labor without the use of money is futile; there can be no "unit of account" without indirect exchange. Economic calculation presupposes the use of a general medium of exchange. Everyone is, indeed, free to *translate* a money calculation into whatever unit he likes.

Using, for example, coat hangers as the "unit of account," one could calculate a profit of 1000 coat hangers from an investment. Yet this calculation is nothing but an algebraic expression of: "*For the money* which was spent in the investment I could have bought 500 coat hangers, and *for the money* I received in exchange of the product of the investment I could buy 1500 coat hangers. If after my investment, my money can buy more coat hangers, I am richer than before. In the same sense my investment can be regarded as profitable." No *numéraire* or "commodity bundle" or anything else could serve as a calculation unit if there were no money in use. No indirect exchange can be settled without the use of money.

The focus of our thesis, therefore, lies on the discussion of the second group, comprising the more common free bankers. This group shares the view that no modern society is possible without the use of money.[4] They disagree, however, over the social and

[2]See Fischer Black, "Banking and Interest Rates in a World Without Money," *Journal of Banking Research* 1 (1970); Eugene F. Fama, "Banking in a Theory of Finance," *Journal of Monetary Economics* 15 (1980); Robert E. Hall, *Inflation, Causes and Effects* (Chicago: University of Chicago Press, 1982); Robert L. Greenfield and Leland B. Yeager, "Laissez-faire Approach to Monetary Stability," *Journal of Money, Credit, and Banking* 15 (1983).

[3]See Neil Wallace, "A Legal Restrictions Theory of the Demand for 'Money' and the Role of Monetary Policy," *Federal Reserve Bank of Minneapolis Quarterly Review* (1983); Thomas Sargent and Neil Wallace, "The Real-Bills Doctrine versus the Quantity Theory: A Reconsideration," *Journal of Political Economy* 90 (1982).

[4]With the exception of Kevin Dowd, see, *The State and the Monetary System* (London: Phillip Allan, 1989), p. 188; idem., *Laissez-faire Banking* New York: Routledge, 1993), pp. 66f; David Glasner, *Free Banking and Monetary Reform* (New York: Cambridge University Press, 1989), p. 240f; and Richard Timberlake, *Gold, Greenbacks, and the Constitution* (Berryville, Va.: George Edward Durell

economic effects caused by money substitutes. Some of them claim that the practicability of free banking requires full coverage of money substitutes. If the issuer of each ticket grants the right to redeem, at par and at the arbitrary request of the holder, a certain quantity of money has to be held as a 100 percent reserve. Where this is the case, the money substitutes have the character of certificates. By contrast, tickets issued on a less than 100 percent reserve are called fiduciary money substitutes. They are no longer certificates because they are only fractionally covered by the quantity of money to which they represent a claim.

In addition, the "free bankers" of this second group claim that fractional reserve banking would not only be practicable but also beneficial. Predictably, then, they also argue that 100 percent reserve banking has considerable disadvantages. A critique of their tenets, therefore, has to embrace both their arguments in favor of fractional and against 100 percent reserves. First I will discuss free banking on a 100 percent gold standard and the principal arguments that have been pronounced against it. Then I turn to the alleged benefits of free banking on a fractional reserve basis. Finally, I try to explain why neither fractional banking nor banking on a fiat money base can be practicable.

Free Banking on a 100 Percent Gold Standard

Money and Substitutes for Money

In monetary theory, there is hardly a word (apart from inflation) that causes as much confusion as the word money itself. It is vital to distinguish money from money substitutes. Yet this distinction is obfuscated by calling the latter "inside" money and the former "outside" money. The same confusion results from spurious talk of "base money," "basic money," or "high-powered money." These terms suggest that there is no practical difference between them; all the instruments in question are somehow "money." The climax of all this rhetorical excess is undoubtedly attained when fractional reserve advocates George Selgin and Lawrence White speak of gold or the gold dollar "as a substitute for bank deposits."[5]

Foundation, 1991), pp. 60ff. For a critique of the latter see Rothbard, "Aurophobia: or, Free Banking on What Standard?," *Review of Austrian Economics* 6, no. 1 (1992): 97–108.

[5]George Selgin and Lawrence White, "How Would the Invisible Hand Handle Money?," *Journal of Economic Literature* 32 (1994): 1737. See also Lawrence White, "Identifying Money," in his *Competition and Currency* (New York: New York University Press, 1989), pp. 206ff.

Does there exist something like a second kind of money? Imagine two scenarios faced by moviegoers. In the first, an individual purchases a ticket, but before entering the theater and taking his seat he decides not to see the movie because there are more urgent things to do. He therefore sells it to somebody who does not yet have one. In the second scenario, the same individual enters the cinema, redeems his ticket with the usher, and takes his seat, but then decides not to stay. His neighbor has found a friend who wants to sit in his place, and he sells his seat to him.

Clearly, in this second scenario his neighbor has not purchased a *substitute for a movie ticket*. He has purchased the seat beside him for the time that the movie is shown. The same holds true in the first case. The first moviegoer did not sell a piece of paper; but sold a seat to a certain showing of the movie. Otherwise he would not have been able to get something in exchange for the ticket. Nobody interested in seeing a film would buy sheets of paper called "tickets" if they were not a means for seeing the film. Neither is anybody eager to buy sheets of paper called banknotes were it not for the convenient disposition of money.

It is also problematic to describe the relationship between money and money substitutes as one of fixed parity or convertibility. In a larger sense all goods exchanged against one another have a parity, that is, the exchange rate. In the same sense, all goods exchanged on the market have proven to be convertible into one another. However, this does not mean that the parity is already implied in the existence of the exchanged goods.

Assume that Paul exchanges eight hours of his work against one ounce of gold. *After* the exchange has taken place, one can say that Paul's work has been converted into gold or that gold has been converted into Paul's work. Yet the existence of one ounce of gold does not imply that one will receive eight hours of Paul's work for it. Nor does Paul's capacity to work stem from the fact that it can possibly be exchanged against one ounce of gold. The existence of the gold and the existence of Paul's capacity to work are independent from each other. Their exchange rate is not implied in their mere existence.

It is different with money substitutes. They can only come into being as a claim, a part of a contract, that fixes their exchange rate to money. They are signs, expressions for the disposition of a certain quantity of money. When they are exchanged against money they are redeemed. Redeemability is the original meaning of the term convertibility. A document that is convertible in this sense can never have a value different from the object that it gives

a claim to. A convertible currency—money substitutes in the form of bank notes—can neither be a money nor a standard.[6] Only irredeemable notes are money—that is, fiat money. They are valued separately because they can be used independently from other goods.

Banknotes and demand deposits are money in only one case: if they do not represent claims. Obviously such a situation cannot come about unless the redemption promise is broken. Breaking a contract amounts to an expropriation of the partner in exchange. That our present money consists of irredeemable banknotes and demand deposits—of central banks—is the result of government-initiated expropriations of money that characterize modern history.[7] Banknotes can only be government (fiat) money because no other agent in a modern state can break contracts on such a wide scale without fear of punishment.

In a system of free banking—whether on a fractional or 100-percent-reserve basis—the demand deposits and banknotes of the competing banks are *substitutes*. They represent a convenient means of documenting claims on money. In exchanging these tickets, one exchanges ultimately (presently existing) money of which they are considered to be representative. Under a gold standard, the exchange of banknotes signifies the exchange of weights of gold. Tickets and other signs are useful because they are not as heavy or voluminous as the goods that are the real objects of the exchange.

Would there be Money Substitutes on a 100 Percent Reserve Basis?

Under a 100 percent gold standard all money substitutes are entirely covered by gold. For each checking account and for each banknote held by the public, the designated amount of gold lies in the vaults of some bank.[8] The banks do not lend this gold to other market participants. They hold it and permit the owner to use some substitutes for his gold that facilitate his market exchanges.

[6]See the contrary opinion of White, ibid., pp. 134f.

[7]See, for example, V. C. Smith, *The Rationale of Central Banking* (1936; Indianapolis, Ind.: Liberty Classics, 1990); Kevin Dowd, *Laissez-faire Banking*, esp. chap. 10.

[8]It is noteworthy that what is said about banks applies to virtually all financial intermediaries dealing with money substitutes. Money substitutes are not only banknotes and demand deposits but principally *all* claims that have to be redeemed at par into money whenever the holder of the claim likes to have money substitutes. See in particular Murray N. Rothbard's excellent analysis of money substitutes in the 1920s in *America's Great Depression*, 4th ed. (New York: Richardson and Snyder, 1983), p. 83.

In dealing with demand deposits and notes, banks do not act as financial intermediaries but as warehouses. Financial intermediation, then, can only be provided if and insofar as market participants temporarily *renounce* a claim to the disposition of their money and give it into the disposition of their banks. This is the meaning of the term credit. Under 100 percent reserve banking, credit given by money owners is the necessary condition of financial intermediation. Only if a gold owner has lent his gold to his bank can the bank, in turn, lend this gold to other market participants. Banks are thus engaged in two completely distinct businesses. On the one hand, there is the warehouse business with money substitutes; on the other hand, there is the credit business with money that has been given for their exclusive disposition. There is no reason to assume that these two businesses must always be performed by the same company. Specialization can lead to exclusive gold warehouses and exclusive financial intermediaries.[9]

The money owners profit from the use of banknotes and checking accounts. They do not have to charge themselves with the inconveniences that go hand-in-hand with the use of relatively voluminous and heavy metallic money. In the case of checking accounts they can also avoid the risks of keeping their money at their homes, for no check is valid without their signature.

The holders of demand deposits, in one way or another, have to pay for these services. Their bank will have to charge them with the full costs of security provisions, and of the factors of production the bank has to buy in order to deal with depositors. Otherwise, either the bank's profits would be reduced, or it would have to charge the costs to its financial intermediation business. In the latter case, the bank would become less attractive in comparison to its competitors. It would either have to charge higher interest rates for the money it lends or pay lower interest rates on the money it borrows.

One hundred percent reserve banking differs from banking as we know it from our daily transactions because interest could no longer be paid *on* demand deposits, but a fee would have to be paid *for* them. It is therefore very probable that, should such a system be introduced, fewer people than today would like to hold their money with the banks and use money substitutes instead.

[9]See Condy Raguet's discussion "Of Banks of Deposits, Banks of Discount, and Banks of Circulation" in his *Treatise on Currency and Banking* (New York, 1840), pp. 67ff.

One cannot say that no money owner would accept such a deal. Questions of this kind can only be answered empirically, that is, not before banks and their customers actually deal with such a situation. If there is at least one customer to whom using money substitutes is more important than the fee due, then there will be money substitutes on a 100 percent reserve basis.

Warehouses for money would not be more unusual than warehouses for other commodities. Considering the conveniences linked to the use of money substitutes, there are good reasons to believe that the latter will find employment especially in the performance of big payments. Yet all other transactions will largely be dominated by specie. Thus, under 100 percent reserve banking, gold would certainly not be outcompeted by its substitutes. It would always stay in circulation.[10] However, in a big and growing market, the inconveniences linked to the use of relatively heavy and voluminous gold (and especially silver) money would be progressively reduced. The more transactions are effected on the market, the more purchasing power would accrue to a given quantity of gold.[11]

The Consequences of Individual Failure Under 100 Percent Reserve Banking

Under 100 percent reserve banking all banks can operate independently of one another. The illiquidity of one bank never implies the illiquidity of the others. If one bank is becoming illiquid, it is forced to retire immediately all the money it has lent to other market participants (and, hence, to other banks). However, this will never lead to the illiquidity of those borrowers who have not engaged themselves in the transformation of maturity. Illiquidity will be limited to those borrowers who had put the borrowed money into employments that are more lengthy than the credit term and who now are unable to meet their obligations.

At all times and in all places there will be market participants whose speculations prove to be erroneous and who fail to fulfill their contracts. Such failure always has negative repercussions

[10]See, Hans-Hermann Hoppe, "How is Fiat Money Possible," *Review of Austrian Economics* 7, no. 2 (1995): 57.

[11]This argument was used by Condillac in order to claim that not only the quantity of money is rather irrelevant but that, on the contrary, it would be advantageous if it were smaller ("On voit donc qu'il est assez indifférent qu'il y ait beaucomp d'argent, et qu'il serait même avantageux qu'il y en eut moins. En effet, le commerce se ferait plus commodement. Quel embarras ne serait-ce pas si l'argent était aussi commun que le fer?" *Le Commerce et le gouvernement* (Paris, 1795), p. 87).

on their business partners and regularly leads to the failure of some of them, too. But so long as error is limited to only a few market participants, it cannot have, under 100 percent reserve banking, repercussions on the whole economy. Ruins will then always impede only a very limited group of enterprises. There will always be a problem concerning the immediate business environment of the errant. No central bank is needed to limit their repercussions further.

Nobody has ever raised the objection that a 100 percent reserve system would lead to wide-spread business failure. Nobody has ever been able to prove that this system cannot endure, that it must inevitably lead to its own destruction. All of its critics have pointed to some alleged shortcomings of 100 percent reserve banking for which they propose fractional reserves as an antidote. In the next section the question of such "shortcomings" will be examined.

Critics of 100 Percent Reserve Banking

The Alleged Costs of 100 Percent Reserve Banking

The most common objection against a full coverage of money substitutes is that the system would be too costly. The money in the vaults of the banks is lying idle. It could be better used for other purposes, for example lending it to someone in need of a credit. This idea is entirely wrong. The confusion that constantly arises about this issue is related to the concept of cost itself. Costs are always the costs of an action that an individual confronts. They consist of all the desirable effects that, in the eyes of the actor, cannot be brought about because he has preferred to aim at some other ends. Costs are the expected forgone utility.

The concept of cost has no meaning whatever apart from choice. It cannot be understood if only one action is considered apart from two alternative actions. Every actor is always confronted with *some* costs. The use of money is no exception. From the point of view of a money user, it is obvious that holding money, whether in cash or in form of a bank account, is costly. Indeed, he could employ it in buying some useful commodity or service. Accordingly, it is also costly for the bank to keep large stocks of money. There are always some people ready to pay at least *some* interest rate on additional funds.

However, does the mere fact that an action is costly represent a shortcoming of this action? Does the mere existence of costs represent a shortcoming of the use of money? Clearly, the answer

is no. Costs are the forgone utility of an action that is not carried out because another action has been preferred. Hence, so long as a person has to choose from among the specified ends the chosen action must be costly. And so must be the use of all other means that could also be used in another way. We can employ no commodity without having it at our discretion, namely, without holding it. Therefore holding it must be costly in one respect or another. There are always costs with the *holding* of money because its *use* implies holding it.

It seems as if at least some of the free bankers agree with this argument. They concede the fact "that the use of money carries with it certain social costs (forgone benefits of barter) does not compel one to conclude that its costs outweigh its benefits."[12] Indeed, the very use of money *implies* that for its user the benefits outweigh the costs. Money is always used in spite of its costs. However, the free bankers fail to see what this implies about 100 percent reserve. They continue to adhere to the spurious distinction between money hoards and money in circulation. In their eyes, there are people who do not want to hold money but only want to use it in market exchanges. Where no money is held, they suggest, there can be no costs. This reasoning is fallacious. It is impossible "to receive money in exchange for other goods and services" without having the "desire to hold money balances."[13] The use of money must always be costly.

True, say some economists, the mere fact that costs are inextricably linked to the employment of all non-specific means cannot reasonably be considered as a disadvantage. But does this compel us to satisfy ourselves with the present level of costs? All great inventions have this in common that they reduce the costs of action. Why, then, should we not seek for such cost reductions in the realm of money?

Look, for example, at cars parked idly in the streets while their users are at work. They just use their cars to drive from their homes to work in the morning and in the evening they drive them back home again. Many more services could be rendered by these cars if their owners would allow other people to use them during their worktime. The same thing holds true for money. Instead of lying idly in the vaults of the banks, it could be usefully employed by other people in the meantime.

[12]Lawrence White, *Competition and Currency*, p. 200.

[13]George Selgin, *The Theory of Free Banking* (Washington, D.C.: Cato Institute, 1988), p. 53.

Thus, a certain quantity of gold could serve several bank customers at the same time. This is the nature of fractional reserve banking.

We do not have to discuss the question if whether cars can render *additional* services. For the sake of the argument, we might admit that. Let us suppose that parked cars could render additional services when they are used—with or without the consent of their owners—by other people. What is at stake is the question of whether the same holds true for money. It is this question, however, that we have to answer in the negative. For the services that stem from the use of a certain quantity of money depend on money prices, and money prices depend on the use of the existing quantity of money. It is by the use of idle money from demand deposits that money prices will unavoidably be enhanced. Thus, not only the owners of the demand deposits that were lent out but *all* owners of money, be it in the form of cash or in the form of money substitutes, will find the purchasing power of their money balances reduced. The use of idle money hoards is paid by the owners of these hoards and all other money owners. No other outcome is conceivable because the mere intensification of the use of money does not imply the intensification of the production of goods. The use of money and of its substitutes is always costly. If it is not the holder who is charged with these costs it must be someone else.

It is true that all new technical devices to economize the use of money have resulted in a tendency to higher money prices. The same will inevitably hold true for all future improvements of this kind and thus they have the same effect as a further reduction of the reserve ratio of money substitutes. But does this prove that there is no other difference between them which is crucial? Does it not simply represent another proof of the virtual irrelevance of the money price level?

There is no need to enter into the discussion about the importance of money prices. We rather have to emphasize the difference between two origins of a more intense use of money. One is entrepreneurial innovation and the other is the reduction of the reserve ratio. The great innovations of banking history such as banknotes, checking accounts, clearing houses, and credit cards have brought advantages for all market participants. They economized factors of production that the banks formerly had employed in the service of their customers. Less money had to be spent in the production of these banking services so more could be spent for other market transactions. The same

effect was caused by all innovations of non-bankers permitting them to keep smaller money balances. New techniques for business accountancy, for the planning of market transactions, and for business forecasts fall in this category.

On the other hand, a smaller reserve fraction merely means inflation, viz., an extension of the quantity of money in the larger sense. Yet, as no factor of employment has been reduced, no additional production can result from it. There can be no doubt that the first mentioned innovations are not inflationary, viz., increase the quantity of money in the larger sense. They lead to a more intense use of the existing quantity of money or, in other terms, enhance the velocity of circulation. This is what causes an increase of money prices on the market. The profits derived from productive innovations are a reward for an achievement that is useful for all market participants. By contrast, profits derived from inflationary reductions of the reserve fraction simply represent fraud. No use of a factor of production has been reduced. The banker gains something which is taken from other people.

Financial Intermediation Under 100 Percent Reserve Banking

Implicit in all arguments against banking on a 100 percent gold standard is the conviction that this system would gravely impede financial intermediation. In the judgment of moderate free bankers, such as Larry Sechrest,

> First, with 100 percent reserves, banks cannot make loans from their deposits. Every dollar deposited must be held, ready to be redeemed, at all times. This severely restricts the available credit in the society. One could make a very plausible argument that much of the real economic growth that has occurred would have been impossible in a world of 100 percent reserve banking. Furthermore, banks resent such an imposition.[14]

This expression fatally recalls the inflationist real-bills doctrine. Therefore, some free bankers advance a more radical argument. They say that 100 percent reserve banking makes financial intermediation impossible. This is, however, untrue; even if credit were *restricted* by 100 percent reserve banking (which is not the case) there would still be credit in this system. To be sure

[14]Larry Sechrest, *Free Banking: Theory, History, and a Laissez-faire Model* (Westport, Conn.: Quorum Books, 1993), p. 66.

there would be no intermediation of demand deposits because the disposition of them would entirely be reserved to the depositors. Yet even in a system of fractional reserve banking the intermediation of demand deposits represents but a part of the whole intermediation business. By far the biggest part of the money lent by the banks has been temporarily given into their *exclusive* disposition. Therefore, the pretension that under 100 percent reserves "banks would be unable to lend"[15] is untenable. One does not have to quarrel about whether the word credit, or the expression "true financial intermediation,"[16] should be reserved for lending operations on the basis of demand deposits (fiduciary money issues). The only relevant issue is whether there is still financial intermediation under 100 percent reserve banking. This cannot be contested.

The Alleged Dangers of Money Shortages and of Changes of the Price Level

The case for fractional reserve banking is entirely based on the age-old equivalence idea. According to this idea each commodity *corresponds* to some quantity of money. The exchange of a bigger quantity of goods on the market is only possible if the quantity of money increases, too. Devastating results could result from a "fear of currency shortage."[17] The prospect of a rigidly limited quantity of money, say the free bankers, could drive the market participants to enhance their money holdings. This would precipitate a real money shortage even if there had been none in the beginning. It is obvious that this argument not only applies to gold but to all other goods as well. The quantities of shoes, bread, and bottles of milk are no less limited than the quantity of money. Nevertheless there are no general fears of shoe shortages. Neither is it necessary to invent special devices to prevent them.

However, this is not the whole of the picture painted by the free bankers. Fractional reserve banking is needed because metallic money cannot increase in a degree sufficient to permit all market exchanges. It is needed to provide "transfer credit."[18]

[15]Dowd, *The State and the Monetary System*, p. 25.

[16]Steven Horwitz, *Monetary Evolution, Free Banking, and Economic Order* (Boulder, Colo.: Westview Press, 1992), p. 115.

[17]Selgin and White, "How Would the Invisible Hand Handle Money?": 1726.

[18]See Selgin, *The Theory of Free Banking*, pp. 60ff. Transfer credit is "credit granted by banks in recognition of people's desire to abstain from spending by holding balances of inside money" (p. 60). This of course, is no definition. Every use of money implies the holding of it.

Transfer credit, they say, is necessary to prevent disruptive consequences that otherwise would follow. Principally, they say, each increase in the demand for money would cause unfavorable money shortages for it withdraws money from circulation:

> Consider what happens when the supply of money fails to increase in response to an increase in demand for money on the part of wage earners. The wage earners attempt to increase their money balances by reducing their purchases of consumer products, but there is no offsetting increase in demand due to increased, bank-financed expenditures. Therefore, the reduction in demand leads to an accumulation of goods inventories. Businesses' nominal revenues become deficient relative to outlays for factors of production—the difference representing the money that wage earners have withdrawn from circulation. Since each entrepreneur notices a deficiency of his own revenues only, without perceiving it as a mere prelude to a general fall in prices *including factor prices*, he views the falling off of demand for his product as symbolizing (at least in part) a lasting decline in the profitability of his particular line of business. If all entrepreneurs reduce their output, the result is a general downturn, which ends only once a general fall in prices raises the real supply of money to its desired level.
>
> As was said previously, such a crisis can occur only if banks fail to respond adequately to a general increase in the demand for inside money.[19]

This reasoning is central for the doctrine of fractional reserve banking. There are several fallacies in it. Even if it *were* correct, there would be no way to explain why prices can ever fall. Yet this is what the free bankers consider as the long-run outcome of a growing economy.

Most importantly, the above statement is but half of the story. The other half is the story of wages.[20] If an entrepreneur faces reduced demand for his products, he sooner or later has to pay lower wage rates. Now, if a worker accepts this, the output of this enterprise is not reduced. It remains profitable and can stay in business. If a worker does not accept the lower wage rate, he will

[19]Ibid., p. 55.

[20]See the following, for example, W. H. Hutt, *The Keynesian Episode* (Indianapolis: Liberty Press, 1979), pp. 51ff.

sooner or later have to look for another employment, thus reducing wage rates elsewhere. Other businesses that hitherto were submarginal become profitable. In either case there can be no general reduction of output. Wage earners will have lower nominal incomes.

Yet, all other prices are lower, too. Thus their real incomes have not declined. Even if all wage earners decided suddenly to bury their banknotes in pillows or burn them, there would be no need and no possibility to adequately increase the supply of banknotes. To be sure, there would be some disruptive elements in this scenario. Yet, it is not the falling prices that are disruptive, but the general folly that drives *all* market participants to burn their banknotes. Falling prices are nothing but a symptom of an adjustment taking place. Preventing prices from falling amounts to curing the symptom and leaving the disease untouched. General output or aggregate demand can neither be conserved nor enhanced by increasing the money supply. The free bankers have not yet learned the lesson of Say's Law.

Some of the free bankers have filled volumes with studies on the history of banking and, still, are blind to the most important issues of money and banking. With the opponents of gold, they share the conviction that money is only optimal if it is flexibly supplied according to the changing scope of its employment or of needs. There can be no greater fallacy in monetary theory. No issue is more fundamental. Therefore the insight of classical economics has to be repeated again: *The quantity of money is irrelevant for the benefits derived from its use, in the long run and in the short run.* There is no need and no possibility to adjust it according to its changing employment. There is no need because the adjustment can be achieved by a change of prices and particularly a change in wages. But most importantly, there is *no possibility* of an "adjustment" of the quanity of money. Even if one could succeed in replacing the money exactly there where it is "withheld" (which would be close to a miracle) one would need an angel to inform each market participant about the structure of prices that is now likely to be created.[21]

There is no meaningful way to define a demand for money that could exceed the supply of money (the existing money stock). An

[21]See the analoguous remarks of Mises concerning the possibility of stabilizing the value of money in his *Theory of Money and Credit* (Irvington-on-Hudson, N.Y.: Foundation for Economic Education, 1971), pp. 123–31.

ever increasing quantity of commodities and services can be sold on the market with one and the same supply of money.[22] The argument can be reduced to the conviction that "if prices go up we need more money to sell all the goods." However, the mere fact that one price or even all prices did already go up with the use of *unchanged* money stock proves that the latter does not have to be increased.

Every existing good can be exchanged on the market. The crucial question is whether the selling prices render its production profitable or not. Unprofitable investments prevent more urgent productions. This is why they are unprofitable. If transfer credit is given to make them profitable, the satisfaction of more urgent wants is artificially prevented.

On Some Alleged Advantages of Fractional Reserve Banking

Is Fractional Reserve Banking the Necessary Outcome of an Unhampered Market?

Fractional reserve banking has been represented as the necessary outcome of an unhampered market.[23] If this were true it would be a strong support for the claims of the free bankers. For whatever was undertaken by any other agent to establish a different system, there would always prevail a tendency toward fractional reserve banking.

It is most convenient to clarify the nature of this argument because some of its advocates believe it to be "causal-genetic," an expression which Schumpeter used to distinguish Austrian economics from other approaches. An abstract summary of it could run like this: First one points at a problem of action, for example, the problem that "double coincidence" in a barter economy is very rare so that most people willing to sell the goods which they do not need personally would not be able to exchange on the market. Then one shows that this problem can be solved by a certain behavior that was until now unknown.

In our example this would be the invention of indirect exchange: using a medium of exchange, people are no longer dependent on the

[22]For example David Ricardo, *The High Price of Bullion*, Works 3 (London: John Murray, 1811), p. 73.

[23]G. Selgin and L. H. White, "The Evolution of a Free Banking System," in Selgin, *The Theory of Free Banking*, chap. 2, and in White, *Competition and Currency*, chap. 12; also Dowd, *Laissez-faire Banking*, pp. 26–33, 59–68.

improbable case of "double coincidence." With this solution of the old problem, however, new problems are arising by which no one has been previously confronted. One of these new problems is linked to economic calculation. Economic calculation cannot be successfully executed without the use of a medium of exchange. The calculated planning of action reaches as far as the price system that is constituted by the use of the particular medium of exchange.

Comparing the prices expressed in a medium of exchange that will probably be realized on the market permits us to evaluate the probable success of even the most complex projects with a hitherto unachievable precision. On the other hand, one of the problems that is linked to economic calculation is the homogeneity of the medium of exchange. If the different items of the total quantity of a medium of exchange are not of a sufficiently homogeneous quality, no calculation can be successfully put into action. A new solution is required to solve the new problem. As should be clear by now, whatever solution will be applied, it will be at the base of other problems that need other solutions, and so forth.

This essay is not concerned with questions of method. Yet, fractional reserve banking is recommended because it allegedly represents the necessary outcome of the operation of the unhampered market which in turn can allegedly be deduced by the above method. The latter, therefore, needs some consideration.

It is very important to realize that in economics there are two types of arguments of which one could say that they feature evolutions. One argument is purely logical. This is, for example, the case for the necessary evolution that we call the business cycle.[24] A business cycle takes place after the injection of additional quantities of money through the credit system. Whatever the market participants will do in such a situation, they cannot prevent the additional quantity of money from exercising an additional effect on the price structure. After the injection of new money, many projects seem to be (are calculated to be) profitable that did not seem so before. Projects are started which would not have been started without the injection of new money. Indeed, saying that additional quantities are *injected* into the market through the credit system means *that* they are borrowed. Then the price (the interest rate) must be lower than it would otherwise have been. As this interest

[24]See Ludwig von Mises, *Human Action* (Chicago: Henry Regnery, 1949), pp. 571ff; and Murray N. Rothbard, *Man, Economy, and State* (Los Angeles: Nash, 1962), pp. 850ff.

rate *cannot* last but *must* go up it represents an *additional* source of error for market participants.[25]

The alleged deduction in the theory of fractional reserve banking is not of this kind. Essentially it is a historical account, even if it does not feature *our* history. The necessity of the evolution it describes is only an empirical, that is *ex post*, necessity. Of course, we know that in all types of barter societies, the problem of double coincidence exists. We also know that man has discovered indirect exchange. Yet, this invention, as every other invention as well, was in no way inevitable. In all places and at all times action is confronted with problems. Only *ex post* are we often capable of saying if and in how far a certain behavior represents a solution and to what. This is what can be achieved with causal-genetic approaches to the evolution of monetary institutions. And this is *all* they can achieve. They are a kind of very abstract history of monetary institutions, a history of what would have happened if government had not intervened in a misconceived manner.

Now, let us disregard the question of whether it is appropriate or not in this context to neglect government interventions. The only question we have to face is whether there are any problems of action that, *by their pure existence*, imply that a certain solution—indirect exchange, clearing houses, fractional reserve banking, etc.—be invented. Does an empty refrigerator imply that it will be filled? Did gravitation create the relativity-theory to let man fly to the moon? Did the weakness of our eyes invent X-rays to see through a patient's skin? Did idle gold hoards lead to fractional reserve banking? If this were the case, the causal-genetic process would be a sound line of reasoning. Yet, it is not the case. It is undisputed that all the institutions that are allegedly *deduced* from problems represent, in some manner at least, solutions to existing problems. However, this is no proof that other outcomes would not be possible. Fractional reserve banking

[25]By the way, it is not true that a reduction of the inflated money stock is the cause of crises. It is already the widespread *injection* of additional money via the credit system which implies that money calculation has to fail on a wide scale. Once the failure becomes obvious in the form of a crisis, a reduction of the money stock has the effect of accelerating recovery. Hence, one cannot claim that "Austrian economists such as Rothbard *add* that it was the Fed's expansionary policies during the 1920s that precipitated the crisis, which was exacerbated by the Fed's later inaction" Steven Horwitz, *Monetary Evolution, Free Banking, and Economic Order*, p. 182 [emph. added]. This claim presupposes that monetary expansion is but a detail in the picture of business cycles and that Rothbard shared the view that it is the drop of the money stock which creates crisis. Neither is true.

could be but a part of all the possible solutions. To state a problem and then present one (now known) solution is no proof that the problem already *meant* this solution. If this implication cannot be demonstrated, the argument can never be general, that is, valid for the markets of all times and places. It then refers only to one particular outcome, not to all the outcomes that the unhampered market must take.

The approach championed by the free bankers contains no argument of the kind required to prove that an unhampered market leads to fractional reserve banking. It cannot be claimed in defense of the case for fractional reserves.

Does Fractional Reserve Banking Lead to Monetary Equilibrium?

Free bankers Kevin Dowd and Lawrence White say they do not defend the real-bills doctrine.[26] Even so, they have recognized the proximity between their tenets and this fallacious doctrine. Yet all their efforts to distinguish between the two have proved to be futile. There is no difference between a money substitute issued to give a real-bill credit and a money substitute issued to give transfer credit.[27] Both are credits out of thin air, that is, no credits at all. Contrary to their pretensions, the free bankers are nothing but the modern advocates of the real-bills doctrine.

There is but one quite modern feature in their argument. It is the conviction that only fractional reserve banking leads to monetary equilibrium. The latter is supposed to be the state of affairs that prevails when "there is neither an excess demand for money nor an excess supply of it at the existing level of prices."[28] According to Selgin, the lending process in a fractional-reserve banking system equilibrates money supply and demand because:

> Whenever a bank expands its liabilities in the process of making new loans and investments, it is the holders of the liabilities who are the ultimate lenders of credit, and what

[26]For a vain attempt to prove the contrary, see, Dowd, *The State and the Monetary System*, p. 60ff.

[27]In a brilliant analysis Fritz Machlup demonstrated that the time horizon for which a credit is given has nothing to do with the time horizon of its employment. It is thus illusory to believe that fiduciary issues would only finance transfers (*Börsenkredit, Industriekredit und Kapitalbildung* [Vienna, 1931], pp. 139, 179ff).

[28]Selgin, *The Theory of Free Banking*, p. 54.

> they lend are the real resources they could acquire if, instead of holding money, they spent it. When the expansion or contraction of bank liabilities proceeds in such a way as to be at all times in agreement with changing demands for inside money, the quantity of real capital funds supplied to borrowers by the banks is equal to the quantity voluntarily offered to the banks by the public . . . Thus a direct connection exists between the conditions for equilibrium in the market for balances of inside money and those for equilibrium in the market for loanable funds. An increase in the demand for money warrants an increase in bank loans and investment. A decrease in the demand for money warrants a reduction in bank loans and investments.[29]

Therefore, fractional reserve banking avoids excess demand and supply of money because the issues of the banks are virtually irrelevant. It is only their customers who choose the appropriate money balances and thus the total quantity of money in use. Balances are held in consideration of the purchasing power of money, that is, the money prices prevailing on the market. "People who find themselves holding excess notes or deposits will get rid of them largely by depositing them in checking or savings accounts at their own bank, or by spending them away to persons who will deposit them."[30] Now, say the free bankers, money prices are exclusively determined by the value of outside money, for example the value of gold. *Money substitutes play no role in the formation of money prices.* The supply of bank money has no influence on the purchasing power of money. Money substitutes must necessarily have the same value as money itself because they are convertible into money. In the eyes of the free bankers, restrictions on the issues of banks would in no manner prevent changes of the price level. This is because the latter exclusively depends on the industrial demand for gold. The following gives a sample of formulations of this anchor theory[31]:

> The public's demand to hold the demand liabilities (notes or demand deposits) of any particular bank is a definitely limited magnitude in nominal as well as real terms given that the purchasing

[29]Ibid., p. 55.

[30]White, *Competition and Currency*, p. 158.

[31]See also Horwitz, *Monetary Evolution, Free Banking, and Economic Order*, p. 120f; Dowd, *Laissez-faire Banking*, p. 65f.

> power of notes and demand deposits is fixed by their redeemability for specie.[32]
>
> In the limit, with clearinghouse reserves of base money economized to zero and hand-to-hand currency entirely bank-issued, so that neither the banking-system nor the public holds any base money, the purchasing power of base money would depend entirely on nonmonetary demand for the substance comprising base money. Under a commodity standard the value of the unit of account (a standard unit of the base money commodity) would still be determinate. Under a fiat standard, the value of the unit of account would go to zero (because there is no nonmonetary demand for fiat money), placing the system's viability in doubt.[33]
>
> . . . a modern competitive theory of money distinguishes between currency [taken as synonymous with high-powered money] and bank money. The stock of currency at any moment is fixed. That fixed stock of currency together with the demand for currency determines its value. Being convertible into currency, bank money or deposits must have the same value as currency. And given a price level determined by the supply of and the demand for currency, the banking system, without affecting the price level, supplies whatever quantity of deposits the public wants to hold.[34]

This is sheer fallacy. Money prices on the market are the prices paid in form of money *and* in form of money substitutes. It is this *total* sum (the money supply in the larger sense[35]) which determines the height of money prices. Yet, fractional reserve banking means that there are fiduciary issues of money substitutes. Then the money supply in the larger sense must be bigger than the money supply in the narrower sense (of money itself). In this case, money prices must be higher than the prices that could be formed with the use of money only.

Suppose I get an additional fiduciary banknote of one ounce of silver sterling from my banker. This banknote permits me to

[32]White, *Competition and Currency*, p. 158.

[33]Selgin and White, "How Would the Invisible Hand Handle Money?": 1724–5.

[34]Glasner, *Free Banking and Monetary Reform*, p. 174f.

[35]This means the quantity of money (money in the narrower sense) plus the quantity of fiduciary money substitutes. The latter always equals zero in a 100 percent reserve system. The money supply in the larger sense, then, always equals the money supply in the narrower sense. Only in a system of fractional reserves can these two aggregates deviate from one another.

satisfy wants that hitherto were not sufficiently important to be considered (they were submarginal). If I pay for a meal in a restaurant with this banknote then, without any doubt, I have affected market prices. In fact, by my very purchase I have formed market prices. These prices would have never come into being without the additional issue of a banknote. Selling the meal to other persons would have required a price reduction to attract submarginal consumers. Thus, without the issue of the additional banknote, the money price of a meal would necessarily have been lower. True, the free bankers might say, but if you only *hold* your money, then no new prices are formed on the market. You then have exercised no influence on market prices. But money is always demanded to be spent. Even if an additional fiduciary money substitute is spent only one time it already has raised money prices on the market.

It is the principal shortcoming of the free bankers not to understand the principles of money-price formation.[36] They believe that changes in the purchasing power of money are a matter of the long run.[37] This is an error. Their entire conception of *how* those changes come about is futile. On grounds of their doctrine, one cannot even conceive of how changes in the purchasing power of money are *ever* brought about. However, the formation of market prices is definitely not a matter of the long run. Money prices are formed by the use of the supply of money in the larger sense. The larger this supply, the higher are the money prices. It is therefore impossible that relative money prices not be distorted or affected by a change in supply of fiduciary issues. *Each* modification of the supply of money in the larger sense affects money prices *with no delay of time*. Once this is conceded, the anchor theory collapses. The decisive influence that money has on its substitutes

[36]Consequently, it is not surprising that some advocate the absurd idea that the crisis of the thirties had been the outcome of heavy variations of the value of gold (Glasner, *Free Banking and Money Reform*, p. 222ff). For a critique see the articles by Wiegand, Kemmerer, and North in *Gold Is Money*, Hans Sennholz, ed. (Westport, Conn.: Greenwood Press, 1975). Cause and effect are confused. The value of gold changed heavily because of big variations of the quantity of its substitutes. The same confusion prevails about the variations of the gold price of the 1980s. Gold went up because many market participants expected it to soon become money again. It went down when it became obvious that these expectations were premature. This was partly due to the views of experts who considered it as "a commodity whose purchasing power is subject to violent and erratic fluctation" (White, *Competition and Currency*, p. 131).

[37]"[I]t takes time for changes in spending to influence prices in a general way" Selgin, *The Theory of Free Banking*, pp. 53f.

is by its quantity. The quantity of money determines the quantity of money substitutes that can be issued. This money supply in the larger sense, then, enters into the formation of money prices.

It is characteristic of the entire free-banking program to confuse this issue. They adhere to some mythical idea of price formation through convertibility.[38] And they tend to consider quantitative limitations on action as accidents to which the attainment of monetary equilibrium is unfortunately exposed. However, with the myth of the anchor falls the myth of monetary equilibrium and its complements, excess demand and excess supply of money. It is untenable that "short-run corrections in the real money supply require changes in the nominal quantity of money."[39] A change of the (nominal) supply of money can never be warranted "because it maintains monetary equilibrium."[40]

One cannot avoid this conclusion, as Stephen Horwitz attempts to do, by merely redefining terms. Horwitz defines a neutral money as not distorting "the determination of relative prices when there are changes in its supply."[41] It would be as meaningful to define the perfect human being as "someone whose mind is not limited by the category of causality."

Definitions are necessary. What is at stake, however, is not our capacity to *invent* definitions but whether the definition in question is useful or not. No definition can be useful that contradicts itself. Whatever names we choose to describe it, a "money that will not distort the determination of relative prices when there are changes in its supply" is a contradiction. Calling this impossibility *neutral money* means nothing else than that we give a name to something that we cannot even conceive of. Discussing the effects of neutral money is therefore as meaningful as the dissemination of accountancy methods in a socialist commonwealth.

It is frequently objected that the relevant quantity of money is indeterminate. From this, it is inferred that the formation of money prices cannot rely as heavily on the money supply as it has been pointed out above. What does this objection amount to? It amounts to saying that existing stocks are indeterminate. Of

[38]Convertibility taken fallaciously in its larger, meaningless sense. See the section entitled "Money and Substitutes for Money" in a previous section in this article.

[39]Selgin, *The Theory of Free Banking*, p. 54.

[40]Ibid.

[41]Horwitz, *Monetary Evolution, Free Banking, and Economic Order*, p. 134.

course this is not true. The supply of a present good is always limited even if there is no one able to say exactly how much of this good exists. Otherwise it would not be a good. Thus, the stock of a medium of exchange is never indeterminate in any relevant manner. Money and its substitutes are no exception. Confusion about the money supply in the larger sense stems from conceptual confusion.[42]

Does Fractional Reserve Banking Favor Investment?

The spurious doctrine of the equivalence between money and real goods is not only used as a critique of 100 percent reserve banking. It also underlies attempts to prove the expediency of fractional reserves. Because the ultimate end of indirect exchange is always to buy some non-monetary goods, the use of money cannot have any value independent from the value of the latter.

Thus, say the advocates of fractional reserve banking, money is an entitlement to real goods. It *represents* the real funds for which it is intended to be exchanged. But, unfortunately, there need not always be equivalence of the amount of the loanable funds and the money in circulation. The latter may prove insufficient to buy all real savings. *Distortions* would be inevitable when the *real loanable funds* could not be borrowed because there is no corresponding circulating money to buy them. This is where fractional reserve banks step in. In the form of money substitutes they create the corresponding money that otherwise would be lacking. According to Horwitz:

> Savers supply real loanable funds based on their endowments and intertemporal preferences. Banks serve as intermediaries to redirect savings to investors via money creation. Depositors give banks custody of their funds, and banks create loans based on these deposits. The creation (supply) of money corresponds to a supply of funds for investment use by firms.[43]

This is the essence of the free bankers' creed. In their eyes, only part of the whole money supply is relevant for the market

[42]Unfortunately, such conceptual confusion prevails also in one of the most brilliant expositions of the problems of fractional reserve banking, see, F. A. Hayek, *Monetary Nationalism and International Stability* (London: Longmans, Green, 1937).

[43]Horwitz, *Monetary Evolution, Free Banking, and Economic Order*, p. 135.

exchanges. Only the part in circulation constitutes a demand for real goods and services. The other part is money held—the proper demand for money. The owners of money held are lenders: "what they lend are the real resources they could acquire if, instead of holding money, they spent it."[44] Because the proportions between money in circulation and money held can change there can be a difference between savings and investment. Suppose someone increases his money balance. Holding more money substitutes, he renounces his share of the goods to which the money entitles him. Now the money he holds no longer *circulates* on the market. He saves but nobody invests. What is more important, nobody *can* invest because the necessary medium of exchange has been withdrawn from the market. Accumulation of unsold goods inventories would be the inevitable consequence were it not for the beneficial intervention of fractional reserve banks. They create new money in circulation that will buy the idle goods inventories. Savings and investment are again in accord with each other.

It is not necessary to point out all the fallacies of the equivalence idea.[45] We only have to examine its basic tenet regarding investment. The free bankers think that there can be a difference between savings and investment. Yet there is no such difference. Savings and investment are always identical. They are merely two aspects of the same action, just as buying and selling are two aspects of the same market exchange. One cannot save without investing, nor is it possible to invest without saving at the same time. Thus, suppose that Jones sells a car against 50 ounces of gold that he intends to hold until his retirement age. Jones has invested in gold. Yet this means nothing else than that his savings are in gold, too. It is immaterial whether Jones keeps his gold in some worn socks or with his banker or someone else. No additional action of any bank is required to make savings and investment equal.

Now, suppose that Jones keeps his gold with a bank on a demand deposit. His banker thinks—because he has been instructed by some clever free banker—that in lending out these idle funds through the issue of a money substitute, he finances a corresponding investment. He gives two ounces to Smith who, in

[44]Selgin, *The Theory of Free Banking*, p. 55.

[45]Note that its application in the context of savings-investment is incompatible with its application to justify the "anchor theory." However, as both are fallacious we do not have to dwell on inconsistencies between the tenets of the free bankers.

turn, buys a washing machine. By giving this idle money to Smith, does Jones create Smith's washing machine? Does he create gold? Does he create just one present good? Does he create something else than a demand deposit? If the answer is no—and there can be no doubt about that—how is he able to finance an additional investment project, that is, supply it with some present goods? He takes Jones's money to do that. Thus, *he not only takes Jones's savings but also his investment*. Such actions are commonly called robbery.

Our enlightened banker has financed Smith's investment project by robbing Jones. He has not achieved an economic miracle, at least no miracle that no other robber would be capable of. Of course, in our enlightened age, neither Smith nor Jones are aware of the nature of the blessings of fractional reserve banking. Smith eats the cake of Jones and of the other money owners while the latter think that they still have it. For it is not true that by "holding a bank liability, either deposits or currency under free banking, the possessor refrains from redeeming it for outside money."[46] Holders of demand liabilities are definitely *not* "granters of credit just as are holders of time liabilities."[47] The possessor believes that he can have both, benefit from the use of a money substitute *and* redemption whenever he wants. This is exactly why money substitutes under fractional reserve banking are so interesting to him. The banker (and some economists) may believe that there is just "a difference of degree and not a difference of substance" between credits given on a base of demand deposits and credits on a base of other credits. But there can be no doubt that not only *is* there a difference of substance but that this difference constitutes, in Murray N. Rothbard's terms, "the nub of the problem" of fractional reserve banking:

> a claim—and banknotes or deposits are claims to money—does not involve the creditor's relinquishing any of the present good. On the contrary, the noteholder or depositholder still retains his money (the present good) because he has a claim to it, a warehouse receipt, which he can redeem at any time he desires. This is the nub of the problem, and this is why fractional reserve banking creates new money while other credit agencies do not—for warehouse receipts or claims to

[46]Horwitz, *Monetary Evolution, Free Banking, and Economic Order*, p. 135.
[47]Selgin, *The Theory of Free Banking*, p. 62.

money function on the market as equivalent to standard money itself.[48]

If issuing fiduciary money increased "the supply of loanable funds and spurs further economic growth"[49] there would be, to be sure, no possibility to dispute some beneficial effects of fractional reserve banking. Then the need to redeem money substitutes must appear as an atavistic obstacle for banking. And so would the limitation of money itself. But if one can really imagine "politicians leveraging the Fed into generating short-term output increases to pump up the economy at election time,"[50] why do we not encourage our politicians to do that *all* the time? Why do we abstain from continually enforcing "temporary deviations of real output from its natural rate?"[51]

The answer is: because it is, *even in the short run*, impossible to generate output increases by printing money. Production capacities for future *and* present goods are always limited. If I convert my existing production facilities to the production of more present quantities, then quantities produced in the future will be reduced. If this were my intention then I would successfully increase output. I would err, by contrast, if I believed that I could have more quantities today without paying in the form of less quantities tomorrow. I cannot feel richer having many goods today when I know that I shall starve tomorrow. When I am convinced that it will rain tomorrow I will repair the roof of my house. I do not think a second of taking too long a sunbath to complete the repair today. The additional hour of sunbathing is, in any practically relevant sense, not more than the repair of the roof of my house. Forcing me to behave in another way, namely, to take a longer sunbath today, can in no conceivable manner be more valuable to me.

In quite the same way, it is impossible to provide more loanable funds through fractional reserve banking. Gold held in demand deposits must be considered as savings. This, however, does not mean that its holders renounce their disposition of it. Fractional reserve banks may be necessary—as is central banking,

[48]Murray Rothbard, "The Case for a 100 Percent Gold Dollar," in *In Search of A Monetary Constitution*, Leland B. Yeager, ed. (Cambridge: Harvard University Press, 1962), pp. 115–6. Reprinted in book form by the Ludwig von Mises Institute, Auburn, Alabama in 1991.

[49]Horwitz, *Monetary Evolution, Free Banking, and Economic Order*, p. 115.

[50]Ibid., p. 131.

[51]Selgin and White, "How Would the Invisible Hand Handle Money?": 1725 n.

too—because it "would make certain lending opportunities profitable that would not otherwise be worthwhile."[52] So is a robber necessary to make loans to those who would not otherwise get them. No bank can procure more loanable funds than the public is willing to place at its disposal. The only thing they can do is to *deceive* their customers about the quantities of factors of production that are available.

Printing banknotes and creating new deposit accounts is not the cause of cars assembled, bridges constructed and children educated. Everyone inclined to ignore this will sooner or later be told better by the course of events. A bank always operates as an intermediary of *already existing* funds. It does not create them. Issuing additional quantities of fiduciary banknotes and demand deposits does not increase the quantity of the goods that can be bought with the new fiduciary money. Hence, inflation cannot represent an increase in output. Only if the receivers of higher nominal incomes *believe* that they can have both more goods today *and* more goods tomorrow is the increased quantity of present goods more in their eyes.

Yet this is a blatant error that only becomes apparent at a later stage of the inflation-induced evolution. Those who believed in the blessings of inflation or who ignored the latter altogether will find that the longer sunbaths of yesterday have to be paid for by a wet dining room today. Inflation-created output increases are a contradiction in terms. Not only do they fail to encourage investment, they positively impede it because they cannot but lead to error, that is, to the destruction of investment. There is no difference between fractional reserve banking and government intervention in financial markets. Both "*divert* savings from more to less productive channels."[53]

The free bankers are inspired by a spurious problem. It is therefore that their doctrines are as unsatisfying as those of their predecessors. During almost the whole of our century, economists were in search of the causes and consequences of deviations

[52]Dowd, *Laissez-faire Banking*, p. 48. This is precisely the argument of the central bankers. Goodhart, for example, claims that central banks are necessary "to support the residual, risky, 'true', banking institutions, which were undertaking the necessary function of making loans to borrowers who could not otherwise sell their own equity and debt in extant financial markets" ("Are Central Banks Necessary?," *Unregulated Banking: Chaos or Order?*, Forrest Capie and Geoffrey Wood, eds. (London and New York: St. Martins Press, 1989), p. 18.

[53]Murray N. Rothbard, *Power and Market*, 2nd ed. (Kansas City: Sheed Andrews and McMeel, 1977), p. 186.

between savings and investment. Nearly all of them overlooked the disposition issue. (Probably they tried to avoid it because it would have led them too near to the concept of ownership; which was deemed unscientific.) So they tried to explain the recurrent crises of capitalism with the wrong tool. Business cycles are a matter of systematic error. Yet, this error refers to the disposition of goods, not to differences between savings and investment. Their unawareness of the disposition issue leads the free bankers to misconceive the argument of Rothbard in support of 100 percent reserve banking. His claim that fractional reserve banking is fraudulent[54] is in their eyes "more jurisprudential than economic."[55] They are certainly right that "nothing in a free banking system prevents an individual who desires 100 percent reserve banking from explicitly contracting for it."[56] Yet nothing in the world prevents people from being foolish. Rothbard's view that banknotes are the legal equivalent of warehouse receipts is *not* "based on what he thinks legal practice *ought* to be."[57] Rather it is the other way round. Legal practice ought to acknowledge that banknotes *are* substitutes for money and that it is impossible that two persons dispose of the same good at the same time.

Does Fractional Reserve Banking Convey a Superior Kind of Knowledge?

The fundamental economic fallacy of all brands of socialism is the idea that money is not needed for the calculated planning of action. Unfortunately, there is a corresponding fallacy of just the opposite nature, namely, that the use of money provides *something more* than the indispensable instrument of the calculation of action. This conviction is manifest in the naive attempt to create goods by an increase of the quantity of money. It is also apparent in the attempts to attach a special dignity to money because it allegedly conveys a superior kind of knowledge. Recently the conviction that monetary exchange is a social communication process has found an advocate among the free bankers:

> Both language and money are ways of extending our perceptual apparatuses beyond the immediate; the difference lies in to what each allows us access. The advantage of a monetarily extended

[54]Rothbard, "The Case for a 100 Percent Gold Dollar," pp. 114f.
[55]White, *Competition and Currency*, p. 156.
[56]Ibid., p. 157.
[57]Ibid., p. 156.

> language over language alone (and why the modern socioeconomic order is equally dependent on money, as it is on language, for its emergence and evolution) is that money allows us to utilize not only the articulate knowledge of others but, more important, their knowledge that cannot be put into language.

He then theorizes what kind of information money does convey:

> language and money . . . *constitute* the way in which we express [mental] constructs and preferences. Just as we cannot help but think in terms of the words that language provides us, we cannot help but act in the market in terms of the money prices of what we want to exchange. As difficult as it is to communicate thoughts outside of language, so it is difficult to express market-relevant wants outside of monetary exchange.[58]

There is no doubt that money prices constitute an expression of our preferences. However, this is not the point. The point is that they are but *one* expression of preferences and that the latter are revealed in *any* prices, not only in money prices. Yet, if our preferences are revealed by all market prices then it is impossible to claim a particular ability of money to convey them.

But there are still other, more general flaws in the superior-knowledge theory of money: Money is scarce, language is not. The use of money *implies* social cooperation, the use of language is a unilateral act that does not imply cooperation. The *success* of the use of money is based on a fundamental disagreement about the meaning (more narrowly: the value) of money. As with every market exchange, it presupposes only the knowledge *that* the intended act is profitable (more useful than any other action), not *why* it is so. Market exchange rates convey no knowledge apart from the valuations which made cooperation possible. The use of money permits diverging interpretations of the underlying objective conditions of action. This is of no importance for the success of a market exchange. *Every* use of money, by its mere existence, proves that cooperation is possible even if one partner in the exchange is fundamentally erring. By contrast, the success of the use of language is based on a sufficiently similar interpretation of special objects (words and other symbols). Without an agreement upon their meaning *no* success would be conceivable. The use of a language is impossible without the tacit conviction that the

[58]Horwitz, *Monetary Evolution, Free Banking, and Economic Order*, p. 97.

objects of the discourse are perceived (interpreted) in the same way.

The success of trade and money and its importance for humanity is based on the fact that they do not presuppose any agreement between cooperating individuals about the interpretation of their environment. Money and trade rely upon the extreme opposite foundation, that is, diverging attitudes toward the value of objects. Therefore it is not true that "joint production processes require the communicative agreement that money permits."[59] The division of labor is certainly *facilitated* by language. Yet, language is but a tool to reduce the uncertainty linked to the interpretation of the intention of others; insofar, it resembles not only money but *all* means of action. It is to this wide analogy that Simmel refers in his *Philosophy of Money*. Such an analogy has limits:

> The point of departure for the analogy between money and language is to recognize that both mediate social processes; money is the "medium of exchange" for Menger and many others; language is the "medium of experience" for Gadamer and others in the Continental tradition . . . Language and money do not reveal some preexisting mental constructs or preferences, rather they constitute the way in which we express those constructs and preferences.[60]

Simmel's authority, therefore, cannot be claimed in support of the idea that money is—as language—a means of communication.

The difference between 100 percent and fractional reserve banking is of course one of error and information. Yet fractional reserve banking is far from being superior in this regard. Rather the opposite. Under 100 percent reserve banking the factor use linked to the employment of money substitutes shows itself in the costs incurred by the bank customers. Under fractional reserve banking just the opposite holds true each time additional quantities of fiduciary money are issued. The bank customer receiving

[59]Ibid., p. 100.

[60]It seems to be the intention of discussing Simmel's work at length to prepare the ground for a communication theory of money (ibid., pp. 91ff). The same reproach must be made for citing Mises's ideas on the importance of language from his *Nation, State, and Economy* (New York: New York University Press, 1983). Indeed, these belong to the few ideas Mises considerably revised later on (*Omnipotent Government* [New Haven, Conn.: Yale University Press, 1944]). It is impossible to claim his authority in support of the tenet that "ideas do not exist extralinguistically" (Horwitz, *Monetary Evolution, Free Banking, and Economic Order,* p. 186).

an additionally issued banknote or demand deposit at (necessarily) too low a price believes this price to be the costs of the credit.

In fact, this is not the case; the rest of the costs must be paid by the other money owners in form of lower purchasing power. The customer receiving interest payments for his money deposited in a demand balance believes him receives a free lunch. In fact, they do not do so for their deposit with a bank makes fiduciary issues possible and thus leads to a decrease of the purchasing power of their money. Additionally, they are erring about the quantity of money they can dispose of. However, only in times of liquidity crises do those errors on a wide scale become obvious.[61] Thus it is precisely under a regime of fractional reserves that the market participants are systematically *misinformed* about the quantities of goods they can dispose of. It is also unlikely that, under fractional reserve banking, "reserve holdings would indeed fluctuate to reflect the trust that the public holds in a bank's liabilities and the confidence the bank has in its assets," as Horwitz believes.[62] If this interpretation was common in the market then even bad banks—and *especially* bad banks—would do their utmost to operate on a low reserve ratio.

The breakdown of any system of fractional reserves represents only the cluster of failure that was already implied in the cluster of erroneous assumptions concerning the quantity of disposable goods. Insofar as there are striking parallels to the issue of gold versus fiat money, the latter has traditionally been defended with reference to the smaller resource consumption that it would allegedly imply. Yet, at the end of this century, marked by fiat money regimes all over the world, even the most ardent of its champions admit that this was an illusion.[63]

The Necessary Failure of Fractional Reserve Banking

The Two Sources of Business Failure Implied in Fractional Reserve Banking

The free bankers think that fractional reserve banking can, in principle, last forever. They believe that it does not bear in itself the source of its destruction. They are convinced that its pure existence does not imply its decline. They are wrong on each one of these contentions.

[61]See Machlup, *Börsenkredit, Industriekredit und Kapitalbildung*, pp. 143ff.

[62]Horwitz, *Monetary Evolution, Free Banking, and Economic Order*, p. 146 n. 46.

[63]Milton Friedman, "The Resource Cost of Irredeemable Paper Money," *Journal of Political Economy* (1986).

Some critics of fractional reserve banking think that the root of the free bankers' fallacies is that they maintain that the holding of money constitutes savings. Yet, as it has already been stated above: one cannot save without investing, nor is it possible to invest without saving at the same time. This refers to *all* goods and, thus, to money. The terms savings and investment (or better: savings-investment) refer to *all* actions. From the point of view of the acting person each means which he disposes of—even for the shortest delay of time—is savings-investment. Like the category of means-ends, it is a categorical feature of action. The machines owned by a great industrialist are as much his savings-investment as the coffee cup that I own as a part of my savings-investment. So are cars, refrigerators, dentists' equipment, computers, and the fresh pizza served in a restaurant. And so is the money that one owns, too.[64]

However, these considerations are only preliminary to what economics is all about, that is, the employment of *limited* means or goods. In a situation of unlimited means there could be no question of the success of action. All actions would be successful because of the abundance of means. Action could not be as we know it. Just the contrary is true for goods. Only a limited number, representing a limited range of actions requiring their

[64]Here my opinion deviates from that of Rothbard. He says: "A man may allocate his money to consumption, investment, or addition to his cash balance." (*Man, Economy, and State,* p. 678, see also pp. 179f), thus suggesting that holding a cash balance is something different from savings–investment. Hans-Hermann Hoppe has given another expression to this view in claiming that time-preference and the utility of money are "two distinct and praxeologically unrelated factors" (*The Economics and Ethics of Private Property* [Boston: Kluwer, 1993], p. 119). To be sure, there is no causal connection between the demand for money and the interest rate. Increasing the quantity of money cannot reduce the interest rate because money's *real* value, its purchasing power, would be reduced accordingly. Yet this is no reason to overlook the unity in all *acts*, viz., in all valuation. Value is the preference accorded to an effect, and at least in the realm of action this can mean nothing but that the preferred effect should be achieved *before* alternative but less urgent effects. As action—and all other means—are always employed in the pursuit of some ends or effects acting man necessarily has to value (i.e., select) his means according to the urgency of the ends they are supposed to achieve. Thus, time-valuation is present in all actions. Actions with money can be no exception.

However, it should be noted that it is the holding of *money* which constitutes savings-investment. The holding of money substitutes, on the other hand, does not constitute savings-investment but *claims* on savings-investment in the form of money. It *cannot* give disposition of more than the existing stock of money—even if the owners of fiduciary money substitutes *believe* the contrary to be the case. See Böhm-Bawerk, "Rechte und Verhaeltnisse vom gueterwirtschaftlichen Standpunkt," in *Gesammelte Schriften* (Frankfurt/M.: Sauer & Auvermann, 1968).

use can be successfully executed. This number or range is larger when more goods can be employed, and it is smaller when fewer goods can be employed. Yet at each moment it *is* limited. The main problem of acting man consists of the identification or discovery of the most important actions which—under the prevailing limitation of goods—can successfully be carried out. *This problem can only find a solution if and insofar as acting man correctly identifies how many goods are at his disposal.* He must fail if he errs in his appreciation of the amount of goods he can dispose of. If an institutional arrangement implies that the acting persons under its influence err systematically, the arrangement itself can be said to lead to necessary failure. This is exactly the character of fractional reserve banking.

Errors are regrettable but there are no known means to avoid them. Error in business consists of a false appreciation of the future values of consumers. It will occur at all times and in all places, with or without 100 percent reserves in banking. In comparison to the totality of all actions, however, error is but a minor phenomenon. Given sufficient time, man learns how to deal successfully with all objects, be they means or obstacles to his ends. One hundred percent reserve banking is no object that implies particular difficulties for action. Errors, then, cannot be a characteristic feature of its use. It is quite another case with fractional reserve banking. Fiduciary issue of money substitutes as such is, of course, not the root of business error. There is no link whatever between the coverage of money substitutes and the correctness of anticipation. But in two respects it is always linked with error.

The first respect is that a situation in which reserves are fractional *can only be brought about* by the issue of fiduciary money, that is additional and therefore uncovered money substitutes. The important feature of this bank-created inflation is that it must lower the interest rates charged by the banks. Without lowering the interest rates, they would simply be unable to lend the additional money substitutes. Considering the lower interest rates, more projects are calculated to be profitable and launched. Yet, because the production capacities are limited, this must lead to a "cluster of business error,"[65] that is, to approximately synchronous failures of many market participants.

Dealing with a fractional reserve banking system, market participants are permanently misled. In their calculations more

[65]Rothbard, *America's Great Depression*, p. 16.

projects appear to be profitable than can be successfully finished. The nature of fractional reserve banking is to cause this kind of failure on a wide scale. One cannot reproach the free bankers because they do not consider the lessons of Austrian business cycle theory. At least some of them do know that the issue of additional quantities of money substitutes leads market participants to make systematic errors. Yet general errors of market participants do not stem from a confusion "between nominal and relative price changes."[66] All prices are nominal. Without a denomination in some unit there would be no means with which to compare them.

The second aspect is contagion. Even the free bankers do not deny that under fractional reserves, the failure of one bank is likely "to trigger systemwide runs, implying large-scale demands to redeem banknotes and deposits for base money" leading to "widespread bank failures, undermining the payments system."[67] Nevertheless they do not believe this to be a devastating critique of their case. They argue that systemic crises in the past have not been a great threat in banking systems. In their eyes it was rather legal restrictions that played a crucial role. They believe that the evolution of an unhampered market would lead to institutions capable of avoiding runs and panics. Let us examine these arguments in turn.

Legal Restrictions and the Exogenous Causes of Bank Failure

Runs on the banking system, it is said, "were precipitated by events exogenous to the banking systems."[68] Now, what is an *exogenous event*? Imagine a blind person walking without orientation on the pavement. What if he falls in a hole and breaks his neck? One could blithely argue that the reason for his accident was

[66]Selgin and White, "How Would the Invisible Hand Handle Money?": 1725.

[67]Ibid.

[68]Hasan Ifedhar and Gerald P. Dwyer Jr., "Bank Runs in the Free Banking Period," *Journal of Money, Credit, and Banking* 26 (1994): 284. Or, in the terms of A. J. Rolnick and W. E. Weber: "free bank failures were not caused by individuals establishing free banks with the same intention of having them fail. Rather, free banks failed when economic times turned bad and the value of their portfolio declined. Thus, the problems of banks during this period do not appear to have been different from those encountered by banks in other periods or by other types of industries" ("The Causes of Free Bank Failures," Journal of Monetary Economics 14 (1984): p. 290. See also Glasner, *Free Banking and Monetary Reform*, p. 203; Dowd, *Laissez-faire Banking*, pp. 218f; Horwitz, *Monetary Evolution, Free Banking, and Economic Order*, p. 152ff).

exogenous to his being blind. He did not break his neck because he was blind but because some unpredictable circumstances *from outside* disturbed his otherwise brilliant fate.

The futility of this reasoning is obvious. The concrete object that hurts the blind is as immaterial for the issue as the concrete reasons that lead too many market participants to redeem their money substitutes at the same time. It is also immaterial whether the concrete causes for failure are defined as exogenous to the activity in question. The only relevant aspect in this context is whether the activity in question implied already certain problems or not. In the above cases there can be no doubt about this point. To be blind *means* to be exposed to the increased danger of collision. To hold fractional reserves *means* to be exposed to the danger of having to redeem more than one is able to. The free bankers think they have refuted the reality of contagion crises. Yet, they have merely played with words. The contagion or domino effect is not refuted if one *defines* it conveniently. There is no use in building up a straw man called contagion crises and meaning a sudden breakdown of confidence in the banking system that comes out of heaven. There is no such thing as contagion in this sense. It is therefore not very surprising that such contagion never occurred in the past and that it will never be easy to find in practice.

At the bottom of the issue is the relationship between the psychology of the actor and the success of his actions. For economic analysis, the importance of a belief is not its mere existence but the conditions under which it leads to successful action, viz., under which it is right. Crises of confidence and bank runs can be interpreted in two ways. Either one has to suppose that the prevailing conditions justify them, that is, render them successful. Considering fractional reserve banking this is undoubtedly the case. Timely redemption always proves to be successful because it is impossible to satisfy all redemption demands. Or one has to suppose that the beliefs of the market participants are completely erroneous. Why, then, do they err all at the same time and in the same way? Are they guided to similar behavior by a somewhat mysterious herd instinct?

To these questions, the free bankers have provided no answers. To be sure, everybody necessarily acts according to what he *believes* is right. But it is quite a different question whether the convictions of the actor *are* right, that they too lead to successful action. Does the existence of an individual belief, or

confidence as such, imply that it be justified? Is a bank illiquid *because* the depositors believe it to be so? Implicitly, the free bankers answer these questions in the positive. For if contagion crises are "crises of confidence" and contagion effects are "confidence externalities,"[69] one is led to believe that the mere breakdown of confidence in banks leads to a breakdown of payments.

At least under 100 percent reserve banking this is obviously not the case. Here there could be crises of confidence, but there can be no crises of the payments system. This is because the monetary aggregate that is relevant for payments—the money supply in the larger sense, that is, money plus fiduciary issues—could not differ from the supply of money. Its quantity could only vary to the extent that the quantity of money varies. At least in the case of gold this is of no practical importance.

Whether the money at the disposal of the market participants is in the vaults of the banks or under grandmother's pillow is, under 100 percent reserve banking, of no importance for this aggregate. Hence, contagion as suggested by the definition of some free bankers cannot be relevant for banking crises.

Why Fractional Reserve Banking Must Always Lead to Bank Runs

Under a fractional reserve banking system it is impossible to redeem all money substitutes. If a bank that has issued fiduciary money substitutes is forced to redeem more of its substitutes than money in its vaults, it has but one option to avoid bankruptcy. It has to borrow the money from other banks. The latter, thus, are confronted with the following dilemma: either they do lend the money, thereby depleting their vaults and becoming themselves illiquid, too. Or they refuse to lend the money and the former bank goes bankrupt. Then all of its customers—*but especially those who have not been able to redeem the substitutes in their possession*—will try to get some cash. They will search for money or money substitutes from the remaining banks. The deceived customers of the ruined bank need cash to maintain their daily transactions. They have no money to deposit, but they need money or money substitutes right now. The remaining banks, however, are not able to accept them as customers. Their stocks of money have not been increased. The issue of further fiduciary money would inevitably make them illiquid. But even this refusal to issue additional quantities of fiduciary money

[69]Selgin and White, "How Would the Invisible Hand Handle Money?": 1726.

cannot avoid their ruin. They are doomed, too. For if those deceived customers of the first bank cannot immediately dispose of cash they go bankrupt and thus cause liquidity problems for their creditors. Now the latter will have to ask the remaining banks for more cash, creating the old problem on a wider scale.

The contagion effect can only be stopped one way. There must be a bank that is able to satisfy all demands of redemption. However, if the failing market participant is big enough, contagion cannot be stopped at all, at least not if money production is as costly as in the case of gold.

One could ask whether it must necessarily come to a situation in which one single business failure proves to be too big to be borne by the banking system. The answer is: the principle of fractional reserve banking brings it about. Each banker can successfully operate on the hypothesis that in the case of a personal liquidity crisis, he can rely on his fellow bankers. It is in their interest to save him to avoid a bank run. Under such circumstances, the permanent expansion of fiduciary issues provides almost riskless profits. These are the objective conditions of fractional reserve banking. Even the less clever among the bankers will discover them after some years of business experience. Even the less alert among them will behave accordingly, that is, try to reduce their reserve ratio as far as possible. This expansion makes an individual failure ever more dangerous because the reserve ratio is further and further reduced.

It is the possibility of this expansion, however, which the free bankers deny. They claim that there are at least two obstacles for a bank willing to expand its fiduciary issue. The first obstacle to their note issues would be limited by the demand to hold them.[70] Banks are only capable of issuing according to the demand of their customers. All money substitutes that the latter did not really want to hold would quickly be returned to the bank and their redemption be demanded.

Undoubtedly it is true that all money substitutes held by the market participants are really wanted. Neither can it be disputed that each redemption of a money substitute means that its owner does no longer want to hold it. This, however, is completely beside the point. The only question is whether the demand for money—and, thus, for its substitutes—is limited or not. Yet it

[70]Dowd, *The State and the Monetary System*, p. 62. See also the references given above in the section entitled "Does Fractional Reserve Banking Lead to Monetary Equilibrium."

certainly is not. Let us avoid any misunderstandings. Demand in the sense that the free bankers use this term means desire to dispose of money substitutes, it does not refer to "effective demand, to desires made effective by being 'demanded', i.e., by the fact that something else is 'supplied' for it."[71] It is the very intention of the free bankers to put liquidity at the disposal of market participants without forcing them to supply it. Considering the demand for money in this sense one has always to remember that money is a *present* good. It can be used now. No present good is available in a quantity that would satisfy *all* demands. This is precisely why it is a good. Hence, there is always demand for some more money to secure hitherto less important (submarginal) satisfactions. It is correct that under fractional reserve banking "market forces compel banks to issue more money, when, at given prices, more of it is demanded by the public."[72] But that demand is unlimited.[73] It therefore cannot limit the issues of fiduciary money.

However, the free bankers might say that the expansion of fiduciary money substitutes encounters still a second obstacle that will limit it. That is any expansion increases the risk of depletion of the money stock of the bank. True, but how does our banker know how much he can increase without going bankrupt? There certainly *is* some point beyond which his costs increase "faster than revenue, and so expansion beyond that point is unprofitable."[74] Yet, it is not the *existence* of such a point that is the problem, *it is the ignorance of its exact location.* No banker knows and can know exactly in advance what amounts of issues are still profitable and which prove to be ruinous. There is but one means to find it out: trial and error. This is, to be sure, the foremost principle of all action. But *in all other businesses than fractional reserve banking saving a competitor is no condition of one's own success* because individual failures (and follies) do not systematically lead to the breakdown of the whole industry. Fractional reserve banking is different. The reserves of the bigger banks may suffice to ignore bankruptcies of some minor competitors.

[71]Rothbard, *Man, Economy, and State*, p. 677.

[72]Selgin and White, "How Would the Invisible Hand Handle Money?": 1725.

[73]It is unlimited without regard to the prevailing money prices on the market. The latter, however, rise every time the quantity of fiduciary money substitutes is enhanced. They must necessarily be higher than they otherwise would have been. The circumstance, too, leads to higher demands for holding money.

[74]White, *Competition and Currency*, p. 25, Cf. also Selgin, *The Theory of Free Banking*, p. 46.

Liquidity problems of big competitors, however, cannot be ignored. Every banker knows this. Every banker knows that it is in the interest of his fellow bankers to save him. Hence, he has every reason to be audacious in the exploration of that point beyond which the expansion of his fiduciary issues is unprofitable. And at least the alert customers of the banks do know this, too. They will always be very alert for news indicating probable bank insolvency. Thus they will quickly redeem their money substitutes to protect themselves. Taking these precautions they behave in no conceivable manner "contrary to the theory that depositors stage runs simply out of fear that others might run."[75]

It is of no relevance that the market participants have less *confidence* in their business partners, be it banks or others. It is not important *where* the chain of failures sets in—in a bank or in some exogenous institution. All that is needed is that the error be sufficiently big to cause a sufficiently big bank to fail. Then a succession of failures cannot be avoided. Fractional reserve banking is frequently seen as a kind of multiplier of reserves. In fact, it is a multiplier of error. Fractional reserve banking is an iron chain that links the errors of one or a few market participants with the errors of all the others. Under 100 percent reserve banking, too, there may be some banks that engage in lending operations based on maturity transformation. This, however, is no characteristic feature of 100 percent reserve banking. But it is the essence of fractional reserve banking. Here *all* the banks by the nature of their operations are exposed to the risk of having to redeem claims of others without yet being entitled to demand the redemption of their claims.

Liquidity Crises in the Past

Relying on past events can often be helpful to illustrate political and theoretical issues. However, it can provide no evidence. Even if no failure of fractional reserve banking had occurred in the past this would be no proof that sooner or later it will not have this consequence. Therefore, two notes on this subject will have to suffice.

A central problem of the study of history refers to the *evaluation* of events. There are free bankers, for example, who consider three suspensions of payments in about 50 years time to be not much.[76] From the point of view of an enlightened economist this

[75]Selgin and White, "How Would the Invisible Hand Handle Money?": 1726.

[76]Ibid., p. 1726. They note that *only three* out of six major panics in the National Banking era involved suspensions of payments.

may be true. The point of view is different for someone who lost all or some of his wealth in one of these three panics. He suffers from an act of deception. He is ruined because his banker committed—willingly or not—fraud on him.

The free bankers have accorded much attention to the relative success—absence of any major crises—of the Scottish-fractional-reserve banking system of the first half of the eighteenth century. The critics of fractional reserve banking have pointed to the dependence of the Scottish banks on the financial city of London. The latter in turn depended entirely on the Bank of England. Thus, Scottish free banking was not free at all, but a remote part of the English central banking system.[77] The free bankers deny this. In their eyes the "Scottish banks did buy and sell assets in the London financial market, but did not hold deposits at the Bank of England nor, it seems, any significant quantity of its notes. Nor did the Bank of England make last-resort loans to the Scottish banks."[78]

Yet it is immaterial whether the Bank of England was *directly* involved in securing money for the Scottish banking system. In times of trouble the Scottish banks could always rely on credits from London banks. The huge London market could always provide money if sufficient interest was paid. Thus it is because they resorted *indirectly* to issues of the Bank of England that the Scottish banks depended on the latter as well.

Contractual Remedies I: Option Clauses, Equity Claims, and Monetary Disintegration

The most striking contradiction in the free bankers' program is their grudging confession that it is unpracticable. No free banker disputes that the suspension of payments is the ultimate recourse of fractional reserve banks.[79] Yet, redeeming its money substitutes is no generous favor that a bank renders to its customers. Redemption cannot be suspended like granting credit. The inability to redeem is what constitutes bankruptcy. In *all* businesses it is the inability to pay money owed that constitutes bankruptcy. The free bankers, by contrast, believe that

[77]See Murray N. Rothbard, "The Myth of Free Banking in Scotland," *Review of Austrian Economics* 2 (1987): 229–45. See also Charles Goodhart, *The Evolution of Central Books* (Cambridge, Mass.: MIT Press, 1988), p. 51f.

[78]Selgin and White, "How Would the Invisible Hand Handle Money?": 1732. See also Lawrence White, *Free Banking in Britain: Theory, Experience, and Debate, 1800–1845* (Cambridge: Cambridge University Press, 1984); Dowd, *Laissez-faire Banking*.

[79]Cf., e.g., Selgin, *The Theory of Free Banking*, p. 137; Glasner, *Free Banking and Monetary Reform*, pp. 199ff.

this inability could just be a tiny little liquidity problem. There may be banks, they say, which essentially are solvent. These banks just need some time to provide the liquid funds to pay out their impatient and ill-informed customers.[80]

This argument ignores the fact that time is a good. If we always disposed of just a little bit more time we could be sure to have reached nirvana. With always just a little bit more time one could provide all the money in the world. Unfortunately, every means in the mundane life of the human race is limited. Time, therefore, plays a crucial role for the success of action. In every place outside nirvana one has to pay for the time-saving means called goods. There is no possibility of providing "liquidity to the market only."[81] One cannot pay with liquidity; one can only pay with goods.

Yet who pays for the banks if they are unable to pay for themselves? The free bankers reply that the bank customers might *agree* to pay for the banks. They might accept devices (such as option clauses and the transformation of money substitutes into equity claims) permitting the temporary suspension of payments. Thus the fractional reserve banks could always stay in business without ever violating contracts. It is very doubtful whether these contractual remedies would be contractual legitimations of fractional reserve banking.[82]

For the sake of the argument let us assume they would. However, they cannot be *remedies* for the shortcomings of fractional reserve banking. They merely permit banks to cure the liquidity problem by the issue of further fiduciary money substitutes, saving the banks at the expense of the other market participants. If this is a remedy then it is a very general one. Applying the same argument one could say that robbers merely solve their liquidity problems. Or imagine an engineer supplying motors that always explode. It is conceivable that he finds buyers for his products even if he warns them. Yet this does not change the fact that his motors *do* explode. If other people are damaged—which in the case of those motors will not occur as inevitably as in the case of fiduciary money—the engineer could argue: It is not only me and my customer who profit from the use of my motors. You profit from it, too, because the prices I charge are

[80]Cf. Dowd, *Laissez-faire Banking*, p. 48.

[81]Selgin and White, "How Would the Invisible Hand Handle Money?": 1727.

[82]For a refutation of this claim of the free bankers see Hans-Hermann Hoppe, "How is Fiat Money Possible?": 70f.

lower than those of my competitors. My motors are worse, to be sure, but the factor use in their production is lower. Hence, everybody profits from my product and from its exchange on the market. Forcing me or my customers to pay indemnities now is tantamount to ruining me. Then nobody will profit anymore. Give us just a little bit of time and let us continue our business. Then we shall be able to pay indemnities to everyone.

Nobody would accept such a proposal. If there is just one person suffering from the effects of the explosion the owner of the motor would have to pay an indemnity and stop using the motor. In the realm of banking another kind of law seems to prevail. If just one market participant does not give his consent to fiduciary issues and uses money instead his rights are violated. Yet, nobody is forced to pay indemnities and nobody is forced to abandon fractional reserve banking.

All alleged remedies for fractional reserve banking have one thing in common: they seem to shift the frontier separating efficient and inefficient enterprises. They seem to retrieve some banks from liquidity crises that could not otherwise be salvaged. They promise the age-old economic would-be miracle of rendering submarginal projects profitable with more money, without more work, productive innovations, and savings-investment. This is, of course, an illusion. The quantities of all goods are always limited. Contractual remedies per se do not create new goods. They can save the banks—but the bill has to be paid by the other market participants. Option clauses, deposit insurance, and the transformation of money substitutes into claims on equity of the banks all imply higher inflation. Yet inflation is not costless. It is tantamount to prescribing higher doses to a drug addict, thus ruining him further. A drug addict, though, inflicts harm only on his property. The contractual remedies recommended by the free bankers harm even those who did not give their consent.

How can one seriously advocate a system without believing in its success? The free bankers do not torture themselves with questions of this kind. In strict accordance with the principle that if reality does not comply to theory then it is a poor reality, they propose to take another attitude to life itself. Selgin and White, for example, suggest that the unconditional demandability of banknotes and some deposit liabilities may be the result of legal restrictions rather than market forces:

> Discussions of bank runs and panics ordinarily assume that a bank continues to pay out base money until either all demands

> are satisfied or the bank is declared bankrupt. An alternative exists: a bank may suspend payments of base money before such payments render it insolvent and force it into bankruptcy. Although suspension is often regarded as inherently a violation of a bank's contractual obligations to holders of its demandable debt, the unconditional demandability of banknotes and some deposit liabilities may be the result of legal restrictions rather than market forces . . . Under laissez faire, bank liabilities might be conditionally demandable only.[83]

Yet the point is not whether the restrictions of the use of money substitutes are legal but whether they can be removed by an act of legislation. It is devoid of any sense to attempt a definition of legal restrictions covering any conceivable obstacle to any action. No means can be used in the pursuit of opposite ends at the same time.[84] When I use my shoes to take a walk in Central Park you cannot burn them to heat your kitchen in Montana. Yet this is certainly a restriction of your actions. There is no difference in regard to money. Each use of an ounce of gold must exclude other uses which could be made of it. The legal interdiction to issue more claims to money than money exists merely acknowledges this fact.

Last but not least, no advocate of option clauses seems to be aware that as soon as they are used, a system of different *moneys* is established. The same holds true for all essays to link checking services to equity claims. When money substitutes cease to be claims on money and, though, continue to be used each of them constitutes a different price system. Before, all of them were just expressions of the disposition of money. Thus there was just *one* price system. Now, using them does not mean any more use of money. A general acceptance of such devices would thus lead to monetary disintegration.

Contractual Remedies II: Central Banking and Inflation

The only means to avoid monetary disintegration while preserving the principle of fractional reserve banking is to pool the money reserves. Contrary to the conviction of the free bankers[85] it is immaterial which form of cooperation this pooling takes. It

[83]Selgin and White, "How Would the Invisible Hand Handle Money?": 1729.

[84]On this point see Hoppe, *The Economics and Ethics of Private Property*, p. 14.

[85]Cf. Selgin and White, "How Would the Invisible Hand Handle Money?": 1732f.

can take the form of private-branch banking. It can also take the form of a private-central clearing house or of a government-imposed central bank. In each case the effects caused by concentration of money that, before, was dispersed are the same. Pooling permits a shift to large quantities of money to satisfy large but isolated redemption demands. Crises that, before, emerged out of a local liquidity problem can now be prevented. Redemption demands that, before, were critical for the whole monetary system can now be satisfied. Thus, apparently the necessary condition to stop a contagion crisis is now given. Finally, one bank seems to be able to satisfy all redemption demands.

However, one must not overlook that these effects are caused by the *pooling* of money, not by money pools as such. They are merely temporary. Pooling, therefore, cannot avoid bank runs forever. Because there are now greater facilities to provide liquidity the banks will expand their fiduciary credits, thus reducing the reserve ratio again. Only for the time needed for this expansion can the pooled stock of money suffice to help even the biggest banks out of liquidity problems.

Sooner or later, however, the reserve ratio will be reduced to such an extent that the old problem appears on a new scale. Redemption demands that, before, were uncritical now become critical for the whole monetary system. Some banks become big enough to cause, by their failures, crises of the whole system. Hence, the pooling of money stocks does not change the underlying problem of fractional reserve banking. Its main effect is to keep bankrupt banks in business and to make the other market participants pay for it. Not only are the banks able to continue the issue of fiduciary money substitutes, they can even expand it. They grow, not by increasing their services but by expropriating the other market participants.

As no final relief can be brought about by the pooling of money stocks there are but two options for the management of the pooling institution. Either it has to break the redemption promise or it has to look for possibilities to profit from a further concentration of the money stock. This was the problem faced by the central banks during the time of the old (fractional reserve) gold standard. Suspension of payments by the central bank causes principally the same effects as suspension by a single bank. If its money substitutes continue to be used they take the place of the former money. The ensuing monetary disintegration will inevitably reduce the division of labor and permit the central bank to inflate almost at will. This is, of course, the situation we find

today. On the other hand, a further concentration of the money stock must sooner or later lead to a pooling institution on a world scale. Then, at least, there would be no further solution to the persisting liquidity problem of fractional reserve banking than to break the redemption promise once and for all time. While this would have no disintegrating effects on the division of labor it would eliminate all obstacles for inflation.

However, the power linked to a (world) fiat money can only be preserved as long as hyperinflation does not result. Yet hyperinflation is inevitable if the banks are not prevented from ignoring liquidity constraints. There is but one efficient means to assure this: to regulate the free-banking, fractional-reserve, fiat-money system, that is, to impose violent restrictions on this business and especially on the credit volume. Of course, no legislation can prevent the reduction of the reserve ratio. Typically it forbids credit contracts that the rulers pretend to be especially risky. It thus makes banking more bureaucratic, suppresses competition, and, contrary to its intentions, shifts the credits into more risky investments. Thus ever more regulation becomes necessary to suppress its own unintended consequences. The contractual remedies proposed by the free bankers are roads that lead to nowhere. Far from representing solutions they aggravate the problem. They force all other market participants to patronize a destructive system which sooner or later will lead them to hyperinflation or socialism.

The Necessary Failure of Fiat Money

How Gold Becomes Money in an Unhampered Market

The above sections have dealt with the monetary issues of banking. It has been shown that the case for fractional reserve banking is weak. The free bankers' arguments against 100 percent reserves, as well as their arguments for fractional reserves, are wholly untenable. The same holds true for money proper. Here the free bankers display the same inflationist predispositions, viz., their dissatisfaction with gold. Gold is criticized because its supply is not flexible, that is, not as inflationary as its opponents would like it to be. Of course this criticism is spurious on the same grounds as the case against 100 percent reserves.

The quantity of money does not determine the benefits of its use. *All* variations of its supply are harmful. The only qualification to this statement is the increased non-monetary benefits that stem from an increased supply of specie. However, it is not sufficient to prove the

case against gold to be unfounded. One also has to show that the case for other moneys is futile. Can there be a case for fiat money? Is it conceivable that such a system could be successful?[86]

Money is exchanged to be exchanged again in the future. It is bought in exclusive consideration of its future purchasing power. Yet the only successful technique for the estimation of future prices is to base this estimation on present prices, that is, the prices of the immediate past. Today's money prices, therefore, will always rely upon money prices of yesterday. This is the meaning of Ludwig von Mises's regression theorem.[87] It has vast implications for the theory of money.

Its most important implication for the analysis of the competition between moneys is that it is impossible to introduce new moneys out of thin air. History has featured just one technique for the introduction of new moneys. First, one issues documents representing a claim on money. These documents can become money substitutes if their owners can redeem them at par whenever they want. Yet, their circulation is restrained if they have the character of certificates because in this case a price has to be charged for their use. Once there are *fiduciary* issues, however, money substitutes can crowd money out of circulation. Whenever this happens, the opportunity has come for would-be entrepreneurs to *introduce* a new money. Their method is simple: they break the promise they gave and refuse redemption of the documents they issued. The latter can stay in circulation because there are already prices for them on the market. Yet, such an obvious violation of property rights on a wide scale is only possible if government does not assume its duty to punish that entrepreneur. Past governments have not only spared such persons from prosecution, they have often protected them or were even identical with them. Clearly the necessity of recourse to like procedures for the introduction of a new money represents an important limitation on competition in the realm of money. It is especially this practical aspect that has been completely overlooked by its champions.[88]

[86]For the following see the third part of my *Logik der Währungskonkurrenz*, forthcoming from Frankfurt/M: R. G. Fischer, 1996.

[87]See Ludwig von Mises, *Theorie des Geldes und der Umlaufsmittel*, 2nd ed. (Munich and Leipzig: Duncker & Humblot, 1924), pp. 85ff, also published in English as *The Theory of Money and Credit*, H. E. Batson, trans. (London: Jonathan Cape, 1934); idem, *Human Action*, pp. 408ff.

[88]In his *Denationalization of Money*, 2nd ed.(London: Institute for Economic Affairs, 1978) Hayek simply skips the problem that the Ducates, which he wants

If there is more than one kind of money in use, the regression theorem has to be qualified in an important respect. There is, to be sure, still no possibility of introducing a new money out of nothing. It is still decisive for a market participant who is offered two moneys, A or B, to know at what exchange rate he can sell either of them in the future. The appreciation of this future exchange rate still has to rely upon past prices. But now another determinant of future money prices enters the scene. It is by his very decision to buy money A and not money B, that is, to use A and not B, that a market participant determines the future array of A- and B-prices. If he buys A instead of B he causes a tendency of B-prices to rise and a tendency of A-prices to fall. This means that the exchange rate A to B must rise in which case there would be incentives for him and other market participants to use A and to sell B. This in turn would accelerate this evolution further until B would be driven out of the market and A the only money left in use. In other words, *the simultaneous employment of more than one money implies that each market participant, by his very action, determines the success of this action.* It is his anticipation *per se* that favors its own correctness. This can hardly be said of any other action. In the competition of existing moneys, thus, the progressive character of money-price formation (its orientation to future selling prices) is not only reinforced; it becomes a factor of success of its own. If the competing moneys can be handled with the same ease then this is the only mechanism by which one money can become supreme and drive all others out of employment.[89]

This self-accelerating process cannot be stopped by the fact that the market participants have often opposite views on future selling prices of the moneys in use. Indeed, there may be some who buy A because they expect A to rise and B to be driven out while others buy B because they expect the opposite. Even speculative activities to bring about a rapid fall in one of the moneys can possibly be equilibrated by activities of the same nature but of the

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to introduce by a redemption promise, can only become money if this promise is broken. In fact Hayek's Ducates are money substitutes and not money. Otherwise they could never be issued. White holds the same misconception. See also White, *Competition and Currency*, p. 132. For a critique of Hayek's ideas on the introduction of moneys, see Martin Hellwig, "What Do We Know About Currency Competition?," in *Zeitschrift für Wirtschafts Sozialwissenschaften*, 105, pp. 565ff.

[89]The selection of media of exchange of our hitherto non-monetary commodities. See for this mechanism Carl Menger, *Money*, in *Collected Works*, Vol. 4, F. A. Hayek, ed. (1933–36; London: London School of Economics, 1970), esp. chap. 8, sec. 1.

opposite intent. However, once the exchange rate begins to move clearly in one direction it is impossible to prevent the outcome described above—unless there are obstacles hindering the self-fulfilling anticipation of future money prices. Now there are two—and only two—types of such obstacles. The first refers to non-monetary employment in which a money can be used. The second concerns the number of persons who exclusively use either A or B as money.

If a money cannot be used for other purposes than for indirect exchange there is incentive to buy it even at a very low exchange rate. This is obvious in the case of a pure-sign money—as signs do not even have a substance. It is also practically the case with a fiat paper money. One certainly could find *some* employment for mountains of printed paper (burning them for heating purposes, for example). Yet the costs of these actions are likely to outweigh the benefits which could be derived from them. On the other hand, the purchase of gold and silver can never be a complete failure. They are used for many non-monetary purposes—even when their employment as money is suppressed. Gold profits particularly from its physical properties:

> platinum, palladium and other precious metals are industrial metals in the possession of dealers and producers, which limits their marketability and deters their use as money. Even silver cannot compete effectively with gold because its current production, relative to its visible supply, is large, exposing its value to sudden changes in quantity. No other metal has such large stockpiles and small current production as gold. No other commodity enjoys as much universal acceptability as gold. [90]

However, one could claim that there still was the second obstacle for the complete abandoning of a fiat money. If there are market participants who exclusively use one money, the exchange rate of the latter can never fall indefinitely. It could always be sold to one of these persons. One could always get a useful commodity in exchange for it. Now, as a matter of fact fiat money is never the only money in use. At least gold and silver are used everywhere and by nearly everyone in the world.[91] As a consequence

[90]Hans F. Sennholz, *Money and Freedom* (Spring Mills, Penn.: Libertarian Press, 1985), p. 67.

[91]It is futile to cite the German hyperinflation of 1923 as indicating "that inflation can reach mindboggling proportions before alternative currencies can gain a foothold," (White, *Competition and Currency*, p. 132). For anyone acquainted with the

gold and silver market prices are omnipresent. Fiat money, therefore, cannot stay in the market if exchange is free. It can never outcompete gold and silver because the latter are also used for many non-monetary purposes. On the other hand, once it is outcompeted by them it can never peacefully come back. It is only preserved because the use of gold as a medium of exchange is systematically suppressed by legal tender laws, regulation of banking and financial markets, and by taxation in fiat money. Therefore, it is wrong to suggest that "neither gold nor inconvertible private currencies will emerge as money under present circumstances."[92]

Transition Toward a Free Money Supply: The Chimera of Competitive Policies

Changing the monetary constitution to bring about a free banking system would imply the exclusion of government intervention from money and banking. Yet it is important to pay some attention to the precise meaning of "depoliticizing of money."[93] Abolishing central banks would not lead to a system that was unpolitical in the sense that the banks would not affect the success of other market participants. It would be unpolitical in the sense that it would not be managed by the state, the agency of violent means.[94]

Abolishing central banks would *lead* to a system without government meddling with money. However, the *act* of abolishing central banks would favor some forms of free banking and necessarily prevent other forms. One cannot avoid performing a last measure of monetary policy in abolishing monetary policy altogether.[95]

German mentality of this time it is rather "mindboggling" that even blind trust in authority and heavy penalties could not prevent the use of all sorts of other moneys.

[92]White, *Competition and Currency*, p. 131.

[93]Cf. Dowd, *The State and the Monetary System*, p. 185ff; White, *Competition and Currency*, p. 91ff.

[94]For the distinction between economical and political means see Franz Oppenheimer, *The State* (New York: B. W. Heubsch, 1914), pp. 24ff.

[95]For the same reason there can be made no vital distinction between rules and discretion as principles of the conduct of monetary affairs. Every rule prescribing *ex ante* how much money has to be issued at what times and in what places and circumstance is discretionary by the very fact that it has to be set up by *someone*. A rule specifying, e.g., different behaviors of central bank officials according to different circumstances cannot even be said to be more "stabilizing" than any pure discretion on their side. It is therefore that rules vs. discretion is a false dichotomy, not because fractional reserve banking has been overlooked as a third alternative (as suggested by Horwitz, cf. *Monetary Evolution, Free Banking, and Economic Order*, p. 125f.

Hence, one cannot avoid answering the crucial question: what money system do I want? The free bankers feel very uncomfortable about this. They are embarrassed by the necessity to choose, that is, to discriminate and they wish to circumvent this problem by permitting competition.[96] They do not see that one cannot create an amorphous entity called competition and thus remain neutral to the whole issue. *Whatever decision one will take, it will necessarily be a decision in favor of something.* Now, money competition will unavoidably lead to the expulsion of all fiat moneys. Even the creation of a world central bank (and thus of one world fiat money) could not prevent it. If this is correct, why not directly choose it? Is it a viable argument that "more than 50 years of being off the gold standard cannot be shrugged off? The past status of gold is not sufficient to guarantee its reestablishment as money?"[97] Let us disregard this fact that the western world is merely some 20 years off the gold standard. Let us skip for a moment the fact that the use of gold as money is suppressed. The real issue is: what are the alternatives? Can fiat money be said to favor freedom more than gold? Can fiat money persist at all? As long as these questions have to be answered negatively there is just one case for abolishing central banking. This is the case for gold. If there was no gold one would have to invent it. It is correct that a "return to gold without an end to the monopoly of currency issue would at best be half a solution."[98] But the same holds true for the inverse relation. Without a return to a 100 percent reserve gold standard, free banking would be far from a full-fledged solution.

A Banking System Which Works and Banking Systems Which Do Not Work

It is bizarre to follow a discussion of "devices for reducing the likelihood that a bank will be unable to provide a full payoff to the last customer in line"[99] with 100 percent reserve banking hardly mentioned. The free bankers claim that freedom means to place no restrictions "on the terms of contracts made between banks and their customers, beyond the requirement that they

[96]"[T]he choice . . . ought not to be foreclosed by anticompetitive policies" (White, *Competition and Currency*, p. 162). Unfortunately this attitude is not limited to the ranks of the free bankers. See also Sennholz who seeks "merely freedom" *(Money and Freedom*, p. 77).

[97]White, *Competition and Currency*, p. 130.

[98]Ibid., p. 135.

[99]Selgin and White, "How Would the Invisible Hand Handle Money?": 1730.

adhere to the standard legal principles governing all business contracts."[100] This is exactly the point. Yet, it is certainly not such a principle to permit—conscious or unconscious—robbery. The only possible conclusion concerning *legal principles* that justify fractional reserve banking would be that these principles themselves are wrong.

The claims against 100 percent reserve banking are fallacious. So are the alleged advantages of fractional reserves. The principal objection, however, is that neither fractional banking nor fiat money are viable options for action in society. Either they must regularly perish (and each time pull the whole economy with them into disaster) or the payment for the errors they provoke must be coerced by ever increasing state intervention. Hence, the choice at stake is between capitalism and another road to serfdom called fractional reserve banking. One cannot have both.[101]

[100]Ibid., p. 1719.

[101]For plans to attain free banking on a 100 percent gold standard see Mises, *The Theory of Money and Credit*, pp. 485ff and Rothbard, "Aurophobia: or, Free Banking on What Standard?": 107f.