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The Uneasy Case for Fractional-Reserve Free Banking

Ludwig van den Hauwe (*)

Resumen:

Desde hace algunas décadas varias subdisciplinas de la economía se ven reorientadas hacia el análisis institucional. Este desarrollo ha afectado más específicamente también a los campos de la macroeconomía y la teoría monetaria donde ha llevado a varias propuestas de reformas financieras y monetarias de gran alcance. Una de las propuestas más exitosas aboga por una banca libre con reserva fraccionaria, o sea un sistema sin banco central en el cual, sin embargo, los bancos puedan operar con una reserva fraccionaria. Este artículo comenta varios defectos conceptuales de dicha propuesta. Más específicamente, varias alegaciones de los banqueros de la banca libre con reserva fraccionaria relativas a las supuestas características operativas de este sistema se critican partiendo de la teoría económica. Más en particular, se denuncia como errónea la alegación que una banca libre con reserva fraccionaria llevaría a la desaparición del ciclo económico. Además, se realiza un análisis de mano invisible lo cual refuerza la conclusión que la banca libre con reserva fraccionaria es incompatible con los principios éticos y jurídicos propios de una sociedad libre.

Palabras clave: banca libre con reserva fraccionaria, ciclo económico, mano invisible

Abstract:

Since a few decades several sub-disciplines within economics have witnessed a reorientation towards institutional analysis. This development has in particular also affected the fields of macroeconomics and monetary theory where it has led to several proposals for far-reaching financial and monetary reform. One of the more successful of these proposals advocates a fractional-reserve free banking system, that is, a system with no central bank, but with permission for the banks to operate with a fractional reserve. This article exposes several conceptual flaws in this proposal. In particular several claims of the fractional-reserve free bankers with respect to the purported working

characteristics of this system are criticized from the perspective of economic theory. In particular, the claim that a fractional-reserve free banking system would lead to the disappearance of the business cycle is recognized as false. Furthermore an invisible-hand analysis is performed, reinforcing the conclusion that fractional-reserve free banking is incompatible with the ethical and juridical principles underlying a free society.

Key words: fractional-reserve free banking, business cycle, invisible hand

Classification JEL: B53, E32, E42, E5, G18, H11, K39, P3, P34;

1. Introduction

Since a few decades several sub-disciplines within the field of economics have been characterized by a reorientation towards institutional analysis. Scratching the surface of economic phenomena and searching for a deeper understanding, economists in several fields have rediscovered the crucial role and importance of institutions. The explosive growth and development of such sub-disciplines as Law and Economics, Constitutional Political Economy and the New Institutional Economics, among others, all illustrate this evolution. This development has in particular also affected the fields of macroeconomics and monetary theory.

As had often been the case throughout the history of economic thought, the members of the Austrian School have in several respects taken the lead in these recent developments. A considerable amount of attention has thus in particular been devoted to deepening our understanding of the institutional pre-conditions for economic coordination in a complex monetary economy, through a critical examination and analysis of possible

institutional alternatives to the prevailing monetary system of central-banking-cum-fiat-money.

While the scientific interest in the general theme of the complex causal relationships between monetary and banking arrangements on the one hand and the genesis of business cycles on the other is not new, it has been revived through recent scholarly contributions.

A debate has arisen in this connection between two opposing views. This debate is relevant to the causal analysis of business cycles and has led to important refinements and to a perfection of the Austrian theory of the business cycle from a comparative institutional perspective.

According to one side of the debate, represented by the fractional-reserve free bankers, the root cause of the business cycle is central banking. The proponents of this view argue that a competitive banking system under redeemability in specie and in which banks are subject to no legal ceiling on currency issues, or floor on reserve ratios, would be inherently stable. According to the other side of the debate, represented by the 100 per cent reserve advocates, the root cause of the cycle is the fractional-reserve nature of banking. The proponents of this view believe that a competitive system of fractional-reserve banking is characterized by inherent instability and advocate a return to banking under a 100-percent reserve requirement.[1]

In this paper it will argued, in general, that the role of institutions is indeed crucial for the comprehension of macroeconomic phenomena such as business cycles and depressions, and, in particular, that the fractional-reserve free bankers have not made a compelling case in favour of fractional-reserve free

banking, and that they have misidentified the monetary and banking arrangements appropriate for a free society.

2. Broadening the Task of Monetary Theory: Towards a Comparative Institutional Analysis of Monetary Phenomena

Institutional economics as a scientific sub-discipline is characterized by a particular kind of orientation in economic analysis, namely its focus on the interrelationships between the system of rules and institutions on the one hand and the social and economic pattern of actions (order or disorder) resulting under those rules on the other. Institutional economics draws inspiration from the insight that Adam Smith´s invisible hand (Smith 1937, 423) is invisible only for those who are blind to the role and function of institutions. In the context of business cycle research this reorientation takes the form of a comparative analysis of the effects of various monetary and banking regimes, in particular with respect to the important issue of the efficacy with which the economic system performs its coordinating role.

In her important book *The Rationale of Central Banking* Vera C. Smith had already set out the main starting points of any such approach when she wrote that "[a]ny attempt to make a final evaluation of the relative merits of alternative systems of banking must look primarily to the tendencies they manifest towards instability, or more particularly to the amount of causal influence they exert in cyclical fluctuations" (Smith 1990, 192) and that "[u]nless it can be proved that free banking would entirely eliminate the trade cycle and general runs on the banks, the argument for the lender of

last resort remains a very powerful argument in defence of central banking" (ibid. 187).

The scientific theory of the business cycle is thus confronted with two distinct though related tasks. First, it is a theory of the unsustainable boom; it has to explain why, given a credit-driven or policy-induced boom, a subsequent bust is inevitable. A second and distinct (but related) task consists in explaining why the recurrence of boom-bust cycles itself allegedly is - or may seem to be - inevitable. It would not be correct to suggest that the Austrian theory of the business cycle is agnostic with respect to the possible answers to this second question. The latter aspect is more closely related to the institutional context and requires an examination both of the working characteristics of actually existing monetary and banking arrangements and of the working characteristics of possible institutional alternatives to the prevailing institutional form of central-banking-cum-fiat-money.

The latter aspect, because of its counterfactual character, is also of a more speculative nature. In particular the search will be for the type of institutional arrangements in the field of money and banking that are most likely to minimize the tendency for the market rate of interest to be reduced below the natural rate.

Using an illuminating metaphor, Hayek pointed out that "(…) money by its very nature constitutes a kind of loose joint in the self-equilibrating apparatus of the price mechanism which is bound to impede its working - the more so the greater is the play in the loose joint." (Hayek 1941, 408)

The existence of money breaks any rigid link between production and demand. That the link between

production and demand is a loose one captures the idea that the relationship between production and demand in a monetary economy will depend upon how well money performs its intermediary role. Hayek recognized that monetary changes can cause relative prices to move in ways that will create discrepancies between supply and demand. Prices can systematically contain wrong information, which leads economic activity away from equilibrium. Production can thus be temporarily misdirected.

However, from a comparative institutions perspective, the nature and the extent of these disturbances will depend not merely upon monetary policy but also, and even more fundamentally, upon the institutional framework (monetary constitution) which is in place. The economist would not want to imply that the extent of money´s "loose-jointedness" - or the amount of "play in the loose joint" - and its effects are unrelated to the institutional structure.

Combining these insights, it is now possible to characterize more adequately the task of monetary analysis and business cycle theory from a comparative institutional perspective. The crucial point is to devise society´s monetary constitution in such a manner that the extent of money´s "loose-jointedness" and the harmful effects thereof are "minimized" so to speak, that is, reduced to a conceivable minimum, while at the same time the general benefits which money as a generally accepted medium of exchange confers upon society are safeguarded. The essential "loose-jointedness" of money means that the use of a generally accepted medium of exchange (money) is not only welfare-enhancing, that is, it brings gains to society, but that it equally entails certain costs and risks.

Therefore society´s monetary institutions should be devised in such a manner that an "optimal" balance is attained between assuring the benefits and gains the use of money confers on society on the one hand and avoiding (or limiting) the costs and risks resulting from the "looseness of the linkage" provided by money on the other. While the economic system clearly cannot and should not be turned into a barter-like system, since money can never be strictly neutral, the task is nevertheless to make explicit the kind of monetary "rules of the game" that will allow to approximate as much as possible this "optimum". Austrian business cycle research thus comprises an important comparative institutional (or, as some would say, "constitutional") dimension.

3. A Reminder: The Austrian Theory of the Business Cycle

The Austrian theory of the business cycle emerges from a straightforward comparison of savings-induced growth which is sustainable, with a credit-induced boom, which is not sustainable.[2] An increase in saving by individuals and a credit expansion orchestrated by the central bank set into motion market processes whose initial allocational effects on the economy´s capital structure are similar. The ultimate consequences of the two processes stand in stark contrast, however. Whereas saving entails genuine growth, credit expansion leads to boom and bust.

If market participants´ time preferences, *i.e.* their degree of preference for present over future goods, falls, then they will tend to consume less now and save and invest more; at the same time, and for the same reason, the rate of interest will fall. A decrease in the interest rate causes resources to be transferred from the

late and final stages to the early stages. The structure of production is thus modified. It will now be depicted by a Hayekian triangle with a longer time-dimension leg and an (initially) shorter consumable-output leg. The time profile of consumption thus becomes skewed toward the future. In a genuine savings-induced boom increased investment in longer-term projects is thus consistent with the underlying economic realities.

This is not true in the case of a policy-induced artificial boom. In the hypothesis of an artificial boom, the change in the interest-rate signal and the change in resource availabilities are at odds with one another. If the central bank pads the supply of loanable funds with newly created money, the interest rate is lowered and long-term investment projects are being initiated, just as in the case of an increase in saving. However, in the absence of an actual change in time preferences, no additional resources for sustaining the policy-induced boom are freed up. In fact, facing a lower interest rate, people will save less and spend more on current consumables. In other words, the central bank´s credit expansion drives a wedge between saving and investment; it results in an incompatible mix of market forces. Malinvestment and overconsumption will be observed. Of course, as the market guides these new long-term investment projects into their intermediate and later stages, the underlying economic realities become increasingly clear and ultimately re-affirm themselves.

Entrepreneurs will encounter resource scarcities that are more constraining than was implied by the pattern of wages, prices, and interest rates that characterized the early phase of the boom. The bidding for increasingly scarce resources and the accompanying increased demands for credit put upward pressure on the

interest rate. On the eve of the bust, "distress borrowing" allows some producers to finish their projects and minimize their losses. At the same time, the high interest rates cause people to curtail their consumption and to save instead. Where "overconsumption" had first been observed, "forced saving" now takes place. The change in saving is far short of sufficient, however, in comparison to the saving actually needed to see the policy-induced investments through to completion. The ensuing period of liquidation involves higher-than-normal levels of unemployment.

Clearly the consumption and investment magnitudes will not simply return to their previous pre-boom sustainable levels. Given the intertemporal disequilibrium created during the boom, needed liquidation may well take the economy inside its production possibilities frontier (PPF). Under favourable conditions, market forces may bring business decisions back into conformity with actual consumer preferences. There is clearly also a danger, however, especially in the face of ill-conceived policy actions by the monetary and fiscal authorities, that the recovery phase will be preempted by spiraling downward into deep depression, that is, self-reversing changes in the capital structure may give way to a self-aggravating downward spiral in both income and spending.[3]

4. The Problems of Central Banking

The stabilization policies of the central banks have not led to the disappearance of the business cycle. Furthermore the problems facing systems with a central

bank are undeniably real and have to some degree also been acknowledged in the orthodox mainstream literature.

In this respect reference can be made to the literature dealing with time inconsistency and the inflation bias under discretionary policy.[4] The analysis of time inconsistency in monetary policy has provided a theoretical framework for thinking formally about credibility issues, and has led to an examination of the actual incentives faced by central banks. The further development of this strand of thought has led to an attempt to spell out some normative implications for the design of monetary institutions. Thus it has been suggested that the government might for instance delegate monetary policy to an independent central banker that is "conservative" in the sense of placing a higher relative weight on inflation stabilization than does society as a whole; or the government might attempt to design an optimal incentive structure by offering the head of the central bank a state-contingent wage contract. (Obstfeld and Rogoff 2002, 641 ff.)

Nevertheless, in all of this literature, the prevailing institutional form of central-banking-cum-fiat-money remains unquestioned and its continuing existence and legitimacy are in fact taken for granted. In other words, these authors do not extend their normative and critical reflection towards proposals for more radical alternatives to the prevailing institutional regime of central-banking-cum-fiat-money.

5. Hayek´s Proposal for the Denationalisation of Money

The scientific interest in more radical alternatives to prevailing institutional forms had been stimulated

towards the end of the 1970s by F. A. Hayek´s proposal for the denationalisation of money. (Hayek 1991)

Hayek envisioned a market in which all issuers, public and private, would offer non-redeemable currencies, each currency constituting its own monetary standard. Each private issuer would pledge to maintain purchasing-power stability in terms of a particular basket of goods, but this pledge would not take the form of an enforceable redemption contract. Thus Hayek, who had always been skeptical toward free banking, did *not* suggest free competition among banks offering wholly or fractionally backed liabilities redeemable for a commodity money. Instead he speculated that private producers of fiat-type monies bearing legally protected brand names would outcompete both commodity-based monies and government fiat monies by promising greater stability of purchasing power. Each issuer would pledge to hold the purchasing power of its money constant in terms of a specified price-index basket, but the pledge would not be a legally enforceable commitment of the sort embodied in a redemption contract.

Hayek´s proposal has provoked at least two forms of fundamental criticism. First, as Prof. Rothbard has reminded, it might be doubtful whether Hayek´s system would be able to pass the market test in view of Mises´s regression theorem. (Rothbard 1997a, 154 ff., 366 ff.) The feasibility of private fiat-type money is thus doubtful in view of the regression theorem.[5] The latter raises doubts about whether it would be possible at all to get a system based on private fiat-type money off the ground in the first place. A new fiat money must at first be linked to an established money through a fixed rate of exchange. Otherwise would-be users of the new money will

have no means for assigning any future purchasing power to it and no basis for demanding definite quantities of it. Prof. Selgin has likened the initial redeemability of a new fiat money (or fixed exchange rate) to a "launching vehicle" that can fall away once the new currency gets into orbit.[6]

Prof. White has pointed to a further problem with respect to Hayek´s proposal: this system might face a time-inconsistency type of problem. (White 1999, 227 ff.) The question can be raised of whether the keeping of such a non-enforceable pledge would be consistent with profit maximization. Arguably a profit-maximizing fiat-type issuer could choose to hyper-inflate its own brand of money, and would do so if staying in business promised less than the one-shot profit available from an unanticipated hyperinflation.

As a result of these criticisms, in more recent times monetary economists working in this tradition have devised different proposals for fundamental monetary and financial reform. Although some of these use Hayek´s work as a source of inspiration, most recent proposals deviate considerably from Hayek´s specific original proposal in their "details".

6. The Strong Claims of the Fractional-Reserve Free Bankers: A Manifold Critique

6.1. Introduction

The case for fractional-reserve free banking consists of a conglomerate of more or less interrelated

claims, all of which are highly questionable on theoretical grounds. These claims are not limited to the contention that fractional-reserve free banking, if it were installed, would lead to the disappearance of the business cycle.

Nevertheless it has to be acknowledged that the theoretical starting point of the fractional-reserve free bankers is not entirely without merit to the extent that it is recognized that the complex issues and problems raised by the loose linkage provided by money – Hayek´s "loose joint" – can be illuminated against the background of Say´s Law. The free bankers recognize that the textbook model of the Classical economists should be complemented by an account of how money and the banking system work to ensure the valid insight behind Say´s Law. They thus conceive of Say´s Law as a conditional proposition.[7] They generally misconstrue the classical meaning of Say´s Law, however; in particular they misidentify the appropriate "monetary rules of the game" of a free society.

As will become clear further, it is not too difficult to offer a convincing conceptual refutation of the claim that the business cycle would disappear under a system of fractional-reserve free banking. Simply refuting that claim, however, might still leave open the possibility that recurrent business cycles and systematic intertemporal discoordination are inherent in the normal functioning of the free, unhampered market. Therefore a more comprehensive critique of fractional-reserve free banking is appropriate, in order to establish the correct meaning to be attached to the notion of free banking, which is different from the one favoured by the fractional-reserve free bankers.

Since the "free market" is ultimately always defined in terms of the institutional constraints and rules to which the actions and interactions of market participants are subject, attention is in this context also to be devoted to the ethico-juridical dimension and issues involved.

6.2. Historical Evidence

Historical evidence generally supports the case against fractional-reserve free banking. (Huerta de Soto 2006, 701 ff.) The main dissenter is Prof. L. White who has argued that the Scottish free banking system had operated for over a century (1716-1845) in a stable, efficient and competitive manner. (White 1995)[8]

Historical evidence by itself, however, because of its highly complex character and since it is often incomplete and sometimes also ambiguous, is unlikely to establish the case against fractional-reserve free banking in a fully convincing manner. Therefore a thorough conceptual critique of fractional-reserve free banking is required. This critique focuses on the ethical and legal perplexities and inconsistencies inherent in the proposal for fractional-reserve free banking, as well as on an exposure of the theoretical flaws in the fractional-reserve free bankers´ account of the working characteristics of this system.

6.3. The Mechanics of Fractional-Reserve Free Banking According to its Advocates: Would Fractional-Reserve Free Banking Be Proof Against Systematic Intertemporal Discoordination and Business Cycles?

The fractional-reserve free bankers distinguish between a "non-arbirary" and an "arbitrary" change in the supply of bank-issued liabilities according to whether or not such changes are effectuated by the banks in response to a change in the desire of the public to hold on to bank liabilities. Since the effects of credit expansion by the banks are basically similar whether or not the credit expansion is accompanied by changes in the demand to hold bank liabilities, the distinction between an "arbitrary" and a "non-arbitrary" expansion is of little intrinsic interest. It is here maintained only for the sake of the argument.[9]

6.3.1. "Non-arbitrary" credit expansion under fractional-reserve free banking: the demand-elasticity of the currency supply

According to the advocates of a system of fractional-reserve free banking, one of the main virtues of such a system consists in the demand-elasticity of the currency supply, not only at the level of the individual bank – *i.e.* the supply of money by an individual bank is *demand-elastic* – but also in case of a *general* rise in the public´s desired holdings of currency across all brands: a fall or rise in the "velocity" of bank-issued money leads to an offsetting change in the stock of bank-issued money by changing the money multiplier.

In terms of the equation of exchange, the system makes *M* move to offset changes in *V*, thus acting to automatically stabilize *MV*, nominal aggregate demand for goods, or *Py*, nominal income. Fractional-reserve free banking would thus "automatically" discriminate between

real disturbances and monetary disturbances, reacting only to the latter, thus also implementing the so-called productivity norm.

Implicit in the productivity norm as espoused by contemporary proponents of fractional-reserve free banking is the idea that no adverse business-cycle consequences as described by the Austrian theory will follow an expansion of the stock of bank money that merely accommodates a prior increase in the demand for money holdings. Such an expansion, instead of adding to the flow of spending, merely keeps that flow from shrinking. The expansion therefore serves not to trigger a boom but to avoid a bust.

A rise in the demand to hold bank-issued money relative to spending implies a fall in velocity (or the ratio of spending to money balances). By reducing spending flows, and thus the "turnover" of bank-issued money, the shift reduces the probability of large adverse clearings. Liquidity cost thus falls, and the banks can safely keep more liabilities in circulation, and correspondingly can make more loans. The rise in its liabilities restores equilibrium by pushing back up the marginal benefit of holding reserves for the representative bank.

In other words, a *general* rise in the public´s desired holdings of currency, shared by *all* the banks, creates the reverse of a global in-concert over-issue. The banks´ reserves are made more than sufficient by the reduction in liquidity costs from reduced spending per unit of currency. The reduction in *gross* clearings reduces desired reserves by reducing the chance of reserve depletion for any given starting level of reserves. In response, the banking system will expand its

liabilities, raising banks´ desired reserves, until desired reserves again match the given stock of reserves.

In these ways, the supply of money by *the banking system as a whole* is demand-elastic: the banks as a group find it profitable to respond to a general rise in the public´s desired holdings of currency by raising the actual circulation.

In the new equilibrium, the argument goes, real intermediation through the banking system has increased: the banking system has a larger volume of liabilities and a larger portfolio of assets. This indicates that the voluntary holding of bank-issued money is one component of the supply of loanable funds. To hold a bank´s currency or deposit liabilities is to lend it funds which it can then intermediate (re-lend).

An important pre-supposition in the foregoing account is that to hold inside money is by itself (and by definition) to engage in voluntary saving. The aggregate demand to hold balances of inside money is a reflection of the public´s willingness to supply loanable funds through the banks whose liabilities are held. Under this assumption, if the sacrificed spending is consumption spending, the increase in the holding of bank-issued currency represents a *net* increase in the supply of loanable funds.

The pre-supposition is questionable, however, and in fact not correct. The concept of saving is confused with the concept of demand for money; it is not correct to maintain the view that to hold "inside" money is to engage in voluntary saving. The holding of money, that is, the act of not spending it, is not equivalent to saving. (also Huerta de Soto 2006, 694-700)

The consumption/investment proportion, that is, the decision of how much of one´s money to spend on

consumption and how much on investment, is determined by a person´s time preference, that is, the degree to which this person prefers present consumption over future consumption. On the other hand, the source of his demand for cash is the utility attached to money, that is, the personal satisfaction derived from money in allowing him immediate purchases of consumer or producer goods at uncertain future dates. An increase in the balances of "inside" money that the public wishes to hold is perfectly compatible with a simultaneous increase in the demand for consumer goods and services if the public decides to decrease its investment expenditure.
If the demand for money increases while the social stock of money is given, this additional demand can only be satisfied by bidding down the money prices of non-money goods. The relative price of money versus non-money will have changed.[10]

However, it is neither possible nor necessary for the banks to respond to a general rise in the public´s desired holdings of bank liabilities by raising the actual circulation.

First, it is *not possible* for the banks to effectuate any such off-setting. The adjustment will already have taken place. In particular it will be noted that the market participants to which a particular bank grants, say, additional loans and the bank customers whose demand for its liabilities has risen are not necessarily the *same* market participants. It is not unlikely that these two groups will be composed of *different* market participants. It is even conceivable that a particular bank experiences positive clearings because *other banks* temporarily hold its currency instead of entering it into the clearing process. Nor is it to be excluded that a particular bank, after finding the level

of its reserves greater than desired, grants loans to *new* customers, that is, market participants who up to that point in time were not (yet) customers of the bank.

Thus the way in which the system accommodates rises in the demand to hold bank liabilities works *indirectly* via the appearance of positive clearings. There is nothing in the adjustment process that guarantees that the additional quantity of bank liabilities supplied in response to such a rise in demand, say, through the granting of more loans, is put directly in the hands of those very *same* market participants who have increased their willingness to hold on to bank liabilities. It is this fact that ultimately throws some serious doubts upon the stronger claims of the advocates of fractional-reserve free banking, such as that the system, through its inherent tendency towards monetary equilibrium, will equally and simultaneously tend towards a situation from which forced saving is absent, in which notional demand equals effective demand and in which the benefits derived from the operation of Say´s Law are maximized. If the analysis is conducted at a sufficiently low level of aggregation and if the precepts of methodological individualism are consistently followed, then all of these claims become highly questionable.

Second, it is *not at all necessary* to accommodate any general increases in demands of market participants to hold on to bank liabilities. Consider a market exchange between market participants A and B, A selling quantities of a particular commodity to B. A deal or transaction between A and B will only take place if the minimum money price at which A is willing to sell a unit of the commodity, that is the minimum price he wants to obtain for one unit of the commodity, is no higher than the maximum price B is willing to pay in exchange of a

unit of the commodity. Suppose that a "general" increase in money demand takes place in the sense that both A and B increase their demand for money balances. On the seller side this means that A will sell a definite quantity of the commodity for a smaller amount of money, or stated otherwise, that A will offer a greater amount of the commodity for a given quantity of money. That is, A is willing to sell at a lower minimum price. On the buyer side, this means that B will offer a smaller amount of money for a definite quantity of the commodity, or will accept only a greater amount of the commodity in exchange for a definite quantity of money. In other words, B is now willing to buy only at a lower maximum price, *i.e.* the maximum price he is willing to pay for one unit of the commodity is now lower. If any transaction between A and B still takes place, the money price of the commodity at which such a deal will be made will tend to be lower than before. In other words, a spontaneous adjustment of quantities bought and sold at a lower money price for the commodity will tend to ensue.[11]

6.3.2. The possibility and likelihood of business cycles and systematic intertemporal discoordination as a consequence of "non-arbitrary" credit expansion under fractional-reserve free banking

In fact, the scenario of a "non-arbitrary" in-concert expansion, as sketched by the free bankers, is quite problematic.

First, it is not made clear why we should ever expect a *general* change in the public´s desired holdings of liabilities, shared by *all* the banks, to occur in the real world. It seems more likely that *some* banks will experience an increase in the public´s willingness to hold on to their respective currencies, while others will not, or not to the same extent.

Furthermore, it can easily be demonstrated that it is precisely the feature of free banking that is considered its main and most outstanding virtue, namely the demand-elasticity of the currency supply or the fact that a fall or rise in the "velocity" of bank-issued money leads to an offsetting change in the stock of bank-issued money by changing the money multiplier, which makes the system particularly prone to business cycles and intertemporal discoordination, possibly on an economy-wide scale.

Consider a situation in which a *general* rise in the public´s desired holdings of currency actually occurs, ex hypothesi across all brands and in the closed-economy case. This is a situation of which we would have to say, according to the inherent logic of the theory, that it is characterized by a global in-concert under-issue. In other words, what happens is the reverse of a global in-concert over-issue. The banks´ reserves are made more than sufficient by the reduction in liquidity costs from reduced spending per unit of currency. This results from the fact that the reduction in *gross* clearings reduces

desired reserves by reducing the chance of reserve depletion for any given starting level of reserves. As a consequence an expansion by the whole banking system of its liabilities, say, by extending loans, is fully justified, that is, according to the theory. Following the model of the fractional-reserve free bankers, this expansion is what will actually restore monetary equilibrium.

Now suppose that those loans are granted to entrepreneurs who spend the additional money on capital goods and launch investment projects, thus widening and deepening the investment goods structure. It will be noted that there is in the model of the free bankers nothing that precludes this scenario. These investment projects will be undertaken in the expectation that a particular flow of credit will be forthcoming in order to complete the lengthier production structure. Now suppose, however, that the public´s desired holdings of currency change again but that this time they decline; again there is nothing in the system to preclude this scenario. The public spends more again, cutting back its money balances previously built up. According to the inherent logic of the theory this leads to a situation *as if* the banks have engaged in an in-concert over-expansion. In such a situation the risk of reserve depletion is increased because the increase in *gross* clearings widens the reserve-loss probability distribution. Each bank will feel its risk of running out of reserves too great. In the hypothesis of a closed system that has a limited quantity of total reserves available, relief from the excess demand for reserves requires the banks to contract their liabilities in order to re-establish their desired levels of illiquidity risk.

However, the investments initially made possible by the previous expansion will now inevitably and necessarily reveal themselves as malinvestments. The newly started (lengthened) capital structure will now reveal itself as unsustainable. The flow of credit needed to complete the lengthier production structure (processes) will not be forthcoming as erroneously expected. The explanation of this fact is not too difficult to find. The new investments in more roundabout production processes were not warranted by genuine previous saving which is needed to sustain these production processes. It will therefore be impossible to complete these production processes.

The free bankers fail to see this problem because they conduct their theorizing on too high a level of aggregation and do not incorporate heterogeneous capital into their model; in other words, their approach is a predominantly macroeconomic one. The conclusion is that free banking will endogenously generate business cycles and economy-wide malinvestment precisely in the type of situations in which according to the fractional-reserve free bankers this would *not* be the case, that is, in the situations in which changes in the stock of bank-issued money supposedly "merely" accommodate changes in the "velocity" of bank-issued money. The fundamental reason is related to the fact that the lending and investment policies of the banks are determined, under free banking, by changes in the demand of the public to hold bank-issued money (the greater or smaller willingness of the public to hold on to bank liabilities), and not to changes in the social rate of time preference (the greater or smaller willingness of the public to forego present consumption and to save). The demand for money

and time preference are distinct praxeological factors, however.

6.3.3. The possibility and likelihood of business cycles and systematic intertemporal discoordination as a consequence of "arbitrary" credit expansion under fractional-reserve free banking

The previous account relates to what from the perspective of the model of the free bankers can be characterized as a *non-arbitrary* in-concert expansion, that is, an in-concert expansion that "merely" accommodates a general increase in the public´s demand for bank liabilities. From the perspective of the fractional-reserve free bankers, the question of whether fractional-reserve free banking would be prone to business cycles and systematic malinvestment is indeed mostly reduced to the problem of whether an erroneous and cycle-generating *arbitrary* in-concert expansion is still conceivable under fractional-reserve free banking, that is, a credit expansion that is not accompanied by an increase in the demand to hold bank liabilities. It is then pointed out that such an expansion, although conceivable, is far less likely than under central banking since banks in a competitive system have strong incentives *not* to arbitrarily expand in unison.

The main idea underlying the argument against the likelihood of arbitrary in-concert expansion by all banks involves a reference to the widening (or broadening) of the representative bank´s probability distribution over reserve losses. If all banks expand in concert, it may

well be true that each bank´s average daily net clearings may be no different, but the increase in gross clearings implies an increase in the variance around that mean, creating a need for additional precautionary reserves.[12]

An idea similar to that which underlies the square-root law of precautionary reserve demand - and which is derived from a well-known proposition of probability theory - can be used, however, to argue that competitive banks can obtain economies of scale by pooling their reserves of high-powered money. Where possible drains on the reserves of individual banks may be assumed to be independent of one another, a familiar proposition of probability theory ensures that a given degree of security for each bank can be obtained with a centralized reserve that is smaller than the sum of reserves which each bank individually would have to hold. (Laidler 1992, 197) Thus a tendency towards centralization in banking may come to prevail, strengthening any tendency towards general in-concert expansion. Moreover, the fact is sometimes overlooked that the functioning of the clearing mechanism/system provides no check of the possibility of in-concert expansion, *i.e.* expansion by all banks or the entire system at once.

6.3.4. The fractional-reserve free bankers´ questionable uses of quantitative probability concepts

More generally, the methodological legitimacy of the use of quantitative probability concepts in the present context, and in particular of the law of large numbers, can be questioned.

In a different context the Viennese philosopher K. Popper had made the useful point that all applications of the laws of large numbers require an objective interpretation and that there exists a fundamental conflict between subjective interpretations and all applications.[13]
The expression "objective interpretation" refers to a theory such as the frequency theory which was developed by Richard von Mises. According to this theory, the applicability of the probability calculus is contingent upon the presence or availability of a *Kollektiv*. This means that the application of quantitative probability theory relies on a pre-supposition of *homogeneity* with respect to the phenomena to be subjected to study.

However, the phenomena belonging to the domain of human action do not, in general, fulfill this requirement. Human action is not a random phenomenon, nor is it deterministic. It is indeed better characterized as "purposeful behaviour". Therefore there can be no numerical probability applied to specific individual events. Prof. L. White violates this methodological precept when he implies that a binomial probability model should be used to analyze interactions between banks and between banks and their clients. (White 1995, 7)
The problem identified here is a mistaken pre-supposition about the fundamental nature of the phenomena involved, rather than incorrect mathematical reasoning.

It may seem somewhat strange that the problems of money and banking give rise to epistemological questions concerning the most appropriate interpretation of the probability calculus, the legitimacy of using quantitative probability concepts etc., but such questions cannot be avoided. It was Edgeworth who wrote

already in 1888 that "probability is the foundation of banking". (Edgeworth 1888, 113)

Consider again the question or problem of whether a fractional reserve free banking system would endogenously generate business cycles. The answer to this question is related to the so-called in-concert over-expansion thesis. It is a well-known fact that even if it is true that the inter-bank clearing mechanism limits and puts a check upon isolated expansionary schemes (expansion by an individual bank) it does not serve to limit credit expansion in a fractional-reserve free banking system if most banks decide to simultaneously expand their loans, *i.e.* to expand in unison.

The free bankers, however, counter this argument on the basis of an explicitly probabilistic argument. When the banks expand in unison, no bank suffers any increase in net average reserve demand, as the expansion does not lead to any change in the mean or expected value of net clearings for any of the expanding banks. But although perfect in-concert expansion does not affect any bank´s mean clearing losses, it does increase the variance of each bank´s clearing losses, and does therefore increase each bank´s precautionary demand for reserves. The so-called "square-root law" of precautionary reserve demand holds indeed that a bank´s demand for precautionary reserves for any fixed planning period will be proportional to the square root of bank-money payments made by its clients during the planning period.
The critical point made here is not that the "square-root law" is based on incorrect mathematical reasoning, although the law itself is more often cited than derived by its proponents. It is indeed a well-known theorem of probability theory that the standard deviation of a

binomial probability distribution grows like the square root of the number of trials.

The critical point made here is the more fundamental one of whether the process of payments from and to banks can be correctly conceived of as a random process, that is, a process of the same fundamental nature of, say, a binomial coin-tossing game. This is not obviously the case, a fact of which Edgeworth, one of the first expositors of the "square-root law", was already clearly aware.

Edgeworth was astute enough to point out that the conditions for the applicability of the *law of error* may not be fulfilled when he wrote that "it may be objected that some fluctuations in banking business are known to depend, not upon a fortuitous aggregation of small causes, but upon regular and unique events,(…)."(ibid. 114) He further added that "it is to be admitted that in banking, as in other departments, the law of error is fulfilled with various degrees of perfection. The rules of chance apply to the "many-dimpled" undulations of commercial fair weather, rather than to the solitary earthquake wave of a great crisis."(ibid. 115)

Further in his (1888) article, when discussing how to "solve a question which in the opinion of some is not devoid of practical interest, namely, how large an amount of uncovered Bank of England notes is it safe to issue now (…)", he went on writing that "[t]he reserve of the Bank of England presents peculiar difficulties. For as it descends, it is subject to influences which cannot be treated as fortuitous. It is pulled up by the actions of a little knot of persons (the Governor and Directors) raising the rate of discount. It is pulled down by the panic-stricken public acting, not

"independently," but like sheep. It acquires force by going. Returns so originated cannot be regarded as analogous to "errors of observation.""(ibid. 122)

Thus we conclude that *the first expositor of the "square-root law" gives evidence of a clear awareness of certain limitations to the applicability of the mathematical theory of probability to the solution of problems of bank management such as the determination of an adequate reserve level.* Edgeworth (1888) thus took care to formulate more reservations than more recent expositors have done. Clearly more recent expositors have not always manifested the same caution. Where the theory of probability cannot apply entrepreneurial understanding will resume its role.

One reason why some advocates of fractional-reserve free banking fail to see the problem of the instability of fractional-reserve free banking and of the ensuing inevitable tendency toward a centralized banking system, is thus that they are sometimes too easily implying or assuming that the management team of a fractional reserve free bank is in a position to determine the optimal reserve level in a straightforward manner using stochastic optimization techniques. This view in fact amounts to the contention that it is somehow possible to *insure* through the application of the law of large numbers the exercise of fractional-reserve banking since, as the argument runs, banks, in order to fulfill their customers´ normal requests for liquidity, and in accordance with the law of large numbers, allegedly only need to keep on hand, in the form of a cash reserve, a fraction of the money deposited with them in cash.

The reference in this area to the law of large numbers is thus equivalent to an attempt to apply the

principles of insurance techniques to guard against the risk of deposit withdrawals, a risk assumed in advance to be quantifiable and thus technically insurable. However, this belief is based on a misconceived idea of the nature of the phenomena under consideration. Indeed, far from the type of events which correspond to the natural world and represent an insurable risk, banking related phenomena fall within the realm of human action and are therefore immersed in *uncertainty* (not risk), which by its very nature is not technically insurable. (also Huerta de Soto 2006, 385ff.) Clearly the events related to customers´ more or less massive and unexpected withdrawal of deposits from a bank correspond to the sphere of human action and are characterized by uncertainty, which by its very nature is not technically insurable.

These fundamental reflections raise doubts about the possibility and likelihood of the banking system insuring itself against the likelihood of in-concert expansion and its adverse consequences (malinvestment, bank runs …) through uses of the law of large numbers.[14]

6.4. The Possibility of Redemption under Fractional-Reserve Free Banking

As has already become clear from the previous analysis, the fractional-reserve free bankers clearly and systematically underestimate the potential for malinvestment, intertemporal coordination failures and business cycles under free banking. There is still a different reason, however, why the free bankers fail to realize that free banking would be considerably less -

rather than more – stable than, say, a banking system based on a 100 per cent reserve requirement.

There is one respect in which central banking systems seem to be *prima facie* superior to a fractional-reserve free banking system. A key characteristic of a modern central bank is that it supports the banking system by acting as a *lender of last resort*. A lender of last resort stands ready to inject high-powered money into the system in the event of an internal drain. An "internal drain" occurs when the public´s increased preference for holding high-powered money prompts redemption of bank-issued money on a scale that threatens to deplete a fractional-reserve banking system of reserves, and so forces a sharp contraction in the quantity of bank-issued money.[15]

Under a regime of fractional-reserve free banking, however, there is no comparable "backstop" in case of a redemption run. Clearly the logical possibility of a major contraction under free banking due to a redemption run – comparable in effect to a shift in the deposit-currency ratio under central banking – cannot be excluded.

The fractional-reserve free bankers acknowledge the fact that increased demands for redemption of bank liabilities into specie would generate effects similar to the effects of a decline in the deposit-currency ratio under central banking. (see e.g. Horwitz 2000, 217)

One is almost tempted, at this point, to conclude that central banking is indeed obviously superior to free banking. As is explained further, this temptation must nevertheless be resisted.

The fractional-reserve free bankers distinguish between "inside money" and "outside money".

Thus Selgin writes:

"A demand may exist for either of two kinds of money: "base" or commodity money-the ultimate money of redemption-and inside money (bank notes and demand deposits) redeemable in base money. In a mature free banking system, commodity money does not circulate, its place being taken entirely by inside money. Such being the case, the unqualified expression "demand for money" used in this study will henceforth mean demand for inside money." (Selgin 1988, 54)

The fractional reserve free bankers thus not only distinguish between "inside money" and "outside money"; significantly they assume that "demand for money" always means demand for inside money; not only does commodity money not circulate; it will almost never be held by market participants outside the banking system.
It is assumed that the entire amount of commodity money is held by the banks as a reserve in their vaults.

Considering the entire banking system´s capacity for credit expansion and new deposit creation (Huerta de Soto ibid. 240), it can easily be demonstrated that the net deposits created by the banking system amount to:

$$D_N = d/[c + f/(1-f)] \qquad (1)$$

where

d : the money originally deposited in the bank´s vault;

c : the cash or reserves ratio maintained by the bank;

f : the percentage of money which filters out of the system.

The money multiplier formula obtained by fractional-reserve free bankers Selgin and White is equal to M/B = 1/r or M = B/r with r = R/M. (Selgin and White 1994, 20) This is basically the formula given previously as (1) but with f assumed equal to zero:

$D_N = d/c$.

The fractional reserve free bankers indeed assume that f=0, or, equivalently, that B = R. The fractional-reserve free bankers lay emphasis on the fact that the free banking money muliplier is thus independent from the public´s desired currency-deposit ratio. (Selgin and White 1994, 20; White 1999, 67-68)

Nevertheless the assumption that B, base or commodity money, equals R, or that the entire amount of commodity money is held by the banks as a reserve in their vaults, is not justifiable on deductive grounds. It refers in fact to a special or "limiting" case and is presumably inspired by the fact that in some historical instances market participants behaved in this manner.

Clearly it is not plausible to assume *both* that outside money will not disappear and will subsist as a redemption medium *and* that the system will somehow be proof against redemption runs, or simply, against the willingness of some market participants to hold some commodity money outside the banking system. To the extent this assumption is not plausible, some more elaborate

formula like the one provided as (1) should be considered. If outside money does not disappear and if there is no market driven path to a purely fiat regime, then outside money is and remains the only *real* money, so to speak. Apparently a confusion is going on here between *money* and what is merely a *title to money*.[16]

A redemption run would here mean: a sudden and significant increase in the desire of the public to hold monetary units outside the banking system, that is, a sudden and significant increase in f. This type of event would entail credit tightening and possibly severe deflation.

Another claim of the fractional reserve free bankers now seems unjustified, namely that such a system would be better capable of coping with "deflationary pressures" than a system subject to a 100 percent reserve requirement. In fact the opposite is likely.

In the mainstream literature discussion regarding the susceptibility of free banking systems to crises of confidence has often centered around Douglas W. Diamond and Philip H. Dybvig´s (1983) influential model of bank runs, which has been viewed as showing that a harmful instability is inherent to *laissez-faire* banking.[17] In their influential paper *How Would the Invisible Hand Handle Money?* fractional-reserve free bankers Selgin and White (1994) correctly doubt that the run-prone contract posited by the Diamond-Dybvig model can plausibly be conceived of as a *laissez-faire* outcome and they explicitly consider several "contractual remedies" for the inherent and harmful instability of such a bank (Diamond and Dybvig 1983).[18]

Unfortunately these authors do not seem to realize that they thus implicitly admit not only that the type of run-prone contract posited by the Diamond-Dybvig model is

unlikely to be a plausible *laissez-faire* outcome, but also that the kind of fractional-reserve free bank they themselves favor is equally unlikely to be a plausible *laissez-faire* outcome. As regards the susceptibility of both types of banking arrangement to crises of confidence and runs, there is in this respect clearly no essential difference between a Diamond-Dybvig bank and a Selgin-White bank.

These authors´ objection that the Diamond-Dybvig bank issues only a peculiar debt-equity hybrid and thus lacks an equity cushion whereas real-world banks have a distinct class of equity-owners insulating depositors against all but the most improbable losses, neglects important considerations relating to the cost of capital and is thus not convincing.[19] The argument relies on the suggestion that an adequate amount of capital will weaken the incentive of depositors to run on the bank and that therefore a fractional-reserve bank needs sufficient capital in order to attract depositors. Capital itself is scarce, however. In order to attract a sufficient amount of capital on the capital markets and to subsequently maintain an adequate capital position, a fractional-reserve bank too will have to offer its actual and potential shareholders sufficient return on equity prospects, taking into account relevant risk levels. It does not yet follow from the fact that a fractional-reserve bank "needs" capital in order to attract depositors that owners of capital (savers, potential investors …) will have an interest in investing their savings in a fractional-reserve bank. In particular, this investment has to yield an adequate return, that is, a return that covers the opportunity cost or yield which could be obtained on an alternative investment opportunity (taking into account relevant risk-return

trade-offs). Of such alternative investment opportunities there are always many. This remains all the more true in view of the fact that the existence of an equity cushion as such will not necessarily entirely eliminate the incentive depositors may have to be first in line and to run on the bank in case of a crisis of confidence.

Finally, it is not clear why Selgin and White do not include 100 per cent reserve banking among the outcomes which would likely dominate fractional-reserve banking under true *laissez-faire*. This blind spot constitutes an important anomaly in their argument.

6.5. Would the Invisible Hand Vindicate Fractional-Reserve Free Banking?

The argumentation is not yet finished. The thesis has now been established that a system of fractional-reserve free banking would be prone to business cycles and systematic intertemporal discoordination as a consequence of credit expansion unbacked by genuine saving. The occurrence of depressions cannot be excluded either. Does this mean that a genuinely free society would be systematically plagued by these economic evils?

6.5.1. Market evolution and the evolution of rules

The answer is in the negative. A positive answer could only rest on the supposition that fractional-reserve free banking is fully compatible with the ethical and juridical principles underlying a free society. This supposition cannot withstand serious scrutiny, however.

In fact, for several reasons it cannot be credibly maintained that fractional-reserve free banking would pass the market test; in other words, fractional-reserve banking cannot be conceptualized as belonging to the set of institutions which would emerge as the outcome of an invisible-hand process, that is, a process in the course of which the individual rights of property and contract of all market participants would be correctly defined and strictly enforced.

One way in which this thesis can be substantiated is through the performance of an invisible-hand analysis. The invisible-hand approach to the analysis of monetary institutions and their origin was pioneered by the Austrian economist Carl Menger in his well-known explanation of the origin of money. (Menger 1994, 257 ff.; 1892 [1994]) In Carl Menger´s account the process that eventually leads to the institution of money is entirely driven by the separate and independent pursuit of individual interests, without any need to rely on deliberate coordination of individual efforts.

In more recent times the invisible-hand approach has been revived by the American philosopher Robert Nozick. (Nozick 1974) Nozick considers a type of invisible-hand processes by which a particular pattern P can be produced and which he characterizes as filtering processes. Through filtering processes can pass only things fitting P, because processes or structures filter out all non-P´s. If there is a filter that filters out (destroys) all non-P Q´s, then the explanation of why all Q´s are P´s (fit the pattern P) will refer to this filter. (Nozick 1974, 21-2)

The point of performing an invisible-hand thought experiment is thus to arrive at useful hypotheses about the relationship between certain (kinds of) filters and

the types of outcomes that can be expected to emerge under the operation of these filters, and about how different sorts of filters lead to different sorts of outcomes.

Invisible hand accounts thus provide us with interesting information about the general relationships between certain types of "filtering processes" (conditions, limiting constraints) on the one hand and the kind of outcomes that can be expected to emerge under the operation of these filters, conditions or constraints on the other.

The Mengerian account about the origin of money provides an answer of this sort; it is sufficient to assume that acting individuals separately and independently pursue their own interests, that they freely engage in exchanges, while supposing that in the process they do not violate other individuals´ legitimate property rights. In other words, it is not necessary to rely on any concerted collective effort or deliberate coordination of individual efforts in order to explain the emergence of money.

To be sure, when discussing economic choice, spontaneous evolution and invisible-hand processes, it is important to be clear and explicit about what level is being considered. Menger´s evolutionary account about the origin of money is thus a story about evolution *within* rules. A commonly accepted medium of exchange can emerge in an institutional context in which property rights are already defined, that is, a context in which acting individuals respect (do not violate) other individuals´ property rights and rights of freedom of contract, in which they can thus freely enter into voluntary contractual arrangements with each other etc.

Apparently not only market outcomes, patterns etc. that emerge as the result of market interaction *within* the framework of rules defining or constraining such interaction, can be conceived of either as the result of deliberate choices or as emerging from evolutionary invisible-hand processes. The rules themselves which constrain market interaction can also become the object of an invisible-hand analysis.

In the present context it is assumed that the theoretical question considered here with respect to the possible origins of fractional-reserve free banking requires an *extension* of the invisible-hand approach to the level of the rules themselves which constrain market interaction, for instance the rules of the law.
It cannot simply be assumed, however, that both kinds of evolutionary process are basically of a similar kind. The processes of institution formation cannot simply be conceptualized as a kind of market for institutions. There is no market for institutions in the same sense in which there is a market for, say, potatoes.

This insight raises an important further question: What is the selection mechanism operating at the level of the evolutionary process with respect to the rules that constrain market interaction, such as the rules of the law? What is the nature of the cultural selection process through which some rules are selected (for) and other rules are eliminated or prohibited from emerging or subsisting?

Obviously, and in particular if the outcome of this evolutionary process is to be characterized according to some pre-defined moral or legal-theoretic standard, or with reference to the notion of a "free" or "just"

society, this evolutionary process cannot be conceived of as a totally unconstrained or unqualified one.

Following F. A. Hayek, and admittedly simplifying matters somewhat for the sake of the argument, the solution which is proposed here consists in the suggestion that the selection process operating at the level of rules can be characterized in terms of the meta-rules followed by judges when deciding cases. Hayek was quite explicit about the meta-rule judges should try to implement when deciding cases:

> As in all other fields advance is here achieved by our moving within an existing system of thought and endeavouring by a process of piecemeal tinkering, or 'immanent criticism', to make the whole more consistent both internally as well as with the facts to which the rules are applied. (Hayek 1973, p. 118)

It is here assumed that the agents assisting primordially in the selection and evolution of rules are the judges.[20] Even if Hayek is not assuming that the judges of a natural law society would be systematically implementing libertarian ethical principles when deciding cases, he is implicitly assuming that legal rules and practices can be subjected to a consistency test and, consequently, that proposed rules or practices that are inconsistent with the accepted body of traditional law, will be weeded out in the evolutionary process through which legal rules are selected over time on the basis of court decisions. Or at least, on the basis of a normative reading of Hayek´s account of the role of judges in a free society, this is how it ought to happen.

It is important to realize, however, that the consistency criterion is not identical to the criterion

or the requirement that only "traditional" rules are to be selected. It does not follow from the mere fact that certain rules or juridical practices have *de facto* persisted over a long period of time and can in this sense be characterized as traditional, that these rules or practices *ipso facto* satisfy a consistency criterion; nor does it follow from the fact that certain practices have persisted over a long time, that they will satisfy or comply with any other meta-rule or quality standard such as a particular ethical ideal or legal-theoretic norm.

There is no reason to believe that the following of tradition *per se* is a reliable meta-rule to be recommended to or imposed upon judges. When it is asserted that judges follow or ought to follow tradition - such as when it is said that they decide cases on the basis of custom and precedent - it is more often implicitly assumed that the accepted body of existing and traditional law is itself the outcome of an evolutionary process implicitly governed by a particular meta-rule or criterion, such as a consistency norm, and which presumably warrants the "quality" of the resulting outcome. In other words, it is more often assumed that, through the critical efforts of legal experts, flaws, internal and external inconsistencies etc. have been progressively weeded out over time and removed from the body of accepted law.

As an illustration, the greatness of classical Roman jurisprudence does not reside in its "traditional" character *per se*. As Prof. J. Huerta de Soto clarifies:

"The occupation of classical jurist was a true *art*, of which the constant aim was to identify and define the essence of the juridical institutions that have developed

throughout society´s evolutionary process. Furthermore, classical jurists never entertained pretensions of being "original" or "clever," but rather were "the servants of certain fundamental principles, and as Savigny pointed out, herein lies their greatness." Their fundamental objective was to discover the universal principles of law, which are unchanging and inherent in the logic of human relationships." (Huerta de Soto 2006, 24)

It has been contended, and on the basis of respectable arguments, that the institution of fractional-reserve banking involves a juridical or legal contradiction or impossibility. (Huerta de Soto 2006, Ch. 1 and Ch. 3; Hoppe 2006, Ch. 6 and Ch. 7; Rothbard 1991) Granting the well-foundedness of these arguments, the proposition that the institution of fractional-reserve free banking cannot be expected to emerge as the outcome of a spontaneous invisible-hand process, and that the invisible hand would thus *not* vindicate fractional-reserve banking is then established by a simple syllogism.

If and to the extent that judges (or other agents assisting in the selection of rules) perform a consistency test when deciding cases, and if and to the extent fractional-reserve free banking cannot be consistently justified from a legal viewpoint (or involves a legal inconsistency or impossibility), then predictably fractional-reserve free banking will not subsist in a society governed by natural law. Such contracts will be systematically disapproved by the judges (or, more generally, by the agents assisting in the selection of rules).

Even from an intuitive viewpoint, this conclusion is plausible enough. Suppose that a bank and a customer somehow agree to enter into an attempted contractual arrangement which they label "fractional-reserve contract" and which allegedly has certain *prima facie* characteristics of a deposit contract (such as being "payable on demand"), except for the fact that contracting parties also explicitly agree that the bank will have to keep in its vaults only a fraction of the money deposited by the customer.

It is not too difficult to understand why such hybrid pseudo-contracts (or so-called fractional-reserve contracts) would not likely be very successful. Such arrangements would tend to systematically generate inherently conflicting expectations and thus become particularly susceptible to give rise to recurring conflicts and to become the source of repeated litigation. On the one hand depositors would expect to be able to redeem their notes continually and upon demand. On the other hand the banks could not expect to be able to fulfill all the promises they have made to redeem notes upon demand, since by assumption they have made many more such promises than they can possibly keep.

Furthermore, the costs accompanying such conflicts can be considered a particular kind of transaction costs. From the standpoint of the banks and their customers (depositors), the most obvious way to avoid such costs consists in the refusal to enter into such hybrid forms of contract. From the standpoint of the judges who have to decide cases in these matters, however, such pseudo-contracts will have to be invalidated.

Arguably a judge following a hypothetical meta-rule of the type "*Disallow types of contract that give rise to unnecessary or potentially excessive transaction costs*"

or even more simply "*Minimize transaction costs*" would systematically declare such contracts null and void, thus creating a suitable precedent. The meta-rule stipulating that judges ought to make sure that legitimate expectations match and do not conflict will in this case yield a similar outcome.

Fractional-reserve free banking is equally incompatible with libertarian ethical principles.[21] Thus when it is assumed that judges (or other legal experts having to decide about the validity of contractual arrangements) adjudicate on the basis of libertarian ethical principles, a similar conclusion follows as regards the problematic character of fractional-reserve free banking.

We thus seem entitled to conclude that under a variety of assumptions regarding the meta-rule followed by judges when adjudicating cases (considered hypothetically the major agents in society assisting in the selection and evolution of the rules of law), the institution of fractional-reserve free banking, rather than being a highly successful institutional form, would more likely be "unfit to survive" and thus be eliminated. The interaction patterns that would actually tend to develop as the outcome of invisible-hand processes would likely be such that the types of successful contractual arrangement between banks and bank customers would be of two kinds only: these contractual arrangements would be either of the irregular deposit contract type or of the monetary loan contract type, at the exclusion of hybrid (and inconsistent) types of contract.

To some degree this conclusion is further supported by the observation that in the actual world - or the world in which we live - the institution of fractional-reserve banking is actually maintained and kept into

existence by interventions and institutions which are easily recognized as being incompatible with the unhampered market, such as lenders of last resort, government-backed deposit insurance schemes, legal tender laws, laws that directly curtail the rights of depositors and so on. It is also further supported by the historical observation that in the absence of such extra-market devices and interventions, fractional-reserve banks have invariably tended to become bankrupt.

The central question we have asked previously was: How strong are the assumptions which have to be made with respect to the meta-rules (filters, constraints…) which in a free society govern the cultural evolution and selection process at the level of the rules constraining the actions and interactions of market participants, in order to ensure (so to speak) that a particular institutional form – *in casu* fractional-reserve free banking – will be either vindicated or eliminated in the process?

Assuming a Hayekian natural law society in which the major agents assisting in the selection of legal rules are considered to be the judges, we have arrived at the conclusion that it is sufficient to assume that the conduct of judges when adjudicating cases satisfies a general consistency constraint in order to admit of the conclusion that the institution of fractional-reserve free banking will be eliminated in the evolutionary process. This is not a particularly strong assumption or requirement. It asserts merely that judges will (or rather, ought to) try to make the law more coherent both internally and with, say, "the nature of things".

We have also been entitled to conclude, however, that under various assumptions regarding possible (other) meta-rules to be implemented by judges, a similarly

unfavorable verdict as regards fractional-reserve free banking seems justified. In a society where judges, arbitrators (or other "institutional entrepreneurs") implement the principles of libertarian ethics, fractional-reserve free banking would not emerge as the outcome of a spontaneous invisible-hand process either. And we can even conjecture that under the assumption that judges follow a still different meta-rule such as the minimization of transaction costs, fractional-reserve free banking would not pass the test. This means that the argument against fractional-reserve free banking, on the basis of an invisible-hand analysis, is fairly robust.

6.5.2. Free banking and the cost of capital

There can be little doubt that the ethical and legal-theoretical objections against fractional-reserve free banking by themselves already constitute a decisive refutation of the proposal for fractional-reserve free banking. There are reasons to believe, however, that even if from the outset fractional-reserve free banking were hypothetically considered fully legitimate from the ethico-juridical viewpoint, economic forces would work against it.

One author considers that in a perfectly free banking system, everyone must be free to offer any type of notes and to charge customers for his services in any way he can imagine. And any customer must be free to choose the kind of notes and the system of payment for services he prefers. Assuming that initially all monetary systems are based on 100-percent-reserves, it may seem that a transition towards fractional-reserve systems can be easily imagined to happen to the extent that these systems are preferred by the money producers and their

customers entering into mutually beneficial contracts. (see Salin 1998) Pursuing this line of argument, it is considered that if ever a 100-percent-reserve system is optimal - which supposedly means that it better meets the needs of producers and users of money substitutes - it will be selected by the market, and fractional systems will not survive.

This author pursues, however:

"It is quite true that, during the whole process of adjustment from one system to the other, there is a multiple creation of money substitutes, with all related effects (inflation, excess credits, over-investment, etc.). These effects are costly, but they may be viewed as a type of investment costs, those which have to be borne in order to shift from one given system to another preferred system." (Salin 1998, 64)

However, it should be kept in mind that there will obviously be winners and losers in this process. The market participants who bear these "investment costs" and those who reap the benefits will most likely be different persons. The "fractional-reserve contracts" between banks and their customers obviously entail external effects affecting the property of third persons who are emphatically *not* parties to these contracts. (see Footnote 21)

But even if we make abstraction from the issues regarding external effects resulting from credit expansion and from the ethico-legal questions involved, it is indeed far from obvious that fractional-reserve banking would be a successful institution and be selected by the "market".

One need only take the previous line of argument one step further to understand why this is true. When it is contended that a bank and its customers might enter into a *sui generis* contract, say, a deposit contract with a fractional reserve, which by both parties to the contract is considered to their mutual benefit, one should realize that on the part of the bank reference is ultimately made to the shareholders of the bank who are the residual owners. Especially from the viewpoint of such (actual and potential) shareholders of the bank, it is far from obvious, however, that a fractional-reserve bank will present itself as a particularly interesting investment vehicle for those capitalists who look for opportunities to invest their savings in the medium to long term, and who will take into account all opportunity costs, such as the forgone return on possible alternative investment opportunities as well as the relevant risk-return trade-offs.

The comparison to be made is then no longer exclusively with a pure deposit institution, but especially also with the type of bank that engages exclusively in pure financial intermediation. As appears clearly from a comparison of the typical balance sheets of a pure financial intermediary on the one hand and a fractional-reserve free bank on the other, the latter might well find itself in a disadvantaged position in the capital markets when it comes to securing an adequate amount of capital (equity).

Typical balance sheet of a fractional-reserve free bank

Assets	**Liabilities**
Specie (reserves)	Notes and Deposits

Bills/Loans	Equity

Typical balance sheet of a bank engaging exclusively in pure financial intermediation

Assets	**Liabilities**
Bills/Loans/ Participations	Medium and Long Term Debt
	Equity

On the one hand the specie reserve to be held by a fractional-reserve bank will generate an opportunity cost since these funds cannot be profitably invested. Nevertheless, as most advocates of fractional-reserve free banking agree, the bank will pay an interest return to depositors. On the other hand, a fractional reserve free bank will always remain subject to the risk of a redemption run in case it loses the confidence of the public. A pure financial intermediary is not subject to this kind of risk (even if it may have to guarantee a sufficient degree of matching between the maturity structure of its assets and the maturity structure of its liabilities). When the two situations are compared, the following tendency undeniably asserts itself: *ceteris paribus, the fractional-reserve free bank will tend to offer lower return prospects for a higher degree of risk.*

This obvious fact has escaped the attention of the fractional-reserve free bankers because in their model the amount of capital at the disposal of the bank (equity) is treated as a fixed parameter. In a more

dynamic and complete analysis, however, this assumption must be relaxed.

In a model of fractional-reserve free banking such as that proposed by Prof. L. White, holding an extra dollar of reserves implies a marginal opportunity cost, but also entails a marginal reduction in liquidity cost. Optimization requires an equalization of the marginal cost and the marginal "return" of holding additional reserves.

In a fractional-reserve bank, keeping an additional dollar "idle" as reserve has *both* a marginal return *and* a marginal cost. Therefore it makes sense to balance the two. In a loan or pure intermediation bank, keeping an (additional) dollar "idle" always has *only* a marginal cost, that is, there is no marginal return involved in holding "reserves", since the problem of incurring a liquidity cost does not arise in this form. No "reserves" are to be held.

From the viewpoint of potential shareholders seeking to invest their savings, however, the relevant alternatives are (1) investing their savings in a bank operating under the principle of fractional reserves versus (2) considering an altogether different possibility involving *no* marginal return of holding (additional) reserves (since no reserves are to be held), that is, a possibility in which the data of the model are altogether different.

For a potential shareholder these two possibilities always remain open (given an appropriate legal framework). Therefore the potential shareholder will take into account the foregone yield with respect to reserves to be held if he or she invests in a fractional-reserve bank as an opportunity cost that can be avoided if he or she invests in a loan bank. He or she will not

regard this forgone yield on reserves to be held as a cost *necessarily* to be borne if liquidity cost is to be reduced. Liquidity cost can be avoided altogether by choosing an altogether different alternative which need entail no foregoing of any yield on earning assets because no funds are, under this alternative, to be held as reserves in the first place. There is no reduction of liquidity cost to be balanced with forgone yield on earning assets under this alternative.

Therefore, the true liquidity cost of investing in a fractional-reserve bank, as against investing in a pure loan bank, is underestimated in this model, if the actual choice alternatives of potential shareholders are taken into account. Furthermore the potential shareholder will of course also take into account the risk inherent in the possibly run-prone character of the fractional reserve bank. *Within* the context of a fractional-reserve free bank, *i.e.* from the perspective of its management team, acting on behalf of shareholders/savers who have supposedly decided to put their money/savings at risk in a fractional reserve free bank, every additional dollar of reserves entails both a marginal gain and a marginal cost. However, from the broader choice perspective of the potential shareholder, facing a choice between a fractional-reserve free bank and alternative investment possibilities and taking into account all opportunity costs, there is *only* a marginal cost. There is no need to invest his or her money in a possibly run-prone fractional-reserve free bank in the first place. Alternatives such as a pure loan or investment bank would always be available under pure *laissez faire.* In this sense fractional reserve free banks might face an equity maintenance problem.

7. Conclusion

Defining and possibly also implementing the monetary institutions appropriate for a free society will likely become an issue of primary importance in the 21st century. Given the ongoing success of the proposal for fractional-reserve free banking, among economists within but to some extent also outside the Austrian School, the task we have undertaken in this essay, which is to expose several flaws and fallacies inherent in this line of thought, is fully warranted. Hopefully our critical reflections will stimulate further debate regarding this important subject matter.

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Notes

[1] Characterizations and/or defenses of fractional-reserve free banking are offered in Dowd (1993; 1996 *passim*), Garrison (1996), Horwitz (1992; 2000), Sechrest (1993), Selgin (1988; 1996, passim), Selgin and White (1994; 1996), White (1989; 1992; 1995; 1999). Among defenders of 100 per cent reserve free banking, mention should be made of Hoppe (1994; 2006 Chapters 6 & 7), Huerta de Soto (1994; 1995; 1998; 2006), Rothbard (1983; 1988; 1991; 1994; 1997a Chapter 18) and Skousen (1996); see also the papers in Rockwell (1992). On the interdisciplinary character of the debate, see Block (1988). The present debate is (only) to some degree reminiscent of earlier debates, see Daugherty (1942; 1943); also Rothbard

(1995, Chs. 5-7) and Mises (1978, 118-20). For a standard account of the role of central banks, see Goodhart (1988).

[2] For recent and excellent accounts of the business cycle see e.g. Alonso (2004), Huerta de Soto (2006), Garrison (2001), Skousen (1990). Chapter XX of Mises (1998) remains required reading.

[3] In fact it is this aspect of the downturn that primarily occupied Keynes´s attention in the *General Theory*. (Keynes 1997) The typically Keynesian scenario of a "sudden collapse in the marginal efficiency of capital" is most likely to occur during a period in which the counter-movements of a boom-bust cycle have already begun to make themselves felt.
On "secondary depression", see also Huerta de Soto (2006, 453-56).

[4] In particular reference is to be made to the literature on "rules" versus "discretion" in monetary policy, see in particular the extensive literature following Kydland and Prescott (1977), Barro and Gordon (1983a, 1983b), for an overview of recent developments, see Walsh (2001, Ch. 8).

[5] On the regression theorem, see Mises (1981, 129-46) and Rothbard 2004, 268-76). Mises devised the regression theorem to solve what he characterized as a circularity problem: on the one hand we resort to individual value scales and demand schedules in order to explain the formation of money prices on the market while on the other hand every time a unit of money enters in an individual´s value scale it will do so in virtue of its marginal utility, that is, its serviceability in exchange rather than in direct use, or its purchasing power ("objective exchange value"), which itself presupposes (or depends upon) an already given structure of money prices for the various goods. Mises argued that although the value of money today depends upon today´s demand for money, today´s demand in turn depends, not on the value of money today, but on its value (purchasing power) yesterday. As we regress backwards in time, we must eventually arrive at the original point when people first began to use gold as a medium of

exchange. If the basis of the present purchasing power of any money is some past purchasing power to which agents refer in forming their expectations, then a new fiat money cannot be created ab ovo. A new fiat money cannot be introduced "independently". Only a commodity-based money can be both new and independent.

[6] As Prof. Selgin writes:

"A fixed exchange rate must (…) serve as a "launching vehicle" for placing any new fiat money into circulation. Once the new money is in circulation, that is, once it is being widely employed as a medium of exchange, the fixed exchange rate used to launch it can be jettisoned without undermining the money´s continued acceptance, just as a rocket can be jettisoned once a satellite is in orbit. The new money, like the satellite, may then continue to circulate (albeit, if history is any guide, at an ever-depreciating value) by means of that inertia which "tends to perpetuate an entrenched use" (…)."(Selgin 1994, 811)

Thus a new fiat money must be linked to some established money to have a plausible prospect of getting off the ground.

[7] See Sechrest (1993, 49) and Horwitz (2000, 86). For Jean-Baptiste Say´s statement of the law bearing his name, see Say (2001, 132-40); a contemporary statement of Say´s Law is contained in Reisman (1998, Ch. 13).

[8] The difficulties inherent in White´s historical thesis are highlighted in Huerta de Soto (2006, Chapter 8), Rothbard (1988), Sechrest (1988); most authoritative from a historical perspective is Checkland (1975).

[9] The terminological distinction which advocates of fractional-reserve free banking implicitly or explicitly make between "arbitrary" and "non-arbitrary" credit expansion - and which was suggested to this author in personal communication - is not essential and in fact itself arbitrary. Under the conditions specified by the theory of the business cycle, any credit expansion unbacked by an increase in genuine saving, will generate a boom-bust cycle.

[10] The implicit definition of saving employed by the fractional reserve free bankers is nevertheless one that has become very common. At least since Keynes´s *General Theory*, saving has been defined as "the excess of income over consumption". (Keynes 1997, 62)

[11] In this connection reference is also sometimes made to a so-called who-goes-first type of problem. The falling price level, the argument goes, is a public good of sorts and each actor wishes to reap the benefits of the needed decline, but no one is willing or able to bear the cost of starting the process. With everyone trying to free ride off the desired result, it never occurs. (see Horwitz 2000, 158) As the previous considerations already make clear, and in the absence of institutional barriers to price flexibility, the who-goes-first problem is largely if not entirely a pseudo-problem.

[12] The so-called "square-root law" of precautionary reserve demand indeed holds that a bank´s demand for precautionary reserves for any fixed planning period will be proportional to the square root of bank-money payments made by its clients during the planning period.

[13] For Popper this means that it is not possible to derive objective statistical conclusions, that is, conclusions about relative frequencies, from subjectivist non-statistical premisses, that is, premisses about degrees of belief. Popper later came to embrace the propensity interpretation.(see e.g. Popper 1983) The suggestion here is, however, that the theory of Richard von Mises still offers a perspective worth to be considered in this context. (Mises 1957 [1981]) For Richard von Mises the existence of random sequences (or possibly the absence thereof) is ultimately an empirical fact. It is the task of statistics to identify which experiments have this collective-generating property and to elicit the associated probability distributions over their class of possible outcomes. The starting point of this theory of probability is the concept of a collective.

[14] More generally it will often be possible to characterize the decision-making process as being dominated by behavioral or endogenous uncertainty, which means that the probability distributions attached to uncertain events faced by decision-makers do not remain invariant with respect to their own actions. In other words the data generation process itself may change as a result of their actions. Under behavioral or endogenous uncertainty, knowledge of the past evolution of a system may be of little guide to its likely future development because there is no stable and exogenously given data generation process that agents can hope to learn about.
In these circumstances, the necessary basis for a formal representation of the process of expectations formation may not exist.

[15] High-powered money is money that currently or potentially serves as bank reserves.

[16] On the important but sometimes neglected conceptual difference between property and property titles, see also Hoppe (2006 Chapter 7).

[17] The Diamond-Dybvig result has mainly been viewed as a rationale for a government-sponsored deposit insurance scheme. In our view the Diamond-Dybvig model primarily serves an illustrative purpose. While the Diamond-Dybvig bank is not exactly a fractional reserve free bank - there is only an analogy or partial similarity between the two - the fundamental reason why the Diamond-Dybvig bank gets into trouble is the same as in the case of a fractional-reserve free bank: it makes promises to pay that, in certain not unlikely circumstances, it may not be able to honour. Both face a *liquidity* problem. And both get into trouble because they violate and attempt to bridge the insurmountable conceptual gulf that separates deposit arrangements from loan arrangements.

[18] A type of "run-proofing arrangement" which is often discussed is the "option clause", which would render bank liabilities conditionally demandable only, thus turning demandable debt into bonds and transforming depositors and

note holders into forced lenders. The arguments relating to the option clause are not generally convincing, see P.J. Shah (1997); also Yeager (1993).

[19] See further section 6.5.2.

[20] Abstraction is here made from Hayek´s views regarding the role of legislation.

[21] In recent times this issue has been argued most cogently by Hans-Hermann Hoppe. In particular, this author has successfully refuted the contention of fractional-reserve free bankers Selgin and White (1996) that fractional-reserve free banking is in accordance with the title-transfer theory of contract as developed by M. N. Rothbard. (1998, Ch. 19) In accordance with Rothbard´s contract theory, individuals are only entitled to make contracts regarding the transfer of *their own property*. Fractional-reserve banking, however, affects the property of third parties in a threefold way. First, by thereby increasing the money supply, the purchasing power of all other money owners is reduced; second, all depositors are harmed because the likelihood of their successfully recovering their own possessions is lowered; and third, all other borrowers of commodity credit are harmed because the injection of fiduciary credit impairs the safety of the entire credit structure and increases the risk of a business failure for every investor of commodity credit. (Hoppe 2006, 200-1)

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