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# Fractional Reserve Free Banking: Some Quibbles

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*ABSTRACT*: We explore several unaddressed issues in George Selgin's (1988) claim that the best monetary system to maintain monetary equilibrium is a fractional reserve free banking one. The claim that adverse clearing balances would limit credit expansion in a fractional reserve free banking system is more troublesome than previously reckoned. Both lengthened clearing periods and interbank agreements render credit expansion unrestrained. "The theory of free banking" confuses increases in money held with increases in real savings, resulting in exacerbated economic cycles when fiduciary media is issued equally under both scenarios. Most troubling, these economic cycles generated by the free banking system breed an incentive to create a coordinating agent serving as a lender of last resort. The central bank is demonstrated to be a natural, if not unavoidable outgrowth of the fractional reserve free banking system.

*KEYWORDS*: free banking, business cycle, credit expansion, interbank clearing, monetary equilibrium, central banking

*JEL CLASSIFICATION*: E30, E50

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## INTRODUCTION

What is the ideal monetary system? This is one of the most important questions of our age. To address this question, George Selgin (1988) makes an elaborate case for a fractional reserve free banking system.[1] Selgin´s argument is especially noteworthy because he approaches this question from an economic point of view.[2] He argues that 100 percent reserve banking (as well as central banking) has economically detrimental effects because it cannot maintain monetary equilibrium, thus leading to costly and unavoidable recessions.[3] Selgin's synthesis of traditional Austrian and monetary disequilibrium theories to justify a free banking system brought new aspects to the debate concerning the ideal monetary system.

While other authors have provided critiques of fractional reserve free banking (hereafter free banking) regarding economic consequences (Hoppe, 1994, Huerta de Soto, 2006, Hülsmann, 1996), the thesis of Selgin *et al.* has not been adequately scrutinized. It is one thing to point out the detrimental consequences of fractional reserve banking yet quite another to show that a fractional reserve free banking system is not required to maintain monetary

[1] Other free banking defenses are found in Kevin Dowd (1989), David Glasner (1989), Lawrence White (1984; 1989), and Leland Yeager (1997). Selgin (1988) is significant as it spurred on many free banking theorists associated with the Austrian school of economics to adopt its arguments. See, for instance, White's (1988) laudatory foreword to Selgin (1988), Steven Horwitz (1989; 1996; 2000; 2006), Larry Sechrest (2008), or Selgin and White (1994; 1996). Selgin (1994, 2001) later reinforced his own arguments. Selgin´s book marked a pivotal turning point in the spread of free banking ideas among Austrian economists.

[2] Michael Rozeff (2010), Selgin (1988), Selgin and White (1996), and White (1989; 2007a; 2007b; 2007c) have also made ethical and legal arguments in favor of fractional reserve banking. The opposing viewpoint which regards fractional reserve banking as legally and ethically problematic is made most strongly in Philipp Bagus and David Howden (2009), William Barnett and Walter Block (2005), Hans-Hermann Hoppe (1994), Höppe, Hülsmann and Block (1998), Jesús Huerta de Soto (2006), Hülsmann (1996, 2008), and Murray Rothbard (1962). From the latter point of view, fractional reserve free banking is partly a misnomer, because in a "free" society such behavior would be forbidden. Fractional reserve free banking may have many advocates among libertarians because its name suggests freedom, even though its practice stands in direct contrast to the legal principles of a free society.

[3] It is additionally alleged that a 100 percent commodity money system would suffer from unnecessarily high resource costs.

equilibrium and that the supposedly stabilizing mechanisms of a fractional reserve banking system are, in fact, destabilizing. The economic necessity for and consequences of a fractional reserve free banking system represent a gap in the literature that requires further review and analysis.

This study examines the remaining economic problems of a fractional reserve free banking system while abstaining from a discussion of legal and ethical issues. We focus our critique on Selgin (1988) due to its clarity and completeness. We demonstrate that fractional reserve free banking not only fails to restore the monetary equilibrium it alleges to create, but also generates effects that most free banking advocates consider detrimental.

## MONETARY EQUILIBRIUM AND FREE BANKING

Microeconomic coordination failures caused by monetary disequilibria were first systematically outlined by Herbert Davenport (1913), Clark Warburton (1946, 1966), Robert Greenfield (1994) and the series of articles contained in Yeager (1997). Selgin (1988) first elaborated the combination of these disequilibria with the doctrine of fractional reserve free banking. Selgin's exposition proved so compelling that within several years, Horwitz (1996, p. 288) opined that: "The Austrian theory [of the trade cycle] and the monetary disequilibrium approach can be seen as explaining the consequences that follow from the two possible cases (inflation and deflation) in which monetary equilibrium is not maintained." The Austrian theory of the business cycle (ABCT) developed in Vienna was seen as a more or less compatible doctrine with the American monetary disequilibrium approach.

Monetary equilibrium is defined as "the state of affairs that prevails when there is neither an excess demand for money nor an excess supply of it at the existing level of prices" (Selgin, 1988, p. 54). Selgin asserts that a fractional reserve free banking system adjusts the supply of money to changes in its demand, keeping $MV$ constant in the famous equation of exchange. When money holders increase their demand for money, they are really increasing their desire to hold bank liabilities (i.e., money substitutes). Accordingly, in an advanced free banking system the demand for money would be the demand for inside money or money substitutes, as

commodity money would not circulate. As a result, individuals write fewer checks on their cash balances or retain the notes of a particular bank longer when the demand for money increases.

By way of example, assume that a bank's clearing debits equal its clearing credits before an increase in the demand for money occurs. An increase in the demand for money issued by a certain bank causes a reduction in adverse clearings against the bank. Consequently, bank reserves increase as the clearing balance turns positive. An increased demand by the public to hold its notes and deposits entices a profit-maximizing bank to expand credit, thus drawing down its excess reserves. The same process occurs when the general demand for money increases. Gross clearings are reduced when depositors write fewer checks or redeem fewer notes, thus reducing the bank's need to hold precautionary reserves (Selgin, 1988, p. 66). Banks may then profitably expand credit until their demand for reserves corresponds with their supply of reserves. In sum, increases in the demand for money lead to excess reserves as the volume of bank clearings falls. In such a scenario, according to Selgin, banks can expand credit to accommodate this increased demand for money.

The reverse clearing process unfolds when the demand for money decreases. As depositors present checks and notes that previously circulated to their issuers, an increase in gross clearings occurs. Banks compensate by increasing their precautionary reserves by retiring loans and investments. A credit contraction, thus, equalizes the supply of money with its decreased demand.

Selgin asserts that this process restores and maintains monetary equilibrium more efficiently than its alternatives, e.g., exogenous money supply changes by a central bank, or via changes in money's purchasing power. Changes in money's purchasing power also satisfy changes in the demand to hold money (i.e., the demand to hold *real* cash balances). Increases in the demand for real cash balances result when people abstain from spending, causing prices to fall. Conversely, as the demand for real cash balances decreases, people spend their cash balances accordingly and cause prices to rise. Selgin (1988, p. 53) acknowledges this alternative adjustment mechanism and states that long-run changes in money's purchasing power *can* satisfy changes in the demand for money. He cautions, however, that

"short-run corrections in the real money supply require changes in the nominal quantity of money" (1988, p. 54). In other words, changes in the purchasing power required to satisfy changes in the demand to hold money work only in the long run. Selgin gives two main reasons for this disparity.

First, prices are rigid in the short run, creating a potential excess demand or supply of money. More specifically, the downward rigidities of certain prices will increase the demand for money leading to a recession that is a "mirror image" of the traditional Austrian business cycle. This is caused by *higher* interest rates than the demand to hold money would normally dictate (Horwitz, 1996, pp. 291, 303).[4]

Second, there may be a "monetary misconception" in the case of an increase in the demand for money that makes prices fall (Selgin, 1988, p. 55). Each entrepreneur individually regards any decline in his revenues as a decline in the profitability of his particular business and reduces his output accordingly. A general downturn ensues as entrepreneurs in general fall prey to this misconception. Consequently, many free bankers believe that "a banking system that promotes deflation disrupts economic activity" (Selgin 1988, p. 56). Free bankers suffer from what Mark Thornton (2003) coins "apoplithorismosphobia": a fear of deflation (or, at least, a special strain of it).[5] They consequently welcome the inflation provided by the fractional reserve system that, due to its clearing mechanism, allegedly provides adequate levels of inflation at just the right moments.

Selgin claims to have proven that a fractional reserve system is not only harmless but is also even necessary to maintain monetary equilibrium. The system responds to any increase in the demand for money with a corresponding increase in the money supply. Price declines are obstructed and recession summarily avoided.

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[4] The argument that prices are downward rigid and that an economy is improved with inflation if the demand for money increases is outside the scope of this article. We deal with this argument in Bagus and Howden (2010a). In the present paper we concentrate solely on inherent problems of the fractional reserve banking system and the relations among the demand for money, savings and business cycles.

[5] Bagus (2003) critically assesses differing Austrian perspectives on deflation.

## LIMITS TO CREDIT EXPANSION IN A FREE BANKING SYSTEM

Free bankers claim that a free banking system best maintains monetary equilibrium. One significant aspect of this equilibrium is that an increase in the demand for money allows for credit expansion. Consequently, any free banking system must be defended against the charge that it enables an unlimited credit expansion when the expansion is coordinated. Through cooperation and coordination, banks can mitigate their adverse clearing balances and remove the brake stopping individual banks from unduly expanding. With every bank expanding at the same rhythm no individual bank loses reserves. Selgin (1988, p. 54) asserts that in an advanced free banking system, notes are continually utilized and *not* redeemed into commodity money. Consequently, the public's redemption demands into commodity money cannot serve as a limit to credit expansion.

In defense, Selgin comes up with a further limit on credit expansion. A bank's demand for reserves consists of two components: "average net reserve demand" (which is the anticipated total difference of clearing debits and clearing credits in a period and which tends to zero in a coordinated expansion) and the "precautionary reserve demand" (Selgin, 1988, p. 72). Banks hold precautionary reserves because the exact sum of the total of debits and credits is uncertain during a particular clearing session. The average net reserve demand will not increase during a coordinated expansion (as it nets to zero). However, the growth in total clearings will bring about a higher variance of clearing balances (both debits and credits). Banks respond by increasing their precautionary reserve requirements, thereby placing a limit on a coordinated credit expansion (Selgin, 1988, p. 82).

There are several reasons to doubt that the heightened precautionary reserve requirement would effectively limit a coordinated credit expansion.

First, negative clearing balances would not necessarily imply a loss of reserves when banks cooperate. A bank with a positive clearing balance could just voluntarily refrain from redeeming notes from a bank with a negative clearing balance. These balances could instead be used as reserves for their own expansion. Moreover, an interbank

market could develop where banks with negative clearing balances could borrow from banks with positive clearing balances. Interest paid and received for such loans would cancel out in the long run. Such an institution of implicit or explicit arrangements concerning the short term interbank financing of clearing deficits would make precautionary reserves essentially obsolete.

A second method for banks to coordinate an unlimited credit expansion is to lengthen the clearing period. For clearing periods as short as an hour, or even a day, there may be important clearing balance divergences (whether positive or negative), even within a coordinated expansion. Prolonged clearing periods will lower any balance discrepancies when banks coordinate their expansion. No bank will lose reserves during a coordinated credit expansion in the long run. Precautionary reserves are only necessary to mitigate reserve losses in the short run. Positive and negative clearing balances will increasingly offset each other in direct relationship to the length of the clearing period. If the coordinating banks agree to clear debits and credits over a longer period, say, every week, month, or year, banks may reduce precautionary reserves accordingly.

The cooperation of banks might become so close that they account for their debits and credits without physically clearing adverse balances.[6] With a lengthened or unlimited clearing period, credit expansion is limited only by the redemption demands of the public that Selgin assumes to be nonexistent in a mature free banking system.

There is a final reason why banks might actually reduce their precautionary reserves during a credit expansion. A rising money supply during a credit expansion increases both the negotiability of bank assets and, more importantly, their prices (Juan Ramón Rallo, 2009a). Consequently, when banks engage in a coordinated credit expansion, higher clearing balance variances do not invoke a greater danger of illiquidity as bank assets rise in price and increase

[6] Selgin (2001, pp. 297–298) relies on the assumption that such cooperation would not occur in an attempt to demonstrate that there are limits to an in-concert overexpansion. At this point he even invokes a central bank to enforce a "stiff penalty-rate" in the interbank overnight loan market to halt an in-concert credit expansion. It is ironic that, as a free banker, Selgin must rely on the intervention of a central bank to show that the credit expansion of a free banking system would be restricted.

in liquidity. Banks can use these more valuable and saleable assets to compensate for any adverse clearing balances.

## DEMAND FOR FIDUCIARY MEDIA IS NOT EXOGENOUS TO THE BANKING SYSTEM

Selgin starts his analysis by assessing changes in the demand for money, not distinguishing between the demand for commodity money (money proper) and money substitutes (Rallo, 2009b). Selgin's base assumption is that all commodity money is deposited in the banking system and remains there or, at least, that the demand for money proper is constant. Nevertheless, there is an important difference between commodity money and money substitutes or bank liabilities.

Bank liabilities (money substitutes) derive their value *from* money proper. Bank liabilities can lose their value or liquidity while money proper retains these qualities. Thus, the demands for money proper and bank liabilities need not necessarily trend in the same direction. During economic crises the demand for money proper generally increases while the demand for bank liabilities decreases, as the former is regarded as safer than the latter. In extreme situations there may even be a flight from bank liabilities if the financial system finds itself in significant illiquidity troubles: this is the common case of a bank run.

The fractional reserve banking system actually causes booms that turn to busts because of its inherent ability to expand credit.[7] During a post-boom recession, bank assets lose value leading to a loss of confidence by the holders of bank liabilities. At this point the demand for money substitutes tends to decrease, as holders sell them in exchange for safer money proper. The fractional reserve banking system is the cause of the instability in the demand for money proper. To assume a constant demand for money proper cannot be a starting point to analyze a system that endogenously changes it.

Free bankers not only fail to distinguish between the demand for money proper and that of money substitutes, but also between the

[7] We assess the free banking system's inherent ability to expand credit in a following section: "The detrimental effects of a fractional reserve free banking system."

various reasons that money is demanded. By its macroeconomic approach, the analysis of the demand for money conceals important microeconomic processes.[8] The increased demand for bank liabilities may result from a multitude of different causes.

When a company gets commercial paper discounted by a bank, this company is effectively demanding bank liabilities. It exchanges its commercial paper against a demand deposit liability at the bank. When a company issues a 20-year bond, and deposits the receipts at a bank, the company is effectively demanding bank liabilities. When a deposit holder withdraws less money from his bank account during a certain period, he is increasing his demand for bank liabilities. When a company issues equity and deposits the receipts at a bank, the company is demanding bank liabilities. The motivations for these actions are very different and at times asymmetrical. The company that issues the 20-year bond wants to spend more money while the deposit holder that withdraws less money wants to spend less money.

Fractional reserve free banking analysis advocates altering the money supply to counter changes in the demand to hold money, thus preventing a sluggish price adjustment process.[9] Not all changes in the demand to hold money stem from supposed imbalances between money's equilibrium and actual purchasing powers. By not properly distinguishing between the very reasons that individuals change their demand for money, fractional reserve free bankers are left with a glaring theoretical hole: *when* should banks alter the monetary base, and *how* are they signaled that this should be done.

The free bankers' analysis of the demand for money does not explain the reasons why the demand for money increases, instead treating it as an exogenous variable. The demand for money tends to change noticeably as perceived uncertainty changes, such as during times of wars, natural catastrophes or economic crises. By not discussing the reasons for changes in the demand for money, free bankers comfortably set aside any discussion as to the causes of crises. In fact, the credit expansion that a free banking system

[8] We owe this point to José Ignacio del Castillo Martínez.

[9] Yeager (1997) provides a collection of essays outlining this process, which provides the foundation for subsequent free banking literature.

can carry out may cause artificially low interest rates and an unsustainable lengthening of the structure of production.[10] When this artificial expansion is reversed, a recession sets in and the demand to hold money tends to increase. Thus, the free banking system itself may cause an increase in the demand for money. Paradoxically, this increase in demand is presented as a problem to which the free banking system itself is the solution.

Free bankers repeat the error of the old Banking School when they treat the demand for money as exogenous to the banking system. Banking School theorists, such as John Fullarton (1844), argued that the "needs for trade" determine the demand for money. Expanding credit in response to a higher demand for money is reckoned to not only cause no harm but to also aid economic expansion. Banking School theorists and free bankers alike neglect the fact that the actions of the banking system can endogenously increase the demand for credit through reduced interest rates. The institutional setup of the banking system influences the demand for bank liabilities. Demand for future goods is not independent of their price. By lowering loan rates or softening credit conditions, a fractional reserve banking system can increase the demand for credit virtually without limit (Huerta de Soto, 2006, pp. 682–683).

Moreover, the artificial boom caused by credit expansion may lead to an increased demand for bank liabilities. As the boom fuels optimism as nominal wealth increases, rising asset prices provide increased collateral against which an increased demand in bank liabilities can be issued (Bagus, 2008). When the banking system satisfies the demand for fiduciary media through credit expansion, the boom feeds upon itself.

## CONFUSION BETWEEN SAVINGS AND THE DEMAND FOR CASH HOLDINGS

Selgin states that the willingness to hold money is the willingness to save, and that holding bank liabilities ultimately means acting as a lender of credit (1988, p. 55). Similarly, Horwitz (1992, p. 135) states that

[10] Ludwig von Mises (1943, 1998, p. 442 n. 17) emphasizes that all credit expansion distorts the structure of production and that free banking allows for it.

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

Horwitz suggests that the creation of deposits increases the supply of savings, as depositors are lenders of real loanable funds. In other words, the mere creation of credit and the corresponding new deposits constitute an increase in real savings. Yet the creation of fiduciary media is not equivalent to an increase in real savings necessary to sustain a more roundabout production process. Real saving implies an abstention from consumption, while the production of fiduciary media does not; fiduciary media may be, and are, created *ex nihilo*. Holding newly created money is not an increase in real saving. To think otherwise confuses the nominal money supply with real resources. If the U.S. government would decree to add a zero to every bank note and demand deposit, people would very likely be willing to hold a larger nominal balance of bank liabilities after the decree. However, this would not constitute an increase in real savings.

Creating money to offset an increase in the demand for money or a decrease in its velocity does not create new real resources. Increased monetary savings does not mean that there is additional real savings. Real savings are required to sustain the factors of production during the production process. Increases in the money supply serve to create only an illusion of wealth.[11]

Horwitz (1996, pp. 291–292) argues that holding fiduciary media is equivalent to saving, relying on their supposed equivalence to outline a "mirror image" Austrian business cycle. He argues that an increase in the demand for money implies an increase in real savings. If banks do not expand credit and let interest rates fall to reflect the increase in savings, interest rates will be too high: an artificial shortening of the structure of production results.

[11] Monetary equilibrium theorists must indirectly accept a version of the Keynesian multiplier principle. When the "velocity of money" falls, an increase in the money supply will not imply more real savings, as it will not create any more goods or services except to the extent that it is believed that the multiplier stimulates spending. We thank Toby Baxendale for bringing this to our attention.

People hold money because it is the most liquid good and mitigates future uncertainty. Money's utility in this role largely determines its demand. In this respect, the complete availability of money is crucial for it to mitigate future uncertainty. A "suspension clause" on bank notes as advocated by free bankers (White, 1984; Selgin, 1988, p. 137; Selgin and White, 1994, p. 1726, 1997) changes the availability of money and forces depositors to save for the duration of the suspension, i.e., depositors are forced to grant an obligatory loan to the bank.

Conversely, when people have a sufficient uncertainty hedge via their deposits, they may attempt to increase their monetary wealth by investing. They do this directly as an investment, or indirectly by loaning the money to someone else who desires to invest directly. The level of investment that an economy can successfully complete depends on its available savings. Investment projects are only carried out to completion if a sufficient quantity of real production factors has been made available by abstaining from consumption.

The time horizon in which people are willing to sacrifice and reduce consumption is important for investment sustainability. Hence, there are important differences between distinct savings instruments (or investments): as examples, cash holdings, an equity investment, a 3-month loan, or a 30-year bond. All of these represent important forms of savings/investments, but they involve different durations, liquidity and risk.

The disparate maturities of savings differentiate sums of monetary savings from each other. Horwitz (1996, p. 299) abstracts from the duration of savings, stating that "demanding bank liabilities is an act of savings." For him, a bank deposit of $1,000 or an investment of $1,000 in a 30-year bond releases identical savings to be invested in long-term projects. Can a long-term investment—a 30-year mortgage, for example—be issued against either of these savings with equal effects on the structure of production? The unequivocal answer is: no (Bagus and Howden, 2010b).

Changes in time preference rates are independent of the demand to hold money as a cash balance (Hülsmann, 2009). The corollary that arises is that the demand for money can change without a corresponding change in either the time preference rates or the consumption-savings relationship.

People can abstain, for example, from reinvesting their resources by amortizing their investments. A relative shift away from investment projects (i.e., future goods) has occurred which increases both cash balances and time preference. Free bankers argue that any increase in the demand to hold bank liabilities constitutes an increase in savings. Following the logic of their argument, they must maintain that the divestment of capital (i.e., the tearing down of machinery and factories, etc.), in order to increase cash balances is a sign of an increased demand for money and represents an increase in savings. Accordingly, banks could and should expand credit when their reserves increase so that investors can commence investment projects (i.e., buying machines and building factories).[12]

This credit expansion will not correspond to individuals' desires. Real cash balances have increased either in response to the perception of increased uncertainty, or in preparation of future consumption opportunities. At the same time, they have divested, increasing the proportion of their consumption relative to real investment spending, i.e., their time preference has increased. Carrying out a credit expansion to entice new investments would then lead to malinvestments, as the real quantity of savings available to sustain investment projects has not increased.

It is also possible that the demand for cash holdings increases while time preference decreases: people can abstain from consumption in order to add to their cash balances. This constitutes an increase in savings and allows the structure of production to lengthen (Huerta de Soto, 1996, pp. 448–449). Factors of production are liberated and

[12] Rothbard (2004, p. 788) and Hoppe (1992) criticize the Keynesian error that the demand for money determines the interest rate, maintaining that income can be spent on three margins: investing, consumption and hoarding. Hülsmann (1996, p. 34) argues that one can also save and invest in cash balances by holding money units. The two views are in fact reconcilable when we recognize that we could still have three margins acknowledging Hülsmann's point: investing in cash balances, investing in real investment projects and consumption spending. In fact, there is a continuum as investment projects are of different durations. Thus, individuals may invest their money for 3 months, 1 year or 30 years before they want to increase their consumption. Changes in the spending on these indefinite margins influence the length of possible investment projects. For instance, when resources that were previously invested for one year are reinvested for 30 years, longer-term investment projects now become more sustainable.

made available for investment projects. The effect is the same as if the investment were made directly into these projects. As Mises (1998, p. 519) summarizes it:

> Whenever an individual devotes a sum of money to saving instead of spending it for consumption, the process of saving agrees perfectly with the process of capital accumulation and investment. It does not matter whether the individual saver does or does not increase his cash holding. The act of saving always has its counterpart in a supply of goods produced and not consumed, of goods available for further production activities. A man's savings are always embodied in concrete capital goods.

A further alternative is that changes in the demand for cash holdings do not affect time preference rates at all: investment and consumption spending can be reduced by equal proportions with no systematic change to time preference.

The demand to hold real cash balances can decrease while time preference increases, decreases or remains the same, depending on how the reduction of cash balances affects the ratio between investment and consumption expenditures. There is no necessary relation between time preference rates and the demand for money. Furthermore, changes in neither the demand nor supply of money are necessarily related to changes in interest rates. Changes in the supply or demand for money *can* affect interest rates in the short-run if they act through credit markets (for instance, during a credit expansion). Thus, the artificial reduction of interest rates during a credit expansion is the result of an inflated money supply *through the credit markets*. Banks can only place additional loans via interest rate reductions.

Increases in the supply of money proper (i.e., gold production under a gold standard) does not necessarily have the same effect. Owners of gold mines may just bid up the prices of the goods and services they buy, keeping interest rates steady. Cantillon effects and wealth redistribution will result, but no systematic change in interest rates need occur.[13]

[13] Although not necessary, interest rates *may* change along the structure of savings due to redistributions between actors with distinct time preference rates (Bagus and Howden, 2010b).

The confusion between increases in savings and cash holdings is a confusion between stock and flow variables. Saving is a flow variable—the part of income that is not consumed. Cash holdings (savings) represent a stock in existence. Cash holdings do not represent saving. One may actually increase cash holdings by saving less (and consuming more), for example, spending a smaller portion of the available income on investments (or selling investments in order to consume). Fractional reserve banking leads to a change in the stock variable (cash holdings) that may create the artificial perception of a change in the flow variable (saving). This misperception is not without potential negative consequences as entrepreneurs may be misled into committing malinvestments.[14]

There is yet another mystery inherent in the idea that holding bank liabilities amounts to saving. Why would holding money proper not be savings? Moreover, if holding money proper were an act of saving, why would it lead to prohibitively high interest rates?

Let us assume that individual *A* holds a quantity of money proper, such as gold coins (or fiat paper money), under his mattress for safekeeping. Now he decides to transfer the coins to a bank—there has been a crime in his neighborhood recently and he regards the bank as a more secure warehouse than his mattress. Following the free bankers' reasoning, bank reserves and the willingness to hold bank liabilities now increase, and banks can and should expand credit in response. Yet there is no increase in *A*'s savings in this example; the coins (cash holdings) have just changed location.

The expansion of credit leads to artificially low interest rates. "Hoarding" unaccompanied by credit expansion does not lead to artificially high interest rates. Increases in hoarded money that stem from a reduction in consumption expenditures cause the interest rate to decline; prices of consumption goods will fall. The price spread in the time structure of production between buying and selling proceeds is reduced accordingly (Rothbard, 2004,

[14] Howden (2010) argues that entrepreneurs are further disadvantaged as the fractional reserve banking system magnifies this misperception, depending on the distance from the initial change in the money supply the entrepreneurs find themselves. As knowledge concerning the credit creation process increasingly deteriorates with the distance from its origin, entrepreneurs receiving these funds later in the credit creation cycle will be more prone to error than otherwise.

pp. 367–452). The demand for present goods falls relative to the demand for future goods, causing interest rates to fall.

The argument that an increase in the demand for money amounts to an increase in savings (or the rate of saving) is essential for the alleged need of a fractional reserve banking system. Yet there is no systematic relationship between savings and the demand for money. Fractional reserve banks face an identification problem because increases in reserves can be caused by abstentions of both consumption and investment. There is no way for banks to know if an increase in reserves means that people are abstaining from consumption or divesting from investment projects. Free bankers must still answer this mystery: how can banks consistently discern the causes of changes in reserve levels (either increases or decreases). Lacking an answer to this question, free bankers must maintain that banks should react the same way to changes in saving and divesting. Fractional reserve free bankers would have to maintain that banks should induce credit expansion (with a commensurate increase in investment) when there are both more savings available and, paradoxically, when entrepreneurs are divesting (i.e., relatively decreasing their saving). Free bankers must identify where the coordinating activity of inducing further investment when faced with divesting entrepreneurs will come from. How would it be coordinating to induce investments when people want to divest?

## THE MONETARY EQUILIBRIUM APPROACH AND INDIVIDUAL DEMAND FOR CASH BALANCES

There are some additional problems with the macroeconomic monetary equilibrium approach defended by some proponents of the free banking school. It must first be remembered that the demand for money is the demand to hold real cash balances, i.e., it is a demand for real monetary services (Hülsmann, 2003, p. 50; Mises, 1998, p. 421). An increase in perceived uncertainty causes individuals to increase their real cash balances in preparation.

First, the uniqueness of the perception of this uncertainty causes the demand for cash balances to be strictly individual. When it is claimed that the demand for money increases, it must be remembered that it is always individuals that increase their

demand, and that members of the general population might not increase these balances in the same proportion. Free bankers argue that a free banking system meets an increased demand for money by increasing the supply of fiduciary media. Yet, they overlook the microeconomic mystery concerning how the fiduciary media will get to the same individuals who have increased their demand for money. Furthermore, they do not explain why issuing fiduciary media would achieve the desired result more quickly than adjusting real cash holdings directly.

While free banking monetary equilibrium theorists face this knowledge problem, a 100-percent reserve system does not. In fact, in a 100-percent reserve system, when individual *A* wants to increase his real cash holding he just abstains from either investment or consumption expenditures or sells assets. "Monetary equilibrium" is restored immediately. Consequently, some prices may fall or some services may remain unsold until prices adjust downward fully.[15]

The monetary equilibrium approach, however, recommends that the price level be held constant by producing new fiduciary media via the fractional reserve banking system to give to *A*. The mystery that remains is how a bank will know that *A* has increased his demand for cash holdings (which he has, in fact, already satisfied by abstaining from spending). Bank *B*, due to positive clearing and higher reserves, may now grant a loan to entrepreneur *C*. Yet, this was not necessary as *A* has already satisfied his increased demand for money. Prices will tend to be bid up if *C* spends the money. This will actually reduce the real cash holdings of *A*, who sees his intentions frustrated. Consequently, *A* will further abstain from spending, leading to an additional decline in prices. This will be frustrated by further issuances of fiduciary media.

At some point the additional money may flow to *A* (although this need not necessarily happen). When *C* spends his money via purchases with other actors, the cash balances of the other actors could increase above the level that they desire.[16] Consequently,

[15] The same happens when *all* individuals increase their demand for real cash balances. They abstain from spending until prices have come to the level that satisfies their desired real cash balance.

[16] Note that this outcome will not result if prices are bid up faster than the increase in nominal cash balances.

they will make expenditures to reduce their own cash balances, the proceeds of which *could* end up in *A*'s hands. This is, however, a convoluted and indirect process that is more burdensome than directly increasing his cash balance (Huerta de Soto, 2009, p. 689). There is no reason why the indirect path of increasing *A*'s cash balance through the issuance of fiduciary media is favorable to directly increasing it through increased holding of money proper.

It is thus unnecessary to increase the supply of money in the face of increased demand; it frustrates the adjustment process. Money in this regard is different than other goods because its services depend directly on its purchasing power. An increase in the production of bread satisfies an increase in the demand for bread. An increase in the demand for money services (real cash balances) cannot be satisfied by an increase in the production of money because an increase in the money supply decreases, ceteris paribus, the purchasing power and consequent services of *each and every* monetary unit.

Second, increases in the quantity of money proper raise problems that must be addressed. Following the logic of monetary disequilibrium theorists, activities that increase the quantity of money proper (i.e., gold mining in a gold standard), without a corresponding increase in the demand for money would lead to an excess supply of money, artificially low interest rates and business cycles. Increases in money (i.e., gold), or money producing activities (i.e., minting) would be regarded as harmful.[17] This line of argumentation does not allow for the fact that increases in the money supply do not necessarily affect interest rates in a systematic way. *Only* when new money is introduced through credit markets are interest rates affected systematically.

Third, Selgin (1988, p. 55) invokes a monetary misperception argument, also used by real business cycle theorists. The argument states that entrepreneurs see the prices of their products fall and think that the profitability of their own products is affected negatively.

Entrepreneurs do have the ability to forecast and anticipate. Entrepreneurs anticipate the future demand for money and the

[17] Of course, much free banking literature relies on a frozen fiat monetary base to limit credit expansion (i.e., Selgin 1988: chap. 11; 1994, p. 1449). Consequently, issues arising from an excess supply of money due to, for example, mining activities, are sidestepped.

future prices of their products when bidding for the factors of production. They may err when estimating the demand for money, as well as the relative demand for their products. Yet there is no reason why they should err systematically in one direction. In fact, any monetary misperception provides a profit opportunity for entrepreneurs to exploit.

Free bankers fail to explain why entrepreneurs would systematically err in one direction and not exploit these profit opportunities.

## THE DETRIMENTAL EFFECTS OF A FRACTIONAL RESERVE FREE BANKING SYSTEM

A fractional reserve free banking system enables credit expansion. This occurs via three basic mechanisms. First, increases in base money by the production of commodity money may increase reserves and allow for credit expansion. Second, increases in the demand for fiduciary media enable a credit expansion as free bankers have pointed out. Third, the cooperation of the banks within the banking system enables credit expansion.

Any credit expansion distorts the structure of production. Credit expansion causes artificially low interest rates, which induce entrepreneurs to embark upon more investment projects than can be successfully completed.[18] Thus, a fractional reserve free banking system enables a primary cause of business cycles: artificially low interest rates.

More investment projects are started than can be completed successfully with the available resources. Some of these projects are liquidated when it becomes obvious that there are not enough real resources available to complete all projects. The liquidated projects are malinvestments that were only undertaken because entrepreneurs were deceived by the credit expansion. Credit expansion and the tendency for lower interest rates makes entrepreneurs think that there are more resources available than in reality. A discoordination is created between savers and investors.

[18] Conversely, entrepreneurs might anticipate the effect of the additional money supply on prices and bid up interest rates accordingly (Hülsmann, 1998). In this case, there are no artificially low interest rates and consequently there is no artificial boom.

Fractional reserve free banking usually restricts credit expansion more than a central banking system, a point emphasized by free bankers. As there may be adverse clearing and customers demanding money proper, there are limits to the boom that are narrower than in a central banking system without cooperation between banks. Nevertheless, the promotion of business cycles cannot be ruled out as fractional reserve free banking still allows for credit expansion.[19] This explicitly arises because free bankers call for credit expansion in response to increases in the demand for money.

Mises (1928) and Hayek (1928) have pointed out that price stabilization in times of economic growth leads to business cycles as credit expands to compensate for the downward pressure on prices. Economic growth coupled with a stable money supply will cause prices to fall. If banks expand credit to stabilize prices, interest rates will be lower than they otherwise would have been and below the level indicated by the amount of real savings. An artificial boom may arise if more projects are started than can be sustained by the amount of real savings.

Similarly, a stabilization of the price level as imagined by free bankers may also lead to an artificial boom. With an increased demand for money, prices fall to adjust to this higher demand. Assuming that time preferences and the level of output do not change, there are no more savings or real resources available to begin investment projects. As there are no more savings available, interest rates will not change due to the increased demand for money. A fractional reserve bank that increases credit in this situation will lower the interest rate below what it would have been if determined solely by market forces and real savings. More investment projects are begun than can be successfully completed. They cannot be completed without an increase in savings. However, no more real resources are available, as time preferences did not change. Interest rates fell due to credit expansion and not due to a reduction in time preference rates signaling an increased willingness to abstain from consumption. Consumers are not

[19] "The notion of 'normal' credit expansion is absurd. Issuance of additional fiduciary media, no matter what its quantity may be, always sets in motion those changes in the price structure the description of which is the task of the theory of the trade cycle… Free banking … [would not] hinder a slow credit expansion" (Mises, 1998, pp. 442 n.17 and p. 443).

willing to abstain from consumption until the projects financed by credit expansion reach completion. Consumers desire higher cash balances which price level changes would have satisfied without changing the relationship between consumption and investment spending.[20] Consequently, any policy that increases credit in response to an increase in money demand will be destabilizing. Boom-bust cycles will be promoted the same way as when price stabilization during times of economic growth is pursued.

A final detrimental effect of a fractional reserve free banking system is that it creates a tendency towards the creation of a central banking system (Huerta de Soto, 2006, p. 713). As we have pointed out, a coordinated credit expansion further increases the limits of credit expansion as there is no (or only limited) adverse clearing. Coordination leads to higher banking system profits. It is not easy to organize, much less coordinate, such an equal credit expansion. A cartel may break up at any moment as banks that expand credit less than the average of the cartel will have an incentive to leave. This exodus threatens the liquidity of the cartel's more expansive members. Banks that are more expansive will lose reserves to the less expansive banks because of the clearing process, eventually becoming illiquid and insolvent. Therefore, a cartel is risky when it cannot be legally enforced, allowing banks to leave the cartel to drive the rest into bankruptcy.

Until the breakdown of the cartel, the coordinated credit expansion involves very attractive profits. Consequently, there arises an incentive to install an entity that coordinates and orchestrates the credit expansion, such as a central bank. The central bank effectively cartelizes the banking system and sets the rhythm of credit expansion. It guides the banking system by interest rate signals, open market operations, minimum reserve requirements, verbal communications and regulatory supervision. An attractive profit-reaping rate of credit expansion is secured with no danger of banks leaving the cartel or excessively expanding in relation to others.

[20] Consumers might increase their cash balances by divesting and increasing their time preference. In this case, consumers increase consumption relative to investment spending. They strive to consume more now at the expense of future consumption. Inducing more long-term investment projects by credit expansion, as free bankers suggest, discoordinates this process.

Bankers have an additional incentive to demand the installation of a central bank as a lender of last resort. The credit expansion of the fractional reserve banks leads to an artificial boom that inevitably causes a recession. During recessions the assets of banks lose value because of bad loans and asset market losses. Depositors consequently lose confidence in specific banks or the whole banking system, demanding redemption in money proper. As banks lose reserves, liquidity problems feed solvency problems and bank runs or panics might ensue. During the recessions that the fractional reserve banking system ultimately causes, banks find themselves in liquidity trouble. If one bank goes bankrupt, depositors may lose confidence in others. The interconnectivity of the banking system may bring the whole system down. Distrust and bank runs spread and losses soar. Bankers who are aware of this problem demand a lender of last resort: the central bank.

Bankers cause booms and busts via credit expansions and later demand the establishment of a central bank due to the problems they experience during these self-made recessions. Advocates of free banking have yet to demonstrate how a system prone to causing economic cycles would not fall prey to creating the very institution they wish to avoid: the central bank.

## CONCLUSION

While Selgin's use of monetary equilibrium theory to advocate a free banking system was certainly innovative, there remain many quibbles. Specifically, it remains unclear why monetary equilibrium requires free banking, and how it will avoid certain detrimental outcomes.

A concerted expansion of the money supply cannot be obstructed as easily as the free bankers believe. Changes to both the duration of the clearing period and redemption restraints from banks with positive net clearing balances allow for extended periods of monetary expansion. A basic free banking assumption—that the demand for money is exogenous to the banking system—rests on a conflation between money and money substitutes. The demand for money can shift independently of the demand for money substitutes. Demand for money is price-influenced, thus allowing it to be endogenously determined within the banking system.

Regardless of money's purchasing power the demand for loans tends to increase when banks lower interest rates.

We have explored the complex and oft-misunderstood relationship between time preference, savings and the demand for money, understood as the demand for real cash holdings. There exists no fixed relationship between these variables. Increases in bank reserves need not solely stem from abstaining from consuming, but may also result from a reduction in investment. How the banking system will determine whether an increase in the demand for money stems from disinvestment of capital or abstention from consumption remains to be seen.

Perhaps the most troubling aspect of a free banking system is that it leads to systematic boom-bust cycles—Austrian business cycles—that many free bankers are trying to avoid. By expanding credit without increased real saving, interest rates are reduced artificially. More investment projects are undertaken than resources are available to complete. The artificial reduction of interest rates causes malinvestments that must later be liquidated in a recession. As bankers become aware that their business is prone to systemic insolvencies (or at least substantial liquidity restraints during recessions), they have an incentive to demand a lender of last resort to aid them through these very problems that are ultimately caused by their own credit expansion. Distortions caused by a fractional reserve free banking system eventually necessitate the creation of a lender of last resort: a central bank. Moreover, bankers have another incentive to call for a central bank. A central bank enables more highly coordinated credit expansion, thereby preventing reserve losses and providing more stable and attractive profits.

The free bankers have done much to demonstrate the evils of a centralized banking system. Perhaps they should turn their attention to the detrimental aspects of their own alternative.

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