

## Still Unanswered Quibbles with Fractional Reserve Free Banking

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**Abstract:** Anthony Evans and Steven Horwitz readily admit that their own understanding of monetary theory is imperfect, and do not even “attempt a rebuttal of [Bagus and Howden’s] claims.” George Selgin accepts that some of the arguments we put forward in Bagus and Howden (2010) make for “interesting theory”. He fails to rebuff our claim that precautionary reserves are unable to constrain credit creation in a fractional reserve free banking system. While calling for us to provide historical evidence to validate the quibbles we put forward, Selgin himself overstates the empirical evidence. He also claims that we have distorted what he has written, and that we use incorrect monetary theory. These allegations are false.

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**JEL classification:** B53, E32, E42, E51, G21

## Still Unanswered Quibbles with Fractional Reserve Free Banking

### Introduction

One would normally be alarmed when faced with wild allegations of academic dishonesty and economic ignorance from not just one opponent, but three. Fortunately in our own case, George Selgin (forthcoming) and Anthony Evans and Steven Horwitz (forthcoming) have enough differences between them that it is uncertain if they themselves can reach agreement on the issues at stake, even without our intervention. After all, what is the particular flavor of “free banking” that we found quibbles with should be identified before moving on. Selgin is bewildered that we would consider any literature other than his own; Evans and Horwitz cannot believe that we have not consulted the more fringe free banking material, in an appeal that we should have included everything ever written on the topic (while failing to do so themselves).

Evans and Horwitz charge that we “impose” our own definitions to bolster our case, while wishing to refrain from engaging in debate over what definitions other economists use. They eventually recant, and fall back on the use of definitions (especially those used by others) throughout their paper (see especially their section 3: Agreeing on terms). They also think that our article does not “warrant[] extended serious academic attention”, while taking the time to write a response to for a peer-reviewed academic journal and while knowing that there is already a response forthcoming from George Selgin. (This confusion can be reconciled in one of two ways: either they think *their* article is not a serious academic response, or they feel that the *Review of Austrian Economics* is not a serious academic outlet.) [hey bud, maybe this last sentence is too harsh. It is implicitly going against the RAE. But is your call. “This confusion”.. also I think when Evans submitted it, he didn’t know that Selgin also would submit, because he

wrote us that he wanted there to be a response on record to our article. I think he thought that Selgin's article would never make it into a scientific journal. Haha]

While Evans and Horwitz deem everyone to at least find common ground on what the proper definition of savings is, it is clear that they can not even find agreement with Selgin on the matter. While Selgin quite clearly regards saving as the act of holding cash, Evans and Horwitz claim that saving<sup>1</sup> properly understood is non-consumption. Indeed, the definitional difference is slight but essential. For one can consume a larger portion of his real income when he disinvests while simultaneously holding constant or even increasing his cash balance. Our own definition of saving, incidentally, agrees with the one of Evans and Horwitz.

Besides the quibbles that Selgin, Evans and Horwitz have between them that are largely of no concern to us, both papers in question take us to task for some of the things that we say. We largely address these points in Bagus and Howden (2011). This paper will largely focus on the things that these authors *did not say* – not said in the sense that they were the points of our original paper that are avoided or evaded.

## **In-Concert Expansion: Take 2**

Selgin (1988: chap. 6) outlines the limits to credit expansion in a fractional reserve free banking (FRFB) system. The main brake is through the use of precautionary reserves – the need of which increases as banks expand credit, regardless of whether this is done in-concert or alone. We (2010: 34-36) provided three reasons why precautionary reserves may prove insufficient at halting an in-concert expansion. To briefly recap, banks can: 1) use an interbank loan market to cover non-zero clearing balances, 2) lengthen the clearing period so as to reduce non-zero

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<sup>1</sup> We should note that Evans and Horwitz actually refer to this as the definition of “savings”. Our most charitable reading [for my taste “our most charitable reading” is too polemic. Not our style. But your call] finds this to be a typographical error, and that they must mean “saving” in its place.

clearing balances (as they tend to zero in the long run), and 3) use credit expansion to increase the negotiability of reserves, thus reducing the risks of illiquidity during credit expansion. Any one of these methods renders precautionary reserves insufficient at constraining inflation.

Selgin briefly dismisses the first two methods, while misinterpreting the final method (consequently defending himself against the wrong claim). Let us give this all another try.

*Can* banks make use of an interbank loan market to minimize the amount of precautionary reserves needed? This is the question that we posed, and one that Selgin seems to affirm. [I think he does: “But here Bagus and Howden appear to confuse actions that are merely possible with ones that are in banks’ best interest.”] While claiming that we confuse “possible” actions with ones that are in a bank’s best interest, Selgin dismisses the option on grounds that holding on to rival banks’ notes costs a bank foregone interest. He takes a much stronger stance on the issue than he has in the past, whereby he (1988: 117) has only tentatively dismissed interbank lending, as banks “may or may not” choose to lend their excess reserves. However, as we both recognize that long-run excess reserves net to zero, there is no foregone interest from interbank lending. Interest that one could have earned by remitting their excess reserves cancels out with the interest implicitly gained by not having their notes returned. [good point] If we start from an assumption that banks strive to maximize profits, and that they are concerned with not just short-term profits, we see that it is entirely possible that a bank would *not* redeem its rivals’ notes, and could instead use them to issue fiduciary media.

Selgin claims that both theory and history agree that there is no incentive for banks to lengthen the clearing period for reserve balances. The theory is ambiguous on this (but does not preclude that the incentive exists), while there is historical precedent for just such a strategy.

The clearing period used for interbank settlements is concerned with two dueling costs.

On the one hand, a higher frequency of clearing reduces the risk of default, thus reducing the cost of nonpayment. On the other hand, higher frequencies increase the costs to clear balances. This increased cost comes as the clearing process itself is costly, and also because clearing balances will be higher the shorter the clearing period.

Indeed, only in a scenario with zero default risk will a real-time settlements system unambiguously dominate a deferred settlement system (Lester 2005). The preferred clearing period depends on the particulars of the economy of interest – in particular, the trust banks have in one another, and the stability of financial institutions.

If default risk remains constant, banks may opt for longer clearing periods to decrease precautionary reserves with no fear that this longer period will increase default costs.

Alternatively, if it is undesirable to increase clearing periods, the clearing system can achieve much the same result (the reduction in precautionary reserves) by less costly credit provision. Hence, banks with negative clearing balances can seek external funding provided through the clearing system to cover their balances in the short run, instead of relying on these balances internally (and which tend to zero in the long run).

Does the evidence suggest that banks never pursued this option, as Selgin suggests? Like much historical interpretation, this question is only ambiguously answered. While historical cases of lengthened clearing periods may be difficult to come by ([keep this note for me, I have a note that I wanted to add, but am searching for it.]), this does not imply that clearing periods were not lengthened relative to what they would have been lacking alternative measures.<sup>2</sup> For

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<sup>2</sup> Selgin cites Norman *et al.* (2007) as “proof” that interbank settlement systems’ strove for reduced clearing periods. Yet the theory and evidence provided in the citation in question is not as strong as Selgin believes. He brings attention to one important sentence – namely, that clearing periods occurred “typically more frequently than before” (*ibid.*: 11) – the operative word being “typically”. We have never argued that banks would never *not lengthen* clearing periods, unlike Selgin who must rely on this fact to prove a free banking system stable. If the citation Selgin provides demonstrates anything, it is that the possibility for lengthened settlement periods remains open, and that historical cases do, contrary to his claims, exist.

example, there is a natural tendency for the banking system to shorten the clearing period as it matures. As a banking system develops, notes are accepted over both a broader geographic areas as well as by an increasing number of banks. While the clearing system develops to mitigate the costs of such note exchanges, there is a natural tendency for the clearing period to shorten as this development occurs. With an increasing number of banks spread over a wider areas exchanging notes, there is an increase default risk that can be reduced through shorter periods.

Alternatively, the costs of default can be reduced through a clearing system ready to accommodate liquidity to the necessary individual banks. Incidentally, this is one long-standing theory for the banking system's own preference for a central bank (Goodhart 1988: chap. 3). If it is undesirable to increase the clearing period of the settlement system (i.e., because default risk also increases with clearing length), one alternative is for the primary or most liquid clearing house to gain facilities to act as the lender of last resort – i.e., become a central bank, by at least some definitions. Incidentally, the expected reserve ratio is also reduced as the cost of intraday credit is reduced. A central bank coordinating the provision of clearing liquidity reduces the cost of such lending, and increases bank profitability.<sup>3</sup> Thus the effect of a lengthened clearing period can be emulated by this alternate measure.

Finally, we noted that credit expansion itself can set off a boom that increases the negotiability of reserve assets. As negotiability increases, the cost of liquidating such assets is reduced. Consequently, banks find themselves in a position to reduce reserve balances as the

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<sup>3</sup> While reducing the cost of clearing liquidity diminishes the “squandering of savings” problem (Selgin XXXX: XX) or minimizes the costs of holding reserves for “unproductive uses” (Evans and Horwitz p. 11), there are good reasons why intraday credit should be costly. Rochet and Tirole (1996) and Mills (2006) argue that a positive intraday interest rate compensates the clearinghouse (or central bank) for monitoring and enforcement costs. Kahn and Roberds (1998) show that costs of default are reduced as banks chose less risky portfolios with costly intraday credit. That the costs of this default may not even be borne by the insolvent bank (i.e., in Lester 2005) further supports the case for costly liquidity, and hence, for banks to hold greater amounts of idle and liquid reserves. [Not sure if we need this all or not. I just really like taking stabs at them for this stupid “squandering of savings” thing.] [ok with me]

ease at which these assets can be used to clear settlements increases. In this case the banking system can endogenously inflate past its existing precautionary reserve brake as doing so can result in a decreased need for the same reserves.<sup>4</sup>

At the same time, a banking system pursuing an inflationary credit policy increases its instability, and hence, the riskiness that clearing balances in any given period may not be covered. This exact point brings us back to the desire by banks to lengthen the clearing period. There is no way to disentangle the two effects determining clearing period lengths. On the one hand, as the banking system develops, and if credit expansion entices instability, clearing periods are reduced to decrease default risk. At the same time, there is the potential for the banking sector to demand increased clearing balances to allow for increased credit expansion. Even if clearing periods continually fell over a given time period, it does not necessarily follow that the second effect is absent. It can equally well be explained by the former effect – shortened clearing periods to reduce default risk – outweighing the latter – lengthened clearing periods to allow for credit expansion. Note that in this case there is still a lengthening of the clearing period relative to what it would have been if the banking sector solely determined clearing periods on the cost of holding reserves versus the risk of default.

Indeed we make a much weaker claim concerning the limits that precautionary reserves pose to the credit supply than what a fractional free banker must defend against. For our claim to be true, any *one* of these three methods is a sufficient though not necessary occurrence for credit expansion to occur. To prove a fractional reserve free banking system's credit facilities

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<sup>4</sup> Selgin mistakenly attributed to us the claim that credit expansion increases asset values, and that this is useful in collateralizing credit expansion. We actually made note that credit expansion increases the negotiability of some assets, thus reducing the costs of liquidating them, and aiding in credit expansion. If anyone questions whether negotiability matters for credit expansion, one need look no further than the liquidity crisis of 2008. The Fed swapped the illiquid assets of Bear Stearns for highly liquid (and negotiable) assets, primarily Treasury debt. During the boom this was never a problem, as the negotiability of the investment bank's assets allowed it to inflate in excess of what could otherwise be possible with illiquid assets.

constrained by precautionary reserves, proving *all* three of these methods to be impossible is a necessary *and* sufficient condition. Until sufficient proof can be proffered to this end, it remains unproven that a free banking system can constrain its credit facilities absent 100 percent reserves.

### **The Origin of the Central Bank**

Why do central banks emerge? This question continues to plague economists, and we originally offered two different avenues through which this emergence arises. First, central banks emerge as a response to the fractional reserve banking system's desire to have a coordinating agency to facilitate credit expansion. Second, central banks emerge as a response to financial instability bred through credit expansion via the fractional reserve banking system.

Important differences arise with these two reasons. Note that the banking system advocates the first to aid cartelization and secure profitability. The second reason sees its impetus through both the banking system (to save itself when financial instability ensues), and through deposit holders, who push for an agency to secure the value of their now-endangered deposits. Note also that a central bank acting as a coordinator of the banking sector is a fundamentally different role than that which emerges under the second reason we give for central bank emergence. Under this second reason – the push for a stabilizing institution in an unstable fractional reserve banking system – the central bank serves in the capacity as a lender of last resort. The lender of last resort can entail either having control of the money supply, or the ability to suspend conversion of inside for outside money.

Selgin thinks that our story of central bank emergence is “an interesting theory.”<sup>5</sup> But he

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<sup>5</sup> Selgin does note that our theory of central bank emergence is similar to that provided by Charles Goodhart (1988). In a subsequent footnote (fn13), he goes on to criticize the theory, as it does not explain why not every industry



quickly dismisses it due to the lack of evidence we provide in our theory-based article. He points instead to some historical cases where central bank emergence has been in response to the fiscal needs of government. This too is an interesting theory, and one that has a long line of support in the literature (some of which Selgin cites in fn14). What we have provided is a potential theory for why central banks emerge. We never tried to rule out alternative hypotheses for this emergence, which in some cases the facts demonstrate reasonably well. In fact, on this matter we can find agreement with Selgin – some hypotheses can only be sustained by an appeal to facts. So let us see how the facts stack up.

The historical evolution to central banking is not one that has occurred overnight, nor is it one where one system suddenly morphed into another. Instead we have a continuum which we might for clarity label as “fractional reserve free banking” [hey buddy, I am adding this. Maybe you think it is not necessary. My argument is that we are 100% free bankers or full free bankers, while they are fractional free bankers, but your call. I think out of context it is clear what you mean] (or nearly so) on one end, and “central banking” on the other. Institutions that have some elements of either system define the middle. The evolution of central banking has been one that sees an increasing amount of the elements of central banking creeping into the monetary system. The payment system is generally the common link between fractional reserve free banking eras and today’s central banking regime. In varying degrees and at different times, payments systems – particularly clearinghouses – have embodied elements of that we would today define as being central to central banking. While differing in important respects (throughout the years, not all

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faces the same incentives, nor is cartelized in the same result. This point seems curiously contested among our opponents, as Evans and Horwitz advise us to look into Goodhart (1988), in an attempt to see how central banks emerge naturally. The crux of our original argument is that central banks do emerge naturally [I do not like the word naturally here, because for me the word implies without the support of the state, and I think that governments have played a role in permitting this in exchange for finance], and in response to some very well defined motives. As for why these motives are distinct from other industries, we address that point below.

clearinghouses were regulators, or had a monopoly on the supply of notes), the evolution of the payments system sheds historical light on our theory and explain how banks can evade otherwise binding precautionary reserve requirements.

One long-standing theory has the Fed as the nationalization of a private clearinghouse system (Gorton 1985). Indeed, many of the clearinghouse's original functions served as the origins of some of the Fed's facilities, while others have been notably entered later.

The biggest similarity is, perhaps, the current use of the discount window. The discount window finds its origins in the issuance of clearinghouse loan certificates (Gorton and Huang 2003: 118-89). These certificates were used initially in the Panic of 1857, and continued during every subsequent panic through 1907.<sup>6</sup> Member banks found themselves in need of currency to satisfy depositors' demand for currency during times of panic. Through the clearinghouse's Loan Committee, banks could submit part of their assets as collateral to be issued certificates that could then be used in place of currency in the clearing process. Currency was thus economized on, and a risk-sharing arrangement was instated whereby all member banks effectively insured one another. If any one bank failed, and the posted collateral for a certificate made worthless, the remaining member banks shared the loss in proportion to each bank's remaining capital relative to the total of all members (Gorton 1985: 280-81).

When clearinghouse certificates proved unable to meet the liquidity demands set upon banks, alternative measures were offered. The first was an extension of the clearinghouse certificated to members of the public. This development occurred later during the Panics of 1893 and 1907, whereby smaller denomination certificates were issued to the public in lieu of currency. To varying degrees, these certificates represented currency substitutes, the majority of

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<sup>6</sup> This period only partially encompasses the period commonly defined as free banking in the United States – roughly 1837-62.

which was illegal at the time (Timberlake 1984). This feature, to its credit, had a beneficial side effect – the risk of legal penalties enticed banks to only issue certificates to the public in severe circumstances (Horwitz 1990: 647).

The issuance of clearinghouse certificates to the public notably *did not* occur during the period of free banking in the U.S. The precedent for this practice was established during the Panic of 1857 (Timberlake 1984: 4). During this panic, banks were met with an internal currency drain after the failure of a prominent bank. In response, individual banks pursued the usual path of curtailing their loans. The clearinghouse pushed forward an alternative (and completely opposite) solution to the problem – that each bank would *increase* its loan portfolio proportionately, thus cancelling out the clearinghouse balances and, hence, further economize on the need for currency (Myers 1931: 97). This type of collusion is the exact type of “cooperative” actions that we noted in our original article would transpire under a free banking regime, and set the dangerous precedent for ever-increasing types of collusion. Notably, these types of collusion are strangely absent from what free bankers assume their system will actually look like.

Though the clearinghouse system was an endogenous development, and member banks voluntarily abrogated certain rights during banking panics to it, there are peculiarities that must be brought to attention. Pooling reserves to back the loan certificates, although voluntary, was not uniformly desired among the banking establishment. As would be expected, conservatively managed banks with stronger reserve positions strongly objected to the practice as “inequitable”, and that pooling “denied them the rewards for their caution” (Timberlake 1984: 4). Strong banks subsidized the continued existence of weak banks during periods of constrained credit.

Indeed, the clearinghouse’s Loan Committee had the ability to equalize its member banks’ reserves by its own assessment, effectively treating the reserve base as a “common fund

to be used for mutual aid and protection” (Myers 1931: 100). This pooling feature, as Myers (*ibid.*) notes, allowed for such a high degree of centralization that even a “strong central bank” would find difficult to obtain. The use of loan certificates allowed the clearinghouse to be “converted, to all intents and purposed, into a central bank, which, although without power to issue notes, was in other respects more powerful than a European central bank, because it included virtually all the banking power of the city” (Sprague 1910: 50-63, as quoted in Timberlake 1984: 5).

By the time the Federal Reserve was established its advocates saw it as “an evolutionary development of the clearinghouse associations” (Timberlake 1984: 14). Indeed, the Senate sponsor of the Federal Reserve bill, Robert Owen, noted that “[t]his bill, for the most part, is merely putting into legal shape that which hitherto has been illegally done” (U. S. Congress 1913: 904). The key departure apparent in Senator Owen’s “for the most part” was the addition of a monopoly of note issuance.

Although the use of loan certificates brought with it similar (though reduced) effects as a monopoly of note issuance, this final change is one that is essential in explaining the full shift from the vestiges of free banking to today’s centralized system. As Selgin makes clear, no other industry clamors to be monopolized; why did this result with the banking sector?

For the support for the note-issuance monopoly, one does not need to look only at the owners of banks, or other interested parties internal to the system. Instead attention on other stakeholders – account holders – yields fruitful results. [good point] In other words, the banking industry has been more successful in monopolizing through a central bank than most other industries because a powerful coalition in its favor was formed. Depositors (the majority of voters) feared suspension of redemption in crisis and saw, rightly or not, a central bank as

solution. Powerful bankers, traditionally financing to a large extent the government, saw also an advantage in the establishment of a central bank. Government interested in the stability of its financier were happy to give in to these coalition. [I thought it would be nice to summarize the reason why there is monopoly in the banking sector, not sure if it is the right place, though.

Maybe better at the end of this section?]

Clearinghouse issuances became associated with either the restriction on, or suspension of, cash payments. In the public's mind the correlation was enough to welcome (or even call for) a systematic method to halt these cash suspensions (Timberlake 1984: 14). The suspension of payments frustrating deposit holders was not unique to the American free banking experience. As Checkland (1975: 185) observes, “[t]he Scottish system was one of continuous partial suspension of payments.” Implementing an institution with a monopoly of note issuance did not only provide a service that banking clients would prefer (i.e., the full availability of their deposits). It also solved an important legal issue. In the 19<sup>th</sup> century American free banking period the suspension of the convertibility of deposits, “amounted to default on the deposit contract, and was in violation of banking law” (Gorton and Mullineaux 1993: 326).

One method to mitigate liquidity constraints is to implement of lender of last resort – in this case, embodied as a central bank with a monopoly on note issuance and the unilateral ability to expand the monetary base at will. Indeed, this is what our original article suggested one root of central banking could be: instability bred by the fractional reserve system produces problems in supply commodity money on demand, hence the demand by the banking system or its clients to rectify the problem. The banking system tried to solve the problem internally, through redemption suspensions and loan certificates. When these methods proved insufficient, customers weary of not accessing their funds in a timely manner accepted the political response

of implementing a lender of last resort through the central bank to solve the problem.

Under a fractional reserve banking system, one way that a depositor can monitor how readily his bank can convert a deposit liability into currency is by making a withdrawal. While this works on any individual bank, if it occurs on a wide scale the banking system faces liquidation. In response, banks have an incentive to form “coalitions” that convert illiquid loan portfolios into liquid claims (Gorton and Huang 2003: 182). In this way, banks can convince depositors that as a group, the banking system is solvent, even if any individual member is not. Note that this cartelized role is only incentivized under a fractional reserve system – in a one-hundred reserve bank, there is no doubt of the banks liquidity [I prefer liquidity here, because in a 100% system, a bank could engage in receiving loans and granting loans. If the granted loans turn bad, the bank may get insolvent. Nevertheless it would by definition stay liquid for deposits as it has 100% reserves], and no resultant need to cartelize to ensure so. Yet even if a coalition incentivizes banks to act disciplined, in a fractional reserve system banking panics can still disrupt the use of bank liabilities as a medium of exchange. While one solution may be that the a centralized agency acts as lender of last resort, or even offers deposit insurance, this centralized agency that eliminates the mitigates the original panic must also subsequently take on a role to fill the gap (Gorton and Huang 2003). In this case, the Fed became the centralized monitor of the banking system when it took away the monitoring role from deposit holders through its lender of last resort role. This argument does not imply that the central bank is a better monitor than depositors, only that when it takes the role away from one group, it must fulfill it in another way.

Included in most modern central banks’ roles as monitors of their respective banking systems is the ex ante role as regulator. Yet even some of the more dubious aspects of this role today were foreshadowed by the private clearinghouses. Just as the Fed has recently come under

fire for keeping its own bailout recipients a secret, lest a run occur on those institutions, private clearinghouses of the past operated in a similar manner. Loan certificates were kept secret to avoid exposing weak banks (Gorton and Huang 2003: 188-89).<sup>7</sup>

There is thus a strong body of historical evidence aligned with what the theory outlined in our former article suggests could occur. In particular, we have seen some historical cases where the private banking industry gradually transformed itself into, by all appearances, a central bank (which legislators then formalized into law). Of course, the banking system also centralized in an effort to cartelize itself. When large number of firms coalesces to discipline another's risk taking, one way to achieve the goal is by assuring that all members are as profitable as possible. In the case of banking, the commonality of interests – sharing private information, setting interbank fees, etc. – all point to the potential for a type of price-fixing and other “cartel-like behavior” (Boyd 2003: 221). While cartels are inherently unstable, this does not rule out their possibility. It instead points to the likelihood of an industry-wide “merger”, effectively eliminating the cartel but supplanting it with a monopolist (Rothbard 1962: 561-63)

Apparently Not as Easy as ABC(T)

[these are the sections that I thought about adding in. The problem is that Boettke said we had 15 pages, which we are already over. I like the article better focusing in on some issues in depth, rather than on many issues only a little. That is why I stayed with our original theoretical argument (that precautionary reserves alone cannot constrain credit creation) and some historical cases demonstrating why this is not the case.

If we added anything else, I would put this brief section in about how focus on the general price level is not sufficient to ward off an ABC. And that monetary disequilibrium theorists lose sight of the micro when they focus on these macro aggregates. The problem with this is that is more or less just restates what we said in the LP article (as well as the original

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<sup>7</sup> In this respect, then, the private clearinghouse went one step further than the current Fed. As the loan certificates were the predecessor of today's discount window, we see one key difference. Any observer can identify which modern bank makes use of the Fed's discount window while the private clearinghouse of the past kept this information private.

article, and I suppose we comment on it in the price rigidities paper that is forthcoming).

These next two headings were other sections that I was going to put in. Again, though, I think it is better to leave them out and focus on the things I already have. Thoughts?

Of Stocks and Flows, and Prices and Price Levels

Selgin (p. 17) maintains

1. Stock vs. flow
2. General vs. relative price level
3. Does money get to who wants it?

The Demand for Money

[lets leave it out]

### **Concluding Remarks**

Selgin, and Evans and Horwitz have brought up several issues which demonstrate a deficiency in our original exposition. We are thankful for their reactions, as they have given us the ability to further illustrate, clarify and augment our original arguments. In particular, we have drawn attention to two areas.

First, the use of precautionary reserves limiting credit expansion is not as clear as might be supposed. The three methods we gave to evade this limit – namely: 1) the use an interbank loan market to cover non-zero clearing balances, 2) lengthening the clearing period so as to reduce non-zero clearing balances (as they tend to zero in the long run), and 3) the use credit expansion to increase the negotiability of reserves, thus reducing the risks of illiquidity during credit expansion – have all been further elaborated on herein. This is especially important feature as it is the most substantial theoretical contribution of our original article, and the one that has received the least attention (both in our original exposition, as well as in our critics lack of attention to it in their responses).

Second, this strengthened theoretical core has been illustrated by historical examples. The



history of free banking has been unclear at the best of times (see, for example, Rothbard 1988 and Sechrest 1993: chap. 5). We have illustrated the gradual transformation of a smoothly running banking industry, to a well-organized and efficient clearinghouse association, and final into ever-greater semblances of the modern central banking industry. The feature that has been the most ambiguous until now – why the private banking industry allowed itself to be monopolized by a centralized note-issuer (i.e., central bank, at least by some definitions), becomes clear in light of the theory provided. Financial instability caused by the fractional reserve system led to withdrawal suspensions and restrictions, thus incentivizing two groups to favor the provision of a lender of last resort: banks themselves to ensure their prolonged existence, and depositors to ensure their depositors were not subject to withdrawal restrictions.

Note that our paper has not proven a free banking system to be inherently unstable. It does bring to light deficiencies (or what we called “quibbles”) with the ability of a free banking system to be stable while operating with fractional reserves. [I think this is impossible .hahaha]

## References

Bagus, Philipp, and David Howden. 2010. Fractional Reserve Free Banking: Some Quibbles. *Quarterly Journal of Austrian Economics* 13(4): 29-55.

Bagus, Philipp, and David Howden. 2011. Unanswered Quibbles with Fractional Reserve Free Banking. *Libertarian Papers*.

Boyd, John H. 2003. Commentary, in (eds.) David R. Altig and Bruce D. Smith, *Evolution and Procedures in Central Banking*. Cambridge: Cambridge University Press. Pp. 220-222.

Checkland, Sidney G. 1975. *Scottish Banking: A History, 1695-1973*. Glasgow: Collins.

Evans, Anthony J., and Steven Horwitz. 2011. An Appeal for Better Scholarly Discourse: How Bagus and Howden Have it Wrong on Free Banking. *Review of Austrian Economics*.

Goodhart, C. A.E. 1988. *The Evolution of Central Banks*. Cambridge, MA: The MIT Press.

Gorton, Gary. 1985. Clearinghouses and the origin of central banking in the United States. *The*

*Journal of Economic History* 45(2): 277-83.

Gorton, Gary, and Lixin Huang. 2003. Banking Panics and the Origin of Central Banking. , in (eds.) David R. Altig and Bruce D. Smith, *Evolution and Procedures in Central Banking*. Cambridge: Cambridge University Press. Pp. 181-219.

Gorton, Gary, and Donald J. Mullineaux. 1987 [1993]. The Joint Production Confidence: Endogenous Regulation and Nineteenth Century Commercial-Bank Clearinghouses. Reprinted in (ed.) Lawrence H. White, *Free Banking, Volume II: History*, pp. 318-29. Aldershot, UK: Edward Elgar.

Horwitz, Steven. 1990. Competitive Currencies, Legal Restrictions,, and the Origins of the Fed: Some Evidence from the Panic of 1907. *Southern Economic Journal* 56(3): 639-49.

Kahn, C. M., and W. Roberds. 1998. Payment System Settlement and Bank Incentives. *Review of Financial Studies* 11: 845-70.

Lester, Benjamin. 2005. A Model of Interbank Settlement. University of Pennsylvania, working paper.

Mills, D. 2006. Alternative Central Bank Credit Policies for Liquidity Provision in a Model of Payments. *Journal of Monetary Economics* 53(7): 1593-1611.

Myers, Margaret. 1931. *The New York Money Market: Origins and Development, Vol. 1*. New York: Columbia University Press.

Rochet, J. C., and J. Tirole. 1996. Controlling Risk in Payments Systems. *Journal of Money, Credit and Banking* 28(4): 832-62.

Rothbard, Murray N. [1962] 2009. *Man, Economy, and State*. Auburn, Ala.: Ludwig von Mises Institute.

Rothbard, Murray N. 1988. The Myth of Free Banking in Scotland. *Review of Austrian Economics* 2: 229-245.

Sechrest, Larry J. 1993 [2008] *Free Banking: Theory, History, and a Laissez-Faire Model*. Auburn, AL: Ludwig von Mises Institute.

Selgin, George. 1988. *The Theory of Free Banking: Money Supply under Competitive Note Issue*. New Jersey: Rowman and Littlefield.

Selgin, George. 2011. *Mere Quibbles: Bagus and Howden's Critique of The Theory of Free Banking*. *Review of Austrian Economics*.

Sprague, Oliver M. W. 1910. "History of Crises Under the National Banking System", Senate Document Number 538. 61<sup>st</sup> Congress, 2nd Session, National Monetary Commission.

Timberlake, Richard H., Jr. 1984. The Central Banking Role of Clearinghouse Associations. *Journal of Money, Credit and Banking* 16(1): 1-15.

United States Congress. 1913. Congressional Records of the 63<sup>rd</sup> Congress, 2<sup>nd</sup> session.

I only put this quote as interest for you. Selgin always claims that he never assumes that commodity money doesn't circulate in a FB regime. This is a long way in the book, and even at this point he makes the assumption. Anyway, just of personal interest more than anything as it isn't really an issue we address in this paper.

“Since base money is assumed not to circulate under free banking (where bank notes supply demands for currency) this type of credit expansion is not relevant to it.” (chapter 4, fn 18). [here it another application of where he begs the question as to whether base money can circulate or whether the mature free banking system will make that unnecessary.] [indeed, great quote. He begs the question again, funny is that in his response he denies it]