

Competitive Currencies, Legal Restrictions, and the Origins of the Fed: Some Evidence from the Panic of 1907*

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I. Introduction

In the last several years, economists have produced numerous studies examining both the theoretical operations and historical manifestations of unregulated banking systems. Recent examples of historical investigations are the studies by L. White [47], who explores the Scottish experience, Selgin [33] on China, and Timberlake [43], Gorton [12], and Mullineaux [20], all of whom examine the role of clearinghouses prior to the creation of the Federal Reserve System in the United States. Timberlake and Gorton emphasize the role that currency substitutes played during banking panics of that era. The present paper seeks to explore the issuing of currency substitutes during the fall of 1907 in greater detail. In particular, it seeks to explain precisely why currency substitutes were needed and how they became accepted and to examine the implications of the panic for both traditional and present arguments over the historical justifications for the Fed.

II. Legal Restrictions and the Inelasticity of National Bank Notes

The legal restrictions affecting pre-Federal Reserve banking provide the key to understanding banking panics and the use of currency substitutes in that era. The National Currency Act as passed in 1863, and subsequently amended, allowed individual national banks to issue notes under certain provisions. Banks were required to purchase certain United States government bonds in the open market and deposit them at the Treasury in exchange for notes in amounts equal to 90 percent of the lower of the par or market value of the deposited bonds. (After 1900 the limit was changed to 100 percent.) Ostensibly, bond collateral was used to redeem notes of failed banks, but it also meant an enhanced market for federal debt, an important concern given the level of debt in the 1860s due to the Civil War [46,11].

Under this system, the market price of approved bonds was the out of pocket cost of note

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issue for banks, while the difference in interest between bonds and foregone alternative assets was a measure of opportunity cost. Consequently, the amount of notes in circulation tended to vary with bond prices rather than with the demand for currency. Higher bond prices or higher rates of return on alternative assets meant that note issue was more costly. Since there was no necessary connection between low bond prices and high currency demand, this system often led to currency shortages where banks were unable to supply the required amount of currency to depositors and would-be borrowers.¹

Other stipulations also prevented the supply of currency from responding elastically to changes in demand. There was a significant time lapse before new notes could be issued by national banks, since banks often had to wait for new bonds to be issued in order to take out more notes. In addition, redemption and contraction of currency did not occur when the banks desired it. Finally, a prohibitive ten percent tax on state bank note issue made it impossible for adjustment from state issues to offset shortages of national bank currency.

During panics these problems were exacerbated. The two main difficulties faced by national banks were: 1) purchasing acceptable bonds at prices that made note issue profitable, and 2) avoiding delays before notes actually went into circulation. Concerning the first problem, a prominent national bank president said, "The real difficulty . . . has been to get acceptable securities . . . one [New York] bank had to borrow from banks in California. This shows the effort the banks are making to take out circulation" [24,2]. A. Barton Hepburn of Chase National Bank noted that "it is extremely difficult to secure the loan of government bonds which are necessary . . . to secure an increase in the circulation of any national bank" [24,2].

When bonds could be purchased, the expense involved was often enough to make further note issue unprofitable. Frank R. Vanderlip of the National City Bank reported that "in order to get United States 2 per cent bonds we have forced the price of them to the highest point on record" [24,2]. A. Barton Hepburn noted similar difficulties: "To purchase . . . 2 per cent bonds, [banks] will have to pay \$108 for them. By having to pay this price for these bonds to bring out circulation the financial situation becomes aggravated rather than relieved" [24,2]. Hepburn recognized that further note issue was badly needed and that high bond prices prevented banks from buying the necessary bonds. The requirement that notes be backed by specific government bonds funnelled the banks' buying power into a single bond market and raised prices there to prohibitive levels. If banks had instead been allowed to issue notes based, like their deposit-credits, on their general assets, marginal costs of note-issue would not have risen any faster than marginal costs of deposit-creation, and banks would have been indifferent at the margin as to which form their liabilities took [34]. The result of the inability of the banks to create enough currency was that they were often forced to give depositors reserve media instead of inside money. This reserve drain caused country banks to replenish their reserves from their deposits at city banks, who did the same to the New York banks, shrinking bank balance sheets and raising interest rates throughout the system.

1. If anything, the bond prices-currency demand problem would be exacerbated under the bond collateral system, because higher bond prices tended to accompany increased demands for cash, thus making note issue more expensive precisely when it was needed the most.

The treatment of the cost of note issue is admittedly brief. It is not my intention to reformulate the exact cost of note issue. However, it seems that the Friedman and Schwartz/Cagan calculations are mistaken in concluding that the shortage of notes under the National Banking System is inconsistent with profit-maximizing behavior. The additional burdens created by the bond collateral requirements apparently meant some additional cost to the banks that has been overlooked in previous studies. More detailed treatments of these issues are by Bell [5], Cagan [7], Goodhart [11], Friedman and Schwartz [10], and especially James [14] and L. White [48].

Once bond collateral was acquired, actual shipment of currency from the Office of the Comptroller could still involve a lengthy delay. During panic situations the Treasury was especially hard-pressed with numerous panic-associated responsibilities. According to a banker quoted in the *New York Times*, currency shipments during the 1907 panic were delayed “owing to the great pressure of work being put upon . . . the Treasury staff” [24,2]. Therefore currency shipments took longest when they were most desperately needed. According to Hepburn, during panics, banks might have to wait thirty days or more after depositing bonds before actually getting hold of new notes. So even if the banks could find acceptable bonds at a profitable price, the effect of their efforts to increase circulation might not be felt for a month, mainly because of the need to rely on centralized governmental approval. This, in turn, meant excessively long printing and transportation delays. These delays would not have occurred in the absence of legal restrictions, as the banks’s choice of assets would not have to have been reported to, deposited at, or approved by the Treasury.²

III. The Panic of 1907 and the Use of Currency Substitutes

The panic of 1907, like previous crises, involved both general problems of currency supply and special stringencies associated with the fall harvest. The country banks needed significantly more currency during harvest season as the transactions demand rose sharply. Due to the inelasticity of note issue, notes (or reserves, including Greenbacks, if sufficient national bank notes were not available) often had to come from city banks, causing shortages in the city [2].

These seasonal difficulties worsened in 1907 as a result of the questionable banking practices of some individual members of the New York financial community. The failed attempt of F. A. Heinze to corner the copper market using depositor funds from his Mercantile National Bank, led to the bank’s failure to meet its clearinghouse obligations in mid-October. One of Heinze’s directors at Mercantile, Charles F. Morse, was involved in other financial dealings, and when his connection with Mercantile became known, his banks were hit by runs. Morse’s connection to the Knickerbocker Trust Company led to a run on it on October 24, which, in turn, led to runs on other banks in succeeding days.

Over the next two days various banks and other financial institutions, including the Treasury, moved to help the stricken banks. Normally banks cleared by using large denomination certificates representing actual holdings of high-powered money. On Saturday the 26th, the New York Clearinghouse Association issued clearinghouse loan certificates, which allowed the banks to clear among themselves without relying on their usual reserve assets. Instead, the loan certificates represented “loans made to member banks by clearinghouse policy committees” [43,3]. The use of certificates freed high-powered money for depositor use and eased the reserve shortage facing the banks.

By November 6th, the failed institutions were in new hands and were settling their obligations to former note holders and depositors. The bank runs ended and stock prices recovered. There was a premium on currency, with prices as high as \$104 for \$100 face value currency [38,281]. By early November, this currency shortage had become the only, but significant, reminder of the

2. In an interesting article on many of these same issues, Miron [18] does not seem to think the bond collateral requirements were a major cause of problems. He explains the creation of the Fed as a response to interest rate fluctuations that occurred during panics. For a discussion of this view, see section six below.

earlier bank runs. Because of the prohibitive cost of note issue, banks were unable to directly prevent such a shortage by increasing the supply of notes. Instead, the banking system and the non-bank public devised ingenious and sometimes amusing methods for evading the law and meeting the demand for currency. These methods included the use of currency substitutes.³

The most common currency substitutes, comprising over 80 percent of the total, were the various clearinghouse currencies [3,515]. Along with clearinghouse settlements between the banks, clearinghouses also issued such loan certificates in small denominations for use directly by the public. These were marked with “payable through the clearinghouse” and were backed by assets of member banks deposited at the clearinghouse. The member banks agreed to accept them on deposit, though the clearinghouse itself held only a percentage of cash reserves for the deposited securities.⁴ Clearinghouse certificates, for interbank use, had been issued in previous panics, but had not circulated among the public because they were of large denominations.⁵ Though these certificates were important, and are the focus for Timberlake [43], other currency substitutes more closely resembled currency that might have been issued in the absence of bond collateral requirements. Also, by implication, these other substitutes were more obviously a violation of the letter of the National Banking Act, as well as laws prohibiting issues of private money.

Another kind of currency substitute used as hand-to-hand money by the public was the negotiable cashier’s check. These were written in small, convenient denominations of \$5, \$10 or \$20 and had no special reserves backing them. Since they were checks, they had to be payable to some person or entity. According to Andrew [3,510], the banks made the checks payable to “bearer” or “through the clearinghouse” or “in exchange” or the like. A number of banks were concerned about the legality of circulating checks in this manner, so they made the checks payable to “John Smith, or bearer” or “Richard Roe, or bearer.” By naming a specific person, banks made these currency substitutes look less like notes. Had the authorities regarded these small denomination cashier’s checks as bank notes, they would have held them to be in violation of the law, which required bond collateral for notes (in the case of national banks) or a ten percent tax (in the case of state banks).

Still another currency substitute, not issued by banks at all, was the negotiable pay check, also known as scrip.⁶ In normal times payment by any form of check was unusual. When firms (in their effort to cooperate with the banks) attempted to pay in checks during the panic, employees were disappointed. The firms then attempted, by various innovations, to overcome this reluctance. First, like cashier’s checks, scrip was issued in small denominations. For example, a worker might get paid \$50 in four \$10 checks and two \$5 checks. Unlike cashier’s checks though, the scrip was not a direct liability of either a specific bank or the clearinghouse. Though it was drawn through the firm’s bank, in that it often had the bank’s or clearinghouse’s name on them, scrip was clearly a *liability of the firm that issued it* [3,512]. Also, scrip was negotiable and passed hand to hand;

3. This section is based on Andrew’s [3] study, which delves more deeply into the nature, types and amounts of currency substitutes.

4. Some certificates and checks were found in cities that previously had no clearinghouse [3, 507]. That such currency was accepted was probably due to the banks in town listing themselves on the actual notes. This indicates that the size and organization of a central clearinghouse were not necessary conditions for the successful use of currency substitutes. These “clearinghouse” certificates also point to the huge role that brand names and reputations played in banking during this time period

5. The role played by these currency substitutes parallel the way in which private mintings of coin have been used to meet shortages as far back as the 18th century [4; 49]. The ways in which these coins became accepted are quite similar to the process noted below.

6. Timberlake [44] gives an extended discussion of the nature of scrip and some historical manifestations.

local merchants accepted it knowing that it could be transferred or accepted by banks as a deposit credit [23,2].⁷ Eventually, when the need for the currency substitutes diminished, scrip was turned in for deposit credits.

Businesses went to other extremes to combat the currency shortage. In Omaha, Nebraska, a streetcar company was forced to pay its workers with 600,000 nickels from its fareboxes [25,1]. The St. Louis streetcar company had earlier done its Omaha counterpart one better by paying employees with five cent fare tickets that could be used in exchange for checks or goods at local stores [41,1]. The fare tickets circulated fairly widely for several weeks, evidently because they had a redemption value as streetcar rides.

IV. Currency Substitutes and the Acceptance of Competitive Bank Notes

Most currency substitutes were illegal, and banks, the government and the public knew it, yet no serious attempt was made to stop issues of such money. Nor did creditors take advantage of the law to put pressure on debtors to pay in legal currency, which would give them a premium profit. If bond collateral requirements were so much in the public interest, why did the Treasury not step in and prohibit (or tax if appropriate) the illegal asset currency? More fundamentally, why was the general public willing to accept such currency at the same value as national bank currency if bond deposit currency was less risky? Another interesting question relates to the banks: why did they judge the cost of issuing currency substitutes, including (in cases) the probability of prosecution multiplied by the penalty, to be less than the cost of issuing legal currency?

To answer the last question, reference might be made to the previous evidence of the high cost of legal note issue during panics. An explanation of the public's acceptance of currency substitutes must, on the other hand, rest on consideration of the fundamental nature of money and the competitive actions of the banks. The essence of money is its general acceptability. Historically, stones, shells, tobacco, cigarettes and cattle have all served as money. Indeed, as Mises [19,95] put it, something can become money *only* "through the practice of those who take part in commercial transactions."

The banks's principal competitive method for gaining general acceptability of the currency substitutes was to earn the public's trust.⁸ For the banks, this often meant deploying their brand name capital. In both Pittsburgh and St. Louis, where substitute issue was heavy, pay checks and circulating cashier's checks were endorsed by the clearinghouse. This endorsement was advertised both on the notes themselves and in public statements [28,1]. In St. Louis the banks advertised their willingness to provide copies of their official signatures to local merchants in order to prevent fraud [40,2]. The Pittsburgh clearinghouse took out an ad announcing that it had hired Pinkerton security to guard against fraud in pay checks [28,1]. A St. Louis bank director walked a customer down to a railway ticket agent's office to personally endorse a check [39,6]. In Philadelphia, banks routinely certified the worthiness of pay checks at employers's requests [25,1]. Such procedures were aimed at promoting the acceptability of the various currency substitutes by showing that the banks stood behind them. Note also that the banks had an interest in promoting checks because acceptance protected their legal cash resources.

7. Timberlake [43,10] notes the "perceptions and judgments of thousands of bankers" as important to the success of the currency substitutes, but fails to mention the role that merchants played by being willing to accept them as payment.

8. The notion of money as a social institution founded on, and embodying, trust has been explored by Simmel [37] and Frankel [8].

A second method for getting the substitutes accepted was education. Pittsburgh banks took out a large newspaper ad explaining how pay checks worked and how they could be deposited in order to open up a checking account for the depositor. The ad also pointed out the conveniences of using checks as well as the safety measures taken [31,6]. A bank teller in St. Louis explained to a recalcitrant customer how he could pay his employees in cashier's checks: "Give the men checks. They're good at the butcher's and the baker's" [39,6]. Another educational device was the explicit printing of instructions and conditions on the back of checks [30,5].⁹

In addition to strictly informational properties, the process of a good becoming money involves a geometrically expanding circle of acceptance. The more others are willing to accept good x as money, the more likely I am to accept it. In Menger's [17] story of the origin of money, this snowballing process is essential to a medium of exchange becoming generally accepted.¹⁰ People want to hold the most generally accepted of assets in order to make purchases more easily. As they see the gains made by those who hold, and then spend, the more marketable assets, people imitate that behavior and attempt to make similar gains. This whole process multiplies until one object is universally (or nearly so) accepted as money.¹¹

This process is revealed in the acceptance of the currency substitutes during the fall of 1907. Store managers, not wanting to lose business due to the greater likelihood of people having to tender wage checks, actually competed briskly with each other in their attempts to encourage holders of such checks to use them at their establishments. A St. Louis jewelry store was one of the first to advertise that checks would be accepted. When a competitor followed suit, the store outdid them by offering a ten percent premium on cashier's checks over other forms of payment—actually reversing the usual currency shortage condition [42,18]! In Pittsburgh, a reporter for the *Post* noted, "a strange desire among all of the storekeepers to be the first to let their customers know . . . the fact that wage checks would be as good as cash" [29,1]. In general, merchants were all very willing to accept wage checks, for reasons similar to the banks's. Not accepting them would reduce sales, whereas acceptance gave them a medium that could be redeposited like cash.

These reports demonstrate the relationship between the willingness of the merchants to accept and the attitudes of the public and the banks. The greater proportion of merchants that would accept substitutes, the more confidently and commonly the banks would issue them in times of demand. The merchants would then read this as evidence of bank confidence, leading to them being more likely to continue to accept substitutes. Analogous arguments hold for the public's attitude toward both the banks and the merchants. This process as a whole is an example of the snowballing process discussed by Menger. Like money itself, the currency substitutes are

9. These informational aspects tie into the literature on the origin and nature of monetary exchange. Brunner and Meltzer [6], Ostroy and Starr [27] and Alchian [1], for example, all stress the informational properties of goods that become media of exchange. Brunner and Meltzer and Alchian expressly argue that the lower the cost of recognizing the quality of a good, the more likely it is to become a medium of exchange. The attempts by the banks and merchants in 1907 to provide this type of information about quality did lower the cost of using the substitutes and facilitated their acceptance.

10. On the Mengerian theory of money, see Jones [15], Nagatani [21] and O'Driscoll [26], as well as part of the discussion in Richter [32].

11. It should be noted that the Menger story refers to the origin of outside money, or what Mises [19, 526] calls "money in the narrow sense." The currency substitutes were inside money, or "money in the broad sense," and this difference limits the applicability of the Menger story. Whereas Menger was trying to explain how *any* medium of exchange would ever arise, here we are examining why *particular* media become more or less accepted. The two evolutionary processes seem to be parallel and Menger's theory can provide insights on the viability of particular types of inside money.

converged upon when people are left to themselves to resolve the need for an acceptable medium of exchange.

V. Bank Runs, Brand Names, and Bank-Specific Information

To assess the relevance of the panic of 1907 for the possibility of competitive note issue, two distinct problems that confronted banks during the panic need to be distinguished. The first was the attempt by depositors to turn bank promises into non-promises (what we might call an “outside money run”), due to a loss in confidence. The second difficulty was another sector’s demand to turn deposits into notes (which we can call a “currency run”); i.e., simply switching the form in which they wished to hold bank liabilities.

The outside money runs in 1907 were centered around the Heinze-Morse banks. The difficulty facing the system then (and facing unregulated banks) is how to prevent localized runs from spreading to the whole system. One way banks tried to prevent contagion in 1907 was through advertising and use of their brand name capital. In addition to advertising the acceptability of the currency substitutes, banks advertised the soundness and trustworthiness of their institutions. Advertising trust and confidence was common practice in an era before federal deposit insurance programs. During the panic, banks immediately resorted to stronger and more innovative ways of advertising, especially through the use of their brand names.

After the panic first began in New York, there was a marked increase in general advertising by banks. There were also changes in the kind of ads they ran. It became more common for banks to list their directors and owners in their advertising. They also offered such standard information as length of time in business and volume of business. In normal times a bank might only rarely advertise its balance sheet. During the panic, on the other hand, various issues of the *New York Times* indicate that advertisements frequently included abbreviated balance sheets. In the issue of October 25, 1907 [22,15], at the height of the panic, there was a full page of bank ads (compared to the usual quarter or half page). The ads included short versions of balance sheets and long detailed lists of bank personnel, including specific information on other business connections of the board members and management. The banks, like the public, were sensitive to concerns about interlocking directorates, and any connection with anyone questionable was bad for business.

Such advertisements appear to be attempts to provide the kind of bank-specific information discussed by Gorton [12]. Bank-specific information allowed the public to determine whether problems with a given bank were individual or symptomatic of wide-spread difficulties. Without such information, the failure of a single bank, perhaps appropriately due to faulty management, could become a multi-bank run, as the public misperceives a local problem as a systemic one.

A few banks also provided such information by refusing to accept deposits from customers who had drawn the funds off of sound banks. Winmill and Fish Bankers, for example, advertised that it would not accept deposits from “reputable banks and trust companies to their unnecessary embarrassment” [22,15]. As Gorton [12,280] notes, informational externalities give banks incentives to prevent competitors from failing. Winmill and Fish’s policy can be viewed as a rational response to that incentive and a way of internalizing the costs of confidence deterioration.

Such activities can also shed light on Gorton and Mullineaux’s [13] argument about the role of the clearinghouses during the panics. They argue that clearinghouses are a way for banks to internalize the information externalities that result from a lack of bank-specific information. By switching to a hierarchical mode of organization (rather than a market one) during panics,

contagion could be prevented. While the evidence presented here corroborates that point to an extent, individual banks also had ways of handling these externalities, both by advertising their own financial situation and by refusing to accept deposits drawn off of sound banks. Gorton and Mullineaux argue that individual banks would hide behind the clearinghouse in panic situations, but the evidence indicates that this is only part of the story. Banks also used individual tactics to internalize information externalities.¹²

The panic also has additional evidence on the role of clearinghouses during crises. At the outset of the panic, the New York Clearinghouse Association made balance sheets of member banks that had suspended payments available for public scrutiny. The clearinghouse also made public a list of all member bank directors and their various business connections. *The Wall Street Journal* made it standard practice to publish this clearinghouse information as soon as it was released [45]. This was a way in which the clearinghouse, as a central information source, could provide bank-specific information.

All of these clearinghouse activities lend support to Timberlake's [43] description of the clearinghouses as efficient, non-governmental central banks.¹³ The actions taken to issue the loan certificates and other currency substitutes to meet the rise in the relative demand for currency were both necessary and effective. In fact, total losses from all issues of clearinghouse currencies were virtually nil [43,13]. Despite the illegality of the currency substitutes, they circulated widely and easily, just as theorists of competitive note issue indicate they might.¹⁴ The way in which clearinghouses became fractional reserve institutions that issued the needed currency, and the fact that the currency was accepted by the public, together indicate how competitively issued currency along with a well developed clearinghouse system might behave under similar circumstances.

VI. Legal Restrictions on Note Issue and the Origins of the Fed

Inside money runs (shifts in the currency-deposit ratio) are only a problem when legal restrictions bias the relationship between deposit and note liabilities.¹⁵ The bond collateral requirements meant that changes in depositor liability preferences required changes in the composition of bank assets, which made producing the desired liabilities unprofitable. Currency substitutes were one way

12. It is interesting that Gorton and Mullineaux [13, 466–67] and Mullineaux [20] argue that the hierarchical role of the clearinghouse somehow casts doubt upon arguments that the market can effectively discipline free banks. As Selgin and White [36, 216] point out, this is true only if one views “the market” as simply responses to price signals. The market, viewed more broadly as a nexus of voluntary exchanges, involves all kinds of hierarchies, including the idea of a bank (or firm) itself. The movement from market to hierarchy simply indicates that *price* coordination is too costly, not that *market* coordination is.

13. Though one need not agree with Gorton [12, 277] that the Fed was *simply* a nationalized clearinghouse system. Aside from traditional clearinghouse activities, the Fed had a monopoly of note issue and could provide the government with an instrument of inflationary finance.

14. One other consideration is the role of branch banking. Interstate branching was basically illegal in the U. S. at the time, though it was legal in Canada (which also had asset backed notes) and Canadian banks felt no effects from the panic. Nationwide branching would also have made funds transfer easier, so that any possible local run could be handled smoothly without the drain on reserves caused by the country banks. Additionally, the fact that over 80 percent of the value of the currency substitutes were issued by the New York Clearinghouse, and backed by the diverse portfolios of its members, provides support for the benefits of the kind of diversification that large branched banks can provide. It can be argued that the New York substitutes succeeded partially because of the assets that backed them. One would expect competitive currencies to be more viable when the issuing banks have more diversified portfolios, like those that branched banks can have.

15. See Selgin's [34] extended discussion for more on the relationship between competitive note issue and the relative demand for currency.

banks evaded these legal restrictions on note issue and profitably provided the desired liabilities. The currency-deposit problem was not a demand for base money in exchange for notes, but a demand for notes in exchange for deposits [43,11].

The extra time and trouble involved in the issue of currency substitutes (instead of conventional bank notes) were a major cost of the era's restrictive banking laws. The risk of legal penalties was also a consideration: shortages and runs had to get fairly severe before banks became convinced that the authorities would look the other way. Had banks been able to issue notes backed by their general assets, they could have easily and quickly made the switch from deposits to notes simply by printing new notes. Such new notes could also serve to meet the demands from the banks where confidence was lost, thus preventing a ripple effect on outside money due to those runs. Since both notes and deposits would be backed by the same assets, no new assets need be purchased to meet the switch in liability preference, and the currency runs could have been avoided.¹⁶ Actual experience with the issue of currency substitutes gives important testimony to these conclusions about the viability of note issue deregulation.

To the extent that concern over the elasticity of the money supply was an important factor in the debate over the creation of the Federal Reserve System, this last point comes into play. Friedman and Schwartz [9,190] argue that elastic meant "subject to substantial change in quantity over short periods for reasons other than immediate profit to the issuer." Phrasing the question this way is misleading because there should not be any reason why elasticity and bank profits are contradictory. *Given* the legal restrictions of the National Banking System, the two were incompatible, but if the national banks had been able to issue currency without the bond collateral requirements, then their own profit maximizing behavior would have led to an elastic currency.¹⁷ Friedman and Schwartz's [9,190] three conditions for elasticity,¹⁸ and implicitly the rationale for the Fed, overlook a fourth possibility—removing the bond collateral requirements.¹⁹

Recent literature on the origins of the Fed, for example Miron [18], emphasizes the seasonality of interest rates under the National Banking System. The justification for the Fed was the need to smooth interest rates. However, it can be argued that legal restrictions were one likely cause of such seasonality. Because the bond collateral requirements led to currency shortages, and because the shortages led to reserve drains, bank balance sheets were subject to heavy fluctuation. The harvest season drain on currency and reserves may well have led to the interest rate movements that the current literature is concerned with. In the absence of legal restrictions, shifts in the currency-deposit ratio would have posed no problem, and the resulting drains on reserves and interest rate seasonality would not have occurred. Further deregulation of note issue could have been a possible alternative to the Federal Reserve System as a way to smooth out seasonal interest rates.²⁰

16. Selgin [34] also notes how the currency-deposit ratio can play havoc with the total supply of money under central banking. Since currency (in the U. S.) is also bank reserves, increases in the public's currency-deposit ratio mean a loss in bank reserves and a multiplied contraction in the total supply of money. Such fluctuations would not occur with unregulated banks, since currency would be inside, and not outside, money.

17. Klein [16] and L. White [47] offer preliminary sketches of the profit maximizing conditions for competitive note issue. Selgin [35] provides a more complete picture of those conditions.

18. These conditions are: 1) some body or bodies to supervise or control the creation and retirement of Federal Reserve money and to handle the mechanical details; 2) some means for creating and retiring Federal Reserve money, 3) some criteria to replace profit in determining the amount to be created or retired."

19. Admittedly, Friedman and Schwartz wrote those lines over 25 years ago when centralized control over the money supply appeared to be the only way to solve apparently endemic elasticity problems. However, recent advances in the theory of competitive banking now make the passage seem somewhat dated.

20. Of course, any complete explanation of the origins of the Fed would have to deal with a myriad of other historical factors in addition to considerations of economic theory strictly defined.

VII. Conclusion

Empirical cases of unregulated note issue are difficult to find, since instances of such behavior have been few and far between. The currency substitutes issued by the national banks during the panic of 1907 provide a fairly good example of many of the phenomena that might be expected with competitive note issue. The acceptance of these substitutes also provides some evidence that the public would use competitive currency backed by general bank assets. When evidence of public acceptance is combined with the ability of competitive currency producers to easily switch from deposit to currency liabilities, the removal of the legal restrictions on note issue presents itself as a feasible alternative to solving the elasticity and interest rate problems that have traditionally justified the creation of the Fed. Further research in this area should help to more completely determine the costs and benefits of each option.

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