What Kinds of Monetary Institutions Would a Free Market Deliver?

Lawrence H. White

At least since Adam Smith's *Wealth of Nations* (1776), economists have periodically debated the consequences of applying the principle of laissez faire to money. Never entirely extinguished, the debate seems to be rekindled at roughly 50-year intervals. In the late 1820s to early 1940s the advocates of "free banking" argued with some success that the monetary system would be improved by freeing entry for banks of issue, and by ending the privileges of the Bank of England and the Second Bank of the United States. In the 1880s and 1890s there was a modest revival of laissez-faire monetary thought in Great Britain, and in the discussions over remedies for the shortcomings of the regulated note-issue of the National Banking System in the United States. In the late 1920s and 1930s a still more modest revival occurred. Today we are in the midst of a large-scale resurgence of interest, dating from the mid-1970s, in competitive institutions for the supplying of money. For the first time since the 1840s a significant number of leading theoretical economists are among the proponents of monetary laissez faire.[1]

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[1]On the 1830s literature, see V. Smith (1936), L. White (1984a), and White and Selgin (1989). On the 1890s, see V. Smith (1936) again, Cowen and Kroszner (1987), and Selgin and White (1990). The important contributions of the 1930s era were Mises ([1928] 1978), Meulen (1934), V. Smith (1936), and Hayek ([1937] 1971). On Meulen, see Dowd (1988d), who also mentions the 1890s British writers. L. White (1984b) and Schuler (1988) survey old and new literature. Brown (1982) contrasts arguments for competitive money with arguments for constitutional monetary rules. Vaubel (1985) and Hellwig (1985) provide an informative clash of positive and negative views on currency competition. Dowd (1988a; 1989) and Selgin (1988) offer valuable restatements and important extensions of arguments for competitive money.

The writing style and theoretical apparatus of the economics profession has certainly changed since the 1830s, but one central point of the basic monetary policy debate has persisted. Many proponents of competitive money (particularly Hayek 1978) continue to point to the instability created by government-sponsored money issuers. They view the self-regulating character of market competition as a potential means for greater discipline and stability in the supply of money.

In another respect the modern debate has ventured onto new ground. The earlier proponents of free banking contemplated competition in the supply of "inside" money, namely bank notes and deposits, which they assumed would be redeemable for the "outside" money gold. Experience (for example with the assignats, Continentals, paper pounds, and greenbacks) suggested that an irredeemable paper currency was not sustainable. It could lead only to hyperinflation or a restoration of redeemability. The precious metals, especially gold, had been freely adopted by commerce around the world as outside money (Brough [1896] 1969, pp. 10–11). The quantity of gold in any nation was not under the control of government. Monetary theorists consequently had little reason to associate laissez faire with the demonetization of the precious metals, or otherwise with competition among multiple outside monies, except in the form of privately minted coins.[2]

Today the demonetization of the precious metals, at the hands of national central banks, is an accomplished fact. Experience with pure fiat monies since the end of the Bretton Woods system, together with the quantity theory of the purchasing power of money, suggests that a noncommodity outside money can, in fact, be sustained. Accordingly a number of recent laissez-faire monetary theorists, beginning with Klein (1974) and Hayek (1978), have contemplated competition in the supply of distinguishable noncommodity outside monies. Others, particularly Timberlake (1981, 1986), Friedman (1984), and Selgin (1988), have proposed free banking on a frozen base of fiat dollars.

In a separate line of development Greenfield and Yeager (1983, 1986; Yeager 1983), drawing on Black (1970), Fama (1980), and Hall

[2]Cowen and Krozner (1987) survey writers who did envision nonmetallic monetary standards under laissez faire. Hellwig (1985) rightly insists on the importance of distinguishing competition in inside money from competition in outside money. The defining characteristic of inside money, as the term is used here, is its redeemability. The asset for which it is redeemable could conceivably be something not itself a money, though historical examples are lacking.

It is probably unwarranted to infer from the four cases mentioned that *no* sort of irredeemable paper currency is sustainable. All four were cases of government-issued currency with legal tender status. I am indebted to Steve Russell for pointing this out.

(1982), have proposed a laissez-faire payments system in which a bundle of commodities would define the unit of account, but outside money would not exist.

Robert King (1983, p. 128) has aptly commented that "the central focus of future research in this area [of the economics of private monetary systems] must be the types of monetary *institutions* that the private market will deliver." The present essay seeks to provide an overview of the most important unsettled questions in the positive description of the monetary institutions that the private market will deliver, framing these questions with historical evidence (itself controversial) on the characteristics of relatively unregulated monetary systems. We consider what a laissez-faire payments system would look like with respect to inside money, outside money, and the unit (or medium) of account. Normative questions, for example whether a competitive payments system would be comparatively efficient, or by some other criterion better than the alternative, would require a separate lengthy essay to be treated adequately and so are not addressed here.

A Picture Based on Historical Precedents

Nineteenth-century proponents of free banking pointed to the monetary systems of Scotland (prior to Peel's Acts of 1844–45), New England (prior to the Civil War), and Canada (prior to World War I) as models of the competitive provision of money. Modern proponents have done likewise. Other cases of relatively unregulated competitive provision of money have also been uncovered.[3] The general characteristics of these historical systems provide a set of default values for considering what modern free-market monetary institutions would look like, because they arguably represent the outcomes of historical evolution in the absence of significant government intervention.[4] The following subsections sketch a stylized picture of com-

[3]On Scotland, see Cameron (1967), Checkland (1975), and L. White (1984a). On New England and its Suffolk Bank note-exchange system, see Trivoli (1979). On Canada, see Wells and Scruggs (1986) and Schuler (1989). Recently uncovered episodes of competitive currency production include Sweden 1831–1902 (Jonung 1987), Switzerland 1826–50 (Weber 1988), Revolutionary France (E. White 1987), and Foochow China 1800–1927 (Selgin 1987). For a global survey, see Schuler (1990).

[4]Economists who hold alternative visions of laissez-faire payments systems have argued on various grounds that the Scottish system does not really represent the outcome of laissez faire. Cowen and Kroszner (1989) believe that Scottish banks were too closely tied by law to redemption on demand in specie. Sechrest (1988) and Rothbard (1988), on the other hand, believe that redemption on demand was too laxly enforced. White (1989) responds to these arguments. Horwitz (1988) criticizes Rothbard's argument. Checkland (1968) long ago objected to Cameron's (1967) laissez-faire interpretation of

petitive monetary institutions on the basis of historical precedents. The second half of the paper discusses the arguments as to whether this picture is a valid guide to what to expect from a laissez-faire monetary regime under modern conditions.

Outside Money and the Medium of Account

Commodity money emerges spontaneously out of barter for the well-known reason that traders discover the benefits of indirect exchange and converge on a widely accepted commodity as a generally used medium of exchange (Menger 1892). Convergence results from the benefit to each individual of using the medium that his potential trading partners will most readily accept. The same benefit suggests that a standard international commodity money will emerge with the rise of international trade, and that the commodity standard (even if not the everyday use of the physical commodity itself to make payments) will persist indefinitely in the absence of government action to supplant it. The historical cases of relatively free banking took place within the context of metallic standards. It is therefore natural (though not necessary, as discussed below) to assume that a precious metal monetary standard would prevail under laissez faire. Weber (1988, p. 460) observes that Swiss banks in the 1830s and 1840s, following their deregulation, "denominated their notes in the most stable currency units in use, which were the foreign specie units."

Full-bodied coins, in a competitive monetary system with a gold or silver standard, would be produced by private mints. Historical precedent exists in the dozens of private mints which operated during the Southern Appalachian gold rush of the 1830s, the California gold rush beginning 1849, and the Colorado gold rush of the late 1850s (Kagin 1981). A live model exists in the coinages of the Gold Standard Corporation of Kansas City. Mints essentially provide the service of certifying the weight and fineness of the pieces of precious metal used in trade. Self-interest would compel each private mint to be scrupulously honest, because any suspicion of short weight would make its coins difficult to pass and would, therefore, quickly depress the demand for its certification services.

In a specie-based monetary system with full-bodied private coinage, in contrast to some other conceived systems, there would be no "separation" of the medium of account from the basic medium of exchange, or separation of the unit of account from the integer units

Scottish banking. Woolsey (1985) and Cowen and Kroszner (1988) also argue that further steps in the natural evolution of the payments system would lead to different institutions. These arguments are considered below.

denominating exchange media. (The "medium of account" is "the good in terms of which prices are quoted and accounts are kept" or equivalently "the good whose unit is used as the unit of account" [Niehans 1978, p. 118].) Firms would naturally find it convenient to post prices and keep books in terms of the commodity they routinely accept in payment, and in the units characteristic of that commodity. For like reasons of calculational convenience, competitive mints would all produce coins in multiples of a conventional monetary unit, which would simply be the standard weight unit for monetary metal. The unit of account would thus be represented in all coins, but would be conceptually distinct from any particular brand of coins.[5] Only in this sense would there be any "separation" of the unit of account from the media of exchange. Nationalization of minting services has in the past promoted a confounding of the monetary unit with the products of a particular mint.

Inside Money

In a historically precedented free-market payments system, members of the public would make the great bulk of their payments not with full-bodied coins but with inside money, consisting of specie-redeemable bank notes, tokens, and demand deposits issued by competing private banks.[6] For reasons of calculational convenience, small-denomination bank notes and tokens would be non-interest-bearing, carrying a constant face value denominated in round multiples of the monetary unit (Fama 1983, White 1987). Their exchange value would be maintained at par by their issuers providing redeemability for specie on demand. As some Scottish notes did before the practice was outlawed in 1765 and much as passbook accounts have commonly done, notes might well carry an "option clause" enabling the issuing bank to delay redemption at its option. Under competition the issuer would be obliged to pay the noteholder a contractually stipulated compensatory interest bonus in the event of invoking the clause. Such a contract, providing flexibility but also an incentive against its abuse, might be optimal for both the bank and its customers as a means of coping with circumstances that might otherwise require

[5] I am indebted to Leland B. Yeager for this point.

[6] Private bank notes have successfully circulated at some time in most countries, and over long periods in many. See note 3 above for references on the least-regulated cases. The monopolization of currency production by government banks is a relatively recent occurance in many nations. In Scotland and Hong Kong it has yet to occur (though the private issue of bank notes is today heavily regulated). Eichenbaum and Wallace (1985), as if innocent of this history, argue for the viability of privately issued currency by citing two recent cases of circulating tire company coupons in Canada.

costly asset liquidation, give rise to a bank run, or end in costly litigation.[7]

Demand deposits, similarly redeemable, would bear interest. Notes could presumably continue to circulate, despite being dominated in rate of return by demand deposits, because they are bounce-proof. As fiat currency notes are today, bank notes would be preferred in transactions for which it would be too costly either to verify that the payer had sufficient funds to cover a deposit transfer or to accept unverified checks. The sphere of currency transactions might well shrink in the future as advances in the technology of point-of-sale electronic funds transfer continue to reduce the costs of verifying deposit transfers, but currency use is unlikely to vanish even in the 21st century.

Under competitive conditions all brands of bank notes and deposits would circulate at par throughout the economy. United States experience in the early 19th century, with discounts appearing on the notes of unit banks in cities far from the place of issue, is not pertinent to a laissez-faire system with unrestricted branch banking, particularly with modern transportation and communications facilities. Banks in a competitive system are all driven to accept one another's liabilities at par, either to profit from replacing rival notes with their own, or because par acceptance enhances the demand to hold the liabilities of all banks which are party to a mutual acceptance agreement (Selgin and White 1987). The same rationale has been driving banks recently to form mutual par-acceptance networks for automatic teller machine cards. As with checks and ATM card withdrawals, notes accepted by other banks would be returned to the issuer through an inter-bank clearing system for redemption. The same adverse clearing mechanism that limits deposit expansion in a conventional banking system would limit the issue of bank notes (Selgin 1988).

How many note-issuing banks a laissez-faire system would sustain, depending as it does on the economies of scale actually present, is, of course, an empirical question. Casual inference from note-issuing experience in Scotland (19 banks of issue when entry was closed in 1844) and Canada (10 banks of issue when the Bank of Canada was established in 1935) suggests that a nation the size of the United States today might support 20 or so nationally branched issuing banks. Inference from today's experience with credit cards or travel-

[7]The potential benefits of the option clause are considered in more detail by Dowd (1988a, pp. 34–35; 1988b, pp. 649–51; 1988c), who explains why bank customers would accept optional notes even when fully redeemable notes are also available. For a technical treatment, see Chappell and Dowd (1988).

er's checks suggests fewer, perhaps five to ten. In any event there is no evidence to suggest that the number would be small enough to permit monopolistic conduct, especially considering the absence of entry barriers.[8]

The reserve ratio that the typical bank would find optimal to hold for prudential reasons, in the absence of regulation, is a similarly practical question. Historical experience in Scotland suggests a figure below 5 percent (see Munn 1981, p. 141).[9]

The clearing system for inside money would be managed by private institutions, as it typically has been in the past and is even today in Canada and the United Kingdom. It is not certain exactly how the system would be structured. The historical arrangement of the Suffolk system suggests the provision of clearing services by a single central clearing bank. Monopolistic pricing by such a bank is restrained by the contestibility of the market, as the Suffolk Bank discovered when it lost its clients to the Bank for Mutual Redemption (see Mullineaux 1987). The arrangements of the Scottish and Canadian clearing systems under conditions closer to free banking suggest that in the absence of relevant legal restrictions the banks would organize the clearinghouse as more-or-less symmetrical partners (Selgin and White 1988). Gorton and Mullineaux (1987) attribute a special hierarchical status in the banking system, one of quasi-regulatory power granted by the member banks, to the private clearinghouses of the National Banking era. The extent to which a clearinghouse in a laissez-faire context would develop such features is a question deserving further theoretical and historical consideration.[10]

Challenges to This Picture

In considering challenges to the foregoing picture of competitive monetary institutions, it is easiest to begin with questions regarding

[8]The *a priori* speculations of Summers (1983, p. 160) to the contrary notwithstanding. The successful recent entry of the Discover Card shows that competition for the market exists.

[9]In Switzerland, however, one major bank for which records survive (Weber 1988, p. 471) held specie reserves of around 50 percent. Either level is contrary to Rothbard's (1983, p. 117) suggestion that banks in a free-banking system would find it necessary to hold nearly 100 percent reserves. Nothing in a laissez-faire system would legally prevent a bank from making a contractural commitment to hold 100 percent reserves, and such a warehouse bank might attract some customers. But the bank would be placing itself at a great disadvantage in competing for most customers and would, therefore, not be typical.

[10]On the historical roles of private clearinghouses see also Munn (1975), Trivoli (1979), Timberlake (1984), Gorton (1985b), and Mullineaux (1988). For theoretical scenarios accounting for the emergence of clearinghouses, see Selgin and White (1987).

inside money, and then to entertain the somewhat more fundamental questions regarding outside money and the unit of account.

Inside Money

It is possible that banks could develop cost-effective means for paying interest on bank notes, which competition would then compel them to employ. Simple post-dated notes, issued at a discount from eventual redemption value, would likely not survive because of the computational costs of figuring present value at each transfer.[11] McCulloch (1986) has suggested an alternative means for paying interest in an expected-value sense: Note-issuers could periodically hold lottery-like drawings to pay cash prizes to holders of notes with winning serial numbers. Winning notes, redeemable for a multiple of their face value, would be withdrawn from circulation. Losing notes would continue to circulate at par, avoiding any calculational inconvenience. It cannot be said *a priori* that such a scheme could not fly. Its absence in the past may simply reflect legal prohibitions against private lotteries.[12]

Quasi-interest payments on bank notes would still leave inside money consisting of debt claims, redeemable on demand at values not contingent on the performance of the issuer's assets. A more fundamental challenge to the historically based picture of free banking is the argument that under laissez faire, inside money would principally consist of *equity* claims or shares in financial institution portfolios (Greenfield and Yeager 1983; Cowen and Kroszner 1988; Goodhart 1988, pp. 86–95). Checkable money market mutual fund (MMMF) accounts provide a model. In contrast to the pre-specified interest earnings on ordinary bank deposits, MMMF accounts fluctuate daily to reflect the performance of the financial institution's portfolio. Shares are denominated in the unit of account, so that the number of shares in an account fluctuates, rather than the price per share. Fama (1983, pp. 8–9, 22) discusses the possible characteristics of a "mutual fund type of deposit," but also expresses the following judgment: "Since deposits with fixed promised payoffs in terms of the unit of account have always been common, such deposits are also likely to be important in a competitive unregulated banking system."

[11]Contrary to the hypothesis of Bryant and Wallace (1980) and Wallace (1983) that bank notes would carry definite maturity dates. See White (1987) for further discussion.

[12]See Cowen and Kroszner (1989, n. 3). One problem facing a bank implementing the scheme is how to prevent its deposit customers from withdrawing great quantities of notes just prior to a lottery drawing. This suggests that drawings would have to be held frequently or (as Tyler Cowen has suggested in correspondence) randomly.

Historically, it was much easier for holders of inside money to monitor a financial institution's compliance with an ordinary debt contract, because monitoring an equity contract requires the holder to observe the performance of the institution's asset portfolio, and banks have traditionally held obscure assets (business and personal loans). The availability today of easily observed assets (publicly traded securities) for inside-money issuers may render this monitoring cost difference no longer significant.

The chief argument for expecting equity accounts to predominate is that they spare the account holder the worry, possibly reasonable in the absence of subsidized deposit insurance, of being last in line in the event of a redemption run. Fear of insolvency is reasonably thought to be the source of runs by noteholders and deposit-holders under a first-come first-served rule for liability redemption (Gorton 1985a). A mutual fund-type institution, without fixed-payout liabilities, cannot become insolvent (have total liabilities in excess of assets). A negative shock to fund assets is reflected in all accounts immediately, rather than (as in the case of a failing bank) falling only on those last in line to liquidate their accounts.

One reason for doubting that equity accounts would predominate is that the potential for runs might be more efficiently remedied in another way, namely by some combination of the option clause, better matching of the maturities of liabilities and assets, extended liability for bank shareholders, senior claimant status for holders of demand liabilities, and private deposit insurance. A second reason is that debt claims with predetermined payoffs may be preferred by risk-averse transactors.[13] It is an open question whether there is any inherent cost disadvantage against joining payment-transfer services to mutual funds. Were mutual fund firms to make direct use of the clearing system, equity accounts might be as easy to spend as demand deposits. That checkable mutual funds in the United States today piggyback on the interbank clearing system may be simply a product of regulatory policies that exclude nonbanks from the clearing system and prevent banks from offering mutual fund accounts.

[13]See White (1984c, pp. 707–9) and Mott (1989). Calomiris and Cone (1985) argue that fixed-payout bank liabilities do not really present depositors with lower risks given thinly capitalized banks. Without deposit insurance and other regulations, however, banks would not be as thinly capitalized as they are today (Benston and Kaufman 1986, p. 70). It can also be argued that when the future purchasing power of the medium of account is sufficiently unpredictable, equity accounts would better insure the *real* value of transactions balances. (I am indebted to Steve Russell for this point.) But this factor is unlikely to be significant under a metallic standard.

Displacement of Commodity Outside Money

As Woolsey (1985, p. 2) argues, there are "private advantages to replacing specie in its monetary roles." Selgin (1988, p. 22) refers to this replacement as "fiduciary substitution." The primary advantage is that alternative assets pay interest (Cowen and Kroszner 1988, pp. 7–9). The monetary roles of specie are as a medium for (1) small and medium-sized transactions among members of the public, (2) over-the-counter redemption of bank-issued monies, (3) interbank settlements, and (4) redemption of clearinghouse liabilities. We will consider the possible displacement of specie from each of those roles in turn.

The use of full-bodied gold coins in circulation has traditionally been impractical for the smallest pieces of change. To illustrate, the smallest gold piece offered by the leading present-day mint devoted to producing circulatable precious-metal coins, the private Gold Standard Corporation of Kansas City, is five-hundredths of one troy ounce, which with gold trading at $400 per troy ounce has a spot value of $20. Banks of issue in a laissez-faire gold-standard economy would presumably offer small-denomination bank notes and redeemable tokens as a medium for making change. (The Gold Standard Corporation itself offers certificates, exchangeable at face value for its coins, in denominations as small as *one*-hundredth of a troy ounce.) The public would presumably find notes and tokens denominated in the unit of account more convenient than the traditional alternative, a parallel silver currency with fluctuating values in terms of gold.

It is possible that bank notes and tokens would cover the entire denominational spectrum and displace gold coins (or silver coins in an economy on a silver standard) completely from common circulation. The public might prefer notes and tokens, even in denominations practicably minted, if full-bodied coins are subject to significant wear (Woolsey 1985, p. 3). Private coins for circulation would naturally contain alloys to enhance their durability, but they would not be perfectly durable. The bulk of full-bodied coins may also be an inconvenience. It would be up to the public to decide whether these two factors would, in fact, outweigh the freedom that full-bodied coins provide from the (probably negligible) risk of default on notes and tokens. Historical experience with free banking suggests that specie might well be displaced from circulation. A contemporary observer of the Scottish system (Anonymous [1802] 1966, p. 39) noted that "Whoever has been to Scotland knows that, notwithstanding the appearances which denote real wealth, no coin but that of copper is common; gold and silver are scarcely visible; . . . Purchases and payments of all kinds are commonly made in paper."

If specie no longer circulates, banks no longer need to hold inventories of specie ("vault cash") to service the public's demand for change. Banks would still find it necessary to hold positive inventories for meeting over-the-counter redemption demands if inside money were redeemable on demand for gold and if *non*-monetary demanders, therefore, sometimes came to the banks as the lowest-cost source of gold. In such a situation a bank might be able, however, to issue fully acceptable inside monies which did not carry any contractual pledge to provide over-the-counter specie redemption, as Woolsey (1985, p. 6) suggests. Or the inside monies might, by carrying a suitable option clause, allow redemption only with advance notice (and possibly transactions fees) sufficient for the bank to procure the specie, thus enabling the bank to hold a zero inventory.

A public already weaned from using specie in circulation might consider the lack of unconditional specie redeemability inconsequential as long as the inside monies were maintained at par. The issuing bank could pay a higher rate of return from an asset portfolio free of some former holdings of non-earning specie, thereby gaining a competitive advantage and leading other banks to follow suit. The inside monies would remain at par, under the conditions assumed, if the bank contractually assured its clientele that the monies would continue to be accepted at par through the clearing system, and the clearing system maintained claims against it at par.

We now consider the possible displacement of specie from its role in interbank settlements. In the simplest settlement system, banks physically exchange specie to settle interbank clearing balances, and each bank accordingly holds specie in its vault to be able to settle potentially adverse balances. Banks naturally have an incentive to foster development of an interest-earning settlement asset in order to economize on their holdings of non-earning assets. In some historical systems, banks have exchanged highly marketable securities to settle clearing balances. In other systems, the settlement medium has been clearinghouse account balances. This medium can be interest bearing if the clearinghouse holds only fractional reserves. The demand for instantaneous settlement today militates toward use of cleaing-house account balances rather than securities, because account balances can have unambiguous unit-of-account values at every moment, whereas securities exhibit a bid-ask spread in intraday trading (White 1986).[14]

[14]Clearinghouse accounts could be debt claims or unit-of-account-denominated equity claims. In the latter case the total intraday account balance would be unclear beyond some amount, but a transfer of balances (the settlement medium) would still be fixed in unit-of-account terms.

Woolsey (1985, pp. 5–6) has suggested that the historical use of specie in settlements *between* regional clearing systems could today be economically replaced by internationally traded securities. In a world of global around-the-clock trading, the direct exchange of securities would face the same problem of finding some unbiased method for splitting the difference between the current bid and ask prices of the securities. An alternative would be a global clearinghouse, with which regional clearinghouses or leading international banks would hold settlement accounts.

The final limit to the displacement of specie is approached as the clearinghouses are able to reduce their reserve holdings toward zero. A clearinghouse's gold holdings will not actually reach zero so long as the clearinghouse maintains a policy of specie redeemability on demand for its accounts. It will presumably maintain such a policy so long as member banks face over-the-counter redemption demands and need to be able to replenish their vaults promptly. Even though redemption demands may seldom be made, there will be a nonzero chance that some settlement account units will be redeemed for gold. An identifiable stock of commodity outside money, though possibly trivial in magnitude, will continue to be held.

If the banks are able to eliminate the need to hold gold in their vaults, through the developments considered above, it is no longer quite as clear that the clearinghouse will maintain a policy of specie redeemability *on demand.* Member banks, like members of the public, might consent to a delayed-redemption-option clause that allows the clearinghouse to hold zero inventories. With claims against the clearinghouse carrying the option of delayed redemption, however, member banks would need some other assurance that the claims would not fall below their par value in terms of gold. An assurance of acceptance at par through a higher clearing system obviously cannot be made by the ultimate clearinghouse. Some other enforceable or incentive-compatible contract must be specified for effectively maintaining clearinghouse accounts at par in the absence of redeemability on demand in the medium of account. Or to put it another way, the clearinghouse must be effectively bound to a policy that will limit the aggregate of clearinghouse account balances to the nominal quantity consistent with maintaining the purchasing power of account balances fully equal to the purchasing power of gold.

One way of contractually binding a clearinghouse whose accounts carried a delayed redeemability option would be to include a provision, after the fashion of the Scottish option clauses, of a bonus to the redeeming party. For the option contract to be agreeable to the account-holders, the bonus would have to be sufficient to make the

present value of the delayed redemption payment at least equal to par.[15] The obligation to pay the bonus would compel the clearinghouse to avoid triggering redemption requests, by pursuing a policy that prevents its obligations from falling below par.

A possible policy for keeping clearinghouse accounts at par with minimal gold reserves is suggested by Fischer Black's (1981) proposal of a method by which a central bank could maintain a gold standard with "*near* zero reserves." The central bank would conduct open-market operations promptly to keep the high-powered money stock on the equilibrium path implicity necessary to maintain its purchasing power at par with gold. An increased demand for gold creating a loss of reserves, for example, would trigger the central bank to make open-market sales from its securities portfolio and thereby to contract the high-powered money stock, raising the purchasing power of money in accordance with the higher equilibrium relative price of gold, and consequently stopping and reversing the loss of reserves.[16]

If the near-zero reserve scheme is really feasible, then with delayed redemption the central bank could conceivably operate with zero reserves. Open-market sales would begin whenever redemption requests were registered. The purchasing power of its money would be raised to the level at which the central bank, in purchasing the gold called for, would suffer no capital loss. Open-market purchases would be used to dispose of any gold deposited (the central bank presumably continues to accept gold deposits at par in order to keep its obligations from going *above* par). A private clearinghouse wishing to operate with zero reserves could pursue the same open-market policy.

Black's scheme for holding near-zero reserves is feasible only if open-market operations affect the purchasing power of money quickly enough to avoid more than near-zero depletion of reserves. The holding of zero reserves by a clearinghouse with delayed redemption is likewise feasible only if open-market operations work quickly enough to avoid capital losses in gold purchases. Assuming feasibility, zero reserves would be *profitable* only if the prospective benefit from holding marginal reserves (paying fewer expected bonuses by reducing the probability of having to invoke the option clause) was less than or equal to the cost (foregone earnings) even at

[15]As discussed by Chappell and Dowd (1988, p. 6), who consider mutually beneficial option clauses in bank-note redemption contracts.

[16]Such a central bank policy of amplifying the effects of gold movements was sharply criticized by Hayek ([1937] 1971) for its effects on credit availability and the interest rate. Black does not consider any such effects.

a zero level of reserves. This is by no means necessary and indeed seems unlikely.[17] The holding of positive reserves, in order to provide redemption on demand in the medium of account, may well be the most economical way to maintain accounts at par so long as the medium of account is in demand. We note that present-day money market mutual funds find it economical to meet redemption requests by holding positive dollar reserves (deposit balances at commercial banks) despite their cost.

A more radical departure that would eliminate the clearinghouse's need to hold outside money reserves, while providing a contractual arrangement for keeping clearinghouse accounts at par, is Greenfield and Yeager's (1983) concept of "units-worth" redeemability. This concept combines denomination of redemption obligations in something other than the redemption medium (an "indexed" redemption *rate*), and redemption for something other than the medium of account (a nonmoney redemption *medium*). They envision bank-like institutions offering exchange media denominated in common units of account, but not at all redeemable (either on demand or with a delay) in physical units of the medium of account. The purchasing power of transactions balances is instead maintained at par by their par acceptance through the clearing system. As in a clearing system which has largely displaced specie in the historical ways discussed above, an institution with adverse clearing balances settles them by transferring ownership of assets *worth* the stipulated number of units. In their system this is the only sort of redeemability made available.[18]

The application of units-worth redeemability to clearinghouse accounts[19] faces the problem previously mentioned, that the ultimate clearinghouse cannot keep its accounts at par through par acceptance at some higher clearinghouse. Units-worth redeemability would instead keep the purchasing power of (e.g.) gold-denominated clearinghouse account balances from falling below par virtually by defini-

[17]The optimizing bank in Chappell and Dowd (1988) seems unlikely to choose zero reserves because the bonus provides a capital gain to noteholders, and all noteholders, therefore, request redemption during any period in which the bank runs out of reserves and must invoke the option clause.

[18]Redeemability in physical units of the medium of account would be impractical because they propose that a wide-ranging basket of commodities serve as the medium of account. What I am calling "units-worth" redeemability they call "indirect" redeemability, a term that may misleadingly suggest redeemability for a claim which is in turn redeemable in the medium of account.

[19]Greefield and Yeager themselves assume that highly marketable securities will be directly used as the settlement medium. They do not discuss the possible use of clearinghouse accounts.

tion. Any tendency for the purchasing power of account balances to fall below par (or equivalently, for the unit price of gold to exceed one) would be prevented by the obligation of the clearinghouse to provide redemption for "one unit" of account balances in settlement assets actually sufficient to purchase one unit of gold in the market. To consider the practical effect, consider again the shock of an increased demand for gold. This shock would, by reducing the value of clearinghouse assets relative to gold, force the clearinghouse to reduce the number of gold units in account balances (assuming equity accounts). Otherwise excess demand for gold at the par price would persist, and the clearinghouse could be sued by a customer who found "10 units" of account balances, or the settlement assets received by redeeming 10 units, insufficient to purchase 10 units of gold. The nominal quantity of clearinghouse balances would thus be appropriately limited to the quantity consistent with par value.

In an economy with gold or any other generally accepted medium of exchange as a medium of account, it is unlikely that banks (or their customers) would prefer accounts offering only units-worth redeemability to accounts offering actual gold redeemability. Settlement assets other than gold, such as securities, would presumably be subject to a bid-ask spread, raising questions about whether the cost of bridging that spread would be borne by the institution or by the account-holder. Would withdrawal of 10 units from an account net the customer as many settlement assets as could actually be *sold* for 10 units at the current bid price? Or only as many as could be *bought* for 10 units at the (higher) current asking price? In the former case the institution bears the turnaround cost of acquiring assets for their asking price and relinquishing them for their bid price. In the latter case the customer bears the cost, unless the assets happen to be the ones he wishes to hold.

One possible way to permit instantaneous intraday settlement while making ultimate settlement in securities would be to have the clearinghouse create daylight settlement overdrafts (collateralized by holdings of securities at the clearinghouse). This arrangement would eliminate the rationale for banks to hold as a settlement asset either the medium of account itself or clearinghouse accounts that compel the clearinghouse to hold the medium of account. Only end-of-day (or end-of-week) clearing balances would have to be settled by transfers of securities. Still, the above questions arise of who bears the cost of bridging the bid-ask spread in redemptions and interbank settlements. One option in settlements is to have both banks with negative and with positive clearing balances bear it. The clearinghouse would subtract securities from the first bank's portfolio at the

bid price and add them to the second at the asking price, thereby capturing the spread as a fee for its transfer services. A bank could avoid this fee in the short run by borrowing or lending in the interbank funds market, and in the longer run by varying its liability volume to counteract any nonzero clearing balance.[20] It is far from clear, however, that this sort of settlement system, eliminating standing balances of a zero-spread settlement medium, is economical from the point of view of the participants.

Greenfield and Yeager implicitly recognize that actual redeemability would prevail in an economy with an exchange-medium good as medium of account. They assume that units-worth redeemability exists in an economy with no alternative, the chosen medium of account being (deliberately) unsuitable for use as a medium of exchange. We consider below the question of the possible "separation" of the medium of account from the basic generally accepted medium of exchange.

Private Noncommodity Outside Money

The leading positive question with regard to privately issued noncommodity outside money (also known as "private fiat money") is simply whether it could represent a stable institution. Hayek (1978, pp. 43–46) envisions that a private issuing bank would announce an intention to keep the purchasing power of its currency constant in terms of a particular basket of goods, but that "it would be neither necessary nor desirable that it tie itself legally to a particular standard." As other economists have argued, however, we need to consider whether the one-shot profit from a surprisingly large issue of irredeemable currency may render it profit-maximizing for the issuer to renege on its announced intention. If so, a policy of stabilizing the currency's purchasing power is "time inconsistent" and will not, in fact, persist.

As we do not have evidence from any historical trials, the question remains theoretical. Klein (1974) discusses the possibility (but does not definitely affirm the existence) of an equilibrium in which the present value of staying in business, embodied in the value of the issuer's reputation or "brand-name capital," exceeds the one-shot profit. In his discussion money-users have a particular form of adaptive expectations. In Taub's (1985a) overlapping generations model with rational expectations, the issuer definitely wishes to exceed the promised quantity of money in every later period. If an issuing firm can at the outset make an enforceable precommitment to the policy

[20]W. William Woolsey has suggested something like this in correspondence.

it will pursue in every subsequent period, then competition would compel each firm to provide money which appreciates at an optimal rate. If such a precommitment is *not* possible, however, then private fiat money would be unstable and would have zero value in equilibrium. The same is true of government fiat money in a similar model where the government aims to maximize seignorage (see Calvo 1978).

From this perspective, a contractual commitment to redeemability may be viewed as an enforceable precommitment that makes a policy of limited issue time consistent, and thus makes privately issued money trustworthy and feasible (Vaubel 1977, Taub 1985b). Coase (1972) long ago suggested, in a nonmonetary context, that a buy-back clause can be used to resolve the time-consistency problem of assuring the buyers of a durable asset (in a case where price exceeds the marginal cost of production) that its price will not be reduced later by additional sales. Even Hayek (1978, p. 42) envisions that a new issuer of private currency would contractually bind itself to redemption at a specified rate in existing government currencies, thus guaranteeing a nominal floor value for the new currency. Some sort of indexed redeemability would likely be necessary to support the constancy of purchasing power that Hayek foresees being maintained even as the floor drops away.

The Medium of Account

The medium of account that initially prevails in a competitive monetary system depends on the historical path traveled. At least four candidate media of account have been discussed in the literature, implying different paths toward a competitive monetary system: (1) Government fiat currency (the dollar) serves as the present medium of account and would continue in that role for the time being if monetary competition were opened but no action were taken to institute a new standard. (2) The medium of account in the competitive payments system described in the first half of this paper was the commodity that historically emerged as the generally accepted medium of exchange. For gold to be the medium of account in a competitive monetary system in the future implies the remonetization of gold. (3) Private fiat currencies, if viable, would presumably serve as media of account for those who routinely accept payments denominated in them. In Hayek's scenario this acceptance would grow gradually. An alternative path involving a discrete switch would be to allow commercial banks to issue dollar-redeemable currency and then to suspend redeemability. (4) A multicommodity medium of account might, as proposed by Greenfield and Yeager (1983), be

successfully established by government taking the lead in making and insisting on payments so denominated. A more gradual path is discussed below.

Rather than attempt to rank these courses of action normatively, we may consider the likely survivability of each medium of account. The convenience to each individual of conforming to the monetary standard that most trading partners are using, as is well known, poses an obstacle to the spontaneous adoption of any new medium of account. An established monetary standard can be expected to persist unless its purchasing power threatens to disappear, or becomes unpredictable enough that transactors find it worthwhile to denominate contracts in a nonstandard but more reliable medium. The "dollarization" of Mexico and Israel under conditions of rapid and erratic inflation provides examples. The use of a more reliable alternative medium of account presumably first appears in idiosyncratic long-term contracts, where its benefits (reduced uncertainly of *ex post* real payments) are greatest, and where the fixed costs of negotiating specific terms must be sunk anyway. Its use may then spread toward spot markets as traders become accustomed to calculating in that medium.

A commodity money (let us continue to assume that it is gold) could be displaced from its roles as a hand-to-hand and bank-to-bank medium of exchange, in the ways discussed above, without any effect on its status as the medium of account. Prices would continue to be quoted in standard units of gold, and inside monies would continue to be denominated in the same units, the two practices reinforcing one another. Even in the limiting case of zero monetary demand for gold, the interaction of supply and demand for nonmonetary gold would place a positive lower bound on the purchasing power of gold and would, therefore, allow gold to serve as the medium of account (see Saving 1976).

The medium of account capability of fiat currency, by contrast, is not robust to the elimination of monetary demand for that good, as Wallace (1983, p. 4) observes, because its purchasing power is not supported by any nonmonetary demand. A competitive monetary system on a base of government fiat money, as some authors cited above have proposed, would, therefore, be vulnerable in the long run to innovations that displaced outside money from its roles as currency and as settlement medium.[21] As the demand for dollars vanished, the purchasing power of the dollar would go to zero or (if supply were also reduced to zero) become undefined. The dollar

[21]I am indebted to George A. Selgin for discussion on this point.

price level would become correspondingly unanchored. It is not coherent to suppose, as Cowen and Kroszner (1988, pp. 11–13) inexplicably do, that use of the dollar as a medium of account could nonetheless continue.

Hayek (1978, pp. 126–27) predicts that gold might displace depreciating government fiat currencies with the opening of free competition among monies, but would itself be displaced by private currencies whose purchasing power would be kept nearly constant. Woolsey (1985, pp. 9–10), though not referring to Hayek's prediction, hints at one way banks might help bring about this second step. Under laissez faire a bank could offer indexed certificates of deposit and long-term loans, denominating these assets and liabilities in a unit of constant purchasing power as measured by the prices of a specified bundle of goods. Different banks might experiment with different bundles, with a common bundle eventually becoming standard. As it became familiar, the bundle unit might spread to many debts and private contracts. Transactors with bundle-denominated payments to make might find it convenient to have bundle-denominated media of payment, prompting banks to offer checking accounts and bank notes in the new unit. Use of the bundle as a medium of account might then spread to spot prices as sellers became routinely willing to accept payment in bundle-denominated media.

Bank accounts and notes denominated in bundle units would be unit-worth-redeemable claims against the banks. Hayek pictures something slightly different: currencies denominated in bank-specific units whose purchasing power is kept nearly constant in terms of a bundle but whose value is not *defined* in terms of the bundle by any sort of redeemability. The bank-specific currency rather than the bundle would serve as medium of account. As argued above, however, resolution of the time-consistency problem may require that the value of bank liabilities be supported by redeemability. If so, there would be no separate bank-specific currency units.

Conclusion

Should the Hayek proposal for free entry into money production give rise to a common multicommodity medium of account denominating all prices and bank liabilities in the manner just described, and should the inherited outside money be completely displaced from its medium-of-exchange roles (in currency, settlements, and somehow even redemption of clearinghouse liabilities) in the ways discussed earlier, the result would be a spontaneously evolved Greenfield-Yeager system. Should a single commodity such as gold

emerge and persist as the medium of account, yet the roles of outside money disappear, the result might be considered a degenerate version of the Greenfield-Yeager system. Should that commodity continue to function as outside money, the result would be a free banking system in the traditional sense.

My own hunches regarding the results of allowing fully free competition in money are that the roles of outside money would not disappear. An inherited outside money would continue to perform those roles and would also continue to serve as a medium of account for the time being. A government fiat outside money accordingly would not lose its value immediately even in the absence of legal restrictions against development of private substitutes. As outside money was eventually displaced as currency, however, and as the private clearinghouse found ways to reduce its holdings of outside money (even supposing that actual redeemability in outside money dominates units-worth redeemability as a means of maintaining the par value of clearinghouse accounts), the value of government fiat money might ultimately become unacceptably tenuous. In that event an alternative medium of account would become predominant. In light of the time-consistency problem, it would not be a bank-specific currency, but likely gold or a multicommodity bundle for which bank monies would be directly or units-worth redeemable. Competition among private issuers would reveal which medium, and associated redemption contract, better secures the trust of the public. I would guess that gold, with its long history and continued serviceability as an outside currency, and with its tangibility as a redemption medium, would have a competitive advantage.

However plausible and historically grounded, these remain only hunches. It is necessary to make explicit one's hunches about how competitive monetary institutions would look, if one wishes to evaluate in any utilitarian way the desirability of allowing them. But we should keep in mind that the ingenuity of potential monetary entrepreneurs in devising contracts makes it impossible for any economist to list all the forms competitive money might take, let alone to judge authoritatively which forms would survive the market selection process in the future. This is all the more true because free enterprise has been denied for such a long time in the production of money.

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Is Private Money Optimal?

Richard N. Cooper

White's paper is a positive analysis about how free banking, including the free issue of bank notes, might work. He avoids judgments or analysis with respect to the social benefits or costs of such a system as compared with present arrangements or with alternative monetary arrangements. As the paper stands, it mixes two quite different things: free banking, and a commodity money of some kind, including a tabular standard in which money is indexed to a general price index. One section of the paper separates these issues and addresses free banking without any redemption requirement. It does not reach a definitive judgment, but it leaves the impression, which is correct in my view, that such a system would not be viable because of the temptation of note issuers to issue too many notes at public expense. Such a system, therefore, would be at least as unstable as a system of government-backed fiat money. Perhaps free banking, in fact, cannot be divorced from some system of commodity-based money, at least as an ultimate redemption obligation. But commodity-based money can certainly be divorced from free banking, and an evaluation of alternative monetary arrangements should clearly address what is the incremental contribution of free banking over some form of commodity-based "anchor" to the monetary system. The merits of commodity-based money for the international system are addressed in Cooper (1988).

Two Key Operational Questions

At the level of positive analysis, two key operational questions have not been addressed in White's paper: (1) What, if any, will be the legal requirements for creation of a note-issuing bank? (2) What notes will the government accept in payment of taxes, and what notes

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The author is Maurits C. Boas Professor of International Economics at Harvard University.

will the government use for its own payments? In addressing the second, very practical question, the government cannot avoid "taking sides" among the competing banks of issue, and thereby endowing the banks whose notes are acceptable with a special status.

Complete laissez faire on these two questions offers the attraction to each taxpayer to found his own "bank" for the sole purpose of issuing bank notes to pay his taxes. If the government redeems them at once, the taxpayer is no worse off, except for printing costs, which need not be high for this purpose. If the government delays in redeeming the notes, the taxpayer has received an interest-free loan. Indeed, the taxpayer could go a step further and print notes to buy government securities, which themselves can be used to pay taxes on maturity. If all taxpayers did this, the interest rate on government securities would be bid down almost to zero, the government would get virtually interest-free loans, and government securities would be the equivalent of money. So seigniorage would accrue to the government after all.

The above process could take place on a more limited scale even if the government imposed some standards for creating a note-issuing bank, provided the standards were not too onerous. Partnerships would be formed for the sole purpose of paying taxes, unless the prospect of immediate redemption were high, in which case the monetary regime would effectively be a standard based on the redemption unit.

But if the standards for bank creation are set high, the system no longer has easy entry and free banking. For the government to require membership in a clearinghouse in order for it to accept a bank's notes represents only a proximate solution to the problem. What are the requirements for membership in the clearinghouse? The government has merely passed a governmental function to a private body.

The Tendency toward Monopoly

A positive analysis should also try to characterize the equilibrium, or steady state, if any, that arises from a proposed system. White suggests that "there is no evidence to suggest that the number [of banks] would be small enough to permit monopolistic conduct." That may be a correct judgment, both for the past and for the future. But history is a complex process, subject to many jolts and turns. Analysts should ask whether there is any *tendency* toward monopoly, which would be realized if "other things are equal" for a sufficiently long period of time.

There are three reasons why, in a stationary environment, one bank eventually would dominate the scene under free banking with commodity redemption. The first has to do with the socially unnecessary process of periodic exchanges of bank notes collected by the various banks. The fewer the banks, the higher the return of each bank's own notes, which can be reissued, and the lower the fraction of the notes that must be physically shipped to other banks of issue. The limit to this incentive for consolidation is a single bank, thus avoiding all exchange costs.

The second reason has to do with the reserves that must be held against possible redemption of bank notes. Here we have the well-known pooling principle: If calls for redemption are not perfectly correlated, reserves to be held against possible redemption can be conserved by concentrating them and pooling all the risks. Whether there are savings from this source depends on the exact probability distribution of desired redemptions from public noteholders and from other banks. But on plausible assumptions there are likely to be savings on needed reserves arising from an ever greater concentration of the reserves in one institution; that is, in the limit, from a single bank or its functional equivalent.

Third, low-cost bank notes offer a great attraction to counterfeiters. This attraction would be increased in an environment in which many different (non-standardized) bank notes circulated simultaneously, since the public would frequently come into contact with unfamiliar notes and would have no basis for judging whether they were counterfeit. Thus the public would be bilked by counterfeiters and, in response, would gravitate toward a relatively few—in the limit, one—kind of bank note.

For all these reasons the steady-state in a stationary environment would be a single bank. That is, redeemable note issue is a natural monopoly. Of course, diseconomies of scale in management or other factors might overcome these tendencies toward monopoly. And the exercise of the monopoly would in any case be limited by the possibility of new entry; that is, it would be a contestable monopoly, but a monopoly nonetheless. Is a private monopoly, even a contestable one, superior to a public monopoly? The paper does not address that normative question.

The Outcome under Uncertainty

This outcome would arise in a stationary environment. In historical time, the environment is anything but stationary. It is subject both to short-run turbulence and to long-run drift, or trends, and on both

accounts to much uncertainty. Such uncertainty *might* reinforce any established monopoly, for example to minimize the problem of counterfeit notes, making entry more difficult, so long as the established monopoly bank is performing its functions adequately. On the other hand, the uncertainty might inhibit the emergence of a single dominant bank, and it would certainly be an environment in which some members of the public could regularly be exploited by new banking ventures that are dishonest or simply unlucky.

I read an interesting tidbit recently: Fully 26 and 32 percent of the FHA home mortgages issued in 1981 and 1982, respectively, when mortgage interest rates ranged from 14 to 17.5 percent, are still outstanding (*Washington Post,* 18 February 1989, p. E1). This situation is true despite the fact that 30-year mortgage rates have been in the range of 8.5 to 11 percent for at least three years. And the situation remains despite the fact that transactions costs for refinancing mortgages are comfortably covered by a 200-basis-point difference, except when the individual plans to sell his house within 2 or 3 years. (But even that contingency has been covered by some refinancing arrangements that absorb all of the refinancing cost in exchange for a higher than market interest rate.)

The gains from refinancing these high-interest-rate mortgages are substantial, over $230 a month on a $100,000 mortgage for an interest rate 3 percent lower, and indeed many refinancings have taken place. But what about those who have not refinanced, despite advertising by banks encouraging it and despite the passage of more than 3 years during which refinancing has been attractive? It must be due to ignorance, apathy, or inertia in human behavior. Some people are sharp-witted and quick to act when it comes to issues of money and finance; others are befuddled and slow to act even when given encouragement and sizeable financial reward.

I suspect a substantial fraction of every society is made up of the second category of people. This means that in a continually changing and uncertain environment some fraction of the public will be financially ignorant, and hence the more gullible among them will be the object of financial swindles of all kinds. Most possible swindles are avoided by the fact that a positive act is required to get drawn into them. But everyone has to use money, whether he is interested in it or not. Hence, if money creation is laid open to free entry, the possibilities for swindle in any nonstationary environment will be legion; and given greed, they will be exploited.

The Social Response

What should be the social response to this possibility? Social Darwinians could argue that nothing should be done to protect such

ignoramuses who are not always on their toes. If they are regularly defrauded and driven into destitution, that outcome is part of a desirable if painful process of eliminating them from society. The same argument could have been made for retention of full freedom of action that existed in the 19th century to sell patent medicines and other nostrums without governmental interference: It would teach the public to stay on its guard, be skeptical, and demand proof of efficacy. Those who did not meet these standards should be weeded out of society.

But we decided collectively long ago to become a "kinder and gentler" society and to create minimum standards and assurances that everyone could count on with regard to food and drugs—and with respect to money. Moreover, it is costly in time and effort constantly to have to check and recheck the necessities of daily life. So enforced minimum standards not only protect the gullible and ill-informed, an admittedly paternalistic view, but also involve a great gain in efficiency in terms of time and effort conserved by everyone in not having to think constantly about what particular notes you receive in change from a purchase and how long you want to keep them. These informational gains must be set against any losses, for example in innovation, from having a government monopoly in currency creation.

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The Case for a Laissez-Faire Monetary System

Karen Palasek

White's paper is at once speculative and defensive. The purpose of his paper is itself twofold, and thus the two-pronged approach is warranted. Ultimately, White wants to convince us that a laissez-faire monetary system is a desirable alternative to the morass of modern central banking. The characteristics of a modern laissez-faire monetary system are extrapolated from an examination of the binding constraints that laissez-faire banking would, presumably, impose on individual banks and on the banking system as a whole. White's argument here critically depends on his grasp of operant market mechanisms, that is, binding constraints on bank activity, and their logical extension into a modern (hypothetical) laissez-faire setting. As such, he risks not only logical errors, but policy irrelevance as well, in asking that we examine such an alternative in the first place.

In balance to the projections about modern laissez-faire banking, his paper raises many, if not all, of the foreseeable objections to a laissez-faire monetary future. This allows a concise review of the major arguments that have been raised concerning such a monetary system. White's rebuttal (the second prong of the paper) of those arguments includes a defense of the logic of his earlier speculation. And indeed, if the laissez-faire alternative thus summarized and defended is a relevant alternative as well, White has made a powerful contribution to the growing number of monetary economists who favor government's exit from the monetary arena.

It is the task of a final section of the paper to attempt to demonstrate the relevance and desirability of laissez faire in money. Competing with laissez faire for attention in policy circles are a number of alternative reforms in addition to the status quo. White's ability to sway or convince us must ultimately rest on the efficiency and stabi-

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The author is Assistant Professor of Economics at Towson State University.

lity, or safety, of laissez faire in comparison to conceivable alternatives. With this final section, the paper becomes a short, self-contained discourse on laissez-faire money, its detractors, and its competitors for reform.

White has edged out onto a limb in making even general projections about a course of future events to be spun out of a (not-currently existing) laissez-faire approach to money. Nevertheless, there is evidence, both theoretical and historical, to support his views. A body of literature exists that documents the viability of laissez faire with respect to money and lends credence to White's speculation about the characteristics of a modern system. White's analysis of a laissez-faire future turns on an identification of the binding constraints that would operate in lieu of regulatory constraints under laissez faire. Understanding the consequences of these constraints for monetary institutions requires an understanding of incentives facing bank managers (or any individual or institution in the business of issuing inside money). As such, White's discussion could be couched entirely in theoretical terms. Happily, his historical work (White 1983, 1984) on the Scottish banking system and the work of Selgin and White (1987) lends empirical support to the theoretical predictions about a laissez-faire monetary future.

The standard approach to U.S. monetary history has held that 19th-century American free banking demonstrated conclusively the failure of monetary laissez faire in the United States. But closer examination of that period and of the nature of free banking itself does not support the accepted wisdom on laissez faire in money. Instead, it forces us to draw a sharp division between the regulatory system known as free banking on the one hand and laissez faire on the other. Most significantly, this division facilitates an understanding of important differences in the behavioral incentives dominant in each system.

American Experience with Laissez Faire

Renewed interest in a laissez-faire monetary system grew out of a series of reexaminations of the American free-banking era (Rockoff, 1974; Rolnick and Weber, 1982, 1983, 1984, 1986). In the United States, free banking did not approximate laissez faire in most important respects and must, therefore, be rejected as a model of laissez faire in action. The experience of banks in New England under the Suffolk system, however, may well demonstrate a laissez-faire monetary system in action. To be sure, the New England regional banking system that developed and thrived between 1824 and 1863

falls short of an entirely laissez-faire approach. Regulation by state and local authorities, including industry entry via bank charter, persisted throughout the era. And so it was a sort of ad hoc laissez-faire approach to banks and money, rather than an intentionally chosen one, which prevailed.[1] Despite the presence of various banking laws in New England, however, research indicates that the binding constraints on industry were market-driven rather than legal.

A brief description of the Suffolk system reveals that it was a system that emerged out of a market for privately issued, redeemable, competitive currencies. Individual banks pursuing profit-maximizing behavior with respect to redeemable note issues and specie reserves discovered that their self-interest was best promoted by maintaining a sound currency—that is, by assuring its noteholders continuous redeemability into the reserve currency: gold. The emergence of a centralized clearinghouse mechanism in the form of the Suffolk system served at least two critical functions. First, it generated strong incentives to maintain sound currency; second, it created efficient two-way information flows about the quantity of notes the public desired and the quality of the notes issued by the bank.

It was never the intention of the Suffolk bank to increase the circulation of notes issued by banks outside of Boston. These so-called "country banks" were scorned by Boston. In fact, when the Suffolk bank and other large Boston banks joined together to form a note-clearing operation, it was their express intent to drive the country notes out of circulation in Boston, thus making room for larger issues of their own. Quite the opposite result was achieved. The country notes, typically circulating at discount in the city, were purchased by the associated banks and presented for redemption, a profitable business for the Boston banks. The threat of, or actual, redemption for specie forced the country banks to curtail their note issues so that they were prepared to redeem notes on demand. Thus the quality of country notes in circulation grew, and instead of declining in acceptability, the circulation of the notes grew as well (since their reputation was now improved). In some sense the campaign to drive the discounted country notes out of Boston was entirely successful. The actions of the Boston banks did not drive out the notes themselves, but they did eliminate the discount at which country notes circulated. In fact, the redemption operations were even suspended for a time because the discount on the country notes fell to less than one-half of one percent, and the banks simply could not

[1]See Palasek (1988) for a discussion of the New England banking system under the Suffolk bank as a laissez-faire system.

make sufficient profit at such low rates of discount on the notes.[2] After a hiatus of several years in which the discount again grew (partly due to a lack of policing action by the Boston banks), the Suffolk bank alone took on the business of note clearing and redemption. Though it was a voluntary clearinghouse operation, banks found it again in their interest to participate and, therefore, to maintain redeemability on their notes.

Modern Laissez Faire

A point-by-point comparison between White's projections for laissez faire and the closest American experience under the Suffolk system reveal the parallels between the two. Those projections about the qualities of a modern laissez-faire system include the following: (1) the emergence of competitive inside monies redeemable in a reserve commodity, but no legal tender or outside money; (2) a commodity money—gold, most probably; (3) private mints and private certification of the reserve base; (4) voluntary specie reserves with no legal minimum reserve ratio; (5) typically low specie reserves to economize on the commodity base; and (6) clearinghouse operations to ensure (not insure) safety and soundness of notes. This last characteristic is the key to creating incentives that compel bank managers to issue only that quantity of notes that the public will willingly hold, given their demand for liquidity and the commodity reserve.

White defends his choice of the foregoing laissez-faire model by arguing that alternative proposals either lack comparable incentives to those generated under laissez faire, or that the proposals require additional specifications or legal restrictions that were not considered by their authors. While he does not dismiss the plausibility of all such alternatives, it is White's contention, and mine as well, that his proposal offers a desirable combination of characteristics with the simplest, and arguably most-efficient, operating form. His proposal is really an outline for a self-regulating monetary system that is both safe from the stance of the noteholder and sound from the viewpoint of a commodity-based currency. In the search for monetary stability, White's proposal deserves respect and attention.

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