Privatizing Money

Leland B. Yeager

Restoring global financial stability requires attention to the currencies themselves that circulate at home and abroad. I'll focus attention on that aspect of the problem.

Be Prepared

The dollar's continuing role as the world's key currency has come into doubt. What might replace the dollar if it collapses or becomes unmanageable? Let's hope it doesn't, but we should be ready with ideas just in case. Even if our current system survives, contemplating radical alternatives can provide a new perspective on it and on possible improvements. Just as conjectural or "what-if?" history can improve our understanding of the actual course of events, so "what-if?" monetary systems may help us better understand, by contrast, what we now have.

How would a system function without a dominant issuer whose banknotes and deposits *defined* the unit of account? How would the system work if the unit ("dollar") were defined, separately from any particular medium of exchange, to have a stable value? What if no base money existed distinct from ordinary means of payment, so that questions of reserves, reserve ratios, and the money multiplier could not arise? Would the quantity theory of money still apply?

According to Milton Friedman and Anna Schwartz (1987: 313), if our present system does fail, "what happens will depend critically on

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the options that have been explored by the intellectual community and have become intellectually respectable. That—the widening of the range of options and keeping them available—is, we believe, the major contribution of the burst of scholarly interest in monetary reform."

A system without government money and with competing private issuers rules out central control of the quantity of money and requires some other way of giving a definite value to the dollar. The dollar must then be linked to some single good or a combination of goods and services. The present article urges no specific reform along these lines, but it does sketch one out as an example and as an introduction to aspects requiring attention.

Inflation is one danger to our current system. It may emerge once recovery from the current recession carries further and banks make use of their total and excess reserves, which the Federal Reserve had greatly expanded to fight the crisis. Activating idle reserves will multiply total money. Businesses and consumers will become readier to spend from their cash balances (velocity will recover). In principle, the Federal Reserve, if clever enough and sheltered enough from politics, could reverse its anti-crisis measures in good time. A worry for the longer run is that the government may quasi-repudiate its soaring debt, both explicit and implicit under entitlements, by pressuring the Federal Reserve to inflate it away by monetizing it.

Talk about *de*flation, instead, as today's pressing short-run problem was familiar until recently. On this view, inflation can be dealt with if and when the time comes; and inflation is easier to deal with anyway. Robert Reich said so on Lawrence Kudlow's TV program in May 2009. An editorial in *The Economist* (May 2009) recognized "something to both fears. But inflation is distant and containable, while deflation is at hand and pernicious." Many of us here could argue just the opposite.

Perhaps the dollar will escape inflationary destruction. Benjamin Friedman explains a related worry. It concerns the central-bank base money that banks hold as reserves against their ordinarily much larger volume of deposit liabilities. Central banks exercise their power by manipulating this reserve base, indirectly through interest rates if not by directly controlling its size. Yet these bank reserves (not total base money, including currency held at home and abroad) have become small in crisis-free times, not small in dollar amount

but relative to national and international money flows, total output, and ordinary checking accounts, near-moneys, and innovative means of payment. Central banks exert their leverage with an ever more rubbery lever working on a relatively shrinking fulcrum. Much higher reserve requirements and substantial interest paid on reserves could conceivably mitigate this difficulty. Otherwise, how long will it take before the traditional monetary control becomes unworkable? (See Friedman 1999, 2000a, 2000b; Moini 2001: 269; and Brittan 2003: 151.)

The Nominal Anchor in a Decentralized System

A monetary system works with transferable receipts/vouchers—receipts for the values of goods and services delivered and vouchers for obtaining goods and services available on the market at their values in prevailing or agreed prices. These receipts/vouchers ("tickets") take the form of coins and currency and entries on the books of financial institutions. The system greatly facilitates multilateral transactions. It records transactions—provides evidences of them—and monitors them to deter dishonest persons from taking more values off the market than they have contributed or will contribute as promised.

Such a system of tickets requires a dollar in which to express and record values. Now, what at any given time establishes the dollar's size, its purchasing power? What provides determinacy?

A determinate system keeps the quantity of money and the price level from drifting unrestrained in a mutually reinforcing way. Determinacy presupposes a "nominal anchor." Joseph Schumpeter (1970: 217–24, 258, and *passim*) spoke of a "critical figure" set otherwise than by ordinary market forces. Either or a blend of two ways can provide the anchor: (1) Control, either explicit or indirect, over the size of some monetary aggregate, most obviously the money supply,[1] or (2) definition of the dollar by one or more goods and services, with the definition made operational by redeemability.

[1]The nominal anchor in the United States nowadays is often said to be warranted expectations of low and steady (maybe zero) price inflation. This interpretation does not contradict the quantity theory of money. Expected inflation hinges on experienced actual inflation and on policy experience and commitments; and these depend in turn on suitable management of the quantity of money, regardless of just what claims are counted as money and whether policy affects it through interest-rate manipulation or directly.

Abandoning method (1) rules out central control of the money supply, even control through targeting on an interest rate.[2] (Loss of interest-rate control may not be entirely regrettable, particularly since the central bank's habitual interest-rate smoothing tends to retard rate adjustments and make base money behave procyclically or at least not countercyclically (Hetzel 2009).

Abandoning route (1) to determinacy also precludes any policy of making the price level rise or fall in a particular way (other than in conformity with a commodity definition of the dollar). If, for example, we want the price level to drift downward in conformity with George Selgin's productivity norm (Selgin 1997a), we must retain central control of money. (Selgin's argument for letting the price level vary inversely with productivity is the best argument known to me—though not a conclusive argument—against aiming for a steady price level.) Central control would also be necessary to make any other nominal aggregate, say nominal GDP, behave in a particular way.

Privatizing money thus requires taking route (2) to determinacy: definition of the dollar and convertibility of money in one or more goods and services. That method controls the quantity of money in a decentralized and indirect way, since the monetary commodity is itself scarce.[3] The simplest example is a privatized gold standard.

[2]The current neoclassical/neoKeynesian consensus on monetary policy emphasizes a targeted interest rate and pays curiously little explicit attention to the quantity of money. (Woodford 2003 may be considered the flagship of that literature.) Yet *how* does the central bank control that rate without manipulating the volume of bank reserves? Perhaps the relation between money and interest-rate targeting is considered so well understood or so old-hat (Wicksell [1898, 1936] 1965) that mentioning it nowadays would seem unsophisticated. But somebody should explain it to financial journalists.

Richard W. Fisher and Harvey Rosenblum (2009), president and research director of the Federal Reserve Bank of Dallas, worry about how the too-big-to-fail phenomenon saps the effectiveness of monetary policy. Noteworthy here is their neglect of the policy's quantity-of-money aspect. In their view, monetary policy works, when it does, through interest-rate, credit, and capital-market channels, which concern the price and availability of credit to businesses and households, a balance-sheet channel, which concerns the value of real and financial assets, and an exchange-rate channel, which concerns that rate's effect on exports and imports. Fisher and Rosenblum mention no other channel.

It is no excuse for ignoring money that financial innovation has rendered what counts as money, for statistical purposes, hopelessly fuzzy. What counts for macroeconomic behavior is whether the total of whatever it is that cash-balance holders desire to hold exceeds or falls short of the total in existence.

The Quantity Theory under Decentralized Money

The quantity theory is unduly narrowed if applied only to the most easily explained case—an exogenously supplied fiat money, with causation running only from its quantity to prices. A reasonable extension recognizes, rather, a *correspondence* between money and prices. Causation may run the other way, as in a single city in the United States or a small country under an international gold standard. There, the quantity of money becomes the quantity demanded at an exogenously determined price level.

The quantity theory holds in that expanded sense even under a privatized and decentralized system. Under a privatized gold standard, banks issuing notes and deposits must conduct their business to stay ready to redeem their issues in gold, even or especially when arbitrageurs demand the gold. Banks' prudence keeps the quantity of money from growing beyond what is willingly held at the price level corresponding to the dollar's gold content and gold's relative price against other goods and services. If, in the opposite direction, the actual quantity of money should start to fall short of the quantity demanded and cause incipient price deflation, banks would have an opportunity and an incentive to buy gold relatively cheap to back an expanded volume of their money and their lending. (Under a government gold standard, holders of relatively cheap gold take it to the mint for coinage.)

Ignoring money means ignoring the multifaceted cash-balance effect through which money affects total nominal spending and in turn affects inflation, deflation and, transitionally, real economic activity. (On directly and indirectly working wealth, portfolio-balance, and Cambridge aspects of the cash-balance effect, see Zincone ([1967]1968.) It is exasperating to read only cryptic explanations of how interest-rate targeting is supposed to work, explanations involving the relative price of present and future goods. Perhaps it is not important for the public to understand the role of money. Perhaps a driver need not understand just how the brake and accelerator affect the speed of his car; yet he might want to understand those instruments at least out of curiosity, especially if his job involves cars.

[3]The quantity of money sets itself so that the defining commodity has the same marginal value in its ordinary and monetary (or money-backing) uses. If its marginal values are not equal, some of it shifts into the greater-valued use. A shift in the money-expanding direction can work by free monetization (e.g., coinage). In the opposite case of the commodity's being worth more in its ordinary uses than as money, some money is redeemed or melted. The value of money is determined by demand for holdings of it interacting with its commodity-constrained supply.

Durability of a Private Standard

Allowing private banks to issue currency notes as well as deposits would avoid the complications of a variable currency/deposit ratio, which are familiar when government monopolizes currency issue (Selgin 1997b). The discipline of redeemability would be tighter under a privatized gold standard, since each bank would have to stand ready in effect to redeem any adverse clearing balances in the routine daily clearings of notes issued by and checks drawn on the various banks, whereas a government issuer would avoid this routine clearing and would have to guard against only internal and external drains on its gold reserves.

Furthermore, abandoning or debasing a gold standard is easier for the government than for competing private issuers of money. People come to regard government money as itself defining the dollar. If the government cuts the gold content of the dollar or abandons the gold standard, people continue regarding its money as the unit of account, the basis of pricing and contracting. Historical experience so testifies.

In a system of competing private banks, by contrast, the money of no specific issuer has that special status. Contract law and concern for competition and reputation inhibit each bank from violating its commitment to redeem its money in gold. This advantage remains even if a basket of goods and services should replace gold as the monetary standard. A related advantage is that completely privatized money imposes discipline on government fiscal policy. No longer can the government float bonds promising to pay in nothing better than what it can print itself. Nothing, of course, can guarantee against government destruction of privatized money or of almost any other institution.

A Multicommodity Standard

Although a gold standard is the easiest-to-explain case of free banking and of determinacy of money and prices by method (2), gold is not the best commodity basis. The real value of gold depends not only on its industrial demand but also and perhaps especially on demands for purposes of money and monetary reserves, investment, and hoarding. This complication is noteworthy: if gold remains a speculative asset with a volatile relative price, changing that status would require its widespread, perhaps international, adoption as the

standard. Like any other single good, it has a variable price relative to the prices of other goods and services. Their nominal price level would have to vary in accordance with the changing real price and fixed nominal price of gold. If industrial innovations should strengthen the demand for gold, its relative price would have to rise; and since its nominal price is fixed, the nominal prices of other goods and services would have to fall.

A basket—an assortment of goods and services like one used in calculating a broad price index—would define the dollar better.[4] The general level of dollar prices would be less variable than under a single-commodity standard. The more inclusive the basket, the more stable its value would be relative to that of all goods and services on average; and its fixed-by-definition nominal value would imply near-stability of the average level of all nominal prices. (Whether assets with volatile prices, such as stocks, land, and houses, belong in the basket is a question recognized later.)

Redeemability of money in the wide assortment of goods and services would be awkward for everyone concerned. Instead of being promised and carried out in that way, redemption would take place indirectly, in quantities of one or more redemption media having actual market values just sufficient to buy the number of standard baskets denominating the banknotes and deposits being redeemed. Quite distinct from what defines the dollar, the redemption medium or media might be gold or some one or more commodities or securities on an agreed list. Just which one or ones is not crucial. Although the dollar would be defined by *physical amounts* of goods and services, redemption media would be delivered in *value amounts* and not in prespecified physical amounts. For the same reason, variability of a redemption medium's own price would be no problem.

There is no substantive difference, just one of convenience in each context, between speaking of the dollar's being defined by a basket and its being defined by a price index. An index expresses the change over time of the total price of the basket used for calculating it. The value amount of the redemption medium delivered to redeem $1

[4]It is convenient to consider one dollar defined by a basket of tiny quantities of goods and services. In practice, a basket of convenient size might define $1,000.

This paper returns to a proposal that Robert Greenfield and I first made in 1983, calling it the "BFH system" for a reason stated there. Since then various criticisms, clarifications, and modifications have appeared. Besides items cited in the References, Google locates much of this further literature.

increases or decreases in the proportion to which the actual price index exceeds or falls short of its base level of 100, at which the total market value of the basket's contents is just $1.

Redemptions directly between note and deposit issuers and individuals would ordinarily be inconvenient. Banks and large-scale arbitrageurs, though, could seek profit from fleeting inconsistencies between the basket definition of the dollar and market prices for the goods and services in the basket and for the redemption medium. Most redemptions would probably take place routinely in settlement of net balances at one or more clearinghouses maintained by the money-issuing banks.[5] The clearinghouses might well sponsor a price index corresponding to the dollar's commodity definition, and they might operate a mutual fund whose shares members would use as the redemption medium among themselves.

Among the redemption media employed, banks might even include each others' notes and deposits. It is not true that banks would then be meaninglessly restrained only by each other, leaving no effective restraint against their expanding together and causing price inflation. The reason why not is that a bank would have to redeem its own notes not in *face-value* amounts but, if there were a discrepancy, in *basket-worths* of other banks' notes. Suppose that Alpha Bank wanted to redeem its own $1 note in the notes of Beta Bank, whose $1 note had fallen in purchasing power to only 80 percent of the standard basket. Then, to redeem its own $1 note in one full basket-worth of purchasing power, Alpha Bank would have to deliver $1.25 of Beta's notes ($0.80 \times 1.25 = 1.00$). Or, in the opposite direction, suppose that the Beta dollar had risen to 120 percent of the basket's purchasing power. Then Alpha Bank would have to deliver only $0.83 of Beta money to redeem its own $1 note ($1.20 \times 0.83 = 1.00$). Realistically, arbitrage and competition would prevent such sizable deviations in purchasing power in the first place—unless a bank failed and its notes ceased to circulate. The very purpose of redeemability is to discipline issuers to keep the purchasing power of their notes and deposits aligned with the standard

[5]On each bank's incentives to accept notes issued by and checks drawn on other banks and, further, to join with others in a clearinghouse, see White (1984: 19–22) and Selgin and White (1989: 225–33).

basket. The particular redemption medium used is of subordinate importance.

Most redemptions in each others' money, contributing to mutual discipline, would probably take place in routine netting of gross interbank balances at the banks' clearinghouses. Only *net* clearings would have to be settled in some distinct redemption medium.

Demand-Determined Money

Under the decentralized system considered here, issuing institutions supply the quantity of money that the public desires to hold at the price level predetermined by the dollar's basket definition. Deviations upward or downward from $1 per basket would present powerful incentives for arbitrage bringing corrective adjustments in the quantity of money. If the actual price level were higher than the level corresponding to the dollar's definition, redemption demands and arbitrage would remove the excess money. If the actual price level were lower, banks would take advantage of the profitable opportunity to issue additional money on loan or even to buy things.[6] Expectations would join in correcting or forestalling deviations both of the dollar's purchasing power from its commodity definition and of the actual quantity of money from the quantity demanded at the price level so determined. Although the quantity of money would be demand-determined, not supply-determined, the quantity theory's money-and-price-level correspondence would hold.

Keeping actual and demanded quantities of money equal does not require measuring either quantity, specifying what liquid instruments add up to any particular total, or assigning weights to its components. Route (2) to determinacy obviates any central control. Not only total money, however conceptualized, would be demand-determined but also its breakdown into types and denominations. Under competition, issuers would serve the preferences of their note- and deposit-holders.

[6]Greenfield and Yeager (1983) give a fuller example than would warrant repetition here. Though complicated by indirectness, the process resembles the arbitrage that would keep the open-market price of gold under a gold standard from deviating substantially from mint par.

Components of a Stable Price Level

Do we want a stable general price level? Does avoiding inflationary and deflationary pressures bring macroeconomic stability? Well, no; "real" disturbances do occur. But avoiding disturbances to monetary equilibrium avoids the ordinarily dominant factor in business cycles. (That point is disputed, however.)

Economists of the Austrian school warn against even just enough monetary growth to keep the price level from falling in a growing economy. They fear "injection effects." Despite general price stability in the 1920s, these effects supposedly triggered the Great Depression. Some economists (like George Selgin, cited above) prefer a price level varying inversely with general productivity. As argued above in the section on a nominal anchor, however, that or any other specific price-level trend (other than stability against one or more goods specified as the monetary standard) presupposes an appropriately managed total money supply. But central money management is incompatible with a decentralized and privatized system. Arguments for and against a stable price level are too numerous to review here.

No Central Bank and No Base Money

Having no central bank is inferior, admittedly, to money management by all-knowing, all-benevolent philosopher-kings, who would adjust their policy to what is best on each occasion while earning the public's confidence. Realistically, no such option is available. With no central bank, there could be no uncertainty about dominant monetary policy and no industry of Fed-watching. With no chance of central-bank bailouts (and with fiscal-policy bailouts implausible), financial institutions would have to restrain themselves and one another from imprudent risk-taking and pay closer and prompter attention to risks of parties dealt with.

No specific base and reserve money would remain. The basket defining the dollar would be too awkward to serve as base money. Nor would the redemption medium or media so serve. The medium would have no fixed dollar value, and money would be redeemed not in specified physical amounts of it but in value amounts. Not circulating, both the commodity basket and the one or more redemption media would just be elements in a system of defining the dollar and making issuers keep their notes and deposits at their defined values.

With nothing special to hold as reserves, contract law and competition for reputation would remain as discipline on each bank to make loans and investments prudently and stay able to meet its obligations. Holders of notes and deposits of a shaky bank could not stage a perhaps contagious run into base money, since none would exist. Holders could try to get rid of notes and deposits of a shaky bank only by spending them or converting them into money issued by sounder banks. Whether that advantage would limit the contagion of crises like our recent one is a question worth pondering. The specifically monetary aspects of boom, recession, and contagious fear would be ruled out. No artificially (politically) easy money could provide the background; nor could a recession hinge on an excess demand for some ultimate base money, since none would exist in the first place. Monetary reform alone, however, would scarcely abolish the psychological aspects of bubbles and their bursting. Human nature would still, sometimes to some extent, drive speculative herd behavior and the contagion of optimism and pessimism.

With no distinct reserve money, no question of reserve ratios could arise. Some economists of the Austrian school (Hoppe, Hülsmann, and Block 1998; Huerta de Soto 2006) denounce the current fractional-reserve system. Bank deposits represent titles to underlying base money, they say; and having more titles in existence than the underlying property items is illogical, unreal, illegal, and immoral. Especially for these and not just for economic reasons, banks should hold 100 percent reserves against their notes and demand deposits. But in a system with no base money, banknotes and deposits would not even resemble titles to anything in particular. Rather, they would be receipts for values of goods and services delivered and vouchers for whatever is available on the market at market prices, all in a vast system of recording and monitoring transactions and decentrally clearing multilateral and intertemporal transactions.

An Erroneous Criticism of Indirect Redemption

Some criticisms of a multicommodity standard with indirect redemption have been frivolous, for example, that the system would require trying to buy Coca-Cola from a slot machine by sticking in sheets of plywood. Others show inattention, as in charging that the system has the same indeterminacy as a supposed gold standard with

the dollar redeemable in a dollar's worth, not a physical amount, of gold.[7]

Schnadt and Whittaker (1993) have independently rediscovered a more disturbing criticism, one made by Wicksell (1919). Wicksell was rebuffing "an attack on the quantity theory" (to translate the title of his article) that Benjamin Anderson (1917: 150–53) had made. Anderson had decorated an excessively narrow interpretation of the theory with a contrived example of indirect convertibility. Unfortunately, instead of focusing on the central weakness of Anderson's attack on the quantity theory, Wicksell focused on and criticized Anderson's scarcely relevant scenario.

Allegedly, indirect convertibility sets and almost continuously resets the price of the redemption medium at the banks' redemption windows, driving it toward zero or infinity, except that the system would collapse before either extreme were reached. The charge is erroneous (Woolsey and Yeager 1994; Greenfield, Woolsey, and Yeager 1995). It regards any discrepancy between the open-market price of the redemption medium and its price implied by its deliveries at the redemption window as destructively violating the law of one price. Actually, that discrepancy serves as an expository device in explaining how it would eliminate and even forestall itself. It would motivate arbitrage tending to keep the actual quantity of money equal to the quantity demanded at the stable price level corresponding to the commodity definition of the dollar. The arbitrage-motivated redemptions of money that would keep the price level from rising have their counterpart in the opposite direction: profit-motivated issue of new money would keep the price level from falling.

A second error is the assumption that money-issuing banks would hold substantial reserves of the redemption medium. Large releases or accumulations of such reserves would be needed to cause large changes in the medium's nominal and relative price. Actually, banks would have reason *not* to hold reserves as volatile in value as supposed; for the most part, they would buy the redemption medium as needed. A third error is to forget that more than one thing could and probably would be used as redemption media. The redemption medium, whatever it might be, is delivered in a *value* amount equal to the market value of the number of physically specified baskets cor-

[7]Similar inattention brought a charge, later retracted (Selgin and White 1996), that banks could overexpand in unison without triggering restraint by arbitrage.

responding to the denominations of the money being redeemed. The thing or things delivered would be whatever the parties concerned found convenient. Banks might settle their net balances in value amounts of shares in a mutual fund operated by their clearinghouse.

Thought-Provoking Criticisms

A criticism made by Trautwein ([1991]1993) is loosely reminiscent of "cobweb" cycles in the price and output of some agricultural commodity because of lags in the responses of each to the other. A price level higher than what corresponds to the basket definition of the dollar attracts arbitrage that shrinks the quantity of money; but by the time that the price level has fallen back to equilibrium, sluggishly, the quantity of money has shrunk too much, making the price level continue falling to below equilibrium. Then arbitrage belatedly reexpands the quantity of money—but too much—and so on. Whether a model exhibits such cycles depends on its particular parameters.

Here a point made a few paragraphs above is again relevant: the postulated deviation of the actual price level from the level implied by the dollar's basket definition serves an analytical and expository purpose. No one has shown that such a deviation would become both actual and large enough to touch off the feared cycle.

Still, Trautwein's and similar charges usefully introduce concern about *sluggishness* of the response of prices to the arbitrage-induced corrective changes in the quantity of money. The next section faces this concern.

How Price-Sticky Should the Basket's Components Be?

Greenfield and Yeager (1983) already mentioned a related objection to indirect convertibility. Arbitrage might make the money supply respond too quickly and drastically in forestalling or correcting a deviation from $1 of the total of open-market prices of the items in the basket. Erratic behavior of highly flexible prices would average the calculated price index up or down, requiring deflationary or inflationary pressure to move the index back toward its target. Monetary stringency would impinge not only on flexible but also on sticky prices, but only sluggishly, meanwhile deflating production of the stickily priced goods.

In contrast, *direct* redemption (and its opposite, money issue) under a *single*-commodity standard like a gold standard works in *two* ways. It keeps the dollar and its defining gold content equal in value not only by monetary contraction or expansion but also by specifically affecting the supply of gold on its own market.

One implication for a dollar-defining basket is the same as for a price index targeted by a central bank in a centralized system: the basket or index should cover a wide assortment of goods and services so that monetary pressure working to keep its total value on target should not require any great part of the pressure to operate on its sticky-priced components. In other words, fluctuations in volatile prices should not so dominate the index that, to keep it stable on average, stickily priced goods must suffer deflationary or inflationary pressure on their production.

Gregory Mankiw and Ricardo Reis (n.d.) explain considerations bearing on the composition of a target index. They recommend one heavily weighted with sticky prices, like the core consumer price index, rather than on other prices in the headline CPI (and presumably other than on volatile asset prices). They want to avoid monetary pressures *tending* to push sticky prices up or down on the grounds that such pressures would affect quantities, in the short run, anyway, rather than those prices themselves. Woodford (2003) likewise recommends that a central bank target on the most stable prices.

Coping with Price Stickiness and Information Delays

The literature contains other suggestions for coping with the contrast between indirect and direct redemption. Indirect redemption might take account of an average over the recent past and near future of the price index implicit in the dollar's basket definition. Or the index might be a core or a "trimmed" version leaving out of account the perhaps 5 or 10 percent by value of the components whose prices had risen or fallen most since some earlier date. For that and perhaps other reasons, the index or basket would have an adjustable composition. Banks might agree that their clearinghouse would make the adjustments by impartial criteria. Such an index or basket would have to be chained from adjustment to adjustment, but chained indexes are already not unusual.

Using an average over time of the basket's total price would alleviate a problem of information. A day-by-day total price of anything

as comprehensive as the CPI basket would be difficult to obtain because so many individual prices enter into it. So comprehensive a figure can be published only periodically, say monthly. What happens when a money-holder demands redemption during the interval between the most recent and the next figure? If he expects a rise or fall in the total price, he would time his redemption demand to his own probable advantage and the disadvantage of issuing banks.

A possible solution is to interpolate the terms of redemption on a specific date as the weighted average of the latest and the next price indexes. The weights would allow for how close the specific date was to the latest and next reporting dates. Since the future figure would not be known at the time, however, tentative terms of redemption would be chosen somewhere in a range of plausibility. The terms would provide for retroactive fine-tuning once the new index figure became known. The holder redeeming money would then pay or to receive a fine-tuned adjustment in the appropriate amount of redemption medium.

Such retroactively fine-tuned redemption is sometimes described as redemption partly in a futures contract. Although a loose analogy does hold, such terminology is misleading; for the provision for retroactive adjustment is different from an ordinary futures contract whereby one party agrees to buy and the other to sell something at a specified price at a future date.[8] The analogy does recognize that both parties agreeing to the retroactive adjustment are running a risk; they are in effect betting on the future CPI (or whatever index is used).

Interpolation between latest and next CPI figures suggests the idea of an average price index calculated over *several* months in the past through *several* months in the future. Retroactive adjustment then plays a larger role than for the short period only. More knowledge comes to bear in appraising signs of and forestalling future inflation or deflation. Either or both parties to a money-redemption might hedge his risk by a side transaction in another market, especially if the duty and right to abide by the terms of retroactive adjustment are made marketable to third parties. Speculators as well as hedgers could operate in this side market.

[8]Woolsey (1994) explains the stretched meaning of "futures contract" relatively clearly.

The side market could be a distinct market for CPI futures.[9] On it speculators could deploy their additional knowledge and insights and willingness to bear risk. Doing so, they would make the market deeper and more active, ordinarily to the benefit of hedgers. Traders in effect deal in a fictitious commodity whose price mirrors the CPI. At the maturity of a contract, as of an ordinary commodity futures contract, the parties settle not by making and accepting actual delivery but by the loser's paying the winner the amount involved.[10] Futures contracts are in effect bets whereby a participant hedges a risk in his ordinary affairs by taking an opposite risk in the futures market or else by deliberately taking an uncovered risk as a speculator.

The analogy with a bet helps explain such operations. Even ordinary insurance is in a sense a bet at appropriate odds. A houseowner bets that his house *will* burn down, hedging the risk of loss if it does. The insurance company bets that it will not, covering the risk by the law of large numbers and by collecting the premiums.

The profit-and-loss paid in closing out a futures contract on a fictitious CPI commodity is the counterpart of any discrepancy between the open-market and redemption-window prices of the redemption medium in the simplest story of indirect redemption. That discrepancy is what restrains banks from inflationary overexpansion of money and credit or encourages appropriate expansion in a growing economy. What agreed medium is used for the profit-and-loss payment is unimportant. What matters is the profit opportunity from appropriate expansion or loss from overexpansion.

Trends on the quasi-speculative CPI futures market may give banks early insights into appropriate tightening or loosening of their money and credit operations to obtain desired net balances at their clearing house. Expectations may thus reinforce keeping the purchasing power of the dollar as defined by a basket or price index.

High-tech data processing and the fact that most money redemption, hedging, and speculating would be conducted on a large scale by banks and professional arbitrageurs could keep such complica-

[9]The Chicago Mercantile exchange tried to institute such a market in February 2004 but found too few participants to justify continuing it at that time.

[10]Actually, traders on an organized exchange deal not with each other individually but with the exchange itself as counterparty. Such institutional details do not affect the point made here.

tions from being a serious difficulty. As with today's monetary system, ordinary members of the public need not concern themselves with just how the system operates.

Firmly specified details of indirect convertibility can hardly be expected at this stage of academic discussion. The main point is linkage of the dollar to a basket of goods and services not just by definition but operationally.

Asset Prices

What should be done about asset prices? It would hardly be practical or reasonable to include speculative or quasi-speculative goods like stocks and bonds, foreign currencies, houses, antiques, and other collectibles in a basket defining the dollar. However, a central bank or a competitive bank trying to keep money stable according to a price index, as well as hedgers and speculators, might well pay attention to movements of these flexible and speculative prices. These might convey early warnings about too much or too little monetary expansion.

The issue of sticky prices and flexible prices, as of assets, bears an analogy with the theory of optimum currency areas, which considers the characteristics of national economies that make them good or poor candidates for forming a currency union. Typically, some considerations pull one way and others the other way. As so often in economic affairs, tradeoffs are unavoidable.

Constructivism or the Market?

Proposals to replace existing institutions with new ones thought up out of one's head are what F. A. Hayek has called "constructivism." Hayek himself has committed that offense, if it is one, with his own proposals for monetary and political reforms. The opposite approach to reform is sometimes called "letting the market decide." Llewellyn Rockwell envisions the government's rapid disengagement from money and finance. "Virtually overnight, we would see the appearance of hundreds if not thousands of new payment systems and alternative monies online." After "trial and error," after "a period of wild experimentation," including possible elaborate use of online barter, "the market" would settle onto a reliable, stable, and honest standard system. "We need the government merely to let the

market be free of political violence, and we will begin to see our way out of this mess" (Rockwell 2009: 4–5).

Possibly so, but our existing monetary system results from many centuries of piecemeal government tinkering. Government interventions interact, for good or ill, some mitigating the harm done by others; and many private activities are so attuned to them that a sudden unplanned transition would be painful. Perhaps the government has a moral obligation—if it can legitimately be personalized that way—to disengage itself in a well-considered manner. Just how it does so will unavoidably affect what new system emerges; so it should give an appropriate nudge toward a new and freer system.

Admittedly, politics poses an obstacle to an "appropriate" nudge, as to any coherent economic policy. Of no desirable institution, however, is political infeasibility an inherent and immutable feature. Economists violate their professional responsibility when they fudge their analyses out of concern for supposed political feasibility (Philbrook 1953).

The government must choose a unit of account for its own spending, taxing, borrowing, lending, and accounting. Its choice will give private parties a reason to adopt the same unit. It will thus have a role in suggesting the basket or price index to define the unit, at least initially. Later, private entities like the clearinghouses operated by banks may take over the calculation and occasional revision of the basket or index. As already suggested, the clearinghouses may well specify the redemption medium or media, perhaps a mutual fund that they operate, that will be convenient for their members and their members' customers.

"The market" does not reason and decide. It is a metaphor: people interact on it. Academic analysis of and on-paper experimentation with alternative systems might avoid some of the "wild experimentation." Enterprising bankers would surely want to take account of such research. A government nudge and "the market" need not be inconsistent approaches.

Further Thought Needed

What are the international implications of privatized money along the lines sketched out? What about the balance of payments? By sheer arithmetic, a country's (or region's) overall balance-of-payments position is the sum of the individual positions of all its house-

holds, firms, and other private and official institutions. Each of these units would be concerned to keep its own earnings, expenditure, and broadly conceived borrowing and lending in sustainable relation with one another; and actual and potential creditors would add discipline. This concern would take care of the country's aggregate balance-of-payments position if, as privatization implies, no central bank or similar authority were distorting market signals and incentives by manipulating exchange rates, money, or credit. The balance of payments becomes self-regulatory in roughly the same way as that of a single city in a large monetary area.

Although privatized systems need not conform to political boundaries, close commercial and legal ties make multiple systems, with money units defined by different baskets, unlikely within the United States. Abroad, whether government money persists or not, a shared unit defined by a single specific basket would be unlikely to prevail in countries with widely diverse patterns of production and consumption. Between currencies based on similar baskets of goods and services, however, purchasing-power parity would keep exchange rates fairly stable over the medium or long run.

Privatized money would seem to rule out active participation in intergovernmental monetary institutions; but it would allow or even enhance freedom of international trade, investment, and travel, unless these were otherwise interfered with. Optimists might even conceive a role for international organizations in moderating interferences.

This article does not insist on specific details of privatization. Rather, it offers an example of what academics might well work on in case a new system became necessary. Also, the contrast with our existing system offers insights into it, for example, into the role of base money as it now exists. We should think in advance how our ideas might fail rather than learn from mere trial and error. Karl Popper (2002) recommended critical rationalism as a way of "letting our ideas die in our stead."[11]

[11]Similarly, Popper recommends "peaceful debate in which we can let ideas die in our stead" (quoted in many places, including Gattei 2002: 253)—and "Good tests kill flawed theories; we remain alive to guess again" (www.brainyquote.com/quotes/quotes/k/karlpopper159607.html). See also Popper (n.d.).

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