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# The Qualities of the Monetary Base Essential to Sound Money: Fiat and Gold

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Abstract: Sound money should have at its base a group of non-interest-bearing assets which have the quality of such extreme moneyness and are in such restricted supply that individuals in aggregate are willing to hold (directly or indirectly) large amounts even when other monetary assets outside the monetary base yield substantial interest income. These conditions were fulfilled historically under the pre–First World War international gold standard. They should hold also for the hypothetical creation in the present or future of sound money, whether fiat or gold. By contrast, under the actual monetary regime, with its banner standard target of 2 percent inflation, the monetary base has become severely corrupted: extreme moneyness has eroded, and individuals derive no utility from it at the margin of holdings. The nature of the route from here to there—from a corrupted monetary base to one suitable for sound money—is the final subject of the present article.

A key element in the neo-Keynesian critique of "monetarism" (Fischer 1979; Brunner 1983), and subsequently in the advocacy of the standard target of 2 percent inflation (Bernanke et al. 2001), was the evidence from the 1970s and

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1980s of serious instability in the demand for money, especially taken in its narrow definition. The "velocity of money" was allegedly too volatile and unpredictable for a set of automatic mechanisms—or, alternatively, constitutional rules—to make the control of money supply the basis of good money. Even if the money supply followed an ideal path set by rules, mechanisms, or targets determined by experts, the inflation outcome could be very different from the prediction. Under the alternative regimes offered by critics and advocates, the central bank would not treat any monetary aggregate as a "control variable." Instead, it would steer the policy interest rate according to the "stars," a term much used in the Federal Reserve's jargon (Koenig 2017), referring to the best estimates of the neutral interest rate (r*) and the natural rate of unemployment (u*). The central bank would deploy supplementary tools, including quantitative easing (QE) and quantitative tightening (QT), as required.

The critics and advocates were either silent or dismissive about important historical evidence concerning the international gold standard which countered their hypotheses (White 2017). That standard, which reigned globally for many decades before 1914, was a monetary system in which automatic mechanisms (operating within parameters partially set by geology and mining technology) determined the supply of the monetary base. Could the inadequacies of the contemporary fiat regimes, including their monetarist experiments, be due to a deterioration in the quality of base money, which consequently ceased to enjoy the broad and strong demand it did under the gold standard? Empirical tests on data from the monetary system at the time could not reject the proposition that a fiat-money regime—pivoted on a monetary base with intense monetary qualities, the essence of "extreme moneyness," and in strictly limited supply, similar to the pre-1914 gold standard—could succeed. These qualities relate to money's functions as a medium of exchange and store of value; base-money components perform those functions to an exceptionally high standard. Could the source of instability in the demand for money, which has been empirically identified in the recent past, lie in the dilution of intense monetary qualities by subsequent regulatory and legal developments? This article pursues an answer to this question. The plan is as follows.

The argument begins with hypothetical regimes of sound money, exploring how the monetary base would function in them. It considers first a fiat-money regime and then a gold-money regime. In both cases, base money consists of assets which render intense monetary services and enjoy strong and broad demand. The supply of monetary base is restricted such that, at the margin, individuals find its services of significantly positive benefit. That condition is essential because it allows imbalances between supply and demand of the monetary base to emit powerful economic forces, including, crucially, direct effects on spending on goods and services. J. S. Mill recognized the significance of those forces whether due to their presence or absence: "Most of the time the machinery of money is unimportant, but when it gets out of control it becomes the monkey wrench in all the other machinery of the economy" (quoted in Friedman 1969).

The argument then proceeds to consider how, under the actual fiat monetary regime, the monetary base has lost the essential qualities which would make it the pivot of sound money. In part, the analysis is historical, stretching from the launch of the Federal Reserve to the present day, including the experience of German monetarism. The analysis also reviews certain prescriptions for monetary reform, some of which have been implemented in practice, and demonstrates how these prescriptions corrupt the monetary base and have contributed to the unsoundness of the current fiat-money regime. The article ends with a section on possible ways to restore the monetary base so that it can function as an essential component of sound money.

## THE MONETARY BASE IN A HYPOTHETICAL SOUND-FIAT-MONEY REGIME

For sound fiat money, the two assets making up the monetary base—cash and reserve deposits, each bearing no interest—should feature extreme moneyness and be in overall short supply. Cash takes the form of banknotes, representing government liability, which are always usable in bearer form by anyone for immediate settlement, at par, of payments. As a store of value, their bearer form and potentially high value-to-mass ratios explain their desirability in the absence of inflation (a defining aspect of a sound regime). Reserve deposits are liabilities of the central bank, immediately usable at par for payments between member institutions of the interbank

clearinghouse. Individuals benefit from the extreme moneyness of reserve deposits through their crucial role in backing safe deposits, conceptualized here for a hypothetical banking system with no government protection for depositors, whether as a lender of last resort, with deposit insurance, or through an extraordinary bailout.

Individuals differ in their appreciation of the intense monetary services that are the essence of extreme moneyness. At the margin, the enjoyment any individual derives from these services, which flow from their base-money holdings, is balanced by the cost of interest foregone—base money under sound-money regimes pays no interest. The intensity of services related to base money's function as a store of value under a fiat-money system does not stem from the identical list of important factors under a gold-money regime. The gold-regime list includes as one element the tangibility and beauty of gold bars and coins, properties which are rooted in the natural world, not government decree.

Individuals are the ultimate consumers of intense monetary services. They derive these under the fiat regime considered here, either through direct ownership of cash or indirectly through holdings of safe deposits. Safe deposits are bank liabilities secured against backings of cash and reserve deposits. Banks manage their liquidity and deploy capital to enhance their safety. They can be used to make payments or cash withdrawals at par as requested by the client, who regards them as an exceptionally safe form of savings. Their backing can take the form of a specified ratio of reserves held in special accounts created for this purpose. In addition, the bank holds excess reserves to boost its perceived ability to convert safe deposits into cash or use them to make payments on demand. There may be some legal flexibility in any specified reserve ratio; for example, it may span a range with a minimum average over a stipulated period.

A given bank builds confidence in its safe deposits through ample holdings of excess reserves and a reputation for conservative and skillful management of assets. The safety and liquidity of a particular category of safe deposit (banks can offer a range of safe deposits from totally safe to reasonably safe) are bolstered by a prioritization of this in terms of legal claim; owners of the safe deposits come before other creditors in the event of the bank's insolvency. Some banks may find that it is commercially viable and

attractive to issue a super-safe type of deposit which is fully backed by reserve deposits and cash.

Under the hypothetical sound fiat regime, the benefits derived by individuals from the services of extreme moneyness (described as super-money qualities in Brown and Pringle 2022), flowing from monetary base components, are significant and robust even at the margin. The government, including the central bank, has not diluted the quality of these services by bestowing similar qualities on a broader range of monetary assets, such as by providing deposit insurance, assisting too-big-to-fail banks, and acting as an increasingly generous lender of last resort. Such dilution is distinct from another factor which may detract from the intensity of monetary services rendered by base money under a fiat regime—namely, the availability of a deep market in short-term-maturity Treasury bills. These are closer, albeit far from perfect, substitutes for banknotes and reserve deposits under a fiat regime than they would be for gold coins and bars—with their distinct attributes based on physical characteristics—under a gold regime.

The supply of the monetary base under a fiat regime is set by the central bank or other monetary authority. Because extreme moneyness is kept in short supply—which, in a fiat regime, results from strict control over the creation of base money by the monetary authority—a significantly positive interest rate is the norm in money markets. This is consistent with the substantial benefits individuals perceive from extreme moneyness at the margin of their base-money holdings.

The interest rate set in the money market, where reserve deposits are borrowed and lent, plays a key role in establishing continuous balance between supply and demand for the monetary base. In addition, the effects on spending on nonmonetary goods and services, as driven by individuals seeking to restore their desired consumption level of intense monetary services, become critical in balancing supply and demand over the medium term.

For example, the money-market rate rises in response to a demand for base money which exceeds supply. The demand could reflect an upward drift in the prices of many goods and services and some wages. This drift may occur for various reasons, such as a surge in public spending or some combination of random influences on

individual prices which lead to wage-price spiraling and rising price expectations. A higher money-market rate means a greater cost of enjoying the extreme moneyness of cash or reserve deposits and a consequent fall in demand.

Individuals vary in how they respond over time to the increases and decreases in the availability of intense monetary services from a given holding of base money which result from price fluctuations. This varying response—from a common starting point where at the margin all individuals perceive substantially positive benefits from these services in line with significantly positive interest rates—is important in explaining how money-market-rate changes and effects on intended spending on nonmonetary goods and services share the role in balancing the supply and demand of the monetary base. Those whose marginal benefit from intense monetary services rises sharply as the amount available to them shrinks (due, for example, to a fall in the value of money) would not be much inclined to make do with less base money in view of a rise in the interest rate such as would satisfy some other individuals. An example of making do would be holding a higher proportion of medium-safe and a lower proportion of ultra-safe deposits, gaining satisfaction from significant extra interest income. Individuals not inclined to make do with less availability of intense monetary services might move initially in the opposite direction, from interest-bearing alternatives into base money, in response to the erosion of base money in real terms. They perceive an especially high rate of benefit loss on their holding of base money, a form of consumer durable[1] (this renders intense monetary services), which has shrunken in terms of its capacity to deliver intense monetary services as the value of money falls. They may well plan optimally to rebuild holdings of this consumer durable over a period of months by spending less on other goods and services—reversing any feasible initial transitory albeit costly response in the form of adjusting their financial portfolio mix including liabilities and assets. The hypothesized speed may seem at odds with the long

[1] Note that there is no consensus in the economics literature that money is a consumer durable. This description of money fits the emphasis in this article on intense monetary services rendered by the monetary base, especially the functions of storing value and providing enjoyment. Friedman (1969), in relation to the quantity theory of money, broadly describes money as a capital good, which in the given context includes consumer durables. He writes that money yields consumer services.

and variable lags frequently attributed to changes in actual monetary conditions, but the discussion here is for a monetary base empowered by a degree of extreme moneyness not found in the real world which has been the subject of empirical observation.

Fiat base money, whether in the actual world or under the ideal regime described here, is outwardly strange as a form of consumer durable: it is not physical in nature, as gold bars and coins are, but takes the outward form of a financial instrument—in effect, a paper claim. As such, it can render intense monetary services, but the effects on spending—resulting, for example, from a reduced supply of intense money services caused by a fall in the value of money—may be less strong for fiat money than gold, as discussed further in the next section.

Another response to the changing capacity to enjoy intense monetary services is characteristic of those individuals who perceive only a slow rise of marginal perceived benefit from intense monetary services as the holdings which render these recede. Such individuals would not feel very pressed to add to their holdings of base money so as to make good the erosion of the underlying consumer durable (rendering intense monetary services) by price rises and are satisfied for some time with financial compensation instead. They may even cut their holdings in response to a significant rise in the money rate given the increased attractiveness of interest-bearing alternatives. As the value of money increases, with prices falling in response to planned spending cuts by individuals who more keenly appreciate highly and overall intense monetary services, interest rates fall back as consistent with continuing balance between supply and demand of base money. This rebalancing, driven by moves in the overnight rate, occurs directly in the money market and not in the credit markets.

Rebalancing as described occurs in the context of an authority under the hypothetical sound money fiat regime guiding the supply of base money, according to automatic or constitutional rules, along a very slow upward trend to meet demand and retain purchasing power over the long run. Short- and medium-term fluctuations in purchasing power—upward and downward but symmetric over the long run—will probably occur due to varying influences on the demand for base money. These include episodes of abnormally rapid growth in productivity (economic miracles) as well as abnormal fluctuations

in scarcity and abundance in resource markets. The authority does not adjust the path of the base money supply promptly or strongly in response to evidence about emerging variations in real influences but instead focuses on the long run (Brown and Pringle 2022).

Overnight interest rates, in the case of a sound fiat money pivoting on a monetary base as described above, are wholly determined by the market. The authority in this regime does not fix rates. The significant fluctuations in rates which occur—sometimes triggered by shifts in the value of money affecting the availability of intense monetary services—play a role in the process by which monetary policy affects the economy but only alongside the potentially stronger forces of direct effects on spending on goods and services. These effects, as we have seen, consist generally of individuals modifying their planned consumption of nonmonetary goods and services to expeditiously restore, or, if base money is veering above demand, reduce a significant part of their capacity to consume intense monetary services. These effects are distinct from shifts in spending that may follow from a rise or fall in the money-market rate.

To determine how rate fluctuations might bring about shifts in spending, we should note that these fluctuations are of a different nature and significance in this hypothetical regime of sound money than what we have seen in the past thirty years, during which the central bank manipulated by various strategies a whole array of interest rates for two-year terms and beyond (Brown and Simonnot 2020). Under the sound regime, the overnight rate is highly volatile: short-term rates are influenced by the overnight rate as well as assessments of how long the present tight or easy conditions in the money market could persist. Long-term rates are determined largely independently of this continuous rebalancing in the money market.

The details of how the effects on spending occur in the ideal sound-money regimes can depend on how the imbalance between the supply and demand of base money comes about. If the shortage of base money stems from the central bank not creating enough to meet demand, then a rise in the overnight rate may lead some individuals to rebalance their portfolios by shifting out of base money.

Some of these individuals know it is likely that this rate rise is transitory: if prices fall because other individuals reduce spending to restore their consumption of intense money services, then

the supply of base money will increase in real terms. Based on assumptions of this sort, they may be comfortable adjusting their base-money balances downward for a short period of time but not over the medium term.

There is no need to delve further into all the different forms of adjustment which occur in response to the initial disturbance between the supply and demand of base money. Suffice to say, there is an important component in the cumulative adjustment process which transcends interest rate changes and includes crucially the effects on spending on nonmonetary goods and services.

Another example of the supply and demand of base money falling out of balance will amplify the importance of these effects. Suppose a supply shock in the global economy causes a spike in prices across the effected goods and services, and, as a consequence, the demand for base money veers above supply. That could occur if the demand for base money were buoyed by a rise in transaction prices which exceeded any drag from a fall in real income. A rise in overnight interest rates sustains continuous balance in the money markets, assuming that the supply of base money does not change from its preset course; however, as individuals strive to rebuild their enjoyment of extreme moneyness by cutting back their spending on other goods and services, they exert downward pressure on prices, which then, outside areas of shortages, fall below preshock levels.

Alternatively, dislocations and shortages related to the supply shock could bring about a fall in incomes so significant that the demand for base money falls below its level on the eve of the shock. This would provide a basis for adjusting prices to higher levels which endure during the period of dislocation so that prices on average would be higher than before the shock.[2]

The deriving of significant benefits from intense monetary services at the margin of monetary-base holdings is the basis for the power of base money to influence economic outcomes. If base money rendered no intense services at the margin of individuals'

[2] Such sustained rises and falls in prices, which occur despite a balance between the supply and demand of base money, are called "natural rhythm" in Brown and Pringle (2022) and play a key role in benign intertemporal adjustments of consumption in response to supply shock and recession.

holdings, then very small interest rate changes would be sufficient to clear the overnight money market. There would be little consequence on spending on nonmonetary goods and services, whether induced by interest rates or the intention to restore the amount of intense monetary services enjoyed.

## THE IMPORTANCE OF THE MONETARY BASE IN A GOLD REGIME

This section will demonstrate the importance of the monetary base and the intense monetary services which it renders in establishing the soundness of a gold-money regime. Here, the assets which have intense monetary qualities are gold bullion and gold coins, circulating as a medium of exchange in countries that are "on gold"—hereinafter called the "gold bloc." The intense money qualities differ in part from those in the hypothetical sound-fiat-money regime described above.

Gold coins and gold bullion are the "real thing"—made up of the yellow metal whose natural properties, set down in the periodic table, are the basis of its appeal as money (beauty, high density, ease of divisibility into standard units). The intensity of monetary services as a store of value in gold coins and bullion extend to a dimension not possible in fiat base money. In the case of gold, these services include beauty and tangibility—individuals can "feel" their monetary wealth. In addition, we should note that gold coins and bullion do not depend fundamentally on a political and legal order, as the assets in a fiat monetary base do, to function as a store of value. Banknotes or bank deposits wholly backed by gold are viewed by their holders as gold certificates which have an extra dimension of virtual tangibility, beauty, and extreme moneyness not present in fiat notes.

Under a gold regime, there could be costs not present under a fiat regime when converting one form of base money into another—for example, gold coins into gold bullion. Even if there is free minting, transport costs would occur in the process. If each nation in the gold bloc had its own mint, the price of bullion specified for a given delivery point would vary slightly between those mints within a range set by transport costs (Yaeger 1965; Rockwell 1992).

Notionally, we can describe all current gold coins and gold bullion in the world as the monetary base of the gold-money system, which spans all gold monies. Outside the monetary base are some physical gold assets—especially jewelry (which accounts for around 50 percent of aboveground gold in the world), gold ornamentation, and numismatic coins. Safe deposits with a high backing in monetary base (gold coins and bullion) can be considered hybrid monetary assets (Mises describes these as money substitutes [Mises 1998]). Banknotes which are fully backed by gold are base money from the view of the holder, as are fully backed safe deposits (what Mises describes as money certificates).

Monetary base in the gold system is entirely non–interest bearing. Indeed, if we consider the cost of storage, its nominal return is slightly negative. The monetary base is in such short supply relative to broader monetary assets (including, for example, time deposits and certificates of deposit) and near-money paper (for example, short-term Treasury bills) that money-market rates under a well-functioning gold regime would be at or above a floor at a significantly positive level, as was the case for the pre-1914 gold standard—money rates in London only rarely fell below 2 percent and never to near zero.

The money market in an ideal gold regime is in effect a market of deposits that are fully backed by gold coins or bullion at a clearing house.[3] Individuals or institutions that lend out such deposits experience a loss in the intense monetary services at the margin and require income from significantly positive interest to make up for this.

Individuals differ in the extent to which they appreciate the various services of extreme moneyness as rendered by components of the gold monetary base. Given that, with regard to the function of storing value, the potential degree of intensity for monetary services from gold is likely higher than it is for those from fiat

[3] With the creation of the Federal Reserve in 1913, notes and reserve deposits had a legal backing of only 40 percent in gold—a factor which, together with the assumed lender-of-last-resort function of the new institution, reduced the intensity of monetary services provided by these forms of monetary base relative to pre-1913 forms (gold coins and bullion). This had implications for actual monetary inflation in the 1920s.

money, we could see among individuals a greater divergence of the average appreciation of gold's extreme moneyness relative to that of fiat money. This would plausibly result in more powerful effects on spending from imbalances emerging between the supply and demand of the monetary base in gold than in fiat.

Consider the portfolio rebalancing and effects on spending triggered by the supply of the monetary base veering ahead or below demand under the gold regime. Supply is heavily influenced by factors related to geology and the mining industry. The tendency is for the overall supply of the monetary base to grow very slowly albeit with some variability. Potential shifts between using gold as jewelry and as money do not interfere with that tendency, but they do play a key role of equilibration in the gold-money regime.

Suppose that a supply shock occurs under this gold regime—a range of goods and services (and possibly labor) suddenly becomes scarce, and prices rise. At the same time, many individuals would find themselves with inadequate holdings of monetary base, except when their real incomes have also fallen. The overnight rates jump to clear the money market, and some individuals with a relatively low perceived average benefit from their monetary-base holdings would be induced thereby to hold less. Demand for jewelry might decrease so that some is melted into gold bullion, in turn relieving the shortage of monetary base. Many individuals would plan to rebuild their holdings of base money in real terms over time, thereby restoring their consumption of intense monetary services, by cutting back their spending on nonmonetary goods and services.

Under the gold regime, as under the earlier hypothesized fiat regime, prices can swing upward or downward because of nonmonetary shifts which have considerable bearing on the demand for money. But these episodes tend to be symmetric and offsetting over the long run as well as self-reversing.

Take the case of an economic miracle, meaning a surge in the growth of total-factor productivity over an extended period. The miracle accompanies the reduction of prices by individual suppliers in response to falling costs, and the sound-money regime—in this case, gold—accommodates that. Accelerated growth of real income means that the demand for base money does not fall, despite lower prices. In the short term, the supply of monetary base is unaffected by

the miracle, but it is in the medium and longer terms. An unchanged gold price and falling costs in the gold-mining industry mean gold miners increase output and the economic miracle could extend to a sudden rise in mining productivity. There are offsetting influences on the demand for gold jewelry—on the one hand, demand gets a boost from higher living standards, but the increased relative price of gold relative to consumer goods in general weighs on demand. Overall, the increase in gold-mining output means that over the long run the rise in money's purchasing power, which occurs early in the economic miracle, would not persist in full.

Prices also rise or fall on a sustained basis across goods and service markets, whether under a gold regime or the hypothetical sound fiat-money regime, during business-cycle fluctuations. These can occur without monetary inflation or disinflation shocks, which are necessarily absent under perfectly sound-money regimes. They are instead explained by, for example, disappointment in a new technology because it performs below expectations. Historically, the gold regime of the late nineteenth century to 1914 included examples of monetary inflation and disinflation, which, in the United States, can be attributed to various government interferences in the operation of this monetary standard (Rothbard 2002).

If the gold bloc slides into recession, there is a tendency for the suppliers of goods and services to cut prices to promote sales. Recession will likely mean an increase in demand for monetary base because the absolute safety of its components will increase in appreciation in a world of greater financial risk. The fall in prices of goods and services, therefore, translates into an increase in the supply of monetary base in real terms, but this does not bring about any pressure for a reversal of the price fall, because the demand for monetary base increases too. If weak economic conditions continue, the mechanisms of the gold regime will bring about additional monetary stimulus. In the gold-mining industry, for example, costs will fall relative to revenues so that output targets are raised. Reduced demand for jewelry during a recession means that gold will seep into the monetary base. In any case, the widespread expectation that the fall in prices is transitory will encourage individuals and businesses to spend more.

## A CRITIQUE OF MILTON FRIEDMAN'S HIGH-POWERED MONEY CONCEPTS

In sum, strong equilibrating processes emanate from the monetary base in a sound-money regime, and these could be even stronger under a gold than a fiat regime. These equilibrating processes are essential to the regime's success in providing good money, from the point of view of both the individual and society. Granting this, consider another term for base money used famously by Milton Friedman, especially in appendix B of *A Monetary History of the United States, 1867–1960* (Friedman and Schwartz 1963), where he lays out the algebra for the "proximate determinants of the nominal stock of money." For Friedman, the term "high-powered" does not convey the intensity of services rendered by the monetary base but rather its hypothesized powerful role in determining the supply of broader money-supply aggregates. These latter are the focus of Friedman and Schwartz's analysis of historical data concerning the effect of money on the economy.

Here, the emphasis is different: base money is high-powered in the sense that it emits potentially strong equilibrating forces across the economic system as its supply and demand come into balance. Its source of strength is the intensity of monetary services provided by its component assets. A sound-money regime harnesses these forces. For the monetary base, or high-powered money, to play such a pivotal role, there should be a weighty share of individuals who feel such discomfort as to adjust their spending promptly and deliberately to restore their holdings in real terms toward some baseline. Moreover, the overall supply of intense monetary services rendered by the monetary base should be substantial relative to the economic size of the respective monetary area. In the opposite situation, the overall desired consumption of intense monetary services would only amount to a tiny fraction of aggregate incomes.

In that situation, keeping monetary base in short supply so that, at the margin, the benefits from intense services justify sacrificing income from significantly positive interest is not the basis of great power. The monetary base on its own would remain puny. The influence of base money on the economy, including the direction of prices, would come almost entirely through interest rates rather than effects on spending decisions. In this economy, the money-market

rate—how it fluctuates through individuals making small, absolute adjustments into or out of near—or broad-money assets, on the one hand, and monetary base, on the other—would loom much larger than direct effects on spending on goods and services. A monetary squeeze could cause the overnight money rate to surge or fall. The effects of these occasionally violent swings in the overnight rate are impossible to estimate, but they are the only potentially effective form of monetary transmission from the monetary base where it does not enjoy strong and broad demand when all its components are non–interest bearing.

Under a sound-money regime, intense monetary services should have a substantial weight in general consumption and yet be highly restricted in supply so that individuals derive significant benefit from these at the margin of their base-money holdings; otherwise, the monetary transmission mechanism lacks the powerful component of direct effects on individual spending on goods and services. This is a key point, expanded below, which conflicts absolutely with Friedman's proposition (Friedman 1963) that base money, in an ideal fiat regime, should pay the market interest rate. Friedman focuses on a different point. Because the marginal cost of producing base money under a fiat regime is zero, individuals should not confront a cost in holding it, which would reduce their enjoyment of its potential services. Friedman goes further: given the practical obstacles to banknotes paying interest, he advocates a gradual decline in prices over the long run so that cash yields a significantly positive rate in real terms. He argues that gold money is suboptimal because the enjoyment of the intense monetary services which flow from base money is constricted by the significant cost of mining the yellow metal.

In response to these points made by Friedman—and Tolley (1957)—sound money depends on the constraint of the overall supply of intense monetary services so that their perceived benefit at the margin of monetary-base holdings is significantly positive. That is the condition for changes in the availability of intense money services—as occurs for example when a fall in the value of money means a given amount of base-money holdings renders less—having a direct effect on intended spending by individuals on goods and services. If the fiat regime neither protects that scarcity nor allows intense monetary qualities to flourish and sustain an economically

broad demand for base money, then the monetary system lacks solid anchoring, which depends on powerful direct effects from money on individuals' demand for goods and services. Soundness is unattainable. Where reserve deposits pay a market interest rate, the benefit derived by individuals from intense monetary services rendered will be very low or zero at the margin of individual base-money holdings (this may not apply where the banking industry is characterized by monopoly or oligopoly, meaning that the interest rate paid on deposits is held well below a competitive level). Emerging shortages or glut in the supply of monetary base will then have little if any direct effects on spending as compared with influences which emanate from changes in interest rates.

How would interest rates be set for base money under Friedman's ideal proposals? Free-market determination of the interest rate in the overnight money markets requires that base money pay no interest. Hence, if base money is to pay substantially positive interest over time, as would be the case under the Friedman proposal when the aim is long-run price stability, market determination of the overnight rate is not possible. The money-market rate will be wherever the fiat authority decides—presumably with its stated long-run policy aims in mind. In the case of reserve deposits that pay interest at the policy rate, their intense monetary services are of zero benefit at the margin so that the base money loses its power to emit strong equilibrating forces in the economic system through direct effects on spending.

In the case of a long-run, gradual fall in prices—as favored by Friedman—base money will yield a significant return in real terms even when its nominal rate of return is zero. So, in agreement with Friedman's proposal that base money, despite bearing no interest, should pay a positive real return, as when prices fall over the long run, the overnight money rate can here be determined by the market. The real return on cash and reserve deposits—both bearing no interest—due to the gradual rise in the value of money would be distinct from the overnight interest rate, which would fluctuate so as to balance continuously supply and demand. But the fact that, at the margin, the benefit from intense monetary services which base money renders would be in general very small—consistent with generally tiny nominal interest rates in the overnight money market—means that it loses considerable influence. In this system,

changes in monetary conditions have one main channel of transmission: interest rates.

But this is also true under the current fiat regime. The 2 percent inflation standard has corrupted the monetary base relative to the ideal. The two main forms of its corruption involve banking and financial policies and monetary policy reforms.

## CORRUPTION OF THE MONETARY BASE

For banking and financial policies, consider the current crises involving various forms of state backing for bank deposits and other debt instruments. The safety of deposits depends less on the backing of high-powered money than on deposit insurance (Brown and Pringle 2022). Holders of deposits may also rely on the belief that the central bank and other government agencies will come to their rescue as lenders of last resort during any episode of financial strain for the too-big-to-fail institution concerned or somehow extend deposit insurance to non-insured deposits. In effect, by protecting assets outside base money, authorities diminish the intense monetary qualities rendered by the latter. Correspondingly, the demand for monetary base becomes less broad and less strong and its power shrinks to emit a potentially equilibrating force in the form of direct effects on spending on goods and services. In a vicious circle, monetary inflation eventually causes a crisis of the banking system, which in turn stimulates political forces to introduce yet more safety mechanisms. These in turn further unanchor the monetary system, increasing the danger and severity of a future episode of asset inflation, which could lead to another bust and bank crisis.

Early twentieth-century history illustrates the process of base corruption and its monetary consequences. Following the end of the First World War and the Great Recession of 1920, there dawned a new confidence in the U.S. banking system. It seemed that the creation of the Federal Reserve would prevent the periodic scourge of banking crisis and collapse, which had most recently occurred in 1907 (Bruner 2023). Accordingly, it is likely that demand for the monetary base fell relative to historical trends. The hypothesis that demand for base money softened helps explain how the U.S. found

itself in a great monetary inflation in the 1920s symptomized by asset inflation despite growth of the monetary base on average in the low single digits (Meltzer 2003). Monetary inflation did not show up in positive reported consumer price inflation because a concurrent economic miracle in which growth in productivity was surging (the second industrial revolution, featuring mass electrification, the assembly line in auto production, and the radio) (Rothbard 1963) caused much related price-cutting while rapid income growth restrained the softening in demand for monetary base.[4]

Also falling under banking and financial policies which corrupt the monetary base are measures which deprive cash of some of its potential intense monetary qualities. These include limitations on denomination of banknotes and restrictive practices which favor retail customers who use credit cards rather than cash. In principle, users of cash should obtain keener prices for many goods and services because of the "interchange fees." These, however, are somehow levied on cash users or on the merchants who accept them. Oligopolist card providers and state legislators may try to restrict retailers from charging for the use of credit cards on the phony basis of protecting the consumer, who is much more likely to want a discount for using cash. If merchants could fully pass on to customers paying with a card the cost of its use, then the benefits of cash would be greater.

Historically, onerous reserve requirements played a role in the corruption of the monetary base, though they may have appeared on the surface—especially in Germany during the era of the deutsche mark—to strengthen monetary anchoring. Under the actual monetary regime of the late twentieth century and the first decade of the twenty-first century, banks increasingly resented legal reserve requirements, which have since lessened. In effect, the whole regulatory apparatus of protection meant that banks faced dwindling customer enthusiasm for deposits that were subject to mandated high reserve backing and thereby entailed a loss of income opportunity.

[4] Milton Friedman described the years 1922–27 as the high tide of the Federal Reserve—based on actual price stability and low constant growth in the money supply (Friedman 1963). That verdict, however, is open to question, not least because of its silence on virulent asset inflation as a key symptom of monetary inflation (Brown and Pringle 2022).

Customers of regulated banks were in effect curtailed in their freedom to choose deposits with a lower backing of monetary base despite their preference for them (Brown 2018; Hagen 1998). Domestic banks were effectively blocked from creating supplies of deposits with a low backing of reserves, which could have been popular. Hence, at the margin, many individuals found they were holding more reserve deposits than they would under a freely competitive banking system. Correspondingly, the benefit these individuals obtained from the intense monetary services rendered by these deposits at the margin was not expressed by a simple calculation of interest foregone on hypothetical deposits with very low reserve backing. In consequence, shortages and gluts in the monetary base had less powerful effects on spending than they would if there had been no such compulsion.

In the U.S., bank lobbying against reserve requirements culminated in the Financial Services Relief Act of 2006, which granted the Federal Reserve the authority to begin paying interest on reserves as of October 1, 2011. In October 2008, amid the 2007–8 financial crisis, the Federal Reserve, under Chairman Bernanke, succeeded in getting legislators to include a stipulation in the Emergency Economic Stabilization Act that would allow the Fed to immediately start paying interest. The rationale for this step, given by Chairman Bernanke (Ireland 2019), included reference to Friedman's argument that interest payment on reserve deposits is a benign move if the goal is efficiency in the long run. There was also reference to the idea that if banks could be encouraged by the Fed's paying interest on reserve deposits to hold much higher levels of reserves, making their deposits safer, there would be less danger of future crisis. This idea begged the issue that financial crisis stems from monetary inflation, which had become a greater danger in a monetary system with a now even more seriously corrupted base money.

According to Bernanke (2009), "the payment of interest on excess reserves will permit the Federal Reserve to expand its balance sheet as necessary to provide the liquidity necessary to support financial stability while implementing the monetary policy that is appropriate in light of the system's macroeconomic objectives of maximum employment and price stability." As Ireland (2016), Taylor (2010), and Goodfriend (2011) point out, the Fed adopted its policy regarding interest on reserves in 2008 largely to facilitate

interventions, extending well beyond its role as a lender of last resort, in private credit and capital markets. Critics have argued (e.g., Selgin 2016) that the payment of interest on reserves thwarted the stimulatory purpose of Fed policies during the 2007–2008 financial crisis and its aftermath. Demand for reserve deposits, they hypothesize, exceeded the bulge in supply because of QE.

The point here transcends these arguments. By paying interest on reserves, the Fed took a further step—a very large step—in corrupting the monetary base so that it could no longer play any significant role in anchoring the monetary system. Instead of holding reserve deposits to the extent that, at the margin, the benefits from their intense monetary services are equal to income from foregone interest, individuals now hold them less sparingly so that at the margin these services yield no benefit. Correspondingly, banks hold huge quantities of reserve deposits because their opportunity cost has greatly diminished. Hence, the supply of base money veering ahead of or below the demand for money no longer has any significant effect on spending on goods and services. The effect on interest rates, triggered by the demand for base money veering ahead of or below the supply, is now limited to an interest-rate spread between the policy rate paid on reserve deposits fixed by the central bank and the interest rate on the nearest substitute asset for reserve deposits (say, very short-term Treasury bills).[5] That interest-rate spread is normally of only trivial importance in price outcomes in the economy and has little bearing on money-market rates.

The interpretation here of the bad monetary consequences of reserve deposits paying interest at the policy rate, a practice initiated by Bernanke, is distinct from Selgin's subsequent critique (Selgin 2018), which focuses on the enabling of vast lending to its favored borrowers—including big government—at preferential rates. Selgin argues that the Fed could use its new tool to subsidize banks' reserve holdings by paying a return on reserves exceeding returns on other risk-free assets. In fact, it did so while vastly expanding its balance sheet with a range of assets, including government bonds and mortgage-backed securities. Base money,

[5] In the special case of "zero rate policy," where the T-bill rate is zero, the above interest-rate spread is the same as the absolute interest rate.

according to Seguin, was no longer high-powered in the sense of driving the expansion of bank deposits and lending. Selgin draws an analogy with driving a car: the floor system, where the policy rate applies to reserves, allows the Fed "to steer the fed funds rate any way it likes, while stepping on the reserve-creation pedal as hard as it likes, only by putting the usual monetary transmission mechanism in neutral."

Implicitly important for Selgin, as well as other writers who hypothesize that the monetary base drives loan and deposit growth, is the concept of reserves as "hot potatoes." According to their multiplier analysis, when banks experience an increase in their excess reserves (measured relative to the legal minimum), they try to unload them as quickly as possible by expanding their loans. In turn, across the system as a whole, the money lent out returns in the form of an increase in deposits. There is an important discontinuity, or nonsubstitutability, of money-like qualities between bank deposits (excluding the monetary base) and near-money instruments outside the banking sector. In the credit market, there is a discontinuity between bank loans and other forms of credit and loans. In the current financial environment, loans make up only a small share of many banks' total assets, and client deposits make up only a small share of their total liabilities.

This article's argument, by contrast, assumes the context of a competitive banking and wider financial system with no legal reserve requirements (or ones so low that they do not influence behavior). In this system, reserve deposits are not hot potatoes but consumer goods which render intense monetary services strongly appreciated by banks and individuals even at the margins of their holdings. Here, the key discontinuity is between the monetary base and other components of the conventional, broadly defined money supply; the intense monetary services which the base renders to individuals, from which they benefit substantially even at the margin, mean that it emits equilibrating forces, including crucially direct effects on spending on goods and services. For Selgin, by contrast, the key discontinuity is not the lack of extreme moneyness for broad money instruments outside base money but between bank and nonbank deposits, on the one hand, and between bank and nonbank loans, on the other. Banks produce deposits and loans, in general, which are discontinuously superior

in liquidity, availability, and certain other qualities to their nonbank possible substitutes. If payment of interest on reserves curbs the power of the authorities to stimulate the growth of bank deposits and loans, then that will have important implications for the power of monetary policy.

Here, the important consequence of the Bernanke-led payment of interest on reserve deposits at the policy rate (as opposed to the previous rate of zero percent) is that, under competitive conditions, the benefit of intense monetary services from these deposits at the margin is zero—whether from the viewpoint of their bank holders or of individuals who hold safe deposits backed by them. In practice, of course, conditions might not be competitive; a few very large banks which are uniquely able to offer safe deposits might possess the oligopolistic or monopolistic power to not pass on the interest they receive on reserve deposits to their clients.

According to this argument as well as Selgin's, the policy rate fixed by the central bank is now the principal tool of monetary policy in a system where the monetary base has been neutered and is no longer a possible source of direct effects on spending on goods and services. Moreover, the policy rate is arbitrarily fixed by the central bank without any reference to the supply and demand of the monetary base. In sound-money regimes, the money rate is determined by the market (a key point noted, for example, in Taylor 2010). Selgin suggests that market determination can consist of just a free-floating rate within a corridor set by policy—for example, a rate for deposits at the Fed and an official discount rate. In this article's argument, by contrast, a free-floating rate excludes any rate-fixing intervention, including the use of corridors, and reserve deposits pay no interest.

How should we view QE, which accompanied the innovation of paying interest on reserve deposits? If QE had been launched without this innovation, then money-market rates would have fallen instantaneously to near zero. This happened under earlier QE-like episodes, whether in 1934–36 (Brown and Simonnot 2020) or during the Second World War and its immediate aftermath (Brown and Simonnot, forthcoming). Operations which cause the supply of reserve deposits to veer far ahead of the demand for reserve deposits when the money-market rate is already close to zero or at zero

have almost no direct effects on wider spending given that intense monetary services at the margin are also zero.[6] They may, however, have indirect effects in the form of expectations insofar as they raise the danger of future goods-and-services inflation. For example, if individuals expect that the central bank will never mop up the present flood of reserve deposits, then at some point during the business cycle's expansion phase, far beyond the present recession, many individuals will find their holdings in the monetary base are well in excess of desired levels, taking account, for instance, a fall in financial and default risks. Money rates could long remain at zero, sustaining balance in overnight markets but stimulating demand for goods and services and powering asset inflation. If individuals anticipate higher prices eventually through such distant effects, they may step up their spending during the present recession. For now, QE enhances the central bank's opportunity to encourage a flow of funds which strongly favors certain types of loans to be officially prioritized—including government debts.

When QE takes place with the policy rate of interest paid on reserve deposits, the same observation as above applies where there are no direct effects on spending and there is a general favoring of prioritized borrowers. The effect of any inflation expectations on present spending is in principle likely to be much weaker than if there were no interest on reserve deposits. When the business expansion begins, the central bank can raise its policy interest rates even with a flood of reserve deposits still in the system. The flood means that interest rates on near-money assets, especially T-bills, will be abnormally low relative to the policy rate for reserve deposits, but this will not have much wider economic influence. There could, however, be some expectational effect if there is a widespread intuition that QE and the growing unsoundness of the monetary system indicate future inflation.

Pure QE, defined as an operation in which the central bank commits itself to a huge program of issuing reserve deposits to buy assets and not linked to financing a simultaneous increase in the government deficit, is not a powerful tool for providing stimulus,

[6] We are here considering QE as a pure monetary operation without a change in fiscal policy. "Helicopter money," by contrast, includes a simultaneous fiscal shock (Dowd 2018).

least of all where reserve deposits pay interest at the policy rate. A more effective way to counter a recession or a depression is to keep the overall supply of the monetary base in short supply so that a significantly positive interest rate remains. The expectation of a procyclical upturn of prices further ahead could then play a key role in stimulating recovery. Prices would fall to a low level during the recession, and expectations of higher prices further ahead would lead individuals and businesses to spend in the present.

Even given that the policy rate is currently paid on reserve deposits, could there be some residual effects on direct spending on goods and services from the banknote component of base money? If, for example, a rise in the prices of goods and services leads individuals to estimate that the marginal benefit of holding notes is higher than the prevailing interest rate, they would all convert some holdings of safe deposits, and, with those, their monetary base component, into banknotes at the one-to-one conversion rate. This would have no effect on spending because the marginal benefit from their holdings of monetary base in the form of interest-paying reserve deposits was already zero at the margin; therefore, there would be no incentive to switch from nonmonetary goods and services to restoring intense monetary services.

## THE JOURNEY TO A RESTORED SOUND MONETARY BASE

In sum, monetary policy today is interest-rate policy. The Fed chooses the path for policy rates and, through its communications—whether speeches by senior officials, press conferences, or periodic statements of policy—about how it could adjust these going forward, can manipulate interest rates for maturities extending at least two years into the future. The supply of monetary base is not a control variable in this process. QE and QT are policies which have their principal influence on the availability and relative cost of credit between sectors that include the government itself. The Fed's practices are a far cry from a monetary regime built on perpetual scarcity of a monetary base with highly popular intense monetary qualities and in which all interest rates are determined by the market rather than the Fed's decree.

To arrive at such a regime, the first step is to end the payment of interest on reserve deposits, the second is to restrict the supply of monetary base so that money retains its purchasing power over the long run, and the third is to promote conditions in which the intense monetary qualities of the base will blossom again. The problem, however, is the lack of knowledge about what the demand for the monetary base will be when these conditions are fully satisfied, For example, if the journey begins by ending interest payments on reserve deposits, then where should the central bank set the initial target for the outstanding supply of the monetary base? It should probably be much less than it is under the present regime, under which demand is fueled by the potential to earn income from interest—but by how much? In principle, the journey could in its later stages feature a big rise in demand for base money as its intense monetary qualities are boosted by the dismantling of government protection for depositors and by substantial evidence that the previous menace of inflation has receded.

One possibility to start a fiat system on its journey toward soundness would be to set a target for the supply of the monetary base, estimating demand as reforms kick in. But the estimates will most likely prove wrong, showing up in a prolonged rise or fall of prices. Alternatively, there could be flexibility in the target from year to year, depending on evidence of monetary inflation and deflation, but that seems treacherous. We see here a version of the reanchoring problem—the turbulence that accompanies the process of anchoring a monetary system which has been long unanchored. This problem is also encountered in proposals to move to a gold-based monetary system, mostly concerning where to set the gold content of the currency (Brown and Pringle 2022).

The shrinking of the monetary base is probably essential to the fiat regime's journey away from its status quo, which is characterized by full payment of interest on reserve deposits and the central bank having an enormous balance sheet, but this step poses its own set of problems. The disposal process could prove difficult or disrupt the market.

The central bank and the Treasury would have to work together, with the former exchanging its holdings of long-term government bonds and credit paper for the latter's short-term Treasury bills.

The central bank could then sell these rapidly to mop up the monetary base. The long-term bond holdings of the Treasury could be liquidated gradually over time—or, equivalently, the Treasury could gradually lengthen the maturity of its debt, retiring some of the Treasury bills issued during the first stage of the process. This all assumes that the Treasury can sustain—or at least avoid a big deterioration in—its credit rating once it becomes evident that its bonds can no longer be monetized to allay dangers of default in nominal terms. That assumption may appear highly problematic under present political circumstances. At an extreme, if credit ratings were to plunge, even rolling over short-term Treasury bills might become challenging.

Monetary unions, in reducing the sizes of the balance sheets for their member countries, can cause credit quality between the different sovereign debts to widen, increasing the possibility that the union will break up. That is the situation today for the Economic and Monetary Union of the European Union: the contraction of member banks' balance sheets would require, for example, the Bank of Italy to unload its massive holdings of Italian government debts and loans to Italian banks, surely causing stress for Italian sovereign and bank credit.

Returning to general principles concerning the journey to a base money consistent with soundness, what should be done about the losses which could emerge on the central bank's balance sheet as soon as its initial holdings of assets are exchanged for Treasury bills? Under fiat-money regimes, accounting issues between two government agencies—for example, the central bank and the Treasury—should be seen as subsidiary to the problem of determining the true economic cost underlying any assessment of loss (Pollock 2022). The Fed's accounting losses (marked to market) on its portfolio of assets—which, as of early 2023, amount to around $1 trillion (around 4 percent of GDP)—should, for example, be viewed as a belated adjustment, in terms of present value, to the true cost of financing government debt which will emerge after the phony reckonings of a long period of near-zero interest rates and massive QE operations by the Fed. Previously, assessors of federal borrowing would look at the Treasury's outstanding debt and calculate its servicing cost on the basis of coupons. But perhaps 25 percent of this would have been converted into floating-rate debt

by QE, and the cost of servicing that debt would be much higher than the notional low coupons at the time of the Fed's purchase. The losses accumulating in the Fed's balance sheet indicated how much higher the cost would be.

These losses, however, should not stand in the way of making a start toward building a monetary base which would function as the core component of a sound-money regime. Quite the opposite, they are one piece of evidence concerning the wider damage of monetary base corruption.

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