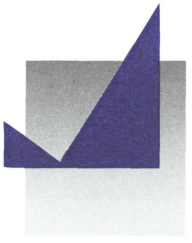
Is there a role for gold in monetary policy?

Robert D. Laurent



Gold has played a major role in the history of money and monetary policy. With the abandonment of convertible money and the adoption of fiat money, the integral role of gold in monetary policy disappeared. Nevertheless, there continue to be proposals to bring gold back into a more prominent role in monetary policy. These proposals essentially take two tacks. One argues that governments should readopt convertibility of currency into gold. The second argues to retain fiat money, but to use the price of gold as an early indicator of changing price pressures. Both of these proposals imply an enhanced role for gold in monetary policy. This article examines both proposals.

The article begins by describing the role of gold in the development of money and monetary policy. It traces how the unique characteristics of gold account for its prominent role in a specie money system and led gold to play a central role in a convertible money system. When gold was abandoned with the adoption of a fiat money system, a credibility problem arose for the future purchasing power of money. While some believe that returning to the gold standard would solve this problem, this article argues that it would not. Indeed, analysis of the operation of a gold standard makes clear that even if the credibility problem could be solved, other systems would be superior to the gold standard.

The second proposal, to use gold prices as an early indicator of changes in inflationary pressure under a fiat money system, rests on the assumption that gold prices and general prices move closely together. The price of gold and general prices do tend to move reasonably closely over long time horizons, but in fact the price of gold tends to be much more erratic over shorter time horizons. While a number of factors produce the erratic short-term movements in gold prices relative to general prices, two of the most important are the complex nature of the decision to shift between gold and fiat money as stores of value, and shifts in foreign demand for gold. This suggests that gold prices are not particularly closely related to small incipient fluctuations in the inflation rate. Moreover, a cursory examination of the evidence suggests that other commodity indices would serve at least as well as gold prices in the role of early indicators of changes in inflationary pressures. Indeed, it appears that the unique quality of gold makes its price more useful for gauging substantial shifts in the public's attitude toward fiat money, as for example when policy is attempting to eliminate deep-seated expectations of increasing inflation.

Coinage

Money is one of the great innovations in history. It is so simple and common, and its use so ubiquitous, that most users never think about the significance of its function. Money greatly facilitates the exchange of goods and services, allowing the specialization in employment that characterizes all modern societies.

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In a society in which each economic unit produces all the goods and services it consumes, there is no need for money. As specialization of labor develops, however, people begin exchanging goods and services. The simplest mode of exchange is swapping (or bartering) goods and services directly. But as the variety of goods and services grows, bartering becomes increasingly difficult. Consider the problem of a watch repairman who requires medical treatment for a sore back. The repairman must find an orthopedist who needs exactly the right amount of watch repair, or barring that, the repairman must string together a chain of swaps linking people requiring watch repairs with people willing to provide something the orthopedist wants. The difficulties are obvious.

Far simpler and more efficient is a system in which people exchange a common commodity in return for goods and services. This commodity is called money. Money is defined not by what it is, but by the function it performs. Any commodity used as money must of necessity also serve as a store of value between the time it is acquired and the time it is spent. As a result, money facilitates saving. Economists express this dual function of money by saying that it is both a means of transaction and a store of value.

The degree to which money facilitates savings is an important part of its function. What is critical in this regard is not merely money's value—what it can buy—but also how that value is expected to change in the future. The value of money is determined by the supply and demand for it. The demand for money is simply the quantity of goods and services offered in exchange for it; the supply is the quantity of money offered in exchange for goods and services. An increase in demand raises the value of money, while an increase in supply lowers it. What can be particularly damaging for money's role as a store of value are expectations that its supply will increase rapidly, lowering its future value.[1]

A large number of commodities have served as a means of transfer and a store of value at different times over history.[2] Gold has probably played those roles in more societies and for a longer time than any other commodity, including the fiat money that currently dominates. Indeed, many people in many parts of the world still consider gold a better store of value than fiat money. There are many reasons for this. Gold does not decay or corrode. It has a lustrous appearance and is extremely malleable, so that it can be worked into ornamental pieces from which the gold can later be easily recovered. In addition, while gold is widely distributed around the earth, it has always been relatively rare compared to iron, copper, or even silver, so that an amount small enough to be easily hidden and carried has always been sufficient to purchase a large amount of whatever could be produced by human labor of the time.

Initially, gold was probably transferred in the form in which it was found—as nuggets, grains, or simply gold dust. But it is difficult to know the quantity or purity of gold in these forms. As metalworking technology developed, the attraction of coinage became clear. Since the quantity of metal in a coin is usually less than the amount that could be purchased in a free market with the minted coin, there is typically a return to the minter of coins.[3] This return is called *seigniorage*. It reflects the excess face value of the minted coin above the value of the metal and the costs of processing it into a coin. The value of the coin is thus determined by the minting process, rather than by the inherent value of the metal in it.[4] As a result, not only is there a return to the minting process, there is also an incentive for counterfeiting—the production of unauthorized replicas. The development of coinage also opens up the possibility that the coins will be deliberately nicked or shaved to remove metal from the coin.[5] This is the reason for the front and back stamping and the milling that sometimes appears on the edge of a coin. Nevertheless, throughout history, coins have been debased not only by their holders, but also by their issuers. By reducing the amount or the value of metal in a coin, the issuer raises the seigniorage return and increases revenue.[6]

Convertible money

At this point, money consisted of coins of different denominations made of varying amounts of different metals—principally iron, nickel, copper, silver, and gold. The value of money was supported by the scarcity of the metal used to make it. The more valuable metals such as gold were typically used for the highest denomination coins, which were used most often to store wealth and least often for

transactions.[7] Because gold coins were used only rarely for transactions and their value was relatively high, it was risky to hold them on one's person or at home. Depositories were established where holders could deposit coins or other valuables for safekeeping. Depositors paid for the safekeeping services rendered and were given receipts indicating ownership of the coins on deposit.

Some important developments flowed naturally from these depositories. First, depositors came to realize that when they wanted to make a transaction, they could simply sign over (endorse) the receipt for coins on deposit to the payee. This was easier and safer than withdrawing coins from the depository and transferring them to the payee, who most likely would simply redeposit them. As payees became accustomed to accepting endorsed deposit receipts, it was but a small step to allow payers to endorse over some portion of their deposits to a payee—and thus were born modern-day checks. Depositories also began issuing standard receipts in various denominations, redeemable by the bearer for coins on deposit. These generalized depository obligations, called bank notes, were precursors of paper currency.

Depository managers soon realized that only a small fraction of the coins on deposit were typically withdrawn at any given time. As a result, depositories could lend some of the money to borrowers and earn interest. Initially, depositories made these loans surreptitiously to keep depositors from knowing that not all their funds were being held in storage. But soon they began lending openly and assuaged depositors by paying interest on their deposited funds. At this point, depositories essentially became banks, making loans, paying interest on deposits, and (most importantly of all) creating money.

With this development, convertible money had appeared, that is, money that had value because it could be converted into something intrinsically valuable, such as gold. For the first time, goods and services could be purchased not only by coins (specie), but also by promises to pay specie. Money consisted of coinage, deposits at banks on which checks could be written, and bank notes—the latter two redeemable in specie at banks. The circulation of convertible money and the transfer of deposits through checks were substantial improvements over a system consisting solely of coinage. Convertible money and checks increased convenience and safety. Additionally, bank depositors could earn interest on their funds, which in turn encouraged further savings. Moreover, since mining metal and minting coins involve a substantial expenditure of real resources, the new banking system was less costly to society. Creating deposits on a bank's books and printing bank notes cost far less than mining and minting metal.

Though the appearance of banks and convertible money was a substantial improvement, it created a new problem. The quantity of circulating convertible money redeemable in coin (specie) was now much greater than the specie held in banks. Money was no longer constrained by the amount of available specie. If enough of a bank's depositors tried to redeem their deposits, the bank would fail. What might cause depositors to do such a thing? Anything that led them to believe that the bank could not honor redemption requests. Even a rumor that the bank had suffered losses on its loans which made it insolvent, or a fear that others might try to redeem their deposits, could lead to a bank run. This explains the critical role that confidence plays in banking.

To protect themselves, banks held specie in their vaults, deposits at other banks, and some very liquid assets that could be sold for specie in an emergency. These reserves could help a bank survive a surge of redemptions. In addition, a solvent bank experiencing a run could acquire additional specie by borrowing from other banks. They would have an incentive to help in order to maintain confidence in all banks.

If an individual bank were experiencing redemption pressures, the help of other banks in providing specie could easily be decisive. But if runs were occurring at many banks, the problems would be much greater. In such a case, the quantity of specie in the entire banking system would no longer be nearly sufficient to redeem all deposits, and many banks would fail. Indeed, many of the protections for individual banks were much less effective if many banks were facing runs. Drawing on deposits at other banks simply redistributed a fixed quantity of specie. A widespread sale of liquid assets could drive down asset prices,

weaken banks' capital positions, and cause even more bank runs.

Any factor that causes depositors to believe that banks collectively cannot redeem deposits will cause simultaneous runs on many banks. Historically, events such as war and civil disorder have often had this effect. (The U.S. during the Civil War and England during the Napoleonic Wars suspended convertibility of deposits and bank notes into specie for many years.) In addition, the development of a banking system introduced an entirely new factor that could cause runs. When economic activity waned, depositors began to fear that if loans could not be repaid, deposits could not be redeemed. Depositors withdrew specie, causing a further fall in money, economic activity, and prices. When economic activity waxed, depositors felt more confident of banks' ability to redeem deposits, and they deposited more specie, increasing money, economic activity, and prices. Convertible money may not have initiated fluctuations in business activity, but it clearly amplified the size of the fluctuations.

A banking system that creates convertible money amplifies cyclical fluctuations and price movements. The gold standard—the convertible nature of the money that allows it to be exchanged for gold at a pegged price—acts to stabilize money and prices over longer periods of time. Imagine a situation in which the prices of all goods and services are rising, and the equilibrium market price for gold rises above the pegged price.[8] Producers and sellers of gold will then sell in the market rather than selling to banks at the pegged price. Conversely, buyers of gold will bring dollars to banks, rather than to the market, to purchase gold. These actions will reduce gold in the banks by a quantity sufficient to bring the market price of gold down from the equilibrium price to the pegged price. With a reduced quantity of gold in the banking system, the amount of money created will fall, as will the prices of all goods and services.

On the other hand, if the equilibrium price of gold falls below the price at which gold is pegged (presumably reflecting falling prices of all goods and services), then producers and sellers of gold will bring it to the banks at the pegged price instead of selling in the market, and buyers will purchase in the market rather than from banks. The quantity of gold held by banks will rise, and as a result, the amount of money will increase and the prices of goods and services will rise. As these examples illustrate, a gold standard stabilizes prices by automatically producing changes in the supply of convertible money when the equilibrium market price of gold deviates from the pegged gold standard price. The gold standard will stabilize the prices of all goods and services to the extent that movements in the equilibrium price of gold match movements in general prices.

The gold standard also stabilizes relative prices across countries. When two countries peg the value of their convertible moneys in terms of gold, they effectively peg an exchange rate between their currencies. This enables each country to translate foreign prices into its own currency easily and precisely. If the prices of goods in the first country rise relative to those in the second country, the second country's goods will be more attractive in both countries, and more net goods will be shipped from the second country to the first. Since gold is the medium of international payments, there will be an increased net shipment of gold from the first country's banks to the second country's banks. As a result, convertible money will contract in the first country and expand in the second country until prices return to equilibrium in the two countries.[9]

Fiat money

The experience with convertible money made clear that something could serve as money that was not even intrinsically valuable. People exchanged convertible money for goods and services even if there was no guarantee that it could be converted into specie. At times, the money continued circulating long after convertibility had been suspended. What mattered most was the confidence that it would continue to be accepted in exchange for goods and services in the future, and the expected rate at which it could be exchanged. This rate depended primarily on how scarce money was expected to be in the future.

Given these realities, it was clear that a monetary system could be based on something other than convertible money. The logical choice was a note, physically similar to the old bank note but not convertible into anything. Such notes are called fiat money; as the name implies, their status derived entirely from law.

Fiat money has a number of advantages. First, it reduces the real cost of providing a monetary system to a minimum, since mining and minting costs dwindle almost to zero. Accordingly, seigniorage returns to the money issuer increase. Second, fiat money can be controlled more readily. Banks tended to lose specie when the economy was contracting. This led to further contractions in money and economic activity. By contrast, under a fiat money system, while banks still have convertible deposits, those deposits are convertible into fiat money. The issuer of fiat money can offset the outflow of reserves from the banking system by supplying more fiat money, something it cannot do under a system of money convertible into gold. Fiat money thus gives the central bank full powers of monetary policy and raises the possibility of smoothing out cyclical fluctuations. Indeed, a number of the world's central banks were established in hopes that they could dampen economic cycles by providing an "elastic currency."[10]

Despite these benefits, replacing the gold standard with a system of fiat money creates an important potential problem. As long as a gold standard is in place and money is redeemable by something in limited supply, there is a cap on money creation. By contrast, fiat money makes it possible for government to raise revenues by issuing excessive money. This may seem more attractive than raising revenue by borrowing or increasing taxes.[11] But an excessive issue of fiat money will cause prices to rise, and thus imposes a "hidden tax." Instead of the burden of the increased revenue falling on present or future taxpayers, the costs will be borne by those holding currency or assets accruing payments in money (for example, bonds). Advocates of a gold standard argue that it protects against this danger.[12]

Advocates may well be right in arguing that a gold standard maintains the purchasing power of money better than fiat money does. Certainly, the historical record supports that conclusion.[13] Yet the movement around the world has been toward fiat money.[14] This appears to be because governments are not always willing to be constrained by a past commitment to maintain the long-run purchasing power of money. The difficulty is not getting governments to adopt a gold standard; rather, it is getting them to stay on it, or barring that, to get them to return to the standard at the old price of gold. History is replete with examples of countries going off the gold standard and not returning to the old price of gold. There is no way to force a sovereign power to adhere to a gold standard if the costs of adhering to it become high.[15]

Indeed, even if countries could be forced to remain on a gold standard, it would not be the best way to achieve price stability. The analysis in the previous section showed that a gold standard works to maintain the purchasing power of money by producing changes in convertible money. If the government were willing to bear the costs of allowing money to respond to deviations of the price of gold from its pegged price, then an actual gold standard would not be necessary. The cost of mining and minting gold could be saved by simply moving fiat money in response to deviations of the price of gold from target. In fact, even better would be a system in which the money stock was directly adjusted in response to deviations in the prices of all goods and services from target levels. This would remove the possibility that a change in the relative price of gold would affect general prices. In summary, if government has the discipline to follow a gold standard, gold is not necessary; if government does not have the discipline to follow a gold standard, even gold will not help.[16]

Though governments may not be willing to commit themselves to a gold standard, there is still a strong constituency in favor of price stability. One approach advanced by this constituency is to give more independence to the central banks that issue fiat money so as to insulate them from government influence, and buttressing this independence with legislation charging the central bank to achieve some measure of price stability.[17] Indeed, there does appear to be some movement in this direction.[18]

Gold markets

Under a fiat money system, a central bank has the task of creating fiat money to dampen cyclical economic fluctuations while simultaneously maintaining the long-run purchasing power of money, formerly maintained by a gold standard. Some propose that the bank use changes in the price of gold as a signal to adjust the quantity of fiat money in order to maintain

price stability. Gold prices can serve this role if their movements tend to match general price movements. This is somewhat similar, as noted earlier, to the operation of the gold standard, in which the price stabilization properties of gold depended upon the stability in its relative purchasing power. The data in figure 1, covering the period from 1800 to 1992, indicate that over long periods of U.S. history, movements in gold prices have corresponded quite closely with movements in the general level of prices. This correspondence is impressive considering that the price of gold was pegged for substantial subperiods, and that wholesale prices over this period increased by about six times.

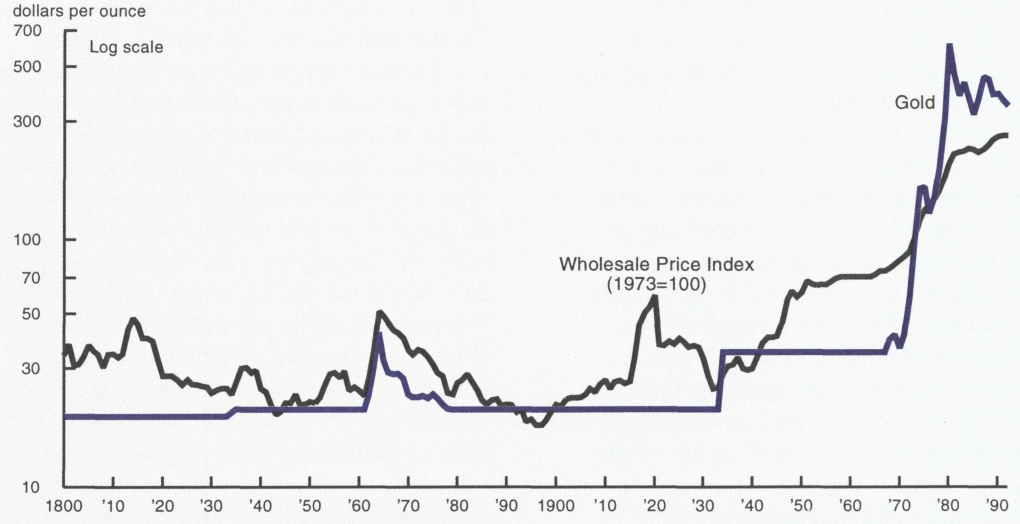
A major reason for this long-run stability is that, as the purchasing power of gold rises, more resources are devoted to discovering and extracting it. This may not seem to be the case, since the best known examples of gold production appeared to be accidental "discoveries." However, the total production of gold in such discoveries has generally been small and short-lived compared to the scale of overall gold production. After the initial surge in a discovery, the production of gold has generally returned to an expensive process of extracting the metal from difficult-to-reach veins or from difficult-to-process ore. In such circumstances, higher gold prices are required to elicit higher gold production.[19]

A second characteristic of the gold supply is that it does not change much in the short run. Since the present stock of gold includes virtually all the gold that has ever been mined, the immediate impact of any sudden supply change is likely to be minimal. Even major events such as the "discovery" of gold in the New World by the Spaniards, the California and Australian gold discoveries, and the development of the cyanide process to mine South African ores affected total gold stock and gold prices only gradually.

As a consequence of these supply characteristics, the most volatile short-term movements in gold prices reflect changes in the demand for a relatively fixed quantity of gold. The demand for gold is basically for three uses—commercial and industrial, ornamental and jewelry, and as a pure store of value. The commercial and industrial demand for gold is relatively small and diffuse, facts that contribute somewhat to the stability of the total demand for gold.[20] In the typical commercial use of gold, there are no ready substitutes, and the amount used is generally of small value relative to the price of the final product. As a result, the cost of developing substitutes is likely to be uneconomical.[21]

FIGURE 1

Wholesale prices and the price of gold
(1800-1992)



Sources: Jastram (1977) for 1800-1976 data. Thereafter, Bureau of Labor Statistics for the Wholesale Price Index, and the *Wall Street Journal* for gold prices.

The gold demand for ornamental and decorative purposes is quite large but is not likely to be very responsive to changes in price unless prices become extreme. History has inculcated in much of the human race the opinion that gold is a very desirable medium with which to create art and adorn jewelry. By tradition, gold is the preferred medium in which to express many sentiments; witness wedding bands and gifts for a "golden" anniversary.[22]

As described earlier, tradition and history have also placed gold in a unique position as a store of value and an alternative to fiat money. Unlike the other two main uses of gold, the demand for gold purely as a store of value can be quite erratic and price-insensitive. A significant shift between the large quantity of fiat money and the relatively fixed quantity of gold available over the short run is likely to produce very sharp changes in the exchange rate between them—that is, in the price of gold. Any events that affect the relative attractiveness of fiat money, primarily through expected changes in the value of fiat money, may have this consequence, such as changes in internal social stability, the tides of war, or anything that affects the desirability of raising revenue through seigniorage.

The above analysis suggests that in the short run, sharp fluctuations in the price of gold are likely to stem from shifts in the demand for gold as a store of value. If this is true, then short-run movements in the price of gold may be useful for monetary policy by providing an early signal of changes in expected inflation rates. Yet three other aspects of the gold market make it difficult to translate a change in gold price directly into an expected change in general prices.

The first aspect is that, given gold's high ratio of value to weight and its wide acceptability, it has an international market. As a result, the price of gold in two countries (adjusted for the exchange rates between their two fiat currencies) is not likely to deviate much. If the price of gold or the value of currency rises in the first country, then gold will be shipped from the second country to the first. Indeed, this is precisely the key mechanism of an international gold standard, as described earlier. Clearly, it implies that changes in the domestic price of gold could result from changes in gold demand in a foreign country, rather than signaling changes in expected inflation at home.

A second aspect of the demand for gold concerns the common wisdom that the price of gold rises in response to inflation. As figure 1 shows, while gold prices and general wholesale prices have typically moved closely over long periods of time, the relationship is much more complex over short time periods. Short-term movements in gold prices are much more volatile than those of the general level of prices. In part, this may be the natural result of comparing a single price against the average price of an entire basket of goods and services. But in addition, economic theory strongly suggests that in the short run, the relationship between gold prices and general prices should not be as simple as a close lock step.

Under ordinary circumstances, holding gold purely as a store of value would not seem attractive. The holder of gold must either risk theft or pay storage costs, as well as forgo any interest return. Given these facts, the motivation for increasing one's demand for gold as a store of value would not simply be expected inflation, but an internal calculation that the price of gold is likely to rise more (even after storage costs) than the return available from fiat money. In addition, since there are costs in shifting wealth between fiat money and gold, there should be some expectation that these conditions will endure for a while. In practical terms, this is likely to mean a situation in which inflation is increasing and real interest rates are low or negative. Conversely, gold prices are likely to weaken when inflation declines and real interest rates are high.[23]

The third aspect of the demand for gold is that when there is also an international market for fiat moneys as stores of value, the situation is likely to be even more complex. The price of gold will be most sensitive to movements in the real interest rate on that fiat money which offers the highest real rate. While a change in the real rate on any fiat money is likely to have some impact on the price of gold, a change in the real rate on a fiat money with a relatively low real rate is not likely to have a great influence on gold prices, since holders of that money have available to them as stores of value not only gold, but also better fiat monies. In the case of a change in real rates on a relatively unattractive fiat money, the major reaction is likely to be a change in its exchange rates with

other fiat moneys. However, a change in the real rate on the fiat money with the highest available real rate is likely to have an impact not only on exchange rates, but even more on the demand for gold, because this fiat money represents the closest alternative to gold. As international capital markets become more integrated, this role of the best alternative fiat money should become more important in interpreting gold price movements.

Gold prices and inflation

This analysis of gold markets suggests that it will not be easy to translate changes in gold prices into predictions about future inflation rates. While the supply of gold appears sufficiently price-elastic to produce a stable relative gold price over long periods of time, demand factors can cause the relative price to be very erratic over the short term. This is due to the international character of the gold market and the complex nature of the calculations that lead to shifts between fiat money and gold. Shifts in foreign demand, including those arising from the monetary policy actions of other fiat money issuers, can affect the domestic price of gold. In addition, small and incipient moves in inflation are not likely to be matched by shifts between gold and fiat money, or changing gold prices. As a practical matter, gold prices are likely to be affected only in situations in which inflation has already been changing, and in which short-term real interest rates set by the monetary authority indicate that change is likely to continue for some time. Accordingly, gold should be particularly good not for forecasting small fluctuations in inflation from small changes in gold prices, but for capturing large shifts in the public's attitude toward fiat money from large changes in the price of gold that are likely to be associated with significant changes in inflation. Large falls in gold price are likely to be particularly helpful in gauging the success of monetary policy in reversing expectations of sharply increasing inflation.[24] The following discussion presents data on gold prices and general prices and interprets them in light of this analysis.

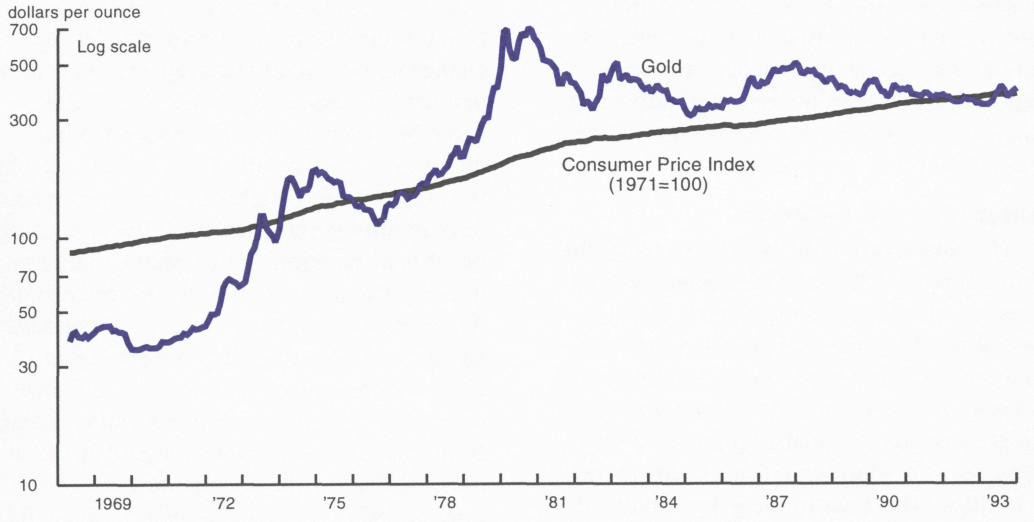
From 1934 to 1968, gold prices in the U.S. were fixed at $35 per ounce. This price was applicable only to foreigners, as legislation in 1933 had made it illegal for U.S. residents to hold any monetary form of gold. During those years, wholesale prices increased approximately threefold. This explains the deterioration in the purchasing power of gold over the same period, shown in figure 1. Following World War II, the Bretton Woods agreement made the U.S. dollar an international reserve currency and, through the price of gold, fixed its exchange rates with other currencies. This meant that the U.S. essentially acted like a bank, and other nations' central banks acted like depositors. As a result of this system, all countries enjoyed the benefits of fixed exchange rates in foreign trade, and the U.S. enjoyed the benefits of seigniorage that accrue to money issuers. But the system depended on the U.S. not overissuing dollars. By 1968 foreigners had more dollars than they were willing to hold, and the equivalent of a bank run developed. The U.S. had to stop redeeming dollars from foreign central banks for gold at $35 an ounce and allow the price to move. In addition, by 1971, U.S. citizens had regained the right to hold gold.

Figure 1 shows that since 1968, the price of gold has increased almost three times as much as the Wholesale Price Index. As the figure also indicates, this more rapid increase has helped move the longer-term increase in gold price into line with the longer-term increase in wholesale prices; thus it has made up for the long period from 1934 to 1968 in which gold prices were frozen while wholesale prices rose. The data in figure 2 give, in somewhat more detail, the behavior of gold prices and the Consumer Price Index (CPI) over the period since 1968. While the CPI has risen steadily, with changes in slope reflecting variations in the rate of inflation, the gold price has experienced steep and extended declines. Indeed, the current gold price is well below its 1980 peak of nearly $700 an ounce (on a monthly average basis). This is consistent with the observation that the relationship between gold prices and general prices can be very volatile in the short run.

Even though gold prices are much more volatile than prices in general, changes in gold prices (if properly scaled) might still be of value in predicting changes in general inflation. Figure 3 plots year-over-year changes (appropriately scaled) in both gold and the CPI. In periods of large moves in the rate of growth of gold prices and the CPI, the rate of change in gold prices does tend to precede the major part of the fluctuations in inflation.

FIGURE 2

Consumer prices and the price of gold
(April 1968-December 1993)



However, over other periods, such as the last decade when the rates of price change have not fluctuated much, there appears to be little connection. This is again consistent with the conclusion that small movements in gold price were not likely to be closely associated with changes in inflation. Figure 3 also indicates that gold prices have been particularly quiescent over the last three or four years.

The analysis of the gold market in the previous section indicated that a shift in demand from fiat money to gold would not be triggered simply by public expectations of inflation, but by expectations that inflation would continue increasing. In practice, this is likely to mean low, if not negative, real interest rates. Figure 4 plots gold prices and the real federal funds rate and shows that sharp moves

FIGURE 3

Year-over-year changes in gold prices and consumer prices
(April 1969-December 1993)

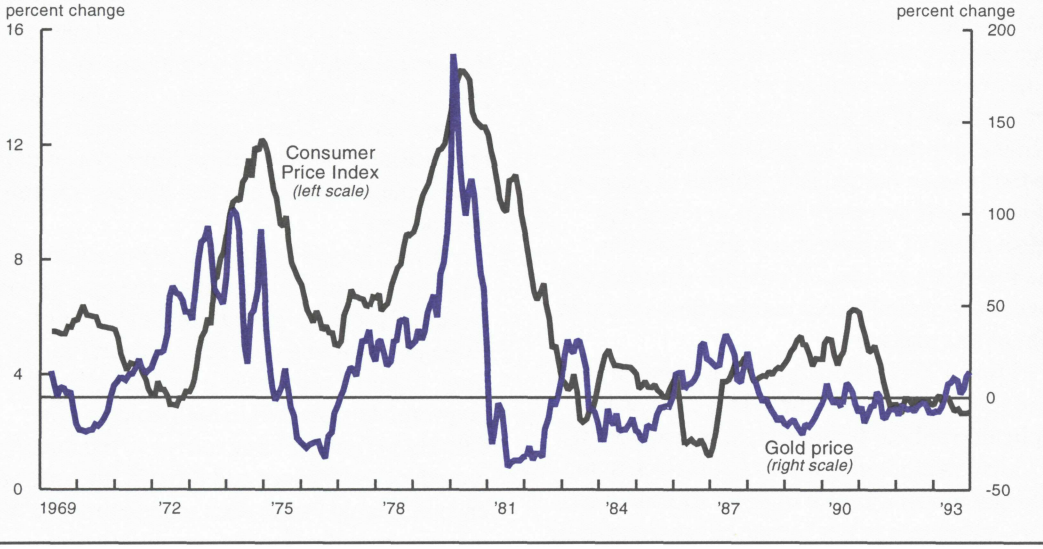
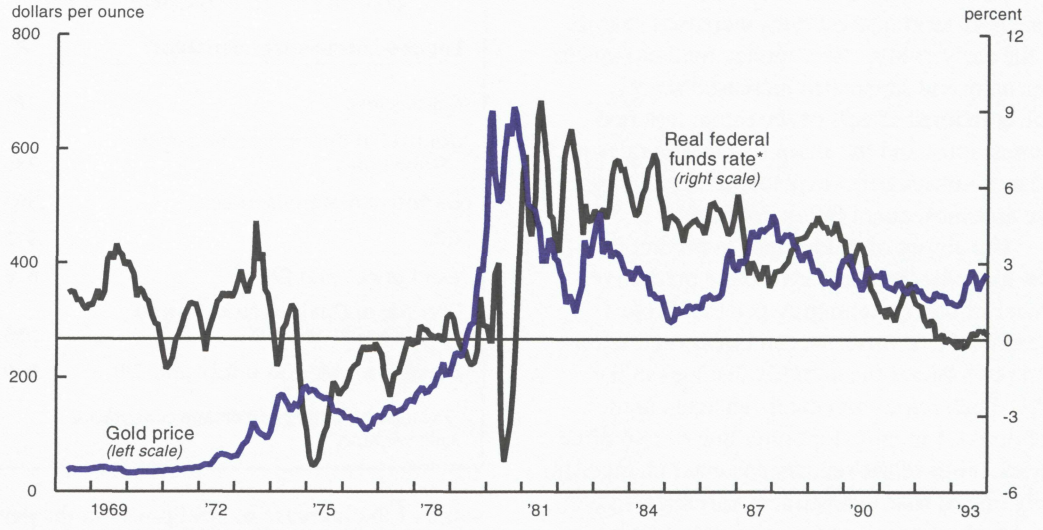


FIGURE 4

Gold prices and the real federal funds rate
(April 1968-December 1993)

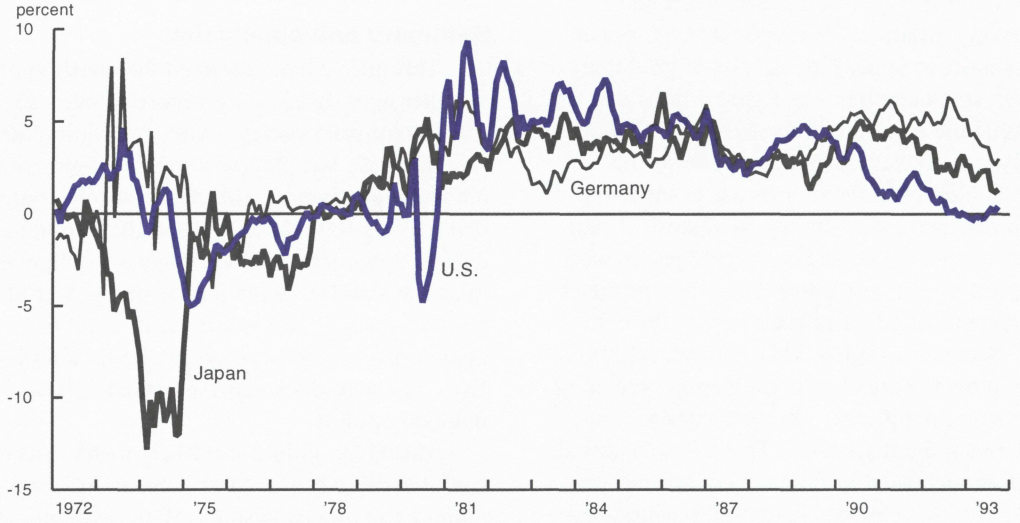


*Real federal funds rate is the funds rate minus the year-over-year change in the Consumer Price Index.

in gold prices are preceded by real interest rates of the opposite sign. This is particularly noticeable around 1980, when there was a major shift in the real federal funds rate. In the period before 1980, the real federal funds rate was low if not negative, while in the period after 1980 it was very high. In addition, figure 3 shows that inflation, as measured by the CPI, was increasing before 1980 and decreasing thereafter. Finally, figure 4 shows a striking contrast in the behavior of gold prices before and after 1980.

FIGURE 5

Short-term real rates in the U.S., Japan, and Germany
(January 1972-September 1993)



Note: Real rates are short-term rates minus year-over-year change in the Consumer Price Index. Short-term rate for U.S. is the federal funds rate. For Germany and Japan it is the money market rates from the International Monetary Fund.

Source: *International Financial Statistics*, IMF.

The previous section also described how the behavior of foreign issuers of fiat money can affect the price of gold. Figure 5 shows that the U.S. was not the only country in which real short-term interest rates increased sharply in the early 1980s. Real money market rates in Germany and Japan also increased sharply. The combined effects of the initial low real interest rates and the sharp rise in real rates in these countries helps explain the very sharp rise and subsequent fall in gold prices.

The ability of gold prices to predict inflation may also be compared to the predictive power of other commodity prices. Table 1 presents the results of seven linear regressions done to forecast the monthly changes in the CPI. Each regression enters changes in the previous 24 months for either one or two price series. Four of the regressions enter changes in only one of four independent variables—gold prices, the *Journal of Commerce* Industrial Price Index, the sensitive materials prices included in the index of leading indicators, and the CPI itself. The other three regressions enter lagged changes in the CPI in combination with changes in each of the commodity price measures. The $\bar{R}^2$ figures indicate the fraction of variance in the monthly CPI explained by the variable(s) in each regression. As the table makes clear, the other two commodity indices explain fluctuations in the CPI at least as well as gold prices do.[25]

Finally, the second quarter of 1993 witnessed a spurt in gold prices that some suggested at the time might be an early warning of increasing inflation. This episode provides an opportunity to apply the analysis of gold markets presented earlier. As figure 4 indicates, at this time the real federal funds rate had fallen nearly to zero, suggesting that perhaps the stage could be set for an increase in inflation. However, as figure 3 shows, by historical standards, the period's increase in gold prices was quite mild, certainly nothing like the increases that had signalled sharp rises in the CPI in the past. Second, as figure 3 also shows, inflation had not been increasing in the period preceding the rise in gold prices. On the contrary, it had been exceptionally stable. Third, in this period inflation increased in China, a country where gold holds an esteemed historical position and where foreign fiat money investment alternatives to the yuan are few.[26] It is likely that some of the increase in gold prices in the period stemmed from the increased Chinese demand for gold. Fourth, in this period the Bundesbank, which probably had the highest short-term real rates among central banks that attract international capital, sped up its pace of lowering short-term real rates (see figure 5).[27] Finally, this was a period in which sensitive materials prices and the *Journal of Commerce* Industrial Price Index were falling, not rising. For all of these reasons, and in light of the analysis in the previous section, it would seem reasonable to conclude that the rise in gold prices in mid-1993 was probably not signaling a significant increase in U.S. inflation.

TABLE 1

Forecasts of monthly percentage changes in the Consumer Price Index (CPI)
(January 1972-November 1993)

Lagged independent variables[a]	$\bar{R}^2$
Gold prices	.271
Journal of Commerce Industrial Price Index	.330
Sensitive materials prices	.362
CPI	.510
Gold prices and CPI	.516
Journal of Commerce Industrial Price Index and CPI	.556
Sensitive materials prices and CPI	.560

[a]24 lagged monthly percentage changes for each variable.

Summary and conclusion

This article has examined the question of whether gold should play a more prominent role in monetary policy. After examining the role that gold has played in the development of money and monetary policy, the article argues that making fiat money convertible into gold does not guarantee the willingness to achieve long-run stability in the purchasing power of money. Even if this willingness could be guaranteed somehow, there are better alternatives than a gold standard on which to base monetary policy.

Moreover, gold is not likely to serve as a useful early indicator of changes in inflation under a fiat money system. While gold prices and general prices have moved together over long periods of time, short-term movements of