

# Should High Gold Prices Be A Source of Concern?

*“A rise in the price of gold is the best signal that we have to indicate that there is diminished confidence about the future purchasing power of money.”*

—Wayne Angell

*“Gold has racked up a notoriously poor record as a leading indicator of U.S. inflation, especially in the '80s and '90s.”*

—Citibank economists

One of the primary responsibilities of the Federal Reserve is to facilitate mutually beneficial, private exchange by maintaining the value of the nation's currency. If the future purchasing power of the dollar is uncertain, the operation of our free enterprise economy is disrupted: people will forgo transactions that they would otherwise have undertaken and be forced to negotiate complicated and costly contingent contracts that they otherwise would have been able to avoid. To protect themselves from loss, people will eschew dollar-denominated assets in favor of alternative stores of value.

In the view of some economists, gold plays a special role as an alternative store of value. When, after two years of comparative quiet, the price of gold surged this winter (*Chart 1*), these economists warned of an impending increase in inflation. For example, in a *Wall Street Journal* editorial, former Federal Reserve Governor Wayne Angell asserted that “A rise in the price of gold is the best signal that we have to indicate that there is diminished confidence about the future purchasing power of money.” Other analysts were skeptical about the significance of the gold-price run-up and, more generally, about the usefulness of gold as an inflation indicator. Citibank economists, writing in the newsletter *Economic Week*, asserted that “Gold has racked up a notoriously poor record

**Chart 1**  
Gold's Sharp Winter Price Hike

Daily spot price  
(Dollars per ounce)



SOURCE: London Bullion Fixing.

as a leading indicator of U.S. inflation, especially in the '80s and '90s.”

In research presented here, I show that Wayne Angell and Citibank are *both* right. Consistent with Wayne Angell's view, there is evidence that the price of gold has been one of our more useful inflation indicators during the 1980s and 1990s. However, consistent with Citibank's skepticism, the predictive performance of gold has been less than stellar.

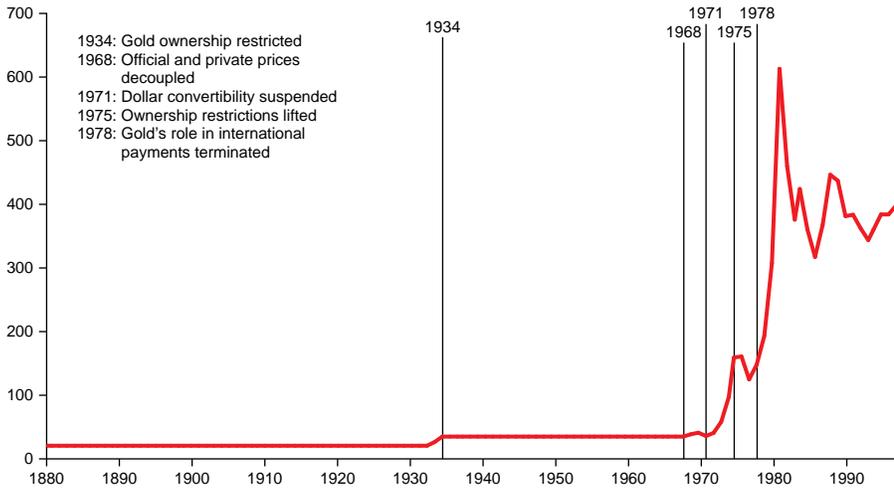
## Historical Background

Why might gold be regarded as a particularly attractive store of value in times of inflation and inflation uncertainty? Compared with other commodities, gold is unusually durable: it doesn't decay, rust or tarnish. Gold's attractive appearance and malleability mean that it can be enjoyed as jewelry or other ornamentation and yet is easily convertible into coin or bullion. Moreover, because gold is durable and malleable, nearly all the gold that has ever been mined is still available. Consequently, the available stock of gold is large relative to the influx of newly mined gold, and the total supply of gold does not fluctuate much from year to year. Finally, gold is sufficiently rare that only small quantities are needed to purchase large amounts of other goods and services.

Chart 2 provides some historical perspective on the price of gold. It shows that for over 50 years, from 1879 through 1932, the price of gold was fixed at just under \$21 per ounce. In 1934, the price was reset at \$35 per ounce, and U.S. citizens were prohibited from owning gold coins or bullion. No further changes occurred until 1968, when the metal's private price was decoupled from its official price. But it was not until 1971, when the convertibility of the dollar was suspended, that the market price of an ounce of gold rose appreciably. In 1975, private U.S. citizens were again allowed to hold gold coins

**Chart 2**  
The Price of Gold

Annual averages  
(Dollars per ounce)



SOURCE: U. S. Congress.

and bullion, and in 1978 the International Monetary Fund's official gold prices and gold convertibility requirements were finally terminated. The average annual price of gold peaked a few years later, in 1980, at more than \$600 per ounce. (The peak daily closing price—achieved early in 1980—was \$850 per ounce.) Since 1982, average annual gold prices have stayed between \$300 and \$450 per ounce.

The focus of this article is on the gold-inflation relationship since 1981. The 1980s and 1990s have been marked by comparative stability in the international financial system and the laws pertaining to gold ownership. Moreover, there have been no substantial changes in the conduct of monetary policy, and it is over this period that its critics say gold has performed poorly as an inflation indicator.

**Gold as an Inflation Indicator**

To get a clear picture of the relationship between the price of gold and inflation, we must smooth out some of their short-term fluctuations. To this end, Chart 3 plots a six-month moving average of the annualized rate of change in the consumer price index (CPI) and a 12-month moving average of the

price of gold. The gold-price plot is shifted relative to the inflation plot to show the level of gold prices six months earlier. For example, the chart indicates that inflation during the six months ending in July 1986 was very low: consumer prices actually *fell* at an annual rate of almost 1 percent. The gold-price plot attains its minimum (\$317 per ounce) at very nearly the same position on the chart—indicating that the low inflation in the first half of 1986 was preceded by low

gold prices during 1985. More generally, Chart 3 suggests that sustained movements in inflation have often been preceded by similar movements in the price of gold. The most glaring exception occurs in late 1990, when the Persian Gulf crisis triggered a sharp uptick in inflation that was not foreshadowed by a rise in gold prices.

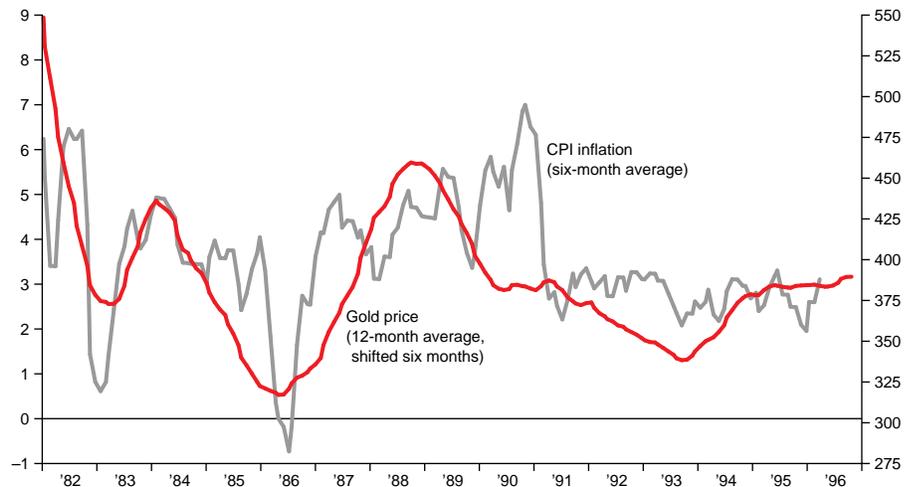
Exactly how much power to predict future inflation do gold prices have? To get an answer, I regressed six-month inflation rates first simply on past inflation rates, and second on both past inflation rates and past gold prices. I found that past rates of consumer price inflation are of absolutely no use in predicting current consumer price inflation: the adjusted  $R^2$  when lagged inflation rates are the only explanatory variables is actually negative.<sup>1</sup> In contrast, when gold is introduced into the forecasting equation, the equation's predictive power rises to 21 percent.

Moreover, the impact of gold is quantitatively significant. Roughly speaking, each \$10 increase in the price of gold, sustained for six months, implies a 20-basis-point-higher inflation rate over the following six months.<sup>2</sup> For example, the \$30 increase in the price of gold

**Chart 3**  
Gold as an Inflation Indicator

Annualized percentage  
(Change in CPI)

Gold price  
(Dollars per ounce)



SOURCE: Department of Labor, author's calculations.

*“An upward blip in gold prices says little about future inflation. However, a consistently high gold price is one of the symptoms of an irresponsible monetary policy.”*

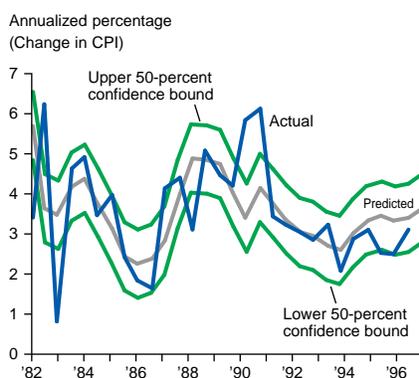
that occurred this winter, *had it been sustained*, would have raised forecasted inflation in the second half of 1996 by over half a percentage point.

### Gold Prices Are Predicting Higher Inflation

Chart 4 plots actual and predicted six-month changes in the consumer price index, where predictions are based on lagged gold prices and lagged inflation rates. The most recent inflation prediction—3.6 percent—covers the six-month period between March and September of 1996. In the previous six-month period, the predicted inflation rate was 3.3 percent and the actual inflation rate was 3.1 percent.

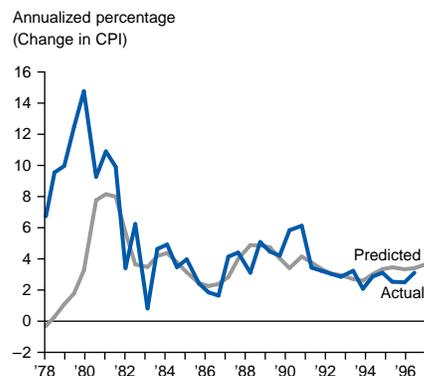
How much confidence should one place in the current 3.6-percent inflation prediction? Not a lot. On either side of the predicted-inflation plot, Chart 4 displays upper and lower 50-percent confidence bounds. Chances that the actual inflation rate will lie within these bounds are 50–50. For inflation from March to September of 1996, the upper and lower bounds are 4.5 percent and 2.75 percent, respectively. That’s a pretty wide range. Indeed, despite its 3.6-percent inflation prediction, the forecasting equation says that there is a one-in-three chance that inflation will be lower over the next six months than the 3.1-percent rate recorded

**Chart 4**  
Gold’s Prediction: Higher Inflation



SOURCE: Department of Labor, author’s calculations.

**Chart 5**  
Signs of Instability



SOURCE: Department of Labor, author’s calculations.

over the past six months. Even with gold’s help, inflation predictions aren’t very accurate.

### More Caveats

Just because gold is helpful for predicting inflation doesn’t mean that it is the *best* inflation indicator, or that other indicators aren’t helpful, too. I looked at nine indicators other than the price of gold, including measures of labor market and output market slack, survey measures of inflation expectations, the slope of the yield curve, and measures of money growth and commodity prices. Among these alternative indicators, I found that the slope of the yield curve has had more predictive power for consumer price inflation during the 1980s and early 1990s than has the price of gold: the yield curve explains 25 percent of the variation in CPI inflation over this period, as compared with 21 percent for gold. One does even better using both variables together: predictive power jumps up to 38 percent.

The clear message is that gold may not be the only—or even the most valuable—indicator of future inflation. Moreover, just because gold has historically been helpful for predicting inflation doesn’t mean that it will remain so in the future. Some evidence on this score is illustrated in Chart 5, which extends our earlier plots of actual inflation and predicted inflation

back into the late 1970s. A sharp deterioration in the performance of the forecasting model is evident as one moves backward in time: inflation is much, much higher prior to 1981 than the model would have predicted. Indeed, the model says that the chances of seeing such high inflation rates were less than one in 100.

What accounts for this breakdown in the predictive performance of gold? One possibility is that gold sales by the world's central banks following elimination of convertibility requirements kept gold prices below what they otherwise would have been. In any case, the forecasting breakdown raises fears that the relationship between gold and inflation may shift again. Such a shift might occur as a result of renewed gold sales by central banks (who still hold a third of the world's total mined gold). Alternatively, it might occur in response to increased real or policy uncertainty in the United States or overseas.

A second reason for skepticism concerning the reliability of the gold-inflation relationship has to do with gold's more recent forecasting performance. As shown in both Chart 4 and Chart 5, since 1993 actual inflation has fallen short of the rate one would have predicted using past inflation and gold prices. While this string of overpredictions may very well be only a chance occurrence, it bears watching.

### **Conclusion: Gold's Predictive Power Is Neither a Mirage Nor a Panacea**

Federal Reserve Chairman Alan Greenspan has said that the price of gold is a useful but not perfect indicator of inflationary expectations. In other words, as an indicator of future inflation, the price of gold is neither a mirage nor a panacea. Consistent with Greenspan's view, there is evidence that sustained movements in the price of gold convey valuable information about future inflation trends.

Currently, the price of gold is signaling that inflation is likely to rise. However, the confidence bands around this prediction are quite wide. If we want to narrow these bands, we must look beyond gold to the information contained in other economic and financial indicators. The need to look beyond gold is heightened by the realization that the gold-inflation relationship has not always been stable.

Should high gold prices be a source of concern? Yes, but not a source of panic. An upward blip in gold prices like that observed this winter says little about future inflation. However, a consistently high gold price is one of the symptoms of an irresponsible monetary policy.

—Evan F. Koenig

### **Notes**

<sup>1</sup> The *unadjusted*  $R^2$  is the fraction of the variation in the dependent variable that is explained by the regression equation. The adjusted  $R^2$  exacts a penalty for each additional explanatory variable to offset the tendency for even an irrelevant regressor to increase the unadjusted  $R^2$ . (In the extreme case where there are as many independent regressors as observations, the  $R^2$  would always be 1.0 in the absence of adjustment.) The exact relationship between the two measures of explanatory power is  $R^2_A = R^2_U - k(1 - R^2_U)/(n - k - 1)$ , where  $R^2_A$  is the adjusted  $R^2$ ,  $R^2_U$  is the unadjusted  $R^2$ ,  $k$  is the number of regressors (excluding the constant) and  $n$  is the number of observations.

<sup>2</sup> The estimated regression takes the form:

$$\begin{aligned} \pi_t = & -3.754 + 0.158\pi_{t-1} \\ & (2.472) \quad (0.180) \\ & + 0.000\pi_{t-2} + 0.0175g_{t-1} \\ & (0.146) \quad (0.0065) \end{aligned}$$

$$R^2_A = .213, \text{ S.E.} = 1.262,$$

where  $\pi$  is the annualized percentage rate of consumer price inflation over a six-month period,  $g$  is the average monthly gold price over a six-month period and standard errors are in parentheses. The equation was estimated using semiannual data, from 1982:H1-95:H2.

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