Unemployment, Gold, Money and Forecasts of Inflation

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by Allan H. Meltzer

Conventional wisdom in the United States holds that money growth is now irrelevant for judging Federal Reserve action or inflation. Various reasons are offered to explain this striking departure from basic economics. The most common explanation is that financial innovation has distorted the growth rates of monetary aggregates and the meaning of “money.”

Several measures are now widely used to predict inflation. Chief among them is the unemployment rate. High unemployment is said to lower inflation. Almost every time a new statistic appears, market watchers and the financial press report that strength (weakness) in the economy will cause inflation to rise (fall).

Chart 1 compares the annual rate of inflation (four quarter average) to the lagged unemployment rate quarterly for the past ten years. At times the two series move in the same direction (1985--86, 1990, 1992--94); at times they move in opposite directions as suggested by the belief that inflation and unemployment are negatively related (1987--89, 1991--92). On average, the predicted negative relation comes through and is statistically significant. But the forecasting power is weak, as the chart suggests.

Quarterly inflation rates are more variable than average annual rates, so the relation is weaker for quarterly than for average annual data. Chart 2 compares the lagged unemployment rate to the quarterly rate of inflation (annualized). Again, there is evidence of the predicted negative
relation on average. There are also periods in which the two move in the same direction.

The conclusion to be drawn from these data is that there is a weak association between inflation and the unemployment rate. The unemployment rate contains some information about inflation but, as discussed below, the information is not superior to the information in some monetary aggregates.

The Wall Street Journal advocates use of the level of the gold price to predict the rate of inflation. This is at best a mistake. Inflation is calculated as the rate of change of some broad index of prices. The level of the gold price cannot and should not be expected to predict the rate of inflation.

Chart 3 compares the lagged rate of change of gold prices to the rate of inflation using annual rates (four quarter average). Chart 4 uses quarterly data (at annual rates). There is no evidence of any relation at all. Inflation rises with falling gold prices from 1987 to 1990 and falls with rising gold prices from 1992 to 1995. This is opposite to the alleged relation. Computation shows that there is a negative relationship on average, but it is weak and not statistically significant. Changing the lag structure does not improve forecast accuracy.

Contrary to repeated assertions, money growth continues to play a useful role in forecasting inflation. Chart 5 shows that the forecast of inflation improves significantly using a forecasting equation that assigns importance to Federal Reserve actions. This equation includes the annual growth rate of the monetary base relative to the average growth of the real base, lagged one quarter, the lagged value of the unemployment rate.
and lagged rates of inflation. The estimated equation implies that a 1% change in the growth rate of the monetary base -- say from 3 to 4% -- changes inflation by 0.4% within a quarter. The direct effect on the measured rate of inflation is about the same as a 3/4 percentage point change in the inflation rate (from 5-1/2 to 6-1/4%). If the two variables changed in the same direction in the proportion 1 to 3/4, the combined effect would approximately cancel for the inflation rate.

This comparison appears to make the unemployment rate and the growth of the monetary base about equally important. However, the base is more variable than the unemployment rate, so a 1% change in its growth is a smaller relative change than a 3/4 percentage point change in the unemployment rate. A 1% change in the base is about 1/2 the standard deviation of the growth of the base (56%), but a 3/4 percentage point change in the unemployment rate is more than a full standard deviation of the unemployment rate (118%).

Table 1 compares forecasting accuracy of the three forecasting methods. The average rate of inflation for the period is 3.2%. Two times the standard error from the equations tells the range within which the forecast error would lie 95% of the time using the particular method of forecasting. For the unemployment rate and the rate of change of gold prices, the range is 100% or more of the average rate of inflation. A central bank using either of these methods, to achieve say 2% inflation during 1985--95, could expect no better than that the inflation rate would remain between -1 and +5% using only the unemployment rate to forecast inflation. (Using the rate of change of gold prices gives an even larger range.) Neither variable has been useful for forecasting inflation during
this period.

Table 1

Measures of Forecast Accuracy

<table>
<thead>
<tr>
<th>Measure</th>
<th>Standard error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployment rate</td>
<td>±1.5</td>
</tr>
<tr>
<td>Percentage change in gold price</td>
<td>±1.7</td>
</tr>
<tr>
<td>Base money growth plus (see text)</td>
<td>±0.7</td>
</tr>
</tbody>
</table>

A more precise version of the relation between unemployment and inflation would introduce the "natural rate" of unemployment or NAIRU as an additional variable. Deviations of unemployment from NAIRU, not the unemployment rate itself, are said to be negatively related to the rate of inflation.

A problem with this explanation is that NAIRU is not constant, and it cannot be expected to remain constant. Changes in regulation, tax rates, the terms of trade, and the demographic composition of the labor force affect the value of NAIRU. In recent years, the assumed value of NAIRU has drifted from 6.5% to 6% to 5.8% to 5.6%.

NAIRU appears to be near the prevailing level of unemployment, wherever that is, as long as inflation is not rising. Inability to find the
value of NAIRU removes most of the content from this explanation of inflation.

The point of this exercise is not to suggest that we at the Shadow Committee can forecast inflation with sufficient accuracy to offer a short-term forecasting procedure. We cannot, and neither can the Federal Reserve. Table 6 shows their forecast errors for the period based on the mid-point of the projections they release at the Humphrey-Hawkins hearings.

Our point is a different one. Federal Reserve officials and market watchers, who profess or act as if inflation depends closely on the unemployment rate, have to recognize that such dependence as there is in the data gives no basis for the belief that the Federal Reserve can control the inflation rate by responding to the unemployment rate.

As we noted at our September 1995 meeting:

(1) there is substantial uncertainty about the value of the "natural" rate of unemployment and how it changes in response to changes in tax rates, regulation, the real exchange rate and other forces;

(2) there is substantial uncertainty also about how much inflation responds in the short-run to changes in unemployment.

Money growth remains the principal determinant of long-run inflation and changes in the growth rate of the base have an important influence on short-run changes in the rate of inflation. As shown in Chart 5, based on our rule, inflation will continue to fall toward zero even if the Federal Reserve would increase the growth rate of the monetary base to a 4% annual rate from the current rate of 2% or less. The projected path for 1996, shown in Chart 5, is based on an annual 4% growth rate in the
monetary base beginning in fourth quarter 1995 and a 5.8% unemployment rate.
Chart 2

Quarterly Inflation versus Unemployment
Annual Inflation versus Annual Rate of Change of Gold Price Lagged 4 Quarters

Chart 3

- Annual Rate of Change of Gold Price Lagged 4 Quarters
- Annual Inflation
Chart 4

Quarterly Inflation versus Quarterly Rate of Change of Gold Price Lagged 4 Quarters
Chart 5

Actual vs. Forecast Inflation; Base Growth = 4%
CHART 6

FOMC Forecasts of Inflation vs. Realized Inflation

Change in GDP Deflator