Research Department
Federal Reserve
Bank of
San Francisco

August 31, 1979

FRB SF Weekly Letter

Oil, Money and Inflation

Economics does not qualify as one of the exact sciences. Indeed, some would question whether it deserves the title of social science, given the relative inaccuracy of most economic forecasts over the last five years. There have been so many shocks to the economic system — first and foremost from oil prices — that the standard methods of economic forecasting (either Keynesian or Monetarist) have been less than completely satisfactory. A case in point is the forecast of inflation for 1979. At the beginning of the year, Administration forecasters anticipated a 7 ½-percent rise in prices, and most private forecasters expected more — but nobody came anywhere near forecasting the 13-percent annual rate of inflation experienced over the January-July period. At best, the U.S. inflation rate for 1979 as a whole may approach the 11-percent rise experienced since this time a year ago.

People are beginning to compare the 1979 inflation record with that of 1974. The similarities are substantial. In each case, a supply shock late in the preceding year caused the price of oil to rise substantially. The percentage increase in oil prices was much larger in early 1974 than in 1979, but the U.S. dependence on foreign oil was only half as great then as it is now. Again, the government imposed a ceiling on domestic oil prices in that earlier period, but is now permitting some adjustment in prices. Thus, on balance, despite the lesser magnitude of 1979's oil-price shock, its effects could be almost as serious as those of 1974.

Long-run and short-run

In analyzing the factors which determine the overall inflation rate, it is useful to distinguish between long run (fundamental) determinants and short run (transitory) determinants of inflation. The oil-price shock clearly falls into the latter category. No matter how severe the oil-price rise, its effect on the inflation rate will probably be temporary — although in this context, "temporary" may last as long as two years. Most economists acknowledge that over the long run, the fundamental determinant of inflation is the growth in the nominal money supply in excess of the real demand for money to meet the needs of trade and finance.

We can apply this analysis in comparing the 1979 inflation with the 1974 inflation. First, we must estimate the contribution of monetary factors to the inflation rate. For purposes of this discussion, we can reduce the money-price relationship to a simple rule of thumb: The growth of the broad (M_2) money supply in any one year, minus 2 percentage points for the growth in the demand for money, will equal the rate of consumer-price inflation two years later. For example, if M_2 should grow by 11 percent in year "one," we would expect the monetary factors to explain roughly a 9-percent inflation in year "three."

The evidence

As the chart indicates, M_2 accelerated in 1972 to a peak rate of about 11 percent at the end of the year, and then decelerated to about 9½ percent by mid-1973. (Both series show monthly percentage changes, on a year-over-year basis.) The inflation rate in 1974-75 followed the same pattern, accelerating in 1974 and decelerating in 1975 — except that it peaked at 12 percent rather than at the 9-percent figure which would have been expected from purely monetary developments.

This suggests as a rough rule of thumb that non-monetary factors explained approximately 3 percentage points of the inflation rate in 1974. This is consistent with the faster acceleration of inflation in 1974 than of money growth in 1972, and is also consistent with the spreading influence of the December 1973 oil-price increase throughout the

Research Department
Federal Reserve
Bank of
San Francisco

U.S. economy. Conversely, in 1975, the inflation rate decelerated faster than money growth. This suggests that the effects of the oil-price shock were gradually declining in 1975 and contributing proportionally less to the inflation rate. On balance, despite the strong influence of this non-monetary shock, it is interesting to note that the turning point in the inflation rate coincided perfectly with the turning point of money-supply growth two years earlier.

A similar relationship can be seen between 1977-78 money-growth rates and 1979 inflation (see chart). Money-supply growth peaked at 11 percent in July 1977, and declined substantially after October 1977. The inflation rate has accelerated in 1979 at a faster rate than the money supply accelerated two years earlier. However, the *level* of the inflation rate is now approximately equal to the *level* of prior money growth. This suggests that perhaps as much as 2 percentage points of the current inflation rate is due to non-monetary factors. The interesting question is whether the inflation rate will peak this year at the same point as it did in the 1974-75 period, i.e., two years after the peak in money growth. If the earlier experience is repeated, we are close to the peak in the inflation rate, and so should observe substantial inflation relief by the end of the year.

Qualifications

Nonetheless, a number of *caveats* should be raised against such a simple interpretation as this. First, as with any economic relationship, the link between money and prices is far from exact. A relationship with a two-year lag would be considered valid if the actual peaks were off by as much as three to six months' time. This suggests that the inflation peak might occur as late as the end of 1979 and still be consistent with the general proposition suggested here.

Secondly, the oil-price factor itself could shift the peak of the inflation rate beyond the date that would be suggested by the peak in money growth. In the earlier episode, a single, one-time increase in oil prices occurred in December 1973 and worked its way through the economy over the next two years. But the 1979 experience is somewhat different. The increase in oil prices has been spread out over a longer period than the one which occurred in 1974, which suggests that we may still see some additional accelerations in inflation. Moreover, additional price increases may be announced in September, further postponing the peaking-out of the inflation rate.

It is theoretically possible that other non-monetary shocks could affect the level and timing of the inflation rate. For example, declining productivity could have affected the money-price relation, but in fact, that effect has been modest. A decline in productivity would mean that for a given increase in the money supply, there would be a smaller volume of goods available, and thus a higher average inflation rate. While the trend growth of productivity has declined from 2.5 percent in the 1950's and '60's to 1.0 percent in the 1970's, that decline has already been incorporated in the current estimate of the money-price relation. The variations of productivity over the business cycle are reflected in the two-year lag in the money-price relation. For example, the lengthy lag between a slowdown in money growth and its impact on prices reflects the fact that such a shift initially tends to lower real output, temporarily lower productivity and raise the cost of production. On the other hand, an increase in money growth initially tends to raise real output, increase productivity and hold costs down. The 3.2-percent decline in productivity in the first half of 1979 is typical of the early stages of a recession —

somewhat comparable to the 4.0-percent decline in the first half of 1974.

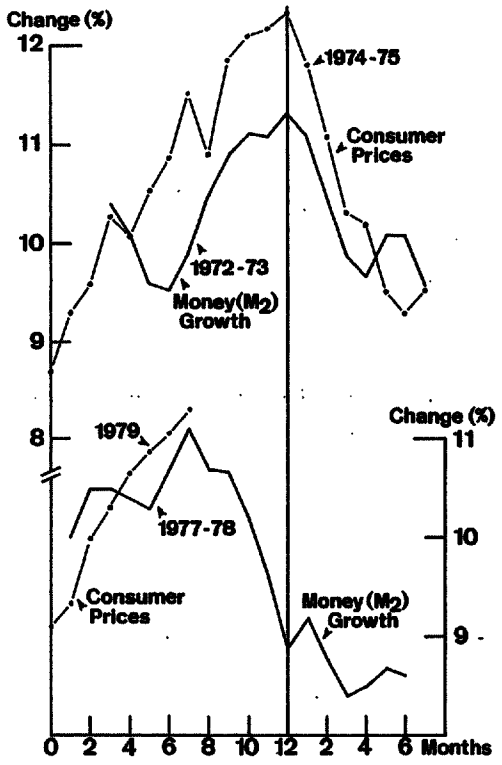
Oil and money crucial

Thus, it appears that oil and other international shocks are the principal non-monetary factors influencing inflation in 1979. When these shocks stop, the inflation rate should decline substantially, in response to the much slower growth of the money supply that has been developing over the last two years. On the basis of the relationship shown on our chart, the underlying rate of inflation could then decline to about 7 percent. Also, if the Federal Reserve hits the midpoint (6½ percent) of its current long run M_2 target, the inflation rate further down the road could perhaps decline to as low as 4½ percent.

Such an optimistic projection of the inflation rate seems quite inconsistent with our current double-digit inflation. However, it must be recalled that the current accelerated inflation is quite consistent with the rapid monetary growth that occurred in 1977 and with the supply-side shocks that have occurred in 1979. The supply shocks are less important now than they were in 1974. Thus, there is reason to assume that the inflation rate will eventually return to the path suggested by the underlying monetary phenomenon.

Michael W. Keran

Money and Prices



FRB SF Weekly Letter

FIRST CLASS

Research Department
Federal Reserve
Bank of
San Francisco

Alaska • Arizona • California • Hawaii
Idaho • Nevada • Oregon • Utah • Washington

FIRST CLASS MAIL
U.S. POSTAGE
PAID
PERMIT NO. 752
San Francisco, Calif.

BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT

(Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding 8/15/79	Change from 8/8/79	Change from year ago @ Dollar	Change from year ago @ Percent
Loans (gross, adjusted) and investments*	130,495	− 225	+ 18,191	+ 16.20
Loans (gross, adjusted) — total#	107,667	− 315	+ 16,985	+ 18.73
Commercial and industrial	31,295	− 274	+ 4,123	+ 15.17
Real estate	39,553	204	+ 8,212	+ 26.20
Loans to individuals	22,124	92	NA	NA
Securities loans	1,824	− 119	NA	NA
U.S. Treasury securities*	7,557	101	− 774	− 9.29
Other securities*	15,271	− 11	+ 1,980	+ 14.90
Demand deposits — total#	43,234	869	+ 1,964	+ 4.76
Demand deposits — adjusted	31,249	− 23	+ 1,398	+ 4.68
Savings deposits — total	30,509	− 24	+ 15	+ 0.05
Time deposits — total#	51,694	289	+ 6,526	+ 14.45
Individuals, part. & corp.	43,324	307	+ 7,373	+ 20.51
(Large negotiable CD's)	18,520	147	+ 1,571	+ 9.27
Weekly Averages of Daily Figures	**Week ended 8/15/79**	**Week ended 8/8/79**	**Comparable year-ago period**	
Member Bank Reserve Position				
Excess Reserves (+)/Deficiency (−)	− 2	23	89	
Borrowings	121	30	153	
Net free reserves (+)/Net borrowed(−)	− 123	− 7	− 64	
Federal Funds — Seven Large Banks				
Net interbank transactions [Purchases (+)/Sales (−)]	+ 436	+ 1,862	+1110	
Net, U.S. Securities dealer transactions [Loans (+)/Borrowings (−)]	− 246	+ 162	+ 47	

* Excludes trading account securities.

\# Includes items not shown separately.

@ Historical data are not strictly comparable due to changes in the reporting panel; however, adjustments have been applied to 1978 data to remove as much as possible the effects of the changes in coverage. In addition, for some items, historical data are not available due to definitional changes.

Editorial comments may be addressed to the editor (William Burke) or to the author .... Free copies of this and other Federal Reserve publications can be obtained by calling or writing the Public Information Section, Federal Reserve Bank of San Francisco, P.O. Box 7702, San Francisco 94120. Phone (415) 544-2184.