Research Department
Federal Reserve
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Weekly Letter

Comparing Inflation Forecasts

Inflation forecasts for 1984 appear to be subject to more than the usual uncertainty. To a large extent, the differences in these forecasts reflect different theoretical approaches to explaining inflation. In one view, the effects of the rapid monetary growth that occurred during 1982 and 1983 dominate. An alternative view stresses the influence of higher than normal economic slack. According to the latter view, high monetary growth cannot boost the inflation rate unless it puts pressure on wages and prices by reducing the rate of unemployment.

This *Letter* describes these two models and compares their forecasts for 1984. We show that while the two approaches normally forecast inflation equally well, the model emphasizing the effects of economic slack is likely to provide a better forecast of inflation over the next year or two.

Two views

The approach to modeling inflation embodied in most large structural econometric models focuses on the effects of economic slack—particularly slack in the market for labor—and of expectations of future inflation. What labor market participants presumably really care about are anticipated real wages. Thus, money wages adjust by increasing faster relative to anticipated inflation when labor markets are tight than when they are loose, even though the aggregate level of money wages does not move quickly enough to clear the market for labor in any particular year. Since prices are viewed as being primarily determined by a mark-up over unit labor costs, the implication of these models is that realized inflation tends to be higher when labor markets are tight. When labor markets are neither particularly tight nor loose, the inflation rate tends to be equal to that anticipated.

The other view argues that inflation is basically a monetary phenomenon. Narrowly defined money, or M1, expanded by 13.4 percent from July 1982 to July 1983 —the highest sustained monetary expansion since World War II. The growth of M1 has since slowed, but in the past inflation has tended to follow the path of M1 growth with an average lag of 2 to 3 years. The high money growth of 1982 and 1983 in this view ordinarily would raise inflation in 1984.

This approach is not necessarily incompatible with the first since the dynamics of the inflationary process are likely to be as depicted in the slack model. Faster monetary growth should first produce increases in real aggregate demand that reduce economic slack; but as inflation accelerates because of this reduction in slack, real money balances fall. The resulting reduction in real aggregate demand would then return the level of economic slack to its trend. The only long-run effect of higher monetary growth would be on inflation, but the mechanism of transmission would be temporary movements in slack.

If past movements in monetary growth are the dominant determinant of short-run movements in economic slack, as monetarists believe, the monetary approach has an important advantage for forecasting. A forecast of inflation based upon past monetary growth would implicitly embody about as good a forecast of economic slack as can be made.

Formal models

We have used econometric equations embodying these two approaches to compare their forecasts of inflation. The equations were estimated over the period from 1964 through 1980. To make a clean test of their comparative forecasting powers, the temporary effects of supply shocks unrelated to current demand conditions were removed. This was done by using the implicit price deflator for personal consumption

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expenditures, excluding food and energy, for the measure of prices. In principle, movements in the real exchange value of the dollar could affect consumer prices in a way similar to supply shocks. But statistical tests indicated that this effect was not important in the period of estimation.

The economic slack model of inflation contains measures of slack and expected inflation. The central tendency of inflation is the rate of inflation anticipated. Variations in inflation around this central tendency are captured by movements in the slack variable. For the slack, the current unemployment rate for males in the 25–54 age bracket was used. The normal, or non-cyclical, rate of unemployment in this measure has been less affected by demographic shifts over time, making it preferable to the total unemployment rate. Expected inflation is measured by past changes in the price index over the previous 16 quarters.

The monetary model of inflation simply contains current and past monetary growth. It is thus a "reduced-form" relationship that leaves the transmission mechanism relating money to prices implicit in the lag structure. Current and lagged changes in M1 growth over 16 quarters were used.

Within the period of estimation (a portion of which is shown in the chart), the two approaches predict the inflation rate equally well. The average difference between the actual annualized inflation rate in any one quarter and the predicted value is 0.7 of a percentage point in each case. Also, to the extent that economic slack affects inflation, its influence appears to have already been captured by past monetary growth within the sample period. This is indicated by the fact that when the unemployment rate is included in the monetarist equation, which contains current and past monetary growth, there is no significant reduction in the prediction error.

Forecasts for 1984

Beyond the period of estimation, the accuracy of these two approaches to forecasting inflation is very different. The economic slack model tracks the decline in the inflation rate during 1982 and 1983 quite well, with an average absolute error of only 0.9 of a percentage point. In making these forecasts, the slack model's past predictions of inflation were used in the measure of expected inflation, so that the forecasts depend only upon movements in slack. In contrast, the monetary model overpredicts inflation quite badly in 1982, with an average absolute error of 1.7 percentage points. The error in 1983 is even worse at 4.0 percentage points. For 1984, the two forecasts continue to diverge, with the monetary model forecasting a 9.2 percent inflation rate from fourth quarter to fourth quarter and the slack model predicting 6.3 percent.

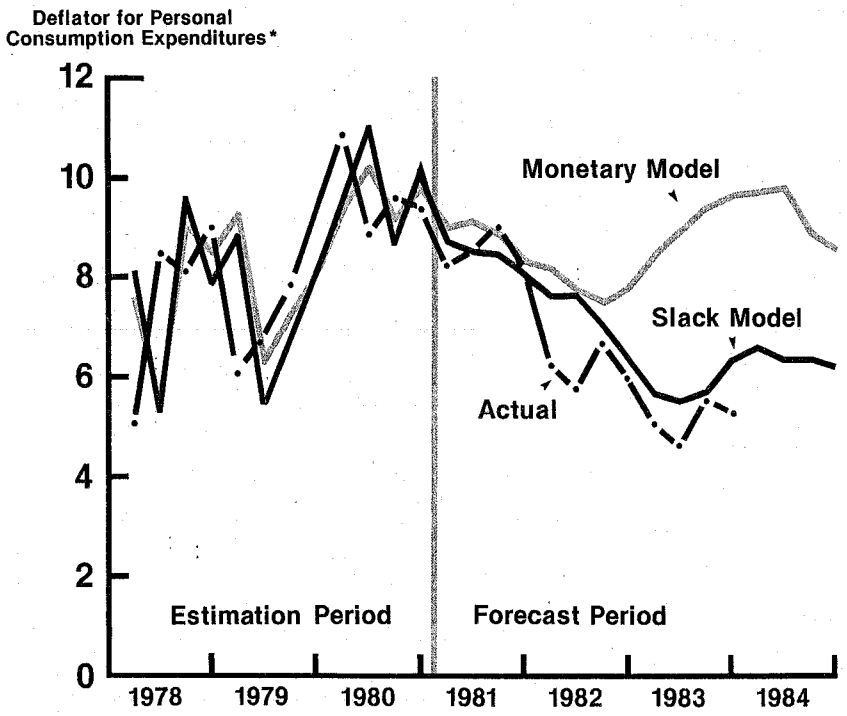
For the monetary equation, M1 growth of 6 percent, equal to the mid-point of the Federal Reserve's current target range, was assumed for 1984. The forecast from the slack model is based on the 0.8 of a percentage point reduction in the national unemployment rate for 1984 predicted by a sample of forecasters polled by the American Statistical Association and the National Bureau of Economic Research, and on the historical relationship between changes in the unemployment rates for the total labor force and males of prime age. Interestingly, this sample of forecasters predicts a 5.4 percent inflation rate for 1984 (measured by the GNP deflator)—much closer to the forecast of the slack model than that of the monetary model.

The slack model is likely to provide a better inflation forecast for 1984 than the monetary model because it was more accurate in 1982 and 1983 and because it produces an inflation forecast closer to the current consensus. Although the monetary model normally has the advantage of not requiring an indepen-

dent forecast of economic slack, forecasts of slack based purely on monetary considerations have not fared well recently due to declines in the income velocity of money, or its rates of turnover. Between the fourth quarter of 1981 and and the first quarter of 1983, the velocity of M1 dropped at a 5.5-percent annual rate, compared to a long-term positive growth trend of 3 percent. As a result, economic slack is now higher than could have been predicted on the basis of prior monetary growth. Moreover, most forecasts for 1984 indicate gradual reductions in slack that would not usually be enough to generate significant increases in inflation.

Adrian W. Throop

Comparing Inflation Forecasts



*(Annualized Percent Change; Food and Energy Excluded)

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BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT
(Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding 2/29/84	Change from 2/22/84	Change from year ago Dollar	Change from year ago Percent
Loans, Leases and Investments[1] [2]	177,701	2,209	1,676	4.8
Loans and Leases[1] [6]	157,394	2,267	2,039	6.6
Commercial and Industrial	46,262	449	299	3.3
Real estate	59,229	66	330	2.8
Loans to Individuals	26,950	125	299	5.6
Leases	5,006	3	– 56	– 5.6
U.S. Treasury and Agency Securities[2]	12,187	– 37	– 319	– 12.8
Other Securities[2]	8,119	– 20	– 44	– 2.7
Total Deposits	185,994	2,020	– 5,002	– 13.1
Demand Deposits	44,236	1,824	– 5,000	– 50.8
Demand Deposits Adjusted[3]	28,698	1,225	– 2,633	– 42.0
Other Transaction Balances[4]	12,004	73	– 770	– 30.1
Total Non-Transaction Balances[6]	129,752	122	768	3.0
Money Market Deposit Accounts—Total	40,373	94	776	9.8
Time Deposits in Amounts of $100,000 or more	38,085	– 11	– 79	– 1.0
Other Liabilities for Borrowed Money[5]	20,222	– 716	– 2,784	– 60.5

Weekly Averages of Daily Figures	Week ended 2/29/84	Week ended 2/22/84	Comparable year-ago period
Reserve Position, All Reporting Banks			
Excess Reserves (+)/Deficiency (–)	NA	NA	NA
Borrowings	NA	NA	NA
Net free reserves (+)/Net borrowed(–)	NA	NA	NA

[1] Includes loss reserves, unearned income, excludes interbank loans
[2] Excludes trading account securities
[3] Excludes U.S. government and depository institution deposits and cash items
[4] ATS, NOW, Super NOW and savings accounts with telephone transfers
[5] Includes borrowing via FRB, TT&L notes, Fed Funds, RPs and other sources
[6] Includes items not shown separately

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