Do Households Misperceive the Price Level? Some Evidence from Survey Data

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THE TEST

Our test consists of three steps. First we regress the public’s expectation of future inflation on its lagged value and the current change in the CPI. A statistically significant coefficient on this test variable refutes the hypothesis that the public is completely ignorant of the current aggregate price level. Second we test for statistical significance of the contemporaneous monthly inflation rate in a regression of the future inflation rate on its current expectation. This procedure is commonly used to test for expectations “rationality” (e.g.,用手熊和瑞克尔[1980]) It tests, however, the joint hypothesis that the information in the series is known to the public and that this information is efficiently employed in forming the public’s expectations. In a “rationality” test the first of these hypotheses is assumed to be true. Here we assume that expectations are rationally formed and test the null hypothesis. A statistically significant coefficient on the current inflation rate refutes the hypothesis that this series is completely known to the public. The test described above is subject to a potential weakness. The test will have power only if the current inflation rate is actually useful in forecasting future inflation.1 Step three of our test checks this condition by including the current monthly inflation rate in a regression of the future inflation rate on past monthly inflation rates.

THE DATA

Survey data on the inflation expectations of the public have been collected by the Survey Research Center of the University of Michigan on a monthly basis since January of 1978. Approximately 700 respondents are asked two questions: “During the next twelve months, do you think that prices in general will go up, or go down, or stay where they are now?” and “By about what percent do you expect prices to go up, on the average, during the next twelve months?” The data series used here as a measure of the public’s expectation of inflation (\( \pi \)) is the mean response to this second question.2 Note that the series records the expected percentage change in the general price level over a period of time stretching one year into the future. As our measure of the inflation rate being forecast \( \pi \) we therefore use the percentage change in the CPI from the survey month to the same month one year later. Thus our sample period ends with December 1988, not because later survey data is unavailable, but because CPI data for 1990 is not yet in. Our measure of the current price level (P) is the percentage change in the CPI from the previous month to the survey month expressed in annual terms.

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THE RESULTS

An ordinary least squares regression of the current expectation of future inflation \( \pi \) on its lag and the current monthly inflation rate over the period February 1978 to December 1988, yields:

\[
\begin{align*}
\pi &= 0.728 + 0.063p + 0.797\pi - 0.875 \quad R^2 = 0.34 \quad D.W. = 2.55 \quad DOF = 128 \\
\end{align*}
\]

The t-statistic reported in parentheses under the second coefficient estimate (significance level = 0.0002) strongly refutes the hypothesis that the public is ignorant of the current behavior of the price level.

We next regress the future inflation rates \( \pi \) on its expectation and the current inflation rate. But, as noted by Bryan and Gavin [1986], the fact that the period of observation for the Michigan Survey Data is much shorter than the forecast horizon implies that the forecast errors are inherently autocorrelated and therefore hypothesis tests based on OLS standard error estimates in this regression will be biased. We therefore employ the procedure proposed by Hansen and Hodrick [1980] via the “ROBUSTROB” option provided in the RATS statistical package:

\[
\begin{align*}
\pi &= 2.423 + 0.056p + 1.323\pi - 0.751 \quad R^2 = 0.76 \quad D.W. = 0.46 \quad DOF = 129 \\
\end{align*}
\]

Since that statistic does not apply in this procedure, Hansen/Hodrick standard errors are reported in parentheses for this regression. The Chi-Square statistic for the hypothesis that the coefficient on \( P \) is zero is 2.601, which has a significance level of 0.10 with one degree of freedom. This test fails to refute the hypothesis that the public knows the current price level.

Of course the possibility remains that the current inflation rate lacks explanatory power in equation (2) simply because it has little marginal value in predicting the one-year-ahead inflation rate. We test for this possibility by regressing the future inflation rate on the current and twelve lagged values of the monthly inflation rate:

\[
\begin{align*}
\pi &= 1.332 + 0.263p + 0.603\pi_{-12} - 0.611 \quad D.W. = 0.24 \quad DOF = 118 \\
\end{align*}
\]

The coefficient for \( 2\pi_{-12} = 1.12 \) is the sum of the coefficients on the first twelve lags of \( P \) and the number in parentheses is the Hansen/Hodrick standard error calculated for this sum. The Chi-Square statistic for the hypothesis that the coefficient on current \( \pi \) zero is 11.025, which has a significance level of 0.009 with one degree of freedom. This result confirms that \( P \) does help predict \( \pi \).

CONCLUSION

The results reported above refute the hypothesis that the public is ignorant of the current price level and fail to refute the hypothesis that the public fails to make full use of the information contained in the current CPI in foreseeing future inflation. It should be emphasized that the CPI data used here was NOT available to the public when the Michigan survey was taken (indeed, since the CPI for any month is released in the middle of the following month and the Michigan survey is taken throughout the month, many respondents did not have access to the prior month’s CPI). Our results therefore suggest that the public is able to detect changes in the general price level quite adequately without the government’s help.

More importantly, we are able to refute the hypothesis that there is an important lag in the public’s perception of the aggregate price level. This finding casts serious doubt on those theories of the business cycle that, like Phelps (1978) “island” model, rely on the public’s ignorance of the aggregate price level to explain deviations from full employment. It also undermines the “policy ineffectiveness” debate since, if business fluctuations are not caused by the public’s perception errors, the question of whether or not the public can be fooled is moot.
On Using a “Patched” Data Base: An Illustration of the Conundrum

Samuel Schwartz*

INTRODUCTION

It is well-known that "$t\)" time series data sometimes contain missing observations. . . . Observations can be miss for a variety of reasons, such as clerical errors, malfunction of recording equipment, deletion of apparently ‘bad’ observations, and the inability to observe the process at certain times, for example at night-time or on weekends.” (Robinson, 1984) Consequently, empirical economists sometimes make use of data bases whose gaps and omissions have been filled, based upon those data points that do exist. For example, in a recent study on the growth of nonprofit arts organizations in the U.S. during the decade of the 1970’s, Schwartz and Peters (1983), attempted to measure the growth of organizations in the different arts disciplines and their subgenres, stratified by budget size. One of these subgroups was the class of orchestras labeled “Metropolitan” by the American Symphony Orchestra League (ASOL), the requirement being a budget of $100,000-$499,999 in FY79. ASOL collects data from its member orchestras annually. However, unlike the larger major orchestras which had a nearly perfect response rate over the decade, the smaller metros...