Entrenched Inflation Update for 8/24

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Executive Summary

Entrenched inflation is now down to 3.04%. This warrants a Federal Funds Rate of 4.06% at the present time.

Entrenched Inflation

With the Sept. 27 release of the August 2024 PCE-PI, the univariate AR(1) Adaptive Least Squares (ALS) forecast of long-run entrenched inflation is now 3.04%, down from 3.13% for July, and from 3.52% as recently as April.

Entrenched inflation is plotted in blue in Figure 1 below, along with year-over-year inflation in red. It was consistently over 4.00% throughout 12/21 – 4/23, warranting a Fed Funds rate of at least 5.50% throughout that period. However, entrenched inflation was only twice above 5.00% during that period, despite year-over-year inflation that exceeded 6.00% throughout 12/21 – 8/22. It has consistently been 3.60% or less ever since 10/23, warranting a rate of no more than 4.90% since that time. Its latest value of 3.04% currently warrants a Fed Funds Rate of 4.06%.

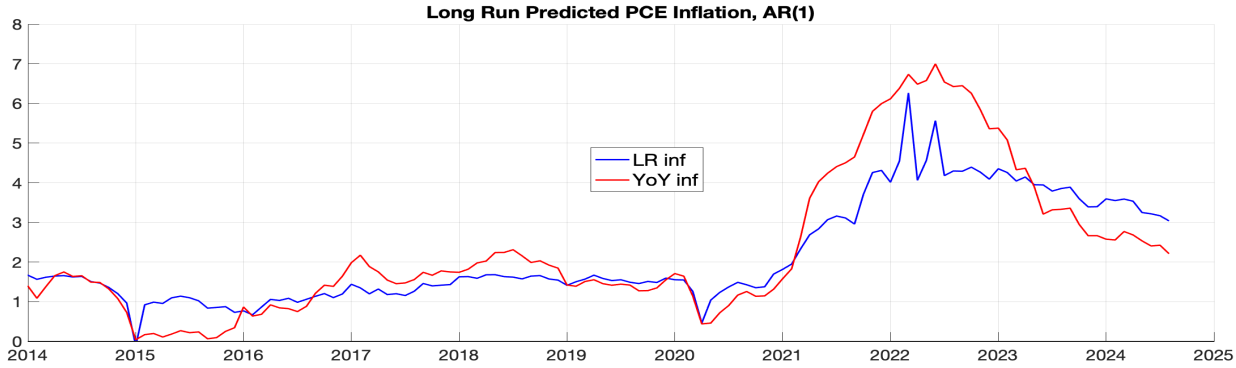

Figure 1

Entrenched (blue) and year-over-year (red) PCE Inflation

ALS is my refinement the Recursive Least Squares (RLS) estimator advocated by Tom Sargent (1993, 1999) and by George Evans and Seppo Honkapohja (2001). It can parsimoniously estimate a general linear regression with time-varying parameters. See

McCulloch (2024) below for details and references. In that paper I find that a simple model of monthly PCE inflation with a time-varying constant and no autoregressive parameters, as in the Adaptive Expectations model of Phillip Cagan (1956) and John Muth (1960), can be globally rejected in favor of a model that also has time-varying AR(1) transients. However, AR(1) cannot be rejected in favor of AR(2), AR(3), or AR(4). The likelihood-maximizing noise/signal ratio implies an asymptotic monthly RLS gain of 1/21.8.

The Taylor Rule

The above Fed Funds Rate recommendations are based on a Taylor Rule with a 2.0% inflation target, 150% feedback from expected inflation to interest rates, and a 0.5% "natural" real interest rate, while setting aside the unemployment gap.

Empirical Taylor Rules often find that the FOMC has placed a large coefficient on the lagged policy rate itself. However, the ALS estimate of entrenched inflation already optimally balances the newest information with the old information that went into earlier policy rates, so that adding the lagged policy rate would only unnecessarily lengthen the "Implementation Lag" portion of the already excessive Friedman-Schwartz "Inside Lag" in monetary policy.

Unlike Adaptive Expectations, the AR(1) ALS model gives a different inflation forecast at each horizon, as shown in Figure 2 below, thus giving any Taylor rule a menu of possible policy horizons to work with. For example, the observed 8/24 month-over-month annualized inflation rate of 1.09% predicts 2.11% inflation over the coming month, 2.52% on average over the coming 3 months, and 2.89% over the coming year, as shown by the blue line in the figure. However, *marginal* month-over-month predicted inflation, as shown by the red line, rises quickly toward its asymptotic value of 3.04%, and already exceeds 3.00% by 2/25. Furthermore, by the time the 8/24 PCE-PI was announced, 9/24 was already history and could no longer be affected by Fed policy. Since the FOMC only meets 8 times a year, another month or two might also go by before it even meets. It therefore seems appropriate and adequate for Taylor Rule policy purposes to look beyond the transitory component of inflation, and just to use the asymptotic long-run or entrenched inflation forecast.

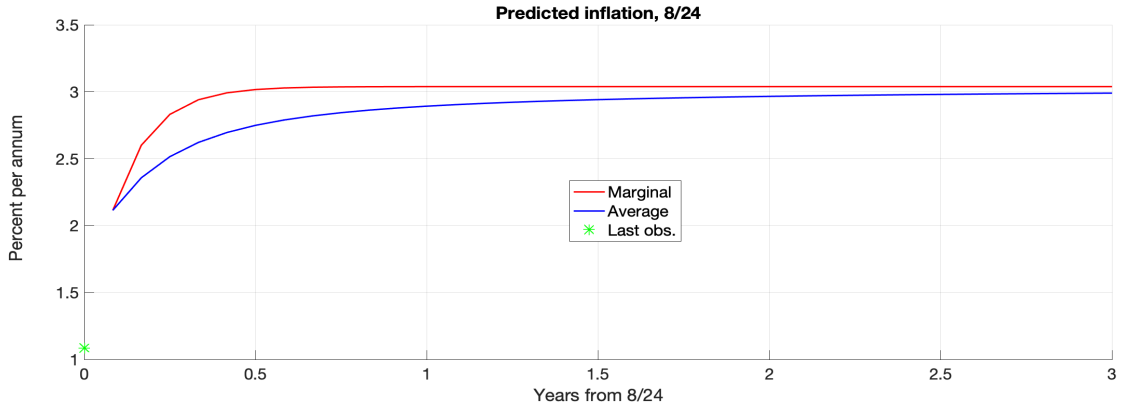

Figure 2

Predicted average (blue) and marginal (red) inflation from 8/24

The best single predictor of future inflation is the history of inflation itself. Indeed, John Taylor's original 1993 paper simply used the most recent year-over-year inflation as its proxy for inflationary expectations. However, it is not inconceivable that other observed variables, such as unemployment or even interest rates themselves, have supplementary predictive power. ALS could easily estimate a Vector Autoregression (VAR) that incorporates such variables. For the present, however, these forecasts are based simply on what might be called the "Mama Gump" model of inflation: "Inflation is, as inflation does."

I plan to update this memo's entrenched inflation estimates monthly.

Hu McCulloch is Adjunct Professor at New York University and Professor Emeritus at Ohio State University. The referenced paper is, "Adaptive Least Squares: Recursive Least Squares with Constant Noise-to-Signal Ratio," Aug. 9, 2024, online via <www.asc.ohio-state.edu/mcculloch.2/papers/ALS/>.
Future updates of this memo will also be posted via that site. Comments are welcome at mcculloch.2@osu.edu.