Plan B Entrenched Inflation Update for 12/25, Revised

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Executive Summary

With the Jan. 22 release of the Oct. and Nov. 2025 PCE Price Index, the Plan B estimate of Entrenched PCE inflation for Dec. 2025 is now 2.91%. This currently warrants a Federal Funds Rate target of 3.87% to 4.33%, depending on how aggressively the Fed chooses to achieve its announced inflation target. The reduction of the target rate to 3.64% at the FOMC's December meeting was reasonable at that time, but now is too low.

Plan B Entrenched Inflation

The BEA has announced it will not release the Dec. 2025 PCE-PI until Feb. 20, rather than late Jan. as used to be the norm. However, the Dec. CPI-U, released on Jan. 13, enables us to construct a "Plan B" surrogate for what the PCE-PI inflation number for Dec. will be. Using this surrogate value in place of the actual PCE number along with the newly released Oct. and Nov. PCE values, the revised AR(1) Adaptive Least Squares (ALS) forecast of long-run or "entrenched" PCE inflation is now 2.91%, up from the preliminary value of 2.84% given in this report on Jan. 14. "Plan B" is explained in the final section below.

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. However, entrenched inflation was only twice above 4.57 % during that period, despite year-over-year inflation that exceeded 6.00% throughout 12/21 – 8/22 and even touched on 7.00%.

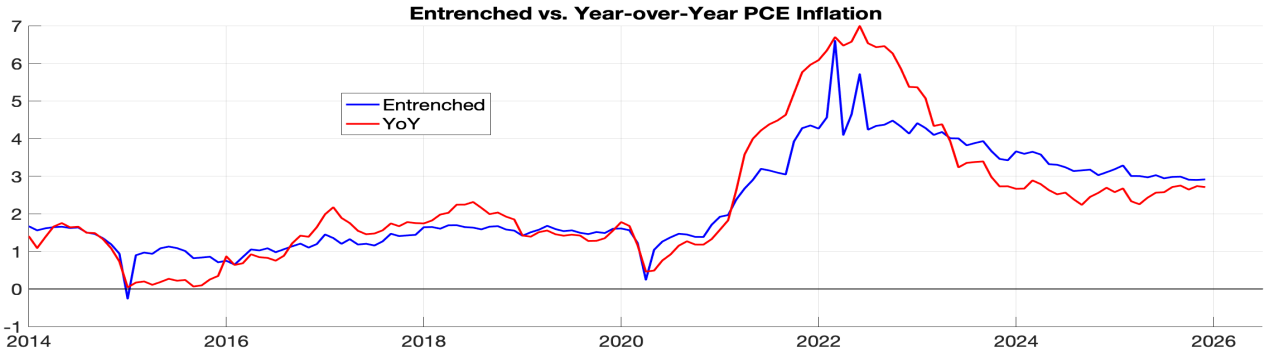

Figure 1

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

The last month's values are Plan B surrogates based on the latest CPI-U.

ALS is my refinement the Recursive Least Squares (RLS) estimator advocated by Sargent (1993, 1999) and by Evans and Honkapohja (2001). It can parsimoniously estimate a general linear regression with time-varying parameters. See McCulloch (2025) below for details and references. In that paper I find that the univariate Cagan-Friedman Adaptive Expectations model, with a time-varying constant and no autoregressive parameters, can easily be globally rejected in favor of a model that adds time-varying AR(1) transients. However, AR(1) cannot be globally rejected in favor of AR(2), AR(3), or AR(4). The likelihood-maximizing noise/signal s.d. ratio of 20.5 months implies an average lag of 21.0 months.

Since YoY inflation has an average lag of only 6 months, much of the variation in it is indeed “transitory.” It consistently overestimated entrenched inflation from early 2021 through early 2023. However, it has consistently underestimated entrenched inflation since that time.

The Taylor Rule

The above Fed Funds Rate recommendations are based on a “Taylor Rule” with a 2.0% inflation target, a 0.5% “natural” or "neutral" real interest rate, and 150% or 200% feedback from expected inflation to interest rates, while setting aside the zero-mean unemployment gap.

The ALS model with AR(1) transients ordinarily gives a different inflation forecast at each horizon, thus giving any Taylor rule a menu of possible policy horizons to work with. The blue line in Figure 2 below shows predicted average inflation from 12/25 to the dates indicated. The Plan B surrogate 12/25 month-over-month annualized inflation rate of 2.96%, as shown by the green star, together with the time-varying AR(1) coefficient of 0.34, predicts 2.93% inflation over the coming month, converging quickly to the long-run "entrenched" value of 2.91% within 4 months. In most months, there is a more dramatic variation by horizon.

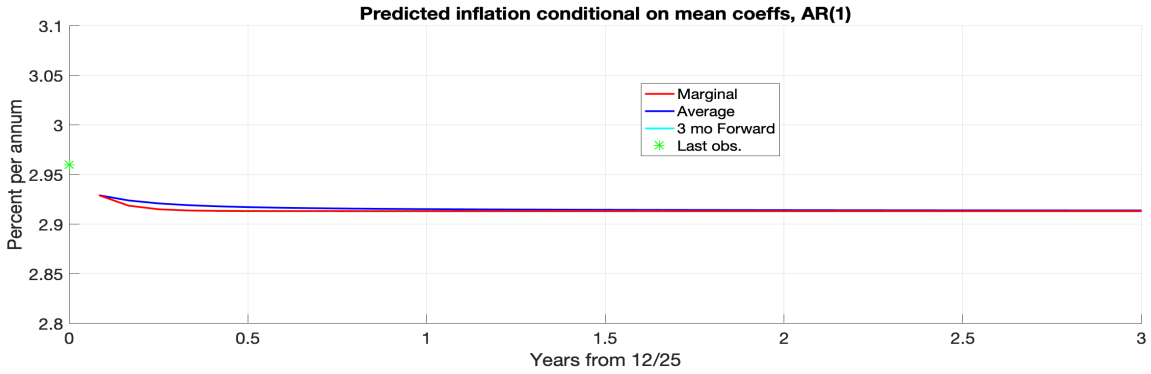

Figure 2

Predicted average (blue), marginal (red), and 3-mo. forward (cyan) inflation

By the time a given month's PCE-PI is first announced, normally at the end of the following month and now apparently even 3 weeks later than that, the following month's inflation is already history and can no longer be affected by Fed policy. Since the FOMC only meets 8 times a year, an additional six or seven weeks might also go by before it even meets. It therefore is appropriate, for Taylor Rule policy purposes, to look beyond the first few months, and to focus instead on the forecasts at least a few months into the future. The barely visible cyan line in Figure 2 shows the *forward forecast for average inflation*, beginning 3 months in the future, to the horizon indicated. In most cases, the 3-month forward forecast of one year inflation is virtually indistinguishable from the long-run, "entrenched" inflation rate.

Empirical estimates of the Taylor Rule typically 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 may or may not have entered into earlier policy rates, so that adding the lagged policy rate itself would only unnecessarily lengthen the "Implementation Lag" portion of the Friedman-Schwartz "Inside Lag" in monetary policy. The lags inherent in the data and the ALS estimator are already part of the unavoidable "Recognition Lag" portion of the "Inside Lag."

Even though the probability is virtually unity that the new inflation data that arrives between FOMC meetings will call for a change in its target rate of at least 1 basis point in one direction or the other, the committee never changes its target rate by less than 25 basis points, presumably because a change of just a couple of basis points would not be newsworthy and might need to be reversed next meeting. On the other hand, it is reluctant to actually *make* a 25 basis point change when it is finally called for, for fear markets and

journalists would pay *too much* attention. It therefore routinely allows its rate to get so far out of line with inflationary conditions that a series of several changes in the same direction ultimately becomes necessary. If its policy were truly data-driven and not inertia-driven, its rate would change unpredictably up or down by a few basis points at almost every meeting.

Figure 3 below shows the actual Effective Fed Funds Rate (blue line) versus a moderate Taylor Rule with 150% feedback from entrenched inflation to interest rates (red line), and a more aggressive Taylor Rule with 200% feedback (magenta line). In both cases the "natural" real rate is taken as 0.5%, the inflation target is 2%, and unemployment is set aside.

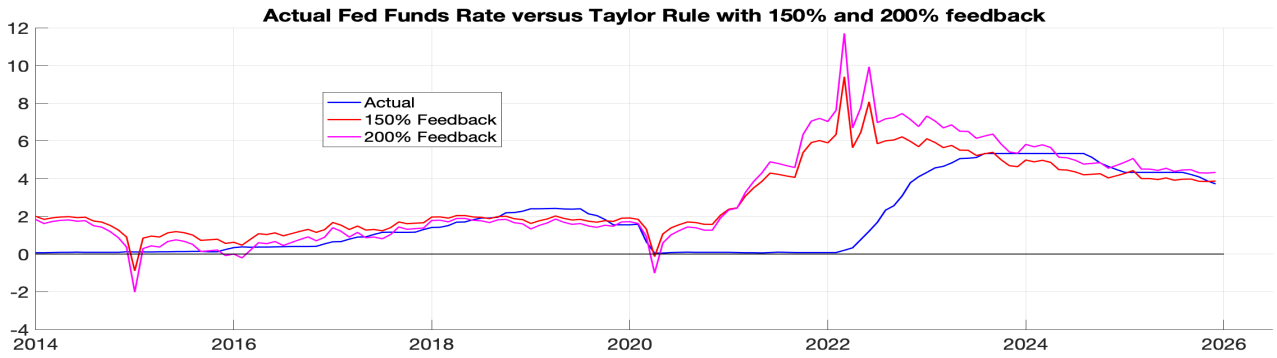

Figure 3

Actual Fed Funds Rate (blue) versus Taylor Rule with 150% (red) or 200% (magenta) feedback.

It may be seen that although the near-zero Fed Funds rates prior to 11/2014 were not justified, the sharp deflation of 12/14 - 1/15 did briefly warrant a zero or near-zero rate. Policy was reasonably in line with entrenched inflation thereafter through early 2020. The brief but sharp covid deflation again did briefly call for a zero rate. However, rates should have returned to pre-covid levels by May 2020, and should have exceeded those rates by the beginning of 2021. The rate should have been at least 6% by the beginning of 2022. The FOMC did not catch up with the Taylor Rule until the second half of 2023. Had the FOMC followed these recommendations from May 2020 on, inflation would presumably have come out different, as would the recommendations. It was actually somewhat too tight by either measure in mid-2024,* but since then has kept up reasonably well with the slowly falling entrenched inflation. Since the FFR series depicts monthly averages, the final value for Dec. 2025 does not fully reflect the mid-Dec. reduction to 3.64%. That value was

* See my letter in the 6/26/24 WSJ, calling for easing.

reasonable at the mid-Dec. FOMC meeting, but is now low given the belated Jan. 22 PCE release.

What information set should the Taylor Rule use?

The best single predictor of future inflation is past inflation itself. Indeed, John Taylor's original 1993 paper just used year-over-year inflation as its proxy for expected inflation. It is not inconceivable that other observed variables, such as unemployment or even interest rates themselves, have supplementary predictive power, and perhaps should be included in the information set the Taylor Rule uses for expected inflation. ALS could easily estimate a time-varying Vector Autoregression (VAR) that incorporates such variables. I plan to investigate that option in the future.

It may be that micro shocks such as the Administration's tariff and immigration policies will have an impact on prices and therefore on estimated entrenched inflation. However, until these effects actually appear in the price indices, any Taylor Rule should take a wait-and-see stance on them

All-Item vs. Core and Hardcore Inflation

So-called "Core Inflation," which excludes volatile food and energy prices, is often preferred by Fed officials to All-Item inflation, particularly when it comes in closer to the Fed's 2% inflation target than does All-Item inflation itself. For example, the Holston-Laubach-Williams estimates of the U.S. natural rate of interest on the NY Fed's website make exclusive use of the Core PCE-PI, without even a mention of the All-Item version. (https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr1063.pdf?sc_lang=en)

While it is true that Core Inflation is less volatile and more predictable than All-Item inflation, the ideal measure by these criteria would in fact be what I call "*Hardcore Inflation*": Hardcore Inflation is computed using *no price data at all*. As a result, it has zero volatility and is perfectly predictable! Its "only" drawback is that it tells us nothing at all about prices. Likewise, Core Inflation tells us less about prices than does All-Item inflation.

It is not inconceivable that decomposing All-Item inflation into components such as Core and non-Core could improve the overall forecast of All-Item inflation. However, preliminary calculations suggest that this is not the case.

PCE-PI vs. CPI-U and C-CPI-U

Dean Croushore ("Revisions to PCE Inflation Measures: Implications for Monetary Policy," *Int'l. J. of Central Banking*, 10/2019, pp. 241-65) has pointed out that the substantial revisions to the PCE-PI one and two months after its first release, and in particular the first annual revision one year later, make the initial PCE-PI announcements only rough approximations to their ultimate values. The PCE-PI is therefore a moving target and an ambiguous standard for monetary policy.

In the past, the PCE-PI for a given month was first announced near the end of the following month, making it about 4 weeks out of date by the time it is announced. However, the Dec. 2025 value will not be announced until Feb. 20, so that the computation lag has been increased by about 3 weeks. This appears to be the new normal.

In earlier versions of this report, I mistakenly asserted that the Chained CPI-U (C-CPI-U) is final on first release and therefore would be superior to the PCE-PI for policy purposes. In fact, it is revised after first release using subsequent data, though perhaps not as severely as the PCE-PI. This index deserves future study. Note that although the NSA CPI-U is not revised, the seasonal adjustments in the commonly used SA CPI-U may be revised for up to 5 years. However, these revisions are small compared with those in the PCE-PI.

Plan B Prediction of the PCE-PI from the CPI-U

Figure 4 below plots annualized month-over-month PCE inflation versus CPI-U inflation for 2/00 through 9/25, both SA. Except for 9/01 and 10/01, which were apparently affected by data disruptions accompanying the 9/01 attacks, the points very closely follow the linear regression line:

PCE = 0.465 + 0.677 CPI

It is well known that the CPI-U overstates inflation relative to the PCE-PI, by 35 basis points on average, but the coefficient of only 0.68 on CPI-U inflation implies that the bias is greater at higher inflation rates, and is actually negative at rates below 1.44%. I suspect that at least part of this effect is due to the fact that the CPI-U is based on price data from only one week in the month, whereas the PCE-PI reflects price data throughout the month. This makes PCE-PI inflation act like a moving average of CPI-U inflation, and as a result its highs and lows are less extreme. (This regression line has been updated with data through 9/25.)

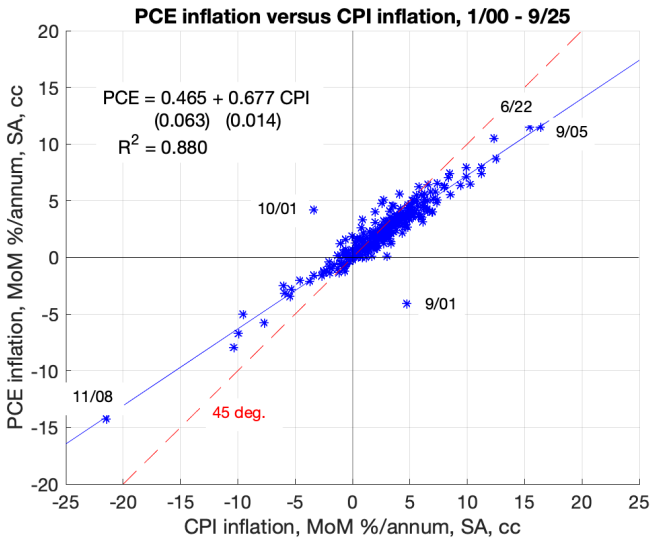

Figure 4
PCE-PI inflation vs. CPI-U inflation, both MoM,
seasonally adjusted, and continuously compounded.

Since the CPI-U is ordinarily announced near the middle of the following month, rather than well into the subsequent month, as is now the case with the PCE-PI, this equation can routinely be used to compute a surrogate PCE-PI value that gives the FOMC an estimate of entrenched PCE-PI inflation approximately five weeks earlier than would be the case if it waited for the initial PCE-PI announcement.

The annualized CPI-U inflation from Nov. to Dec. 2025 was 3.68%. The above formula translates this value into 2.96% PCE-PI inflation. This value was used as surrogates for the Dec. PCE-PI inflation in this report. It will be replaced with the actual value when it is eventually announced.

There are two problems with the new CPI-U report. The first, pointed out by Matt Grossman and Chao Deng in the 12/20-21 WSJ, is that the absence of October data interferes with the way the BLS computes the very important Owner's Equivalent Rent component of Shelter. There is indeed something apparently wrong with the numbers: Comparing Table 1 in the Sept 2025 and Nov 2025 CPI releases, the NSA Shelter component, which is 35.5% of the total CPI-U, is reported to have actually **declined** 0.001% in 2 months, or 0.007%/yr. Yet Rent of Primary Residence (21.0% of Shelter) **increased** 0.242% in 2 months or 1.42%/yr., while Owner's Equivalent Rent of Residences (74.0% of Shelter) **increased** 0.343% in 2 months or 2.06%/yr. The other 5.0% of Shelter is

not reported in this table, but the numbers don't look possible. If there was simply a computational error in the CPI-U, that problem should not affect the PCE-PI when it finally comes out, but it would likely have pushed entrenched PCE inflation back up nearer to its 9/25 value of 2.97%.

The second problem is that President Trump's August 1 firing of BLS Director Erika McEntarfer for having released an unfavorable jobs report means that BLS (and also BEA) economic data may be politically manipulated in the future. This report takes the announced data at face value.

I plan to update this memo's entrenched inflation estimates monthly. There was no memo for October 2025 because of the lack of new data for the PCE or even the CPI.

Hu McCulloch is Adjunct Professor at New York University and Professor Emeritus at Ohio State University. *The referenced paper, "Adaptive Least Squares: Recursive Least Squares with Constant Noise-to-Signal Ratio," revised Sept. 11, 2025, is online via* http://www.asc.ohio-state.edu/mcculloch.2/papers/ALS/
Future updates of this memo will also be posted via that site, along with past editions back to 9/24. Comments are welcome via mcculloch.2@osu.edu.