Delivering Price Stability in a Changing Economy

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October 30, 2026

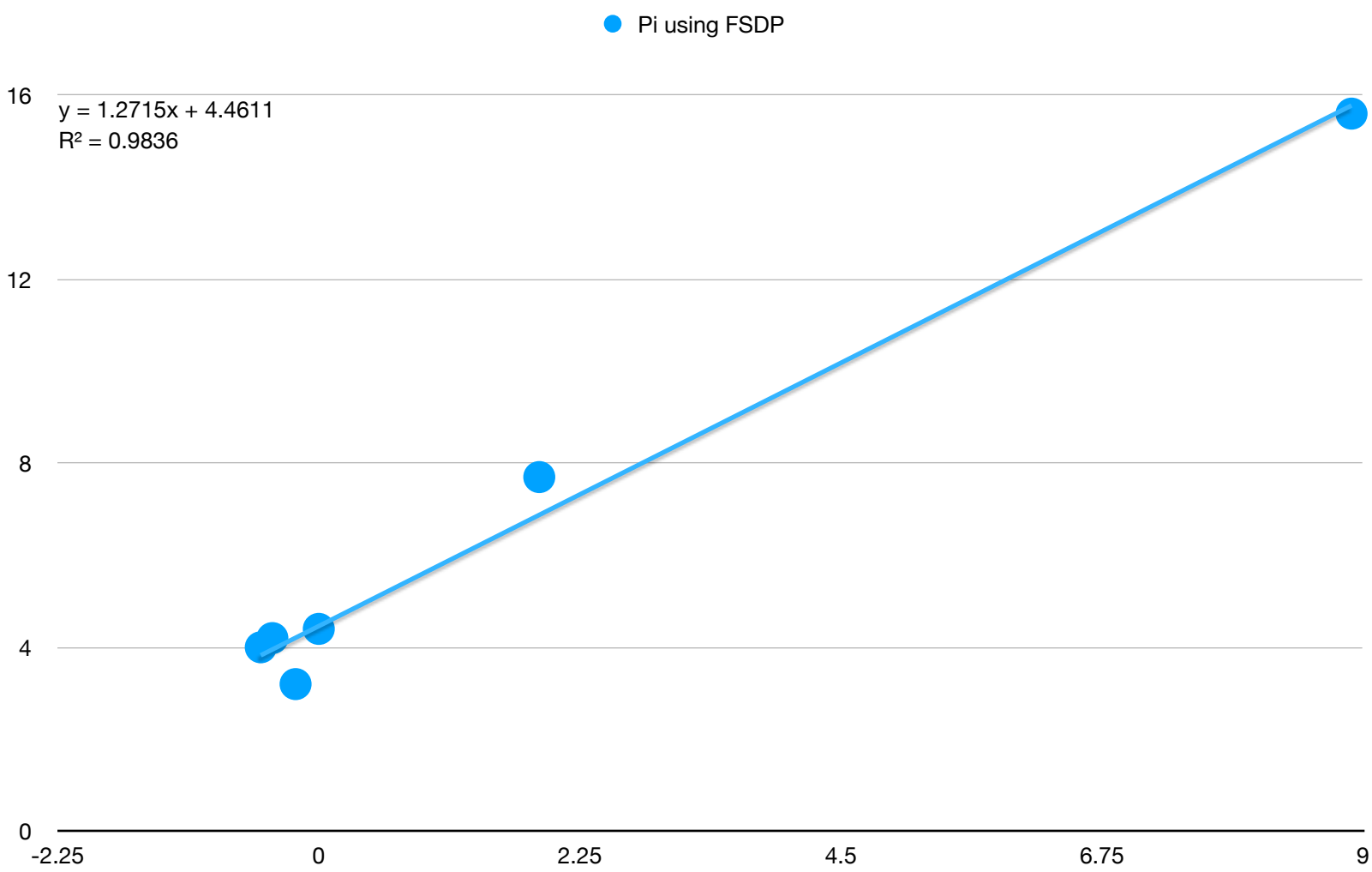
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“Examine the drivers of inflation, first principles, and weigh the full range of ideas for delivering price stability in a changing economy.”

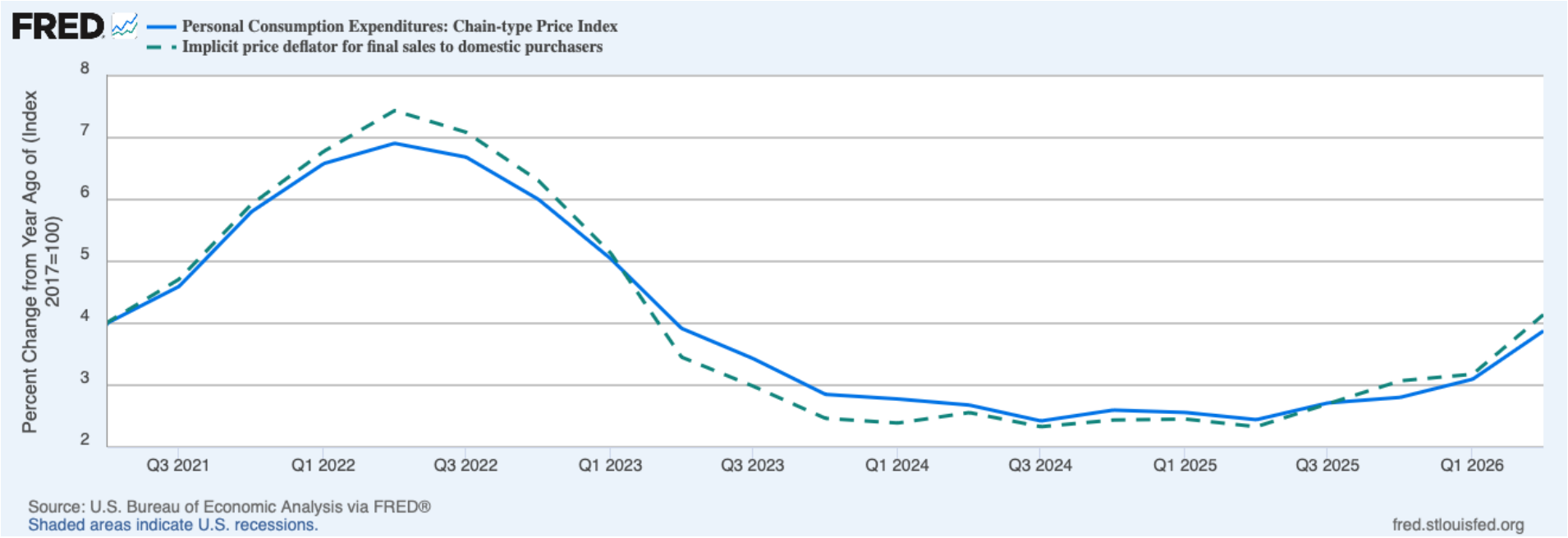
Fed Chairman Kevin Warsh

Where We're Headed:

"Underlying inflation" plotted against the lagged unemployment gap, 2021-2026.



The Problem: Inflation Has Run Persistently Above the FOMC's 2-percent Longer-run Target



What's Going On?

Lemony Snicket: A series of unfortunate events

The Policy Response: "Wait-and-Hope." Supply shocks should run their course—leaving only one-off price-level effects—provided long-run inflation expectations remain well anchored.

Aye, There's the Rub: How can policymakers maintain the credibility of their long-run target in the face of inevitable inflation fluctuations? How is the public to determine whether the fluctuations are justified? By what metrics should the performance of the Fed be judged? Without a coherent and well-articulated inflation-control *strategy*, expectations can de-anchor at any time.

My View:

- **To better guide policy and better anchor long-term inflation expectations, the Fed should pay more attention to broad measures of nominal income and spending in its deliberations and communications.**

- **Properly implemented, NGDP targeting is not a radical departure from familiar policy principles and practices.**

- **Through an NGDP-targeting lens, FOMC policy over the past six years has been systematically inconsistent with the Fed's professed longer-run inflation goal. Recent high inflation is not the mere transient effect of adverse supply shocks.**

What is NGDP Targeting?

Step #1. Set a target—$NGDP^*(T)$—for nominal gross domestic product T periods from now. (Forward guidance!)

Step #2. Try to hit it: $y(T) + p(T) = NGDP^*(T)$, where, $y(T)$ and $p(T)$ are the log-levels of future real output and the future price deflator, respectively, and E(.) indicates an expectation based on currently available information.

Implication: $[y(T) - Ey(T)] + [p(T) - Ep(T)] = 0$. That is, output surprises are accompanied by equal-size price-level surprises in the opposite direction.

> In other words, demand-driven output shocks are suppressed. Supply-driven shocks have an equal-size, opposite-signed impact prices.

For convenience, I'll assume T = 1 year from here on.

Does having price and output move in opposite directions make sense?

- **"Yes" in an economy where money wages are stickier than prices (Koenig, *Economics Letters* 1996). It facilitates real-wage adjustment in response to productivity shocks when the money wage is sticky.**

- **"Yes" in an economy where people have loan and lease payments fixed in nominal terms. There, price stability concentrates output-shock risk on debtors while fully insulating creditors—potentially stressing the financial system (Koenig, *IJCB* 2013; Sheedy, *BPEA* 2014). NGDP targeting spreads risk evenly between debtors and creditors.**

  Nominal debt, debt defaults, and resultant financial-system strains are characteristic of our very worst recessions (Fisher, *Econometrica* 1933).

Lesson: Be skeptical of policy prescriptions from models that ignore sticky wages and nominal debt.

Ahead: NGDP targeting can be made consistent with the Federal Reserve Act, and it sheds light on monetary policy's post-COVID performance.

NGDP Targeting and the Federal Reserve Act

Step #1. The Federal Reserve Act calls on the Fed to provide aggregate liquidity sufficient to support full-employment output at a low average rate of inflation:

$$NGDP^*(1) = Ey^*(1) + p(0) + \pi^*,$$

where $Ey^*(1)$ is expected future full-employment output, $p(0)$ is the current price level, and π^* is target average inflation.

Step #2. Policymakers try to hit the announced spending target:

$$y(1) + p(1) = Ey^*(1) + p(0) + \pi^*.$$

If realized spending is coming in above target, policy restraint is needed. If spending is coming in below target, policy needs to be eased. A policy *guide*, or *criterion*, not an instrument rule.

Implication #1: This version of NGDP targeting respects the Fed's dual mandate.
Rearranging terms, the FOMC attempts to equate the sum of output and inflation gaps to zero:

$$[y(1) - Ey^*(1)] + [\pi(1) - \pi^*] = 0,$$

where $\pi(1) \stackrel{def}{=} p(1) - p(0)$ is the inflation rate. This condition is a *forward-looking* version of John Taylor's 1993 policy criterion (Taylor, *C-R Conference Series* 1993). Policymakers respond preemptively to threats to their full-employment and price-stability objectives.

Implication #2: Target NGDP growth is countercyclical.

Rearranging terms yet again, NGDP *growth* should be fast enough to accommodate expected growth in full-employment output, plus any needed catch-up output growth, plus target inflation:

$$NGDP(1) - NGDP(0) = E[y^*(1) - y^*(0)] + [Ey^*(0) - y(0)] + \pi^*,$$

where $NGDP(t) \stackrel{def}{\equiv} y(t) + p(t)$. The intuition? Slack temporarily raises the real economy's non-inflationary speed limit above the growth rate of potential output.

Implication #3: Mind the gaps.

Consolidating terms, policy is on track iff

$$[y(0) - Ey^*(0)] + [\underline{\pi}(1) - \pi^*] = 0,$$

where

$$\underline{\pi}(1) \stackrel{def}{\equiv} [NGDP(1) - NGDP(0)] - E[y^*(1) - y^*(0)]$$

is "underlying" or "projected" inflation: $\underline{\pi}(1)$ is where inflation would eventually end up if the current growth rates of nominal demand and potential output were to hold steady. As before, policy is guided by output and inflation gaps. But here the output gap is predetermined, while the inflation gap moves 1-for-1 with the excess of nominal-demand growth over potential-output growth.

Evaluating the Fed's Post-COVID Behavior

The policy prescription when NGDP* is set in accord with the Federal Reserve Act:

$$[y(0) - Ey^*(0)] + [\underline{\pi}(1) - \pi^*] = 0,$$

or

$$\underline{\pi}(1) = \pi^* - [y(0) - Ey^*(0)].$$

What I estimated:

$$\underline{\pi}(1) = \pi^* + \alpha[U(0) - EU^*(0)],$$

where *U* is the unemployment rate and E*U is the median SEP estimate of the full-employment rate of unemployment. We would expect to find $\alpha > 0$ and—given the FOMC's declared long-run inflation objective—we would expect to find $\pi^* = 2.0$.**

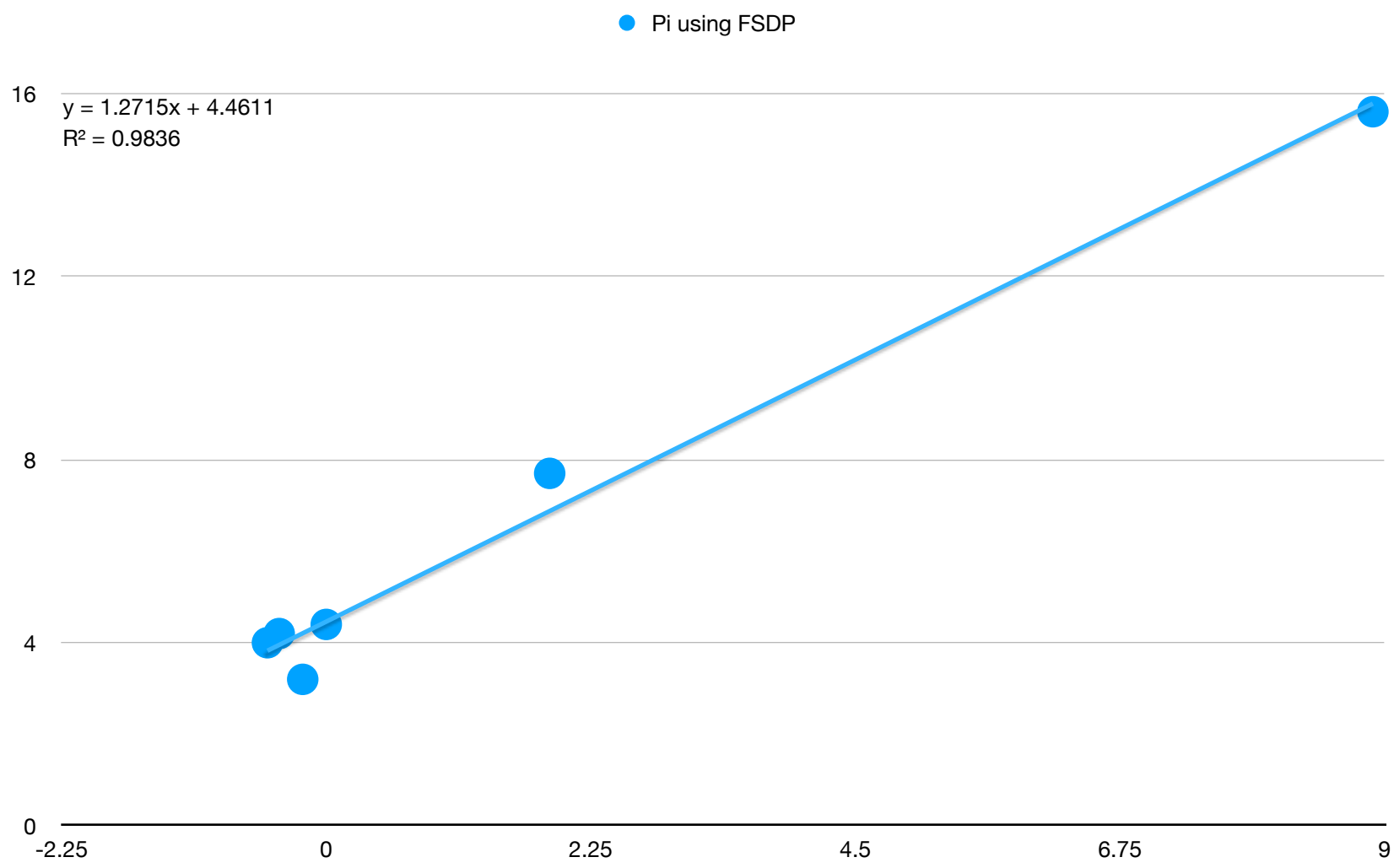
Results:

$$\underline{\pi}(1) = 4.46 + 1.27[U(0) - EU^*(0)]. \qquad R^2 = 0.984$$
$$\qquad\quad (0.31) \quad (0.08)$$

Conclusion: The Fed has responded as expected to labor-market slack, but has kept spending growth well above the rate consistent with 2-percent longer-run inflation.

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“Underlying inflation” plotted against the lagged unemployment gap, 21:Q2 - 26:Q2



SUMMARY

- **NGDP targeting allows partial passthrough of supply shocks but requires that policy suppress demand shocks.**

- **The Federal Reserve Act prescribes strong target nominal demand growth when there is labor-market slack and weak target nominal demand growth when the labor market is tight.**

- **FOMC performance can be judged by the behavior of nominal demand. Is its growth predictable? Countercyclical? Consistent with the Fed's longer-term inflation target after controlling for potential output growth and current slack? What is the FOMC doing to keep spending on course? This consistent focus on nominal demand contrasts with the flip-flop between inflation concerns and recession concerns that now plagues Fed communications.**

- **Policy is accommodative or restrictive as nominal demand is either accelerating or decelerating relative to expected growth in potential output. Forward guidance that the public needs and the Fed can reliably provide relates to the future path of nominal demand, not the future path of the funds rate. For the public, knowing the *criterion* used to decide whether policy needs to eased or tightened is more important than knowing the Fed's instrument rule.**

- **The FOMC transitioned too quickly to a neutral post-COVID policy stance, and over the past four years demand growth has been stuck at a rate inconsistent with 2-percent longer-run inflation. Policymakers have failed to acknowledge the inconsistency—much less tried to resolve it. Without public commitment to a sensible and coherent policy strategy—such as NGDP targeting—long-term inflation expectations will not be reliably anchored.**

EXTRAS

1. If I Were King of the Forest

"Nominal spending growth is an important summary measure of the economy's overall liquidity and the stance of monetary policy. The Federal Reserve can't control spending growth directly or exactly, but does have important influence through its short-term interest rate decisions. The Federal Reserve Act directs us to supply liquidity sufficient to support full employment with long-term price stability. By that standard, nominal spending growth has been excessive over the past four years. We at the Federal Reserve intend to begin moderating spending growth, starting now. While we believe that most of the deceleration in spending will take the form of a slowing in the rate of price increase, that outcome is by no means certain: it depends very much on the nature of the shocks hitting the economy over time. So, too, does the path of short-term interest rates."

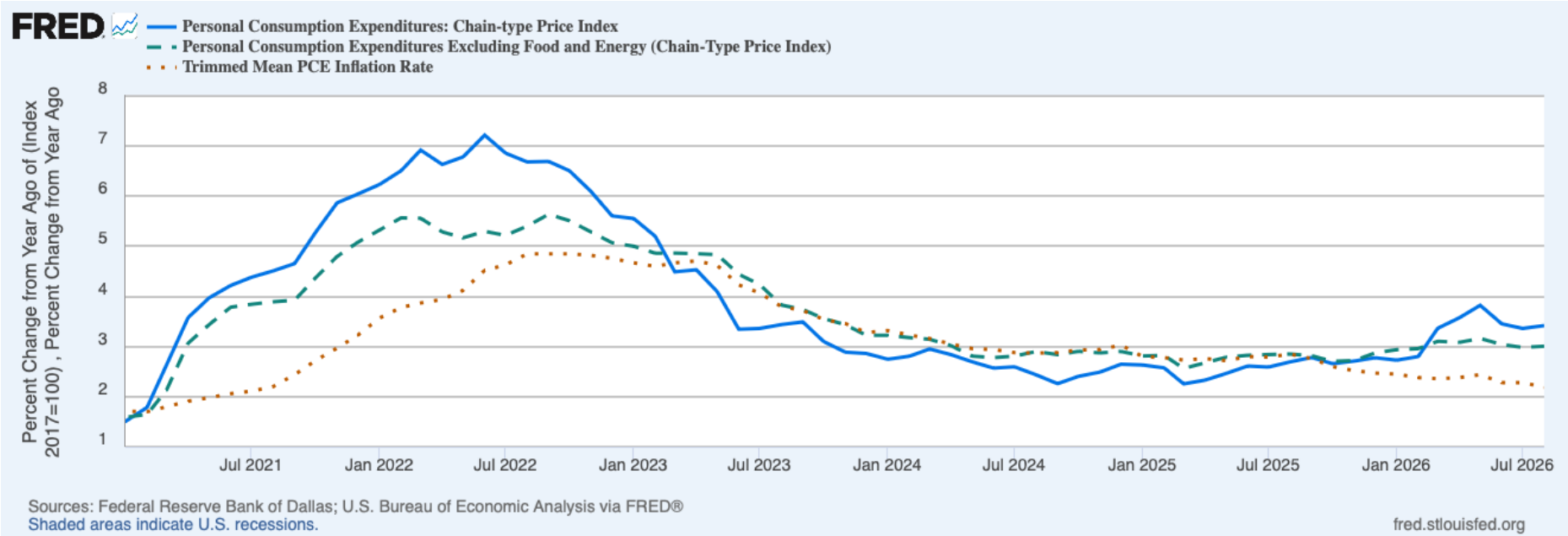
2. The Relationship Between "Underlying Inflation" and Measured Inflation

It's easily shown that

$$\underline{\pi}(1) = \pi(1) + [y(1) - y(0)] - E[y^*(1) - y^*(0)].$$

So, $\underline{\pi}$ exceeds or falls short of conventional inflation as output is either increasing or decreasing relative to estimated potential.

3. Is Low Trimmed-Mean PCE Inflation Reason for Complacency?



What is Dallas Fed trimmed-mean inflation?

- **Percent price changes across 177 PCE categories are sorted each month. Changes below the 24th percentile and above the 69th percentile are dropped, and the weighted average of the remaining categories is the trimmed mean.**

- **Asymmetric trimming because the cross-category distribution of price changes is typically skewed negative: The average of the bottom 10% of price changes is much farther below the distribution median than the average of the top 10% is above the median. Consequently, the mean of the middle 80% of price changes is above the mean of the entire distribution.**

Trimmed-mean inflation has several desirable properties (Dolmas and Koenig, "Two Measures of Core Inflation: A Comparison," Federal Reserve Bank of St. Louis *REVIEW*, 2019:Q4):

- **It is more strongly and reliably related to labor-market slack than are either headline inflation or conventional-core inflation, making it a better indicator of labor-market imbalances.**

- **It does a better job of stripping noise from headline inflation than does conventional-core inflation, making it more predictable than either headline or conventional-core inflation.**

- **Over the business-cycle, first-release TM inflation has exhibited less bias, when compared with latest-vintage headline inflation, than has first-release conventional-core inflation.**

- **Real-time TM and conventional-core inflation are both helpful for forecasting latest-vintage, near-term-future headline inflation. Neither clearly dominates the other.**

But: **The trimmed mean can exhibit downward (upward) bias during periods when price changes are skewed more to the upside (downside) than is typical. It trims too many of the extreme upward (downward) price changes. Since the distribution of price changes has been less negatively skewed than usual, of late, current low TM inflation readings are suspect. (Atkinson, Dolmas, and Zarutskie, "Skewness Warrants Caution as Trimmed Mean PCE Inflation Eases, *Dallas Fed Economics*, April 16, 2026)**

In Any Case:

- **It is ultimately *headline* inflation that households care about, and that the Fed is responsible for keeping at a low average level. That TM inflation is currently near 2 percent is reassuring only to the extent it means that future headline inflation is likely to fall to a similarly low level.**

- **But there is *no way* that headline inflation can sustain a lower level at current rates of nominal demand growth. The FOMC must commit to a slower pace of demand growth if it is serious about its 2-percent longer-run inflation target.**

- **Absent a commitment to slower growth in nominal demand, longer-term inflation expectations could shift upward quickly and at any time.**

- **Indeed, if the Fed were to now forego restrictive policy on grounds that TM inflation is running only slightly above 2 percent, that decision would likely seem disconnected from reality, making the FOMC's price-stability commitment less credible.**