The KC Median CPI Core-Core Inflation Signal: Entrenched-Inflation Regime Overlay for Arabica

Why Cleveland Fed Median CPI inverted year-over-year delivers a 3.33 pp directional spread on Arabica forward 60-day returns across 36 years and complements the headline CPIAUCSL overlay.

David Stendahl · Market Lab Analytics · November 5, 2026

The signal with the limits stated upfront

Three things the reader must know before the rest of this brief lands.

First, the full-distribution daily Spearman information coefficient against Arabica forward 60-day returns is plus 0.075 at p-value 1.5e-12 on a sample of 8,947 daily observations spanning 1990 through 2026. Strongly significant on the 36-year window.

Second, Phase +1 (Disinflation Signal) delivers plus 1.63 percentage points above baseline across 3,806 trading days (42.5 percent of sample) and Phase −1 (Entrenched Inflation) delivers minus 1.70 percentage points across 3,278 days (36.6 percent). 3.33 pp directional spread with clean monotone phase pattern.

Third, the non-overlap independence test at 60-day sampling is sign-consistent but borderline significant. Across 150 independent samples the Spearman is plus 0.133 with p-value 0.10. The signal is a slow-moving macro regime anchor with monthly release cadence; short-horizon value is limited.

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The thesis: core-core inflation regime

The Cleveland Fed Median CPI is a trimmed-mean inflation measure that captures the median expenditure-category price change rather than the weighted all-items average. It strips outlier volatility from headline CPI and provides a cleaner read on entrenched broad-based inflation. Where headline CPI responds to any single volatile category (energy, used cars, food), Median CPI requires broad-based price pressure across the full basket to move.

For Arabica, the Median CPI matters because it is the cleaner signal of the entrenched-inflation regime that drives Fed tightening cycles. Rising Median CPI signals the Fed is in or heading toward tightening; falling Median CPI signals the Fed is in or heading toward easing. The commodity complex

responds to Fed cycle context via the real-yield channel, the dollar channel, and the risk-rotation channel.

The signal is orthogonal to the headline CPIAUCSL overlay via different aggregation methodology and lower autocorrelation (Median CPI rho 0.73 vs CPIAUCSL rho 0.99 at monthly lag 1). The two signals stack cleanly as independent macro regime views.

The signal takes Cleveland Fed Median CPI monthly year-over-year, z-scores on a 2-year rolling window, inverts so disinflation reads positive composite, and tanh-bounds. State thresholds plus or minus 0.2 (moderate) and plus or minus 0.5 (extreme). Phase +1 at composite above +0.3, phase −1 below −0.3. Target: ICE US Coffee C first-nearby back-adjusted close.

Historical window: Cleveland Fed Median CPI series from 1983; engine runs from 1990 onward with 504-bar warmup.

What the firings have actually done

Computed over 8,947 daily observations post-warmup from 1990 onward. The baseline Arabica forward 60-day return is mean plus 2.32 percent and median minus 0.96 percent across the live-window sample.

> **Baseline Arabica forward 60-day return:** mean plus 2.32 percent / median minus 0.96 percent across the live-window sample.
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> **Daily Spearman IC (fwd 60d):** plus 0.075, p-value 1.5e-12, N equals 8,947. Strongly significant.
>
> **Non-overlap IC (60-day step):** plus 0.133, p-value 0.10, N equals 150. Sign-consistent, borderline significant.
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> **Phase-conditional forward 60-day Arabica returns:** Phase +1 (Disinflation Signal, 3,806 days / 42.5 pct): plus 3.94 percent, edge plus 1.63 pp. Phase 0 (On Trend, 1,863 days / 20.8 pct): plus 1.99 percent, edge minus 0.33 pp. Phase −1 (Entrenched Inflation, 3,278 days / 36.6 pct): plus 0.61 percent, edge minus 1.70 pp.
>
> 3.33 pp directional spread between Phase +1 and Phase −1 with clean monotone phase pattern.

Three findings. The daily IC is strongly significant on the 36-year window. The monotone phase pattern cleanly separates Disinflation Signal from Entrenched Inflation with 3.33 pp spread. The Phase +1 and Phase −1 shares are both substantial (42.5 and 36.6 percent) meaning the signal spends most of the sample in a directional regime rather than neutral.

Three cases that frame how to read the signal

The canonical anchors are the 2022-2023 Fed tightening cycle, the 2024 soft-landing regime, and the 2015 oil-collapse disinflation.

Case 1: The 2022-2023 Fed tightening cycle

Entrenched Inflation firing anchored the 2022-2023 Fed tightening cycle as Cleveland Fed Median CPI peaked near 7 percent year-over-year and remained elevated through the aggressive rate hikes.

Composite held in Phase −1 territory. Arabica underperformed through the tightening cycle consistent with the Phase −1 edge; macro headwinds suppressed the fundamental-supply response from the 2022 Brazilian frost premium.

Case 2: The 2024 soft-landing regime

Disinflation Signal firing in mid-2024 as Median CPI moderated back toward the 2-year mean and Fed tightening paused. Composite transitioned from Phase −1 into Phase +1 territory as the soft-landing narrative strengthened. Arabica rallied through 2024-2025 consistent with the Phase +1 edge; disinflation plus Fed pause gave commodity-friendly backdrop.

Case 3: The 2015 oil-collapse disinflation

Disinflation Signal firing in mid-2015 as the oil price collapse dragged Median CPI back below the rolling mean. Composite held in Phase +1 territory through 2015 and early 2016. Arabica delivered material forward returns through the regime consistent with the empirical Phase +1 edge. Textbook disinflation-regime bullish anchor.

How to use this signal today

Composite is currently reading plus 0.805 in the Disinflation Signal band. The HEALTHY phase began August 2026, 67 trading days ago. Cleveland Fed Median CPI has run below the 2-year z-score mean through late 2026 consistent with entrenched disinflation after the 2022-23 inflation peak.

Pair with the following for stacked conviction: the headline CPIAUCSL overlay (orthogonal macro signal via different aggregation), real yields (10-year TIPS), the dollar index, Fed funds futures, and fundamental supply signals. This core-core inflation signal provides the Fed cycle context; pair with bottom-up supply fundamentals for full conviction.

Reader rule: Disinflation Signal firings flag macro-tailwind regimes where fundamental supply shocks amplify. Entrenched Inflation firings flag macro-headwind regimes where fundamental KC tightening may fail to translate to price.

Methodology

Data source: FRED Cleveland Fed Median CPI (MEDCPIM158SFRBCLE), monthly release. Computation: year-over-year percent change, z-scored on a 2-year rolling window, inverted so disinflation reads positive composite, tanh-bounded. State thresholds plus or minus 0.2 (moderate) and plus or minus 0.5 (extreme). Phase +1 at composite above +0.3, phase −1 below −0.3. Target: ICE US Coffee C first-nearby back-adjusted close.

Historical window: Cleveland Fed Median CPI series from 1983; engine runs from 1990 onward with a 504-bar warmup for the rolling z-score.

Validation computed on 8,947 post-warmup daily observations. Daily Spearman IC plus 0.075 at p-value 1.5e-12 across 8,947 observations, strongly significant on 36-year sample. Phase +1 per-day forward return plus 3.94 percent (plus 1.63 pp above plus 2.32 percent baseline). Phase −1 per-day forward return plus 0.61 percent (minus 1.70 pp below baseline). 3.33 pp directional spread. Non-overlap IC at 60-day sampling plus 0.133 at p-value 0.10 across 150 samples, sign-consistent but borderline significant.

Orthogonality to the headline CPIAUCSL signal is empirical. The two signals have autocorrelation rho 0.73 vs CPIAUCSL rho 0.99 at monthly lag 1; Median CPI carries independent information beyond the headline aggregate.

What this signal does not cover

The signal does not capture headline CPI (see Z1188 CPIAUCSL overlay). It does not capture core PCE or trimmed-mean PCE (alternative Fed inflation gauges). It does not capture Fed policy independently of its inflation response (see Fed funds futures). It does not capture Arabica-specific supply conditions (see ENSO, CHIRPS, Brazil CONAB, USDA PSD signals). Cleveland Fed Median CPI is historically less sensitive to commodity cycles than headline CPI.

Disclaimer

This brief and the signal it describes are for informational purposes only and do not constitute investment, legal, tax, or trading advice. Hypothetical or simulated performance results have certain inherent limitations. Unlike an actual performance record, simulated results do not represent actual trading. Also, since the trades have not been executed, the results may have under- or over-compensated for the impact, if any, of certain market factors, such as lack of liquidity. Simulated trading programs in general are also subject to the fact that they are designed with the benefit of hindsight. No representation is being made that any account will or is likely to achieve profits or losses similar to those shown. The phase-conditional forward-return stats reported above are a full-sample unconditional measurement. Readers should consult a licensed financial professional before taking any trading action.

References

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