The KC Cecafe Brazil Arabica Realized Price YoY Signal: A Bucket-Conditional Tightness Lens

Why Brazilian Arabica realized dollar-per-bag year-over-year, z-scored on a 36-month rolling window, is a transaction-derived gauge of physical tightness whose economic edge lives inside the extreme buckets rather than in continuous prediction.

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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 0.024 at p-value 0.025 on a sample of 8,947 daily observations. Technically significant on that sample size; economically modest. Peak information coefficient sits at the 42-day forward horizon (plus 0.039) and fades to zero past 126 days, turning negative past 189 days. Reader caveat: this is not a continuous predictor.

Second, the non-overlapping independence test at 60-day sampling is not significant. Across 150 independent samples the Spearman is plus 0.026 with p-value 0.76. The daily information coefficient above is driven by overlapping windows, not by independent-sample prediction.

Third, the signal's economic strength is bucket-conditional. EXTREME_POS firings (composite above plus 0.6) delivered plus 2.67 percentage points above the plus 3.80 percent baseline (median plus 2.61 percent) on forward 60-day Arabica across 774 trading days, 8.6 percent of the post-warmup sample. EXTREME_NEG firings (composite below minus 0.6) delivered minus 2.78 percentage points below baseline across 840 days, 9.3 percent of the sample. The large NORMAL bucket (76.2 percent of the sample) delivered no directional edge. Read the extremes. Ignore the middle.

The thesis: a transaction-derived tightness gauge

Brazil produces roughly 35 percent of the world Arabica coffee crop. Cecafe, the Brazilian Coffee Exporters Council, aggregates monthly export invoices and publishes revenue in US dollars and bag counts shipped. Dividing the two yields the realized average export price per 60-kilogram bag, averaged across all buyers that month.

Unlike ICE futures positioning, this is a transaction-derived measure of physical tightness. When the realized price is running sharply above its 36-month trend, Brazilian producers are paid up for their coffee: the physical market is tight. When the realized price collapses, supply is pressing bids: the market is loose.

The signal is the year-over-year percent change in realized dollar-per-bag, z-scored on a 36-month rolling window and tanh-bounded to plus or minus one. Positive composite equals above-trend realized price equals tight market equals bullish Arabica setup. The economic strength shows up in the extremes, not in continuous prediction.

Cecafe publishes its monthly exports table at cecafe.com.br with a 10 to 20 day lag after the reference month. The historical PDF backfill (completed July 2026) extends usable Cecafe data back to January 2016. Pre-2016 the composite is zero by engine convention.

What the firings have actually done

The directional edge concentrates in the extreme buckets. Computed over 9,007 daily observations post-warmup from December 3, 1990 through November 4, 2026.

Baseline Arabica forward 60-day return: plus 3.80 percent mean / plus 2.61 percent median across the live-window sample.

Daily Spearman IC (fwd 60d): plus 0.024, p-value 0.025, N equals 8,947.

Daily Pearson IC (fwd 60d): plus 0.044, p-value 2.9e-05.

Non-overlap IC (60-day step): plus 0.026, p-value 0.76, N equals 150. Not significant.

Peak IC horizon sweep (Spearman vs fwd Nd): h equals 21: plus 0.029; h equals 42: plus 0.039 (peak); h equals 63: plus 0.022; h equals 126: plus 0.003; h equals 189: minus 0.020; h equals 252: minus 0.043. Horizon turns negative past six months.

Bucket-conditional forward 60-day Arabica returns: EXTREME_POS (774 days, 8.6 pct of sample): plus 6.47 percent, edge plus 2.67 percentage points above baseline. MODERATE_POS (320 days, 3.6 pct): plus 3.28 percent, edge plus 0.97 pp. NORMAL (6,866 days, 76.2 pct): plus 1.80 percent, edge minus 0.52 pp. MODERATE_NEG (207 days, 2.3 pct): plus 7.33 percent, edge plus 5.02 pp (likely sample-size artifact; bucket spans a transition zone, episodes are short). EXTREME_NEG (840 days, 9.3 pct): plus 1.02 percent, edge minus 2.78 pp.

Three findings. Naive mean-reversion from the extremes does not work: the signal is directional not mean-reverting at the extremes. The bucket-conditional pattern is clean on the positive side (plus 2.67 pp edge, two multi-hundred-day bullish episodes) and noisier on the negative side (minus 2.78 pp aggregate edge but mixed individual episodes). The signal is most useful as an EXTREME_POS entry trigger paired with directional options sizing; as an EXTREME_NEG mean-reversion caution, not as an automatic short.

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Three cases that frame how to read the signal

The signal's canonical anchors are the 2021 Brazilian frost rally and the 2024 to 2025 modern replication; the EXTREME_NEG side is carried by the 2017 to 2018 regime shift. Readers unfamiliar with the Cecafe mechanism should treat these three as the mental anchors for how the composite reads physical tightness.

Case 1: The 2021 Brazilian frost rally

An EXTREME_POS firing began April 5, 2021 as Cecafe realized dollar-per-bag ran sharply above trend, anticipating the physical market tightening that would peak with the July 2021 Minas Gerais frost. The composite stayed above plus 0.6 for 358 consecutive trading days through September 2022, the longest extreme-positive episode on record. Arabica rallied from roughly 130 cents at the April 2021 trigger to a peak near 258 cents in February 2022. Forward 60-day return at the trigger was plus 30.79 percent. This is the signature anchor for how the signal reads a tightening physical market in real time.

Case 2: The 2024 to 2025 modern replication

An EXTREME_POS firing began October 2, 2024 as Brazil realized price again ran above its 36-month trend. The composite held above plus 0.6 for 209 consecutive trading days through August 2025. Arabica rallied materially through late 2024 and into 2025. Forward 60-day return at the trigger was plus 25.79 percent. This replication, with a different macro backdrop from 2021, is the modern validation that the bucket-conditional mechanism generalizes beyond the one-off frost event.

Case 3: The 2017 to 2018 Brazil-loose regime

An EXTREME_NEG firing began December 4, 2017. The composite stayed below minus 0.6 for 124 trading days through June 2018. Forward 60-day return at the trigger was minus 5.05 percent, confirming the bearish-Arabica polarity for this particular EXTREME_NEG trigger. This is the cleanest anchor for the negative-extreme side; three of the other four negative-extreme episodes in the sample posted positive forward 60-day returns at trigger, which is why the negative side carries a caveat.

How to use this signal today

Composite is currently reading minus 0.722 inside the EXTREME_NEG band. The current STRESS phase began February 2, 2026, 191 trading days ago, meeting the BTD danger threshold. Cecafe realized Arabica export price has run significantly below its 36-month trend.

Pair with the following for stacked conviction: ICE Europe COT managed-money positioning, the LRC Vietnam Highlands soil moisture sibling signal (Robusta side of the global stack), and USDA FAS Brazil coffee attache reports for ground-truth confirmation. Do not size on NORMAL or MODERATE readings. Watch for a cross back toward NORMAL from the current EXTREME_NEG band as a potential regime change marker.

Reader rule: EXTREME_POS firings are directional entry triggers with historical conviction. EXTREME_NEG firings are tightness-break warnings that require a second confirmation (positioning, weather, or ground-truth) before sizing.

Methodology

Data source: Cecafe monthly Brazilian Arabica exports table (arabica_bags, arabica_revenue_usd) via the Brazilian Coffee Exporters Council PDF publications at cecafe.com.br. Computation: realized price per bag equals arabica_revenue_usd divided by arabica_bags per month; year-over-year percent change; 36-month rolling z-score against the trailing window mean and standard deviation; tanh bounded to plus or minus one. State thresholds plus or minus 0.2 (moderate) and plus or minus 0.6 (extreme). Phase +1 at composite above +0.3, phase −1 below −0.3. Target: ICE US Coffee C first-nearby close. Historical window: engine runs December 1990 onward for benchmark context; Cecafe signal valid January 2016 onward (PDF backfill completed July 2026), composite is zero before that date by engine convention.

Validation computed on 9,007 post-warmup daily observations. Daily Spearman IC plus 0.024 at p-value 0.025 (weak but technically significant on N equals 8,947). Peak IC at 42-day forward horizon (plus 0.039), fading to zero past 126 days, negative past 189 days. Non-overlapping (every-60-day) independence test not significant at p-value 0.76 across 150 independent samples. Bucket-conditional edge EXTREME_POS plus 2.67 pp above baseline across 774 days; EXTREME_NEG minus 2.78 pp below baseline across 840 days. The directional edge lives in the extreme buckets, not in continuous prediction.

What this signal does not cover

The signal does not cover Robusta (Vietnamese Conilon Robusta is the other half of the global coffee stack and has its own dedicated supply lens). It does not cover ICE futures positioning (CFTC managed-money data is a separate layer). It does not cover weather risk directly (Brazilian frost windows live in June through August and have their own weather overlay). It does not cover futures-contract mechanics such as roll yield or basis (both matter for Arabica but are separate from the realized-price mechanism). It does not deliver a signal in the NORMAL band, which is 76 pct of the sample.

The signal is a monthly-cadence, bucket-conditional tightness lens on Brazilian Arabica realized price. Use it as part of a stack, not standalone.

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 bucket-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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