The KC BDI Global Growth Z-Score Signal: Global-Growth Macro Overlay for Arabica

Why the Baltic Dry Index year-over-year z-score delivers a 1.81 pp directional spread on Arabica forward 60-day returns across 36 years via the commodity-complex demand channel.

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 0.084 at p-value 1.4e-15 on a sample of 8,947 daily observations spanning 1990 through 2026. Strongly significant on the 36-year window.

Second, Phase +1 (Global Growth Strong) delivers plus 0.49 percentage points above baseline across 3,467 trading days (38.8 percent of sample) and Phase −1 (Global Growth Weak) delivers minus 1.32 percentage points across 4,024 days (45.0 percent). 1.81 pp directional spread.

Third, Phase 0 (On Trend) delivers plus 2.48 percentage points above baseline across the 16.3 percent middle bucket. The middle outperforms both extremes; this is a non-monotone pattern that readers must respect. Non-overlap IC is sign-consistent but not independently significant on 150 samples.

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The thesis: global growth via dry-bulk shipping

The Baltic Dry Index tracks shipping rates for dry-bulk commodities (iron ore, coal, grains, soybeans) across major global trade routes. BDI rises when global industrial activity and commodity trade accelerate and falls when activity slows. It is widely used as a real-time proxy for global growth because shipping rates respond to demand before manufacturing surveys or GDP data confirm the cycle.

Arabica is sensitive to the global-growth cycle via the commodity-complex demand channel. When BDI signals above-trend global activity, coffee consumption growth, speculator capital flow, and overall commodity-rotation inflows all support Arabica prices over 60-day horizons. When BDI signals below-trend activity, the opposite backdrop obtains.

The signal takes Baltic Dry Index year-over-year percent change, z-scores on a rolling 5-year window, 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: Baltic Exchange BDI series from 1985; 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 0.084, p-value 1.4e-15, N equals 8,947. Strongly significant.
>
> **Non-overlap IC (60-day step):** plus 0.099, p-value 0.23, N equals 150. Sign-consistent but not independently significant.
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> **Phase-conditional forward 60-day Arabica returns:** Phase +1 (Global Growth Strong, 3,467 days / 38.8 pct): plus 2.81 percent, edge plus 0.49 pp. Phase 0 (On Trend, 1,456 days / 16.3 pct): plus 4.79 percent, edge plus 2.48 pp. Phase −1 (Global Growth Weak, 4,024 days / 45.0 pct): plus 1.00 percent, edge minus 1.32 pp.
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> 1.81 pp directional spread between Phase +1 and Phase −1. Non-monotone around Phase 0.

Three findings. The daily IC is strongly significant on the 36-year window. The Phase −1 Global Growth Weak bucket carries the clearest directional signal with minus 1.32 pp edge. Phase 0 (On Trend) delivers a surprising plus 2.48 pp edge on the 16 percent middle bucket; the middle outperforms both extremes making this a non-monotone pattern. Treat as directional overlay on the extremes with caution.

Three cases that frame how to read the signal

The canonical anchors are the 2021-2022 commodity supercycle, the 2010-2011 post-GFC recovery, and the 2015-2016 commodity bust.

Case 1: The 2021-2022 commodity supercycle

Global Growth Strong firing anchored the 2021-2022 commodity supercycle as BDI broke to multi-year highs on China reopening, global dry-bulk demand, and post-pandemic restocking. Composite held in Phase +1 territory through the rally. Arabica delivered material forward returns through the regime consistent with the Phase +1 edge via the commodity-complex demand channel. KC traded from roughly 1.20 per pound pre-rally to above 2.40 at the 2022 peak.

Case 2: The 2010-2011 post-GFC recovery

Global Growth Strong firing through 2010-2011 as BDI rallied from GFC lows on China-driven commodity demand. Composite held in Phase +1 territory consistent with sustained Arabica strength through the global recovery period. Textbook global-growth-driven commodity rally that moved KC meaningfully higher through the recovery.

Case 3: The 2015-2016 commodity bust

Global Growth Weak firing through 2015-2016 as BDI collapsed to all-time lows on China slowdown and global dry-bulk oversupply. Composite held in Phase −1 territory through the extended weak-growth regime. Arabica underperformed through the cycle-low pricing regime consistent with the Phase −1 edge; global demand weakness pressured the commodity complex broadly.

How to use this signal today

Composite is currently reading plus 0.036 in the On Trend band. The Neutral phase began October 2026, 16 trading days ago. Baltic Dry Index year-over-year is running near the 5-year z-score mean through late 2026 consistent with neutral global-growth regime.

Pair with the following for stacked conviction: NFCI financial conditions overlay, headline CPI and Median CPI inflation regime overlays, dollar index, and fundamental Arabica supply signals. This BDI signal provides the global-growth demand context; pair with inflation regime, financial conditions, and bottom-up supply fundamentals for the full macro-plus-fundamental read.

Reader rule: Global Growth Strong firings flag bullish regimes where commodity-complex demand supports Arabica over 60-day horizons. Global Growth Weak firings flag bearish regimes. On Trend is surprisingly the strongest bucket but represents the quiet neutral regime between directional calls.

Methodology

Data source: Baltic Exchange daily Baltic Dry Index release. Computation: year-over-year percent change in BDI, z-scored on a rolling 5-year window, 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: Baltic Exchange BDI series from 1985; 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 0.084 at p-value 1.4e-15 across 8,947 observations, strongly significant on 36-year sample. Phase +1 per-day forward return plus 2.81 percent (plus 0.49 pp above plus 2.32 percent baseline). Phase −1 per-day forward return plus 1.00 percent (minus 1.32 pp below baseline). 1.81 pp directional spread. Non-overlap IC at 60-day sampling plus 0.099 at p-value 0.23 across 150 samples, sign-consistent but not independently significant.

What this signal does not cover

The signal does not capture full commodity-complex demand (BDI tracks dry-bulk shipping specifically; coffee is a soft not a dry-bulk). It does not capture Chinese commodity demand independently (see China-specific manufacturing and construction signals). It does not capture Arabica-specific

supply conditions (see USDA PSD, ENSO, CHIRPS). Short-horizon BDI moves can be affected by shipping-specific factors (vessel supply, canal disruptions) unrelated to coffee.

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

Baltic Exchange, Baltic Dry Index daily release, balticexchange.com.

ICE Futures US, Coffee C first-nearby back-adjusted continuous contract (ticker KC), end-of-day settlement.