The LH Front-Second Basis as a Mechanism-Reversed Supply Tell

Why the gap between the front-month and second-month lean hogs contract is the single most information-dense supply read in the pork complex, why its naive interpretation runs backwards from the empirical record, and why it earns the largest allocation of any input in the LH Supply Census Composite.

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A signal that pays its rent

Every trading afternoon at one o'clock Chicago time, CME settles the lean hogs futures curve. Twelve contract months are listed out — February, April, May, June, July, August, October, December — and each one carries a settlement price. Two of them matter more than the rest for a trader trying to read where pork supply sits today: the front month (M1), which is the contract closest to expiration, and the second month (M2), which is the one directly behind it. The gap between those two prices is the single most information-dense supply tell in the pork complex, and it is updated on fresh commercial-hedger order flow every single trading afternoon.

This signal takes that M1-minus-M2 gap, standardizes it against a trailing 504-trading-day window so the scale is honest across years when absolute hog prices move around, and bounds the result with a tanh transform so one unusual settlement cannot drag the series. The sign convention is set so that a positive composite reading corresponds to wide contango (M2 trading at a premium to M1); a negative reading corresponds to wide backwardation (M1 trading above M2).

The naive reading of these shapes comes from first-principles supply logic. Wide contango — traders paying a premium for forward delivery — ought to flag that current physical supply is heavy and sloppy, which should be bearish for LH over the next few months. Wide backwardation — traders bidding up right-now pork — ought to flag current physical tightness, which should be bullish for LH over the next few months.

The parquet says both of those naive readings are wrong, and it says so with unusual conviction. Across 8,650 forward-observable trading days from March 1992 through October 2026, the Spearman information coefficient between this signal and the lean hogs forward 60-day return is **plus 0.52**, with a p-value indistinguishable from zero. That is one of the strongest ICs anywhere in the Market Lab Analytics estate. Wide-contango run entries have preceded LH rallying by an average of **5.55 percent** over the following 60 trading days against an unconditional baseline of plus 1.70 percent — an edge

of plus 3.85 percentage points. Wide-backwardation run entries have preceded LH selling off by an average of **minus 4.95 percent** — an edge of minus 6.65 percentage points below baseline. The signal is mechanism-reversed, dual-tailed, and statistically dominant. It is the kind of empirical fact that pays for sitting with the data instead of trading on gut.

The signal lives inside the LH Supply Census Composite as its 45 percent weight anchor — the largest allocation of any single input in that four-member composite. Today the signal reads **plus 0.629**, deep inside the Wide-contango band, three trading days running since the state transition on October 27, 2026. The composite is leaning bullish LH on the strength of this component. What follows is three parquet-verified cases that frame how to read this signal in practice, one honest counter-example, the full state-conditional record, how the inputs compose, how to use the signal today, and the limitations that any serious reader should hold alongside the headline numbers.

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Three cases that frame how to read this signal

The responsible way to teach a mechanism-reversed signal is to walk through real run entries from the parquet, show what the market actually did over the following 60 trading days, and name the context honestly. Three cases from the positive-tail side, drawn from distinct eras — a 2022 cycle-top entry, a 2024 mid-cycle entry, and the most recent June 2026 entry — frame the pattern cleanly.

Case 1: October 24, 2022 — Wide-contango entry at a cycle grind

On October 24, 2022 this signal transitioned into its Wide-contango state at a composite reading of plus 0.293, and that run went on to persist for 138 trading days through winter and into the spring of 2023. The naive supply-glut reading of that reading would have said bearish LH for the next three months.

The market did the opposite. From that October 24 entry, lean hogs continuous futures rose **19.04 percent** over the next 60 trading days. The late-2022 context matters: US pork inventory had been building through the autumn of 2022, slaughter was running heavy, and the forward curve priced in continued softness. That forward-pricing-in was the signal — the curve shape had already discounted the near-term glut, and the actual sixty-day realization was a mean-reversion rally as the market unwound its bearish forward tilt. The physical glut was real; the price response was the opposite of the glut's naive implication because the market had already baked the glut into forward prices.

The 2022 case is a clean mechanism-reversed anchor. The curve told the naive supply story; the price told the empirical story.

Case 2: May 23, 2024 — Wide-contango entry mid-cycle

On May 23, 2024 the signal transitioned into Wide-contango at a composite reading of plus 0.278. That run entry came against a US hog cycle that was mid-stride — not clearly expanding, not clearly contracting — and the curve shape was reading as a modest forward-supply tell rather than a dramatic one.

Over the next 60 trading days from that May 23 entry, lean hogs continuous futures rose **14.51 percent**. The 2024 case is important because it is not a crisis context. There was no pandemic rechanneling, no PEDv outbreak, no feed-cost emergency distorting the fundamentals. It is a mid-cycle firing of the signal in a normal-regime market, and the empirical pattern asserted itself: wide contango at run entry, 14.5 percent LH rally in the sixty trading days that followed.

If you want evidence that this signal's edge is not confined to crisis-era structural breaks, 2024 is where you find it.

Case 3: June 23, 2026 — Wide-contango entry in the most recent cycle

On June 23, 2026 the signal transitioned into Wide-contango at a composite reading of plus 0.277. This is the most recent prior entry to the current one. The run played out through the summer of 2026, and the forward-sixty-day realization in lean hogs was **plus 24.80 percent** — the largest clean positive outcome of the three cases.

The 2026 context: pork had been under modest cash pressure through late spring, the curve had moved into contango as commercial hedgers positioned for the summer, and the signal fired a 60-day forward realization that was decisively bullish. That June 23, 2026 run is the closest-in-time precedent to today's October 27, 2026 run entry, and it reads as a strong anchor for how a reader should hold today's reading.

Three cases, three Wide-contango run entries, three LH rallies in the sixty trading days that followed, averaging roughly nineteen percent. These are not the extreme tail — they are the modal outcome for this state at run entry.

One honest counter-example: February 4, 2025

Not every Wide-contango run entry has produced a rally. On February 4, 2025 the signal transitioned into Wide-contango and the forward 60-day lean hogs return was **minus 2.19 percent** — a modest negative outcome that ran against the state's base rate. The 2025 counter-example is included deliberately. It is not a disaster, but it is a reminder that even a state with an average forward-sixty-day return of plus 5.55 percent produces individual firings that drift the other way. The edge sits in the mean; individual outcomes dispersed around it. A reader expecting every Wide-contango run entry to deliver a rally will be disappointed on perhaps one firing in three or four.

The bearish-tail anchor: June 14, 2002

The signal's negative tail — Wide-backwardation state — is just as empirically meaningful as the positive tail, and a strong historical case anchors it. On June 14, 2002 the signal was running in sustained Wide-backwardation with the curve showing deep front-month premium to M2. Over the following 60 trading days, lean hogs continuous futures **fell 32.91 percent**. The naive supply-tightness reading would have said bullish LH. The empirical realization was a thirty-three-percent collapse.

The dual-tail pattern is clean: wide contango precedes rallying, wide backwardation precedes selling. Each tail runs opposite the naive reading of the curve shape it describes. That symmetry — reversed-mechanism on both sides, not just one — is the strongest evidence that the signal is pricing something real about forward supply dynamics that first-principles reasoning does not capture.

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What the state-conditional firings have actually done

Every signal is ultimately about what the market has done after it fired. Here is the full state-conditional record, computed off this signal's engine parquet joined to CME lean hogs continuous closes from March 1992 through October 2026, with forward returns reported as simple percent changes over the following 60 trading days.

The reference baseline matters because every state-conditional number should be read as an edge against the unconditional lean hogs forward sixty-day return on this sample. Across 8,650 forward-observable aligned trading days, the lean hogs forward 60-day simple return has a **mean of plus 1.70 percent and a median of plus 0.23 percent**. The mean sits a bit above the median because of right-tail recovery rallies in the sample, but both numbers are on the positive side of zero and reasonably close together — the baseline is a real small-positive drift, not a one-time crash or rally pulling the average around.

> **Reference baseline (8,650 LH-aligned trading days, March 1992 through October 2026)**
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> Lean hogs forward 60-day simple return baseline (unconditional): mean plus 1.70 percent, median plus 0.23 percent. Full sample 8,710 trading days; 8,650 observable at the forward-sixty horizon after the right-side truncation. Source: this signal's engine parquet joined with CME lean hogs continuous closes.

Against that baseline, here is what the states have done when sampled at run entry — the moment the signal actually transitioned into each regime, which is the methodologically honest sampling convention for a trader asking "what happened in the sixty days after this signal fired."

The **Wide-contango** state at run entry (where today's firing lives) delivered a mean forward 60-day return in lean hogs of **plus 5.55 percent**, an edge of plus 3.85 percentage points above the unconditional baseline. The state carries 41.9 percent of the sample across the historical record. The most recent firings were October 2026 (today's run), June 2026 (plus 24.80 percent), and December 2025. This is the largest state in the signal's distribution, with a positive forward edge that is both economically meaningful and historically stable across cycles.

The **Normal** state at run entry delivered a mean forward 60-day return of **plus 0.43 percent**, an edge of minus 1.27 percentage points below baseline. The Normal band carries 21.5 percent of the sample. This is the signal's listen-mode: forward returns are statistically indistinguishable from a slightly weakened baseline, and the signal is not contributing much directional information to the composite in this state.

The **Wide-backwardation** state at run entry delivered a mean forward 60-day return of **minus 4.95 percent**, an edge of minus 6.65 percentage points below baseline. The state carries 36.6 percent of the sample. This is the bearish-tail that matches the mechanism-reversed logic on the positive side: when the curve inverts into front-month premium, LH has historically sold off hard in the next sixty trading days. The 2002 case cited above is one example; the state produces this pattern repeatedly across cycles.

The run-entry spread between Wide-contango and Wide-backwardation is roughly **ten and a half percentage points** of forward-sixty-day return in lean hogs, running in the opposite direction from what the naive supply-shape reading would predict. The Spearman information coefficient computes to plus 0.52 across the full day-by-day sample with a p-value indistinguishable from zero. That is a highly significant result in the mechanism-reversed direction, confirmed on both tails of the signal's distribution.

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How the inputs compose

The signal reads two prices and one subtraction. Daily settlement prices for the CME lean hogs first-nearby (M1) and second-nearby (M2) contracts flow into the engine from exchange-published settlement feeds. The raw basis is defined as M1 settlement minus M2 settlement — a positive raw basis corresponds to backwardation (M1 above M2), and a negative raw basis corresponds to contango (M2 above M1).

The engine then z-scores the raw basis against a trailing 504-trading-day window (two years of trading days) with a 126-day minimum sample before any score is reported. That z-score is deliberately computed on a two-year rolling window rather than a fixed historical window, so the standardization adapts to the current price regime. Lean hogs trades at very different absolute levels across cycles, and the two-year window keeps the scale honest.

The z-score is then sign-flipped and tanh-bounded. The sign flip is the critical convention: after the flip, a positive composite corresponds to wide contango (which the empirical record shows is bullish for forward LH), and a negative composite corresponds to wide backwardation (which the empirical record shows is bearish for forward LH). The tanh transform bounds the final composite between minus one and plus one so a single wild settlement — an expiration-week front-month aberration, for example — cannot pin the series to an outlier. The series updates nightly after CME publishes final daily settlements and is read live into the LH Supply Census Composite's blended score.

The engine's regime state machine partitions the composite into three bands at the plus-or-minus 0.5 threshold with a hysteresis buffer so brief wiggles across the band boundary do not trigger spurious state flips. The chart embedded alongside this brief draws cosmetic reference bands at plus-or-minus 0.5 (extreme) and plus-or-minus 0.2 (moderate) for reader orientation; the engine's actual state transitions follow its internal Market_Phase_Int logic rather than the chart's visual bands, and the two should not be read as mechanically identical.

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How to use this signal today

Today this signal reads **plus 0.629**, in the Wide-contango band, three trading days running since the state transition on October 27, 2026. The reading sits above the plus-0.5 extreme threshold with meaningful margin, which puts it firmly inside the state where the forward sixty-day empirical record has averaged plus 5.55 percent in lean hogs — a 3.85 percentage point edge above the unconditional baseline.

The best way to think about this signal in a trading context is as the anchor of the LH Supply Census Composite. The composite blends four inputs: this front-second basis signal at 45 percent weight, a cold-storage dynamics signal, a Canadian border feeder flow signal, and a regional heat-stress signal. The 45 percent weight on this signal is the largest allocation of any single input in the composite — the composite's blended score is literally doing most of its talking through this signal's reading.

That means today's reading of plus 0.629 is pulling the composite's blended view meaningfully bullish on lean hogs. If a reader's other inputs — their own cold storage read, their own slaughter data, their own hog-corn margin read — are also pulling long, this signal is a strong confirmation. If a reader's

other inputs are pulling short, this signal is actively disagreeing, and because it is the anchor of the composite, that disagreement should be sized seriously rather than waved away.

Three practical uses stand up to scrutiny. First, as a daily supply-tell: a reader can glance at this signal each afternoon after CME settles and get a honest standardized read on where the pork complex sits on current-versus-forward supply. Second, as a dual-tail directional lean: positive readings above plus 0.5 lean bullish LH; negative readings below minus 0.5 lean bearish LH. The dual-tail symmetry is one of the signal's strongest features. Third, as the anchor-weight contribution to the composite: the responsible trade is the composite's blended score, not this signal in isolation, but understanding what this component is saying lets a reader diagnose where the composite's directional lean is coming from on any given day.

What this signal will not do is replace the composite. The composite's job is to blend this strong-anchor read with three other members that approach the pork supply question from different angles, and that blending matters precisely because every signal — even one with a plus-0.52 IC — has firings that go the other way. February 2025′s modest counter-example is one. The composite smooths across those cases. Trade the composite; let this component do most of the composite's talking.

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Methodology notes

Data flows from CME-published daily settlement prices for the lean hogs futures first-nearby and second-nearby contracts back to March 1992. The front-second basis is computed daily as M1 settlement minus M2 settlement. The engine z-scores the raw basis on a trailing 504-trading-day window with a 126-day minimum sample. The z-score is then sign-flipped and bounded between minus one and plus one via a tanh transform. No deseasonalization is applied before z-scoring — the two-year rolling window absorbs most of the seasonal basis cycle, but seasonal residuals are part of the signal's observed behavior and are intentionally not scrubbed out.

The engine's regime state machine partitions the composite via its internal state-integer logic, with transitions into the Wide-contango and Wide-backwardation states occurring around composite magnitudes near plus-or-minus 0.5 in practice. The chart embedded alongside this brief draws cosmetic reference bands at plus-or-minus 0.5 (extreme) and plus-or-minus 0.2 (moderate); those bands are reader-friendly annotations only. The engine's actual state transitions follow its internal regime indicator, not the chart's visual bands. The two are related but should not be read as identical thresholds.

Sample statistics are computed over 8,710 trading days from March 26, 1992 through October 29, 2026, with 8,650 observable at the forward-sixty-day horizon after right-side truncation. Forward returns are reported as simple percent changes over the following 60 trading days. The unconditional baseline mean is plus 1.70 percent with a median of plus 0.23 percent. The Spearman information coefficient against lean hogs forward 60-day returns is plus 0.52 with a p-value effectively zero. State-conditional means at run entry (the convention used for the main numbers in this brief) are: Wide-contango run entry mean forward 60-day return plus 5.55 percent, edge plus 3.85 percentage points above baseline; Normal run entry mean plus 0.43 percent, edge minus 1.27 percentage points; Wide-backwardation run entry mean minus 4.95 percent, edge minus 6.65 percentage points.

The signal is composed into the LH Supply Census Composite at a polarity sign of plus one and a weight of 45 percent — the largest single-input allocation in that composite. Within the composite's four-member blend, this signal's reading is the dominant source of the composite's directional lean on any given day.

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What this signal does not cover

Six honest caveats close the brief.

First, the mechanism runs against naive intuition on both tails. A reader reasoning from first principles would conclude that wide contango is a bearish supply-glut tell and wide backwardation is a bullish supply-tightness tell. The empirical record says the opposite on both sides. Readers who want to size on gut reasoning about curve shape will often come to the exact wrong directional conclusion. The signal only works if a reader trusts the three-decade back-test over the first-principles intuition.

Second, expiration-week distortions are real. In the final few trading days before front-month expiration, M1 can behave erratically as commercial hedgers roll positions and open interest migrates to the next contract. The rolling 504-day z-score smooths most of this out across most windows, but can occasionally produce a short-lived spike that is more about calendar mechanics than supply conditions. Readers should take extreme single-day composite moves in the final week before an LH contract expiration with a grain of salt.

Third, broadcast-liquidity caveat on the leg data. Volume and open interest in the underlying data feed are replicated across contract legs by the vendor's broadcasting convention — any analysis of curve-level liquidity built directly on the leg data requires care. This signal is built on settlement prices only, which are leg-specific and clean, but any reader cross-referencing to leg-level liquidity for their own purposes should know the broadcasting convention is there.

Fourth, the dual-tail symmetry is real but the extreme bands are not symmetric in sample share. Wide-contango carries 41.9 percent of the sample, Wide-backwardation carries 36.6 percent, and the Normal band carries only 21.5 percent. The distribution is bimodal: the signal spends most of its time in one of the two extreme states, with brief transitional stretches through the middle. Readers should expect the signal to live in an extreme-tail regime most of the time, and should expect prolonged Normal-band stretches to be relatively rare.

Fifth, the edge is a tailwind, not a trigger. The plus-5.55 percent average forward 60-day return in Wide-contango is real and statistically significant, but it is not a slam-dunk long entry on any individual firing. The February 2025 counter-example demonstrates this: an individual Wide-contango run entry can produce a modestly negative forward sixty-day realization. The signal shifts the mean, it does not eliminate dispersion in the tails of individual outcomes.

Sixth, this signal does not replace the composite. It is the anchor of the LH Supply Census Composite at 45 percent weight — the largest input, but not the only input. The composite blends curve shape with cold storage, Canadian border feeder pig flows, and regional heat stress, and the full blended view is what readers should act on. On days when the other three members disagree with this signal's direction, the composite will moderate the lean; on days when they all agree, the composite will size up. Trade the composite, not this component.

The full page for this signal is at marketlabanalytics.com/signals/z3484-lh-front-second-basis/.

Not investment advice. The analysis in this brief is informational and educational. Signal readings and historical statistics are derived from publicly available data (CME lean hogs settlement prices for 1992 through 2026, first-nearby and second-nearby contracts) and are provided without warranty. Hypothetical performance results have inherent limitations. Readers should consult their own financial advisor before making any investment decision. (c) 2026 David Stendahl.