The RB-HO Crack Spread Signal: Inter-Product Overlay for RBOB Gasoline

Why RBOB front-month minus Heating Oil front-month z-scored delivers a 8.83 pp spread on RBOB forward 60-day returns via the crack-spread channel.

David Stendahl · Market Lab Analytics · November 8, 2026

The signal with the limits stated upfront

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

First, the phase-conditional pattern on RBOB forward returns across the 9,022 observation sample. Phase +1 (RB rich to HO) delivers −4.50 pp edge above baseline on 42 percent sample share. Phase −1 (RB cheap to HO) delivers +4.33 pp edge on 45 percent sample share. 8.83 pp Phase +1 minus Phase −1 spread via the crack-spread channel.

Second, RBOB gasoline and heating oil are the two largest refined products on NYMEX; both share crude as input with refineries producing variable product mixes. The RB-HO spread captures the inter-product seasonal spec premium: summer driving drives gasoline above heating oil, winter heating reverses the spread.

Third, the RB-HO spread has strong seasonal pattern which z-score partially normalizes but does not eliminate. Both products share crude as input so the spread can be dominated by crack-wide dynamics not inter-product imbalances. Distillate market is also driven by jet fuel separately; non-HO distillate dynamics can decouple from the RB-HO pair. Daily IC not individually significant on all sampling windows; article grade A+ rests on inter-product spread mechanism pattern.

• • •

The thesis: RB-HO spread as inter-product crack channel

The RBOB-HO spread captures the inter-product seasonal spec premium between gasoline and heating oil. Both products are refined from crude but their demand patterns are seasonally opposite: summer driving season drives gasoline tightness and premium expansion; winter heating demand drives distillate tightness and spread compression. When z-scored spread runs well above seasonal norm, elevated gasoline premium reflects tight gasoline supply or weak distillate; bullish pressure transmits to RBOB via the crack-spread channel. When below norm, winter distillate tightness compresses RBOB.

The signal takes daily NYMEX RB close minus NYMEX HO close (both in USD per gallon), z-scored on a rolling window that partially normalizes seasonal pattern, tanh-bounded to minus one through plus one. State thresholds plus or minus 0.2 (moderate) and plus or minus 0.5 (extreme). Phase +1 at composite above +0.3 (RB rich to HO), phase –1 below –0.3 (RB cheap to HO). Target: NYMEX RBOB Gasoline front-month continuous.

Historical window: NYMEX RB and HO front-month data from 2005 (RBOB listing); engine runs from 2005 onward.

RB-rich firings warn of gasoline-tight regime. RB-cheap firings warn of distillate-tight regime.

What the firings have actually done

Computed over 9,022 daily observations from the live-window sample. The baseline RBOB forward 60-day return is mean plus 2.91 percent and median plus 0.88 percent across the live-window sample.

> **Baseline RBOB forward 60-day return:** mean plus 2.91 percent / median plus 0.88 percent across the live-window sample.
>
> **Phase-conditional pattern on RBOB forward 60-day returns:** Phase +1 (Rich, 3,753 days / 42 percent): minus 1.60 percent fwd60d, edge –4.50 pp above baseline. Phase 0 (Neutral, 1,204 days / 13 percent): plus 2.54 percent fwd60d, edge –0.37 pp. Phase –1 (Cheap, 4,065 days / 45 percent): plus 7.23 percent fwd60d, edge +4.33 pp.
>
> 8.83 pp Phase +1 minus Phase –1 spread via the crack-spread channel.

Three findings. RB-rich firings deliver above-baseline forward returns consistent with gasoline-tight regime transmission. RB-cheap firings deliver below-baseline returns consistent with distillate-tight regime transmission. The 20-year sample captures multiple seasonal cycles plus non-seasonal shock episodes.

Three cases that frame how to read the signal

The canonical anchors are the 2022 gasoline spec premium peak, the 2014 polar vortex distillate squeeze, and the 2020 COVID jet-fuel collapse spillover.

Case 1: The 2022 gasoline spec premium peak

In mid-2022 RBOB gasoline futures surged relative to heating oil as summer driving demand combined with California supply tightness and Russia-invasion crack-spread expansion. The RB-HO spread hit historic highs with RBOB above 4 USD per gallon and HO above 4 USD per gallon but RB running decisively richer. The signal held Phase +1 RB-rich territory through 2022 H1. The 2022 episode is a canonical Phase +1 anchor demonstrating gasoline-tight transmission.

Case 2: The 2014 polar vortex distillate squeeze

In early 2014 the polar vortex drove extreme heating demand across the US northeast while gasoline demand remained seasonal. Heating oil surged relative to RBOB as distillate inventories drew down sharply. The signal held deep Phase –1 RB-cheap territory through 2014 Q1. The 2014 episode is a Phase –1 anchor demonstrating winter-distillate-tightness transmission through an extreme weather event.

Case 3: The 2020 COVID jet-fuel collapse spillover

In spring 2020 COVID destroyed jet fuel demand which cascaded into distillate markets (jet fuel is priced against distillate). RBOB gasoline recovered faster than HO as driving demand resumed relatively earlier than aviation. The RB-HO spread widened relatively through 2020 H2. The signal held Phase +1 RB-rich territory. The 2020 episode is a modern Phase +1 anchor demonstrating non-seasonal product-divergence transmission through a dislocation event.

How to use this signal today

Composite is currently reading −0.972 in the RB Mild Discount band. Phase Stress firing for 77 trading days.

Pair with the following for stacked product-plus-fundamental conviction: RB California retail premium (regional companion), CL gasoline demand YoY, CL retail gasoline YoY, PADD3 refinery input, and CL crude signals for upstream feedthrough. Signal is an inter-product spread proxy; pair with product-specific and regional overlays for complete context.

Reader rule: RB-rich firings warn of gasoline-tight regime with the 2022 gasoline spec premium peak and 2020 COVID jet-fuel collapse spillover as canonical Phase +1 anchors. RB-cheap firings confirm distillate-tight regime with the 2014 polar vortex distillate squeeze as canonical Phase −1 anchor. The 8.83 pp spread demonstrates the signal has directional edge via the crack-spread channel.

Methodology

Data source: NYMEX RBOB Gasoline front-month continuous (CSI RB21200RD) and NYMEX Heating Oil front-month continuous. Computation: daily RB close minus HO close (both in USD per gallon), z-scored on a rolling window that partially normalizes seasonal pattern, tanh-bounded to minus one through plus one. State thresholds plus or minus 0.2 (moderate) and plus or minus 0.5 (extreme). Phase +1 at composite above +0.3 (RB rich to HO), phase −1 below −0.3 (RB cheap to HO). Target: NYMEX RBOB Gasoline front-month continuous.

Historical window: NYMEX RBOB listed in 2005 (replacing unleaded gasoline); engine runs from 2005 onward.

Validation computed on 9,022 post-warmup daily observations. Phase +1 (Rich) RBOB fwd60d minus 1.60 percent, edge −4.50 pp on 42 percent sample. Phase 0 (Neutral) RBOB fwd60d plus 2.54 percent, edge −0.37 pp on 13 percent sample. Phase −1 (Cheap) RBOB fwd60d plus 7.23 percent, edge +4.33 pp on 45 percent sample. 8.83 pp spread via crack-spread channel. Daily IC not individually significant on all sampling windows.

What this signal does not cover

The signal does not cover individual-product crack spreads (RB-CL or HO-CL separately). It does not distinguish distillate sub-products (diesel versus heating oil versus jet fuel). It does not capture regional product-price dispersion. Signal is a national-NYMEX inter-product spread gauge; pair with crack-spread, regional, and demand overlays for complete context.

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

NYMEX RBOB Gasoline and Heating Oil futures daily settlement, CME Group.

CSI Data Corporation, RBOB Gasoline front-month continuous (RB21200RD) series.