The HO HO 3:2:1 Crack Regime Signal: Overlay for Heating Oil

Why HO 3:2:1 Crack Regime delivers a 3.04 pp spread on Heating Oil forward 60-day returns via the 3:2:1 refinery crack regime channel.

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What this signal is

Elevated 3:2:1 refinery crack regime (3 WTI crude feed yielding 2 gasoline + 1 distillate) reflects composite refiner margin expansion; the distillate leg transmits bullish Heating Oil pricing via combined refiner profitability signal.

The composite is bounded between minus one and plus one through tanh. Positive readings reflect the bullish channel state; negative readings reflect the bearish channel state.

Today the composite reads −0.636 in the Stretched band after 106 trading days in the current phase. See the state-conditional returns panel below for the empirical phase-conditional edges.

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How the inputs compose

Elevated 3:2:1 refinery crack regime (3 WTI crude feed yielding 2 gasoline + 1 distillate) reflects composite refiner margin expansion; the distillate leg transmits bullish Heating Oil pricing via combined refiner profitability signal. The signal takes 2 times RBOB front-month continuous + 1 times Heating Oil front-month continuous minus 3 times WTI front-month continuous, z-scored against 252-day rolling 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: NYMEX Heating Oil front-month continuous.

What the state-conditional returns have actually done

Computed over 9,023 daily observations from the live-window sample. The baseline Heating Oil forward 60-day return is mean plus 2.71 percent and median plus 1.69 percent across the live-window sample.

> **Baseline Heating Oil forward 60-day return:** mean plus 2.71 percent / median plus 1.69 percent across the live-window sample.
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> **Phase-conditional pattern on Heating Oil forward 60-day returns:** Phase +1 (Crack margin bullish, 2,431 days / 27 percent): plus 5.47 percent fwd60d, edge +2.77 pp above baseline. Phase 0 (Normal, 3,545 days / 39 percent): plus 1.04 percent fwd60d, edge −1.67 pp. Phase −1 (Crack margin bearish, 3,047 days / 34 percent): plus 2.43 percent fwd60d, edge −0.27 pp.
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> 3.04 pp Phase +1 minus Phase −1 spread via the 3:2:1 refinery crack regime channel.

Three cases that frame how to read the signal

Case 1: Margin bullish, 2022 distillate scarcity peak

3:2:1 crack regime ran to historic highs through 2022 as Russia-invasion distillate scarcity + refinery-utilization tightness amplified refiner margins. Signal held Phase +1 territory.

Case 2: Margin bullish, 2008 pre-crisis refinery margin

3:2:1 crack regime held elevated through 2008 H1 at the supercycle peak. Signal held Phase +1 territory.

Case 3: Margin bearish, 2020 COVID demand destruction

3:2:1 crack regime compressed sharply through April 2020 as COVID shutdowns collapsed gasoline + distillate demand faster than crude. Signal held deep Phase −1 territory.

How to use the signal today

Composite is currently reading −0.636 in the Stretched band. Phase Stress firing for 106 trading days.

Pair with companion HO signals listed in the Related section for stacked conviction.

Reader rule: Phase +1 firings reflect crack margin bullish regime via the 3:2:1 refinery crack regime channel. Phase −1 firings reflect crack margin bearish regime. The 3.04 pp spread demonstrates the signal has directional edge via the stated channel.

Methodology notes

The signal takes 2 times RBOB front-month continuous + 1 times Heating Oil front-month continuous minus 3 times WTI front-month continuous, z-scored against 252-day rolling 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: NYMEX Heating Oil front-month continuous.

Validation computed on 9,023 post-warmup daily observations. Phase +1 (Crack margin bullish) Heating Oil fwd60d plus 5.47 percent, edge +2.77 pp on 27 percent sample. Phase 0 (Normal) Heating Oil fwd60d plus 1.04 percent, edge −1.67 pp on 39 percent sample. Phase −1 (Crack margin bearish) Heating Oil fwd60d plus 2.43 percent, edge −0.27 pp on 34 percent sample. 3.04 pp spread via 3:2:1 refinery crack regime channel. Daily IC not individually significant on all sampling windows.

What this signal does not cover

Three limitations. 3:2:1 crack conflates gasoline + distillate margins; distillate-specific signal is noisier. Weight assumes standard refinery yield; actual yield varies by refiner. Z-score smoothing dampens short-horizon margin spikes.

The signal does not capture mechanisms outside its stated transmission channel. It does not substitute for broader Heating Oil supply + demand + inventory + crude overlays; pair with companion signals in the Related section 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 Heating Oil futures daily settlement, CME Group.

CSI Data Corporation, Heating Oil front-month continuous (HO21120RD) series.