The CL Retail Gasoline YoY Signal: Downstream Pass-Through Confirmation for WTI

Why EIA US national retail gasoline YoY delivers a 1.45 pp spread on WTI forward 60-day returns via the retail pass-through channel.

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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 phase-conditional pattern on WTI forward returns across the 9,116 observation sample. Phase +1 (Price rising) delivers −0.79 pp edge above baseline on 42 percent sample share. Phase −1 (Price falling) delivers +0.66 pp edge on 44 percent sample share. 1.45 pp Phase +1 minus Phase −1 spread via the retail pass-through channel.

Second, EIA tracks US national retail gasoline prices weekly across approximately 900 retail outlets. Retail gasoline is downstream of crude through the refining and distribution chain with a typical pass-through delay of 4 to 6 weeks. Rising retail YoY confirms that underlying crude strength has completed the downstream pass-through cycle; falling retail YoY confirms the reverse.

Third, the signal operates as confirmation not prediction. Pass-through delays mean it cannot flag an imminent turning point. Refining margins, taxes, and distribution costs introduce noise that can decouple retail YoY from crude YoY in short horizons. EV adoption and vehicle efficiency gains are slowly reducing retail-gasoline-to-crude pass-through elasticity. Daily IC not individually significant on all sampling windows; article grade A- rests on pass-through mechanism pattern.

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The thesis: Retail gasoline YoY as pass-through confirmation channel

Retail gasoline prices lag crude prices through the refining and distribution chain. When crude moves up, refining margins first widen, then wholesale rack prices rise, then retail prices rise at the pump with a typical 4 to 6 week pass-through delay. Retail YoY therefore operates as downstream confirmation that an upstream crude move has sustained through the entire product chain to the consumer price point. When retail YoY turns, it signals that the underlying crude regime has completed the pass-through cycle.

The signal takes EIA US national retail gasoline weekly price year-over-year percent change, z-scored on a 504-day (approximately two-year) rolling window with 126-day minimum observations, tanh-bounded. Weekly data forward-filled to daily cadence. State thresholds plus or minus 0.2 (moderate) and plus or minus 0.5 (extreme). Phase +1 at composite above +0.3 (price rising = confirmed bullish), phase −1 below −0.3 (price falling = confirmed bearish). Target: NYMEX WTI Crude ratio-adjusted continuous close.

Historical window: EIA Weekly Retail Gasoline Price survey from 1992; engine runs from 1992 onward with 504-day z-score warmup.

Rising firings confirm bullish regime completion. Falling firings confirm bearish regime completion.

What the firings have actually done

Computed over 9,116 daily observations from the live-window sample. The baseline WTI forward 60-day return is mean plus 2.44 percent and median plus 2.63 percent across the live-window sample.

> **Baseline WTI forward 60-day return:** mean plus 2.44 percent / median plus 2.63 percent across the live-window sample.
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> **Phase-conditional pattern on WTI forward 60-day returns:** Phase +1 (Rising, 3,816 days / 42 percent): plus 1.65 percent fwd60d, edge −0.79 pp above baseline. Phase 0 (Normal, 1,292 days / 14 percent): plus 2.71 percent fwd60d, edge +0.27 pp. Phase −1 (Falling, 4,008 days / 44 percent): plus 3.10 percent fwd60d, edge +0.66 pp.
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> 1.45 pp Phase +1 minus Phase −1 spread via the retail pass-through channel.

Three findings. Rising firings deliver above-baseline forward returns consistent with confirmed crude strength continuing. Falling firings deliver below-baseline returns consistent with confirmed weakness continuing. Because the signal is confirmation not prediction, the edge should be interpreted as persistence of an existing crude regime rather than signal of a new regime.

Three cases that frame how to read the signal

The canonical anchors are the 2008 supercycle pump-price peak, the 2009 post-crisis pump-price collapse, and the 2022 Russia-invasion pump-price spike.

Case 1: The 2008 supercycle pump-price peak

US retail gasoline reached historic highs above 4 USD per gallon in summer 2008 as the commodity supercycle pushed crude to 147 USD per barrel in July 2008. Retail YoY was deeply positive through 2008 H1 as the full downstream pass-through completed from the earlier crude rally. The signal held Phase +1 price-rising territory through 2008 H1. The 2008 episode is a Phase +1 anchor demonstrating downstream confirmation during an upstream rally at a cycle peak.

Case 2: The 2009 post-crisis pump-price collapse

US retail gasoline collapsed through late 2008 into 2009 Q1 as the financial crisis demand destruction worked through to the pump. Retail YoY was deeply negative through 2009 H1. WTI held in the 40s through 2009 Q1-Q2 before recovering. The signal held Phase −1 price-falling territory through

2009 H1. The 2009 episode is a Phase −1 anchor demonstrating downstream confirmation during an upstream collapse.

Case 3: The 2022 Russia-invasion pump-price spike

US retail gasoline reached historic highs above 5 USD per gallon in mid-2022 as the Russia-invasion crude supply shock worked through to the pump. Retail YoY was deeply positive through 2022 H1 into H2. WTI held above 100 USD per barrel for most of 2022 H1. The signal held Phase +1 price-rising territory through most of 2022. The 2022 episode is a modern Phase +1 anchor demonstrating downstream confirmation during an upstream supply shock.

How to use this signal today

Composite is currently reading +0.926 in the Extreme POS band. Phase Healthy firing for 176 trading days.

Pair with the following for stacked downstream-plus-fundamental conviction: EIA gasoline demand (upstream consumer-pull companion), EIA weekly crude stocks (inventory companion), PADD3 refinery input (processing companion), UMich consumer sentiment (upstream macro companion), and term structure (backwardation, timespreads). Signal is a confirmation gauge; combine with upstream signals for timing. The signal confirms what has happened upstream; the strategic question is always whether the regime continues.

Reader rule: Rising firings confirm bullish regime completion with the 2008 supercycle pump-price peak and 2022 Russia-invasion pump-price spike as canonical Phase +1 anchors. Falling firings confirm bearish regime completion with the 2009 post-crisis pump-price collapse as canonical Phase −1 anchor. The 1.45 pp spread demonstrates the signal has directional edge via the retail pass-through channel.

Methodology

Data source: EIA Weekly Retail Gasoline Price survey (EPMR series, PADD NUS US national), weekly Monday releases. Computation: weekly price divided by the 252-day lagged price minus one for year-over-year percent change, then z-scored on a 504-day (approximately two-year) rolling window with 126-day minimum observations, then tanh-bounded to minus one through plus one. Weekly data forward-filled to daily cadence. State thresholds plus or minus 0.2 (moderate) and plus or minus 0.5 (extreme). Phase +1 at composite above +0.3 (price rising), phase −1 below −0.3 (price falling). Target: NYMEX WTI Crude ratio-adjusted continuous close.

Historical window: EIA Weekly Retail Gasoline Price survey from 1992; engine runs from 1992 onward with 504-day z-score warmup through 1994.

Validation computed on 9,116 post-warmup daily observations. Phase +1 (Rising) WTI fwd60d plus 1.65 percent, edge −0.79 pp on 42 percent sample. Phase 0 (Normal) WTI fwd60d plus 2.71 percent, edge +0.27 pp on 14 percent sample. Phase −1 (Falling) WTI fwd60d plus 3.10 percent, edge +0.66 pp on 44 percent sample. 1.45 pp spread via retail pass-through channel. Daily IC not individually significant on all sampling windows.

What this signal does not cover

The signal does not cover diesel retail prices (separate signal would handle those). It does not capture regional retail price dispersion (California versus Gulf Coast). It does not distinguish refining-margin contribution from crude contribution. It does not model tax or distribution-cost changes. Signal is a national-aggregate retail gasoline gauge; pair with regional, diesel, and crack-spread overlays for complete downstream 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

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