Aggregated Cross-Country Central-Bank Gold Activity As A Regime Detector

Why aggregating World Gold Council cross-country central-bank holdings changes on a 12-month rolling basis and z-scoring over 60 months produces a regime detector where extremes in either direction coincide with above-baseline gold returns; the June 2015 and October 2025 extreme-reversal cases.

David Stendahl · Market Lab Analytics · November 5, 2026

What this signal is

Central-bank gold activity is lumpy by country. Russia buys twenty tonnes one month and zero the next. Turkey sells ten tonnes during an FX crisis. China discloses accumulation in bursts separated by years of silence. Aggregating cross-country activity on a 12-month rolling basis smooths individual-country lumpiness and reveals the broader official-sector trend.

This signal takes the World Gold Council Financial Transactions Overview (FTO) country-level reporting, computes a 12-month year-on-year change in holdings for each reporting country, sums across all reporters, and z-scores the aggregate on a 60-month rolling window with tanh bounding. A composite near plus one indicates cross-country CB holdings at a 5-year rolling-sum peak. A composite near minus one indicates cross-country holdings at a 5-year rolling-sum trough.

The pattern this signal reveals is unusual. Unlike most direction signals where high readings coincide with above-baseline forward returns and low readings coincide with below-baseline returns, this signal shows a V-shape: both high and low readings coincide with above-baseline gold returns. The Normal middle state underperforms. The 25-year state-conditional means: Phase +1 CB-stress peak plus 1.43 percent; Phase 0 Normal plus 0.59 percent; Phase −1 CB-stress trough plus 1.41 percent. The baseline is plus 1.26 percent.

The interpretation is that extreme CB activity in either direction reflects unusual macro conditions. Extreme buying reflects reserve-diversification waves driven by de-dollarization strategy or post-crisis rebuilding. Extreme selling reflects FX-defense episodes during currency stress. Both conditions themselves drive gold through other channels.

On June 2, 2015 the composite reached its series maximum plus 1.0000 during the Russia-Turkey peak buying window. Gold was at 2,010 dollars per ounce (back-adjusted continuous); it would fall 3.52 percent over the next 60 trading days as the extreme reversed and the China-slowdown narrative

dominated. On October 2, 2025 the composite reached its series minimum minus 1.0000; gold rallied 10.80 percent over the next 60 days as the Fed-pivot and de-dollarization-continuation narratives dominated.

Today the composite reads near plus 0.13, in Normal territory.

Here is the honest reader frame. The Spearman information coefficient of the composite against gold forward 60-day returns is plus 0.01, essentially zero. A linear correlation measure cannot capture non-monotonic state-conditional patterns; the state-conditional analysis is where the regime information lives. Read on for the state-conditional evidence, three signature cases, and the four caveats that mark the limits of the lens.

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How the inputs compose

The World Gold Council publishes the Financial Transactions Overview monthly. The FTO aggregates country-level IMF International Financial Statistics gold-holdings data and WGC supplementary research across roughly 70 reporting countries. For each country the engine computes the trailing 12-month change in holdings in tonnes.

The engine then sums the 12-month changes across all reporting countries each month to produce a cross-country aggregate. The aggregate is z-scored on a trailing 60-month rolling window with 252-day minimum population. The z-score is passed through tanh with scale 1.5 and bounded between minus one and plus one.

The 60-month baseline window captures five years of cross-country CB activity, a span that typically encompasses a full reserve-management cycle. Shorter windows amplified single-country lumpiness after aggregation; longer windows blended across multiple cycles.

The engine also exposes four confirming features: five-day composite velocity, 60-day volatility regime, 60-day correlation with gold daily returns, and 63-day lag-1 autocorrelation.

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What the state-conditional returns have actually done

The gold forward-60-day return baseline (unconditional) is mean plus 1.26 percent, median plus 0.92 percent. Standard deviation 4.98 percent. Percent negative 39.1 percent. State-conditional means below are expressed as edges relative to this baseline.

> **Reference baseline (6,431 gold-aligned forward-60-day windows from January 2001 through November 2026)**
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> Gold forward-60-day return baseline (unconditional): mean plus 1.26 percent, median plus 0.92 percent. Standard deviation 4.98 percent. Percent negative 39.1 percent. Phase 0 source: Z102125 engine parquet joined with COMEX gold back-adjusted continuous closes.

The CB-stress peak state (Market_Phase_Int = +1), 2,494 trading days or 38.4 percent of sample, delivered a mean forward 60-day gold return of plus 1.43 percent. That is plus 0.17 percentage points

above baseline. This is the extreme-buying regime; historical content includes the 2010-2011 post-GFC buying wave, the 2015-2016 Russia-Turkey window, and the 2022-2026 BRICS de-dollarization window.

The Normal state (Market_Phase_Int = 0), 1,309 trading days or 20.2 percent of sample, delivered mean plus 0.59 percent. That is minus 0.67 percentage points below baseline. The transition band carries the weakest state-conditional return.

The CB-stress trough state (Market_Phase_Int = −1), 2,688 trading days or 41.4 percent of sample, delivered mean plus 1.41 percent. That is plus 0.15 percentage points above baseline. This is the extreme-selling regime; historical content includes the 2013-2014 post-tapering compression and the 2020 pre-COVID FX-defense selling window.

The V-shape is the key insight. Both extremes outperform the Normal middle. The Spearman information coefficient of the composite against gold forward-60-day returns is plus 0.01 at N 6,431 because the linear correlation is washed out by the non-monotonic pattern.

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Three cases that frame how to read the signal

Case 1: June 2, 2015 series maximum during Russia-Turkey buying peak

In the first half of 2015 Russia continued its de-dollarization reserve-building program at an accelerated pace. Turkey rebuilt reserves in the aftermath of the 2015 Turkish-lira crisis. Aggregated cross-country holdings climbed sharply on the 12-month rolling sum.

On June 2, 2015 the composite reached its series maximum plus 1.0000. Gold was at 2,010 dollars per ounce on the back-adjusted continuous. Gold fell 3.52 percent over the next 60 trading days as the extreme reversed and the China-slowdown narrative dominated. The case demonstrates that extreme buying is a regime marker, not a direction forecast; subsequent 60-day returns can be negative when the extreme reverses.

Case 2: October 2, 2025 series minimum preceded gold rally

On October 2, 2025 the composite reached its series minimum minus 1.0000 as aggregated cross-country CB activity collapsed on the trailing 12-month basis. The signal was at the floor; gold was at 4,065 dollars per ounce.

Gold rallied 10.80 percent over the next 60 trading days as the Fed-pivot narrative and sustained BRICS de-dollarization dominated. The extreme-selling reading did NOT precede gold weakness; the macro drivers overrode the narrow CB-activity signal. This is the canonical extreme-reversal case on the downside.

Case 3: November 2010 post-GFC CB-buying peak

Through 2009 and 2010 emerging-market central banks accelerated gold accumulation following the Global Financial Crisis. India had purchased 200 tonnes from the IMF in November 2009. Russia continued steady monthly accumulation. China had disclosed its jump to 1,054 tonnes in April 2009.

In November 2010 the composite was near saturation at plus 0.9769. Gold was at 2,203 dollars per ounce on back-adjusted continuous. Forward 60-day gold return was minus 1.57 percent as

the composite peaked; the broader 2010-2011 bull run continued in subsequent windows. Another extreme-reversal pattern on the buying side.

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How to use the signal today

This is a regime detector on a 60-day forward horizon. The signal updates on monthly WGC FTO releases with a 4-to-6-week lag.

Three best uses.

First, as a regime-identification filter. When the composite is in Normal state, CB-activity information carries little gold-directional implication. When the composite is at either extreme (plus 0.6 or minus 0.6), interpret new monthly FTO releases carefully; the extreme may be at a reversal point.

Second, as a complement to the sibling signal. The Z4284 WGC CB Purchases signal uses a direction-style methodology (3-month smooth, 3-year z) and has IC plus 0.12. The two signals on the same underlying data with different methodologies capture different regime aspects: Z4284 is direction-style, Z102125 is regime-detector-style. Pair both for a two-methodology view.

Third, as a multi-mechanism gold framework component. Credit-stress signals (Z4630), sovereign-stress signals (Z2236), and this CB-activity regime detector together span the three main structural-and-crisis mechanisms that drive gold.

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Methodology notes

The composite is tanh of a 60-month rolling z-score of the cross-country sum of 12-month changes in CB gold holdings. The 60-month baseline was chosen to capture a full reserve-management cycle; shorter windows amplified aggregation lumpiness, longer windows blended cycles.

The 12-month rolling change at country level was chosen because it smooths monthly reporting noise while remaining responsive to reserve-regime changes.

The polarity is non-monotonic. Full-sample Spearman IC against gold forward 60-day returns is plus 0.01 (near zero) because the V-shape state-conditional pattern washes out linear correlation measures.

The 2001 start reflects WGC Financial Transactions Overview reliable cross-country coverage onset.

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What this signal does not cover

Four caveats on the signal's reach, each stated plainly.

First, this is a regime-detector signal, not a direction signal. Readers expecting a conventional trend-following lens will be disappointed; the state-conditional pattern is non-monotonic. Use as a regime filter, pair with direction signals.

Second, the near-zero linear IC is the signature of the V-shape. Any single-number signal-quality metric (correlation, R-squared, mean error) will understate the signal's actual regime-detection value because it collapses the non-monotonic pattern to a linear scalar.

Third, as with the sibling Z4284, this is a reported-activity signal only. China PBOC off-ledger accumulation is not captured. Readers using the signal as a China-demand proxy should understand the coverage gap.

Fourth, the sample window is 25 years. The signal has fired through the 2008-2009 GFC, the European sovereign crisis, COVID, and the BRICS de-dollarization era, but has not been observed through earlier regime types. The state-conditional pattern may partly reflect the specific regime mix in sample.

Not investment advice. The analysis in this brief is informational and educational. Signal readings, historical case figures, and empirical statistics are derived from publicly available data (World Gold Council Financial Transactions Overview monthly release; COMEX end-of-day gold back-adjusted continuous settles) 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.