Understanding Copper Market Tightness

Cash–3-Month Spreads, Warehouse Stocks, and a Simple Tightness Index

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This short guide explains how traders read the LME copper cash-3-month spread (“cash–3M”), visible warehouse stocks fit into the story, and how to build a simple, practical tightness index. No prior metals knowledge required.

1) What is the cash–3M spread?

Definition: cash–3M spread = Cash price − 3-month price (USD per tonne).

• Positive cash–3M (cash > 3M) = backwardation → the market pays a premium for metal now

• Negative cash–3M (cash < 3M) = contango → the market is cheaper now than for later deliv

Why it matters: the cash–3M spread is the cleanest daily signal of near-term scarcity or surplus in LME copper. It links directly to the cost/benefit of holding metal, physical premiums, and the returns from rolling nearby positions.

2) Backwardation vs. Contango (intuitive)

Contango: futures > spot. Often reflects storage, insurance and financing costs (“carry”). As time passes, futures prices tend to converge toward spot.

Backwardation: spot (cash) > futures. Often reflects immediate scarcity and a high “convenien yield” to having metal on hand. Spreads reward owners who can deliver now.

Rule-of-thumb linkage: low available stocks ↔ tighter nearby spreads (more backwardation); h available stocks ↔ looser/contangoed spreads.

References for definitions and intuition: Investopedia’s primers on contango/backwardation.

3) Visible stocks, on-warrant vs cancelled warrant

• LME visible stocks are tonnes in LME-registered sheds; they are only a slice of global inventory, but they move quickly and are reported daily.

• On-warrant: metal available for delivery on the exchange.

• Cancelled warrants: metal earmarked for load-out (no longer available).

Mechanics: rises in cancelled warrants or rapid drawdowns in on-warrant stocks tend to tighte nearby spreads (push cash–3M higher). Builds tend to ease spreads.

Recent market reporting often links falling LME stocks with wider backwardation in copper.

4) A simple tightness index using z-scores

Inputs per day: cash–3M spread (USD/t), visible LME stocks (tonnes).

Step A — standardise each series:

z_cash3m = (cash3m − mean(cash3m)) / stdev(cash3m)   (higher = tighter)

z_stocks_raw = (stocks − mean(stocks)) / stdev(stocks)

z_stocks = − z_stocks_raw   (invert so lower stocks = tighter)

Step B — combine:

Tightness index = z_cash3m + z_stocks

Regimes:

> +1 → Tight

−1..+1 → Neutral

< −1 → Loose

Interpretation: higher index = stronger evidence of near-term scarcity.

5) Stocks vs spread: scatter and rolling correlation

Scatter: plot stocks (x-axis) against cash–3M (y-axis). A downward slope is typical: low stocks align with higher (tighter) nearby spreads. Fit a simple line to visualise.

Rolling correlation (optional): compute 30-day correlation between daily Δstocks and Δcash–3M. A negative value supports the tightness narrative (draws coincide with tightening).

6) Practical use: Bias & Invalidator

Bias (example): when Tightness index > +1 and the scatter shows a persistent negative slope maintain a long bias in cash vs 3-month (benefit from backwardation) or be cautious short nearby.

Invalidator (example): if cancelled warrants drop and on-warrant stocks jump (visible availability rises), or the index slips below −1, the tightness thesis weakens—cut or reverse spread risk.

Risk checks: watch dominant positions, warrant flows, SHFE/COMEX arbitrage, and macro grov signals.

7) Worked toy example (numbers for intuition)

Assume: mean(cash–3M)=0, stdev=100; mean(stocks)=200,000 t, stdev=50,000 t.

Today: cash–3M = +120 USD/t → z_cash3m = +1.20.

Today: stocks = 140,000 t → z_stocks_raw = (140,000−200,000)/50,000 = −1.20 → z_stocks =

Tightness index = 1.20 + 1.20 = 2.40 → Tight.

Takeaway: both spread and inventories point the same way; confidence is higher.

8) Glossary

Cash–3M spread: cash price minus 3-month price on the LME.

Backwardation: spot (cash) price above futures; tight nearby market.

Contango: futures above spot; ample supply and/or carry costs dominate.

On-warrant: metal available for delivery on exchange.

Cancelled warrant: metal tagged for load-out (unavailable on exchange).

Convenience yield: benefit of holding the physical metal now (e.g., to meet orders).

Z-score: standardised value = (x − mean)/stdev.

9) Sources & further reading

• Investopedia: “Contango Meaning, Why It Happens, and Backwardation” (definitions and intuition).

• Reuters (June 6, 2025): “Falling LME copper stocks inflate premium for nearby contracts.”

• LME notices & warehouse reports (for daily stocks and warrant flows).

Note: Use primary exchange notices for official definitions and methodologies.