ANNUAL REPORT | SEPTEMBER 2023

MetalMiner Annual Metals Outlook

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> In this report, we've updated our models with new data to provide a current view on what is driving metal prices and what, if any, industrial buying strategies organizations may wish to consider.

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Executive Summary

A Note From the MetalMiner Research Team:

In the East, 2023 began with an auspicious start. China started to unravel zero-COVID, a policy that for years had restricted its economic activity and exacerbated issues with the already dysfunctional supply chain. This led some to speculate that China's reopening would unleash a wave of strong demand and economic growth, especially as Chinese consumers amassed considerable savings during the nearly three years of lockdown policies.

The West, however, faced a far more bearish outlook. The year opened with, at the time, the highest benchmark interest rates in 15 years. While certain aspects of the economy, including unemployment and consumer spending appeared unexpectedly resilient, the manufacturing sector remained in contraction. During January, the ISM Manufacturing PMI dropped to its lowest level since May 2020 at 47.4. This led a number of economists to forecast an H2 recession.

By the second half of the year, however, the global outlook saw a considerable shift. China's economic recovery proved lackluster at best. Its manufacturing sector struggled to remain in growth, youth unemployment stayed concerningly high and property developers and shadow banks struggled to make payments. Amid compounding economic woes and escalating tensions with the West, China opted to stop publishing a number of economic indicators to stem the loss of foreign investments. Meanwhile, the U.S. managed to hold a widely anticipated recession at bay. Although the manufacturing sector remained in contraction, the pace of declines managed to slow from its early year lows. Unemployment held at historically low rates, even amid continued quantitative tightening efforts by the Fed as it worked to cool inflation.

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Executive Summary

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Commodity Markets

Based on international historical analysis, MetalMiner weights the shares of overall price movement of an individual metal as follows:

40% to general market sentiments (commodities)
30% to the sector (industrial metals)
30% to what is going on with the individual metal

Upon closer analysis, MetalMiner has now shifted its understanding of the CRB as it relates to market dynamics and industrial metal prices. Correlational models found no meaningful relationship between industrial metal prices and commodity prices more broadly. The correlation remains strong, however, between the CRB and the U.S. dollar index at over 82% since 2021. Curiously, China FXI shares show an even stronger negative correlation with the CRB at over 91%. Said differently, a falling China FXI index equates to a stronger or rising CRB Index and vice-versa.

Figure 1: CRB Commodity index since 2013

While volatility increased from previous years, the CRB spent the year trading mostly sideways at a historically high range. The index found a bottom in September 2022, still elevated from its historically average trading range, followed by a rebound throughout Q4 2022. While month-over-month price action appeared variable, the index averaged at roughly 293 during the first half of the year. By July, however, higher energy prices helped the index establish a breakout back above the 300 mark. At press time, the CRB sat at its highest level since June 2022 at 326.46.

Commodity Markets

Where to Next for Commodities?

Industrial Metals Market

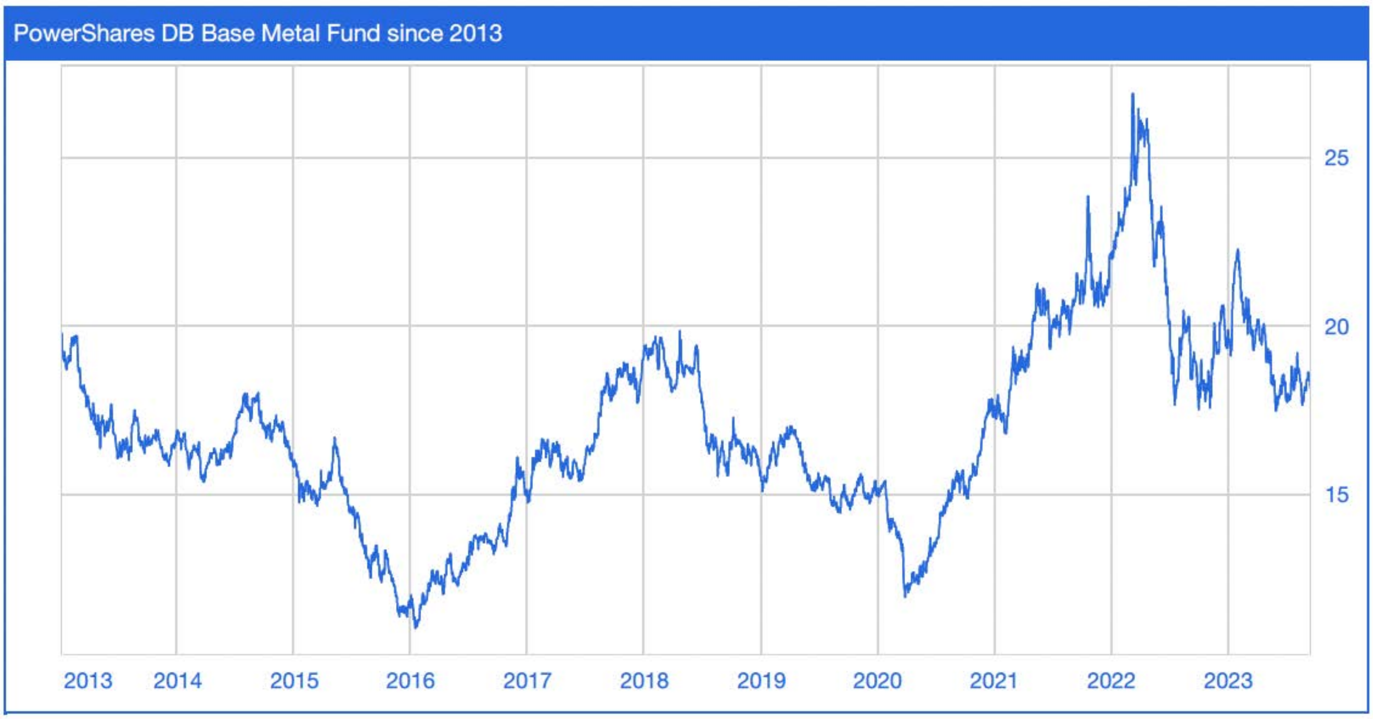


Figure 2: DBB Industrial Metals ETF since 2013

Outlook

2024 Annual Metal Buy Negotiations

Key Price Drivers

1. The U.S. Dollar

USD Dollar Index since 2013

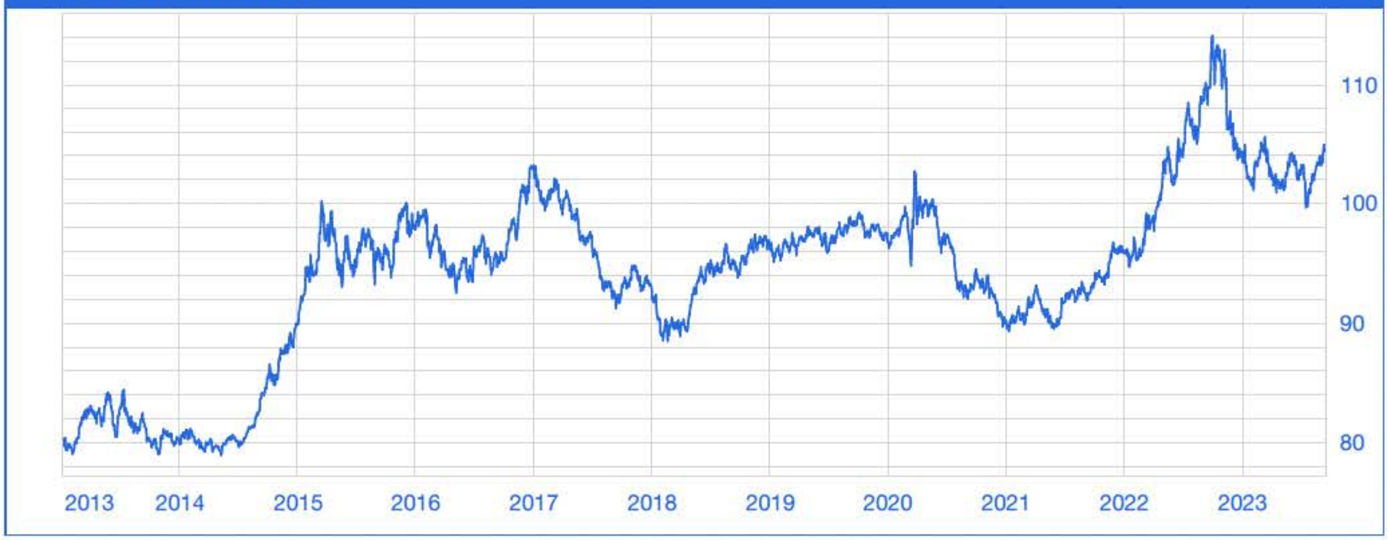


Figure 3: Dollar Index since 2013

CRB Index vs. U.S. Dollar

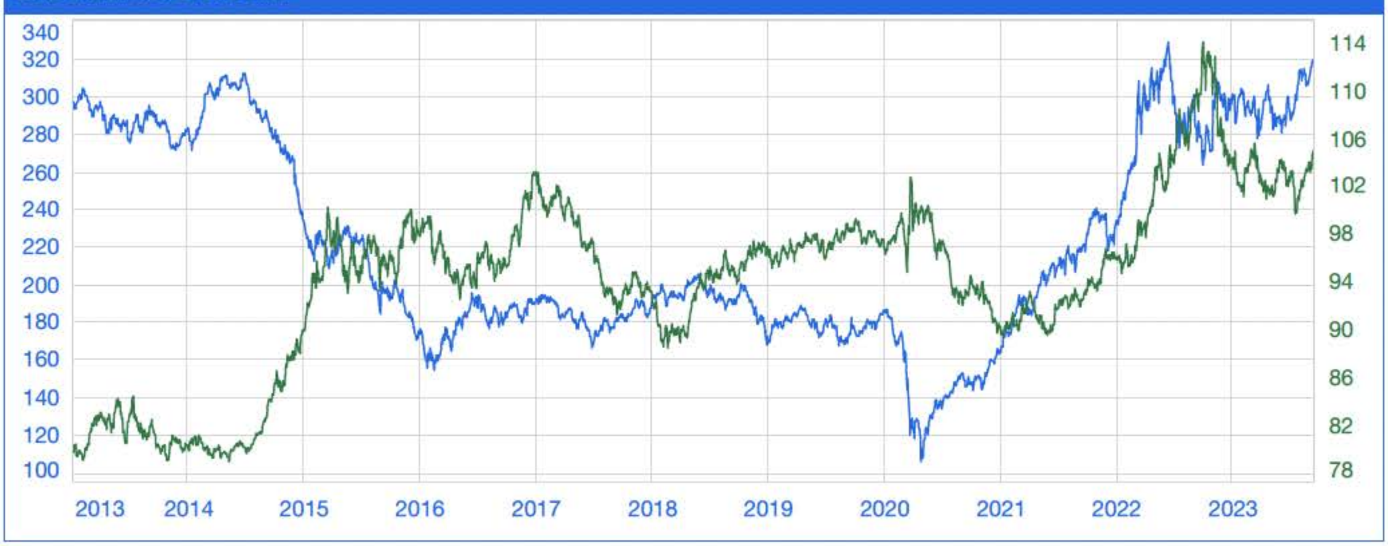
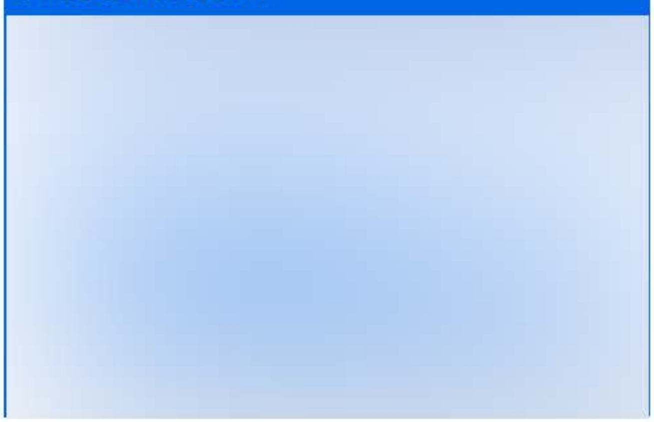


Figure 4: CRB Index vs. U.S. Dollar

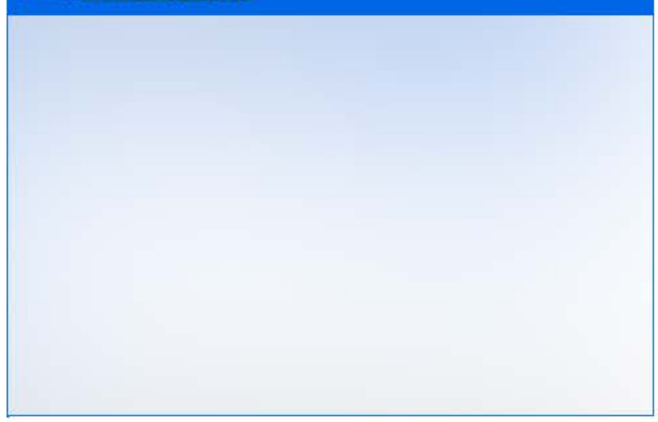
Key Price Drivers

2. China

China's GDP % Growth



China PMI since 2013



Key Price Drivers

China FXI shares since January 2013

Figure 6: China FXI shares since 2013

3. Oil Prices

WTI Crude Oil prices since 2013 (USD/Barrel)

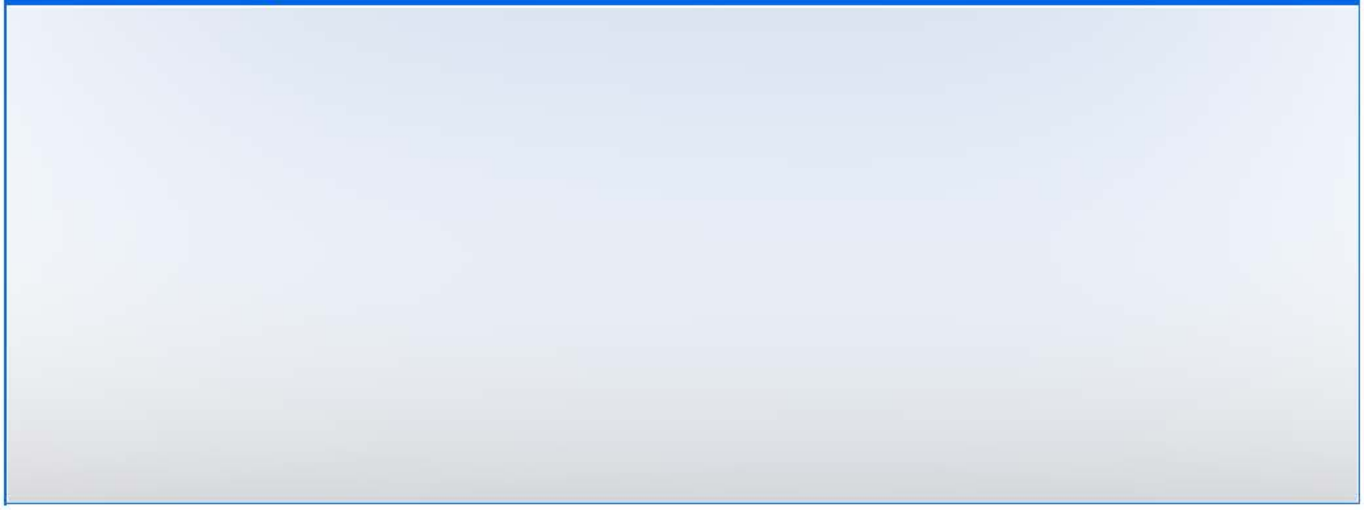


Figure 7: Crude Oil prices since 2013

Key Price Drivers

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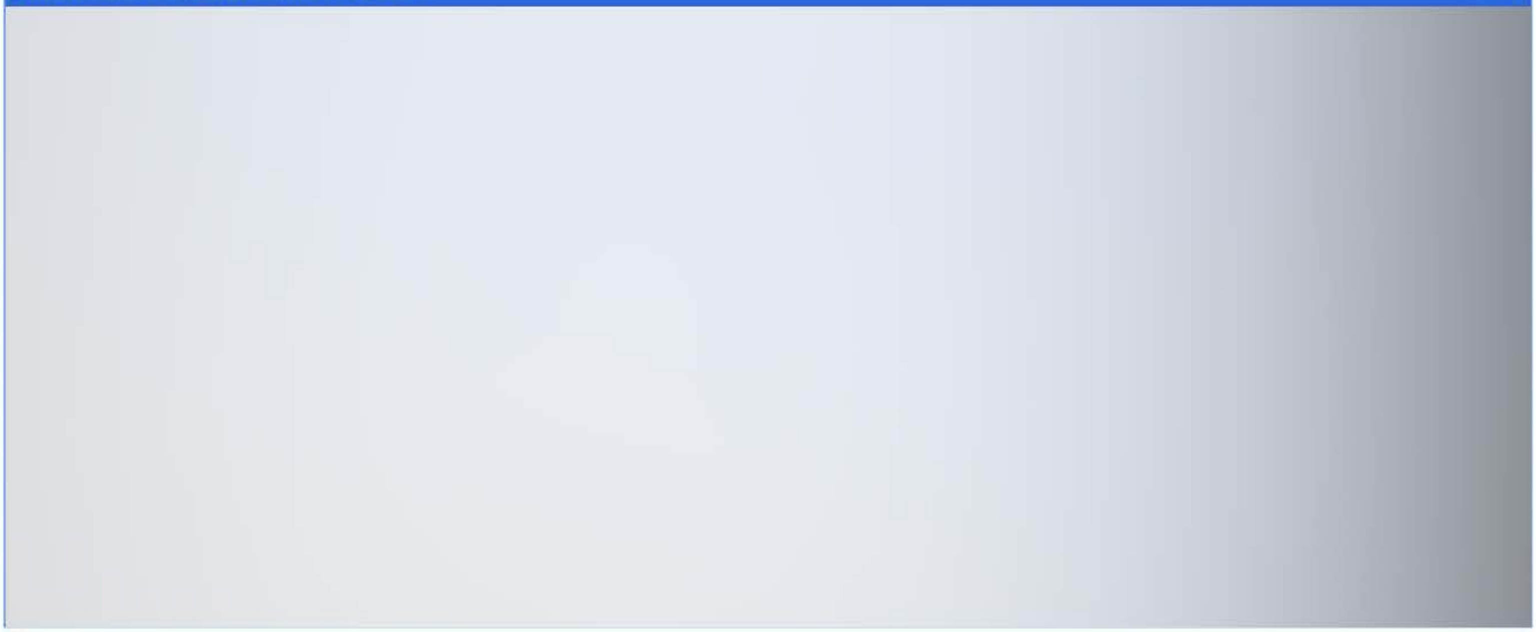
Support/Resistance Levels & Average Prices

Support/Resistance Levels & Average Prices

Aluminum

Al

LME Aluminum: September 18, 2023



KEY POINTS

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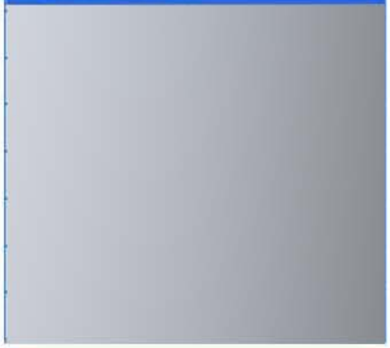
Aluminum Drivers



Support and Resistance Indicator

Industrial Buying Strategy

LME Copper: September 18, 2023

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Copper Drivers

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Stainless Steel/Nickel

Ni

LME Nickel: September 18, 2023

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Lead

Pb

LME Lead: September 18, 2023

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Zinc

Zn

LME Zinc: September 18, 2023

KEY POINTS

- Zinc prices followed the base metal price trend throughout the year. Prices peaked in late January and then saw considerable declines until they found a bottom in late May and began to trade sideways throughout the summer. Prices currently sit 26.53% from their January peak at $2,561/mt.

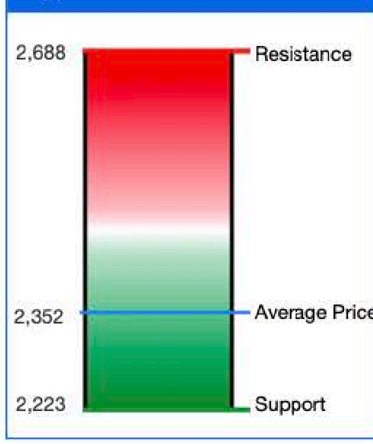
- Zinc mining capacity remains at risk as prices continue to trade around the $2,400/mt mark. Almina-Minas will halt its zinc and lead concentrate operations from Sept. 24 through Q2 2025 amid the profitability crunch. This comes in addition to the production halt at Boliden's Tara mine, Europe's largest mine, which produced 103,000 of zinc concentrate in 2022. Higher global energy prices could pressure producers even further. This will be offset, however, by the current supply surplus within the market. Although they have since seen slight declines, at the beginning of September, LME warehouse inventories sat at their highest level since February 2022, which offers no support to prices.

- Meanwhile, global HDG prices, a major end use for zinc, remain under pressure. Both European and U.S. prices remain bearish, while Chinese prices continue to trade sideways at the global bottom. Although it has yet to, limited consumer demand for HDG could force mills to lower production levels, which would in turn translate to lower zinc demand and prices. Domestically, both the auto and construction sectors remained resilient throughout the year, however, which added support to demand.

Zinc Drivers

1	Global economic slowdown (-)
2	Auto demand pressures (-)
3	Supply constraints (+)
4	Energy prices (+)
5	China stimulus (+)
6	Market surplus (-)
7	U.S. dollar (-)

Support and Resistance Indicator



THE OUTLOOK

Like other base metals, the global economic slowdown remains a risk to prices. Construction-related spending will continue to fuel steel demand in the U.S., and thus zinc, however, it may prove insufficient to offset demand declines within the auto sector, should they come to fruition. High energy prices could add support to prices should it lead to further supply cuts. Although as the market remains in surplus, this will likely limit the impact of those announced thus far. From a technical perspective, the current sideways trend shows no bullish structure, which would indicate a potential breakout. This suggests a risk to the downside remains for zinc prices.

Industrial Buying Strategy

Prices remain in their ranges, which indicates an unclear direction in the long term. Current price action within zinc supports the continuation of a conservative approach. Industrial buying organizations can purchase as needed until a meaningful shift to the upside occurs.

Tin

Sn

LME Tin: September 18, 2023

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HRC

MetalMiner IndX (SM) HRC: September 18, 2023

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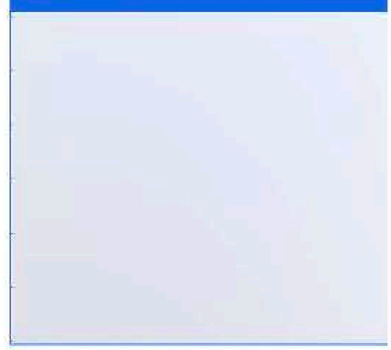
HRC Drivers



Support and Resistance Indicator

Industrial Buying Strategy

CRC

MetalMiner IndX (SM) CRC: September 18, 2023

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MetalMiner IndX (SM) HDG: September 18, 2023

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Plate

MetalMiner IndX (SM) Plate: September 18, 2023

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About MetalMiner

Buy with Confidence

MetalMiner helps buying organizations better manage margins, smooth commodity volatility, generate cost savings and negotiate prices for metal commodities. The company does this through a unique forecasting lens using artificial intelligence (AI), technical analysis (TA) and deep subject matter expertise.

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