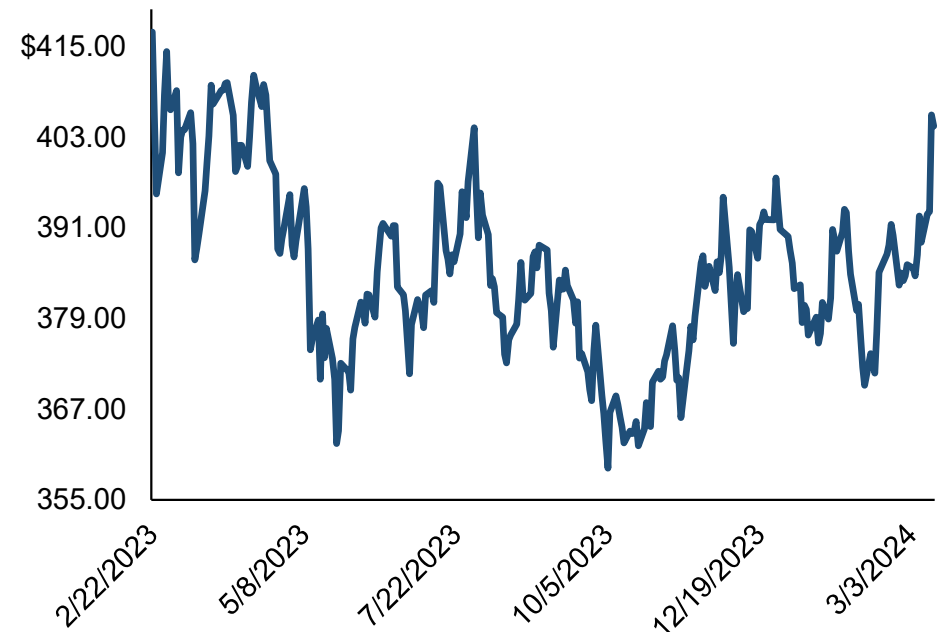




Copper | One-Year Price Chart



Position Details

- Copper | HGU4
- Underlying Price: \$405.00
- Bull Call Spread
- Expiration Date: August 27, 2024

Metals Sector

Analyst
Sougi Akurathi
Sou.akurathi@gmail.com

President
Phil Sullivan
philsullivan10@gmail.com

Vice President
Owen Perry
owenperry0429@gmail.com

Chief Investment Officer
Adi Wodeyar
adiwodeyar@gmail.com



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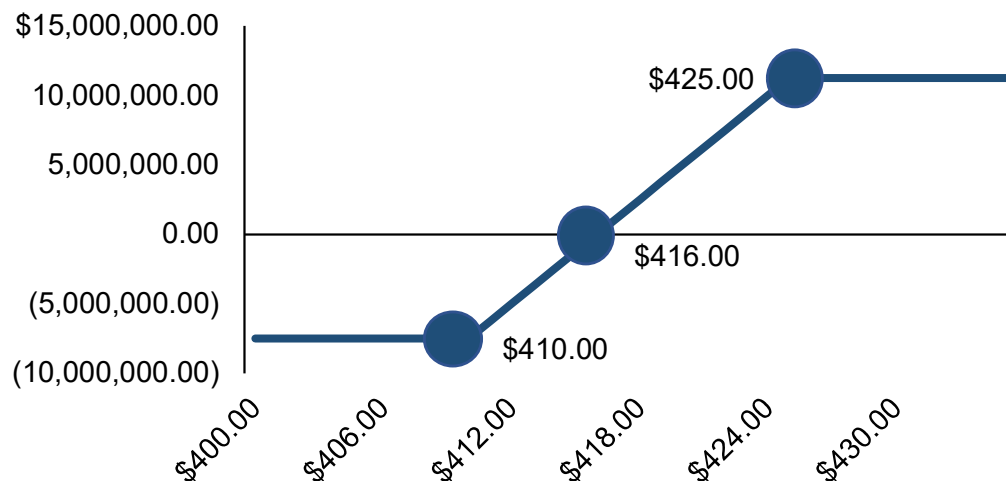
I. Product & Position Overview

Product & Position Overview

Product Description

- **Copper**
 - Copper is a naturally occurring metal that is found in its pure metallic state. It has technological, industrial, and luxury purposes. Copper also has historically acted as a future indicator for the economy and usually trades positively with it
- **Major Countries Involved:**
- **Producers:**
 - Chile | 5.00 mm T
 - Peru | 2.60 mm T
 - DRC | 2.50 mm T
- **Consumers:**
 - China | 14.08 mm T
 - United States | 3.8 mm T
 - Chile | 2.4 mm T

Payoff Diagram



Trade Breakdown

- **Bull Call Spread**
 - This strategy benefits from relatively bullish price movements in the underlying asset
- **Setup**
 - We Buy – 50.00 \$410.00 Calls | HGU4
 - We Sell – 50.00 \$425.00 Calls | HGU4
 - Max Profit: \$11,250,000.00
 - Max Loss: (\$7,500,000.00)
- **Expiration**
 - Date: August 27, 2024

Exit Strategy & Potential Hedge Strategy

- **Bull Base & Bear Case**
 - **\$427.00 / \$415.00 / \$408.00**
 - Breakeven – \$416.00
- **Methodology**
 - The Metals Sector expects a ~3.66% increase in the price of the underlying before the expiration date
- **Hedge Strategy**
 - If the underlying price were to decrease unexpectedly, the Sector would look to reverse trade in this situation



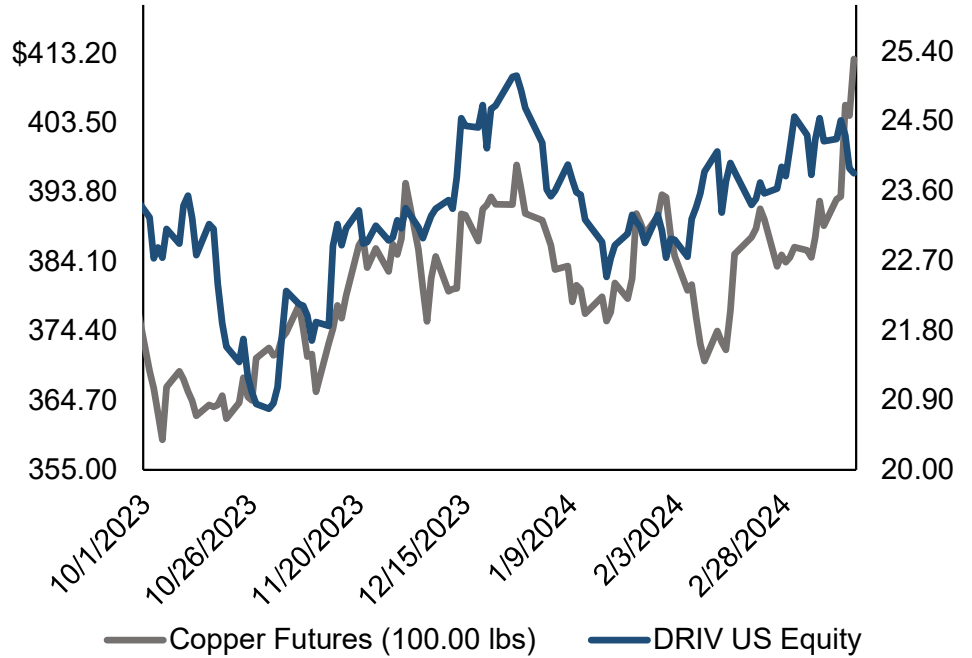
II. Macroeconomic Thesis

Macroeconomic Thesis

Macroeconomic Summary

- **Reduced Chinese Production Tightens Supply**
 - Amid supply concerns, top Chinese smelters agreed to halt Copper production, causing Chinese Copper to increase ~10.00%
 - The London Metal Exchange gained a 1.20% price increase due to traders expecting bullish movements in light of supply concerns from other countries, which were then exasperated by Chinese production cuts that were announced in early 2Q2024
 - Investment funds flip net LME short positions due to excitement for anticipated price hikes
- **New Surge in Electricity Demand Encourages Copper Use**
 - Increasing global demand for household electricity after decades of stagnation pushes for the establishment of more data centers and powerplants in the United States
 - Interest in cryptocurrencies also further pushes demand and results in electricity-hungry data centers, with data centers consuming 6.00% of all electricity in the U.S., according to 2026 projections, which is a sharp jump from the current 4.00% usage
 - 2023 projections for energy demand doubled from 2022 expectations to 564.00 k gigawatts
- **EV Demand Continues to Rise Despite Tesla Backlash**
 - As Tesla faces hesitancy from customers, the EV market remains strong as electric vehicles accounted for 7.80% of registration of new vehicles in January, rising more than 2.00% from 2022
 - Chinese EV markets are thriving and are looking to take over market share. Current price wars within the Chinese EV market persist, with BYD releasing a car for ¥89,800.00 (\$12,507.00 USD), creating excitement

Copper Futures (100.00 lbs) vs. U.S. EV Equity



Market Pros & Cons

- Harsh summer weather predictions to increase electricity usage
- New home building expected to increase in 2024
- Decreased Chinese industrial demand due to real-estate crisis
- Delayed electric vehicle plans from major U.S. automakers



III. Risk Analysis

Risk Analysis

Directional & Magnitude Risk

- **Delta Analysis**

- The Delta value for this trade is 0.0706
- For every \$1.00 change in the underlying asset, the contract will gain or lose \$0.0706
- The Delta has a low value due to the long and short positions of the trade offsetting each other, creating an almost negligible Delta, and increases as the underlying value approaches the breakeven

- **Gamma Analysis**

- The Gamma value for this trade is 0.000042
- Gamma has a small impact on this trade, and causes Delta to change 0.000042 for every \$1.00 change in the underlying

Implied Volatility Risk

- **Vega Analysis**

- The Vega value for this trade is 0.0099
- The implied volatility for this trade is 30.00%, as the trade is long volatility and benefits from volatility higher than the projected volatility of 27.00%. As impending rate cuts approach, the volatility is high for this product due to the trade's close association with the health of the economy
- The Vega is positive and at its highest value in-between the two strikes; therefore, the trade benefits from a rise in volatility between the strikes of \$410.00 and \$425.00

Time Risk

- **Theta Analysis**

- The Theta value for this trade is (0.0706)
- The Theta value is negative due to the OTM position the trade holds, as the underlying value is currently under the lower strike price and has a small chance of ending ITM
- Theta will become positive as the underlying is above the breakeven value and is ITM, so that time decay acts in favor

Interest Rate Risk

- **Rho Analysis**

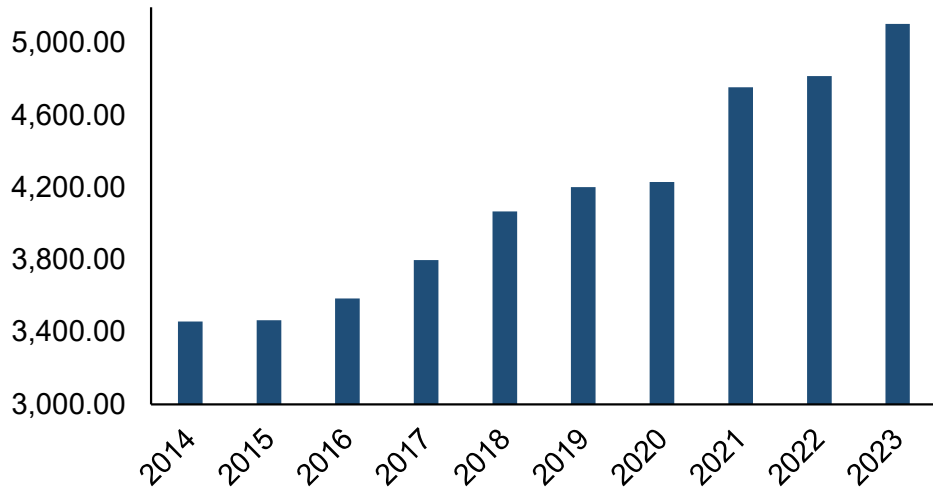
- The Rho value for this trade (0.0258)
- The value of Rho is ~0.00 due to the long and short positions of the trade offsetting each other
- The risk-free interest rate has little impact on the trade



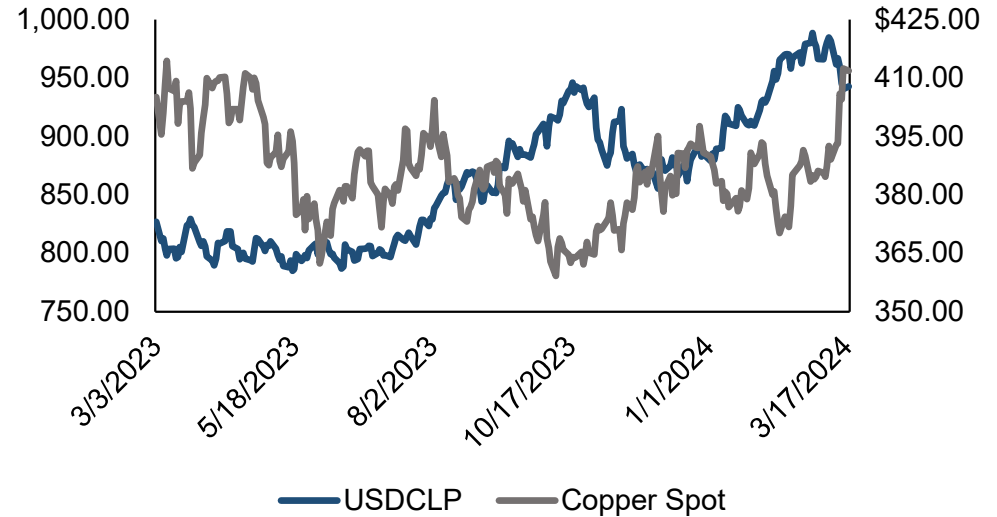
IV. Technical Bias & Fair Value

Technical Bias & Fair Value

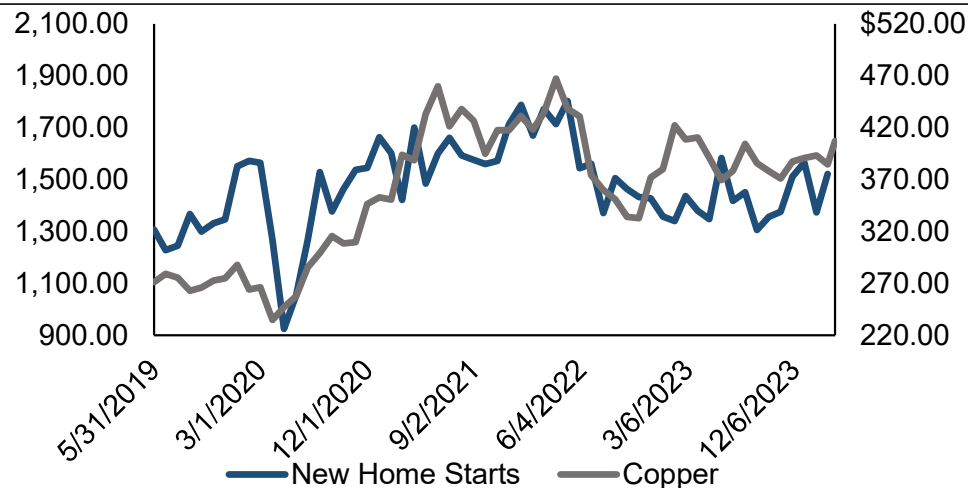
Chinese Power Generation (bb kWh) | Ten-Year Chart



USDCLP vs. Copper Spot Price | One-Year Chart



New Home Starts (in thousands) vs. Copper | Five-Year Chart



Synopsis

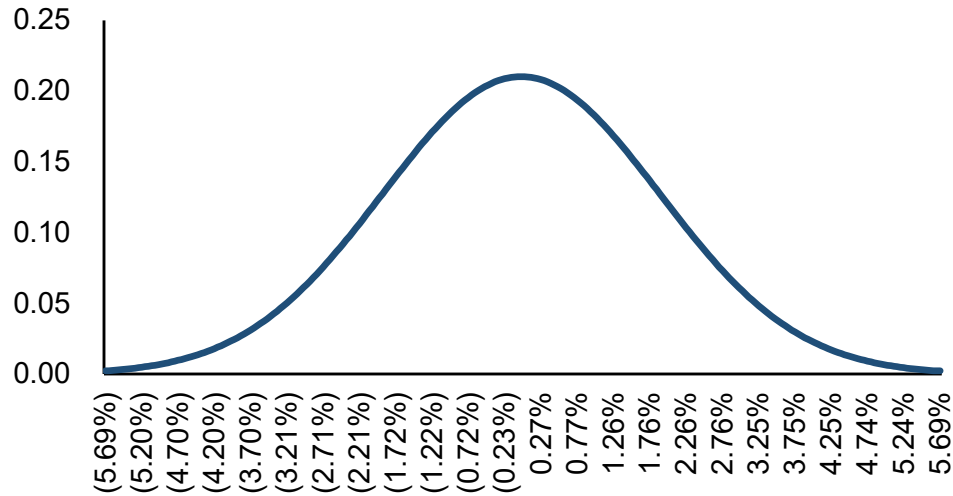
- China, as the biggest consumer of Copper, plays a large role in the demand; therefore, also the price of the industrial metal. As their power generation has increased significantly in the past ten years, the trend of China producing more power each year is a positive indicator of the demand for industrial metals
- The inverse relationship between USDCLP and Copper price is due to the metal's impact on the Chilean economy. As the biggest producer, the Chilean Peso performs well if Copper prices are increased globally, which then causes USDCLP to trade down
- New homes have faced a rough market in the past five years but the demand for Copper in the United States has a direct correlation with the price of the metal. As more homes are being built, the price of Copper increases due to increased demand in the United States



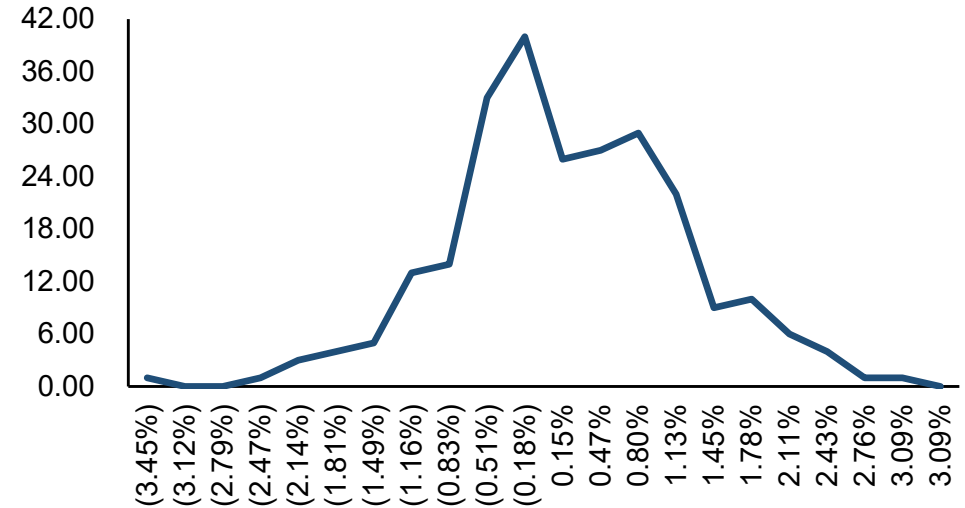
V. Volatility Analysis

Volatility Analysis

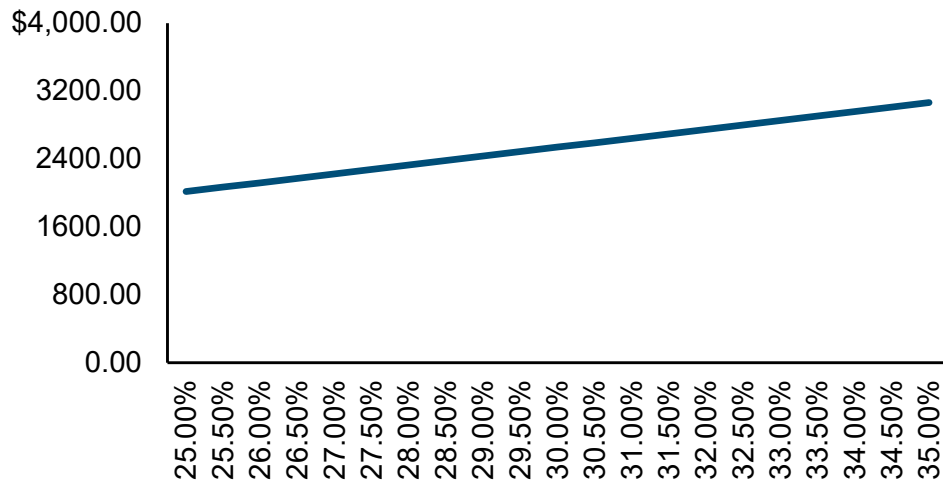
Expected Theoretical Daily Return Distribution



Historical Daily Return Distribution



Position Volatility Sensitivity



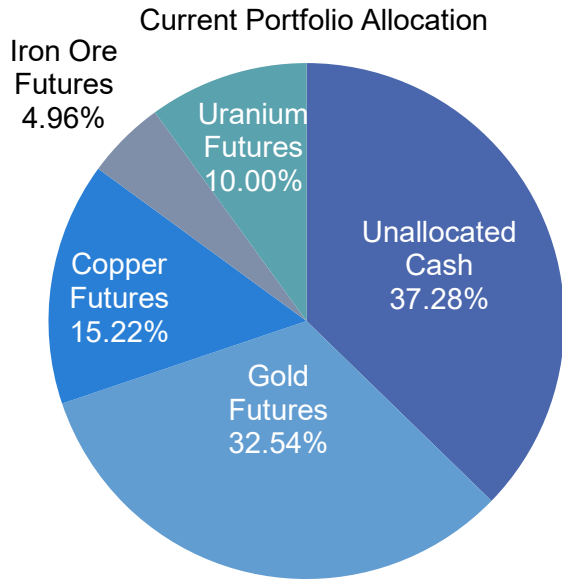
Synopsis

Asset Description	Option Premium
Theoretical Long Put	\$0.28
Actual Long Put	\$0.26
Theoretical Short Put	\$0.04
Actual Short Put	\$0.03
Theoretical Long Put Adj. for DV1	\$28.00
Actual Long Put Adj. for DV1	\$25.75
Theoretical Short Put Adj. for DV1	\$4.00
Actual Short Put Adj. for DV1	\$3.00
Theoretical Edge (LP) Assuming 100.00 k Contracts	\$14,062.50
Theoretical Edge (SP) Assuming 100.00 k Contracts	(\$6,250.00)
Total Theoretical Edge	\$7,812.50



V. Capital Allocation

Capital Allocation



Transaction Summary		
Position Change		
Ticker	Contracts	Allocation
Gold Futures	0	\$0.00
Copper Futures	0	\$0.00
Iron Ore Futures	0	\$0.00
Copper Bull Call Spread	+ 50	7,500,000.00
Allocation Change		7.5mm

