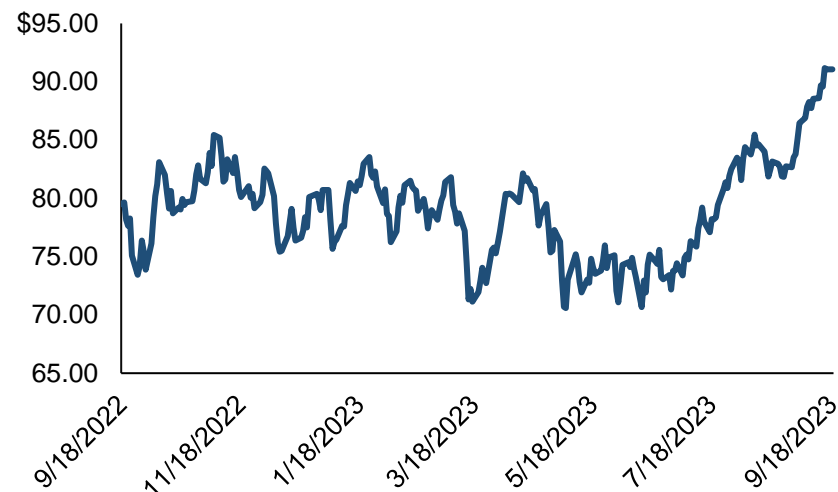




Brent crude oil | 1-Year Price Chart



Position Details

- Brent Crude Oil | COG4
- Underlying Price: \$91.15
- Skip Strike Butterfly with Calls
- December 21, 2023

Energy Sector

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- V. Capital Allocation



I. Product & Position Overview

Product & Position Overview

Product Description

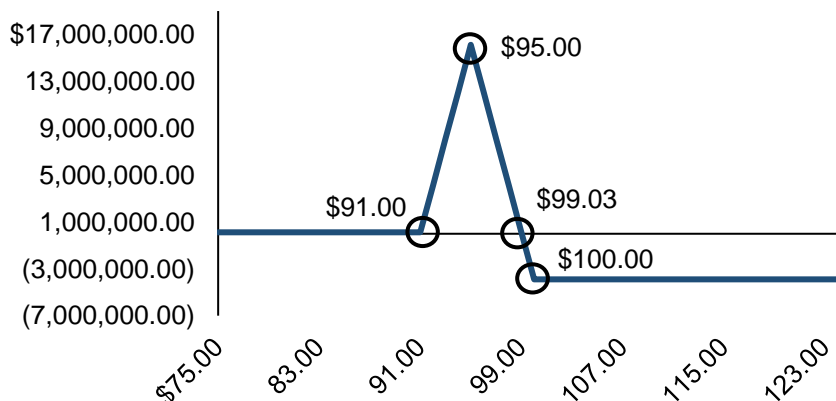
- **Brent Crude Oil**

- Brent Crude is waterborne crude oil extracted in the North Sea that tends to trade at a premium to other types of crude oil due to its low sulfur content and storage qualities
- Crude oil prices are determined by global supply and demand. OPEC+, a union of 13.00 oil-producing countries, heavily influences the price of Brent Crude. Brent Crude is considered the international benchmark for Crude oil, and it is traded on the U.K. Intercontinental Exchange (ICE)

Major Countries Involved

Exporters	Importers
• U.S. 16.00%	• China 15.00%
• Saudi Arabia 12.00%	• U.S. 12.00%
• Russia 11.00%	• India 9.00%

Payoff Diagram



Trade Breakdown

- **Skip Strike Butterfly with Calls**

- This trade will reach max profit from moderately bullish price movements in the underlying. Extremely bullish movements will lead to a max loss. Bearish movements will result in a small collection of premium

- **Setup**

- We Buy – 4.00k ITM \$91.00 Calls | COG4
- We Sell – 8.00k OTM \$95.00 Calls | COG4
- We Buy – 4.00k OTM \$100.00 Calls | COG4

- **Expiration**

- Date: December 21, 2023

Exit Strategy & Potential Hedge Strategy

- **Bull Base & Bear Case**

- **\$95.00 / \$93.00 & \$97.00 / \$100.00**
- Breakeven – \$99.03

- **Methodology**

- The Sector believes that the underlying will benefit from bullish price movements up to the \$95.00/Bbl resistance point and no further

- **Hedge Strategy**

- This strategy allows us to pick a certain price point where we can achieve max profit. In the case of extremely bullish movements, the Sector will look to reverse trade



II. Macroeconomic Thesis

Macroeconomic Thesis

Macroeconomic Summary

• Reduced Global Oil Production and Supply

- Saudi Arabia and Russia recently pledged to continue oil production cuts of 1.30 mm Bbl/d until December
- OPEC, the IEA, and the EIA all announced that they are predicting a market deficit for 4Q2024 due to the extended supply cuts adding to global supply concerns
 - The IEA predicts that oil output from top shale oil-producing areas is on track to decline for a third straight month to around 9.40 mm Bbl/d in October

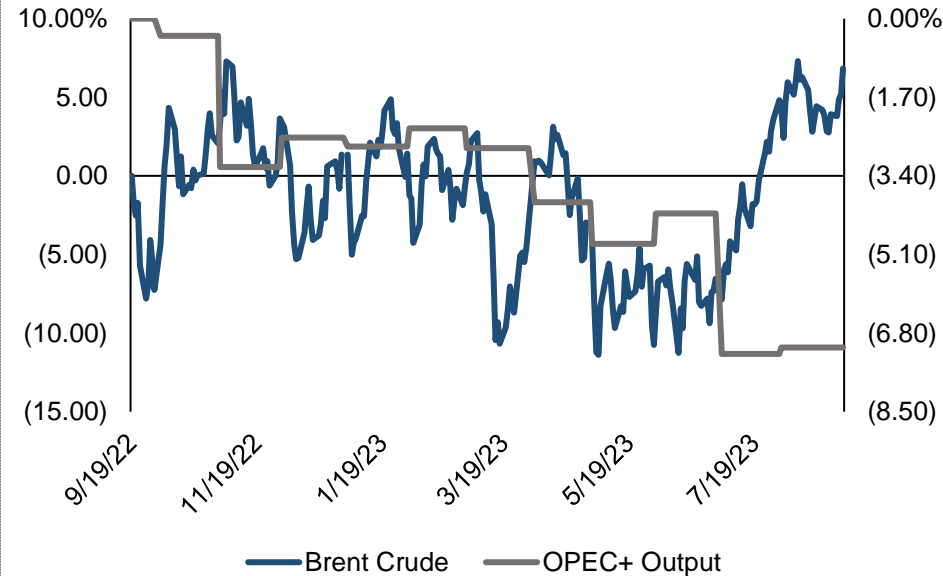
• Economic Data Reflects a Strong U.S. Economy

- The Fed expects to see stronger economic growth, lowering unemployment, and the reduction of core inflation
 - FOMC projections have Core PCE finishing the year at 3.70%
- U.S. GDP projections rose from 1.00% to 2.10% in 2023 and 1.10% to 1.50% in 2024, spurring oil demand
- The LFPR increased to 63.80%, a 0.20% m/m increase

• Limited Demand from Stagnant Chinese Economy

- China's recent efforts to turn their economy around are clouded by decreasing affordability for consumers
 - The Chinese property sector worsened in August with falling home prices, property investment, and sales, despite new supportive policies
- NBS Manufacturing PMI rose from 49.30 in July to 49.70 in August, contracting for a fifth straight month

Brent Crude vs OPEC+ Output | 1-Year Percent Change Chart



Market Pros & Cons

- Stagnant Indian crude oil imports
- Russia implements export duty on oil products
- Sustained oil prices force the Fed to hike in November meeting
- Continued appreciation of the USD



III. Risk Analysis

Risk Analysis

Directional & Magnitude Risk

- **Delta Analysis**

- The Delta value for this trade is (0.01079)
- Theoretically, for every \$1.00 change in the underlying asset, the options contracts will gain or lose \$0.01079
- The \$91.00 and \$100.00 call both have a positive Delta while the \$95.00 call has a negative Delta

- **Gamma Analysis**

- This trade has a Gamma value of (0.00413)
- Due to the nature of the butterfly, there will be a high Gamma event at the peak. As we approach max profit there will be a positive Delta, and Gamma will be high. If the underlying passes the \$95.00 strike, Delta will still be high, but will be negative

Implied Volatility Risk

- **Vega Analysis**

- The trade has a Vega value of (0.02299)
- Implied volatility input for the trade is 26.00%
- Since the underlying for the trade is slightly ITM, the Sector is taking a short position as we want to move closer to our \$95.00 strike then stop. In the case that the underlying moves OTM, we will want volatility to increase
- The skip strike butterfly with calls is best used when volatility is forecasted to decline

Time Risk

- **Theta Analysis**

- This trade has a Theta value of 0.01170
- Because the option is slightly ITM, Theta decay will positively influence this trade if the underlying is at or near our \$95.00 strike
- As we move closer to the expiration date, the option will have a less chance of moving OTM.
- If the option move closer to out \$91.00 or \$100.00 calls, the Theta value will turn negative as expiration approaches

Interest Rate Risk

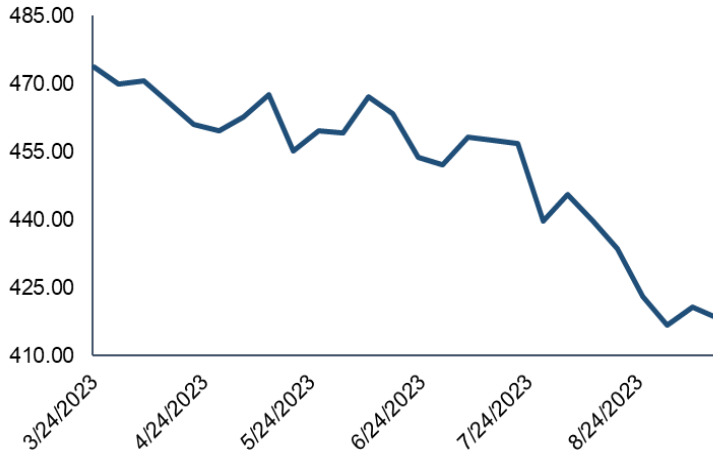
- **Rho Analysis**

- The Rho value for this trade is (0.00060)
- The trade's premium received is greater than paid resulting in a net credit. Since this trade consists of three separate call options which generally rise in price with interest rates, we will benefit from an increase in the risk-free rate
- This positions Rho value is minimal as interest rate increases will have little influence on the price direction of the underlying

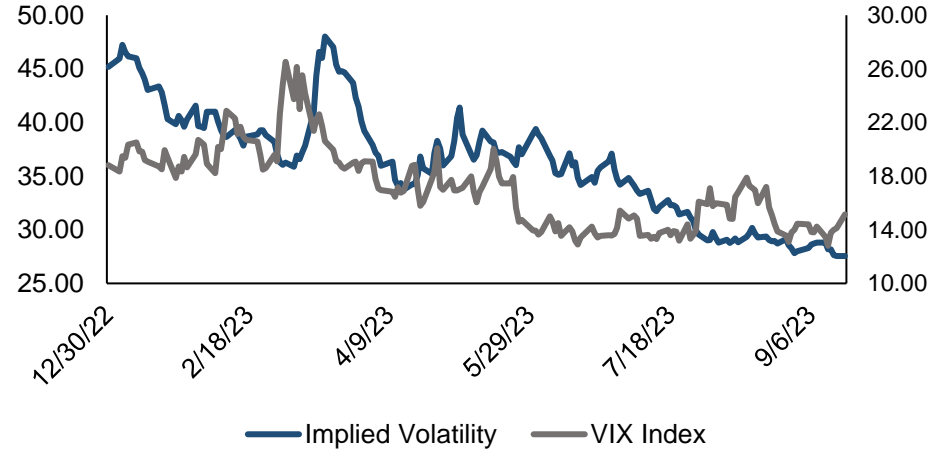


IV. Technical Bias & Fair Value

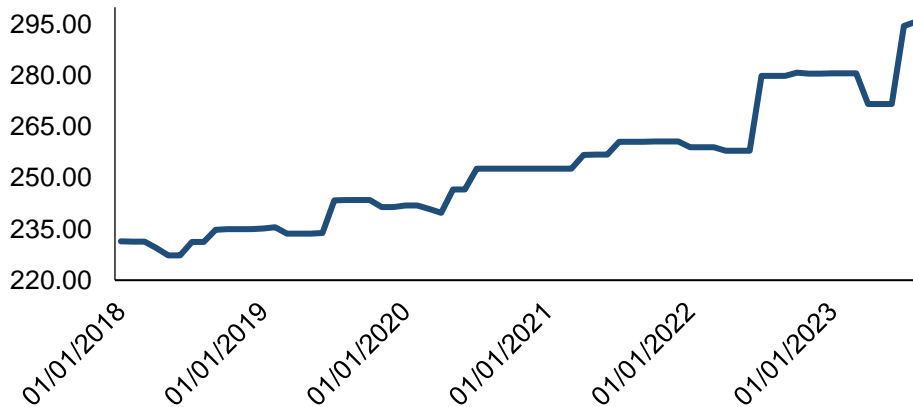
U.S. Crude Oil Total Inventory in Million Bbl/d | Six-Month Chart



Brent Crude Implied Volatility vs VIX Index | YTD Chart



PPI: Pipeline Transportation of Crude Oil | One-Year Chart



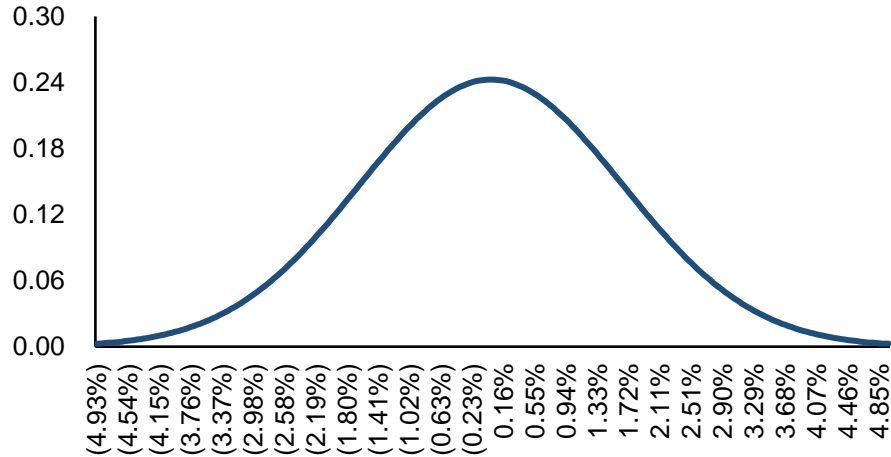
Synopsis

- Crude oil inventories in the U.S. have been reduced considerably due to sustained economic activity. Inventories are consistently being reduced. For the week ending September 15, we saw a net draw of 2.90 mm Bbl bringing the total to 418.50 mm Bbl. This is 3.00% lower than the 5.00-year average for this time of year
- The implied volatility of Brent Crude tends to track a similar path as the VIX Index, which depicts a slow decline in volatility due to stability of global economies. As the Sector forecasts a decline of fear in global energy markets, we believe this trend will continue
- The cost of pipeline transportation has been steadily increasing over the past few years, further pushing inflationary pressures on oil prices

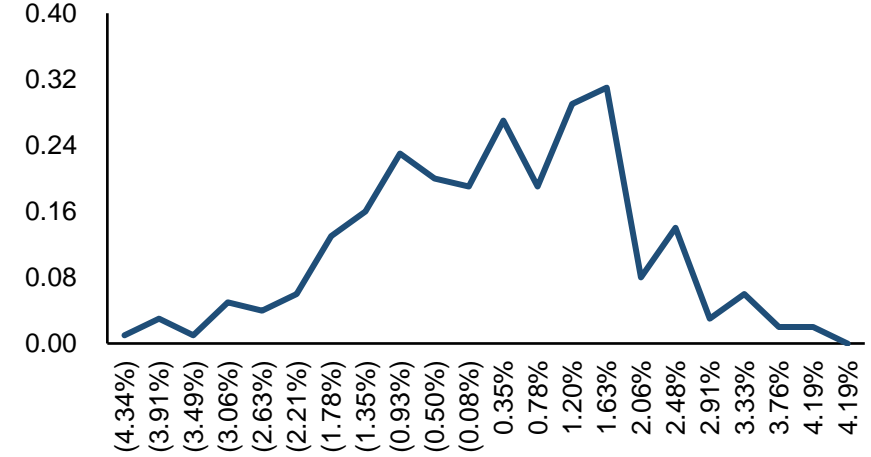
V. Volatility Analysis

Volatility Analysis

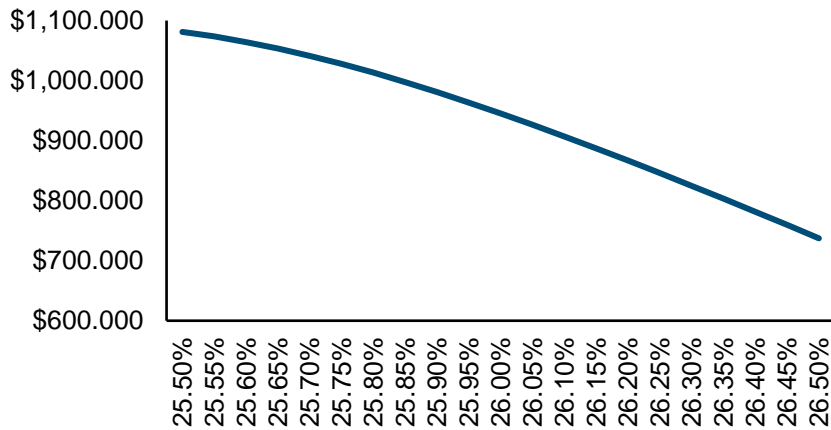
Expected Theoretical Daily Return Distribution



Historical Daily Return Distribution



Position Volatility Sensitivity



Synopsis

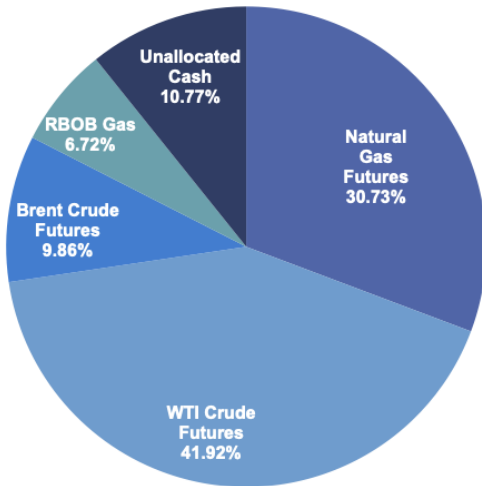
Asset Description	Option Premium
Theoretical Long Call	\$1.3866
Actual Long Call	\$5.0300
Theoretical Short Call	\$1.3785
Actual Short Call	\$3.4500
Theoretical Long Call	\$1.3688
Actual Long Call	\$1.8400
Theoretical Long Call Adj. for DV1	\$138.6633
Actual Long Call Adj. for DV1	\$503.0000
Theoretical Short Call Adj. for DV1	\$137.8541
Actual Short Call Adj. for DV1	\$345.0000
Theoretical Long Call Adj. for DV1	\$136.8753
Actual Long Call Adj. for DV1	\$184.0000
Theoretical Edge (LC) Assuming 100.00 k Contracts	(\$1,457,346.6657)
Theoretical Edge (SC) Assuming 100.00 k Contracts	\$1,657,167.3715
Theoretical Edge (LC) Assuming 100.00 k Contracts	(\$188,498.8083)
Total Theoretical Edge	\$11,321.8974



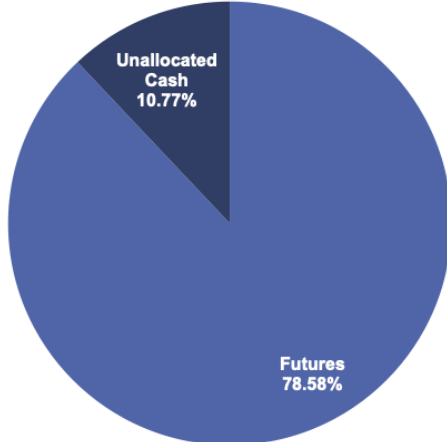
V. Capital Allocation

Capital Allocation

Current Portfolio Allocation

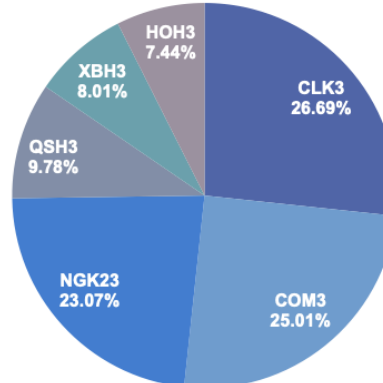


Current Position Allocation

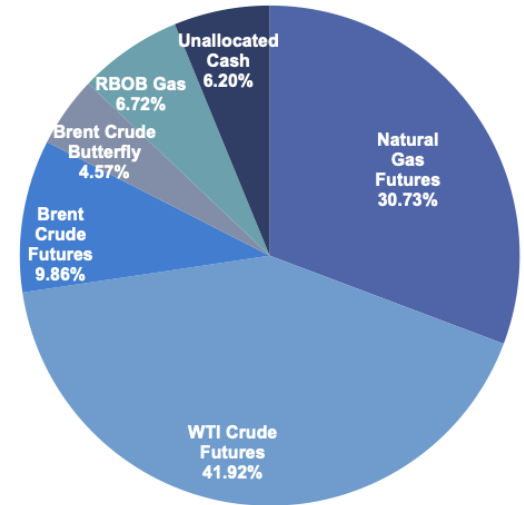


Transaction Summary		
Ticker	Position Change	
	Contracts	Allocation
Brent Crude Futures	0	\$0.00
Natural Gas Futures	0	\$0.00
WTI Crude Futures	0	\$0.00
RBOB Gas	0	\$0.00
Brent Crude Butterfly	+ 16000	\$3,880,000.00
Allocation Change		(\$3,880,000.00)

Benchmark Allocation



Proposed Portfolio Allocation



Proposed Position Allocation

