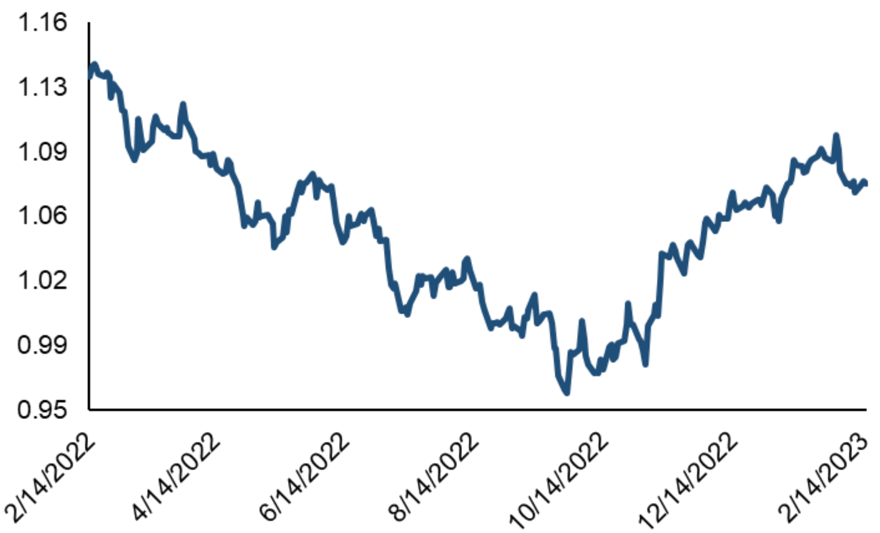
The Asset Management Group

Pennsylvania State University

AMG
PENNSYLVANIA STATE UNIVERSITY

EURUSD | One-Year Price Chart



Position Details

- Euro/US Dollar Spot Exchange Rate | EURUSD
- Underlying Price: 1.0736
- Bull Call Spread
- Expiration Date: August 18th 2023

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I. Product & Position Overview

Product & Position Overview

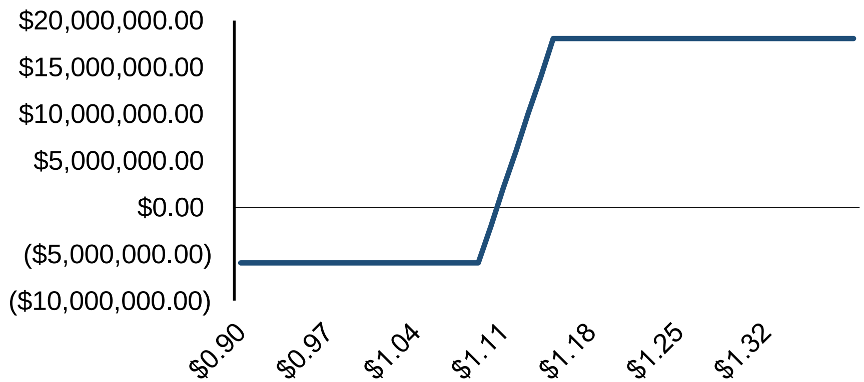
Product Description

- The EUR/USD pair tracks the spot exchange rate between the two currencies, illustrating the amount of USD is needed to buy a Euro
    - The EUR/USD is the most commonly traded currency pair on the foreign exchange market, since it represents a combination of the two largest economies in the world
    - Frequent occurrences that shift the EUR/USD pair range from unemployment data, interest rates changes from the Fed or the ECB and treasury yield movements
- **Key Countries**
    - France
    - Italy
    - Finland
    - Germany
    - Spain
    - United States

Trade Breakdown

- **Bull Call Spread**
    - The Sector will profit from bullish movement of the underlying
- **Setup**
    - We Buy – $400.00 mm OTM $1.09 | EURUSD
    - We Sell – $400.00 mm OTM $1.15 | EURUSD
- **Expiration**
    - Date: August 18th, 2023

Payoff Diagram



Exit Strategy & Potential Hedge Strategy

- **Bull Base & Bear Case**
    - **$1.1500** / **$1.1200** / **$1.0800**
    - Breakeven – $1.1049
- **Methodology**
    - The Sector aims to profit from ~ 6.00% bullish movement in the underlying towards the high strike
    - Max Loss: ($5,948,954.46)
- **Hedge Strategy**
    - In the event of adverse price movement, the Sector will sell Euros and purchase USD

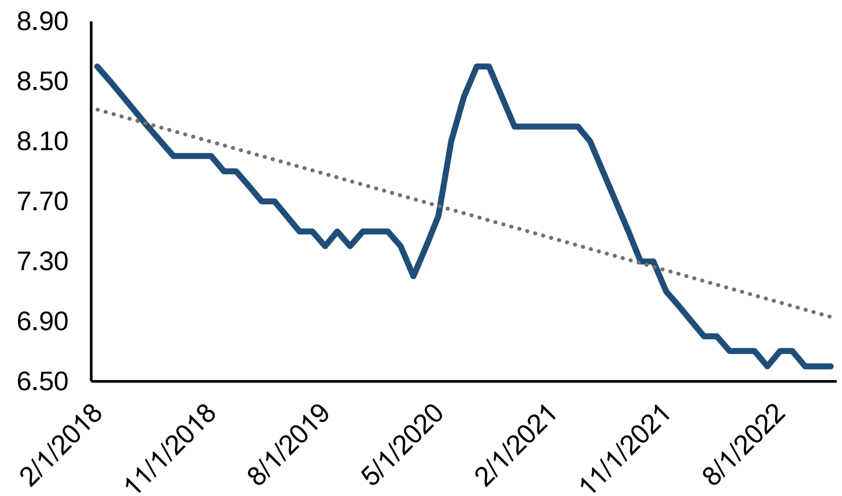
II. Macroeconomic Thesis

Macroeconomic Thesis

Macroeconomic Summary

- **ECB's Slow Inflation Response**
  - Euro Area inflation numbers reached 8.78% before the ECB made any changes to interest rates
    - ECB started raising rates 4 months after the Fed and many other central banks around the world despite seeing similar inflation figures
  - Eurozone inflation hit 10.62% m/m in October 2022 and remains at a projected 8.50% in January 2023 despite the ECB raising rates to currently 3.00%. The ECB will have to continue raising rates to strengthen its currency
- **Tight Labor Market**
  - Eurozone unemployment is at lowest point this decade at 6.60%, with its previous low in March 2008
    - ECB is using these numbers to gain confidence taking hawkish approach moving forward. Experts forecast that the ECB can hike rates up to at least 375.00 bps before the summer
  - Monetary policy tightening in the near future will force European corporations to lay off workers
- **Eurozone Energy Crisis**
  - Stimulus packages were released to keep GDP growth afloat in Europe to respond to the energy crisis
    - The lagging effects of pumping new money into the economy has created increased possibilities of a longer rate hike cycle from the ECB
  - Russia shut off its main gas artery to Europe, the Nord Stream 1 pipeline last September, exacerbating gas and energy resources spiraling inflation across the eurozone

Eurozone Unemployment Rate | Five-Year Chart



Market Pros & Cons

- Household credit growth increase in Europe
- The Fed hits target rate in early summer
- Winter season spurs gas and energy prices in the short term
- Continued halted food exports to Ukraine & Russia fuel food prices

III. Risk Analysis

Risk Analysis

Directional & Magnitude Risk

- **Delta Analysis**
  - The trade has a net Delta of $127.08 mm
  - The Delta of the bought calls were 0.45 and the sold calls were 0.13 making it net positive
- **Gamma Analysis**
  - The trade has a Gamma of $10.86 mm
  - For every one big figure change, the delta would gain or lose $10.86 mm

Time Risk

- **Theta Analysis**
  - The trade has a Theta (17.94 k)
  - For every one day that passes with no change in the underlying, the trade would lose $17.94 k

Implied Volatility Risk

- **Vega Analysis**
  - The trade has a Vega of 500.54 k
  - If volatility changes 1.00%, the premium will go up by the value of Vega
  - EUR/USD implied volatility is ~7.00%

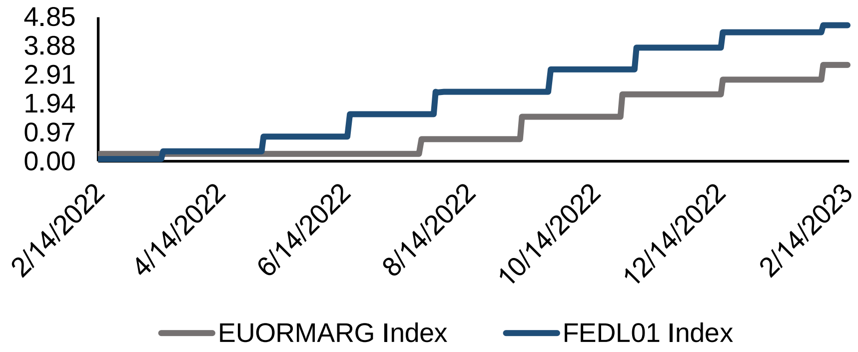
Interest Rate Risk

- **Rho Analysis**
  - The trade has a Rho of 604.74 k
  - A 1.00% move in the U.S. interest rate would cause the option to gain or lose 604.74 k
- **Phi Analysis**
  - The trade has a Phi value of (635.40 k). Therefore, a 1.00% gain in the foreign interest rate would result in a 635.40 k loss

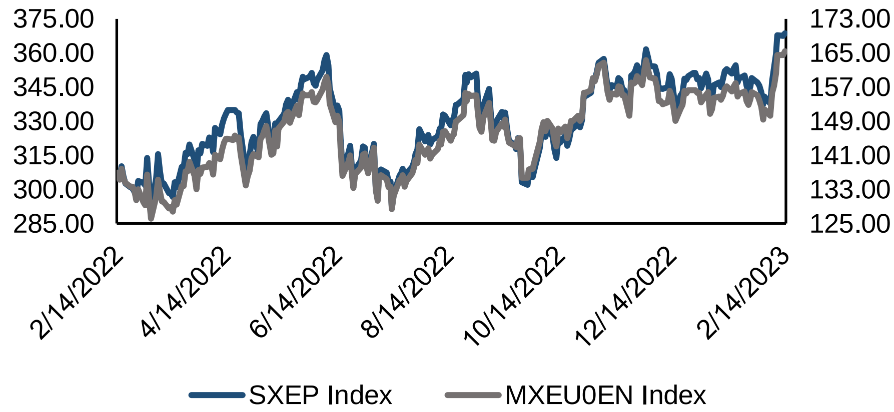
IV. Technical Bias & Fair Value

Technical Bias & Fair Value

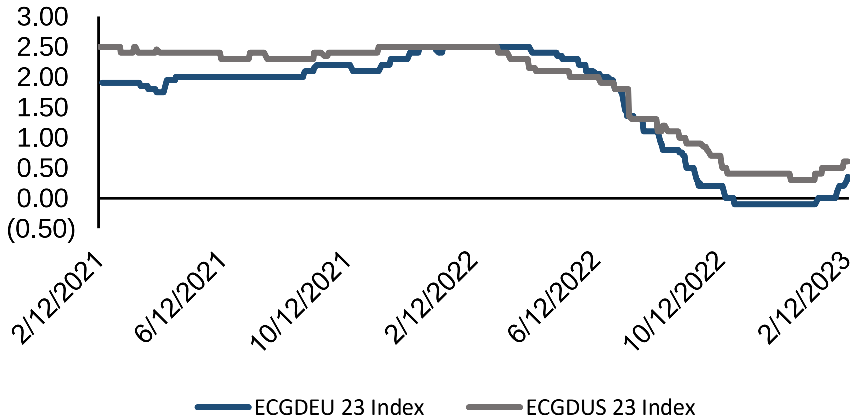
EFFR vs Marginal Lending Rate | One-Year Chart



Oil & Gas Prices vs MSCI Energy Sector | One-Year Chart



U.S. vs Eurozone Forecasted GDP | One-Year Chart



Synopsis

- Overlay of Eurozone GDP and U.S. Shows direction correlation, yet Eurozone GDP goes negative for the final quarter of 2022 while U.S. GDP stays positive
  - 2023 Eurozone GDP numbers were positive, allowing them to avoid recession, opposite of most projections
- Eurozone base rate has hiked slower and remains less hawkish compared to the Fed, starting their rate hikes 4 months after the U.S.
  - ECB'S February meeting was the first time they outpaced the Fed in hiking rates, hiking 50.00 bps compared to 25.00 bps
- The oil and gas price index for the U.S. and Eurozone tend to overlap representing common inflationary measures due to unruly increases in energy costs
  - Currently, both indexes are at yearly highs, pressuring the ECB and the Fed to hike rates higher in order to protect their respective currency values

V. Capital Allocation

Capital Allocation