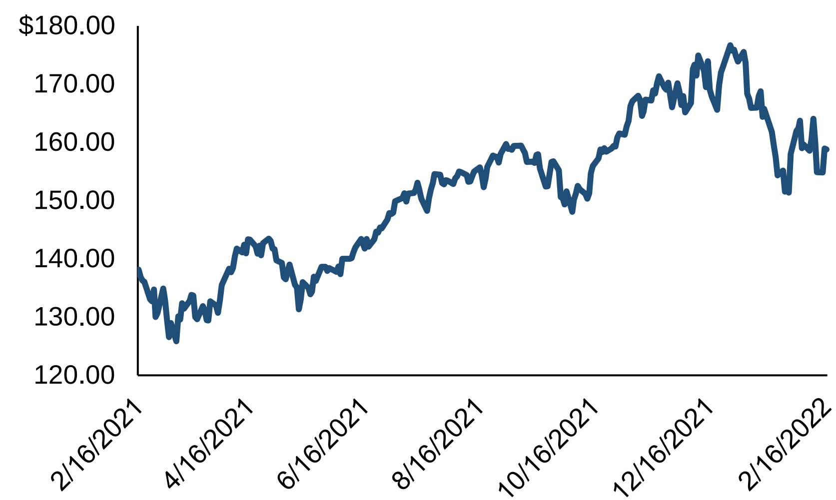
AMG
PENNSYLVANIA STATE UNIVERSITY

XLK US Equity | One-Year Price Chart



Position Details

- Technology Select Sector SPDR Fund | XLK US Equity
- Underlying Price: $158.99
- Bear Put Spread
- Expiration Date: June 17, 2022

Equity Derivatives Sector

Analyst
Phil Sullivan
philsullivan10@gmail.com

President
Luke Palma
lukepalma25@gmail.com

Vice President
Nico Mahramas
nicomahramas@gmail.com

Chief Investment Officer
Joseph Palermo
joseph.palermo12@gmail.com

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I. Product & Position Overview

Product & Position Overview

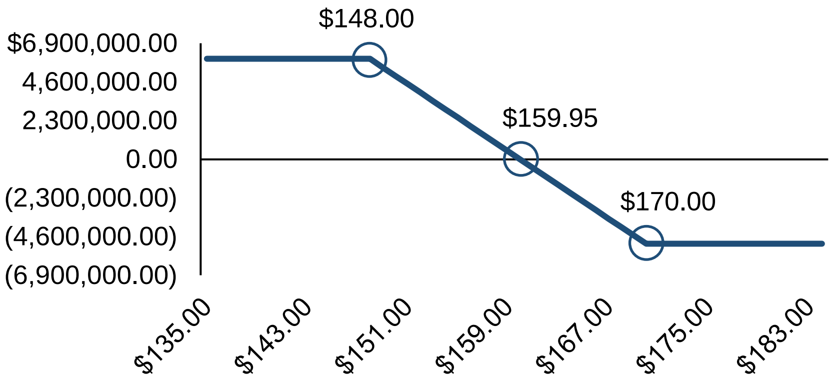
Product Description

- **The Technology Select Sector SPDR Fund**
  - The Technology Select Sector SPDR Fund is an exchange-traded fund comprised of 76.00 holdings seeking to represent the technology sector of the S&P 500
  - XLK is capitalization-weighted and contains large and mid-cap technology companies primarily in the United States
  - Software, computers, and semiconductors represent the top industry groups in XLK, constituting 83.60% of the fund
    - XLK is heavily weighted in Apple Inc. (AAPL) and Microsoft Corporation (MSFT), representing 46.03% of the fund's total weight

Trade Breakdown

- **Bear Put Spread**
  - This trade benefits from negative price movements in the underlying ETF
- **Setup**
  - We Buy – 5,000.00 ITM $170.00 Puts | XLK US Equity
  - We Sell – 5,000.00 OTM $148.00 Puts | XLK US Equity
- **Expiration**
  - Date: June 17, 2022

Payoff Diagram



Exit Strategy & Potential Hedge Strategy

- **Bull Base & Bear Case**
  - **$148.00 / $159.00 / $170.00**
  - Breakeven – $159.95
- **Methodology**
  - The Sector believes the underlying ETF will trade down an additional ~6.50% to reach maximum profit
- **Hedge Strategy**
  - In the event of bullish price movements, the Sector will reverse trade to exit the position

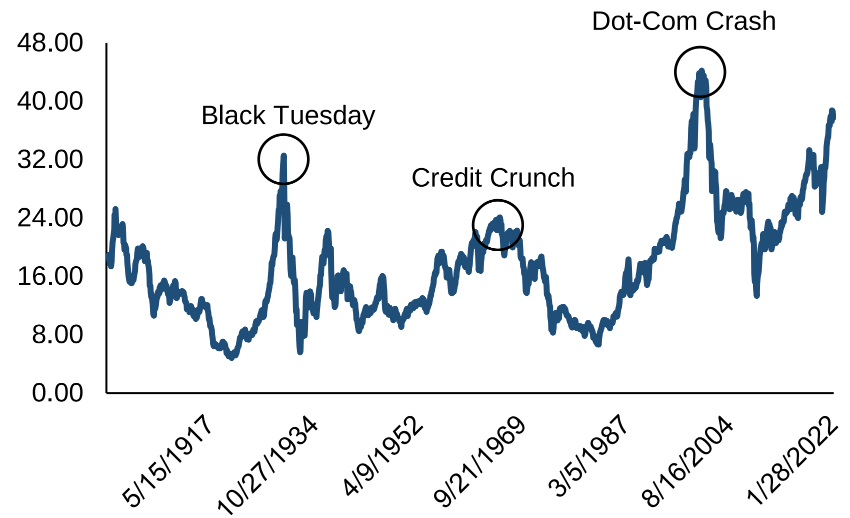
I. Macroeconomic Thesis

Macroeconomic Thesis

Macroeconomic Summary

- **Ceaseless Demand Despite Fed Rate Hikes**
  - Household aggregate net-worth has risen to a record high of $142.00 T, up 21.00% from 2019. Debt service represents only 13.80% of disposable personal income, compared to over 17.00% in 2008-2009
  - Consumers demand higher wages while companies offset costs onto consumers, creating a wage spiral
    - Proctor & Gamble Company (PG), Enphase Energy (ENPH), Chipotle Mexican Grill (CMG), and Kimberly-Clark Corporation (KMB) reported record demand despite rising prices
- **Continued Inflationary Pressures Impact Technology**
  - January CPI for Urban Wage Earners and Clerical Workers shows wages outpacing inflation by 0.70%, signaling that some individuals purchasing power is growing
  - Companies reporting continued supply chain disruptions
    - Toyota Motor Corporation (TM) and Honda Motor Company (HMC) stated they do not expect supply chain issues to improve throughout the year
- **Bolstering Job Markets May Prove Negative for Technology**
  - The United States economy added 467.00 k jobs in January vs. 150.00 k expected, indicating that Omicron minimally impacted labor market recovery
    - A strong job market allows the Fed to hike interest rates aggressively to get prices under control

Shiller P/E Ratio



Market Pros & Cons

- Fed becomes more hawkish than the market predicts
- Monetary policy time lag lasts longer than predicted, causing inflation to continue rising past the predicted peak in February
- Consumers shift demand from goods to services, allowing supply of goods to catch up with demand while repairing supply chains
- Strong corporate earnings hold large-cap technology companies up

Sources: Bloomberg, NASDAQ, FRED

I. Risk Analysis

Risk Analysis

Directional & Magnitude Risk

- **Delta Analysis**
  - The trade is short Delta with a value of (0.333)
    - Theoretically, for every $1.00 change in the underlying ETF, the options contracts will gain or lose $0.333
- **Gamma Analysis**
  - The trade is neutral Gamma with a value of 0.001
    - The trade has a low Gamma value because high volatility benefits the long put while hurting the short put, cancelling out each leg's value

Time Risk

- **Theta Analysis**
  - The trade is short Theta with a value (0.003)
    - The trade is short Theta despite being ITM
    - The maximum profit of the long puts is $9.35 mm while the maximum profit of the short puts is only $3.13 mm. Therefore, the opportunity to reach maximum profit decreases as expiration nears
    - As the trade becomes deeper ITM, the value of Theta will become closer to 1.00. Conversely, as the trade becomes deeper OTM, Theta will become closer to (1.00)

Implied Volatility Risk

- **Vega Analysis**
  - The trade is long Vega with a value of 0.026
  - The implied volatility of the trade is 28.17%
  - Vega is positive for long options while it is negative for short options, regardless of whether it is a call or put
  - Vega is considerably low because higher implied volatility benefits the long puts but hurts the short puts, cancelling each other. However, the value of the long put legs is larger than the short put legs. Therefore, Vega is positive

Interest Rate Risk

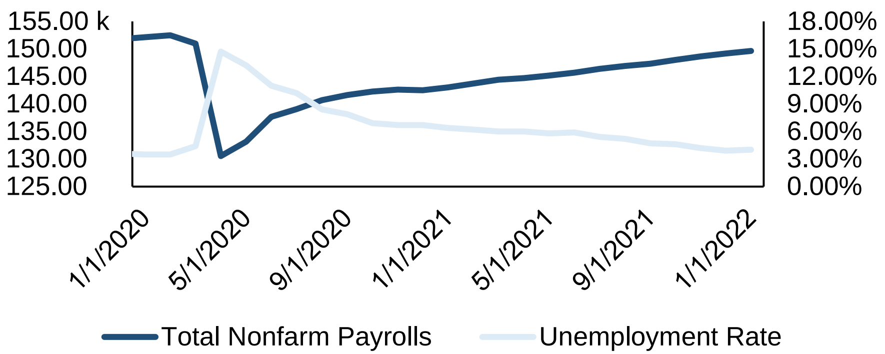
- **Rho Analysis**
  - The trade is short Rho with a value of (0.209)
  - Rho is negative because the trade's premium paid is larger than its premium received. Therefore, an increase in the risk-free rate hurts this trade because the opportunity to invest in a risk-free asset goes away

Sources: Bloomberg

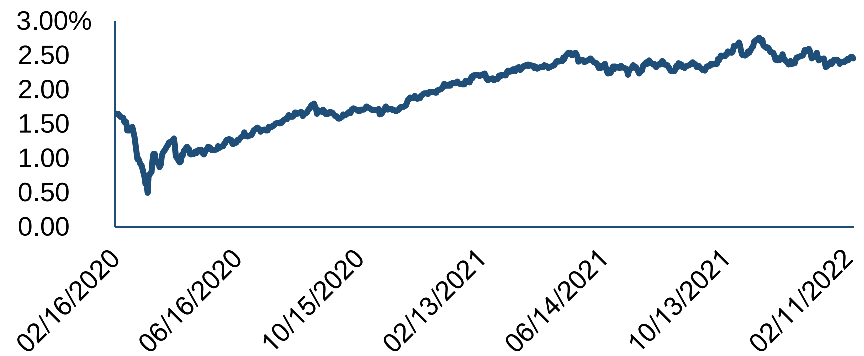
I. Technical Bias & Fair Value

Technical Bias & Fair Value

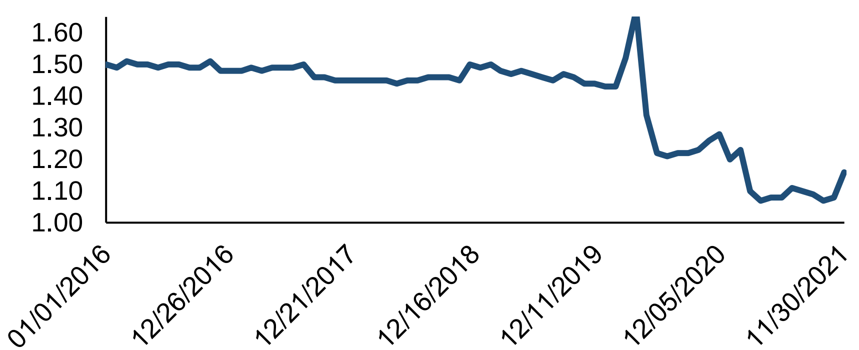
Total Nonfarm Payrolls vs. Unemployment Rate | Two-Year Chart



10.00-Year Breakeven Inflation Rate | Two-Year Chart



Retail Inventories to Sales Ratio | Five-Year Chart



Synopsis

- A strong labor market coupled with low unemployment rates allows the Fed to act hawkish to get prices under control
- The breakeven inflation rate represents what investors believe the inflation rate will average over the next 10.00 years
- A high breakeven inflation rate shows consumers believe inflation will be above the Fed’s inflation target of 2.00% over 10.00 years on average. A high inflation rate negatively affects technology
- The ISR shows the relationship between inventory and monthly sales
- Low ISR suggests retailers have high demand with low supply

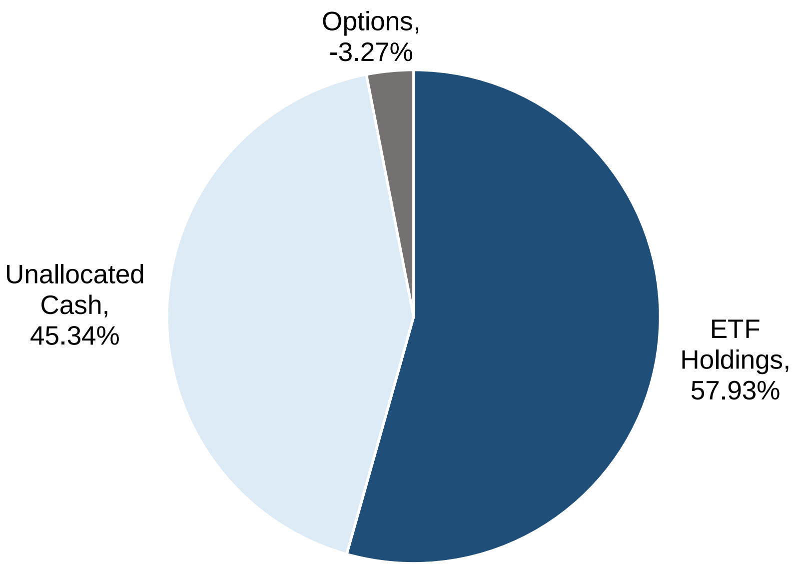
Sources: FRED, NASDAQ

I. Capital Allocation

Capital Allocation

Allocation Breakdown & Portfolio Implications

- The Sector will allocate 60.00% of our total allocation towards holdings of ETFs in our benchmark, 30.00% towards options, and 10.00% is to be held as cash reserves
- This trade will increase the Sector's exposure to the Information Technology sector, which currently holds a 28.04% weighting in the Sector's allocation of exchange-traded funds
- The Sector believes the Information Technology sector will continue to trade down in the short-term, allowing the Sector to capture profits with a bear put spread options strategy



Portfolio vs. Benchmark Allocation Weights