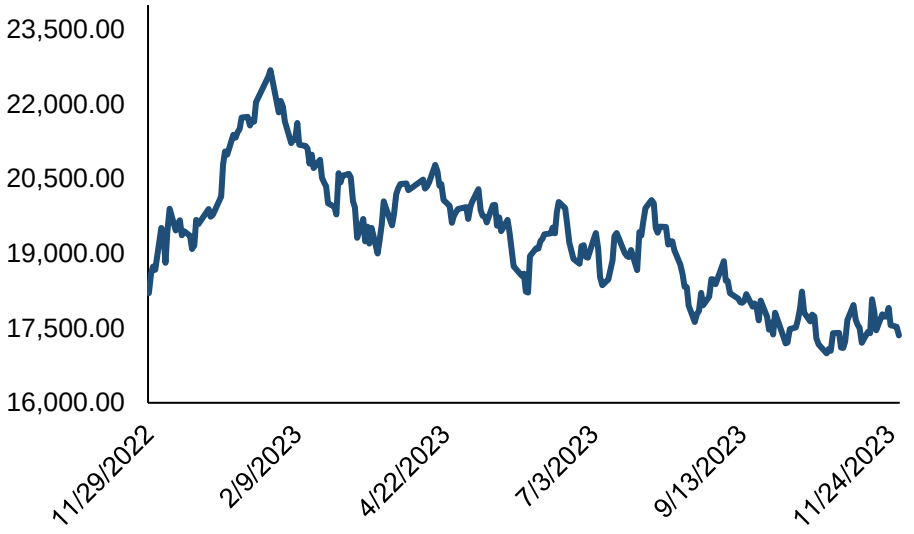
AMG
PENNSYLVANIA STATE
UNIVERSITY

HSI | One-Year Price Chart



Position Details

- HSI | Hang Seng Index
- Underlying Price: 17,047.45
- Christmas Tree Butterfly With Calls
- Expiration Date: February 28, 2024

Index Derivatives Sector

Associate
Owen Perry
owenperry0429@gmail.com

Analyst
Jason Allen
jasonallen5186@gmail.com

Analyst
Sid Anil
sidanil2004@gmail.com

President
Anthony Bruno
anthonybruno2186@gmail.com

Vice President
Julia Petrova
julia.petrova6100@gmail.com

Chief Investment Officer
Phil Sullivan
philsullivan10@gmail.com

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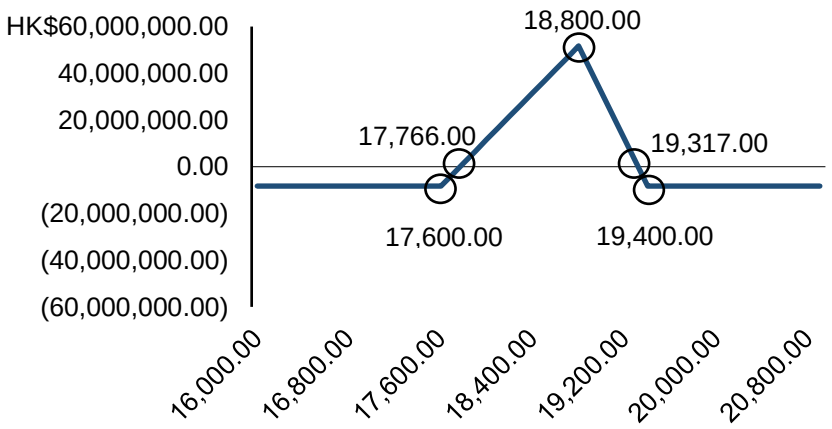
I. Product & Position Overview

Product & Position Overview

Product Description

- **Hang Seng Index**
  - The Hang Seng Index is a free float-adjusted market-capitalization-weighted index. The index contains the 66.00 largest companies that trade on the Hong Kong Exchange (HKEx). These companies represent almost 60.00% of the HKEx and contain some of the largest companies operating in mainland China, thus the index reflects China's economy
  - Sector weightings: Financials (34.08%), Information Technology (28.49%), Consumer Discretionary (9.83%), Properties & Construction (5.77%), Energy (4.61%), Telecommunications (3.90%), Healthcare (3.86%), Consumer Staples (3.28%), Utilities (3.12%), Conglomerates (1.47%), Industrials (0.96%), and Materials (0.83%)

Payoff Diagram



Trade Breakdown

- **Christmas Tree Butterfly With Calls**
  - A Christmas Tree Butterfly with Calls benefits from slightly bullish movements in the underlying
- **Setup**
  - We Buy 500.00 OTM 17,600.00 Calls | HSI
  - We Sell 1,500.00 OTM 18,800.00 Calls | HSI
  - We Buy 1,000 OTM 19,400.00 Calls | HSI
  - Max Profit: $6,623,416.25
  - Max Loss: ($1,063,333.75)
- **Expiration**
  - Date: February 28, 2024

Exit Strategy & Potential Hedge Strategy

- **Bull Base & Bear Case**
  - **18,800.00 / 18,400.00 & 19,000.00 / 17,500.00 & 19,400.00**
  - Break evens – 17,766.00 & 19,317.00
- **Methodology**
  - The strategy requires that the index trades up ~10.28% before date of expiration. The sector sees market stabilization causing small bullish price action while decreasing overall volatility in the index
- **Hedge Strategy**
  - Should the index continue in a bearish trend, or volatility in global markets rise, the sector will look to unwind the trade

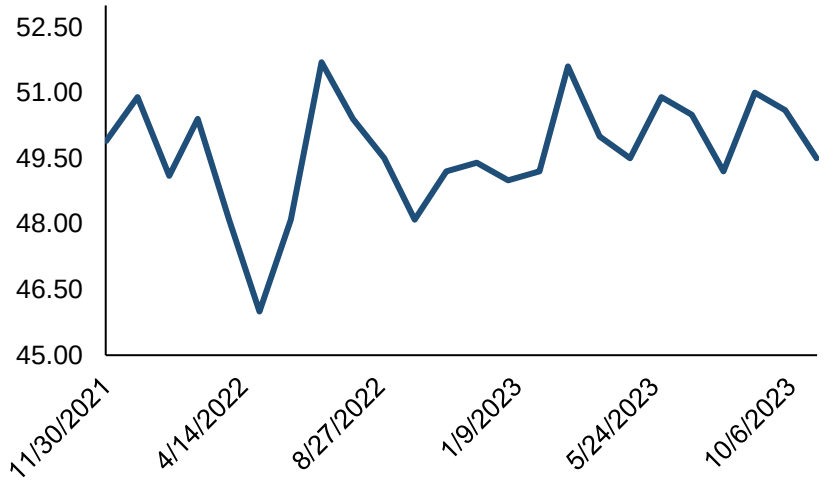
II. Macroeconomic Thesis

Macroeconomic Thesis

Macroeconomic Summary

- **Central Bank Rate Holds Amidst Easing Inflation**
  - Global markets have reacted positively to improving inflationary conditions in major trade partners of China
    - The U.S. and Euro-Area both had significant decreases in headline inflation in the last reading
    - WIRP is currently predicting a 3.60% chance that the Fed hikes at the December meeting
- **Decreasing Political Tensions Between U.S. and China**
  - Wave of positive rhetoric from major Chinese officials
    - President Xi recently met with President Biden as well as a group of major U.S. business leaders
    - Premier Li Qiang has made comments throughout the month expressing support for loosening conditions for foreign investment in China
  - Tensions over international affairs have relatively stabilized
- **Stabilizing Macroeconomic Data within China**
  - Economists forecast a 5.00% y/y growth target for FY2023 and a 4.60% y/y growth forecast for FY2024
    - The PBOC is expected to keep its monetary policy accommodative to provide support to the economy
  - China's imports grew by 3.00% y/y in October easily surpassing market expectations of a 4.80% decrease
  - China's Caixan Manufacturing PMI has ranged between a 1.10 change for 5.00 of the last 6.00 readings and China's NBS Manufacturing PMI has ranged between a 0.70 change for the last 7.00 straight readings

China Caixan Manufacturing PMI | Two-year Chart



Market Pros & Cons

- People's Bank of China continues surplus to stimulate economy
- Energy markets remain resistant to geopolitical supply concerns
- Real Estate bankruptcies escalate, dropping consumer confidence
- China financial sector crackdown escalates

Bloomberg, Trading Economics

III. Risk Analysis

Risk Analysis

Directional & Magnitude Risk

- **Delta Analysis**
  - The trade has a positive Delta at 0.0786
  - The nature of the strategy causes a relatively small delta value, however due to the slight bullish skew in the strike setup and the fact that the trade is currently OTM, the trade gains value with bullish movements in the underlying
  - Our trade gains 0.0786 for every $1.00 increase in the HSI
- **Gamma Analysis**
  - The trade has a Gamma value of 0.0000
  - Gamma is negligible at (0.00002), the slight negative a result of the strike setup of the strategy

Time Risk

- **Theta Analysis**
  - Theta has a positive value of 1.2409
  - The strategy utilized in this trade is short on volatility. In theory, the relation between time and volatility is that greater time to expiry increases the likelihood that the underlying experiences volatile price movements. To that extent, our trade gains value by $1.2409 for every day the trade moves closer to expiration, all else equal

Implied Volatility Risk

- **Vega Analysis**
  - The trade has a negative Vega value of (3.0237)
  - The Christmas Tree Butterfly with Calls is a trade that benefits from mild bullish movements in the underlying, however the position is overall short on volatility. Our trade thus would lose value as implied volatility increases
  - For every 1.00% increase in implied volatility, our option would be effectively devalued by $3.0237
  - Implied volatility: 19.50%

Interest Rate Risk

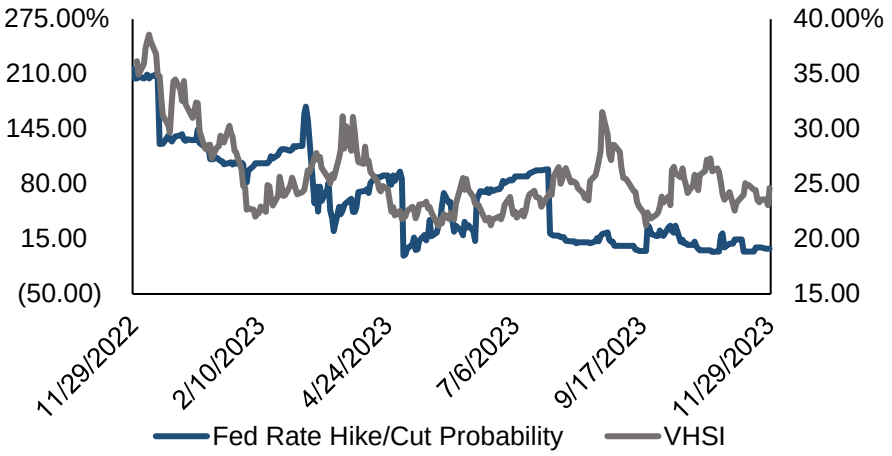
- **Rho Analysis**
  - Rho is negative with a value of (0.4581)
  - Options premiums generally tend to devalue with rate hikes, given the cost of money is raised

    A 1.00% increase in the risk-free rate would thus devalue our trade by $0.4581
  - Given the utilized strategy, our premiums paid are greater than premiums received. Thus, as a net debtor, we theoretically lose opportunity cost in risk-free assets
  - Our macro thesis is rooted in central bank rate pause

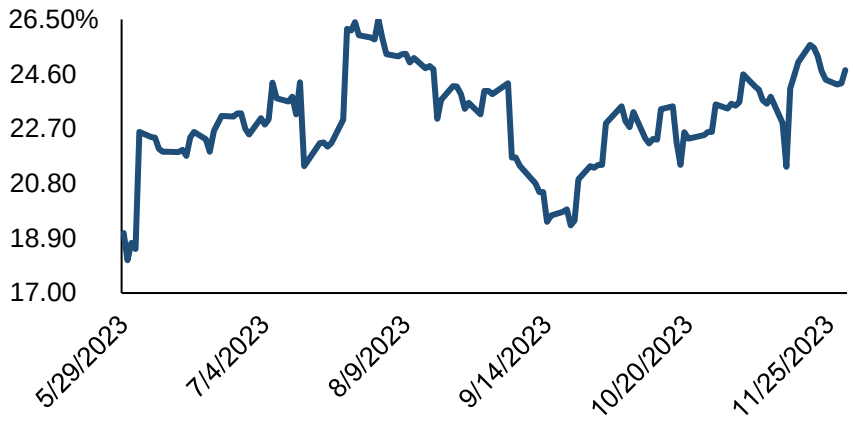
IV. Technical Bias & Fair Value

Technical Bias & Fair Value

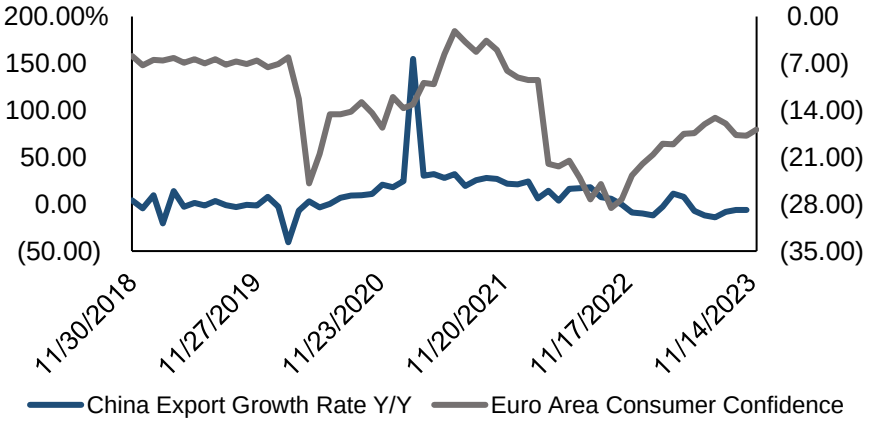
Fed Rate Hike/Cut Probability Index vs. VHSI | One-Year Chart



HSI Historical Volatility 30.00 Day | Six-Month Chart



China Export Growth Rate vs. Euro Area Consumer Confidence | Five-Year Chart



Theoretical Edge Analysis

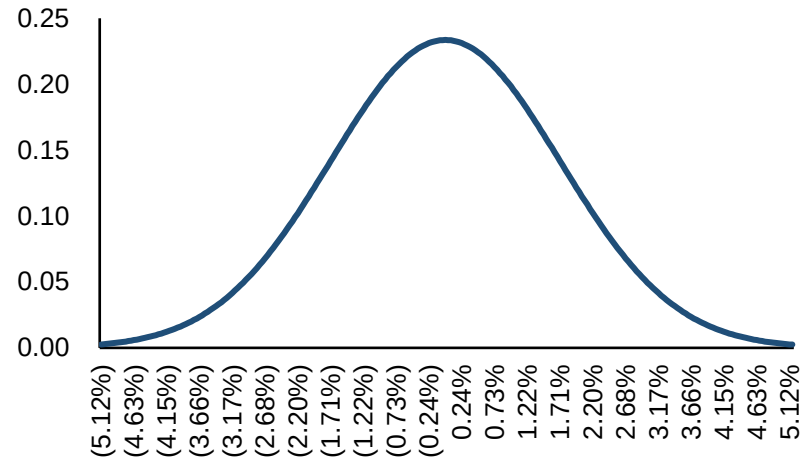
- Over the past year, futures pricing have indicated decreasing probability of Fed rate hikes. The index tracking this probability has decreased in relation with the volatility of the Hang Seng. The relationship between the two indexes indicate that decreasing likelihood of Fed rate hikes has decreased volatility in global markets
- Volatility of the Hang Seng Index has been steadily climbing, however the sector believes that volatility is over priced in current markets
    - Implied Volatility and 30.00 Day Historical Volatility are at 24.65% and 24.74% respectively, however stability in markets have caused volatility to fall below 19.50% in the past six months
- Other than the blip in Chinese exports with the surge in demand as the US and Euro Area reopened from the Covid-19 pandemic, Chinese Export Growth moves in line with Euro Area Consumer Confidence, as Europe is one of the largest recipients of Chinese exports

Macrotrends , Trading Economics, Bloomberg

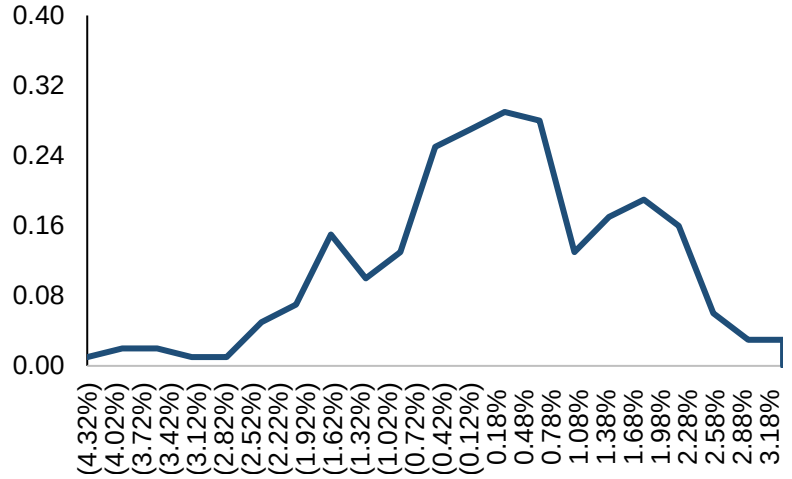
V. Volatility Analysis

Technical Bias & Fair Value

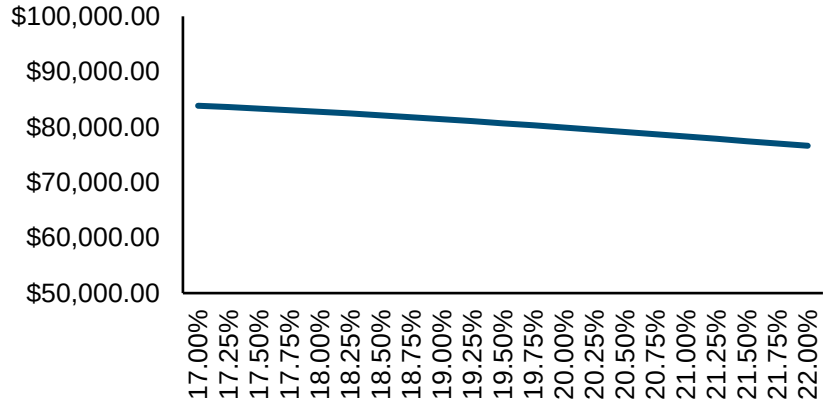
Expected Volatility Based on Inputs



Historical Volatility Based on Inputs



Position Volatility Sensitivity



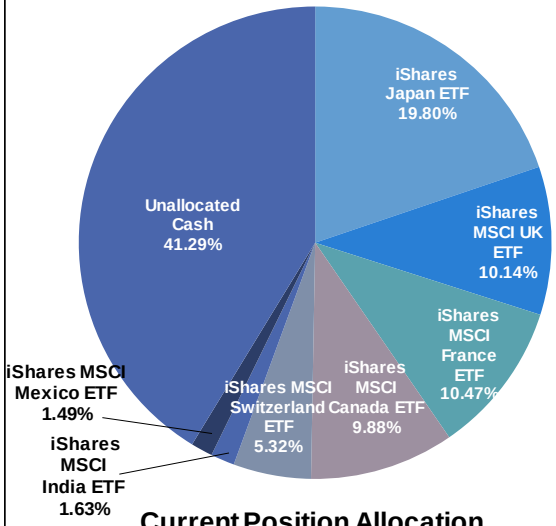
Theoretical Edge Analysis

Asset Description	Option Premium
Theoretical Long Call	$483.7600
Actual Long Call	$626.0000
Theoretical Short Call	$168.0600
Actual Short Call	$258.0000
Theoretical Long Call	$90.9030
Actual Long Call	$157.0000
Theoretical Long Call Adj. for DV1	$48,376.0000
Actual Long Call Adj. for DV1	$62,600.0000
Theoretical Short Call Adj. for DV1	$16,806.0000
Actual Short Call Adj. for DV1	$25,800.0000
Theoretical Long Call Adj. for DV1	$9,090.3000
Actual Long Call Adj. for DV1	$15,700.0000
Theortical Edge (LC) Assuming 500.00 Contracts	($7,112,000.0000)
	-
Theortical Edge (SC) Assuming 1,500.00 Contracts	$13,491,000.0000
	-
Theortical Edge (LC) Assuming 1,000.00 Contracts	($6,609,700.0000)
Total Theoretical Edge	($230,700.0000)

V. Capital Allocation

Capital Allocation

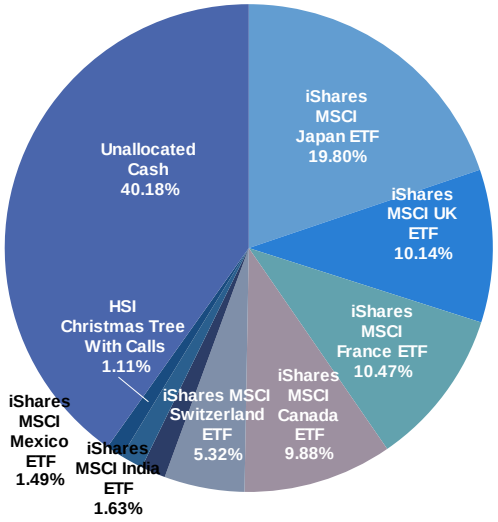
Current Portfolio Allocation



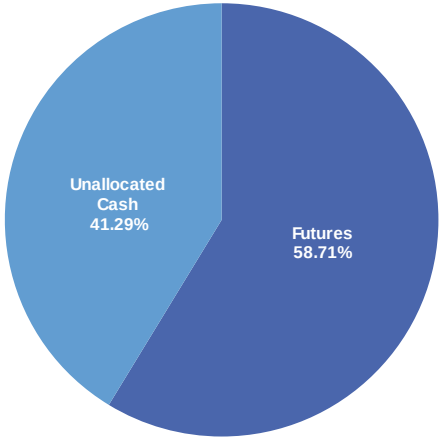
Transaction Summary

Ticker	Position Change Contracts	Allocation
iShares MSCI Japan ETF	0	$0.00
iShares MSCI UK ETF	0	$0.00
iShares MSCI Canada ETF	0	$0.00
iShares MSCI France ETF	0	$0.00
iShares MSCI Switzerland ETF	0	$0.00
iShares MSCI India ETF	0	$0.00
iShares MSCI Mexico ETF	0	$0.00
HSI Christmas Tree with Calls		($1,063,333.75)
Allocation Change		($1,063,333.75)

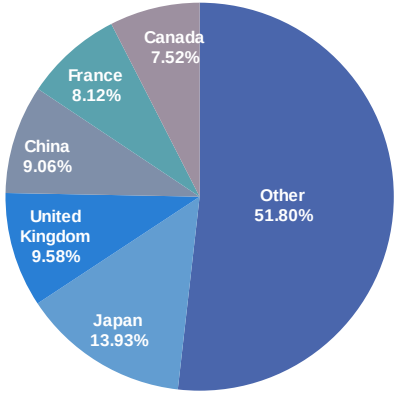
Proposed Portfolio Allocation



Current Position Allocation



Benchmark Allocation



Proposed Position Allocation