Explanation of the Strategy

The objective of this document is to determine the optimal parameters for a trading strategy focused on selling OTM (Out of The Money) Put options for different tickers.

The strategy is based on selling Put options when the IV Percentile (Implied Volatility Percentile) of the ticker is low. This methodology leverages the general tendency for implied volatility to be higher than realized volatility, leading to options being overpriced. In a low-volatility environment, limited price movements in the underlying are expected, increasing the likelihood that the options will expire worthless.

However, the strategy requires continuous monitoring of the IV Percentile while the position remains open. If the percentile reaches a predefined threshold, the position will be closed, as high volatility correlates with greater risks and potential negative returns, reducing the likelihood of the option expiring worthless.

This strategy is defined using three key parameters that determine entries and exits:

1. **Entry IV Percentile**: The IV Percentile value below which a short Put position is initiated.

2. **Exit IV Percentile**: The IV Percentile value above which the position is closed.

3. **Target Delta**: The delta value of the Put option to be sold. Due to the well-known "volatility smile" phenomenon, options with deltas closer to 0 tend to exhibit higher levels of overpricing, enhancing the strategy's effectiveness.

To identify the optimal parameters, multiple backtests will be conducted using various combinations of these three parameters. The effectiveness of the strategy will be evaluated using a metric similar to the Sharpe Ratio, defined as the ratio of the average return per trade to the standard deviation of trade returns.

The initial analysis will be conducted using historical End of Day (EOD) options data for the ticker KO (The Coca-Cola Company). KO represents a stock with an accessible price and capped maximum loss risk, generally not exceeding $3,000 per trade. Stocks with significantly higher prices, such as $800 or $900, can experience more abrupt movements, increasing the risk of substantial losses, which could reach $10,000 or $20,000 per trade.

Finally, to diversify risk and optimize results, other tickers from distinct sectors with similar key characteristics to Coca-Cola—high option trading volume and relatively low stock price—will be explored. This will allow the strategy to be replicated and adjusted across a broader spectrum of financial instruments, enhancing its robustness and long-term stability.

Analysis of Results

EOD options data for a selected group of underlying assets, representing nine economic sectors, was used. The primary objective was to implement backtests to determine the score associated with each combination of strategy parameters. These scores evaluate the effectiveness of various entry and exit configurations.

Subsequently, the results were visualized through graphs to observe how the score evolves with changes in each of the key parameters. Based on the analysis of these graphs, the optimal values for each parameter were selected by identifying points where the strategy's performance demonstrated maximum efficiency.

1. **First Graph**: For the KO ticker (The Coca-Cola Company), a clear trend was observed: as higher delta values are selected, the resulting score increases. This phenomenon can be explained by the "volatility smile." Options with higher delta values tend to be further OTM. As an option moves further OTM, its implied volatility increases, leading to greater deviation from the real price and, consequently, better performance within this strategy.

2. **Second Graph**: The strategy's score progressively increases as the **entry IV Percentile** parameter rises, reaching an optimal value around 40. However, beyond this point, the score noticeably declines. This behavior suggests that an entry IV Percentile above this threshold increases the risk of adverse movements in the underlying asset, thereby reducing the strategy's effectiveness.

3. **Third Graph**: The impact of the **exit IV Percentile** parameter on the strategy's score was analyzed. The results show that as the exit IV Percentile increases, the score also rises, peaking near a threshold of 50. However, exceeding this value causes the score to drop significantly. This dynamic can be explained by the inverse correlation between volatility and expected returns: elevated volatility levels are often associated with bearish movements in the underlying asset, increasing the risk that Put options will not expire worthless.

params_delta_target vs Puntaje

params_iv_entrada vs Puntaje

params_iv_salida vs Puntaje