Strategy outline of our customized Long-Short Criterion

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In the default Long-Short strategy, we either long an asset when the open price of a new trading period is higher than the close price of the previous trading period, or short an asset if the open price of a new trading period is lower than the close price of the previous trading period.

More over, the condition for quit for long is, when the asset's price goes above $(1 + \sigma)$ * open price, where σ is the expected volatility of this trading period, and the condition for quit short is, when the asset's price goes below $(1 - \sigma)$ * open price.

For our new strategy, we incorporated a few metrics to evaluate whether we will long or short an asset.

At the beginning of each trading period, we calculate the Relative Strength Index of the stock on this day. The logic can refer this website, Relative Strength Index Calculation. Also, we find the Moving Average Convergence Divergence as well, and find the value difference between the MACD and the signal line, refer to this website, Moving Average Convergence Divergence Calculation. Signal line of a day is the average of MACD for the past 7 days. Moreover, we pull the implied volatility of this stock using ShinyBroker. Lastly, we fetch the 10-3 spread on that date using online data source.

So now we have 4 metrics: RSI, MACD's difference between signal line, implied volatility, and 10-3 spread. we then normalize all three metrics and compute the z score of each metric for a single trading period.

Then we start a for loop, for each trading period we compute a weighted score using the three metrics: 0.2 * RSI's Z score + 0.5 * MACD Difference's Z score + 0.3 * 10-3 Spread's Z score. If the Z score is greater than 0, we long the asset, else we short it.

After first round of decision, we still have a second round to go. In the second round, we call a trading period is bullish if RSI value is smaller than a lower threshold (entered by user), while MACD exceeds signal line, and define a trading period as bearish if RSI value is higher than an upper threshold (entered by user), simultaneously MACD is below the signal line. In the

case of bullish we long the asset no matter what is the weighted score, in the case of bearish we short the asset no matter what is the weighted score.

Also, the quit criteron is redefined too. The client can enter a long volatility alpha such that, when longing an asset, we only quit if the asset's price goes above (1 + alpha * σ) * open price. Also, the client can enter a short volatility beta such that, when shorting an asset, we only quit if the asset's price goes below (1 + beta * σ) * open price.

Below is the app's main interface panel.