Mean Reversion Pairs Trading with Quantile Bands Strategy

By: Aarav Mohanty

Strategy Overview

Core Concept: Exploit price differences between two historically correlated assets going short on one and long on other, assuming they will revert to their historical mean

Key Components:

1. **Spread Calculation:** Asset 1 price - Asset 2 price (relative value between them)
2. **Quantile Bands:** 10th/90th percentile thresholds of spread, calculated over past 20-days to identify statistically significant extremes
3. **Z-Score:** Calculates z-score of spread, usually used with pairs trading

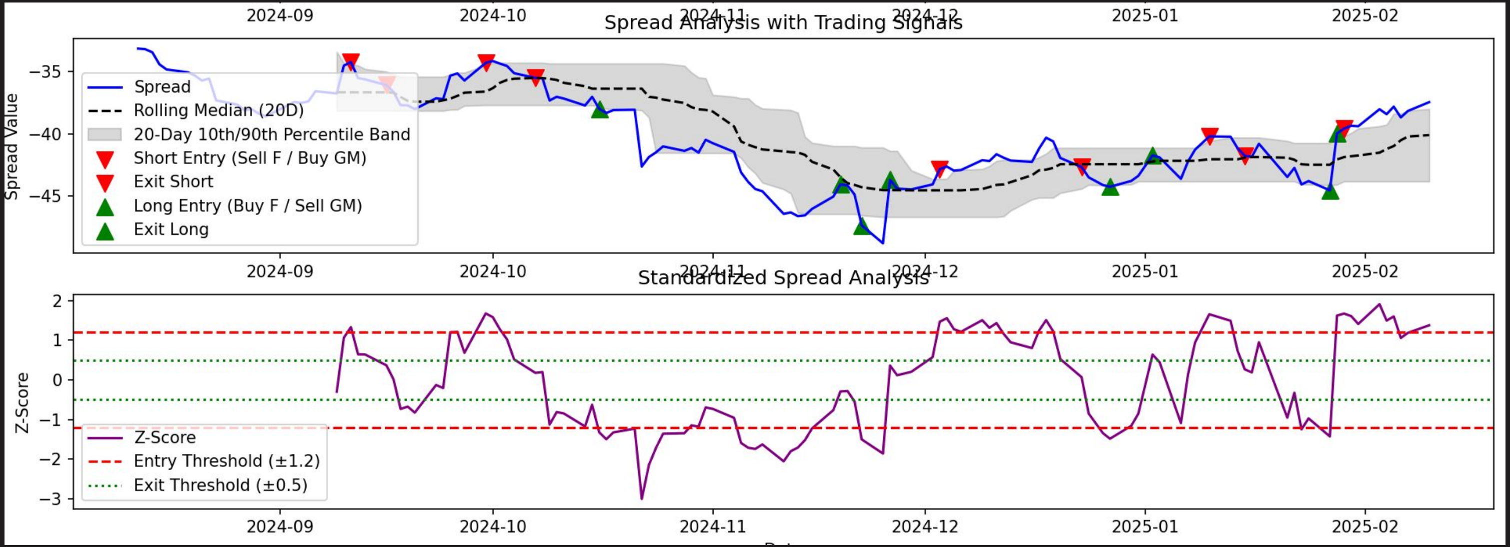
Purpose and Functionality

Purpose: Add quantile bands to existing pairs trading strategy to generate stronger signals.

Generates signals based on the following:

- Short: If Z-score > 1.2 and spread > 90th quantile of historic average
- Long: If Z-score < -1.2 and spread < 10th quantile of historic average
- Exit: If Z-score < 0.5 (Means are reverting back to average)

Results and Analysis



Results: Profitable/better than holding when both equities go down or one went down and one went up

Analysis: Good strategy for short term data and non-high growth stocks