Pairs Trading Strategy Report

Pair Identification and Selection

Selected sector: Banking

For this project, the banking sector was selected, focusing on two major banks: MET and USB. These stocks were chosen based on their liquidity, historical correlation, and cointegration.

Criteria for Pair Selection:

- Liquidity: Both stocks must be actively traded, ensuring sufficient volume and tight spreads.

- Correlation: A preliminary check was conducted for cointegration or high correlation between MET and USB, indicating that their price movements are likely to follow a similar pattern, making them suitable for pairs trading.

- Data Availability: Stocks with complete historical data over the desired period were chosen.

For correlation, correlation coefficients were found for every possible stock pair and those having above 0.8 were filtered out first. To check if the pairs are cointegrated or not, spread is calculated between the two stocks:

$$Spread = \log(a) - n * \log(b)$$

Where, a and b are the stock prices of the pair and n is the hedge ratio (found using regression). The Dickey-Fuller test was run on the spread values. If the p-value was less than 0.05 or 0.01, we confirmed that the spread is stationary. From the shortlisted pairs, Z-scores were calculated and the pair MET and USB was finalized.

Trading Strategy and Signal Generation Method

To determine entry and exit points, the spread between MET and USB was calculated and standardized using Z-score.

- Entry Rule: Z-score moves beyond +1 or -1.

- Exit Rule: Z-score reverts to 0.

- A signal is generated when an entry/exit condition is met.

Risk Management Measures

- Initial capital: INR 1,00,000

- Capital allocated per trade: 10% (INR 10,000)

- Maximum holding period: 10 days

- Z-score Stop-loss: ±3 (exit trade if Z-score crosses this threshold)

Trading Signals Generated and Position Sizing

Signals were generated based on the Z-score thresholds. When Z > 1, short BAC and long C; when Z < -1, long BAC and short C. Position size for each leg was calculated such that total capital allocated per trade did not exceed INR 10,000.

Portfolio PnL

PnL was calculated by tracking the returns from each trade entry and exit based on price movement of the stock pair.

Performance Metrics

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Cumulative Return: 0.0200

Annualised Sharpe Ratio: 0.1082

Maximum Drawdown: -0.0811

Frequency of Trades Placed: 39