Model Backtest Guide

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Introduction

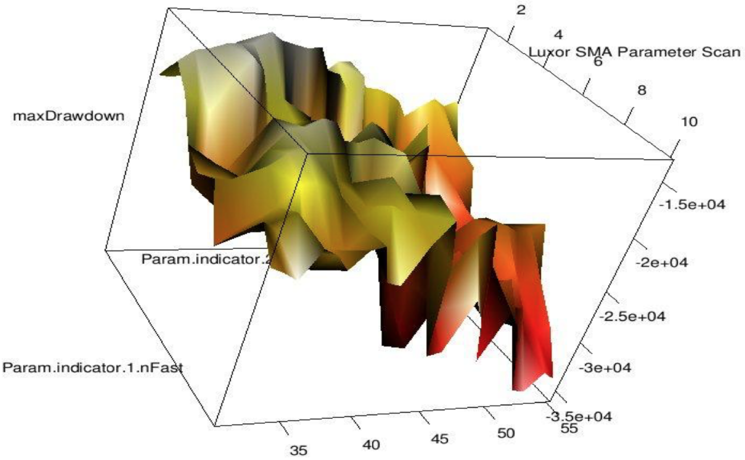
Motivation

- Provide guidance for backtesting trading models
- Illustrate parameter search and optimization
- Identify overfitting risk
- Results comparison and configuration management

Optimization

Parameter Search

- Distributions, combinations
- Dynamic Range



Multiple parameter search yields rough optimization surface.

Expectation

- Local vs. Global Optimization
- Robust Solutions

Trading Simulation

Tool Chain

1. Manage Data
2. Evaluate Data
3. Determine Trades
4. Size Trades
5. Calculate Performance
6. Analyze Performance

Data Sources

- Fetch historical data by ticker
- Check for ticker and exchange swaps – Perhaps only use *latest* universe of GGCM ETFs
- Adjust OHLC for dividends and splits

Strategy and Rules

- Indicators – Derived from market data, path-independent
- Signals – Interaction between market data and indicators – Desire for action, but may not be actionable
- Rules – Path-dependent action on signals – Aware of current positions and time – Computation of order size – Position limits – Periodic rebalancing – Entry, exit and risk-management orders

Exchange Interaction

- Market hours open, close

Blotter Bookkeeping

- Order posts, fills, and cancels
- "Mark the book" with current holdings and prices

Orders

- Our strategies work on months
- Our stops work on minutes or hours
- Order chains: parent fill triggers set of follow-up OCO orders

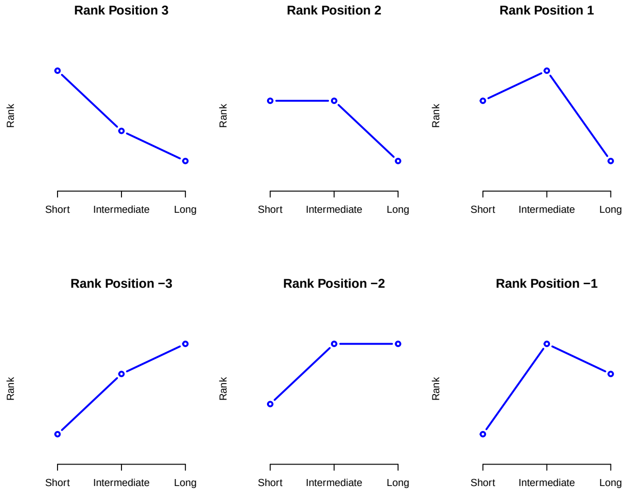
Preprocessing

- Adjusting splits and dividends
- Cleaning zeros and NAs
- Accounting for exchange moves

Calculations: Trend Indicators and Ranks

- Trend up: $X_t > X_{t-5} > X_{t-10} > X_{t-20}$
- Trend down: $X_t < X_{t-5} < X_{t-10} < X_{t-20}$
- Gearing: 120-day correlation with SPX
- Rank R: ordered ranking within group
- Weighted Rank %: $(3R_S + 2R_I + 1R_L)/(6(N-1))$

Calculations: Rank Position



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Backup

References

- Humme and Peterson, “Using Quantstrat Tutorial”, 2013
- Hochreiter, “Financial Portfolio Optimization with (O)R”, 2013