

QF621 Quant Trading Strategies | Investment proposal

Investment objectives:

We identify a mean reversion framework for stock picking across the Japan equity markets to construct a market neutral - low net, low factor exposure portfolio.

Trading universe: Japan, Topix index, 2144 constituents

Economic rational:

The Japan market has typically been a mean reverting market given its aging population demographic dynamics. Post-covid, that view point has changed, with market participants believing that the re-emergence of modest inflation has the power to drive sustained real wage growth, a move back to positive interest rates as well as meaningful corporate governance changes that can help drive sustainable corporate value unlock.

Be that as it may, with the Nikkei surpassing its 1989 peak, we believe that the structural re-rating of Japanese markets has played out largely, and from hereon we are likely to swing back to its mean reverting nature. ***With that view, we look to develop a mean reversion framework for stock picking in the Japan equity markets to take advantage of the toning down of the reflationary narrative.***

Phase 1: Trading universe + data points

- *Defining the universe*
 - **Japan:** We focus on Japan within which we narrow our view to the Topix, comprising of 2144 constituents.
 - The Topix accounts for ~90% of the market, outside of which we believe that liquidity and free float will be a constraint to the execution of our strategy.
- *Data gathering*
 - **Daily price:**
 - 10 -year daily price history of the Topix constituents
 - Possible inclusion of stocks that have been removed from the current index
 - Price should be adjusted for stock splits and other related actions
 - **GICS classification to cluster stocks**
 - Three levels of GICS classification
 - **Stock market cap**
 - Ideally be able to collect daily market cap data, daily free float market cap data
 - **Daily ADV**

Phase 2: Clustering, trading pairs and index tracking

- *Identifying key trading pairs / clusters*
 - Classify the tradable universe into subsectors clusters where we expect stock within the clusters to exhibit a high level of correlation, given the exposure to similar industry dynamics
 - We plan on using GICS classifications to bucket into clusters
 - Our clusters will be back tested for correlations
- *Finetuning the tradable universe in subsectors*
 - In addition to correlation analysis, we plan to set size and liquidity requirements in order to better align the equity trading dynamics including: (1) market cap, (2) free float market cap, (3) ADV, (4) Stock volatility, (5) Beta
- *Setting an index benchmark for measuring relative performance*

- We set a customized benchmark indices on each cluster — this allows us to measure relative out and underperformance for our mean reversion strategy
 - We plan to have indices constructed on an equal weighting of the stocks this would be a better representation of subsector trend

Phase 3: Setting mean reversion parameters

- **Share price movement:** 2 st dev relative vs cluster, 2 st dev valuation move (PE, PB, EV,EBITDA)
- **Fundamental (possible as trigger or as overlay)**
 - Consensus revision direction change (Revenue / EPS)
 - Consensus rating score change, price target change
- **Technical factors**
 - Stochastic, RSI, MACD

Phase 4: Setting entry / sizing targets

- **Technical factors:** Stochastic, RSI, MACD
- **Sizing:** Liquidity constraints 5% ADV?
- **Rebalancing target:** Frequency of rebalancing / GMV ranges
- **Number of positions:** 100 positions ?? = 1% of GMV on avg. 50 Long vs 50 Short

Phase 5: Setting stop loss triggers and Exits

- **Stop loss mechanics:** Absolute stock price move, Relative stock move, Relative stock move as % of GMV
 - Individual stop losses vs portfolio level dradowns
- **Exits: when to exit trade**
 - Back test for avg peak to trough reversion
 - Technical factors

Phase 6: Considerations

- Setting how the book exits older ideas and adds newer ideas – average holding period
- Number of positions – Constant 100 position book? or does that depending on signals
 - If so which ideas gets exit when new triggers come
 - Do we increase number of positions but reduce size on each according to our GMV targets
- Scalability of the strategy — 100mn, 1bn ?
 - How to scale - more positions, or larger size
- Equal weighting — how to vary sizing
- Trading Turnover targets -- 10-20% of GMV a day?
 - Book turns 20% * 250 trading days - Trading cost implication
- Entry - Close / VWAP?

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