SIGNAL RESEARCH NOTE

Price-Trend Family LightGBM Rank

Machine-learning model-variation ranking evidence across broad listed equities.

FAMILY	UNIVERSE	RESEARCH HORIZON
ML model variation	**Broad listed-equity research panel**	**126d**

Executive Summary

Price-Trend Family LightGBM Rank evaluates a model-variation rank on a broad listed-equity panel. The preferred 126d row shows a 8.89% top-minus-bottom spread and a 0.045 rank IC.

Preferred horizon	**126d**
126d rank spread	**8.89%**
Rank IC	**0.045**
Long-leg return	**18.30%**
Average turnover	**68.12%**

Observations

1. The note shows historical rank-ordering diagnostics for a model variation.
2. Neighbouring horizons and yearly splits are included to show whether the result is isolated.
3. Formula details, feature recipes and model parameters are intentionally not disclosed.

Data and Research Setup

The setup evaluates ML model variations on the same broad listed-equity panel and horizon grid.

UNIVERSE

Broad listed-equity research panel. Current holdings and issuer-level rank tables are not shown.

INPUTS

Historical price, liquidity and derived feature fields are aligned to a dated research panel.

COMPARISON BASIS

Displayed rows use the same panel construction, date grid and forward-return convention.

OUTPUT BOUNDARY

The figures are historical diagnostics and do not present current positions or instrument rankings.

Signal Methodology

Without disclosing the exact functional, the construction proceeds along three conceptual steps.

STEP 1

Model variation

The research compares alternative model families, feature treatments or ranking objectives.

STEP 2

Cross-sectional ranking

Each observation date is converted into a peer-relative rank within the research panel.

STEP 3

Forward evaluation

Ranked groups are compared over the research horizon to measure top-minus-bottom behaviour.

> The description is intentionally conceptual. Formula details, exact construction rules and implementation parameters are not disclosed.

Results and Horizon Context

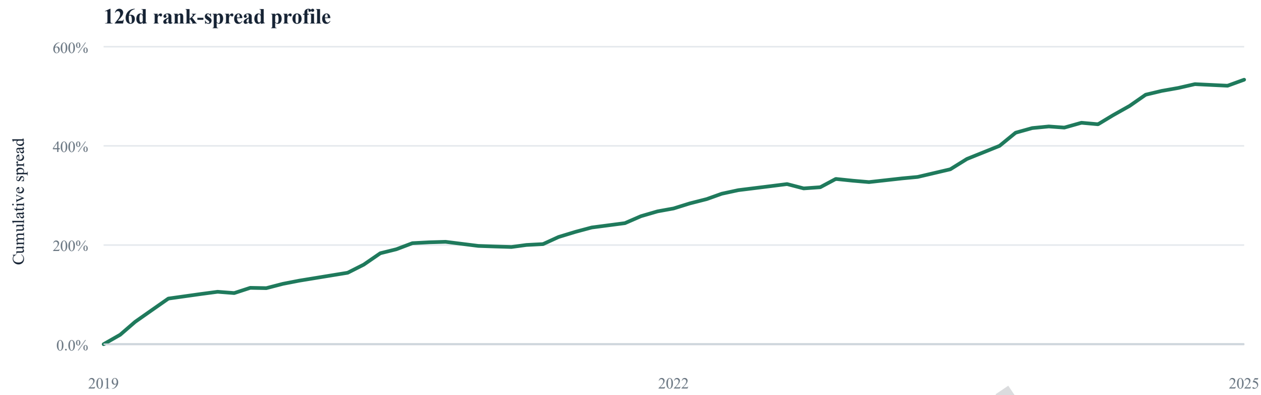

Figure 1. Cumulative 126d top-minus-bottom rank-spread contribution, normalised to zero at the first valid research observation. Long-horizon forward observations overlap, so the series should be read as a ranking diagnostic, not as a standalone return path.

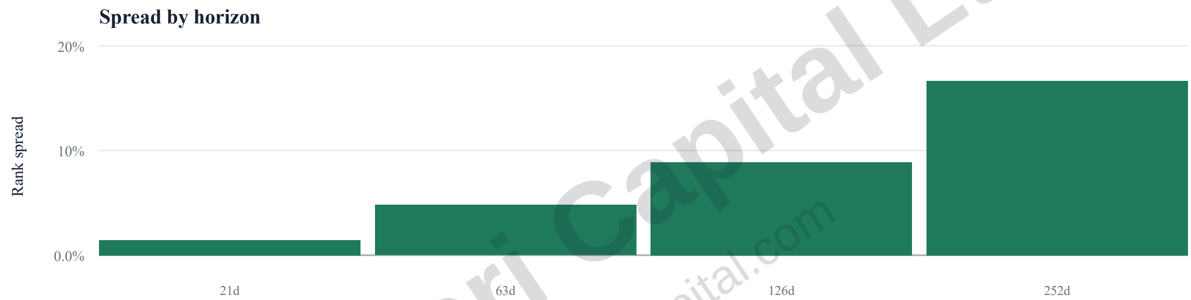

Figure 2. Top-minus-bottom spread across tested horizons under the same comparison setup.

Horizon	Rank spread	Rank IC	Long-leg return	Turnover
21d	1.44%	0.010	2.76%	68.12%
63d	4.81%	0.034	8.96%	68.12%
126d	**8.89%**	**0.045**	**18.30%**	**68.12%**
252d	16.66%	0.047	37.13%	68.12%

The horizon profile and yearly evidence are diagnostics for model ranking behaviour, not current allocation instructions.

Stability and Robustness

Stability is assessed from the yearly preferred-horizon spread profile and neighbouring horizon rows.

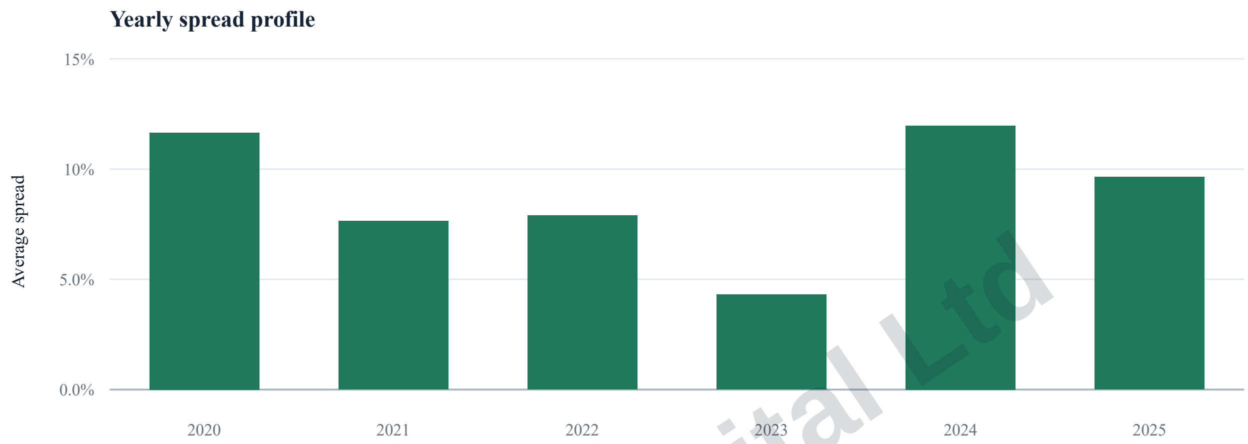

Figure 3. Yearly average 126d rank-spread contribution for the preferred horizon.

Year	Average spread
2020	11.66%
2021	7.64%
2022	7.89%
2023	4.30%
2024	11.97%
2025	9.65%

A coherent result should not depend on a single isolated observation window.

Research Interpretation

The signal is retained in the research library as model-variation ranking evidence.

ROLE

Secondary ML model-variation candidate.

CAPTURES

Alternative ML rank construction evidence across the same equity research panel.

USE

Ranking or comparison component inside broader systematic allocation research.

LIMITATIONS

The note does not disclose construction details, feature recipes, model parameters, issuer-level ranks, execution assumptions or product suitability.