Volatility-threshold regimes on URTH

Strategy evaluated · Development · Sample 2015-03-05 21:00:00+00:00 to 2018-11-30 21:00:00+00:00

N/A marks an undefined or missing value. Return and risk fractions are shown as percentages. The JSON evidence preserves the original precision of the results.

Assessment limits

Survivorship bias. Not assessed. Evidence on historical universe membership is missing.

Look-ahead bias. Not assessed. The report does not verify when signals became available.

Multiple testing. DSR and PBO cannot be assessed from the evidence supplied.

Costs and execution. Gross and net returns were reconciled with recorded costs. Cost sensitivity and actual execution were not assessed.

Use of AI. The engine computes the metrics. Use of AI in strategy development was not assessed.

Advice. This report does not constitute investment advice.

Performance and risk

Absolute performance · Strategy and benchmark

Metric	Strategy	Benchmark
Observations `n_obs`	945	945
Periods per year `annualization`	252	252
Annual risk-free rate `risk_free_annual`	0%	0%
Cumulative return `total_return`	19.2589%	25.5431%
Annualized compound return (CAGR) `cagr`	4.80875%	6.25386%
Annualized arithmetic return `annual_return_arithmetic`	5.0641%	6.99639%
Annualized volatility `annual_volatility`	8.54061%	13.6119%
Sharpe `sharpe`	0.5929439	0.5139911
Sortino `sortino`	0.7887488	0.695268
Maximum drawdown `max_drawdown`	-10.4376%	-18.8925%
Periods to the maximum drawdown trough `max_drawdown_underwater_periods`	279	185
Periods from the previous peak to recovery `max_drawdown_recovery_periods`	425	397
Calmar `calmar`	0.460714	0.3310243
Share of positive periods `positive_period_rate`	31.4286%	54.3915%
Alias for the share of positive periods `hit_rate`	31.4286%	54.3915%

Absolute performance · Strategy and benchmark

Metric	Strategy	Benchmark
Skewness `skewness`	-1.971972	-0.7853827
Excess kurtosis `excess_kurtosis`	21.57595	4.510795

Active performance · Strategy versus benchmark

Field	Value
Observations `n_obs`	945
Periods per year `annualization`	252
Annual risk-free rate `risk_free_annual`	0%
Annualized active return `active_return_annual`	-1.93229%
Annualized tracking error `tracking_error_annual`	10.6794%
Information ratio `information_ratio`	-0.1809366
Correlation with the benchmark `correlation`	0.6200929
Beta `beta`	0.3890693
Annualized regression alpha `regression_alpha_annual`	2.34202%
Annualized Jensen alpha `jensen_alpha_annual`	2.34202%
Strategy Sharpe ratio `strategy_sharpe`	0.5929439
Benchmark Sharpe ratio `benchmark_sharpe`	0.5139911

Statistical uncertainty

Strategy · Mean excess return · HAC

Field	Value
Status `status`	evaluated
Observations `n_obs`	945
Lags `lags`	6
Weighting kernel `kernel`	bartlett
Estimate per period `estimate`	0.0200956%
Annualized estimate `annualized_estimate`	5.0641%
Standard error `standard_error`	0.0147936%
Annualized standard error `annualized_standard_error`	3.72798%

Strategy · Mean excess return · HAC	
Field	**Value**
t-statistic `t_stat`	1.358403
Two-sided p-value (normal) `p_value_two_sided_normal`	0.1743357

Strategy · Sharpe ratio interval · block bootstrap	
Field	**Value**
Observations `n_obs`	945
Block length `block_length`	10
Replications `repetitions`	1000
Seed `seed`	20261116
Confidence level `confidence`	95%
Lower-tail probability `lower_probability`	2.5%
Upper-tail probability `upper_probability`	97.5%
Replications attempted `attempted_repetitions`	1000
Valid replications `valid_repetitions`	1000
Replications with no defined estimate `undefined_repetitions`	0
Status `status`	evaluated
Point estimate `point_estimate`	0.5929439
Standard error `standard_error`	0.4617149
Lower interval bound `ci_lower`	-0.2302075
Upper interval bound `ci_upper`	1.620809

Benchmark · No uncertainty estimate supplied.

Active performance · Mean active return · HAC	
Field	**Value**
Status `status`	evaluated
Observations `n_obs`	945
Lags `lags`	6
Weighting kernel `kernel`	bartlett
Estimate per period `estimate`	-0.00766783%

Active performance · Mean active return · HAC	
Field	**Value**
Annualized estimate `annualized_estimate`	-1.93229%
Standard error `standard_error`	0.0207874%
Annualized standard error `annualized_standard_error`	5.23843%
t-statistic `t_stat`	-0.3688687
Two-sided p-value (normal) `p_value_two_sided_normal`	0.7122256

Active performance · Information ratio interval · block bootstrap	
Field	**Value**
Observations `n_obs`	945
Block length `block_length`	10
Replications `repetitions`	1000
Seed `seed`	20261116
Confidence level `confidence`	95%
Lower-tail probability `lower_probability`	2.5%
Upper-tail probability `upper_probability`	97.5%
Replications attempted `attempted_repetitions`	1000
Valid replications `valid_repetitions`	1000
Replications with no defined estimate `undefined_repetitions`	0
Status `status`	evaluated
Point estimate `point_estimate`	-0.1809366
Standard error `standard_error`	0.4825334
Lower interval bound `ci_lower`	-1.158728
Upper interval bound `ci_upper`	0.7537609

Subperiods and robustness

Additional metrics · No evidence supplied.

Verification and configuration

Engine checks	
Field	**Value**
Schemas valid `schema_valid`	Yes
Evidence hash valid `hash_valid`	Yes
Signature verified `signature_verified`	No
Confirmatory provenance verified `confirmatory_provenance_verified`	No
`reconciliation.tolerance`	1e-09
Status `reconciliation.status`	reconciled
Metric paths checked `reconciliation.checkedPathCount`	96
Hash bindings valid `hash_bindings_valid`	Yes
Metrics reconciled `metrics_reconciled`	Yes
Simulations reproduced `simulations_reproduced`	Yes
`kernelVersion`	1.1.0

Decision thresholds · No evidence supplied.

Engine configuration	
Field	**Value**
Periods per year `annualization`	252
Annualization method `annualizationMethod`	declared by StrategyTrace.frequency.periodsPerYear
Annual risk-free rate `riskFreeAnnual`	0%
`allowPositional`	No
`timezone`	UTC
`calendar`	XNYS
Confidence level `uncertainty.confidence`	95%
`uncertainty.hacLagPolicy.kind`	sample-size-bartlett-v1
`uncertainty.timeBasis.kind`	session-grid
Expected calendar hash `uncertainty.timeBasis.expectedEndsHash`	`1c4d5aaa1ba4395dc9ef7ca4f62c49b9ad6700b6f373557415f9ea94a2c1db86`
Block length `uncertainty.blockLength`	10
Replications `uncertainty.repetitions`	1000
Seed `uncertainty.seed`	20261116

Monte Carlo

Observed path

Field	Value
Terminal wealth (multiple) `terminalWealth`	1.192589
Cumulative return `totalReturn`	19.2589%
Maximum drawdown magnitude `maximumDrawdown`	10.4376%
Longest stretch below the peak (periods) `longestUnderwaterStreakPeriods`	424
Share of periods below the peak `timeUnderWaterFraction`	90.2646%
Longest losing streak (periods) `longestLosingStreak`	9
Ruin threshold reached `ruined`	No

Circular block bootstrap

Metric	Minimum	Mean	Maximum	Quantiles
Terminal wealth (multiple) `terminalWealth`	0.6661589	1.200943	1.747536	5% = 0.9304717 · 50% = 1.197492 · 95% = 1.47344
Cumulative return `totalReturn`	-33.3841%	20.0943%	74.7536%	5% = -6.95283% · 50% = 19.7492% · 95% = 47.344%
Maximum drawdown magnitude `maximumDrawdown`	3.98286%	11.8593%	38.5009%	5% = 6.13842% · 50% = 10.9527% · 95% = 20.484%
Longest stretch below the peak (periods) `longestUnderwaterStreakPeriods`	65	365.882	945	5% = 124 · 50% = 316 · 95% = 799
Share of periods below the peak `timeUnderWaterFraction`	66.1376%	88.9975%	100%	5% = 78.1958% · 50% = 89.5238% · 95% = 97.5714%
Longest losing streak (periods) `longestLosingStreak`	3	6.894	14	5% = 4 · 50% = 7 · 95% = 10
Probability of reaching the ruin threshold `ruinProbability`		0%		

Return-order permutation

Metric	Minimum	Mean	Maximum	Quantiles
Maximum drawdown magnitude `maximumDrawdown`	6.25617%	12.6307%	25.0539%	5% = 8.35105% · 50% = 12.0387% · 95% = 18.2801%
Longest stretch below the peak (periods) `longestUnderwaterStreakPeriods`	97	379.283	789	5% = 187 · 50% = 360 · 95% = 657.3
Share of periods below the peak `timeUnderWaterFraction`	82.6455%	90.6571%	95.4497%	5% = 86.7725% · 50% = 90.8995% · 95% = 93.7566%
Longest losing streak (periods) `longestLosingStreak`	3	4.853	10	5% = 4 · 50% = 5 · 95% = 7
Probability of reaching the ruin threshold `ruinProbability`		0%		

Simulation settings and bindings

Field	Value
`simulationSchemaVersion`	strateva-simulation-evidence/v2
`engineVersion`	0.9.0

Simulation settings and bindings	
Field	**Value**
`kernelVersion`	1.1.0
`observationCount`	945
`strategyTraceHash`	`97cbd672199d7c1dabea882445c71394b9b10f107f49180df45473c2250ebef6`
`contentHash`	`9d6e4139b08f2b08874775396ee2103744a30f820cc2f798550b301cd409d21c`
Replications `configuration.repetitions`	1000
Seed `configuration.seed`	20261116
Block length `configuration.blockLength`	10
Initial wealth `configuration.initialWealth`	1
Ruin threshold (share of initial wealth) `configuration.ruinWealthFraction`	50%
`configuration.quantiles`	5% · 50% · 95%
`classic.method`	CIRCULAR_MOVING_BLOCK_BOOTSTRAP
`classic.sampling`	WITH_REPLACEMENT
`permuted.method`	FISHER_YATES_RETURN_ORDER_PERMUTATION
`permuted.sampling`	WITHOUT_REPLACEMENT
Terminal wealth invariant `permuted.terminalWealthInvariant`	Yes
Terminal wealth (multiple) `permuted.terminalWealth`	1.192589

Provenance and traceability

Evidence and input hashes	
Field	**Value**
`bundleSchemaVersion`	strateva-evidence-bundle/v3
`artifactId`	`urn:strateva:strategy-trace:97cbd672199d7c1dabea882445c71394b9b10f107f49180df45473c2250ebef6`
`engineVersion`	0.9.0
`kernelVersion`	1.1.0
`generatedAt`	2026-11-17T13:36:14Z
`contentHash`	`1fad845085194a51c448e04c80e0191c71a7ba2e30850cbaddcaadff7267baee`
Strategy return series hash `inputHashes.strategyReturns`	a5b56006430c864d45eb511b735194af6c1e04d1da7735608cd459568a05a27e
Benchmark return series hash `inputHashes.benchmarkReturns`	d133ba7f72ebcd37af0d8ccc29a3f9d91d16bd85a9563bd41e2f7c2bec280c01

Evidence and input hashes	
Field	**Value**
`lineage`	strategyTrace:97cbd672199d7c1dabea882445c71394b9b10f107f49180df45473c2250ebef6 · scope:8906b9e79b6f940d83fecf454b73496957e4205e0a7bb981e923e77a1262ee2a · artifact:22a40f3f522236414666fb36f05bb0e2aab862bf2606f06c718f8bf9995ae8ad · data:7806390dbc8d56f66ba54d7e356efd7207eafc9b2f39ac388341ec36beb55cd4

Provenance statement	
Field	**Value**
`claim`	development
`runId`	N/A
`freezeHash`	N/A
`engineCommit`	N/A
`containerImageDigest`	N/A

Evidence signature · No evidence supplied.

StrategyTrace · Identity, frequency, conventions and benchmark	
Field	**Value**
`traceSchemaVersion`	strateva-strategy-trace/v1
`engagementId`	eng-9e63cce4
`runId`	volatility-threshold-regimes-evidence
`generatedAt`	2026-11-17T13:36:14Z
`scopeContentHash`	`8906b9e79b6f940d83fecf454b73496957e4205e0a7bb981e923e77a1262ee2a`
`artifactContentHash`	`22a40f3f522236414666fb36f05bb0e2aab862bf2606f06c718f8bf9995ae8ad`
`dataContentHash`	`7806390dbc8d56f66ba54d7e356efd7207eafc9b2f39ac388341ec36beb55cd4`
`frequency.barInterval`	1d
Periods per year `frequency.periodsPerYear`	252
`frequency.calendar`	XNYS
`frequency.sourceTimezone`	America/New_York
`conventions.returnType`	SIMPLE
`conventions.returnUnit`	FRACTION
`conventions.timestampMeaning`	UTC_PERIOD_END
`conventions.turnover`	SUM_ABSOLUTE_POSITION_CHANGES
`conventions.exposure`	FRACTION_OF_EQUITY
`conventions.costs`	RETURN_FRACTION
`benchmark.kind`	SERIES
`benchmark.symbol`	URTH
`contentHash`	`97cbd672199d7c1dabea882445c71394b9b10f107f49180df45473c2250ebef6`

Notes included in the evidence	
Field	**Value**
`disclosures`	The engine recomputed the metrics from verified StrategyTrace net returns. · Monte Carlo has its own hash. It affects criteria only if preregistered for that purpose.