VaR-filtered mean reversion on QQQ

Strategy evaluated · **Nivel de evidencia** Histórico · Development · Sample 2020-01-02 21:00:00+00:00 to 2024-12-31 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. Historical universe membership is missing (SURVIVORSHIP_BIAS_NOT_CONTROLLED).

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 evidence does not say whether Strateva used AI in the review.

Advice. This report does not constitute investment advice.

Performance and risk

Absolute performance · Strategy and benchmark

Metric	Strategy	Benchmark
Observations `n_obs`	1258	1258
Periods per year `annualization`	252	252
Annual risk-free rate `risk_free_annual`	0%	0%
Cumulative return `total_return`	56.4963%	82.0916%
Annualized compound return (CAGR) `cagr`	9.38623%	12.7563%
Annualized arithmetic return `annual_return_arithmetic`	9.18795%	14.238%
Annualized volatility `annual_volatility`	6.56511%	21.066%
Sharpe `sharpe`	1.399511	0.6758762
Sortino `sortino`	2.264984	0.94147
Maximum drawdown `max_drawdown`	-4.88176%	-34.1047%
Periods to the maximum drawdown trough `max_drawdown_underwater_periods`	4	23
Periods from the previous peak to recovery `max_drawdown_recovery_periods`	80	126
Calmar `calmar`	1.922713	0.3740325
Share of positive periods `positive_period_rate`	12.0032%	54.69%
Alias for the share of positive periods `hit_rate`	12.0032%	54.69%

Absolute performance · Strategy and benchmark		
Metric	**Strategy**	**Benchmark**
Skewness `skewness`	0.7085278	-0.5443189
Excess kurtosis `excess_kurtosis`	15.84954	11.36635

Active performance · Strategy versus benchmark	
Field	**Value**
Observations `n_obs`	1258
Periods per year `annualization`	252
Annual risk-free rate `risk_free_annual`	0%
Annualized active return `active_return_annual`	-5.05004%
Annualized tracking error `tracking_error_annual`	20.3472%
Information ratio `information_ratio`	-0.2481929
Correlation with the benchmark `correlation`	0.2634339
Beta `beta`	0.08209798
Annualized regression alpha `regression_alpha_annual`	8.01904%
Annualized Jensen alpha `jensen_alpha_annual`	8.01904%
Strategy Sharpe ratio `strategy_sharpe`	1.399511
Benchmark Sharpe ratio `benchmark_sharpe`	0.6758762

Statistical uncertainty

Strategy · Mean excess return · HAC	
Field	**Value**
Status `status`	evaluated
Observations `n_obs`	1258
Lags `lags`	7
Weighting kernel `kernel`	bartlett
Estimate per period `estimate`	0.0364601%
Annualized estimate `annualized_estimate`	9.18795%
Standard error `standard_error`	0.0115136%
Annualized standard error `annualized_standard_error`	2.90143%

Strategy · Mean excess return · HAC	
Field	**Value**
t-statistic `t_stat`	3.166701
Two-sided p-value (normal) `p_value_two_sided_normal`	0.001541788

Strategy · Sharpe ratio interval · block bootstrap	
Field	**Value**
Observations `n_obs`	1258
Block length `block_length`	11
Replications `repetitions`	1000
Seed `seed`	20261117
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`	1.399511
Standard error `standard_error`	0.4336009
Lower interval bound `ci_lower`	0.4859223
Upper interval bound `ci_upper`	2.210147

Benchmark · No uncertainty estimate supplied.

Active performance · Mean active return · HAC	
Field	**Value**
Status `status`	evaluated
Observations `n_obs`	1258
Lags `lags`	7
Weighting kernel `kernel`	bartlett
Estimate per period `estimate`	-0.0200398%

Active performance · Mean active return · HAC	
Field	**Value**
Annualized estimate `annualized_estimate`	-5.05004%
Standard error `standard_error`	0.0329905%
Annualized standard error `annualized_standard_error`	8.31362%
t-statistic `t_stat`	-0.6074417
Two-sided p-value (normal) `p_value_two_sided_normal`	0.5435578

Active performance · Information ratio interval · block bootstrap	
Field	**Value**
Observations `n_obs`	1258
Block length `block_length`	11
Replications `repetitions`	1000
Seed `seed`	20261117
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`	-0.2481929
Standard error `standard_error`	0.4244007
Lower interval bound `ci_lower`	-1.10105
Upper interval bound `ci_upper`	0.5597402

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`	NYSE
Confidence level `uncertainty.confidence`	95%
`uncertainty.hacLagPolicy.kind`	sample-size-bartlett-v1
`uncertainty.timeBasis.kind`	session-grid
Expected calendar hash `uncertainty.timeBasis.expectedEndsHash`	`58c22d43e553ebf8061b50b01c3d830fe9fe3428e39a45daaf47c6dfea6a0be7`
Block length `uncertainty.blockLength`	11
Replications `uncertainty.repetitions`	1000
Seed `uncertainty.seed`	20261117

Monte Carlo

Observed path

Field	Value
Terminal wealth (multiple) `terminalWealth`	1.564963
Cumulative return `totalReturn`	56.4963%
Maximum drawdown magnitude `maximumDrawdown`	4.88176%
Longest stretch below the peak (periods) `longestUnderwaterStreakPeriods`	185
Share of periods below the peak `timeUnderWaterFraction`	64.7854%
Longest losing streak (periods) `longestLosingStreak`	2
Ruin threshold reached `ruined`	No

Circular block bootstrap

Metric	Minimum	Mean	Maximum	Quantiles
Terminal wealth (multiple) `terminalWealth`	0.965944	1.58898	2.555278	5% = 1.247542 · 50% = 1.569581 · 95% = 1.997871
Cumulative return `totalReturn`	-3.4056%	58.898%	155.528%	5% = 24.7542% · 50% = 56.9581% · 95% = 99.7871%
Maximum drawdown magnitude `maximumDrawdown`	2.70447%	6.97162%	17.5638%	5% = 3.76156% · 50% = 6.51435% · 95% = 11.5408%
Longest stretch below the peak (periods) `longestUnderwaterStreakPeriods`	61	237.355	979	5% = 95 · 50% = 201.5 · 95% = 505.15
Share of periods below the peak `timeUnderWaterFraction`	33.3068%	67.5467%	94.5151%	5% = 52.3052% · 50% = 67.4086% · 95% = 82.5159%
Longest losing streak (periods) `longestLosingStreak`	2	2.156	4	5% = 2 · 50% = 2 · 95% = 3
Probability of reaching the ruin threshold `ruinProbability`		0%		

Return-order permutation

Metric	Minimum	Mean	Maximum	Quantiles
Maximum drawdown magnitude `maximumDrawdown`	3.2344%	7.07192%	15.3716%	5% = 4.7684% · 50% = 6.74979% · 95% = 10.6234%
Longest stretch below the peak (periods) `longestUnderwaterStreakPeriods`	81	230.696	627	5% = 123 · 50% = 211 · 95% = 405.05
Share of periods below the peak `timeUnderWaterFraction`	59.062%	71.9778%	81.7965%	5% = 65.8943% · 50% = 72.2576% · 95% = 77.345%
Longest losing streak (periods) `longestLosingStreak`	2	2.377	5	5% = 2 · 50% = 2 · 95% = 3
Probability of reaching the ruin threshold `ruinProbability`		0%		

Simulation settings and bindings

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

Simulation settings and bindings	
Field	**Value**
`engineVersion`	0.9.0
`kernelVersion`	1.1.0
`observationCount`	1258
`strategyTraceHash`	`09b0d33f4ed0114f393468bee4daf82c5fb5159ff7ddafc1b9d66dac5f8d5f06`
`contentHash`	`6903c2c26020c578ef7789c55af4b25892f48cd2df67998e8738e55ace511402`
Replications `configuration.repetitions`	1000
Seed `configuration.seed`	20261117
Block length `configuration.blockLength`	11
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`	1.564963

Provenance and traceability

Evidence and input hashes	
Field	**Value**
`bundleSchemaVersion`	strateva-evidence-bundle/v3
`artifactId`	`urn:strateva:strategy-trace:09b0d33f4ed0114f393468bee4daf82c5fb5159ff7ddafc1b9d66dac5f8d5f06`
`engineVersion`	0.9.0
`kernelVersion`	1.1.0
`generatedAt`	2026-11-17T17:39:31Z
`contentHash`	`a2f1dde9766198bd44972b439a8c4528fb94fe7db4a41dabfc017102ba0a9402`
Strategy return series hash `inputHashes.strategyReturns`	a1834183abecf75658a750cdeb73e5674d17bdc392dd18b150afa1d7142ff61b
Benchmark return series hash `inputHashes.benchmarkReturns`	7752137578cf12129a6e6b3696459787a29c2624fdbe5eb21ee8b56dfcffec30

Evidence and input hashes	
Field	**Value**
`lineage`	strategyTrace:09b0d33f4ed0114f393468bee4daf82c5fb5159ff7ddafc1b9d66dac5f8d5f06 · scope:b1543928650451aff44ec830b8ad890250278f961fce37e32aa6e1ff49b88640 · artifact:9f0d82d88c85672142442a28ee480b3b145657647c0833d27fcac17a26c8114d · data:b618743d26fe1e50d6c68bc3cc5371d7f352b9fd30deb8613c36aee32241aa99

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-54fd18c4
`runId`	var-filtered-mean-reversion-evidence
`generatedAt`	2026-11-17T17:39:31Z
`scopeContentHash`	`b1543928650451aff44ec830b8ad890250278f961fce37e32aa6e1ff49b88640`
`artifactContentHash`	`9f0d82d88c85672142442a28ee480b3b145657647c0833d27fcac17a26c8114d`
`dataContentHash`	`b618743d26fe1e50d6c68bc3cc5371d7f352b9fd30deb8613c36aee32241aa99`
`frequency.barInterval`	1d
Periods per year `frequency.periodsPerYear`	252
`frequency.calendar`	NYSE
`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`	SPY
`contentHash`	`09b0d33f4ed0114f393468bee4daf82c5fb5159ff7ddafc1b9d66dac5f8d5f06`

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.