TEMA Vol adjusted on Tesla · fixed size at the next open

> **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`	2%	2%
Cumulative return `total_return`	97.2565%	57.4205%
Annualized compound return (CAGR) `cagr`	14.5777%	9.51533%
Annualized arithmetic return `annual_return_arithmetic`	36.5595%	11.1975%
Annualized volatility `annual_volatility`	67.7572%	20.4551%
Sharpe `sharpe`	0.5103389	0.4506059
Sortino `sortino`	0.7518027	0.6185142
Maximum drawdown `max_drawdown`	-83.2016%	-34.009%
Periods to the maximum drawdown trough `max_drawdown_underwater_periods`	523	27
Periods from the previous peak to recovery `max_drawdown_recovery_periods`	N/A	136
Calmar `calmar`	0.1752093	0.2797886
Share of positive periods `positive_period_rate`	51.7488%	54.2925%
Alias for the share of positive periods `hit_rate`	51.7488%	54.2925%

Absolute performance · Strategy and benchmark		
Metric	**Strategy**	**Benchmark**
Skewness `skewness`	0.1046121	-0.7804664
Excess kurtosis `excess_kurtosis`	2.779496	14.16077

Active performance · Strategy versus benchmark	
Field	**Value**
Observations `n_obs`	1258
Periods per year `annualization`	252
Annual risk-free rate `risk_free_annual`	2%
Annualized active return `active_return_annual`	25.3619%
Annualized tracking error `tracking_error_annual`	73.2344%
Information ratio `information_ratio`	0.3463119
Correlation with the benchmark `correlation`	-0.1276489
Beta `beta`	-0.4228356
Annualized regression alpha `regression_alpha_annual`	41.2942%
Annualized Jensen alpha `jensen_alpha_annual`	38.4765%
Strategy Sharpe ratio `strategy_sharpe`	0.5103389
Benchmark Sharpe ratio `benchmark_sharpe`	0.4506059

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`	0.137219%
Annualized estimate `annualized_estimate`	34.5791%
Standard error `standard_error`	0.129401%
Annualized standard error `annualized_standard_error`	32.6092%

Strategy · Mean excess return · HAC	
Field	**Value**
t-statistic `t_stat`	1.060411
Two-sided p-value (normal) `p_value_two_sided_normal`	0.2889577

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`	0.5103389
Standard error `standard_error`	0.4959396
Lower interval bound `ci_lower`	-0.4484035
Upper interval bound `ci_upper`	1.488264

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`	0.100643%

Active performance · Mean active return · HAC	
Field	**Value**
Annualized estimate `annualized_estimate`	25.3619%
Standard error `standard_error`	0.137332%
Annualized standard error `annualized_standard_error`	34.6076%
t-statistic `t_stat`	0.7328431
Two-sided p-value (normal) `p_value_two_sided_normal`	0.4636541

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`	0.3463119
Standard error `standard_error`	0.4808496
Lower interval bound `ci_lower`	-0.5837959
Upper interval bound `ci_upper`	1.301529

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`	2%
`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`	`58c22d43e553ebf8061b50b01c3d830fe9fe3428e39a45daaf47c6dfea6a0be7`
Block length `uncertainty.blockLength`	11
Replications `uncertainty.repetitions`	1000
Seed `uncertainty.seed`	20261117

Monte Carlo

Observed path

Field	Value
Terminal wealth (multiple) `terminalWealth`	1.972565
Cumulative return `totalReturn`	97.2565%
Maximum drawdown magnitude `maximumDrawdown`	83.2016%
Longest stretch below the peak (periods) `longestUnderwaterStreakPeriods`	1090
Share of periods below the peak `timeUnderWaterFraction`	98.1717%
Longest losing streak (periods) `longestLosingStreak`	8
Ruin threshold reached `ruined`	No

Circular block bootstrap

Metric	Minimum	Mean	Maximum	Quantiles
Terminal wealth (multiple) `terminalWealth`	0.009298527	6.650846	330.2993	5% = 0.154349 · 50% = 2.032594 · 95% = 25.14366
Cumulative return `totalReturn`	-99.0701%	565.085%	32929.9%	5% = -84.5651% · 50% = 103.259% · 95% = 2414.37%
Maximum drawdown magnitude `maximumDrawdown`	43.9118%	78.1322%	99.2459%	5% = 58.2934% · 50% = 79.0083% · 95% = 95.1851%
Longest stretch below the peak (periods) `longestUnderwaterStreakPeriods`	139	691.315	1258	5% = 254.5 · 50% = 626 · 95% = 1231.05
Share of periods below the peak `timeUnderWaterFraction`	84.8172%	96.0382%	100%	5% = 91.3355% · 50% = 96.5024% · 95% = 99.6025%
Longest losing streak (periods) `longestLosingStreak`	6	9.232	15	5% = 7 · 50% = 9 · 95% = 12
Probability of reaching the ruin threshold `ruinProbability`		52.2%		

Return-order permutation

Metric	Minimum	Mean	Maximum	Quantiles
Maximum drawdown magnitude `maximumDrawdown`	51.2116%	74.5401%	95.3679%	5% = 60.0462% · 50% = 74.3267% · 95% = 88.0974%
Longest stretch below the peak (periods) `longestUnderwaterStreakPeriods`	209	652.986	1226	5% = 329.9 · 50% = 620 · 95% = 1061.25
Share of periods below the peak `timeUnderWaterFraction`	90.938%	96.3355%	99.1256%	5% = 94.0382% · 50% = 96.5024% · 95% = 98.0127%
Longest losing streak (periods) `longestLosingStreak`	6	9.218	20	5% = 7 · 50% = 9 · 95% = 13
Probability of reaching the ruin threshold `ruinProbability`		38.4%		

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`	`9400c540c828c80a26cee32ffc04af0eb6d0f17922b02375b9891ee0649e56aa`
`contentHash`	`692c66da313171185b0965db24b620d3ab2436ce96c59faf17e337171523de5f`
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`	1.972565

Provenance and traceability

Evidence and input hashes	
Field	**Value**
`bundleSchemaVersion`	strateva-evidence-bundle/v3
`artifactId`	`urn:strateva:strategy-trace:9400c540c828c80a26cee32ffc04af0eb6d0f17922b02375b9891ee0649e56aa`
`engineVersion`	0.9.0
`kernelVersion`	1.1.0
`generatedAt`	2026-11-17T15:49:02Z
`contentHash`	`71fdfe5a0f2fc7af3b6cdfbfdfe007d7509b3e3e6de3e4b3483dc542887a3073`
Strategy return series hash `inputHashes.strategyReturns`	f8f2fe5def44489dd8410a0cba40fa95b115eb9382d6bb68dd695d0abaea4fa2
Benchmark return series hash `inputHashes.benchmarkReturns`	77cf3b4310c4c50bc9705f96996b50e682211c0f4d5ac1ebfa7b6f43924d0699

Evidence and input hashes	
Field	**Value**
`lineage`	strategyTrace:9400c540c828c80a26cee32ffc04af0eb6d0f17922b02375b9891ee0649e56aa · scope:20fbde44f83f650a96d6c925ee0c59b38032c44bef692c64e97b113fcc7e8c72 · artifact:a17a6dd75801b7d1eebd439a11f5c9c367bcf7310ab297cdcedc2e2f341f52e3 · data:2975eabbbb6cd04c5a55d943045bf93a38dcdefec006e83b26205c8ad82ea534

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-49ada11f
`runId`	tema-volatility-sizing-causal
`generatedAt`	2026-11-17T15:49:02Z
`scopeContentHash`	`20fbde44f83f650a96d6c925ee0c59b38032c44bef692c64e97b113fcc7e8c72`
`artifactContentHash`	`a17a6dd75801b7d1eebd439a11f5c9c367bcf7310ab297cdcedc2e2f341f52e3`
`dataContentHash`	`2975eabbbb6cd04c5a55d943045bf93a38dcdefec006e83b26205c8ad82ea534`
`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`	`9400c540c828c80a26cee32ffc04af0eb6d0f17922b02375b9891ee0649e56aa`

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.