Apple IBS–EMA at the next open

> **Strategy evaluated** · **Nivel de evidencia** Histórico · Development · Sample 2011-01-04 21:00:00+00:00 to 2023-08-04 20:00:00+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`	3167	N/A
Periods per year `annualization`	252	N/A
Annual risk-free rate `risk_free_annual`	0%	N/A
Cumulative return `total_return`	284.353%	N/A
Annualized compound return (CAGR) `cagr`	11.3083%	N/A
Annualized arithmetic return `annual_return_arithmetic`	12.8702%	N/A
Annualized volatility `annual_volatility`	20.7399%	N/A
Sharpe `sharpe`	0.6205531	N/A
Sortino `sortino`	0.9053244	N/A
Maximum drawdown `max_drawdown`	-36.8536%	N/A
Periods to the maximum drawdown trough `max_drawdown_underwater_periods`	100	N/A
Periods from the previous peak to recovery `max_drawdown_recovery_periods`	513	N/A
Calmar `calmar`	0.3068427	N/A
Share of positive periods `positive_period_rate`	19.419%	N/A
Alias for the share of positive periods `hit_rate`	19.419%	N/A

Absolute performance · Strategy and benchmark		
Metric	**Strategy**	**Benchmark**
Skewness `skewness`	-0.09484201	N/A
Excess kurtosis `excess_kurtosis`	18.48239	N/A

Active performance · Strategy versus benchmark · No evidence supplied.

Statistical uncertainty

Strategy · Mean excess return · HAC	
Field	**Value**
Status `status`	evaluated
Observations `n_obs`	3167
Lags `lags`	8
Weighting kernel `kernel`	bartlett
Estimate per period `estimate`	0.0510723%
Annualized estimate `annualized_estimate`	12.8702%
Standard error `standard_error`	0.0203071%
Annualized standard error `annualized_standard_error`	5.11738%
t-statistic `t_stat`	2.515006
Two-sided p-value (normal) `p_value_two_sided_normal`	0.01190305

Strategy · Sharpe ratio interval · block bootstrap	
Field	**Value**
Observations `n_obs`	3167
Block length `block_length`	5
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

Strategy · Sharpe ratio interval · block bootstrap	
Field	**Value**
Replications with no defined estimate `undefined_repetitions`	0
Status `status`	evaluated
Point estimate `point_estimate`	0.6205531
Standard error `standard_error`	0.254365
Lower interval bound `ci_lower`	0.1256711
Upper interval bound `ci_upper`	1.139806

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`	42
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

Engine configuration	
Field	**Value**
`timezone`	UTC
`calendar`	NASDAQ
Confidence level `uncertainty.confidence`	95%
`uncertainty.hacLagPolicy.kind`	sample-size-bartlett-v1
`uncertainty.timeBasis.kind`	session-grid
Expected calendar hash `uncertainty.timeBasis.expectedEndsHash`	`39b15b70e2da90ed8d5856fbb752b5006877b87c3278016584204cefd55dab12`
Block length `uncertainty.blockLength`	5
Replications `uncertainty.repetitions`	1000
Seed `uncertainty.seed`	20261116

Monte Carlo

Observed path	
Field	**Value**
Terminal wealth (multiple) `terminalWealth`	3.843534
Cumulative return `totalReturn`	284.353%
Maximum drawdown magnitude `maximumDrawdown`	36.8536%
Longest stretch below the peak (periods) `longestUnderwaterStreakPeriods`	512
Share of periods below the peak `timeUnderWaterFraction`	74.8342%
Longest losing streak (periods) `longestLosingStreak`	7
Ruin threshold reached `ruined`	No

Circular block bootstrap				
Metric	**Minimum**	**Mean**	**Maximum**	**Quantiles**
Terminal wealth (multiple) `terminalWealth`	0.5283514	4.69118	30.63868	5% = 1.275618 · 50% = 3.800995 · 95% = 11.1543
Cumulative return `totalReturn`	-47.1649%	369.118%	2963.87%	5% = 27.5618% · 50% = 280.099% · 95% = 1015.43%
Maximum drawdown magnitude `maximumDrawdown`	14.818%	36.8677%	69.5063%	5% = 23.2375% · 50% = 35.7114% · 95% = 55.0302%
Longest stretch below the peak (periods) `longestUnderwaterStreakPeriods`	199	949.663	3163	5% = 345 · 50% = 804.5 · 95% = 2020.05
Share of periods below the peak `timeUnderWaterFraction`	73.6344%	89.594%	99.8737%	5% = 82.2861% · 50% = 89.7379% · 95% = 96.4635%
Longest losing streak (periods) `longestLosingStreak`	4	6.506	12	5% = 5 · 50% = 6 · 95% = 9
Probability of reaching the ruin threshold `ruinProbability`		1.5%		

Return-order permutation				
Metric	**Minimum**	**Mean**	**Maximum**	**Quantiles**
Maximum drawdown magnitude `maximumDrawdown`	22.097%	39.5003%	67.0072%	5% = 28.4622% · 50% = 38.6421% · 95% = 54.1418%
Longest stretch below the peak (periods) `longestUnderwaterStreakPeriods`	272	936.614	2351	5% = 473.95 · 50% = 867 · 95% = 1639.15
Share of periods below the peak `timeUnderWaterFraction`	85.8541%	91.1643%	94.1269%	5% = 88.917% · 50% = 91.222% · 95% = 93.0865%
Longest losing streak (periods) `longestLosingStreak`	3	4.242	9	5% = 3 · 50% = 4 · 95% = 6
Probability of reaching the ruin threshold `ruinProbability`		0.7%		

Simulation settings and bindings	
Field	**Value**
`simulationSchemaVersion`	strateva-simulation-evidence/v2
`engineVersion`	0.9.0
`kernelVersion`	1.1.0
`observationCount`	3167
`strategyTraceHash`	`dea3159619aea74a5093e223a5e6e6ccf0fc02796ae946756e828d04e6bc3fba`
`contentHash`	`70ad6a1598dd9a47cd05d61b09a239e5aaa9313ac54e151704f8910c87959327`
Replications `configuration.repetitions`	1000
Seed `configuration.seed`	20261116
Block length `configuration.blockLength`	5
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`	3.843534

Provenance and traceability

Evidence and input hashes	
Field	**Value**
`bundleSchemaVersion`	strateva-evidence-bundle/v3

Evidence and input hashes	
Field	**Value**
`artifactId`	`urn:strateva:strategy-trace:dea3159619aea74a5093e223a5e6e6ccf0fc02796ae946756e828d04e6bc3fba`
`engineVersion`	0.9.0
`kernelVersion`	1.1.0
`generatedAt`	2026-11-17T16:32:32Z
`contentHash`	`44eea209dc8c4c89f1f0f209b0e53b206cc845a3aea3685e086ba240ddd808fa`
Strategy return series hash `inputHashes.strategyReturns`	dba7e814a7853080b896be1e8e3bdbc8cdc0ec3434b3930eeec5bc8188640352
Benchmark return series hash `inputHashes.benchmarkReturns`	N/A
`lineage`	strategyTrace:dea3159619aea74a5093e223a5e6e6ccf0fc02796ae946756e828d04e6bc3fba · scope:55a5987da15515e234141a8fe5d508885f2a0da4bdf10986b24cb6c28d0f997d · artifact:061c441b8e00832bc02d3b5980ba562f694bf114b37ac2084d58fc7d15aafd21 · data:59a2661eb0c8844d9b600214077df393a51d4715c8e8a4d04429b91448c150b0

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-2595aabd
`runId`	ibs-ema-evidence
`generatedAt`	2026-11-17T16:32:32Z
`scopeContentHash`	`55a5987da15515e234141a8fe5d508885f2a0da4bdf10986b24cb6c28d0f997d`
`artifactContentHash`	`061c441b8e00832bc02d3b5980ba562f694bf114b37ac2084d58fc7d15aafd21`
`dataContentHash`	`59a2661eb0c8844d9b600214077df393a51d4715c8e8a4d04429b91448c150b0`
`frequency.barInterval`	1d
Periods per year `frequency.periodsPerYear`	252
`frequency.calendar`	NASDAQ
`frequency.sourceTimezone`	America/New_York

StrategyTrace · Identity, frequency, conventions and benchmark	
Field	**Value**
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	NONE
benchmark.symbol	N/A
contentHash	dea3159619aea74a5093e223a5e6e6ccf0fc02796ae946756e828d04e6bc3fba

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.