Paper 5 C28 — Original Assessment Evidence

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Provenance and interpretation

This catalog reproduces each role-conditioned coding agent's original `allowed_output`, `uncertainty` and `source_spans` strings from the frozen REF_A/REF_B assessment forms. The original case ID is the authoritative join key; the display label is retained for readability. Codes are original non-exclusive classifications from the accompanying documentary-condition register (DOI2). Exact submitted source strings are preserved in the accompanying CSV, including the 32 context-range end points corrected in the separate 212-entry audit ledger. File-only citations are listed in the separate 18-entry ledger.

DOI1 (core replication): https://doi.org/10.7910/DVN/W2RJ51.
DOI2 (documentary conditions): https://doi.org/10.7910/DVN/4Q8BFP.

Original identifiers and paired results

01. QUANTSTATS_01 — QuantStats: CAGR

C27 display alias: `QuantStats_01` **Paired status:** Jointly unresolved
Recorded topics: `PERIOD_BASIS; SCALE_SIGN; INPUT_PREPARATION`

REF_A submitted: UNRESOLVED; period-count CAGR conditional on 1005 returns is 0.00414672024023 fraction; see Q1

REF_A uncertainty: Elapsed-year convention and percentage scaling and initial return treatment unspecified

REF_A source citations (3):

- cases/QUANTSTATS_01/documentary_extract.txt:2-14
- cases/QUANTSTATS_01/documentary_extract_provenance.json:2-8
- cases/QUANTSTATS_01/case_context.json:1-14

REF_B submitted: UNRESOLVED; 1005-return fraction candidate 0.004146720240231216; see Q1

REF_B uncertainty: Initial return handling and percentage scale not fixed

REF_B source citations (2):

- cases/QUANTSTATS_01/documentary_extract.txt:2-14
- cases/QUANTSTATS_01/documentary_extract_provenance.json:2-11

Source-span ledger: 5 line-range occurrences; 4 initially in bounds; 1 documented endpoint correction(s); 0 file-only citation(s).

02. QUANTSTATS_02 — QuantStats: Maximum drawdown

C27 display alias: `QuantStats_02` **Paired status:** Jointly unresolved
Recorded topics: `SCALE_SIGN; INPUT_PREPARATION`

REF_A submitted: UNRESOLVED scale; relative loss is -0.243421052631579 or -24.3421052631579 percentage points; see Q2

REF_A uncertainty: Percentage wording does not identify numeric scaling; preparation baseline not supplied

REF_A source citations (3):

- cases/QUANTSTATS_02/documentary_extract.txt:2-12
- cases/QUANTSTATS_02/documentary_extract_provenance.json:2-8
- cases/QUANTSTATS_02/case_context.json:1-11

REF_B submitted: UNRESOLVED; fraction -0.2434210526315783 or percentage -24.34210526315783

REF_B uncertainty: Percentage wording does not establish numerical scaling or prepared-return conversion

REF_B source citations (2):

- cases/QUANTSTATS_02/documentary_extract.txt:2-12
- cases/QUANTSTATS_02/documentary_extract_provenance.json:2-11

Source-span ledger: 5 line-range occurrences; 4 initially in bounds; 1 documented endpoint correction(s); 0 file-only citation(s).

03. QUANTSTATS_03 — QuantStats: Sortino ratio

C27 display alias: QuantStats_03 **Paired status:** Jointly unresolved
Recorded topics: ESTIMATOR_DIVISOR; INPUT_PREPARATION

REF_A submitted: UNRESOLVED; all-period lower-partial-moment convention gives 0.148255112839882; negative-period-only convention gives 0.101815950431206; see Q3

REF_A uncertainty: Downside denominator and initial return convention not defined

REF_A source citations (3):

- cases/QUANTSTATS_03/documentary_extract.txt:2-19
- cases/QUANTSTATS_03/documentary_extract_provenance.json:2-8
- cases/QUANTSTATS_03/case_context.json:1-14

REF_B submitted: UNRESOLVED; all-return downside divisor candidate 0.1482551128398820; negative-return divisor candidate 0.1018159504312056

REF_B uncertainty: Downside divisor and initial-return preparation unspecified

REF_B source citations (2):

- cases/QUANTSTATS_03/documentary_extract.txt:2-19
- cases/QUANTSTATS_03/documentary_extract_provenance.json:2-11

Source-span ledger: 5 line-range occurrences; 4 initially in bounds; 1 documented endpoint correction(s); 0 file-only citation(s).

04. QUANTSTATS_04 — QuantStats: Volatility

C27 display alias: QuantStats_04 **Paired status:** Jointly unresolved
Recorded topics: ESTIMATOR_DIVISOR; INPUT_PREPARATION

REF_A submitted: UNRESOLVED; sqrt(252)*sd of 1005 simple returns is 0.168355264494637 sample or 0.168271484810676 population; see Q4

REF_A uncertainty: Degrees of freedom and preparation/initial-row convention not defined

REF_A source citations (3):

- cases/QUANTSTATS_04/documentary_extract.txt:2-15
- cases/QUANTSTATS_04/documentary_extract_provenance.json:2-8
- cases/QUANTSTATS_04/case_context.json:1-13

REF_B submitted: UNRESOLVED; sample candidate 0.1683552644946373; population candidate 0.1682714848106760

REF_B uncertainty: Standard-deviation divisor and initial-return preparation unspecified

REF_B source citations (2):

- cases/QUANTSTATS_04/documentary_extract.txt:2-15
- cases/QUANTSTATS_04/documentary_extract_provenance.json:2-11

Source-span ledger: 5 line-range occurrences; 4 initially in bounds; 1 documented endpoint correction(s); 0 file-only citation(s).

05. FFN_01 — ffn: CAGR

C27 display alias: ffn_01 **Paired status:** Jointly unresolved
Recorded topics: PERIOD_BASIS

REF_A submitted: UNRESOLVED day-count; (25.66/25.24)^(1/Y)-1; Y=1457/365 gives 0.00414288368204; Y=1457/365.25 gives 0.00414572714743; see F1

REF_A uncertainty: Dates and endpoints documented but year-length/day-count convention absent

REF_A source citations (3):

- cases/FFN_01/documentary_extract.txt:2-10
- cases/FFN_01/documentary_extract_provenance.json:2-8
- cases/FFN_01/case_context.json:1-11

REF_B submitted: UNRESOLVED; ACT/365 0.004142883682040077; ACT/365.25 0.004145727147434553

REF_B uncertainty: Elapsed-year day-count convention unspecified

REF_B source citations (2):

- cases/FFN_01/documentary_extract.txt:2-10
- cases/FFN_01/documentary_extract_provenance.json:2-8

Source-span ledger: 5 line-range occurrences; 4 initially in bounds; 1 documented endpoint correction(s); 0 file-only citation(s).

06. FFN_02 — ffn: Maximum drawdown

C27 display alias: ffn_02 **Paired status:** Jointly unresolved
Recorded topics: SCALE_SIGN; LINKED_DEFINITION

REF_A submitted: UNRESOLVED; relative magnitude 0.243421052631579; signed relative -0.243421052631579; see F2

REF_A uncertainty: Extract supplies metric name without formula/sign/unit definition; referenced drawdown-series definition absent

REF_A source citations (3):

- cases/FFN_02/documentary_extract.txt:2-3
- cases/FFN_02/documentary_extract_provenance.json:2-8
- cases/FFN_02/case_context.json:1-11

REF_B submitted: UNRESOLVED; conventional relative magnitude 0.2434210526315783

REF_B uncertainty: Definition names metric without fixing sign or relative versus absolute convention

REF_B source citations (2):

- cases/FFN_02/documentary_extract.txt:2-3
- cases/FFN_02/documentary_extract_provenance.json:2-8

Source-span ledger: 5 line-range occurrences; 4 initially in bounds; 1 documented endpoint correction(s); 0 file-only citation(s).

07. FFN_03 — ffn: Sortino ratio

C27 display alias: ffn_03 **Paired status:** Jointly unresolved
Recorded topics: ESTIMATOR_DIVISOR; LINKED_DEFINITION

REF_A submitted: UNRESOLVED; all-period downside RMS gives 0.148255112839882; loss-period RMS gives 0.101815950431206; see F3

REF_A uncertainty: Downside formula and return-preparation details not supplied; linked external articles not consulted

REF_A source citations (3):

- cases/FFN_03/documentary_extract.txt:2-16
- cases/FFN_03/documentary_extract_provenance.json:2-8
- cases/FFN_03/case_context.json:1-14

REF_B submitted: UNRESOLVED; all-return candidate 0.1482551128398820; negative-return candidate 0.1018159504312056

REF_B uncertainty: Linked external explanations not supplied; downside estimator unspecified

REF_B source citations (2):

- cases/FFN_03/documentary_extract.txt:2-16
- cases/FFN_03/documentary_extract_provenance.json:2-8

Source-span ledger: 5 line-range occurrences; 4 initially in bounds; 1 documented endpoint correction(s); 0 file-only citation(s).

08. FFN_04 — ffn: Total return

C27 display alias: ffn_04 **Paired status:** Concordant point
Recorded topics: NO_REPORTED_UNRESOLVED_SELECTION

REF_A submitted: 0.0166402535657686; absolute tolerance 1e-12; see F4

REF_A uncertainty: NONE

REF_A source citations (4):

- cases/FFN_04/documentary_extract.txt:2-7
- cases/FFN_04/documentary_extract_provenance.json:2-8
- cases/FFN_04/raw_input.csv:2-1007
- cases/FFN_04/case_context.json:1-11

REF_B submitted: 0.01664025356576859; absolute tolerance 1e-12

REF_B uncertainty: NONE

REF_B source citations (2):

- cases/FFN_04/documentary_extract.txt:2-7
- cases/FFN_04/documentary_extract_provenance.json:2-8

Source-span ledger: 6 line-range occurrences; 5 initially in bounds; 1 documented endpoint correction(s); 0 file-only citation(s).

09. RISKFOLIO_01 — Riskfolio-Lib: Historical conditional VaR

C27 display alias: Riskfolio-Lib_01 **Paired status:** Concordant point
Recorded topics: NO_REPORTED_UNRESOLVED_SELECTION

REF_A submitted: 0.0257741954043786; v=0.0169242089771892; v+sum(max(-r-v;0))/(.05*1005); tolerance 1e-12; see R1

REF_A uncertainty: NONE under empirical distribution of supplied observations

REF_A source citations (4):

- cases/RISKFOLIO_01/documentary_extract.txt:2-24
- cases/RISKFOLIO_01/documentary_extract_provenance.json:2-8
- cases/RISKFOLIO_01/case_context.json:1-13
- cases/RISKFOLIO_04/documentary_extract.txt:4-6

REF_B submitted: 0.02577419540437855; q+sum(max(-r-q;0))/(.05*1005); tolerance 1e-12

REF_B uncertainty: NONE under empirical distribution of supplied returns

REF_B source citations (3):

- cases/RISKFOLIO_01/documentary_extract.txt:2-24
- cases/RISKFOLIO_04/documentary_extract.txt:4-13
- cases/RISKFOLIO_01/documentary_extract_provenance.json:2-8

Source-span ledger: 7 line-range occurrences; 6 initially in bounds; 1 documented endpoint correction(s); 0 file-only citation(s).

10. RISKFOLIO_02 — Riskfolio-Lib: Mean absolute deviation

C27 display alias: `Riskfolio-Lib_02` **Paired status:** Concordant point
Recorded topics: `NO_REPORTED_UNRESOLVED_SELECTION`

REF_A submitted: 0.00777590730690009; mean(abs(r-mean(r))); tolerance 1e-12; see R2

REF_A uncertainty: NONE using empirical mean of supplied observations

REF_A source citations (3):

- cases/RISKFOLIO_02/documentary_extract.txt:2-16
- cases/RISKFOLIO_02/documentary_extract_provenance.json:2-8
- cases/RISKFOLIO_02/case_context.json:1-11

REF_B submitted: 0.007775907306900091; mean(abs(r-mean(r))); tolerance 1e-12

REF_B uncertainty: NONE under empirical expectation of supplied returns

REF_B source citations (2):

- cases/RISKFOLIO_02/documentary_extract.txt:2-16
- cases/RISKFOLIO_02/documentary_extract_provenance.json:2-8

Source-span ledger: 5 line-range occurrences; 4 initially in bounds; 1 documented endpoint correction(s); 0 file-only citation(s).

11. RISKFOLIO_03 — Riskfolio-Lib: Relative maximum drawdown

C27 display alias: `Riskfolio-Lib_03` **Paired status:** Different resolution
Recorded topics: `FORMULA_NAME_CONFLICT; SCALE_SIGN`

REF_A submitted: UNRESOLVED; literal documented wealth-difference maximum is 0.307844690966720; peak-relative magnitude is 0.243421052631579; see R3

REF_A uncertainty: MDD_Rel name suggests relative loss but displayed formula lacks division by peak; indexing/base also incomplete

REF_A source citations (4):

- cases/RISKFOLIO_03/documentary_extract.txt:2-8
- cases/RISKFOLIO_03/documentary_extract.txt:20-23
- cases/RISKFOLIO_03/documentary_extract_provenance.json:2-8
- cases/RISKFOLIO_03/case_context.json:1-11

REF_B submitted: 0.3078446909667185; max(running_peak(W)-W); tolerance 1e-12

REF_B uncertainty: NONE for literal supplied formula; do not replace with relative peak-normalized drawdown

REF_B source citations (2):

- cases/RISKFOLIO_03/documentary_extract.txt:2-23
- cases/RISKFOLIO_03/documentary_extract_provenance.json:2-8

Source-span ledger: 6 line-range occurrences; 5 initially in bounds; 1 documented endpoint correction(s); 0 file-only citation(s).

12. RISKFOLIO_04 — Riskfolio-Lib: Historical VaR

C27 display alias: Riskfolio-Lib_04 **Paired status:** Concordant point
Recorded topics: NO_REPORTED_UNRESOLVED_SELECTION

REF_A submitted: 0.0169242089771892; negative 51st ascending return under strict empirical F(x)>.05; tolerance 1e-12; see R4

REF_A uncertainty: NONE under empirical distribution and documented strict inequality

REF_A source citations (3):

- cases/RISKFOLIO_04/documentary_extract.txt:2-22
- cases/RISKFOLIO_04/documentary_extract_provenance.json:2-8
- cases/RISKFOLIO_04/case_context.json:1-13

REF_B submitted: 0.01692420897718916; negative 51st ascending return; tolerance 1e-12

REF_B uncertainty: NONE under empirical CDF and documented strict F>alpha

REF_B source citations (2):

- cases/RISKFOLIO_04/documentary_extract.txt:2-22
- cases/RISKFOLIO_04/documentary_extract_provenance.json:2-8

Source-span ledger: 5 line-range occurrences; 4 initially in bounds; 1 documented endpoint correction(s); 0 file-only citation(s).

13. B_pyportfolioopt_01 — PyPortfolioOpt: Annualized volatility

C27 display alias: PyPortfolioOpt_01 **Paired status:** Concordant point
Recorded topics: NO_REPORTED_UNRESOLVED_SELECTION

REF_A submitted: 0.206944579990746; sqrt(w'*(252*sample_cov(R))*w); tolerance 1e-10; see P1

REF_A uncertainty: NONE for supplied clean data and annualized sample-covariance interpretation

REF_A source citations (4):

- cases/B_pyportfolioopt_01/case_context.json:1-24
- cases/B_pyportfolioopt_01/documentary_04.txt:2-15
- cases/B_pyportfolioopt_01/documentary_06.txt:2-20
- cases/B_pyportfolioopt_01/document_extraction_receipt.json

REF_B submitted: 0.2069445799907458; sqrt(wT*(252*sample_cov(R))*w); tolerance 1e-10

REF_B uncertainty: NONE for sample covariance and specified weights

REF_B source citations (4):

- cases/B_pyportfolioopt_01/documentary_04.txt:2-15
- cases/B_pyportfolioopt_01/documentary_06.txt:2-20
- cases/B_pyportfolioopt_01/documentary_03.txt:7-9
- cases/B_pyportfolioopt_01/document_extraction_receipt.json

Source-span ledger: 6 line-range occurrences; 5 initially in bounds; 1 documented endpoint correction(s); 2 file-only citation(s).

14. B_pyportfolioopt_02 — PyPortfolioOpt: Expected return

C27 display alias: PyPortfolioOpt_02 **Paired status:** Concordant point
Recorded topics: NO_REPORTED_UNRESOLVED_SELECTION

REF_A submitted: 0.195326123948240; sum_j w_j*((P_last_j/P_first_j)^(252/755)-1); tolerance 1e-10; see P2

REF_A uncertainty: NONE for asset-CAGR weighted expected return; differs from CAGR of daily rebalanced portfolio

REF_A source citations (4):

- cases/B_pyportfolioopt_02/case_context.json:1-24
- cases/B_pyportfolioopt_02/documentary_05.txt:2-26
- cases/B_pyportfolioopt_02/documentary_03.txt:35-40
- cases/B_pyportfolioopt_02/document_extraction_receipt.json

REF_B submitted: 0.1953261239482399; mean_j(prod_t(1+R_tj)^(252/755)-1); tolerance 1e-10

REF_B uncertainty: NONE; weighted asset CAGR differs from CAGR of rebalanced portfolio

REF_B source citations (3):

- cases/B_pyportfolioopt_02/documentary_05.txt:2-26
- cases/B_pyportfolioopt_02/documentary_03.txt:35-40
- cases/B_pyportfolioopt_02/document_extraction_receipt.json

Source-span ledger: 5 line-range occurrences; 4 initially in bounds; 1 documented endpoint correction(s); 2 file-only citation(s).

15. B_pyportfolioopt_03 — PyPortfolioOpt: Sharpe ratio

C27 display alias: PyPortfolioOpt_03 **Paired status:** Jointly unresolved
Recorded topics: LINKED_DEFINITION

REF_A submitted: UNRESOLVED documentary definition; conventional annual Sharpe using specified inputs is 0.943857161936661; see P3

REF_A uncertainty: Packet documents semivariance performance and Sortino but lacks direct Sharpe reporting formula; conditional reconstruction supplied

REF_A source citations (5):

- cases/B_pyportfolioopt_03/case_context.json:1-24
- cases/B_pyportfolioopt_03/documentary_05.txt:2-26
- cases/B_pyportfolioopt_03/documentary_06.txt:2-20
- cases/B_pyportfolioopt_03/documentary_08.txt:2-22
- cases/B_pyportfolioopt_03/document_extraction_receipt.json

REF_B submitted: UNRESOLVED; conventional supplied-input Sharpe candidate 0.9438571619366621

REF_B uncertainty: Available performance docstring concerns semideviation and Sortino; applicable Sharpe reporting formula not explicitly supplied

REF_B source citations (4):

- cases/B_pyportfolioopt_03/documentary_05.txt:2-26
- cases/B_pyportfolioopt_03/documentary_06.txt:2-20
- cases/B_pyportfolioopt_03/documentary_03.txt:53-62
- cases/B_pyportfolioopt_03/documentary_08.txt:2-22

Source-span ledger: 8 line-range occurrences; 7 initially in bounds; 1 documented endpoint correction(s); 1 file-only citation(s).

16. B_pyportfolioopt_04 — PyPortfolioOpt: Semideviation

C27 display alias: PyPortfolioOpt_04 **Paired status:** Concordant point
Recorded topics: NO_REPORTED_UNRESOLVED_SELECTION

REF_A submitted: 0.137768587641908; sqrt(252*mean(min(R*w;0)^2)); tolerance 1e-10; see P4

REF_A uncertainty: NONE for downside of portfolio return rather than weighted asset semideviations

REF_A source citations (5):

- cases/B_pyportfolioopt_04/case_context.json:1-24
- cases/B_pyportfolioopt_04/documentary_03.txt:19-48
- cases/B_pyportfolioopt_04/documentary_07.txt:7-18
- cases/B_pyportfolioopt_04/documentary_08.txt:2-22
- cases/B_pyportfolioopt_04/document_extraction_receipt.json

REF_B submitted: 0.1377685876419084; sqrt(252*mean(min(Rw;0)^2)); tolerance 1e-10

REF_B uncertainty: General prose calls output semivariance at documentary_03:61; metric name and specific API agree on semideviation and control this reading

REF_B source citations (3):

- cases/B_pyportfolioopt_04/documentary_03.txt:19-48
- cases/B_pyportfolioopt_04/documentary_07.txt:7-18
- cases/B_pyportfolioopt_04/documentary_08.txt:2-22

Source-span ledger: 7 line-range occurrences; 6 initially in bounds; 1 documented endpoint correction(s); 1 file-only citation(s).

17. B_skfolio_01 — skfolio: Maximum drawdown

C27 display alias: skfolio_01 **Paired status:** Jointly unresolved
Recorded topics: SCALE_SIGN

REF_A submitted: UNRESOLVED sign; drawdown magnitude max_t(max(0;S_1..S_t)-S_t)=0.330061599274122; see S1

REF_A uncertainty: Uncompounded path and initial baseline established; sign of reported maximum drawdown not explicitly supplied

REF_A source citations (6):

- cases/B_skfolio_01/case_context.json:1-22
- cases/B_skfolio_01/documentary_01.txt:54-79
- cases/B_skfolio_01/documentary_06.txt:8-16
- cases/B_skfolio_01/documentary_07.txt:8-25
- cases/B_skfolio_01/documentary_08.txt:1-13
- cases/B_skfolio_01/document_extraction_receipt.json

REF_B submitted: UNRESOLVED; maximum peak-to-trough magnitude 0.3300615992741220; reporting sign unspecified

REF_B uncertainty: Drawdown sign and explicit difference formula not supplied; compounded relative candidate is inapplicable

REF_B source citations (4):

- cases/B_skfolio_01/documentary_01.txt:54-79
- cases/B_skfolio_01/documentary_06.txt:8-16
- cases/B_skfolio_01/documentary_07.txt:8-20
- cases/B_skfolio_01/documentary_08.txt:1-13

Source-span ledger: 9 line-range occurrences; 8 initially in bounds; 1 documented endpoint correction(s); 1 file-only citation(s).

18. B_skfolio_02 — skfolio: Annualized Sharpe ratio

C27 display alias: skfolio_02 **Paired status:** Concordant point
Recorded topics: NO_REPORTED_UNRESOLVED_SELECTION

REF_A submitted: 1.03525375136494; sqrt(252)*mean(R*w)/sample_sd(R*w); tolerance 1e-10; see S2

REF_A uncertainty: NONE under annualized mean and sample-standard-deviation reporting

REF_A source citations (5):

- cases/B_skfolio_02/case_context.json:1-22
- cases/B_skfolio_02/documentary_01.txt:36-40
- cases/B_skfolio_02/documentary_05.txt:8-14
- cases/B_skfolio_02/documentary_11.txt:5-9
- cases/B_skfolio_02/document_extraction_receipt.json

REF_B submitted: 1.035253751364938; tolerance 1e-10

REF_B uncertainty: NONE using standard square-root annualization of documented mean/standard-deviation ratio

REF_B source citations (4):

- cases/B_skfolio_02/documentary_01.txt:36-40
- cases/B_skfolio_02/documentary_01.txt:54-79
- cases/B_skfolio_02/documentary_05.txt:8-14
- cases/B_skfolio_02/documentary_11.txt:5-9

Source-span ledger: 8 line-range occurrences; 7 initially in bounds; 1 documented endpoint correction(s); 1 file-only citation(s).

19. B_skfolio_03 — skfolio: Standard deviation

C27 display alias: skfolio_03 **Paired status:** Concordant point
Recorded topics: NO_REPORTED_UNRESOLVED_SELECTION

REF_A submitted: 0.280187506865434; sqrt(252)*sqrt(sum((r-mean(r))^2)/754); tolerance 1e-10; see S3

REF_A uncertainty: NONE under documented sample standard deviation and annualized reporting

REF_A source citations (5):

- cases/B_skfolio_03/case_context.json:1-22
- cases/B_skfolio_03/documentary_01.txt:36-40
- cases/B_skfolio_03/documentary_05.txt:1-28
- cases/B_skfolio_03/documentary_10.txt:17-21
- cases/B_skfolio_03/document_extraction_receipt.json

REF_B submitted: 0.2801875068654335; sqrt(252)*sd(Rw;ddof=1); tolerance 1e-10

REF_B uncertainty: NONE using conventional square-root standard-deviation annualization

REF_B source citations (3):

- cases/B_skfolio_03/documentary_01.txt:36-40
- cases/B_skfolio_03/documentary_05.txt:1-28
- cases/B_skfolio_03/documentary_12.txt:1-16

Source-span ledger: 7 line-range occurrences; 6 initially in bounds; 1 documented endpoint correction(s); 1 file-only citation(s).

20. B_skfolio_04 — skfolio: Mean

C27 display alias: skfolio_04 **Paired status:** Concordant point
Recorded topics: NO_REPORTED_UNRESOLVED_SELECTION

REF_A submitted: 0.290065167568029; 252*mean(R*w); tolerance 1e-10; see S4

REF_A uncertainty: NONE

REF_A source citations (6):

- cases/B_skfolio_04/case_context.json:1-22
- cases/B_skfolio_04/documentary_01.txt:36-40
- cases/B_skfolio_04/documentary_01.txt:54-79
- cases/B_skfolio_04/documentary_03.txt:1-24
- cases/B_skfolio_04/documentary_09.txt:5-9
- cases/B_skfolio_04/document_extraction_receipt.json

REF_B submitted: 0.2900651675680294; 252*mean(Rw); tolerance 1e-10

REF_B uncertainty: NONE

REF_B source citations (3):

- cases/B_skfolio_04/documentary_01.txt:36-40
- cases/B_skfolio_04/documentary_03.txt:1-24
- cases/B_skfolio_04/documentary_02.txt:165-168

Source-span ledger: 8 line-range occurrences; 7 initially in bounds; 1 documented endpoint correction(s); 1 file-only citation(s).

21. B_vectorbt_01 — vectorbt: Maximum drawdown

C27 display alias: vectorbt_01 **Paired status:** Jointly unresolved
Recorded topics: PRODUCER_DEFAULTS; SCALE_SIGN

REF_A submitted: UNRESOLVED; fully invested close-price holding gives signed relative drawdown -0.191849776798164; see V1

REF_A uncertainty: Dispatch definition and holding acquisition defaults absent; sign/scale and exact portfolio path not established

REF_A source citations (6):

- cases/B_vectorbt_01/case_context.json:1-24
- cases/B_vectorbt_01/documentary_03.txt:1
- cases/B_vectorbt_01/documentary_08.txt:1-3
- cases/B_vectorbt_01/documentary_10.txt:1-3
- cases/B_vectorbt_01/documentary_11.txt:1-10
- cases/B_vectorbt_01/document_extraction_receipt.json

REF_B submitted: UNRESOLVED; fully invested relative magnitude candidate 0.1918497767981638

REF_B uncertainty: Sign and normalization absent; referenced holding/order defaults not resolved in packet

REF_B source citations (4):

- cases/B_vectorbt_01/documentary_03.txt:1
- cases/B_vectorbt_01/documentary_08.txt:1-3
- cases/B_vectorbt_01/documentary_10.txt:1-3
- cases/B_vectorbt_01/documentary_11.txt:1-10

Source-span ledger: 9 line-range occurrences; 8 initially in bounds; 1 documented endpoint correction(s); 1 file-only citation(s).

22. B_vectorbt_02 — vectorbt: Annualized volatility

C27 display alias: vectorbt_02 **Paired status:** Jointly unresolved
Recorded topics: PRODUCER_DEFAULTS; ESTIMATOR_DIVISOR; INPUT_PREPARATION

REF_A submitted: UNRESOLVED; sample volatility is 0.239482056530234 excluding initial row or 0.239323620037632 including initial zero; see V2

REF_A uncertainty: Dispatch formula and degrees of freedom and first portfolio-return convention absent

REF_A source citations (5):

- cases/B_vectorbt_02/case_context.json:1-24
- cases/B_vectorbt_02/documentary_02.txt:1
- cases/B_vectorbt_02/documentary_06.txt:1
- cases/B_vectorbt_02/documentary_13.txt:1
- cases/B_vectorbt_02/document_extraction_receipt.json

REF_B submitted: UNRESOLVED; sample drop-first candidate 0.2394820565302342; sample zero-first candidate 0.2393236200376323

REF_B uncertainty: Initial portfolio return and variance divisor unspecified; holding defaults incomplete

REF_B source citations (3):

- cases/B_vectorbt_02/documentary_02.txt:1
- cases/B_vectorbt_02/documentary_06.txt:1
- cases/B_vectorbt_02/documentary_13.txt:1

Source-span ledger: 7 line-range occurrences; 6 initially in bounds; 1 documented endpoint correction(s); 1 file-only citation(s).

23. B_vectorbt_03 — vectorbt: Total return

C27 display alias: vectorbt_03 **Paired status:** Jointly unresolved
Recorded topics: PRODUCER_DEFAULTS

REF_A submitted: UNRESOLVED producer defaults; fully invested first-close holding gives 771.820007/552.963501-1=0.395788339744326; see V3

REF_A uncertainty: Order sizing and acquisition-price defaults delegated to absent from_orders/settings documentation

REF_A source citations (6):

- cases/B_vectorbt_03/case_context.json:1-24
- cases/B_vectorbt_03/documentary_01.txt:1
- cases/B_vectorbt_03/documentary_05.txt:1
- cases/B_vectorbt_03/documentary_09.txt:55-83
- cases/B_vectorbt_03/documentary_10.txt:1-3
- cases/B_vectorbt_03/document_extraction_receipt.json

REF_B submitted: UNRESOLVED; immediate fully invested candidate 0.3957883397443263

REF_B uncertainty: One-line definition and unresolved holding/default references do not establish unique cash deployment and reporting convention

REF_B source citations (4):

- cases/B_vectorbt_03/documentary_01.txt:1
- cases/B_vectorbt_03/documentary_05.txt:1
- cases/B_vectorbt_03/documentary_09.txt:29-37
- cases/B_vectorbt_03/documentary_10.txt:1-3

Source-span ledger: 9 line-range occurrences; 8 initially in bounds; 1 documented endpoint correction(s); 1 file-only citation(s).

24. B_vectorbt_04 — vectorbt: Sharpe ratio

C27 display alias: vectorbt_04 **Paired status:** Jointly unresolved
Recorded topics: ESTIMATOR_DIVISOR; INPUT_PREPARATION; PRODUCER_DEFAULTS

REF_A submitted: UNRESOLVED; sqrt(252)*mean(r)/sample_sd(r) is 0.582559401594310 excluding initial row or 0.582173974920905 including initial zero; see V4

REF_A uncertainty: Zero-dispersion behavior documented but ordinary ratio formula and ddof and initial row/producer conventions absent

REF_A source citations (5):

- cases/B_vectorbt_04/case_context.json:1-24
- cases/B_vectorbt_04/documentary_04.txt:1-5
- cases/B_vectorbt_04/documentary_07.txt:1
- cases/B_vectorbt_04/documentary_13.txt:1
- cases/B_vectorbt_04/document_extraction_receipt.json

REF_B submitted: UNRESOLVED; sample drop-first candidate 0.5825594015943101; sample zero-first candidate 0.5821739749209048

REF_B uncertainty: Variance divisor and first-row return not defined; constant-return rules do not resolve this sample

REF_B source citations (3):

- cases/B_vectorbt_04/documentary_04.txt:1-5
- cases/B_vectorbt_04/documentary_07.txt:1
- cases/B_vectorbt_04/documentary_13.txt:1

Source-span ledger: 7 line-range occurrences; 6 initially in bounds; 1 documented endpoint correction(s); 1 file-only citation(s).

25. empyrical_1 — empyrical-reloaded: Maximum drawdown

C27 display alias: empyrical-reloaded_01 **Paired status:** Jointly unresolved
Recorded topics: SCALE_SIGN; LINKED_DEFINITION

REF_A submitted: UNRESOLVED; conventional signed relative drawdown is -0.139505536955962; positive loss convention gives 0.139505536955962; see E1

REF_A uncertainty: Extract provides no drawdown formula/sign; linked cum_returns definition not supplied

REF_A source citations (4):

- cases/empyrical_1/case_context.json:1-22
- cases/empyrical_1/src__empyrical__stats.py__simple_returns.txt:2-16
- cases/empyrical_1/src__empyrical__stats.py__max_drawdown.txt:2-19
- cases/empyrical_1/document_spans.json:11-19

REF_B submitted: UNRESOLVED; conventional negative relative candidate -0.1395055369559611

REF_B uncertainty: Sign and normalization omitted; linked cumulative-return definition not supplied

REF_B source citations (3):

- cases/empyrical_1/src__empyrical__stats.py__max_drawdown.txt:2-19
- cases/empyrical_1/src__empyrical__stats.py__simple_returns.txt:2-16
- cases/empyrical_1/document_spans.json:11-18

Source-span ledger: 7 line-range occurrences; 6 initially in bounds; 1 documented endpoint correction(s); 0 file-only citation(s).

26. empyrical_2 — empyrical-reloaded: Sharpe ratio

C27 display alias: empyrical-reloaded_02 **Paired status:** Jointly unresolved
Recorded topics: ESTIMATOR_DIVISOR

REF_A submitted: UNRESOLVED ddof; sqrt(252)*mean(r)/sd(r) is 1.13897639703148 sample or 1.13973344357371 population; see E2

REF_A uncertainty: Standard-deviation degrees of freedom and detailed referenced return convention absent

REF_A source citations (4):

- cases/empyrical_2/case_context.json:1-22
- cases/empyrical_2/src__empyrical__stats.py__sharpe_ratio.txt:2-35
- cases/empyrical_2/src__empyrical__stats.py__simple_returns.txt:2-16
- cases/empyrical_2/document_spans.json:38-46

REF_B submitted: UNRESOLVED; sample candidate 1.138976397031481; population candidate 1.139733443573712

REF_B uncertainty: Standard-deviation divisor not documented; external link not consulted

REF_B source citations (2):

- cases/empyrical_2/src__empyrical__stats.py__sharpe_ratio.txt:2-35
- cases/empyrical_2/document_spans.json:38-45

Source-span ledger: 6 line-range occurrences; 5 initially in bounds; 1 documented endpoint correction(s); 0 file-only citation(s).

27. empyrical_3 — empyrical-reloaded: Annual volatility

C27 display alias: empyrical-reloaded_03 **Paired status:** Jointly unresolved
Recorded topics: ESTIMATOR_DIVISOR

REF_A submitted: UNRESOLVED ddof; sqrt(252)*sd(r) is 0.224544100052958 sample or 0.224394950850150 population; see E3

REF_A uncertainty: Annualization inputs specified but dispersion estimator degrees of freedom absent

REF_A source citations (4):

- cases/empyrical_3/case_context.json:1-22
- cases/empyrical_3/src__empyrical__stats.py__annual_volatility.txt:2-30
- cases/empyrical_3/src__empyrical__stats.py__simple_returns.txt:2-16
- cases/empyrical_3/document_spans.json:29-37

REF_B submitted: UNRESOLVED; sample candidate 0.2245441000529583; population candidate 0.2243949508501495

REF_B uncertainty: Variance divisor not documented; scaling candidates use 252^(1/2)

REF_B source citations (2):

- cases/empyrical_3/src__empyrical__stats.py__annual_volatility.txt:2-30
- cases/empyrical_3/document_spans.json:29-36

Source-span ledger: 6 line-range occurrences; 5 initially in bounds; 1 documented endpoint correction(s); 0 file-only citation(s).

28. empyrical_4 — empyrical-reloaded: Annual return

C27 display alias: empyrical-reloaded_04 **Paired status:** Concordant point
Recorded topics: NO_REPORTED_UNRESOLVED_SELECTION

REF_A submitted: 0.259785325643964; (1046.4/524.81)^(252/753)-1; tolerance 1e-10; see E4

REF_A uncertainty: NONE after applying documented removal of initial price-only return row

REF_A source citations (4):

- cases/empyrical_4/case_context.json:1-22
- cases/empyrical_4/src__empyrical__stats.py__annual_return.txt:2-42
- cases/empyrical_4/src__empyrical__stats.py__simple_returns.txt:2-16
- cases/empyrical_4/document_spans.json:20-28

REF_B submitted: 0.2597853256439637; prod(1+r)^(252/753)-1; tolerance 1e-10

REF_B uncertainty: NONE; unrelated AMZN missing value must not remove GOOG observations

REF_B source citations (3):

- cases/empyrical_4/src__empyrical__stats.py__annual_return.txt:2-42
- cases/empyrical_4/src__empyrical__stats.py__simple_returns.txt:2-16
- cases/empyrical_4/document_spans.json:20-27

Source-span ledger: 7 line-range occurrences; 6 initially in bounds; 1 documented endpoint correction(s); 0 file-only citation(s).

29. finquant_1 — FinQuant: Sortino ratio

C27 display alias: FinQuant_01 **Paired status:** Jointly unresolved
Recorded topics: PORTFOLIO_CONFIGURATION; INPUT_PREPARATION; PERIOD_BASIS

REF_A submitted: UNRESOLVED; documentary functional (expected_return-.005)/downside_risk; forward-fill normalized-weight annualized scenario gives 1.66150865150220; see N1

REF_A uncertainty: Missing-price treatment and allocation normalization and component annualization/rf-period linkage not established

REF_A source citations (5):

- cases/finquant_1/case_context.json:1-20
- cases/finquant_1/allocation.csv:1-5
- cases/finquant_1/finquant__portfolio.py__comp_sortino.txt:1-5
- cases/finquant_1/finquant__quants.py__sortino_ratio.txt:3-14
- cases/finquant_1/document_spans.json

REF_B submitted: UNRESOLVED; normalized fixed weights and complete cases give literal candidate 26.43193521229363; see FQ1

REF_B uncertainty: Allocation normalization and missing-data handling unspecified; daily downside versus annual rate/return conventions unresolved

REF_B source citations (4):

- cases/finquant_1/finquant__portfolio.py__comp_sortino.txt:1-5
- cases/finquant_1/finquant__quants.py__sortino_ratio.txt:1-14
- cases/finquant_1/finquant__quants.py__downside_risk.txt:1-13
- cases/finquant_1/allocation.csv:1-5

Source-span ledger: 8 line-range occurrences; 7 initially in bounds; 1 documented endpoint correction(s); 1 file-only citation(s).

30. finquant_2 — FinQuant: Value at risk

C27 display alias: FinQuant_02 **Paired status:** Jointly unresolved
Recorded topics: PORTFOLIO_CONFIGURATION; PERIOD_BASIS

REF_A submitted: UNRESOLVED; investment*(mu-sigma*Phi_inverse(.05)); see N2

REF_A uncertainty: Portfolio-to-functional investment/mu/sigma mapping and horizon plus missing-price treatment not supplied; do not replace documented plus-tail expression with conventional loss VaR

REF_A source citations (5):

- cases/finquant_2/case_context.json:1-20
- cases/finquant_2/allocation.csv:1-5
- cases/finquant_2/finquant__portfolio.py__comp_var.txt:1-4
- cases/finquant_2/finquant__quants.py__value_at_risk.txt:1-16
- cases/finquant_2/document_spans.json

REF_B submitted: UNRESOLVED; I*(mu-sigma*Phi_inverse(.05)); I and periods of mu/sigma not established

REF_B uncertainty: Total investment cannot be inferred uniquely from allocation labels; portfolio moments and horizon unspecified

REF_B source citations (3):

- cases/finquant_2/finquant__portfolio.py__comp_var.txt:1-4
- cases/finquant_2/finquant__quants.py__value_at_risk.txt:1-16
- cases/finquant_2/allocation.csv:1-5

Source-span ledger: 7 line-range occurrences; 6 initially in bounds; 1 documented endpoint correction(s); 1 file-only citation(s).

31. finquant_3 — FinQuant: Expected return

C27 display alias: FinQuant_03 **Paired status:** Jointly unresolved
Recorded topics: PORTFOLIO_CONFIGURATION; INPUT_PREPARATION

REF_A submitted: UNRESOLVED; 252*mean(sum(w_j*r_tj)) gives 0.238265370679580 with price forward-fill or 0.238965367386460 with complete return rows; see N3

REF_A uncertainty: Missing-price rule and normalized-allocation mapping and explicit expected-return aggregation formula absent

REF_A source citations (6):

- cases/finquant_3/case_context.json:1-20
- cases/finquant_3/allocation.csv:1-5
- cases/finquant_3/finquant__portfolio.py__comp_expected_return.txt:1-7
- cases/finquant_3/finquant__returns.py__daily_returns.txt:1-7
- cases/finquant_3/finquant__returns.py__historical_mean_return.txt:1-9
- cases/finquant_3/document_spans.json

REF_B submitted: UNRESOLVED; normalized fixed weights: complete-case 0.2389653673864604; forward-filled 0.2382653706795804; columnwise 0.2383490693630659

REF_B uncertainty: Allocation normalization and unequal observation eligibility not fixed

REF_B source citations (4):

- cases/finquant_3/finquant__portfolio.py__comp_expected_return.txt:1-7
- cases/finquant_3/finquant__returns.py__historical_mean_return.txt:1-9
- cases/finquant_3/finquant__returns.py__weighted_mean_daily_returns.txt:1-8
- cases/finquant_3/allocation.csv:1-5

Source-span ledger: 9 line-range occurrences; 8 initially in bounds; 1 documented endpoint correction(s); 1 file-only citation(s).

32. finquant_4 — FinQuant: Downside risk

C27 display alias: FinQuant_04 **Paired status:** Jointly unresolved
Recorded topics: PORTFOLIO_CONFIGURATION; PERIOD_BASIS; INPUT_PREPARATION

REF_A submitted: UNRESOLVED; documented daily functional sqrt(mean(min(0;weighted_daily_return-.005)^2)); forward-fill normalized-weight scenario 0.00884397269719 daily or 0.140393714151703 annualized; see N4

REF_A uncertainty: Annualization linkage and risk-free periodicity and missing-price rule and allocation mapping absent

REF_A source citations (6):

- cases/finquant_4/case_context.json:1-20
- cases/finquant_4/allocation.csv:1-5
- cases/finquant_4/finquant__portfolio.py__comp_downside_risk.txt:1-6
- cases/finquant_4/finquant__quants.py__downside_risk.txt:1-13
- cases/finquant_4/finquant__returns.py__weighted_mean_daily_returns.txt:1-8
- cases/finquant_4/document_spans.json

REF_B submitted: UNRESOLVED; literal normalized complete-case daily candidate 0.008851617012046923; forward-filled candidate 0.008843972697192727

REF_B uncertainty: Daily threshold conversion and portfolio scaling not defined; allocation and missing-data conventions unresolved

REF_B source citations (3):

- cases/finquant_4/finquant__portfolio.py__comp_downside_risk.txt:1-6
- cases/finquant_4/finquant__quants.py__downside_risk.txt:1-13
- cases/finquant_4/finquant__returns.py__daily_returns.txt:1-7

Source-span ledger: 8 line-range occurrences; 7 initially in bounds; 1 documented endpoint correction(s); 1 file-only citation(s).