Online Resource 1: Supplementary Diagnostics and Data Inventory

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Associated manuscript:
When a Winning Forecast Does Not Identify an Action: An Evidence-Budget Algorithm for Distributional Decisions

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1 Purpose and scope

This Online Resource reports one bounded diagnostic of the implemented screening rule, the full screening-rule sensitivity estimates referenced in the manuscript, a dependence sensitivity for the financial illustration, and the asset-specific data inventory. It does not introduce a new confirmatory outcome or extend the inferential claims of the main paper.

2 Bounded diagnostic of the operational screen

2.1 Definition

The diagnostic uses the post-outcome mechanism file preserved in the replication archive. For each replication and each of the four models added when moving from $U5$ to $U9$, the file contains:

- an independent-stream score-gap proxy, computed against a comparator selected on the disjoint validation stream;
- the absolute standardized 5% VaR action-gap proxy relative to that comparator; and
- an indicator that the candidate is retained by the implemented same-sample empirical-winner Bonferroni–HAC screen.

The reported subset satisfies both

$$\text{independent score-gap proxy} > 0.02 \quad \text{and} \quad \text{standardized VaR action-gap proxy} > 0.05.$$

The 0.02 threshold matches the manuscript's declared negligible-score margin. The 0.05 action threshold is used only to focus the diagnostic on candidates with a nontrivial action difference. The score-gap quantity is an independent-stream proxy, not a population parameter. Consequently, the results describe operational discrimination and do not establish size, power, or coverage.

Table 1: Retention of added candidates with score-gap proxy > 0.02 and VaR action-gap proxy > 0.05

Data-generating process	Evidence m	Candidate–replication rows	Retention probability
Stable Gaussian	20	227	0.982
Stable Gaussian	500	227	0.899
Stable Student-t	20	494	0.937
Stable Student-t	500	494	0.907
Stable skew-normal	20	907	0.884
Stable skew-normal	500	907	0.142
Stable mixture	20	795	0.365
Stable mixture	500	795	0.000
All stable processes	20	2,423	0.734
All stable processes	500	2,423	0.322

2.2 Results

At short evidence length, the operational screen retains 73.4% of these independently gap-positive and action-consequential candidate rows. At $m = 500$, retention falls to 32.2%. The DGP pattern supplies the important boundary: attenuation is strong in the skew-normal and mixture settings but weak in the Gaussian and Student-t settings. This is consistent with, but does not prove, the consequential-separation interpretation in the manuscript.

3 Screening-rule sensitivity

Table 2 reports all 16 post-outcome variants of the stable-process VaR-diameter interaction. Each estimate is

$$[D_{U9,20} - D_{U5,20}] - [D_{U9,500} - D_{U5,500}].$$

Table 2: Stable-process VaR-diameter interaction across declared sensitivity variants

Margin	Screening rule	Estimate	95% lower	95% upper
0.00	Same-sample Bonferroni	0.0617	0.0522	0.0712
0.00	Common $U9$ critical value	0.0523	0.0433	0.0612
0.00	No multiplicity adjustment	0.0393	0.0315	0.0472
0.00	Disjoint-stream comparator	0.0633	0.0536	0.0731
0.01	Same-sample Bonferroni	0.0517	0.0429	0.0604
0.01	Common $U9$ critical value	0.0382	0.0300	0.0464
0.01	No multiplicity adjustment	0.0194	0.0121	0.0267
0.01	Disjoint-stream comparator	0.0556	0.0465	0.0648
0.02	Same-sample Bonferroni	0.0526	0.0440	0.0612
0.02	Common $U9$ critical value	0.0395	0.0314	0.0476
0.02	No multiplicity adjustment	0.0150	0.0079	0.0220
0.02	Disjoint-stream comparator	0.0554	0.0468	0.0641
0.04	Same-sample Bonferroni	0.0508	0.0418	0.0598
0.04	Common $U9$ critical value	0.0407	0.0320	0.0493
0.04	No multiplicity adjustment	0.0255	0.0181	0.0329

Margin	Screening rule	Estimate	95% lower	95% upper
0.04	Disjoint-stream comparator	0.0495	0.0407	0.0583

All estimates remain positive. These checks vary the operational system and are not a multiple-testing-adjusted family of confirmatory analyses.

4 Financial dependence sensitivity

A post-outcome circular moving-block bootstrap resamples local sequences of sealed decision blocks within assets. Across block lengths 3, 6, and 12, the maximum-retained-threshold policy's asset-averaged coverage error remains higher than the selected-winner policy's by 0.00731–0.00764, with all reported 95% intervals above zero. The relative standardized VaR proxy increase remains 9.45–9.48%, with all reported 95% intervals above zero. This preserves the directional conclusion while still not modeling contemporaneous cross-asset dependence.

5 Study 2 data inventory

The analysis uses preserved adjusted-close snapshots. Source dates describe the stored vintage; evaluation dates describe the sealed 20-return blocks after the 1,000-return estimation and 120-return validation histories.

Table 3: Asset-specific source and evaluation coverage

Asset	Source start	Source end	Test start	Test end	Blocks
SPY	1993-01-29	2026-07-07	1997-07-08	2026-06-15	364
QQQ	1999-03-10	2026-07-10	2003-08-25	2026-06-17	287
IWM	2000-05-26	2026-07-10	2004-11-12	2026-06-30	272
EFA	2001-08-27	2026-07-10	2006-02-14	2026-06-23	256
TLT	2002-07-30	2026-07-07	2007-01-11	2026-07-06	245
IEF	2002-07-30	2026-07-10	2007-01-11	2026-07-06	245
LQD	2002-07-30	2026-07-10	2007-01-11	2026-07-06	245
HYG	2007-04-11	2026-07-10	2011-09-20	2026-07-08	186
GLD	2004-11-18	2026-07-07	2009-05-05	2026-06-08	215
EURUSD	2003-12-01	2026-07-07	2008-03-25	2026-07-03	237
BTC	2014-09-17	2026-06-16	2017-10-12	2026-06-06	158

6 Reproducibility pointers

The bounded diagnostic is derived from `results/post_outcome/study1_mechanism_map/mechanism_cells.csv`. The screening sensitivity table is derived from `replication_package/results/study1_sensitivity/sensitivity_summary.csv`. The dependence check is derived from `results/post_outcome/study2_moving_block_bootstrap.csv`. The date inventory is derived from `replication_package/data/asset_inventory.csv`. The replication archive includes file manifests and SHA-256 hashes.