ession (L1/L2 Grid, Refit by ROC-AUC) — VLO Next

Generated: 2026-02-26 21:01:55
TRAIN period: ≤ 2022-12-31 | TEST period: ≥ 2023-01-01
TRAIN size: 2,672 | TEST size: 787
Features — scaled (float + VOL_*): 72 | passthrough: 9
=['l1', 'l2'], C=[np.float64(0.001), np.float64(0.01), np.float64(0.1), np.float64(1.0), np.float64(10.0), np.float64(
Best params (CV): {'clf__C': np.float64(0.001), 'clf__penalty': 'l2'}
Best CV ROC-AUC: 0.5035
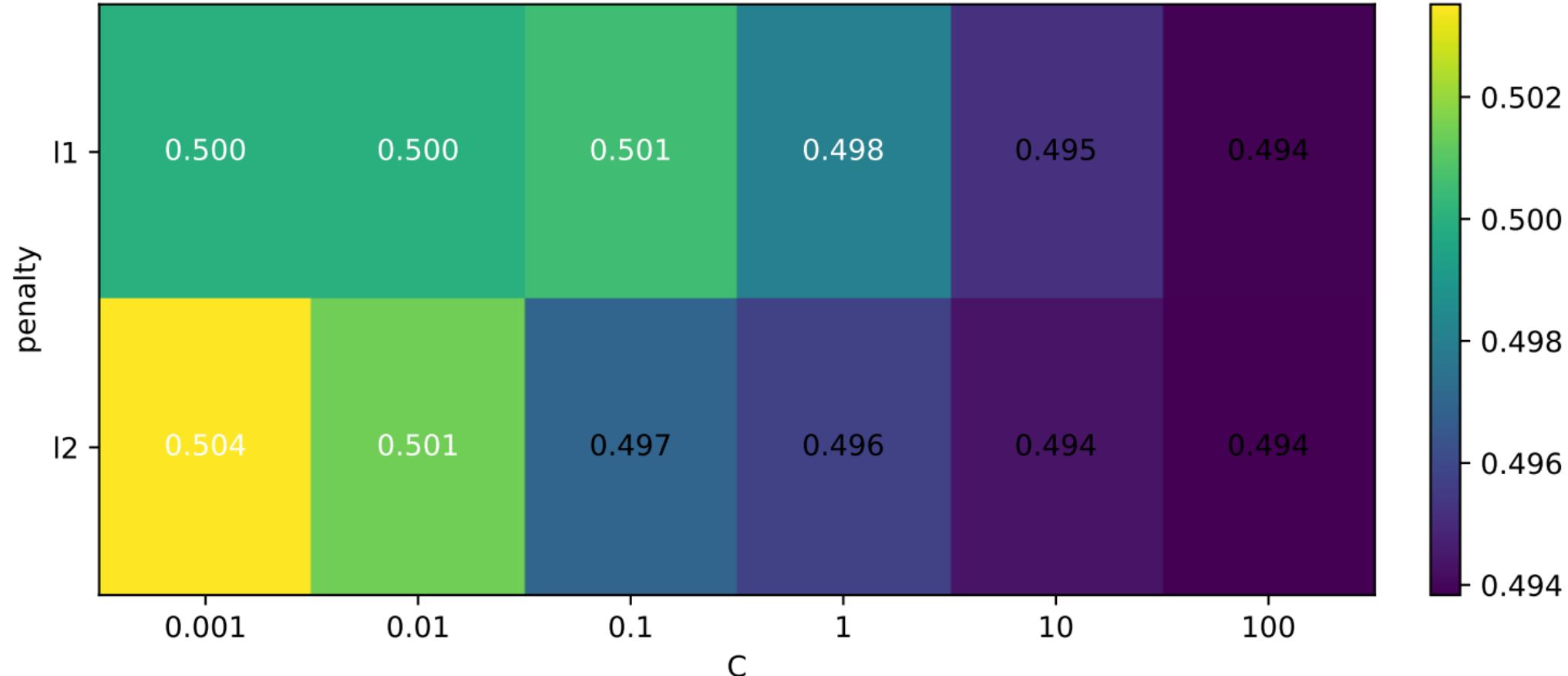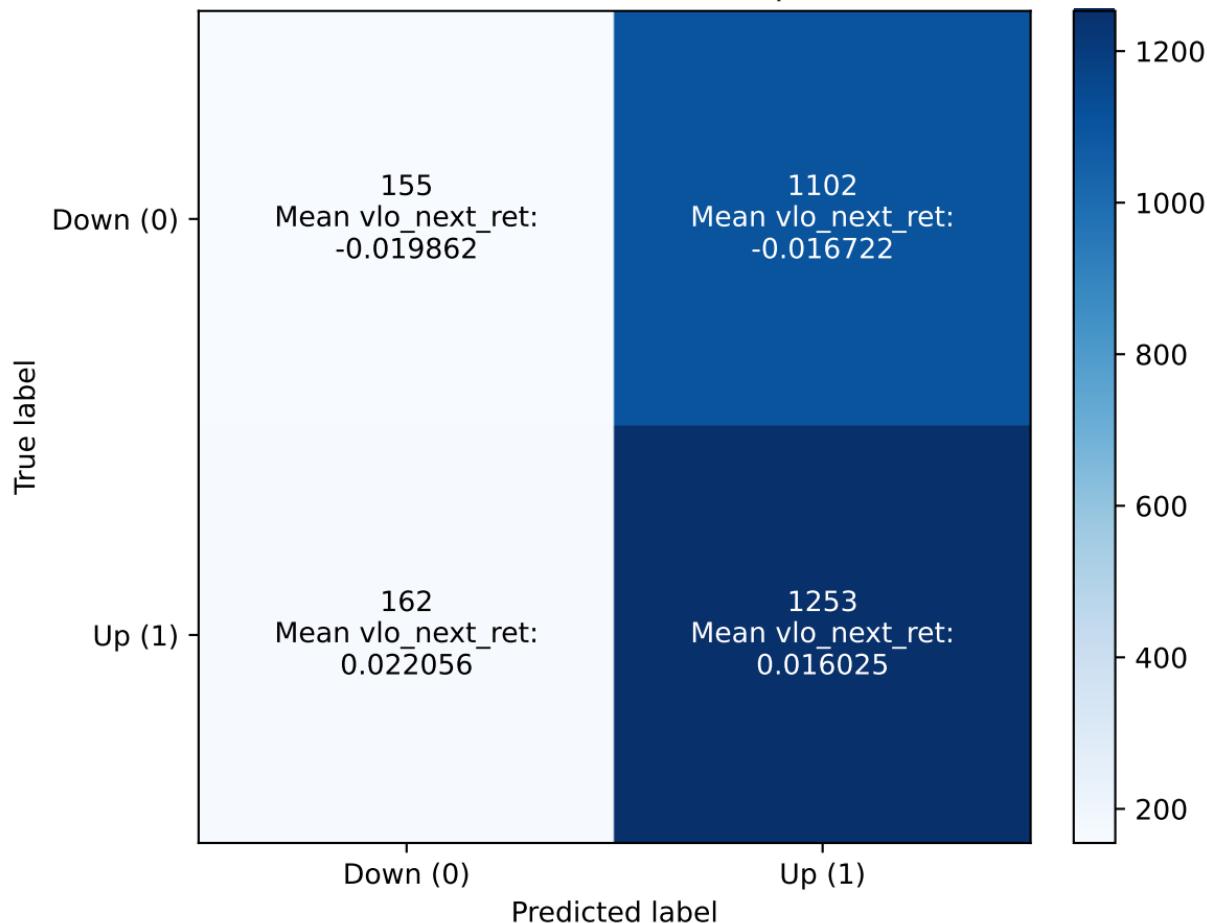
Grid Search — mean ROC-AUC (CV)
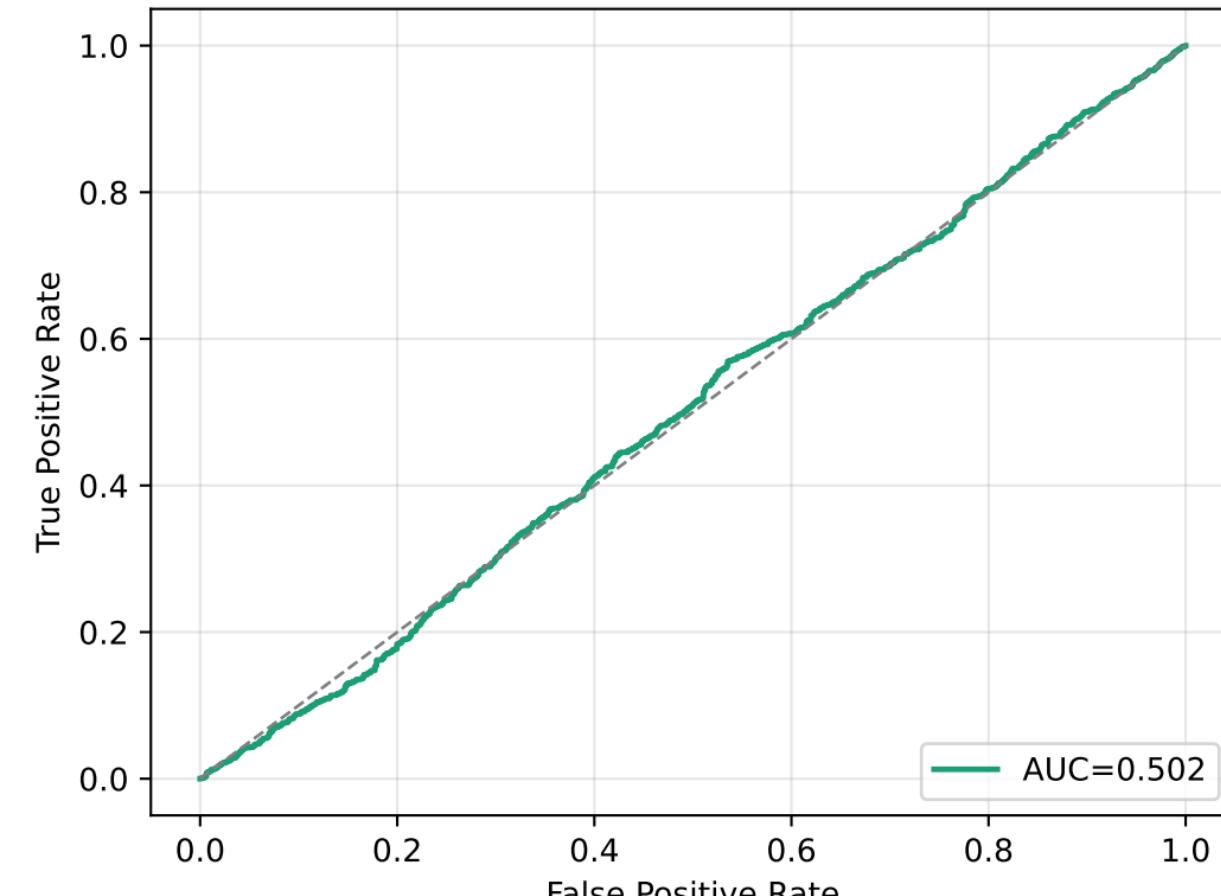
Cross-Validation ROC-AUC — Training Set (≤ 2022-12-31)

metric	value
mean ROC-AUC (CV folds)	0.5035
std ROC-AUC (CV folds)	0.0299
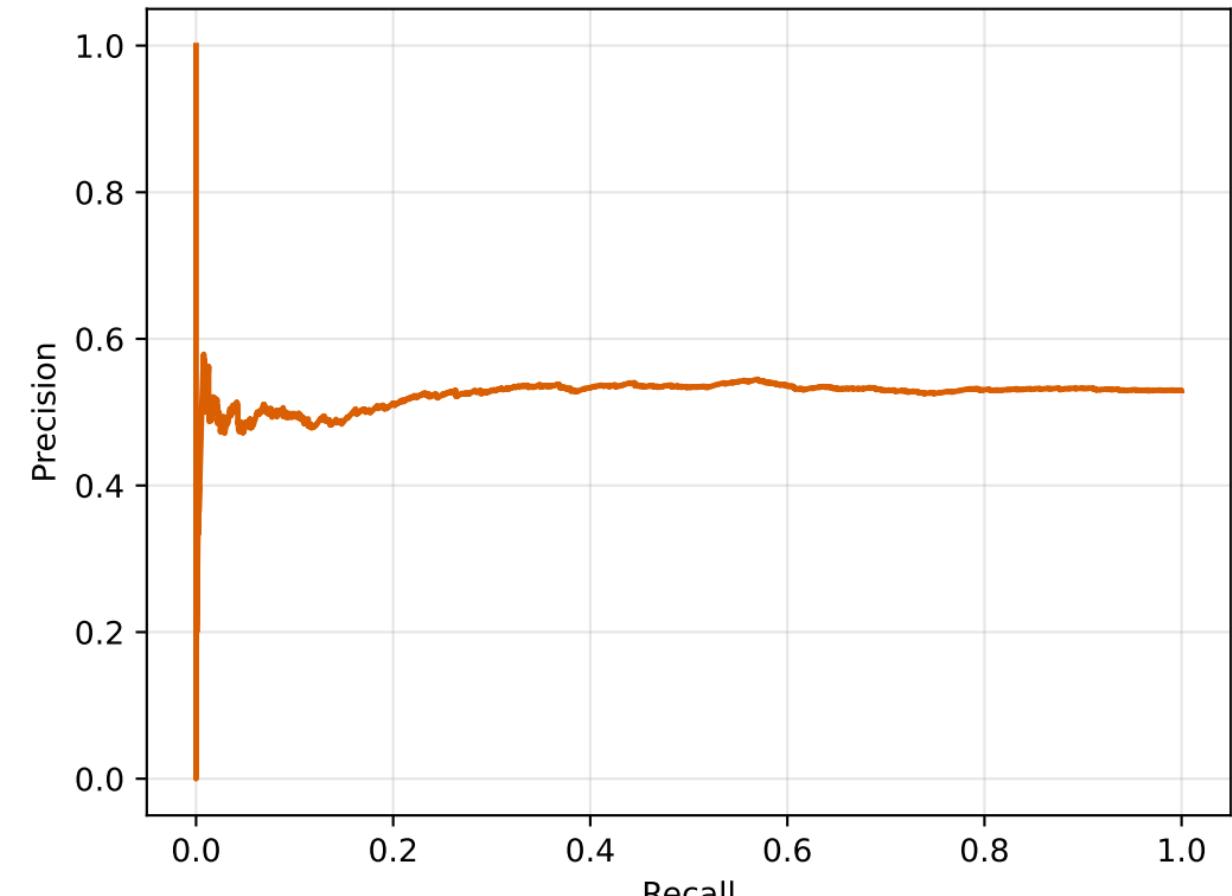
Confusion Matrix — TRAIN (CV predictions)

	Predicted: Down (0)	Predicted: Up (1)
True: Down (0)	155 Mean vlo_next_ret: -0.019862	1102 Mean vlo_next_ret: -0.016722
True: Up (1)	162 Mean vlo_next_ret: 0.022056	1253 Mean vlo_next_ret: 0.016025
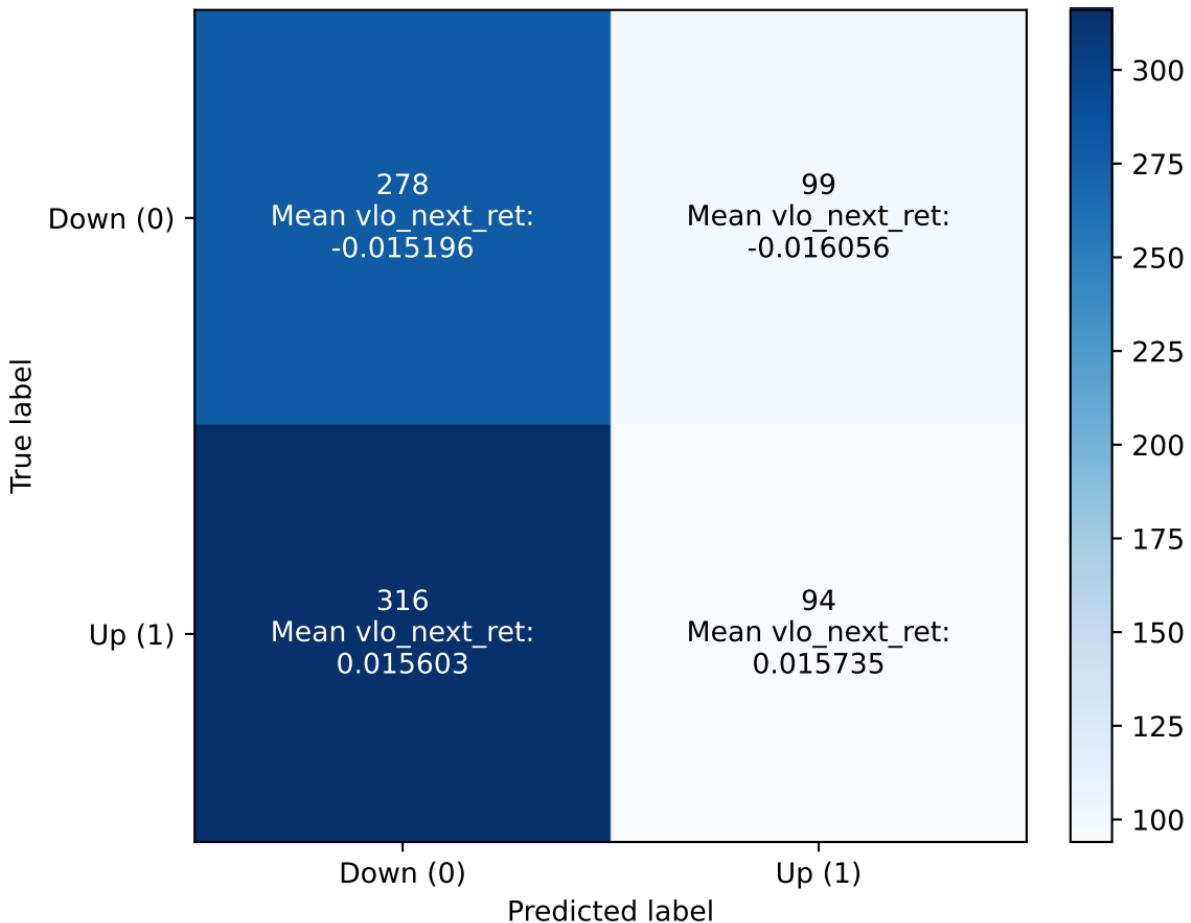
ROC Curve — TRAIN (CV pooled)

AUC=0.502
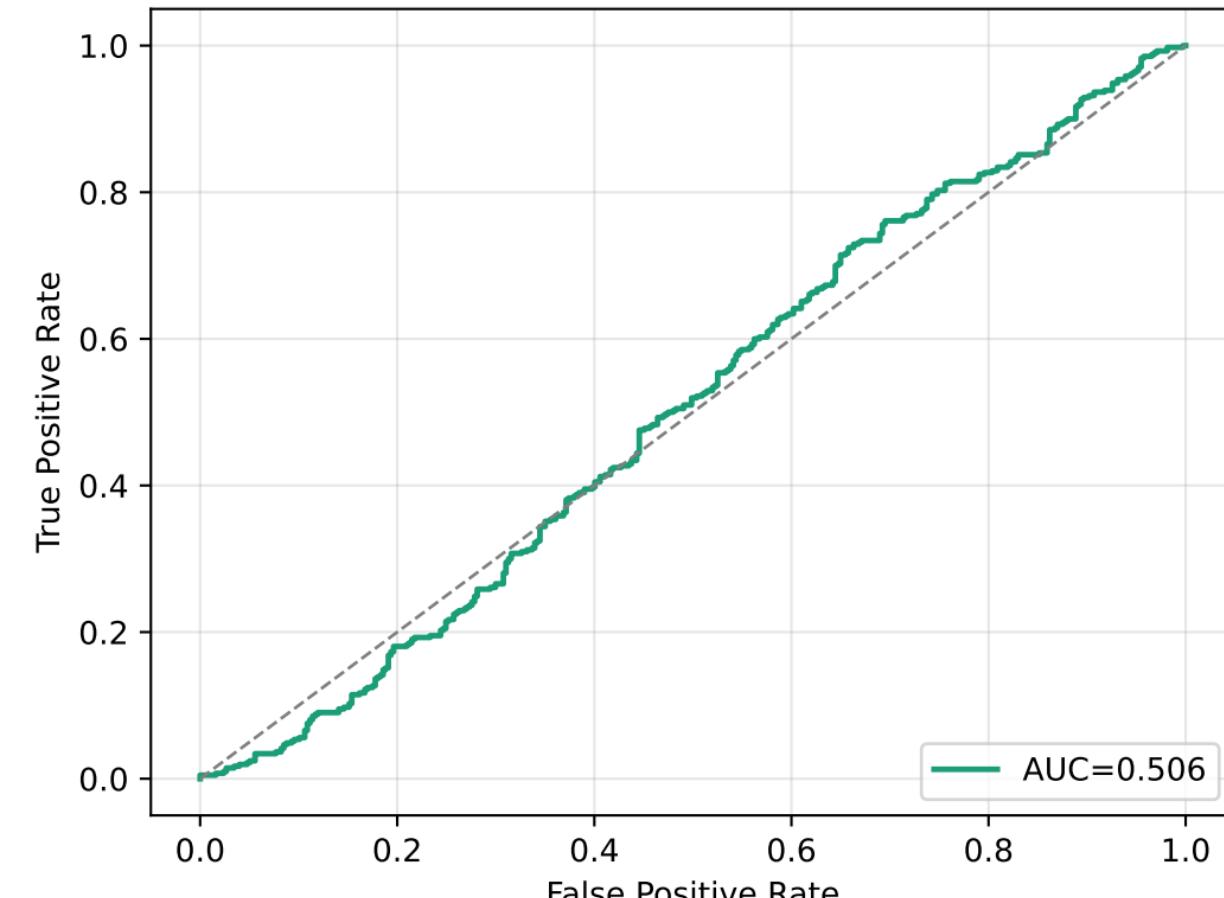
Precision-Recall — TRAIN (CV pooled)
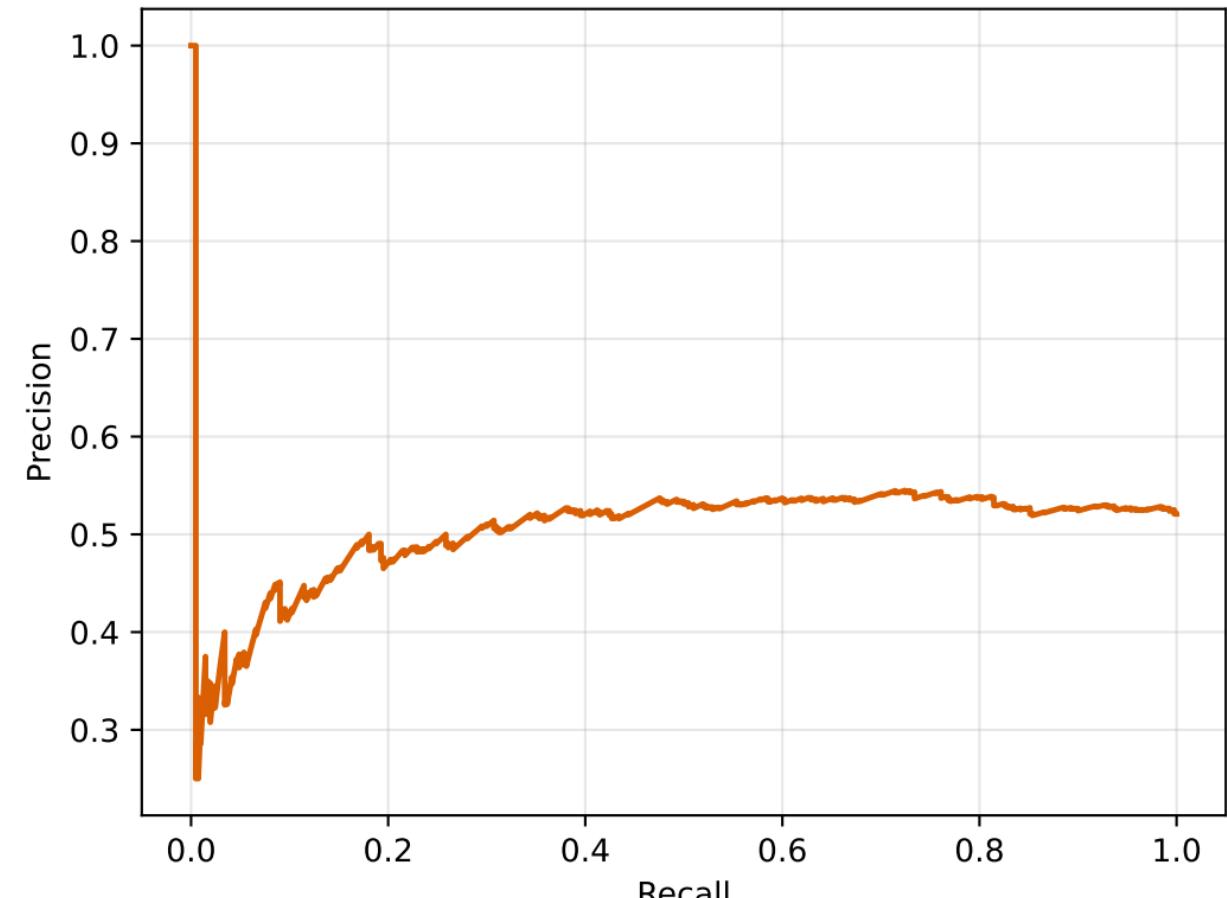
Confusion Matrix — TEST (2023+)

ROC Curve — TEST (2023+)

AUC=0.506
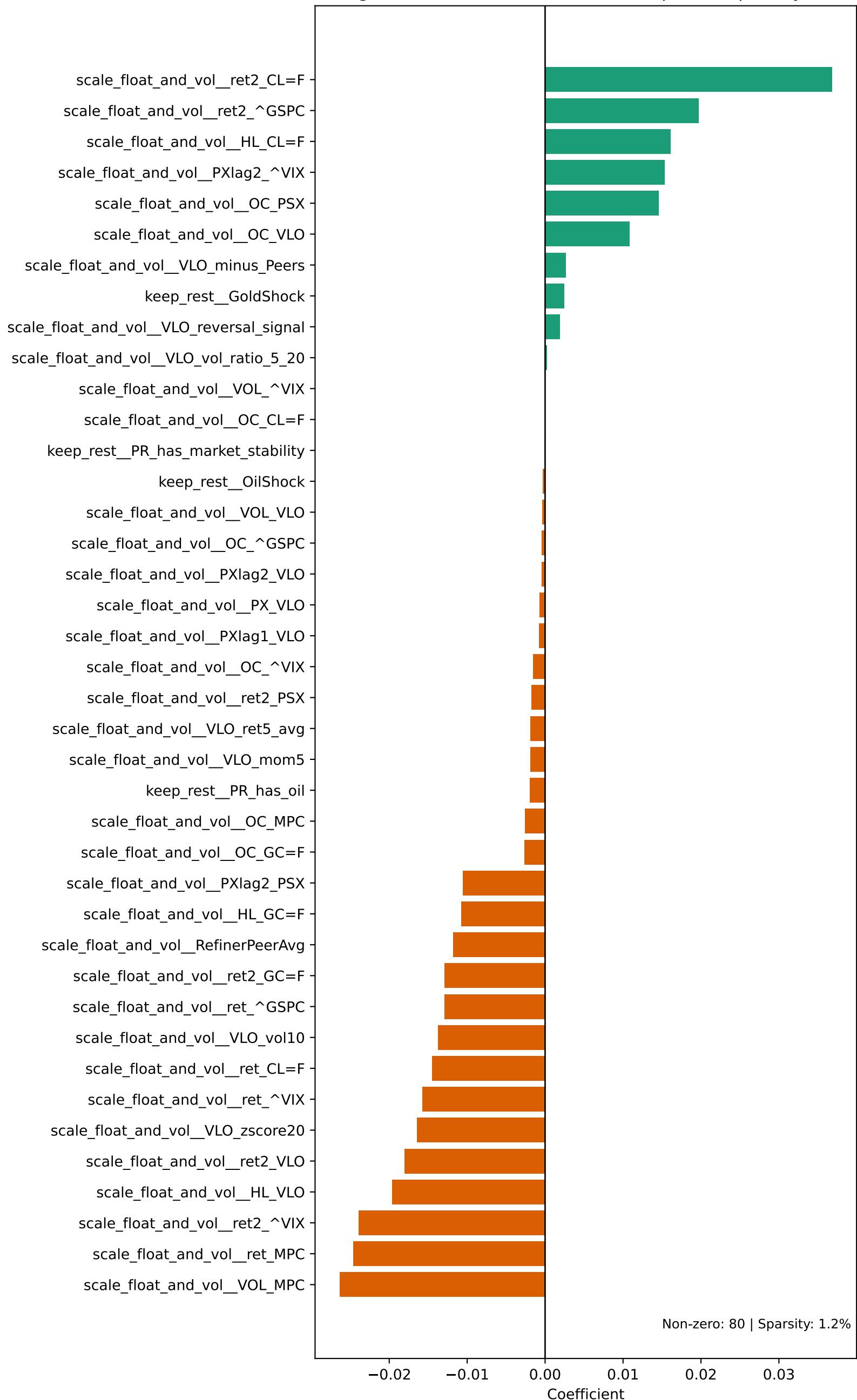
Precision-Recall — TEST (2023+)
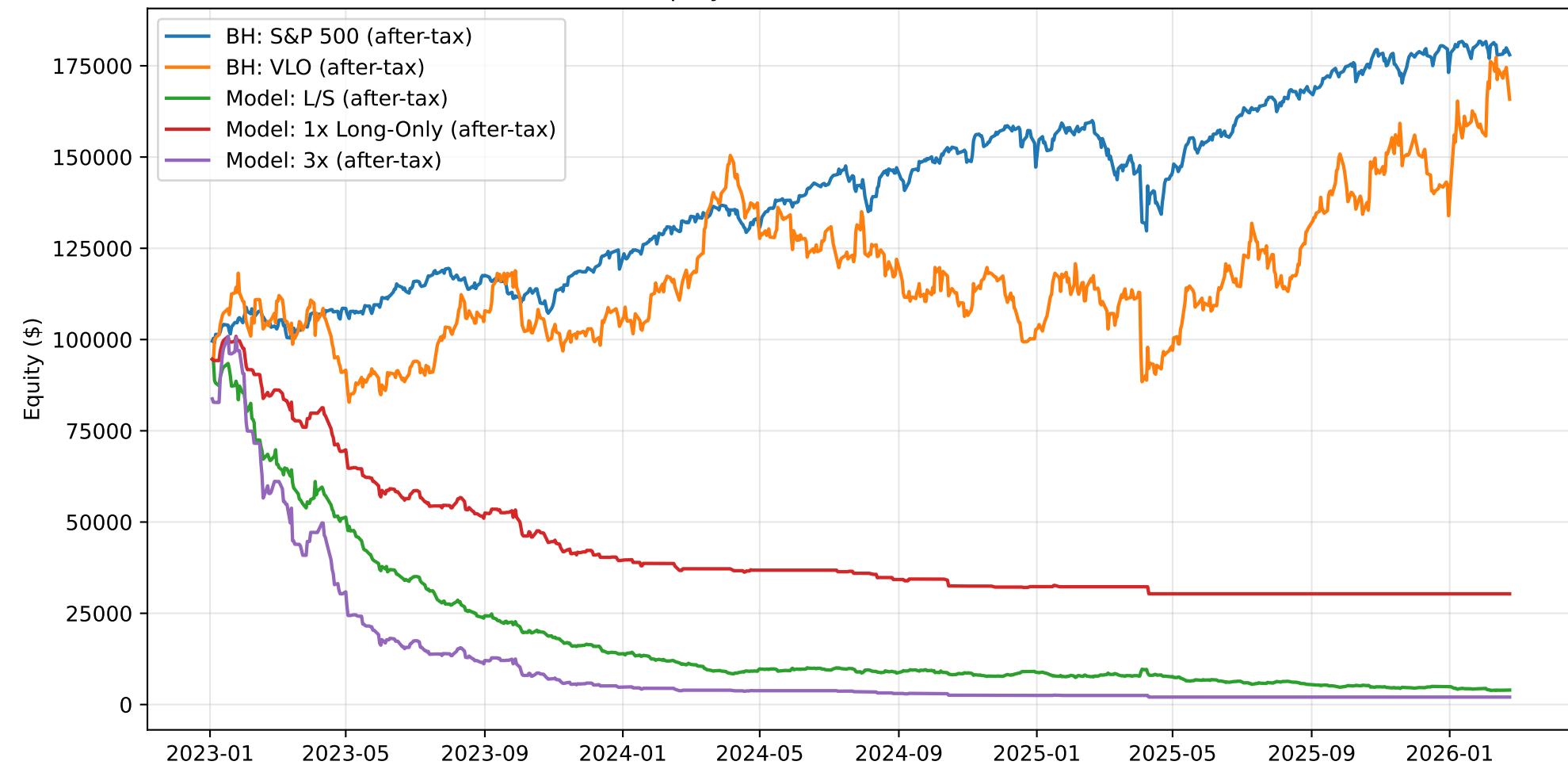
Classification Report — TEST (2023+)

|	precision	recall	f1-score	support
0	0.468	0.737	0.573	377
1	0.487	0.229	0.312	410
accuracy			0.473	787
macro avg	0.478	0.483	0.442	787
weighted avg	0.478	0.473	0.437	787

Logistic Coefficients (scaled feature space) — penalty=l2

scale_float_and_vol__ret2_CL=F
scale_float_and_vol__ret2_^GSPC
scale_float_and_vol__HL_CL=F
scale_float_and_vol__PXlag2_^VIX
scale_float_and_vol__OC_PSX
scale_float_and_vol__OC_VLO
scale_float_and_vol__VLO_minus_Peers
keep_rest__GoldShock
scale_float_and_vol__VLO_reversal_signal
scale_float_and_vol__VLO_vol_ratio_5_20
scale_float_and_vol__VOL_^VIX
scale_float_and_vol__OC_CL=F
keep_rest__PR_has_market_stability
keep_rest__OilShock
scale_float_and_vol__VOL_VLO
scale_float_and_vol__OC_^GSPC
scale_float_and_vol__PXlag2_VLO
scale_float_and_vol__PX_VLO
scale_float_and_vol__PXlag1_VLO
scale_float_and_vol__OC_^VIX
scale_float_and_vol__ret2_PSX
scale_float_and_vol__VLO_ret5_avg
scale_float_and_vol__VLO_mom5
keep_rest__PR_has_oil
scale_float_and_vol__OC_MPC
scale_float_and_vol__OC_GC=F
scale_float_and_vol__PXlag2_PSX
scale_float_and_vol__HL_GC=F
scale_float_and_vol__RefinerPeerAvg
scale_float_and_vol__ret2_GC=F
scale_float_and_vol__ret_^GSPC
scale_float_and_vol__VLO_vol10
scale_float_and_vol__ret_CL=F
scale_float_and_vol__ret_^VIX
scale_float_and_vol__VLO_zscore20
scale_float_and_vol__ret2_VLO
scale_float_and_vol__HL_VLO
scale_float_and_vol__ret2_^VIX
scale_float_and_vol__ret_MPC
scale_float_and_vol__VOL_MPC

Non-zero: 80 | Sparsity: 1.2%

Coefficient

After-Tax Equity Curves — TEST: 2023 to most recent

Legend:
- BH: S&P 500 (after-tax)
- BH: VLO (after-tax)
- Model: L/S (after-tax)
- Model: 1x Long-Only (after-tax)
- Model: 3x (after-tax)

Annual After-Tax Performance (2023+), incl. Average

	BH: S&P 500 (after-tax)	BH: VLO (after-tax)	Model: L/S (after-tax)	Model: 1x Long-Only (after-tax)	Model: 3x (after-tax)
2023	19.78%	9.50%	-85.34%	-58.31%	-94.32%
2024	19.21%	-3.45%	-36.50%	-18.49%	-48.07%
2025	13.32%	29.79%	-43.61%	-6.09%	-18.43%
2026	-0.32%	16.09%	-18.87%	0.00%	0.00%
Average	13.00%	12.98%	-46.08%	-20.72%	-40.21%

Sharpe Ratios (Annualized, Daily Returns) — TEST (2023+ only)

	Sharpe
BH: S&P 500	1.311
BH: VLO	0.682
Model: L/S	-2.942
Model: 1x Long-Only	-2.698
Model: 3x	-2.778

Run Metadata & Time-Split Summary

Report saved: /mnt/batch/tasks/shared/LS_root/mounts/clusters/dvandyk1/code/Users/dva
Scaler saved: /mnt/batch/tasks/shared/LS_root/mounts/clusters/dvandyk1/code/Users/dva
Model saved: /mnt/batch/tasks/shared/LS_root/mounts/clusters/dvandyk1/code/Users/dva

TRAIN period: ≤ 2022-12-31 | TEST period: ≥ 2023-01-01
TRAIN size: 2,672 | TEST size: 787
CV folds: 5
Scaled features (float + VOL_*): 72
Passthrough numeric features: 9
Grid best params: {'clf__C': np.float64(0.001), 'clf__penalty': 'l2'}
Grid best CV ROC-AUC (refit metric): 0.5035
TEST ROC-AUC: 0.5057 | TEST Accuracy: 0.4727

Backtest assumptions (TEST period only, AFTER-TAX curves shown):
  Initial capital: $100,000
  Tx cost per side: 2.00 bps
  Taxes (annual on positive P&L, loss carry-forward):
    - Long-term (buy & hold): 20.0%
    - Short-term (active): 37.0%
  Short borrow APR (L/S shorts): 0.30%
  3x long-only daily cost (financing+expense): 0.0595%
  Stop-loss: NOT APPLIED

Sharpe ratios (annualized, daily returns; computed from daily strategy returns net of
  BH: S&P 500:   1.311
  BH: VLO: 0.682
  Model: L/S: -2.942
  Model: 1x Long-Only: -2.698
  Model: 3x: -2.778

Feature exclusions (pre-model): vlo_next_ret, vlo_next_dir