

# FTF Ablation Report

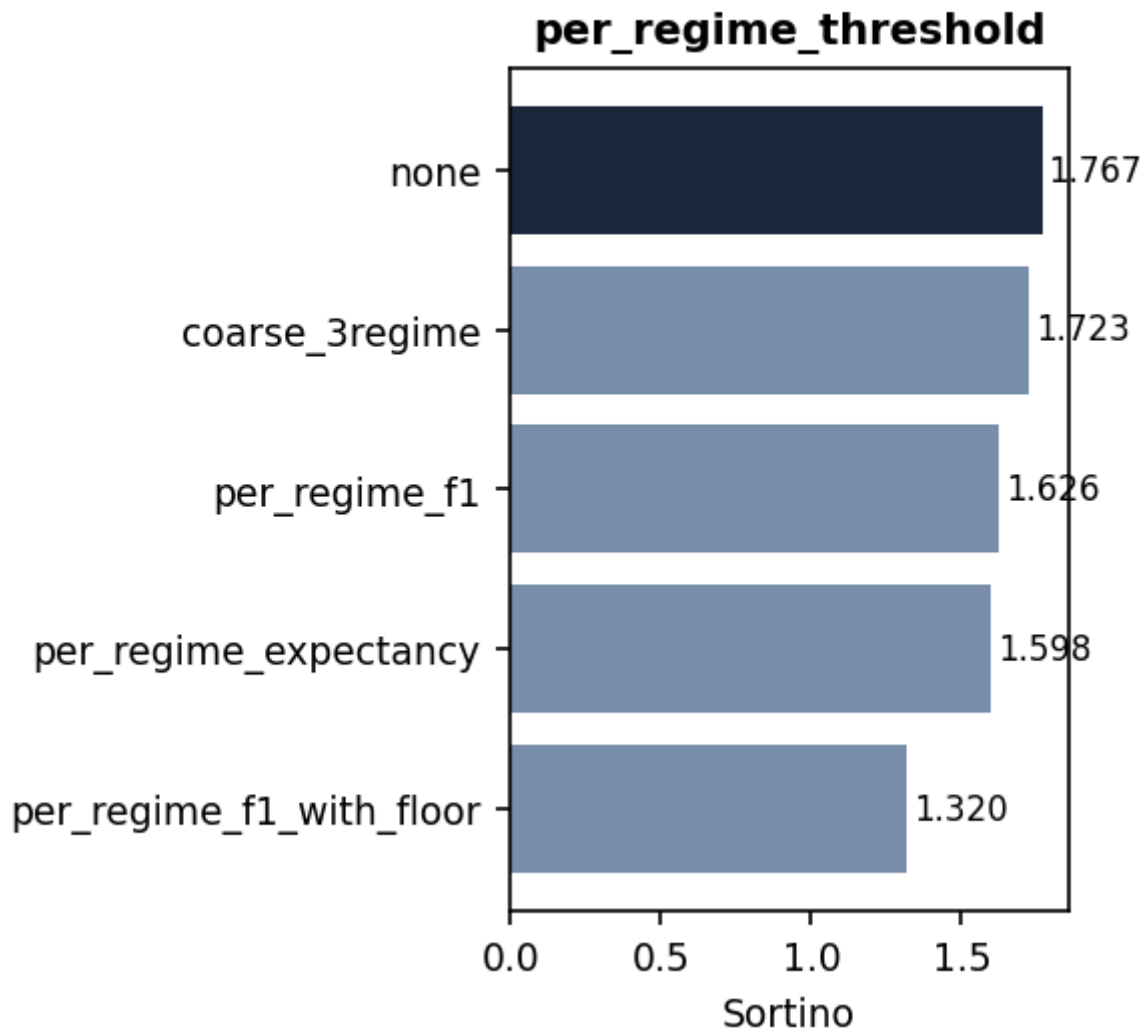
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ATR0.5\_1.5\_H4 — per\_regime\_threshold

<b>1</b> FACTORS	<b>125</b> RESULTS	<b>0</b> ERRORS	<b>3h44m</b> DURATION
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<b>Run ID</b>	ftf_20260430_194027_3d0171_ATR0.5_1.5_H4
<b>Git SHA</b>	2a997d81
<b>Started</b>	2026-04-30 19:40:56.852330+00:00
<b>Cryptos</b>	UNIUSDC, OPUSDC, ARBUSDC, AAVEUSDC, LDOUSDC
<b>Folds / Trials</b>	5 folds × 50 HPO trials
<b>Cost</b>	15 bps

## Sortino by Variant (winner = dark)



Factor	Winner	Primary (Sortino)	95% CI	Verdict	Metrics agreeing
per_regime_threshold	none	1.8652	[1.088, 2.6193]	NOT SIG.	0/4

Lock rule: a factor is **LOCKED** only when at least 2 metrics (sortino / expectancy / total\_return / win\_rate) show BH-adjusted  $p < 0.05$  AND  $|\text{Cohen's } d| \geq 0.3$  in the winner direction. Paired t-test on matched (crypto, fold) cells (Issue #595 Phase A).

### Pairwise Comparisons — Primary metric (Sortino, paired BH-corrected)

Factor	Winner	vs	Mean A	Mean B	p-adj (BH)	Cohen's d	Sig.
per_regime_threshold	none	coarse_3regime	1.865	1.800	0.8729	0.11	NO
per_regime_threshold	none	per_regime_expectancy	1.767	1.642	0.8729	0.10	NO
per_regime_threshold	none	per_regime_f1	1.767	1.705	0.8729	0.06	NO
per_regime_threshold	none	per_regime_f1_with_floor	1.767	1.369	0.2110	0.45	NO

## Multi-metric Significance Matrix

Per-metric verdict of winner vs each alternative. ✓ = BH  $p < 0.05$  AND  $|d| \geq 0.3$  in winner direction. ~ = significant but small effect. ✗ = not significant.

Factor	Pair	Sortino	Expectancy	Total Return	Win Rate
per_regime_threshold	none vs coarse_3regime	✗ p=0.873 d=+0.11	✗ p=0.793 d=+0.13	✗ p=0.814 d=+0.11	✗ p=0.971 d=-0.03
	none vs per_regime_expectancy	✗ p=0.873 d=+0.10	✗ p=0.793 d=-0.13	✗ p=0.814 d=+0.09	✗ p=0.548 d=-0.30
	none vs per_regime_f1	✗ p=0.873 d=+0.06	✗ p=0.896 d=+0.03	✗ p=0.814 d=+0.14	✗ p=0.971 d=-0.13
	none vs per_regime_f1_with_floor	✗ p=0.211 d=+0.45	✗ p=0.793 d=+0.16	✗ p=0.227 d=+0.48	✗ p=0.977 d=+0.01

## Performance Summary — Couche C (économique)

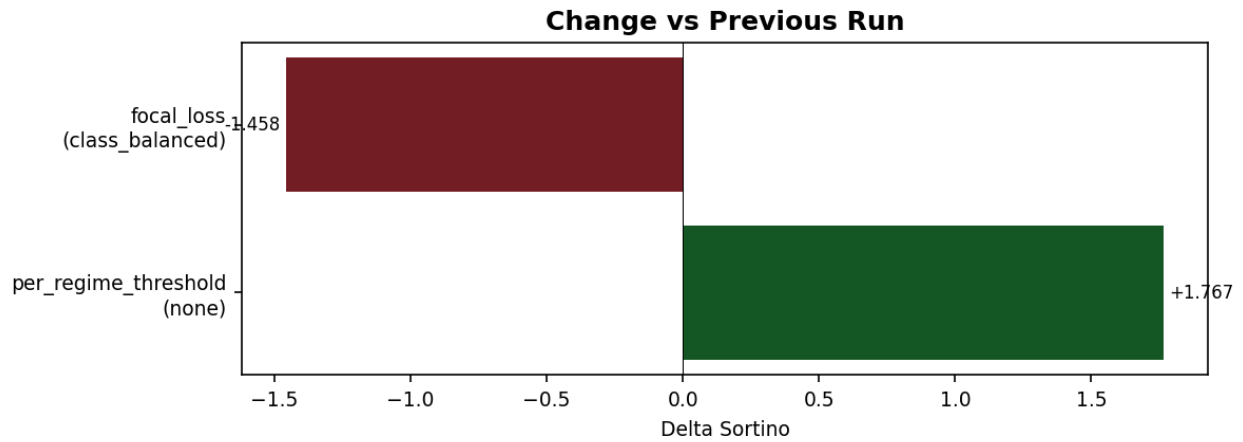
Factor	Winner	Sortino	Std	IQR	Sharpe	Calmar	Trades	Trades/ mo	Win Rate	Max DD	Return %
per_regime_threshold	none	1.767	1.841	2.869	3.845	48.803	1073	23.11	55.3%	-10.7%	39.1%

## All Variants

Factor	Variant	Sortino	Std	Trades	Win Rate	Max DD	Return %
per_regime_threshold	none	1.767	1.841	1073	55.3%	-10.7%	39.1%
per_regime_threshold	coarse_3regime	1.723	1.566	1026	57.1%	-9.4%	38.0%
per_regime_threshold	per_regime_f1	1.626	1.790	1043	57.7%	-10.2%	34.1%
per_regime_threshold	per_regime_expectancy	1.598	1.592	948	60.7%	-8.9%	35.4%
per_regime_threshold	per_regime_f1_with_floor	1.320	1.617	1037	56.7%	-10.7%	28.2%

## Comparison vs Previous Run

Previous: ftf\_20260429\_121011\_282ec7\_ATR0.5\_1.5\_H4



Factor	Variant	Prev	Curr	Delta	Trades Prev	Trades Curr
focal_loss	class_balanced	1.458	None	-1.458 ↓	848	None
focal_loss	mild_focus	1.498	None	-1.498 ↓	853	None
focal_loss	aggressive_focus	1.527	None	-1.527 ↓	862	None
focal_loss	standard	1.640	None	-1.640 ↓	860	None
focal_loss	none	1.767	None	-1.767 ↓	1073	None
per_regime_threshold	none	None	1.767	1.767 ↑	None	1073
per_regime_threshold	coarse_3regime	None	1.723	1.723 ↑	None	1026
per_regime_threshold	per_regime_f1	None	1.626	1.626 ↑	None	1043
per_regime_threshold	per_regime_expectancy	None	1.598	1.598 ↑	None	948
per_regime_threshold	per_regime_f1_with_floor	None	1.320	1.320 ↑	None	1037

### Red Flags

- focal\_loss/class\_balanced: Sortino dropped -1.458 (from 1.458 to None)
- focal\_loss/mild\_focus: Sortino dropped -1.498 (from 1.498 to None)
- focal\_loss/aggressive\_focus: Sortino dropped -1.527 (from 1.527 to None)
- focal\_loss/standard: Sortino dropped -1.640 (from 1.640 to None)
- focal\_loss/none: Sortino dropped -1.767 (from 1.767 to None)

## ML Metrics – Couche A (signal modèle)

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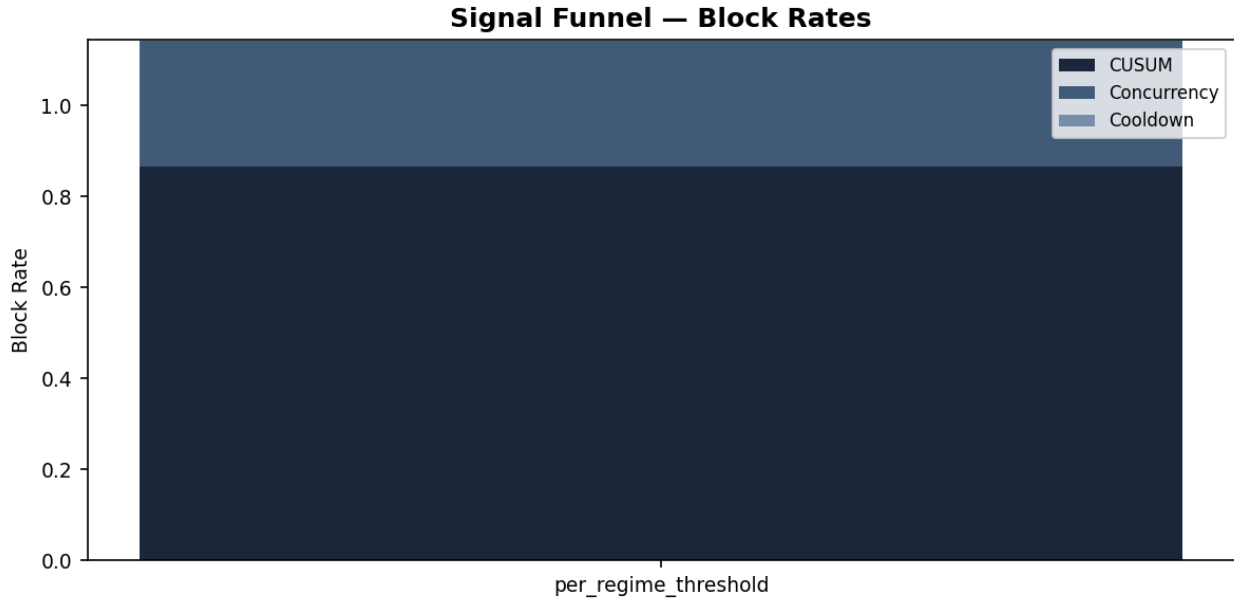
Qualité discriminante du modèle par factor x variant. Un levier classé "signal-restoring" doit bouger ces métriques, pas seulement le débit (Couche B) ou la qualité économique (Couche C).

Factor	Variant	f1_buy	precision	recall	AUC	f1_macro	Brier	ECE	Δ f1
per_regime_threshold	none	0.432	0.438	0.446	0.734	0.651	0.1256	0.0000	0.318
per_regime_threshold	per_regime_f1	0.428	0.425	0.455	0.727	0.647	0.1263	0.0000	0.314
per_regime_threshold	coarse_3regime	0.422	0.422	0.446	0.732	0.646	0.1245	0.0000	0.313
per_regime_threshold	per_regime_expectancy	0.417	0.433	0.452	0.726	0.641	0.1265	0.0000	0.308
per_regime_threshold	per_regime_f1_with_floor	0.416	0.436	0.424	0.726	0.643	0.1264	0.0000	0.310

**Brier** = écart quadratique moyen entre  $p(\text{BUY})$  et  $y_{\text{true}}$  (plus bas = mieux). **ECE** (Expected Calibration Error) = écart moyen  $|\text{confiance} - \text{accuracy}|$  par bin de 10% (plus bas = mieux calibré). Perfect classifier : Brier = 0, ECE = 0.

## Signal Funnel — Couche B (débit)

Survival par étage de filtre. `survival` = BUYs survivant / raw\_buy. Un levier qui fait grimper `survival` sans bouger la Couche A (ML) augmente le débit d'opportunités mais pas la qualité du signal.



Factor	Variant	raw_buy	CUSUM block	CUSUM survival	Conc. block	Conc. survival	Cooldown	Total survival	Traffic
per_regime_threshold	per_regime_expectancy	1324	0.867	0.133	0.207	0.793	0.000	0.793	254
per_regime_threshold	per_regime_f1_with_floor	1491	0.867	0.133	0.230	0.770	0.000	0.770	254
per_regime_threshold	per_regime_f1	1535	0.867	0.133	0.240	0.760	0.000	0.760	254
per_regime_threshold	coarse_3regime	1452	0.864	0.136	0.249	0.751	0.000	0.751	253
per_regime_threshold	none	1661	0.867	0.133	0.277	0.723	0.000	0.723	253

## Stability by Fold

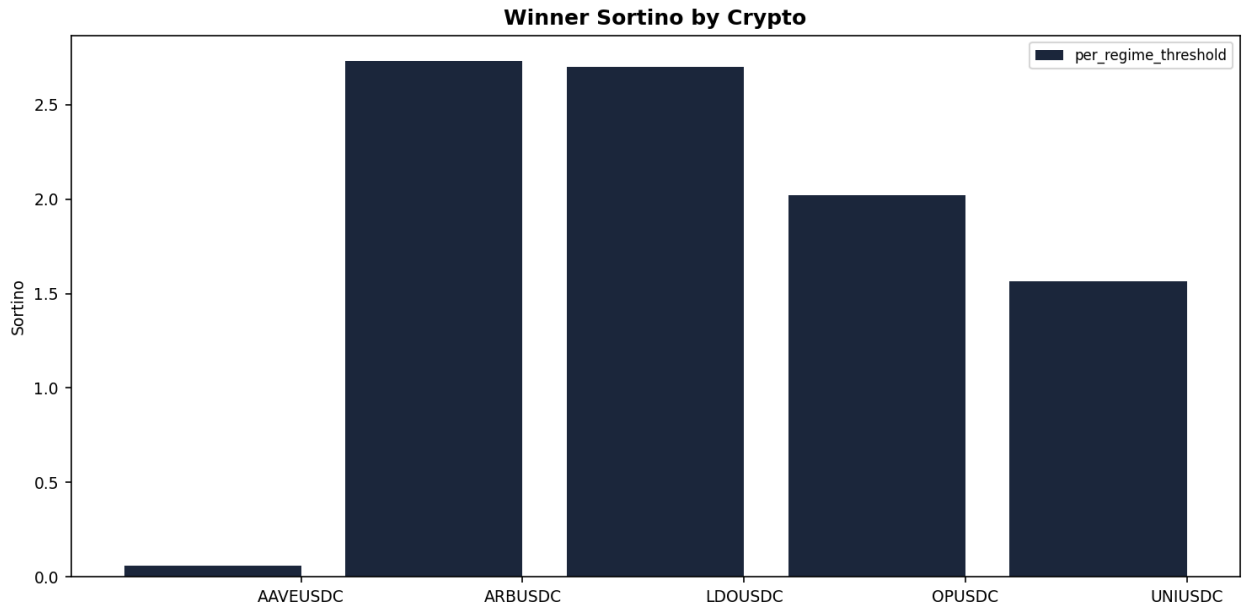
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### Sortino Stability by Fold

**per\_regime\_threshold**

coarse_3regime	1.84	0.40	1.75	2.13	2.24
none	2.29	0.32	1.97	1.55	2.52
per_regime_expectancy	2.23	0.76	0.88	1.62	2.49
per_regime_f1	2.38	0.56	1.09	2.01	2.09
per_regime_f1_with_floor	2.11	0.35	0.89	1.33	1.93
	Fold 3	Fold 4	Fold 5	Fold 6	Fold 7

## Performance by Crypto



Factor	Variant	Crypto	Sortino	Trades	Win Rate	Max DD	Return %
per_regime_threshold	coarse_3regime	AAVEUSDC	0.178	129	53.7%	-10.4%	4.4%
per_regime_threshold	coarse_3regime	ARBUSDC	2.307	235	57.2%	-9.3%	47.2%
per_regime_threshold	coarse_3regime	LDOUSDC	1.977	175	63.2%	-7.0%	54.7%
per_regime_threshold	coarse_3regime	OPUSDC	2.656	237	56.1%	-9.0%	53.0%
per_regime_threshold	coarse_3regime	UNIUSDC	1.685	250	55.0%	-11.2%	33.8%
per_regime_threshold	none	AAVEUSDC	0.058	164	47.7%	-14.7%	0.0%
per_regime_threshold	none	ARBUSDC	2.730	340	55.8%	-12.0%	55.1%
per_regime_threshold	none	LDOUSDC	2.697	113	68.8%	-5.9%	70.2%
per_regime_threshold	none	OPUSDC	2.019	217	50.9%	-9.1%	40.1%
per_regime_threshold	none	UNIUSDC	1.567	239	55.3%	-10.7%	36.4%
per_regime_threshold	per_regime_expectancy	AAVEUSDC	0.053	167	59.2%	-14.7%	-0.7%
per_regime_threshold	per_regime_expectancy	ARBUSDC	2.618	270	58.6%	-8.9%	51.9%
per_regime_threshold	per_regime_expectancy	LDOUSDC	2.253	162	60.4%	-8.6%	55.5%
per_regime_threshold	per_regime_expectancy	OPUSDC	1.862	204	54.8%	-6.4%	35.9%
per_regime_threshold	per_regime_expectancy	UNIUSDC	1.204	145	70.2%	-6.0%	34.2%
per_regime_threshold	per_regime_f1	AAVEUSDC	-0.204	215	47.5%	-19.0%	-5.2%
per_regime_threshold	per_regime_f1	ARBUSDC	2.688	313	52.7%	-9.8%	54.1%
per_regime_threshold	per_regime_f1	LDOUSDC	2.479	126	67.9%	-5.6%	61.4%
per_regime_threshold	per_regime_f1	OPUSDC	1.970	199	61.5%	-7.5%	35.2%
per_regime_threshold	per_regime_f1	UNIUSDC	1.197	190	58.9%	-8.8%	25.0%

per_regime_threshold	per_regime_f1_with_floor	AAVEUSDC	-0.279	193	47.6%	-18.9%	-7.7%
per_regime_threshold	per_regime_f1_with_floor	ARBUSDC	2.564	350	52.3%	-11.8%	52.7%
per_regime_threshold	per_regime_f1_with_floor	LDOUSDC	1.844	136	63.1%	-5.7%	46.4%
per_regime_threshold	per_regime_f1_with_floor	OPUSDC	1.494	209	56.0%	-9.2%	27.6%
per_regime_threshold	per_regime_f1_with_floor	UNIUSDC	0.980	149	64.6%	-7.7%	22.1%

# Configuration Snapshot

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BASE\_ENV at run start (immutable)

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  "CVN_ADAPTIVE_EVENT_ENGINE": "0",
  "CVN_ATR_PERIOD": "14",
  "CVN_BINARY_CLASSIFICATION": "1",
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  "CVN_CLEANLAB_CV_FOLDS": "2",
  "CVN_CLEANLAB_FOLD_BUDGET_S": "60",
  "CVN_CLEANLAB_MAX_DROP_PCT": "5.0",
  "CVN_CLEANLAB_MODE": "off",
  "CVN_CLEANLAB_REWEIGHT_FLOOR": "0.5",
  "CVN_CUSUM_AUTO_CALIBRATE": "0",
  "CVN_CUSUM_THRESHOLD_H": "3.0",
  "CVN_CUSUM_TRAINING_MODE": "enabled",
  "CVN_DEFAULT_HISTORY_MONTHS": "24",
  "CVN_DEFAULT_N_FOLDS": "5",
  "CVN_DEFAULT_N_TRIALS": "50",
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  "CVN_EARLY_STOPPING_ROUNDS": "150",
  "CVN_EMBARGO_BARS": "10",
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  "CVN_MAX_CONCURRENT": "1",
  "CVN_MAX_DAILY_DD_PCT": "10.0",
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