

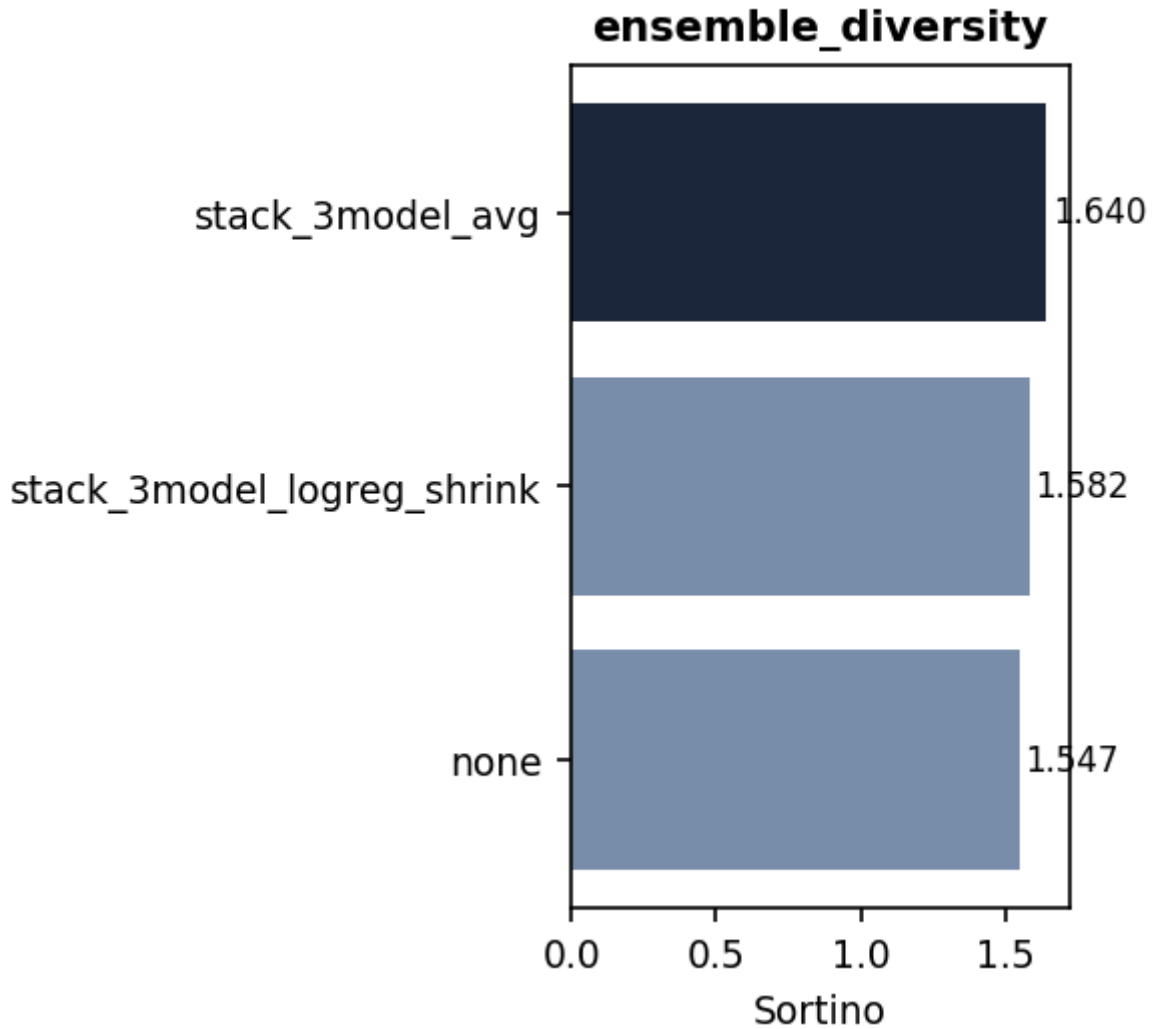
FTF Ablation Report

ATR0.5_1.5_H4 — ensemble_diversity

1 FACTORS	125 RESULTS	50 ERRORS	2h05m DURATION
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Run ID	ftf_20260501_152755_d84267_ATR0.5_1.5_H4
Git SHA	9e1bf8a3
Started	2026-05-01 15:28:24.498169+00:00
Cryptos	UNIUSDC, OPUSDC, ARBUSDC, AAVEUSDC, LDOUSDC
Folds / Trials	5 folds × 50 HPO trials
Cost	15 bps

Sortino by Variant (winner = dark)



Factor	Winner	Primary (Sortino)	95% CI	Verdict	Metrics agreeing
ensemble_diversity	stack_3model_logreg_shrink	1.6483	[1.1632, 2.1589]	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.
ensemble_diversity	stack_3model_logreg_shrink	none	1.582	1.547	0.9520	0.06	NO
ensemble_diversity	stack_3model_logreg_shrink	stack_3model_avg	1.648	1.640	0.9520	0.01	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
ensemble_diversity	stack_3model_logreg_shrink vs none	✗ p=0.952 d=+0.06	✗ p=0.259 d=+0.33	✗ p=0.907 d=+0.09	✗ p=0.438 d=+0.23
	stack_3model_logreg_shrink vs stack_3model_avg	✗ p=0.952 d=+0.01	✗ p=0.625 d=+0.10	✗ p=0.907 d=+0.02	✗ p=0.438 d=+0.20

Performance Summary – Couche C (économique)

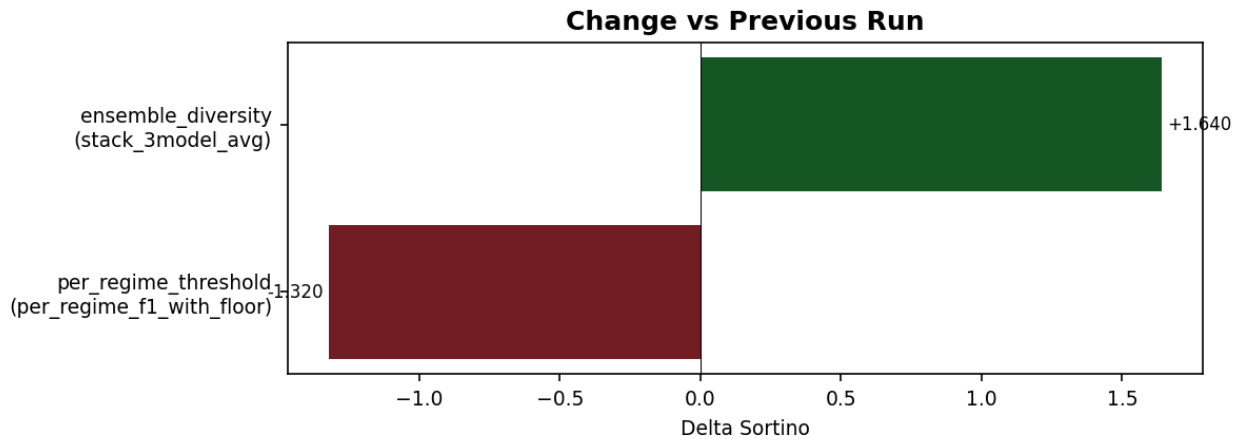
Factor	Winner	Sortino	Std	IQR	Sharpe	Calmar	Trades	Trades/ mo	Win Rate	Max DD
ensemble_diversity	stack_3model_avg	1.640	1.439	2.089	4.050	54.314	970	19.81	58.5%	-9.6%

All Variants

Factor	Variant	Sortino	Std	Trades	Win Rate	Max DD	Return %
ensemble_diversity	stack_3model_avg	1.640	1.439	970	58.5%	-9.6%	30.2%
ensemble_diversity	stack_3model_logreg_shrink	1.582	1.413	897	60.0%	-9.6%	29.2%
ensemble_diversity	none	1.547	1.449	1032	57.5%	-10.3%	28.2%

Comparison vs Previous Run

Previous: ftf_20260430_194027_3d0171_ATR0.5_1.5_H4



Factor	Variant	Prev	Curr	Delta	Trades Prev	Trades Curr
ensemble_diversity	stack_3model_avg	None	1.640	1.640 ↑	None	970
ensemble_diversity	stack_3model_logreg_shrink	None	1.582	1.582 ↑	None	897
ensemble_diversity	none	None	1.547	1.547 ↑	None	1032
per_regime_threshold	per_regime_f1_with_floor	1.320	None	-1.320 ↓	1037	None
per_regime_threshold	per_regime_expectancy	1.598	None	-1.598 ↓	948	None
per_regime_threshold	per_regime_f1	1.626	None	-1.626 ↓	1043	None
per_regime_threshold	coarse_3regime	1.723	None	-1.723 ↓	1026	None
per_regime_threshold	none	1.767	None	-1.767 ↓	1073	None

Red Flags

- per_regime_threshold/per_regime_f1_with_floor: Sortino dropped -1.320 (from 1.320 to None)
- per_regime_threshold/per_regime_expectancy: Sortino dropped -1.598 (from 1.598 to None)
- per_regime_threshold/per_regime_f1: Sortino dropped -1.626 (from 1.626 to None)
- per_regime_threshold/coarse_3regime: Sortino dropped -1.723 (from 1.723 to None)
- per_regime_threshold/none: Sortino dropped -1.767 (from 1.767 to None)

ML Metrics – Couche A (signal modèle)

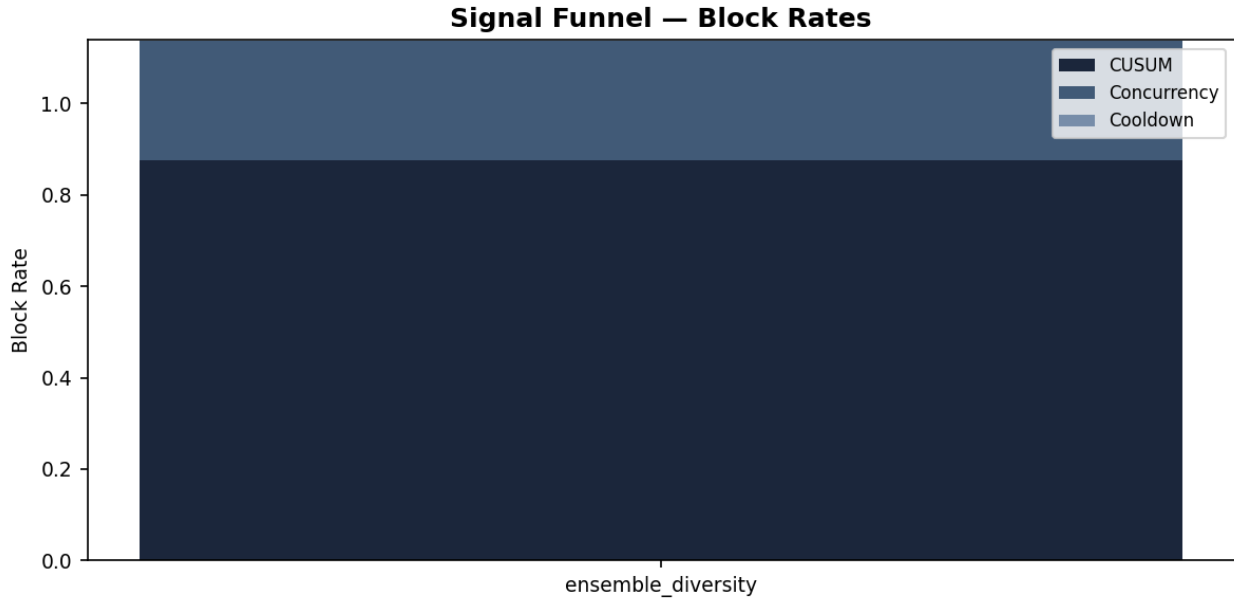
Qualité discriminante du modèle par factor x variant. Un levier classé "signal-restoring" doit bouger ces métriques, pas seulement le débit (Couche B) ou la qualité économique (Couche C).

Factor	Variant	f1_buy	precision	recall	AUC	f1_macro	Brier	ECE	Δ f1
ensemble_diversity	none	0.425	0.425	0.436	0.732	0.648	0.1252	0.0000	0.315
ensemble_diversity	stack_3model_avg	0.424	0.424	0.441	0.726	0.647	0.1261	0.0000	0.314
ensemble_diversity	stack_3model_logreg_shrink	0.424	0.425	0.440	0.731	0.648	0.1257	0.0000	0.315

Brier = écart quadratique moyen entre $p(\text{BUY})$ et y_{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)

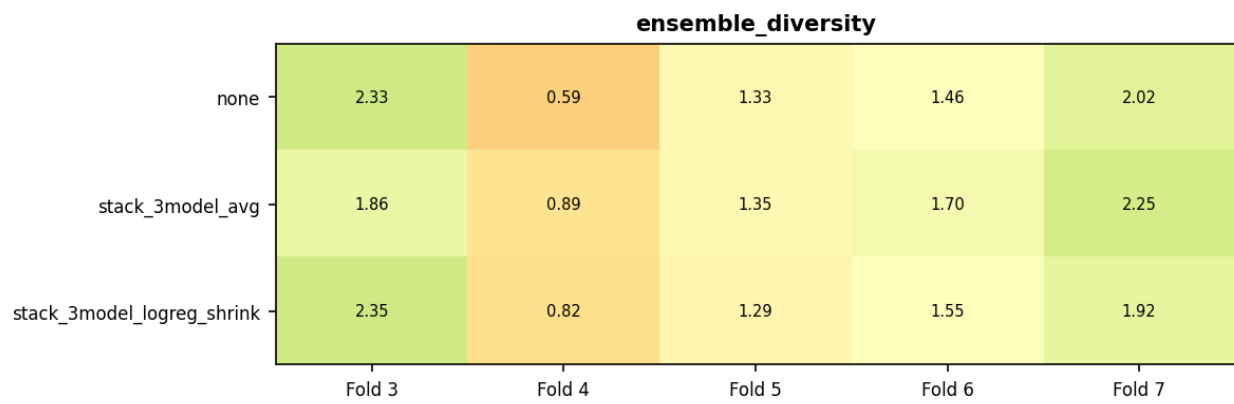
Survival par étage de filtre. `survival` = BUYs survivant / raw_buy. Un levier qui fait grimper `survival` sans bouger la Couche A (ML) augmente le débit d'opportunités mais pas la qualité du signal.



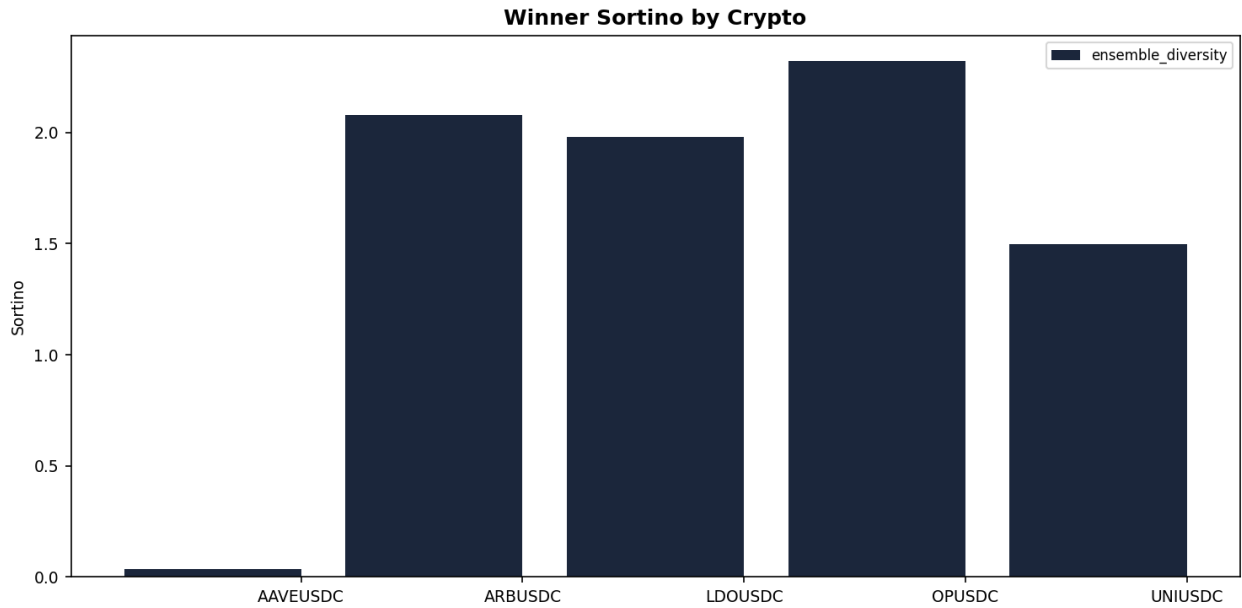
Factor	Variant	raw_buy	CUSUM block	CUSUM survival	Conc. block	Conc. survival	Cooldown	Total survival	Tr Sa
ensemble_diversity	none	1538	0.878	0.122	0.251	0.749	0.000	0.749	25
ensemble_diversity	stack_3model_logreg_shrink	1353	0.878	0.122	0.257	0.743	0.000	0.743	25
ensemble_diversity	stack_3model_avg	1445	0.875	0.125	0.263	0.737	0.000	0.737	25

Stability by Fold

Sortino Stability by Fold



Performance by Crypto



Factor	Variant	Crypto	Sortino	Trades	Win Rate	Max DD	Return %
ensemble_diversity	none	AAVEUSDC	-0.216	184	51.0%	-15.3%	-4.8%
ensemble_diversity	none	ARBUSDC	2.490	242	64.0%	-8.7%	48.2%
ensemble_diversity	none	LDOUSDC	1.661	215	56.7%	-9.3%	32.4%
ensemble_diversity	none	OPUSDC	2.241	211	56.7%	-9.3%	35.3%
ensemble_diversity	none	UNIUSDC	1.559	180	59.3%	-9.1%	29.9%
ensemble_diversity	stack_3model_avg	AAVEUSDC	-0.391	173	47.0%	-18.4%	-6.6%
ensemble_diversity	stack_3model_avg	ARBUSDC	2.326	210	63.9%	-6.8%	43.5%
ensemble_diversity	stack_3model_avg	LDOUSDC	2.054	204	60.7%	-8.3%	39.4%
ensemble_diversity	stack_3model_avg	OPUSDC	2.169	183	61.5%	-8.2%	34.3%
ensemble_diversity	stack_3model_avg	UNIUSDC	1.636	200	57.2%	-8.3%	33.0%
ensemble_diversity	stack_3model_logreg_shrink	AAVEUSDC	0.037	138	51.8%	-12.5%	0.1%
ensemble_diversity	stack_3model_logreg_shrink	ARBUSDC	2.077	166	69.4%	-7.0%	41.9%
ensemble_diversity	stack_3model_logreg_shrink	LDOUSDC	1.978	189	62.1%	-9.3%	37.0%
ensemble_diversity	stack_3model_logreg_shrink	OPUSDC	2.321	224	59.6%	-9.9%	37.7%
ensemble_diversity	stack_3model_logreg_shrink	UNIUSDC	1.498	180	57.0%	-9.3%	29.5%

Configuration Snapshot

BASE_ENV at run start (immutable)

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  "CVN_ATR_PERIOD": "14",
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  "CVN_CLEANLAB_FOLD_BUDGET_S": "60",
  "CVN_CLEANLAB_MAX_DROP_PCT": "5.0",
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  "CVN_CLEANLAB_REWEIGHT_FLOOR": "0.5",
  "CVN_CUSUM_AUTO_CALIBRATE": "0",
  "CVN_CUSUM_THRESHOLD_H": "3.0",
  "CVN_CUSUM_TRAINING_MODE": "enabled",
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  "CVN_EARLY_STOPPING_ROUNDS": "150",
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"CVN_USE_META_LABEL": "0",  
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