GOVERNANCE RECORD

Factor Library v0.1 — Validation Record

Four launch families · Universe 482 U.S. large-cap equities · Monthly rebalance · Construction sample 2016–2022 · Holdout 2023-01-01 onward

Publication rule v0.1 (in force)

A factor is eligible for publication as a return factor only if (i) the Fama-MacBeth t-statistic on its risk premium exceeds 2.0, (ii) its information ratio in the holdout period is positive, and (iii) its decile spread remains positive net of 20 basis points per side of transaction cost. A factor that fails is still computed and reported as a risk descriptor. A factor that only works before costs is not published.

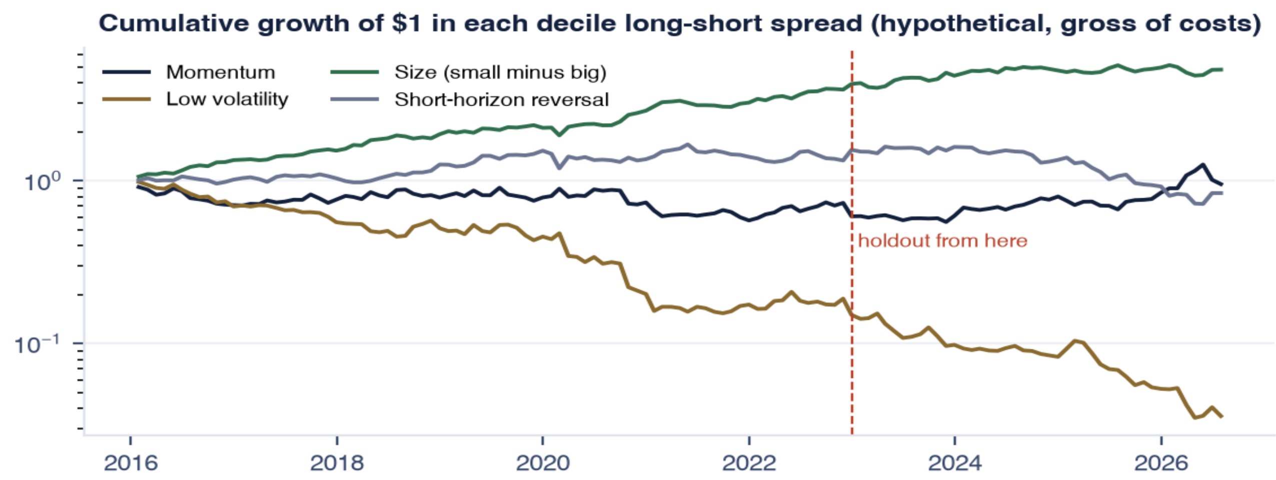
Status vocabulary. **PASS**: meets all criteria of the publication rule in force and is eligible for publication as a return factor. **MONITOR**: does not meet the rule but shows either a Fama-MacBeth t-statistic above 1.0 or a positive holdout information ratio; computed and reported as a risk descriptor, not presented as a source of return. **FAIL**: does not meet the rule on any count; computed and reported as a risk descriptor pending point-in-time data.

Demo build. Data: Yahoo Finance via yfinance; universe = current S&P 500 constituents; market capitalization approximated as current shares outstanding x historical price. The production engine uses licensed point-in-time data with survivorship-free index membership and as-reported share counts. Results in this build are therefore subject to survivorship bias and are presented to demonstrate methodology and format, not as validated production output.

Summary

Factor	FM t-stat (uni)	FM t-stat (joint)	LS ann. return	IR (full)	IR (holdout)	Hit rate	Max DD	Turnover /mo	Net @20bps	Status
Momentum	0.50	1.40	-0.4%	-0.02	0.61	51%	-39%	55%	-3.0%	MONITOR
Low volatility	-3.11	-2.68	-27.0%	-1.01	-1.19	36%	-96%	17%	-27.6%	FAIL
Size (small minus big)	3.03	2.39	+16.0%	1.27	0.44	65%	-14%	11%	+15.4%	PASS
Short-horizon reversal	-0.12	-0.49	-1.6%	-0.09	-0.79	46%	-57%	172%	-9.5%	FAIL

1 of 4 families meet publication rule v0.1 in this build. Spreads are hypothetical decile long-short returns computed on the demo universe (see the legend on every page); the net column deducts 20 basis points per side at each monthly rebalance.



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Hypothetical performance. Backtested and simulated figures are hypothetical: computed from historical data under stated assumptions, gross of transaction costs unless stated, not the results of actual trading or of any account, and not achievable by any investor. Not prepared for use in the recipient's advertising.

Momentum

Specification

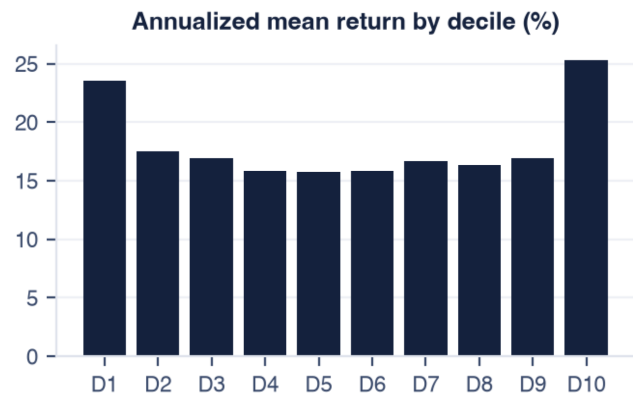
Field	Value
Definition	Total return from month-end t-12 to month-end t-1 (skips the most recent month)
Standardization	Winsorized 1st/99th percentile, z-scored within universe at each month-end
Lookback	252d
Rebalance	Monthly, equal-weight deciles, one-month holding period
Version	0.1

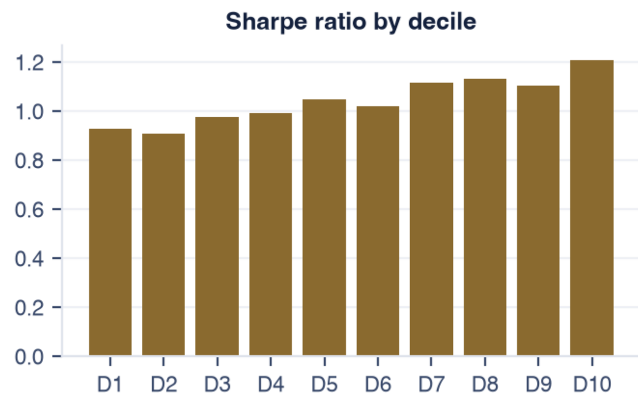
Validation results

Test	Statistic	Full sample	Construction (2016–22)	Holdout (2023–)
Decile portfolios	Annualized LS return	-0.4%	-6.9%	+13.6%
Decile portfolios	Annualized LS volatility	+20.8%	+19.9%	+22.2%
Decile portfolios	Information ratio	-0.02	-0.35	0.61
Decile portfolios	Hit rate (months > 0)	51%	46%	60%
Decile portfolios	Maximum drawdown	-39%	-38%	-24%
Decile portfolios	t-stat of mean monthly spread	0.27	-0.68	1.30
Decile portfolios	Months	127	84	43
Fama-MacBeth (univariate)	Mean monthly premium / t-stat	+0.07% / t=0.50	—	—
Fama-MacBeth (joint, 4 factors)	Mean monthly premium / t-stat	+0.16% / t=1.40	—	+0.37% / t=1.72
Turnover	One-way monthly turnover of LS portfolio	55%	—	—

Transaction cost sensitivity

Cost per side (bps)	0	10	20	40
Net annualized LS return	-0.4%	-1.7%	-3.0%	-5.6%





Publication status

MONITOR — does not meet the rule but shows either a Fama-MacBeth t-statistic above 1.0 or a positive holdout information ratio; computed and reported as a risk descriptor, not presented as a source of return

Criteria: not met: Fama-MacBeth t-statistic > 2.0 (observed +0.50); met: Holdout-period information ratio > 0 (observed +0.61); not met: Decile spread > 0 net of 20 bps per side (observed -0.03).

D1 = lowest factor score, D10 = highest. Under the library sign convention a positive spread means the high-score decile outperformed. Sharpe by decile is shown because a risk-oriented factor may show a flat or negative return spread while altering risk-adjusted return across deciles.

Low volatility

Specification

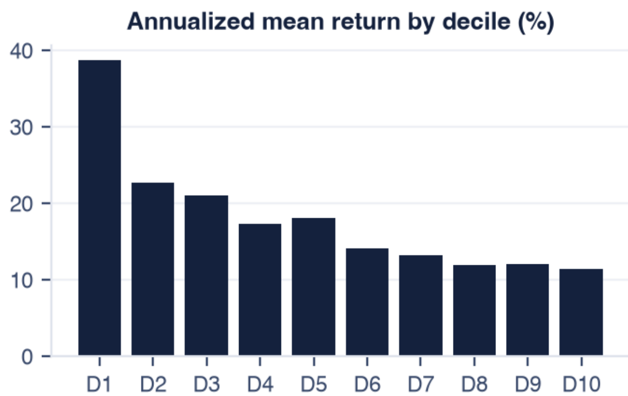
Field	Value
Definition	Negative of annualized standard deviation of daily returns over trailing 252 trading days
Standardization	Winsorized 1st/99th percentile, z-scored within universe at each month-end
Lookback	252d
Rebalance	Monthly, equal-weight deciles, one-month holding period
Version	0.1

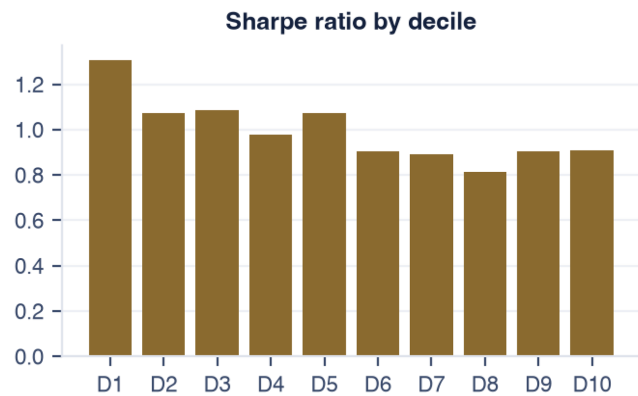
Validation results

Test	Statistic	Full sample	Construction (2016–22)	Holdout (2023–)
Decile portfolios	Annualized LS return	-27.0%	-23.7%	-32.9%
Decile portfolios	Annualized LS volatility	+26.8%	+26.4%	+27.7%
Decile portfolios	Information ratio	-1.01	-0.90	-1.19
Decile portfolios	Hit rate (months > 0)	36%	37%	35%
Decile portfolios	Maximum drawdown	-96%	-85%	-77%
Decile portfolios	t-stat of mean monthly spread	-3.31	-2.32	-2.42
Decile portfolios	Months	127	84	43
Fama-MacBeth (univariate)	Mean monthly premium / t-stat	-0.57% / t=-3.11	—	—
Fama-MacBeth (joint, 4 factors)	Mean monthly premium / t-stat	-0.47% / t=-2.68	—	-0.62% / t=-2.00
Turnover	One-way monthly turnover of LS portfolio	17%	—	—

Transaction cost sensitivity

Cost per side (bps)	0	10	20	40
Net annualized LS return	-27.0%	-27.3%	-27.6%	-28.2%





Publication status

FAIL — does not meet the rule on any count; computed and reported as a risk descriptor pending point-in-time data

Criteria: not met: Fama-MacBeth t-statistic > 2.0 (observed -3.11); not met: Holdout-period information ratio > 0 (observed -1.19); not met: Decile spread > 0 net of 20 bps per side (observed -0.28).

D1 = lowest factor score, D10 = highest. Under the library sign convention a positive spread means the high-score decile outperformed. Sharpe by decile is shown because a risk-oriented factor may show a flat or negative return spread while altering risk-adjusted return across deciles.

Size (small minus big)

Specification

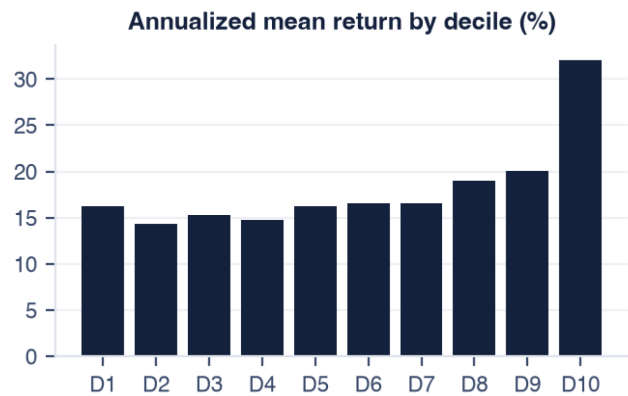
Field	Value
Definition	Negative log market capitalization (current shares x month-end price; demo approximation)
Standardization	Winsorized 1st/99th percentile, z-scored within universe at each month-end
Lookback	spot
Rebalance	Monthly, equal-weight deciles, one-month holding period
Version	0.1

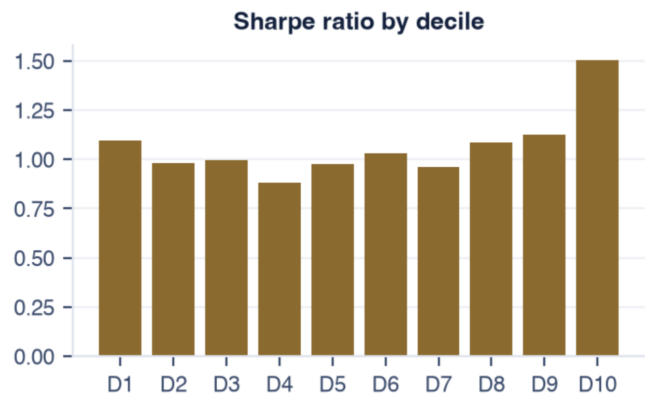
Validation results

Test	Statistic	Full sample	Construction (2016–22)	Holdout (2023–)
Decile portfolios	Annualized LS return	+16.0%	+21.7%	+5.8%
Decile portfolios	Annualized LS volatility	+12.6%	+12.1%	+13.3%
Decile portfolios	Information ratio	1.27	1.79	0.44
Decile portfolios	Hit rate (months > 0)	65%	69%	56%
Decile portfolios	Maximum drawdown	-14%	-13%	-14%
Decile portfolios	t-stat of mean monthly spread	4.07	4.49	0.93
Decile portfolios	Months	127	84	43
Fama-MacBeth (univariate)	Mean monthly premium / t-stat	+0.23% / t=3.03	—	—
Fama-MacBeth (joint, 4 factors)	Mean monthly premium / t-stat	+0.16% / t=2.39	—	+0.01% / t=0.08
Turnover	One-way monthly turnover of LS portfolio	11%	—	—

Transaction cost sensitivity

Cost per side (bps)	0	10	20	40
Net annualized LS return	+16.0%	+15.7%	+15.4%	+14.8%





Publication status

PASS — meets all criteria of the publication rule in force and is eligible for publication as a return factor

Criteria: met: Fama-MacBeth t-statistic > 2.0 (observed +3.03); met: Holdout-period information ratio > 0 (observed +0.44); met: Decile spread > 0 net of 20 bps per side (observed +0.15).

Size is the only family that meets the publication rule in this build. It is also the family whose demo input is not point-in-time — market capitalization is approximated as the current share count multiplied by the adjusted price — so it should be treated as the least reliable of the four until as-reported share counts are licensed.

D1 = lowest factor score, D10 = highest. Under the library sign convention a positive spread means the high-score decile outperformed. Sharpe by decile is shown because a risk-oriented factor may show a flat or negative return spread while altering risk-adjusted return across deciles.

Short-horizon reversal

Specification

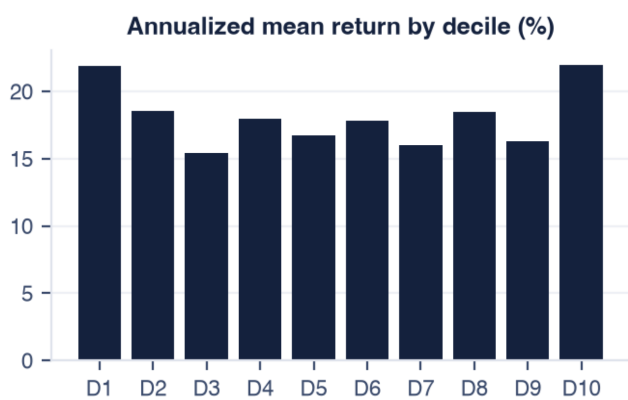
Field	Value
Definition	Negative of trailing 21-trading-day total return
Standardization	Winsorized 1st/99th percentile, z-scored within universe at each month-end
Lookback	21d
Rebalance	Monthly, equal-weight deciles, one-month holding period
Version	0.1

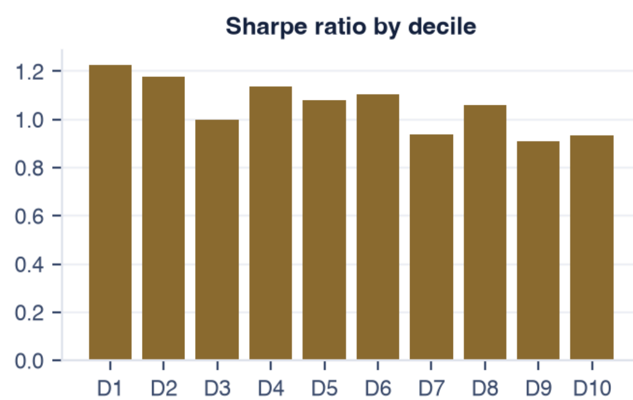
Validation results

Test	Statistic	Full sample	Construction (2016–22)	Holdout (2023–)
Decile portfolios	Annualized LS return	-1.6%	+6.5%	-15.7%
Decile portfolios	Annualized LS volatility	+18.3%	+17.1%	+19.9%
Decile portfolios	Information ratio	-0.09	0.38	-0.79
Decile portfolios	Hit rate (months > 0)	46%	52%	35%
Decile portfolios	Maximum drawdown	-57%	-22%	-56%
Decile portfolios	t-stat of mean monthly spread	0.01	1.20	-1.42
Decile portfolios	Months	127	84	43
Fama-MacBeth (univariate)	Mean monthly premium / t-stat	-0.02% / t=-0.12	—	—
Fama-MacBeth (joint, 4 factors)	Mean monthly premium / t-stat	-0.05% / t=-0.49	—	-0.30% / t=-1.57
Turnover	One-way monthly turnover of LS portfolio	172%	—	—

Transaction cost sensitivity

Cost per side (bps)	0	10	20	40
Net annualized LS return	-1.6%	-5.6%	-9.5%	-16.7%





Publication status

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Hypothetical performance. Backtested and simulated figures are hypothetical: computed from historical data under stated assumptions, gross of transaction costs unless stated, not the results of actual trading or of any account, and not achievable by any investor. Not prepared for use in the recipient's advertising.

FAIL — does not meet the rule on any count; computed and reported as a risk descriptor pending point-in-time data

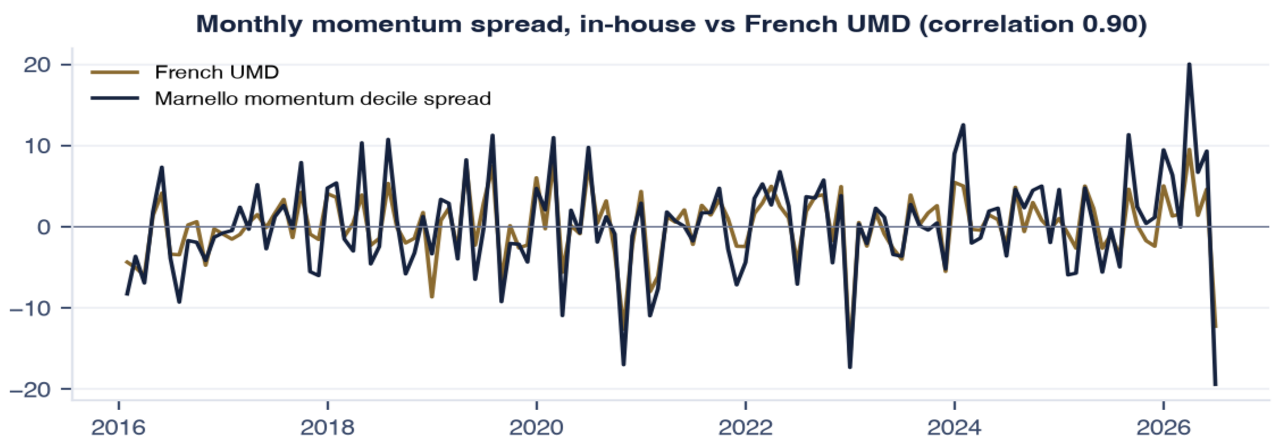
Criteria: not met: Fama-MacBeth t-statistic > 2.0 (observed -0.12); not met: Holdout-period information ratio > 0 (observed -0.79); not met: Decile spread > 0 net of 20 bps per side (observed -0.09).

D1 = lowest factor score, D10 = highest. Under the library sign convention a positive spread means the high-score decile outperformed. Sharpe by decile is shown because a risk-oriented factor may show a flat or negative return spread while altering risk-adjusted return across deciles.

Cross-validation against public benchmarks

The in-house decile long-short spreads are compared with the corresponding factor series published in the Kenneth R. French Data Library (Dartmouth): UMD for momentum and SMB for size. The benchmark series are value-weighted 2x3 sorts on the full CRSP universe; the in-house spreads are equal-weighted deciles within the demo universe, so correlation rather than level agreement is the relevant test. A high correlation with an independent, publicly reproducible series is evidence that the construction is correct. The benchmark series are downloaded by engine/ff_factors.py and the comparison is computed by engine/benchmark.py; any reader can reproduce it.

In-house spread	Benchmark	Months	Period	Correlation	Beta to benchmark	Sign agreement
Momentum	French UMD	126	2016-02 to 2026-07	0.900	1.33	87%
Size (small minus big)	French SMB	126	2016-02 to 2026-07	0.598	0.80	67%
Momentum, sector-neutral variant	French UMD	126	2016-02 to 2026-07	0.841	—	—



The in-house momentum spread has a monthly correlation of 0.90 with French UMD over 126 months, with the same sign in 87% of months. The size spread correlates at 0.60 with SMB; the lower figure is expected because SMB spans the full market while the demo universe contains large caps only, so the in-house spread measures size dispersion within the S&P 500 rather than small-versus-large across the market.

Construction variant: sector-neutral momentum

Variant	LS ann. return	IR (full)	IR (holdout)	Turnover /mo	Net @20bps	Corr. with UMD
Plain (z-score within universe)	-0.4%	-0.02	0.61	55%	-3.0%	0.90
Sector-neutral (z-score within GICS sector)	+0.8%	0.05	0.84	56%	-1.9%	0.84

Sector neutralization removes the component of momentum that is a bet on sector rotation. Whether it is appropriate depends on the client question; both variants are carried in the library with their own validation records.

Version history

Version	Date	Change	Rationale	Approved
0.1	2026-09-08	Initial four-family library on demo data (pre-launch prototype): momentum 12-1, low volatility, size, short-horizon reversal; publication rule v0.1.	Establish the construction and validation pipeline ahead of the point-in-time data licence and the research staff start date.	Jingchang Song, Manager · 2026-09-10

Release history of this record

Release	Built	Approved	Published	Pages
R2026-09-08-validation	2026-09-08 15:23	2026-09-10	—	11
R2026-09-13-validation_record-rerender	2026-09-13 23:45	Superseded by a later render, never approved	—	11
R2026-09-14-validation_record-rerender	2026-09-14 00:02	2026-09-14	—	11

Each row is a real render with its real timestamp. A row whose approval column reads pending has not been approved; the approval date is entered in the ledger when the Manager gives it and this table is re-rendered from the ledger.

Sign-off

Role	Name	Signature	Date
Prepared by	Marnello LLC — pre-launch prototype, produced under the direction of the Manager	—	2026-09-14 00:02
Reviewed and approved	Jingchang Song, Manager	/s/ Jingchang Song	2026-09-14

Governance record

Item	Value
Product	Factor Library Validation Record
Issue	v0.1
Data through	2026-08-31
Library version	0.1 (demo build)
Publication rule	v0.1 (in force)
Families meeting the rule	1 of 4
Built	2026-09-14 00:02
Prepared by	Marnello LLC — pre-launch prototype, produced under the direction of the Manager
Reviewed and approved for release	Jingchang Song, Manager · 2026-09-14