Multi-Factor US Large Cap Equity Strategy

Research factsheet | Backtest Feb 2011 - Sep 2026 | Hugo Hoenn

Objective. Outperform a cap-weighted US large-cap benchmark by modest, consistent amounts through a systematic, long-only tilt toward stocks with attractive **value**, **momentum** and **quality** characteristics, while holding market beta, sector weights and turnover close to the benchmark. The strategy is designed as a smart-beta building block: transparent rules, low cost, and factor exposures that can be explained to a client in one page.

Excess return (ann.)	Information ratio	Tracking error	Sharpe (bench.)	Beta	Max drawdown (bench.)	1-way turnover
+0.9%	**0.36**	**2.2%**	**1.03 (0.99)**	**1.00**	**-25.7% (-25.4%)**	**11.4%/mo**

Performance summary

	Strategy	Benchmark	Active
Annualised return	16.6%	15.7%	+0.9%
Volatility	14.6%	14.3%	+0.2%
Sharpe ratio	1.03	0.99	+0.04
Max drawdown	-25.7%	-25.4%	-0.3%
Tracking error	2.2%		
Information ratio	0.36		
Beta to benchmark	1.00	1.00	
Monthly hit rate	52%		
Avg. holdings / active share	425		28%

Calendar-year returns

Year	Strategy	Bench.	Active
2011	2.3%	-1.2%	+3.5%
2012	17.0%	16.8%	+0.3%
2013	31.5%	32.1%	-0.5%
2014	15.0%	14.6%	+0.4%
2015	1.4%	2.1%	-0.7%
2016	11.8%	13.1%	-1.4%
2017	25.1%	24.9%	+0.1%
2018	-5.0%	-3.6%	-1.4%
2019	30.1%	32.8%	-2.6%
2020	24.4%	24.1%	+0.2%
2021	30.1%	30.1%	-0.1%
2022	-20.1%	-20.9%	+0.8%
2023	28.9%	31.1%	-2.2%
2024	33.2%	29.9%	+3.3%
2025	24.9%	20.9%	+3.9%
2026	25.5%	15.5%	+9.9%

Net of 10 bps per dollar traded. Benchmark = cap-weighted portfolio of the same investable universe. Universe = current S&P 500 constituents (survivorship bias affects strategy and benchmark alike; see page 2). Hypothetical backtest, not investment advice.

How the portfolio is built

Universe & data. ~340-450 US large caps per month. Prices from Yahoo Finance; fundamentals from SEC EDGAR XBRL using each value's *filing date* for point-in-time availability (no look-ahead). Share counts and prices are placed on a common split-adjusted basis; XBRL scale errors are removed with a rolling-median filter.
Signals. Value = log book-to-market and earnings yield. Momentum = 12-month return skipping the latest month. Quality = return on equity and operating cash flow / assets. Each is winsorised at 3 sd, demeaned within GICS sector and z-scored monthly; the composite is the equal-weighted average.
Construction. Target weight ∝ market cap × exp(score); sector weights rescaled to the benchmark; 5% single-name cap; **ex-ante beta matched to the benchmark** using 252-day Vasicek-shrunk betas (this is how low volatility enters: as a risk control, not a scored return factor). Monthly rebalance toward target with one-way turnover capped at 20%.

Factor attribution (Fama-French 5 + momentum, monthly active returns)

Factor	Loading	t-stat
Alpha (annualised)	0.003	0.60
Mkt-RF	0.020	1.90
SMB	0.023	1.22
HML	0.018	0.99
RMW	-0.016	-0.82
CMA	0.009	0.33
MOM	0.094	7.54

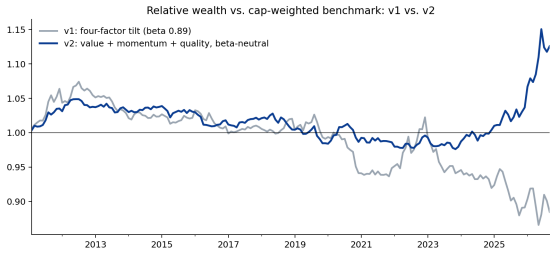
R^2 = 0.27. Active returns load significantly on **momentum** (t = 7.5) with market, size, value and profitability loadings all statistically indistinguishable from zero, i.e. the beta-neutral construction removed the unintended market bet of v1. Residual alpha of +0.3% (t = 0.6) is not distinguishable from zero: returns are explained by the factor exposures the strategy is designed to hold, which is the desired result for a smart-beta product.

Stress periods & research history

Period	Strategy	Bench.	Relative
Aug 2011 (US downgrade)	-11.2%	-11.9%	+0.7%
2015-16 (China/oil)	-6.7%	-6.2%	-0.5%
Q4 2018	-14.8%	-13.5%	-1.3%
COVID crash (Feb-Mar 2020)	-17.9%	-18.9%	+1.0%
2022 bear market	-20.1%	-20.9%	+0.8%

	v1: 4-factor tilt	v2: beta-neutral
Excess return	-0.9%	+0.9%
Information ratio	-0.30	0.36
90% bootstrap CI (IR)	[-0.80, 0.01]	[-0.28, 0.64]
Beta	0.89	1.00
Sharpe	1.02	1.03
Max drawdown	-22.4%	-25.7%
IR 2011-18 / 2019-26	0.10 / -0.53	0.06 / 0.54

What v1 taught us. The first version scored low volatility as a fourth return factor. It beat the benchmark on every risk metric but lagged by 0.9% a year. Regression showed the whole gap was a market-beta bet (beta 0.89, Mkt-RF loading t = -6.6) in a period when the market compounded at ~14% over cash, not factor failure. v2 removes the implicit short-market position and lets the return factors do the work. Both versions are reported; v2 was not selected from a grid.



What this backtest cannot tell you

Statistical power. A 15.6-year sample cannot distinguish an IR of 0.36 from zero (90% block-bootstrap interval [-0.28, 0.64]; P(IR > 0) = 76%). Detecting a true IR of 0.3 at conventional significance would take roughly 45 years of data. The case for the strategy rests on the long, cross-country evidence for value, momentum and quality premia and on the cleanliness of the implementation, not on this sample.
Survivorship. The universe is today's S&P 500, so both series exclude companies that failed; the benchmark's 15.7% annualised return versus ~13.7% for SPY over the same window shows the size of that bias. **Regime.** One US bull market dominated by mega-cap growth; v2's edge is concentrated in 2024-26 and driven by momentum. **Next steps.** Survivorship-free CRSP/Compustat data with history to the 1960s; intangible-adjusted value; an optimiser with an explicit tracking-error budget; and a test in international developed markets, where factor premia have been stronger.

Source: author's calculations. Code and data pipeline: github.com/[handle]/factor-strategy. Prepared September 2026. For discussion purposes only; hypothetical performance does not reflect actual trading.