CNW

Quantitative Research

Adaptive Signal-Driven Portfolio Strategy

NASDAQ-20 Universe — Systematic Long-Only Equity

Period: January 2020 – January 2026

KEY RESULTS AT A GLANCE

TERMINAL WEALTH	MEAN MONTHLY EXCESS	INFORMATION RATIO	ANN. EXCESS RETURN
9.3×	+42 bps	0.47	≈+5.2%
Strategy (vs 6.5× bmk)	vs cap-weighted benchmark	Annualised estimate	Over 6-year backtest

EXECUTIVE SUMMARY

Adaptive Signal-Driven Portfolio Strategy over the NASDAQ-20 Universe

We present a systematic long-only equity strategy applied to a 20-stock universe drawn from the NASDAQ-100 index over the period **January 2020 to January 2026**. The strategy combines a proprietary composite factor signal with dynamic benchmark tilting, adaptive parameter selection, and a market-regime overlay. Over the full evaluation window the strategy compounded to approximately **9.3**× versus **6.5**× for the capitalisation-weighted benchmark, yielding a mean monthly excess return of **+42 basis points** and an estimated annualised Information Ratio of **0.47**.

TERMINAL WEALTH Strategy	TERMINAL WEALTH Benchmark	MEAN MONTHLY EXCESS RETURN	INFORMATION RATIO
9.3×	6.5×	+42 bps	0.47

Introduction

Systematic factor strategies built on price momentum, defensive risk premia, and trend signals have a well-documented theoretical and empirical foundation. Translating these insights into a production-grade portfolio requires careful attention to parameter stability, transaction cost realism, and behaviour across different market regimes.

This report describes such a strategy, designed with two objectives in mind:

- delivering consistent risk-adjusted outperformance over a liquid NASDAQ benchmark, and
- serving as a transparent, non-trivial baseline against which more sophisticated quantitative approaches can be evaluated.

Strategy Overview

Universe & Data

The strategy operates on a universe of **twenty highly liquid NASDAQ-listed equities** spanning Technology, Semiconductors, Communication Services, and Consumer sectors. Daily adjusted-close prices form the basis of all computations. A capitalisation-weighted portfolio of the same universe serves as the benchmark.

Composite Factor Signal

At its core, the strategy scores each asset daily using a composite factor signal derived from three complementary return-predictive dimensions:

Signal Components

- **Medium-horizon price trend** — captures sustained directional momentum
- **Risk-adjusted quality filter** — penalises high-volatility assets
- **Short-to-medium trend confirmation** — cross-horizon consistency check

Portfolio Construction

- ***Benchmark tilting*** *towards higher-scored assets*
- ***Long-only*** *and concentration constraints enforced*
- ***Weekly rebalance*** *with explicit transaction costs*
- ***Walk-forward calibration*** *— no look-ahead bias*

Adaptive Parameter Selection & Regime Overlay

Portfolio weights are governed by two parameters — a signal intensity coefficient and a maximum single-asset weight — re-selected weekly using a rolling walk-forward procedure over a one-year calibration window. No future data enters any calibration step. A binary **market-regime indicator** derived from a long-run price trend of the market proxy is used to reduce gross equity exposure during sustained downtrends, limiting drawdown during adverse periods.

Key design principle: Transaction costs are modelled explicitly at a conservative one-way rate applied to gross turnover at each rebalance, ensuring all reported results reflect realistic after-cost performance.

EMPIRICAL RESULTS

Backtest Performance: January 2020 – January 2026

The backtest covers approximately **1,500 trading days** across a variety of market environments, from the COVID-19 shock and recovery through the AI-driven rally and the volatile 2025 macro environment. The strategy delivered consistent outperformance across most regimes, with a growing advantage emerging from early 2023 onwards.

EVALUATION PERIOD	ANN. EXCESS RETURN	ALPHA VOLATILITY	OBSERVATIONS
Duration	Estimated	Annualised	Monthly
6 Years	≈+5.2%	≈11.1%	72 months

Equity Curve

The two series track closely through 2020–2022. Beginning in early 2023 the strategy accumulates a growing advantage, sustained through the AI-driven rally and the subsequent volatility of 2025. Terminal values are approximately **9.3**× (strategy) and 6.5× (benchmark).

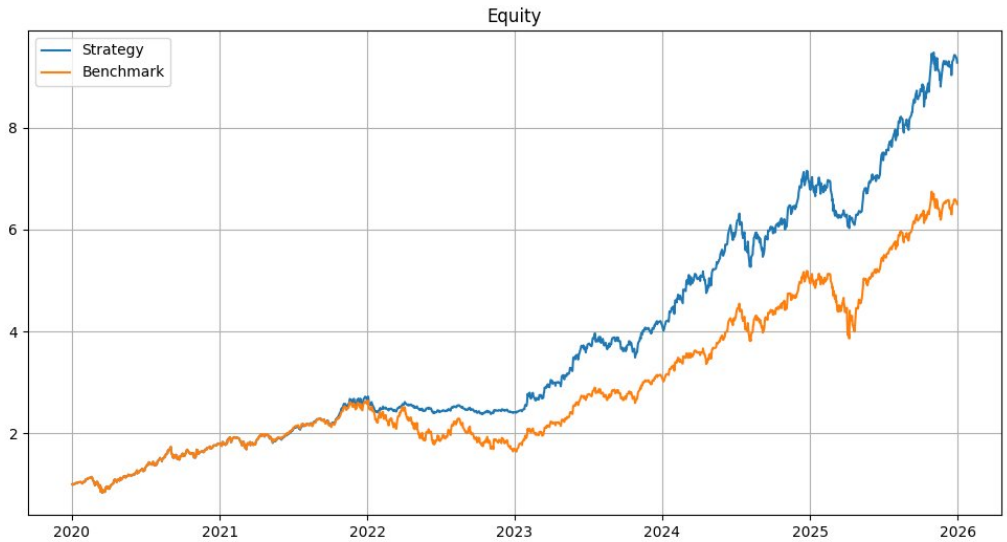

Figure 1: *

Figure 1. Cumulative return of the adaptive strategy (blue) vs. the cap-weighted NASDAQ-20 benchmark (orange), January 2020 – January 2026. The strategy's margin widens materially from 2023 onward, coinciding with the AI-sector-led rally in which the composite factor signal demonstrated strong conviction.

Monthly Excess Return Statistics

Table 1 reports descriptive statistics of the monthly excess return (strategy minus benchmark) over the 72 complete months of the evaluation period.

Statistic	Value
Observations	72 months
Mean monthly excess return	**+0.42%**
Standard deviation	3.21%
Minimum (worst month)	**−13.39%**
25th percentile	**−0.29%**
Median	0.00%
75th percentile	**+0.91%**
Maximum (best month)	**+12.63%**
Annualised excess return (est.)	**≈+5.2%**
Annualised alpha volatility	≈11.1%
Information Ratio (est.)	**0.47**

Table 1. Monthly excess return statistics, January 2020 – December 2025.

Distribution note: The zero median with a positive mean reflects a return distribution characteristic of momentum-based approaches — outperformance is concentrated in a subset of high-conviction months rather than uniformly distributed. The Information Ratio of 0.47 is consistent with published evidence on simple factor overlays applied to liquid US equity universes.

RESEARCH UTILITY & CONCLUSIONS

Utility as a Research Baseline

The strategy satisfies the four requirements of a rigorous quantitative baseline, making it a robust reference point for systematic NASDAQ factor-investing research.

Four Baseline Requirements Met

- **Reproducible** — built on publicly available data
- **Realistic frictions** — explicit transaction costs
- **No look-ahead bias** — strict walk-forward calibration
- **Factor attribution** — maps to established academic risk premia

Suggested Research Extensions

- ***Signal enrichment*** — *alternative data, machine learning*
- ***Advanced optimisation*** — *risk parity, reinforcement learning*
- ***Regime detection*** — *more sophisticated overlay models*
- ***Universe expansion*** — *broader NASDAQ-100 constituents*

Benchmarking Protocol

Any proposed improvement should be benchmarked against this strategy using the **same universe**, **evaluation period**, **transaction cost assumptions**, and **walk-forward protocol**. With an Information Ratio of 0.47, this baseline constitutes a non-trivial hurdle that cannot be surpassed by naive passive tilts alone.

IR Hurdle: An Information Ratio of 0.47 places this strategy comfortably within the range of institutional-grade factor overlays reported in the academic literature for liquid large-cap US equities. Researchers should target IR > 0.60 to claim material improvement over this baseline.

Conclusion

We have presented a signal-driven portfolio strategy on a 20-stock NASDAQ universe that delivers:

TERMINAL WEALTH vs 6.5× benchmark	MEAN MONTHLY EXCESS RETURN	INFORMATION RATIO
9.3×	+42 bps	0.47

The strategy's modular architecture and realistic simulation framework make it a well-suited baseline for systematic NASDAQ factor-investing research. Its combination of a composite signal, adaptive parameter selection, and market-regime overlay provides a strong foundation for future enhancements.