Idiosyncratic Risk Premium

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NARRATIVE OF IDIOSYNCRATIC RISK DIVERSIFICATION

Markowitz, H. (1952). Portfolio Selection. Journal of Finance.

Sharpe, W. (1964). Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk. Journal of Finance.

Fama, E., & MacBeth, J. (1973). Risk, Return, and Equilibrium: Empirical Tests. Journal of Political Economy.

Bali, T., Cakici, N., & Whitelaw, R. (2011). Maxing Out: Stocks as Lotteries and the Cross-Section of Expected Returns. Journal of Financial Economics.

DOES IDIOSYNCRATIC RISK CARRY A POSITIVE PREMIUM?

Theoretical Context:

- Traditional view: Idiosyncratic risk should not be priced (CAPM)
- Behavioral/Merton view: Under-diversification requires compensation
- Recent evidence: Mixed results in empirical literature

This Study:

Tests Han & Xu (2022) finding of positive idiosyncratic risk premium

using alternative methodology and extended sample period

A DIFFERENCE IN DEFINITIONS

Traditional definition of idiosyncratic risk:

Unsystematic risk, or risk that is specific to an asset rather than the market in general.

Definition in our model:

The variance of the residuals after accounting for Carhart 4 factors.

Since our factors may not entirely capture systematic risk, it is possible that our “idiosyncratic risk” is not entirely unsystematic.

METHODOLOGY

Data Sources:

- CRSP/Compustat (1970-2024)
- Standard Carhart-4 factor construction protocols

  Idiosyncratic risk is measured by: $\sigma_{idiosyncratic} = std(\varepsilon)$

  Where ε is the residual of our factor model in the equation:

$$r_i - r_f = \alpha + \beta_m (r_m - r_f) + \varepsilon$$

- Rolling 12-month estimation window

PORTFOLIO CONSTRUCTION

- Decile sorts on idiosyncratic volatility
- Value-weighted and equal-weighted implementations
- Long-short: Q10 - Q1
- Monthly rebalancing

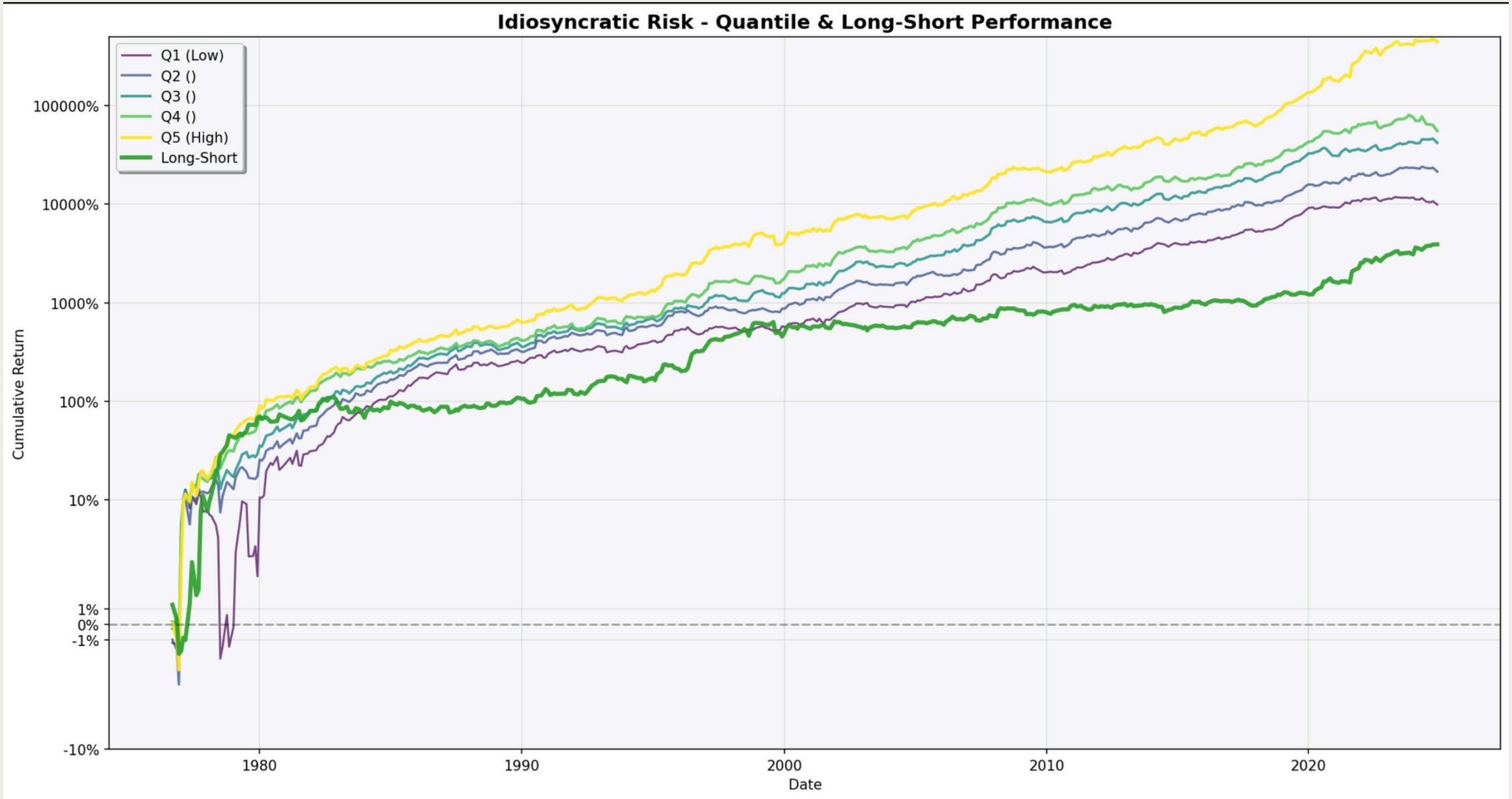
RESULTS - VALUE WEIGHTED PORTFOLIOS (CARHART-4)

Factor	Return	Volatility	Sharpe Ratio	Alpha	Info Ratio	Avg Turnover
Beta	7.0%	15.9%	0.173	2.33%	0.147	60.4%
Value	3.6%	10.4%	-0.059	-0.60%	-0.057	46.2%
Size	3.2%	10.8%	-0.092	-1.30%	-0.122	20.6%
Momentum	10.7%	10.9%	0.589	7.05%	0.648	80.6%
Idiosyncratic Risk	12.0%	15.4%	0.505	7.41%	0.480	57.0%
Combined Portfolio	7.3%	7.5%	0.410	2.98%	0.394	53.0%

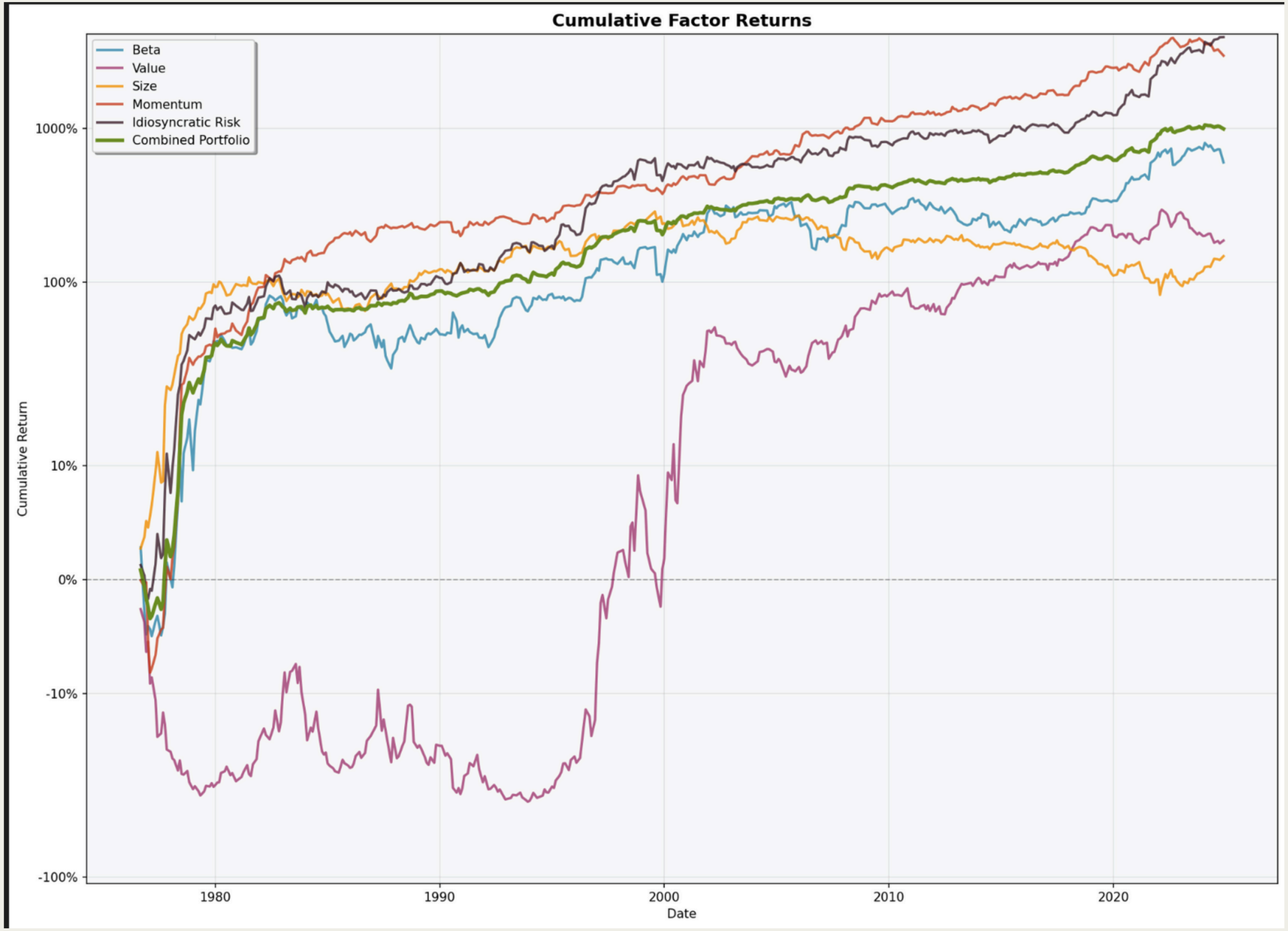
RESULTS - EQUAL WEIGHTED PORTFOLIOS (CARHART-4)

Factor	Return	Volatility	Sharpe Ratio	Alpha	Info Ratio	Avg Turnover
Beta	7.9%	12.2%	0.299	4.34%	0.359	51.5%
Value	6.7%	6.8%	0.371	2.49%	0.362	45.7%
Size	4.1%	9.5%	-0.014	0.06%	0.006	22.9%
Momentum	14.1%	8.3%	1.181	10.09%	1.215	75.5%
Idiosyncratic Risk	11.4%	9.3%	0.776	7.36%	0.795	56.2%
Combined Portfolio	8.8%	5.2%	0.882	4.87%	0.932	50.4%

VALUE-WEIGHTED QUANTILE RETURNS



VALUE-WEIGHTED FACTOR RETURNS



RESULTS - EQUAL WEIGHTED PORTFOLIOS

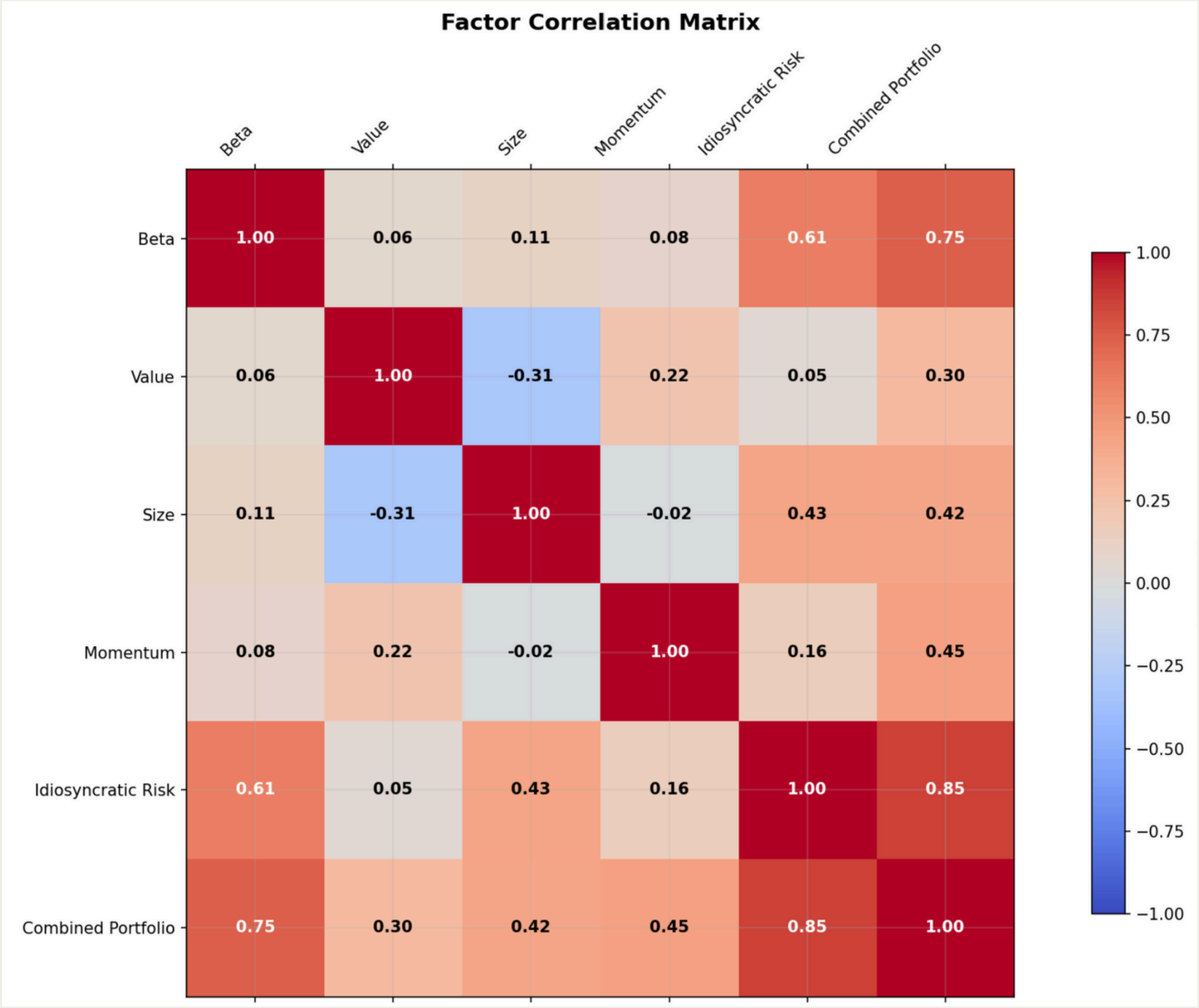
In Sample (1970-2010)

Factor	Return	Volatility	Sharpe Ratio	Alpha	Info Ratio
Beta	8.0%	15.7%	0.162	2.90%	0.185
Value	8.5%	7.8%	0.389	3.19%	0.404
Size	3.0%	11.7%	1.042	11.72%	1.028
Momentum	17.3%	11.3%	1.042	11.72%	1.028
Idiosyncratic Risk	10.8%	13.7%	0.389	5.48%	0.400
Combined Portfolio	9.3%	13.6%	0.284	4.13%	0.303

RESULTS - EQUAL WEIGHTED PORTFOLIOS

Out of Sample (2011-2024)

Factor	Return	Volatility	Sharpe Ratio	Alpha	Info Ratio
Beta	3.6%	27.2%	0.060	0.78%	0.029
Value	10.8%	10.8%	0.820	8.74%	0.805
Size	-2.9%	10.0%	-0.480	-5.96%	-0.605
Momentum	31.4%	14.8%	1.986	31.98%	2.233
Idiosyncratic Risk	8.8%	15.7%	0.434	4.90%	0.318
Combined Portfolio	6.0%	20.4%	0.201	2.75%	0.136


Factor Correlation Matrix
Beta
Value
Size
Momentum
Idiosyncratic Risk
Combined Portfolio
1.00 0.06 0.11 0.08 0.61 0.75
0.06 1.00 -0.31 0.22 0.05 0.30
0.11 -0.31 1.00 -0.02 0.43 0.42
0.08 0.22 -0.02 1.00 0.16 0.45
0.61 0.05 0.43 0.16 1.00 0.85
0.75 0.30 0.42 0.45 0.85 1.00
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75
−1.00

SOURCES

Han, Y., & Xu, W. (2022, December 23). *Is there a positive risk premium for idiosyncratic risk?* SSRN.

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Rothschild & Co. (2024, July 2). *Five stock market talking points.* 2024.

Thank you

CONNER DRAPER, JENNA HANCOCK, AND MAXWELL SCHMUTZ