

QES US Industrials v2.0 – Risk Model Factsheet

Wolfe Research's Luo's QES team has been top-ranked in Quantitative Research, Portfolio Strategy, Economics, Accounting & Tax Policy, and ESG categories in the Institutional Investor magazine's research surveys over the past decade. We leverage our 300+ risk factor library, in-house risk model engine, and expertise in portfolio construction to deliver innovations in risk model design. QES risk models offer next generation style factors, enhanced stock exposures to styles, expanded model coverage, holdings-based factor covariances, alignment of factor portfolios & returns, and intelligent initial estimates of idiosyncratic risk. The QES risk model suite is designed to be more intuitive than conventional models for front-office decision-makers including PMs, CIOs, risk managers, and traders. This Industrials risk model uses our domain knowledge in the sector to offer more systematic explanatory power for specialists. We suggest that sector specialists consider risk through both the sector and broad market lenses.

Model Settings

Item	Description
Risk Estimation Universe	US All-Cap Industrials & Materials Equities
Model History	2007 onwards
Security Coverage	40,000+ securities
Investment Horizon	Medium-term
Variance Half-Life	84 trading days
Covariance Half-Life	252 trading days
Style Exposures	75% regression beta + 25% z-score

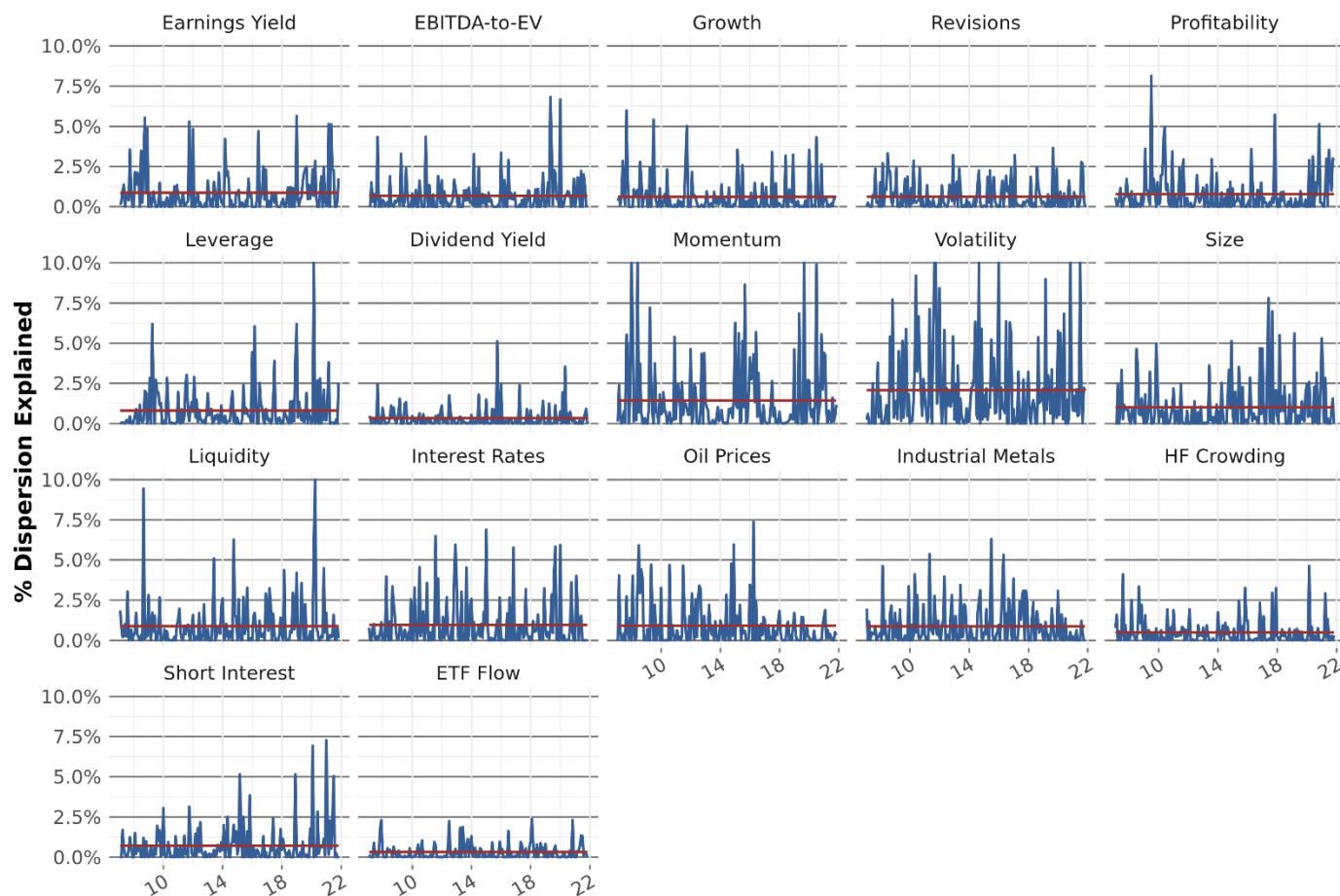
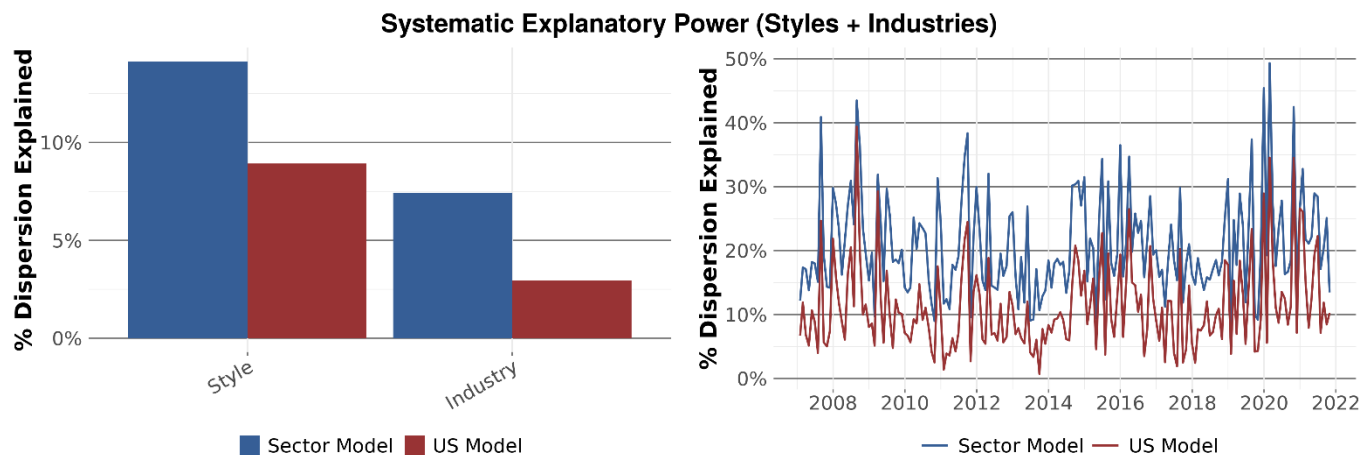
Factors & Descriptions

QES Factor Name	Signal Description
Earnings Yield	Next 12-month median consensus EPS divided by current share price.
EBITDA-to-EV	Ratio of last 12-m EBITDA to sum of net debt, preferred shares, market cap, noncontrolling interest.
Growth	Combination of median consensus EPS growth and sales growth over the next 12-months.
Revisions	Ratio of next 12-month mean consensus EPS to this metric 3-months ago.
Profitability	Combination of trailing ROE and ROIC.
Leverage	Combination of debt-to-equity and debt-to-total capital at current market value.
Dividend Yield	Trailing 12-month dividend per share divided by current share price.
Momentum	Total return of the past 12-months excluding the most recent 1-month.
Volatility	Realized volatility, based on daily returns over the past 12-months.
Size	Market capitalization, common shares outstanding multiplied by the current share price.
Liquidity	Past 3-month average dollar volume divided by average market capitalization.
Interest Rates	Beta to interest rate changes for US Treasuries approximately equivalent to the 10Y.
Oil Prices	Beta to weekly returns of crude oil WTI Futures TR after controlling for market beta.
Industrial Metals	Beta to weekly returns of S&P GSCI Industrial Metals TR Index.
HF Crowding	Combination of hedge fund intensity (% of float) and level (market value) based on 13F filings.
Short Interest	Ratio of shares borrowed for shorting to inventory available for lending.
ETF Flow	Change in ownership (as % of float) by US-listed equity ETFs over the prior 3 months.
QES Industries	Binary one or zero values identifying each stock's QES Industry classification.

Sources: Wolfe Research Luo's QES. Dec 1, 2021. Past performance results do not guarantee similar results in the future.

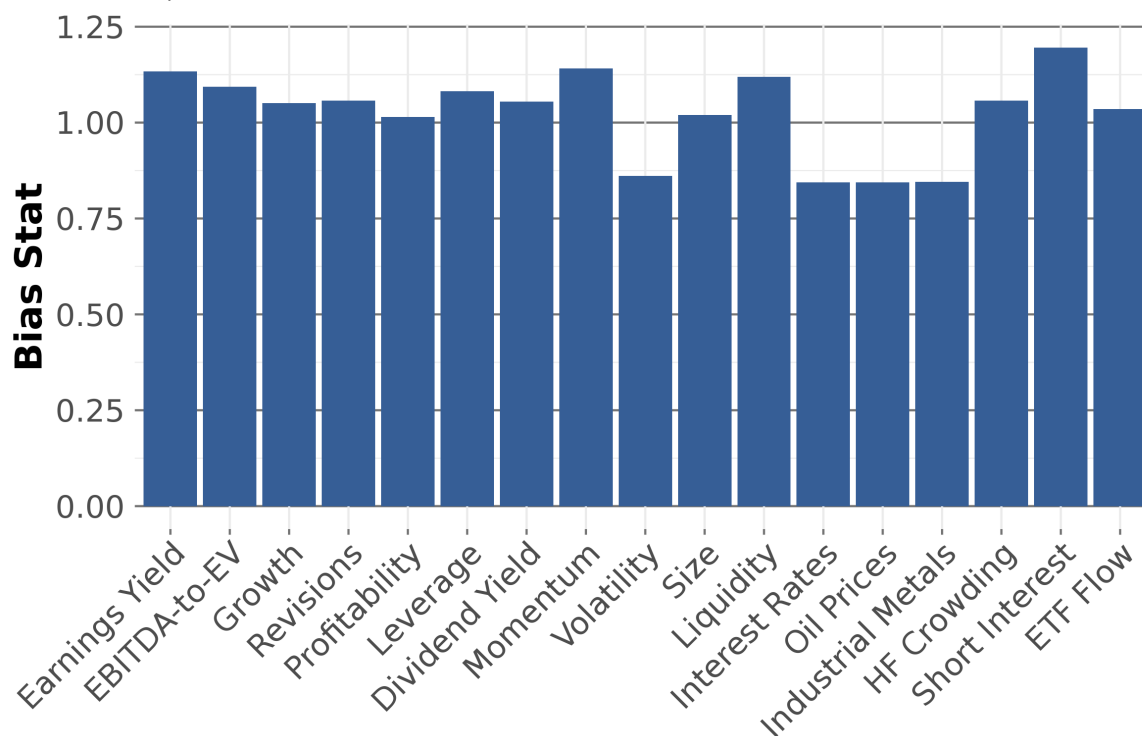
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Explanatory Power for Opportunity Set

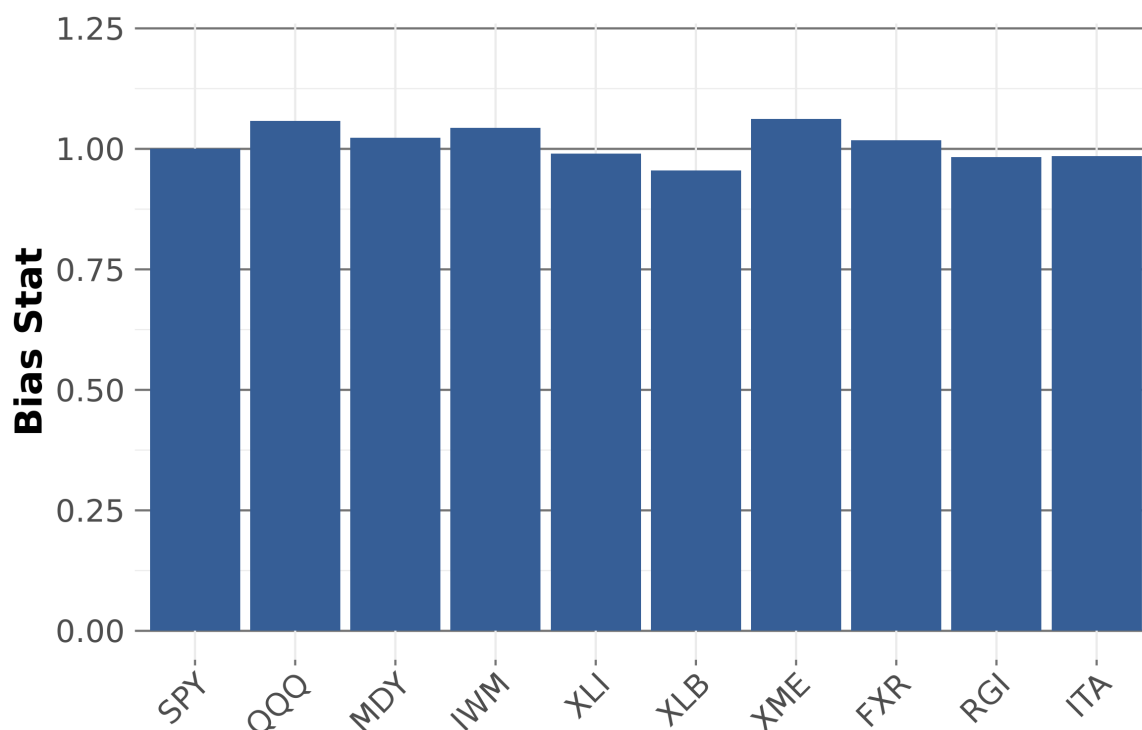


Bias Statistics

* Bias Stats for Style FMPs



* Bias Stats for ETFs

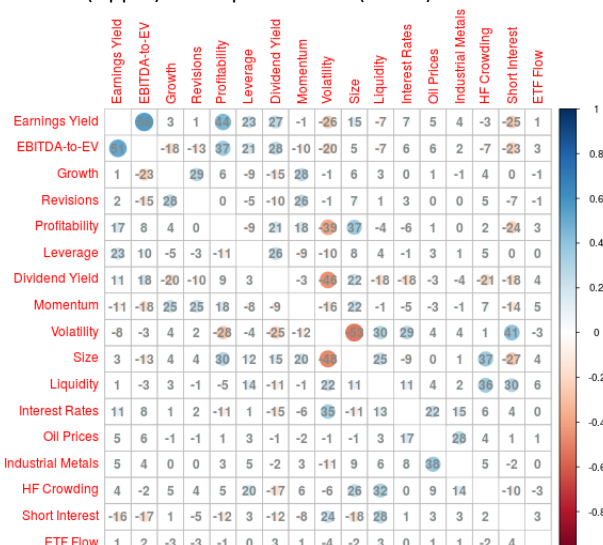


Sources: Wolfe Research Luo's QES, Bloomberg Finance LLP, FactSet, FTSE Russell, MSCI, Refinitiv, S&P Global. Dec 1, 2021. Past performance results do not guarantee similar results in the future.

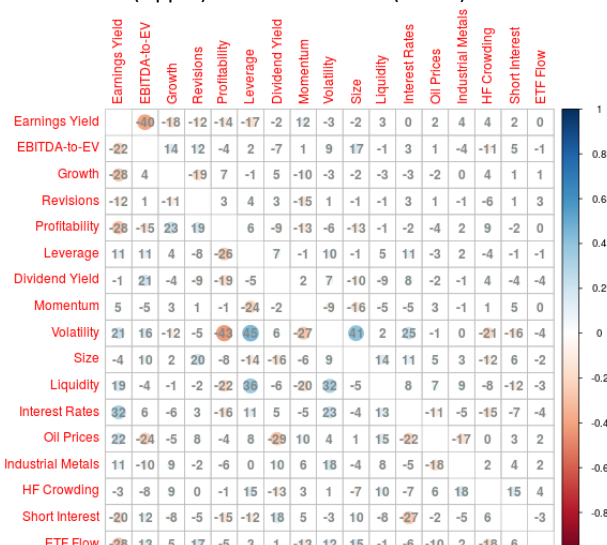
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Factor Correlations

*Signal Rank (Upper) and Exposure Rank (Lower)



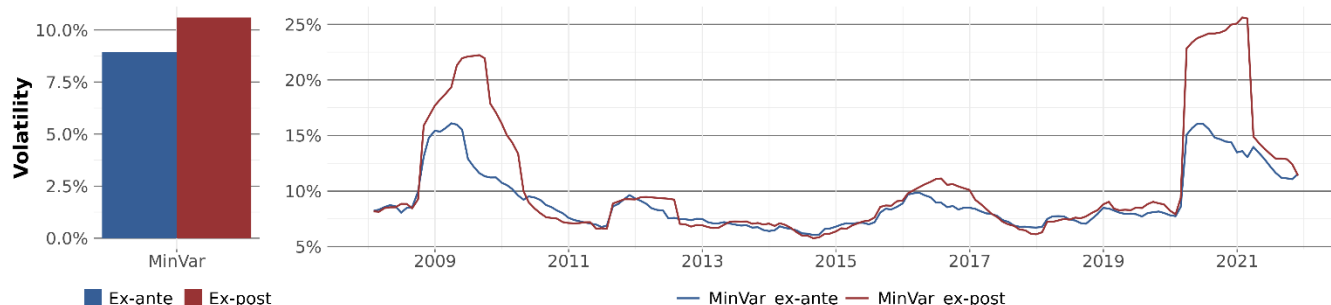
* FMPs Ex-Ante (Upper) and FMPs Ex-Post (Lower)



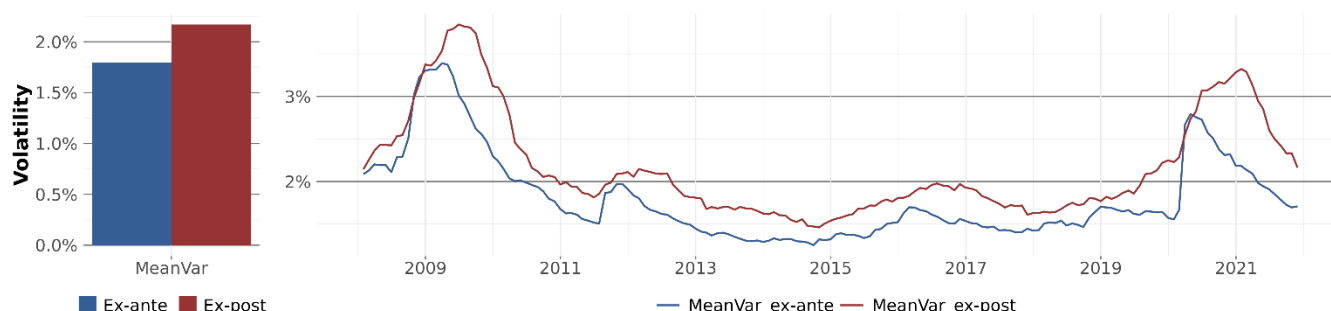
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Portfolio Optimization Tests

*Minimum Variance



*Mean-Variance

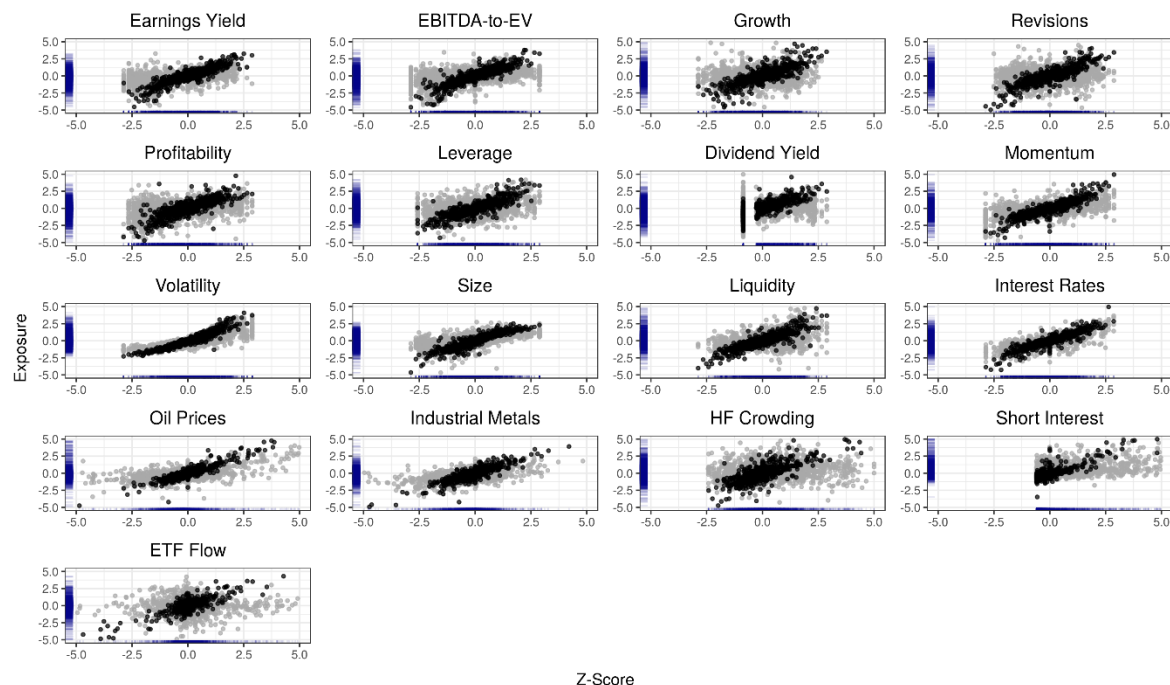


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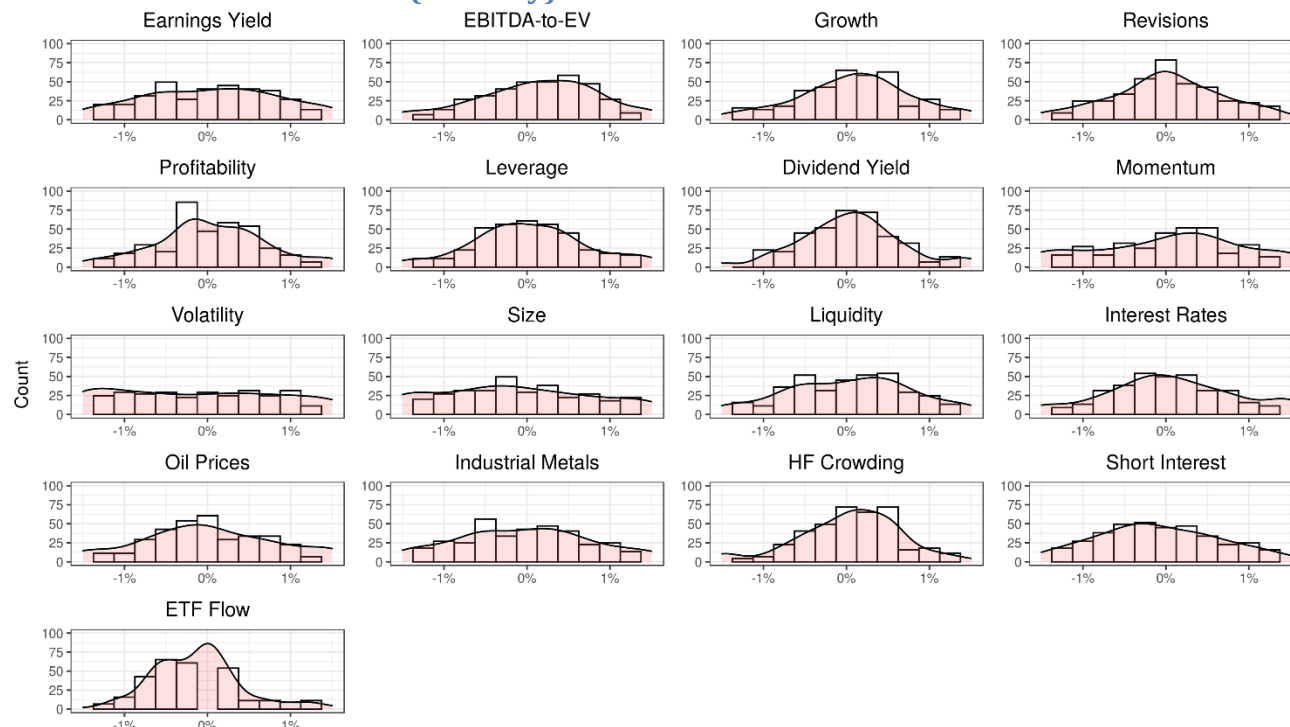
Exposure Distribution (Current)

*In Sector (Black) and In Universe (Grey)



Sources: Wolfe Research Luo's QES, Bloomberg Finance LLP, FactSet, FTSE Russell, MSCI, Refinitiv, S&P Global. Dec 1, 2021. Past performance results do not guarantee similar results in the future.

Factor Return Distribution (Monthly)



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