

QES Risk Model - Developed Markets – Factsheet

Introduction

The Luo's QES team has been top-ranked in the Institutional Investor magazine's research surveys in the Quantitative Research, Portfolio Strategy, Economics, and Accounting & Tax Policy categories in the past decade. The QES risk model suite leverages our expertise in factor construction, our experience with risk model design, and our understanding of systematic drivers of equity risk. This broad Developed Markets model includes fundamental, technical, macro, and positioning factors that explain systematic risks and return dispersion for developed markets stocks. Intended users include both fundamental and quantitative PMs, CIOs, risk managers, and traders.

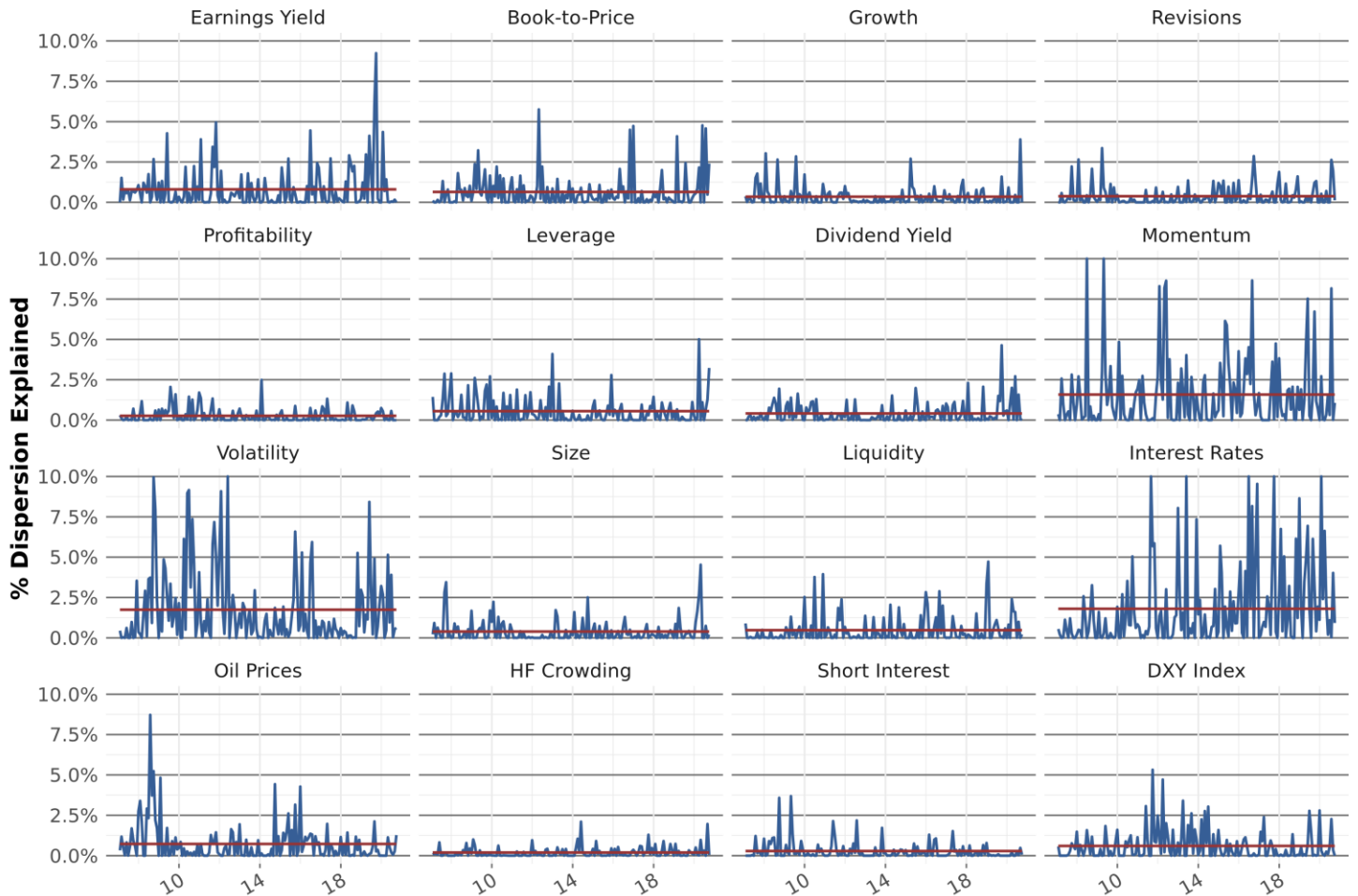
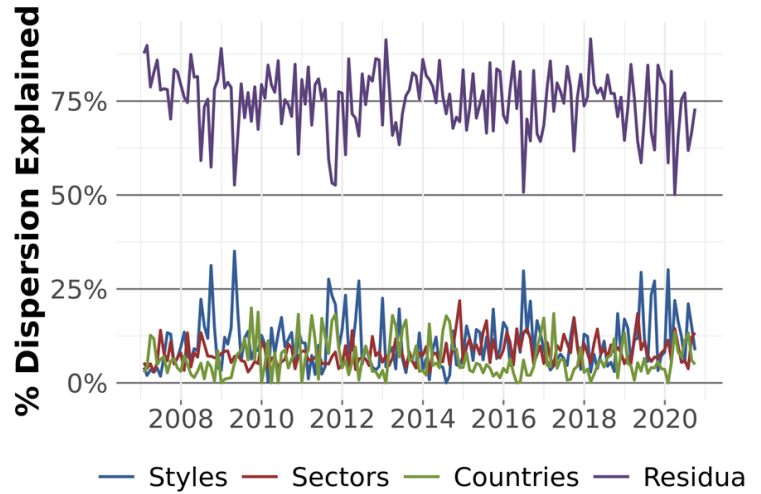
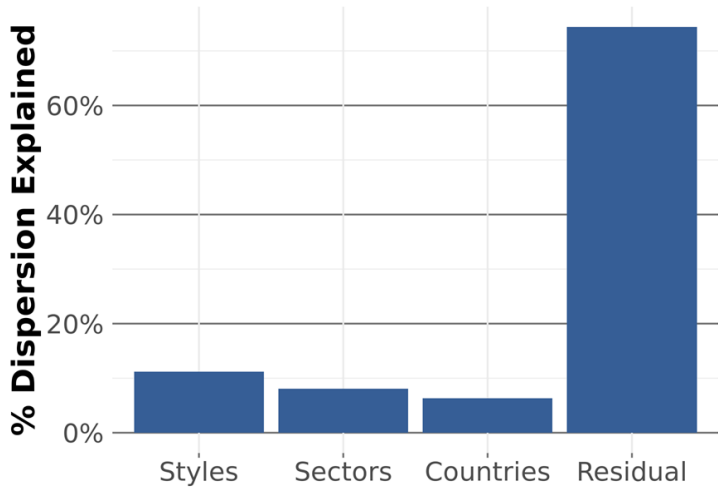
Coverage

- Factor Estimation: Large/Mid-Cap Equities for Developed Markets
- Investment Horizon: Medium-term (Half Lives: Variance - 126 trading days; Covariance - 252 trading days)
- Securities Coverage: Global equities (~40,000) plus US-listed equity ETFs (~1,000)
- Model History: January 2007 to present

Factors & Descriptions

QES Factor Name	Signal Description
Earnings Yield	Next 12-month median consensus EPS divided by current share price.
Book-to-Price	Ratio of book value of equity to market value of equity.
Growth	Combination of median consensus EPS growth and sales growth over the next 12-months.
Revisions	Combination of 3-month changes in mean consensus EPS and Sales over the next 12-months.
Profitability	Combination of trailing ROE and net margin.
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 notional value traded 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.
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.
DXY Index	Beta to weekly changes of US Dollar Index.
QES Industries	Binary one or zero values identifying each stock's QES industry classification.
QES Countries	Binary one or zero values identifying each stock's QES country of risk classification.

Explanatory Power for Opportunity Set



Factor Correlations

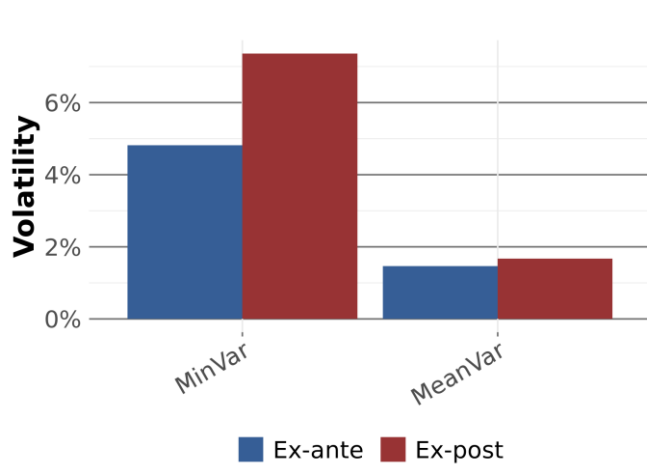
*Signal Rank (Upper) and FMPs Ex-Post (Lower)

	Earnings Yield	Book-to-Price	Growth	Revisions	Profitability	Leverage	Dividend Yield	Momentum	Volatility	Size	Liquidity	Interest Rates	Oil Prices	HF Crowding	Short Interest	DXY Index
Earnings Yield	12	5	9	10	18	14	-11	2	-1	6	7	2	-6	-5	-2	
Book-to-Price	9	-4	-4	-37	-9	2	-20	0	-12	-6	8	4	-2	-3	0	
Growth	5	-5	25	0	0	-10	15	2	4	0	-1	-2	-3	0	0	
Revisions	-19	-21	-6	1	-2	-7	19	0	4	0	-1	-1	0	-1	1	
Profitability	-31	21	8	-8	1	9	13	-4	7	6	-8	-4	-6	1	-3	
Leverage	12	-5	-16	-15	6	-5	-5	0	2	0	-1	0	-1	-3		
Dividend Yield	-7	-37	-24	-8	2	18	-9	-8	-5	-1	-1	2	-1	2	-3	
Momentum	-25	-34	13	36	-1	-28	-14	-6	15	-1	-6	-4	2	-4	2	
Volatility	31	29	15	-15	-21	37	-10	-3	-16	17	22	1	4	6	2	
Size	-25	-13	1	5	5	-14	-1	-4	-4	-16	0	0	11	-14	-3	
Liquidity	10	9	2	-6	-34	27	-1	-12	30	8	9	-3	5	8	-2	
Interest Rates	35	11	11	2	-16	21	-15	-24	36	-21	35	14	-2	0	1	
Oil Prices	23	-17	13	27	-10	-3	-30	8	17	-23	-2	24	-1	1	-25	
HF Crowding	2	8	3	5	20	2	-14	-3	3	-23	-4	16	8	-3	1	
Short Interest	-16	15	-14	-33	5	14	35	-2	23	-7	-27	-32	-31	1		
DXY Index	0	-6	-7	-10	-9	6	15	5	-24	-13	-10	-13	6	-20	11	

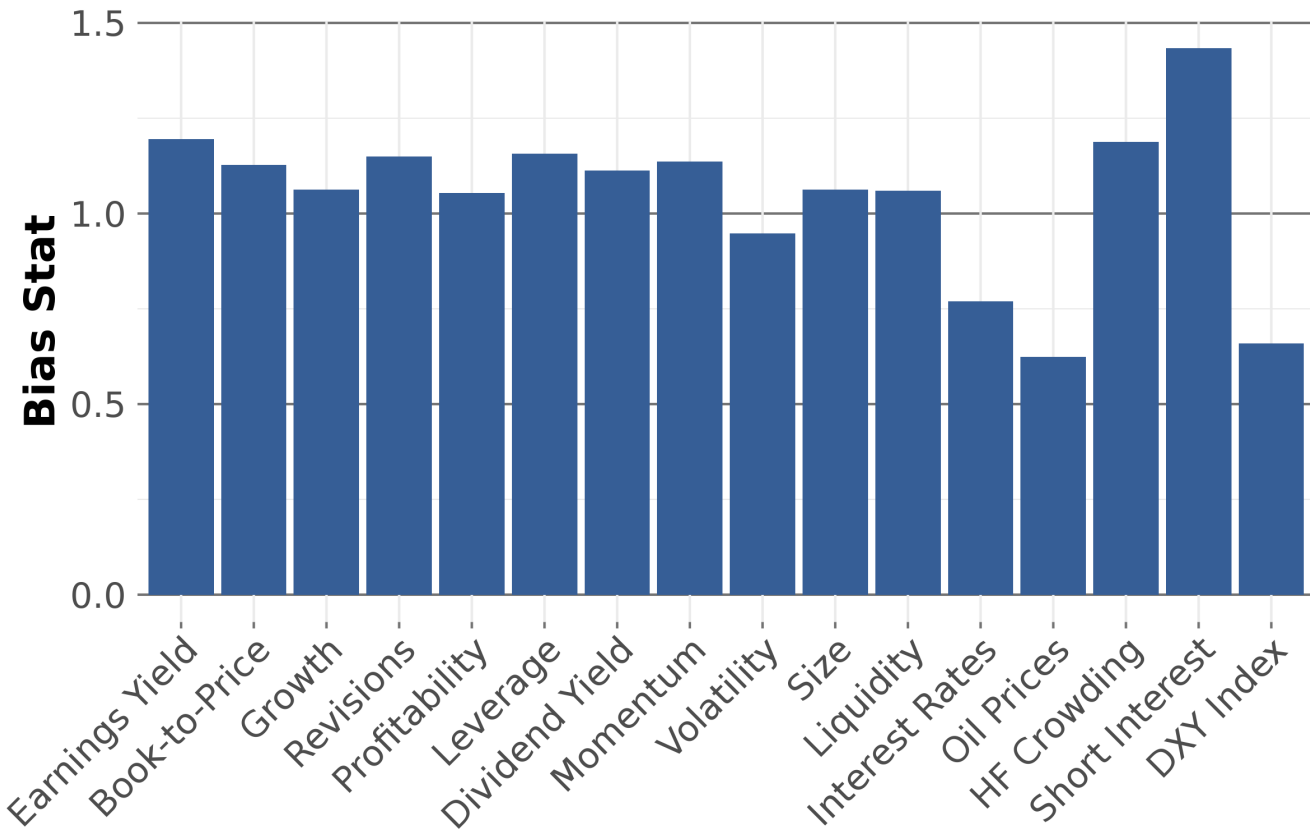
Portfolio Optimization Tests

*Minimum Variance

*Mean-Variance



Bias Statistics



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