

Every equity fund has a windfactor. What's yours?

Adventures in Factor Investing



Nathan Tidd, CFA

+1.646.837.8758

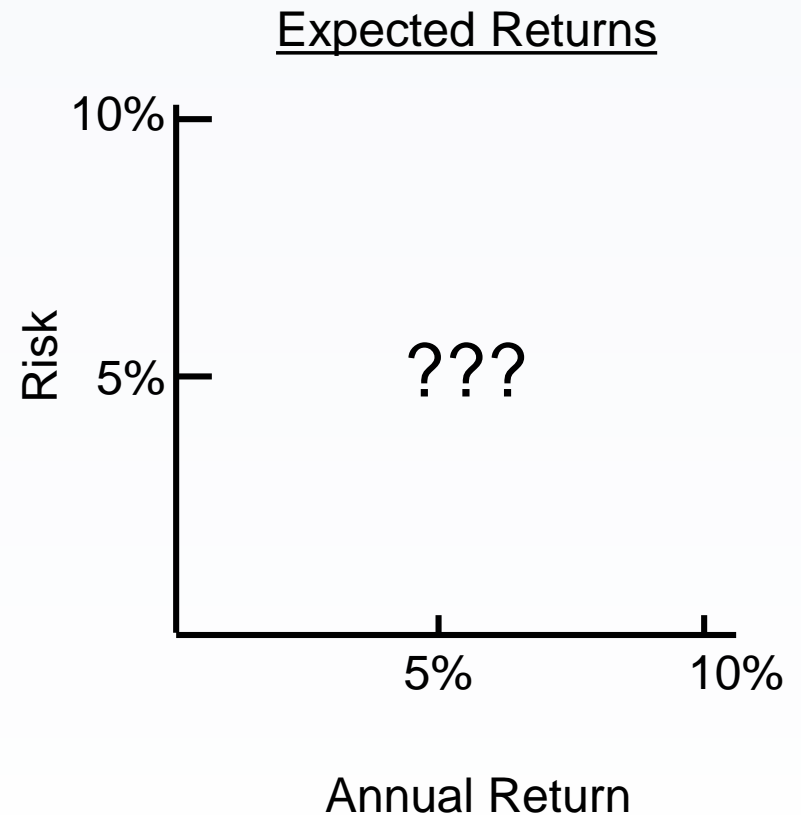
nathan.tidd@windfactor.com

www.windfactor.com

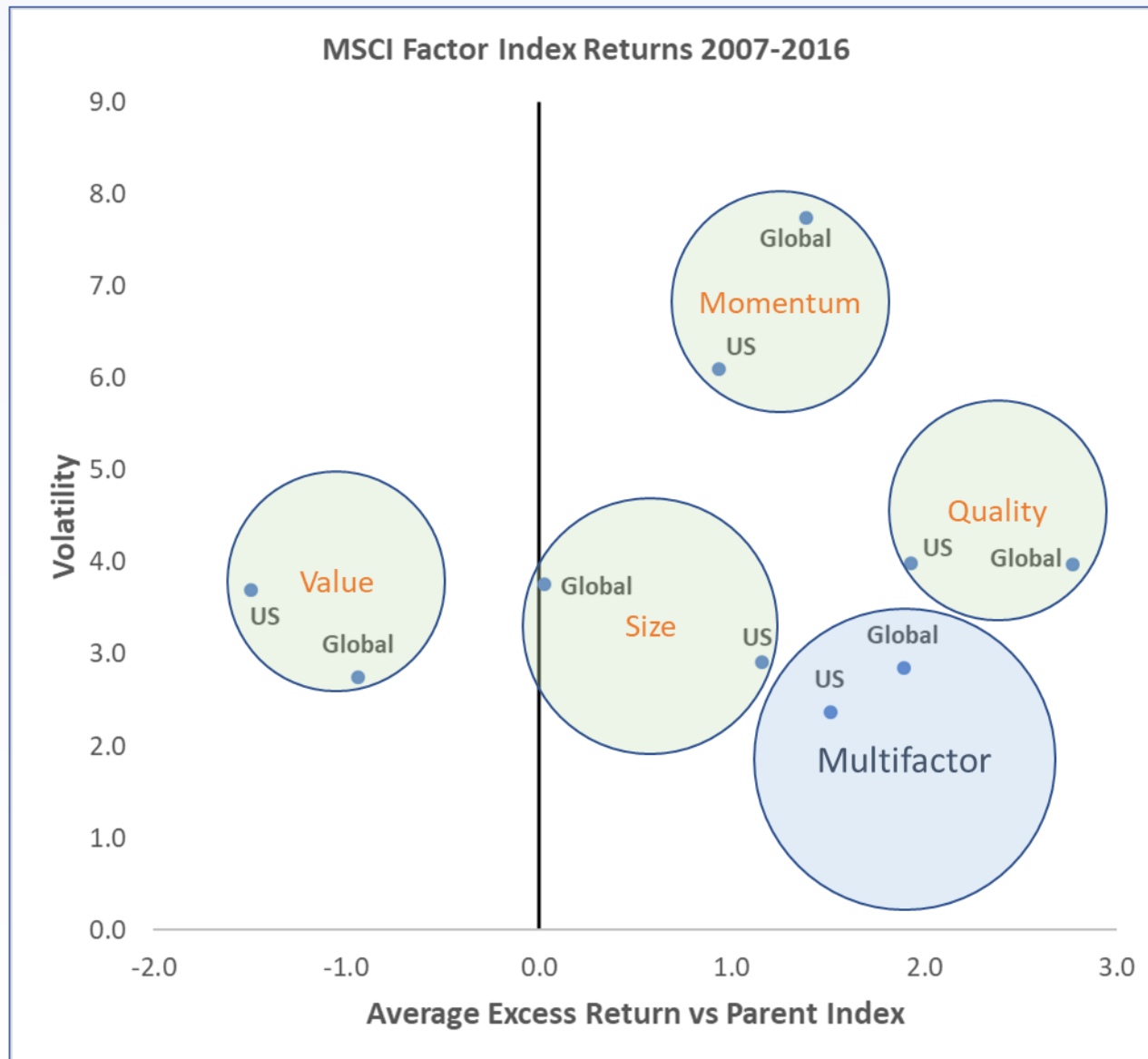
Expectations for Factor Investing

What are the best factor bets this year? Next 10 years?

1. Markets?
2. Industries?
3. “Risk premia”?
 - Value, Size, Quality, Momentum
4. Others?

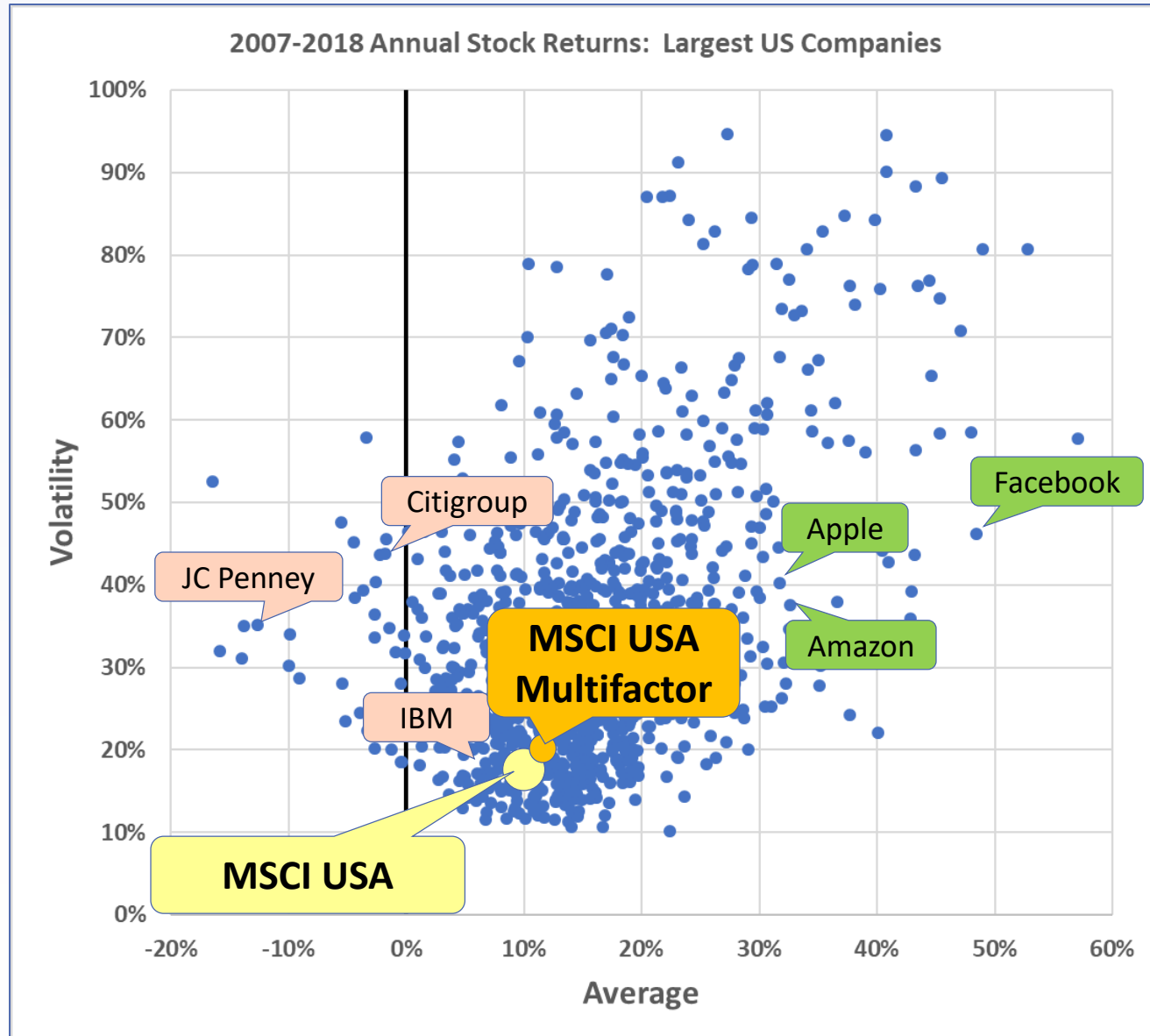


Last Ten Years: MSCI Factor Indexes



Source: Windfactor analysis of index data from msci.com

Risk Premia Barely Move The Needle



Primary US listings with \$1b+ market cap. Source: Quandl

Standard Process

Use this formula every period...

... to produce a time-series of factor returns

Inputs



Regressions:

$$r_a = \sum_k X_{ak} r_k + r_i$$

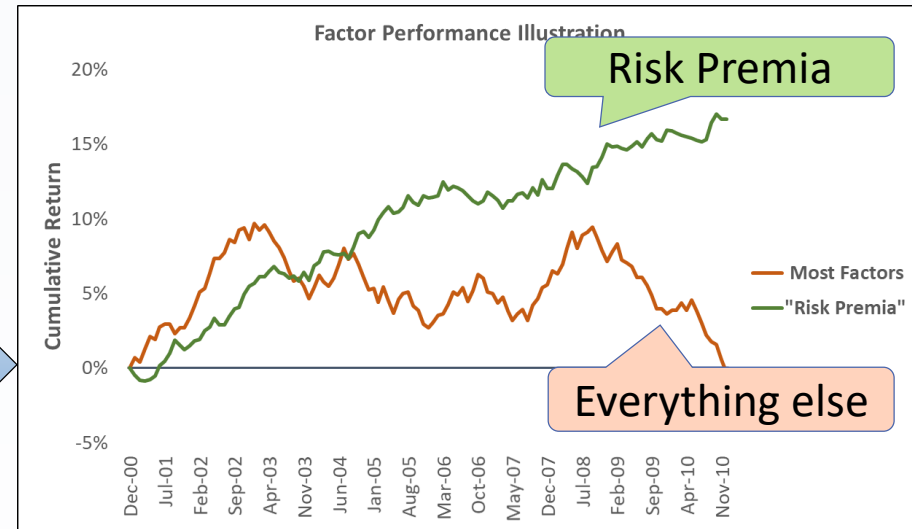
Inputs:

- r_a = equity asset returns
- k = common factors
- X_{ak} = asset exposures to the factors

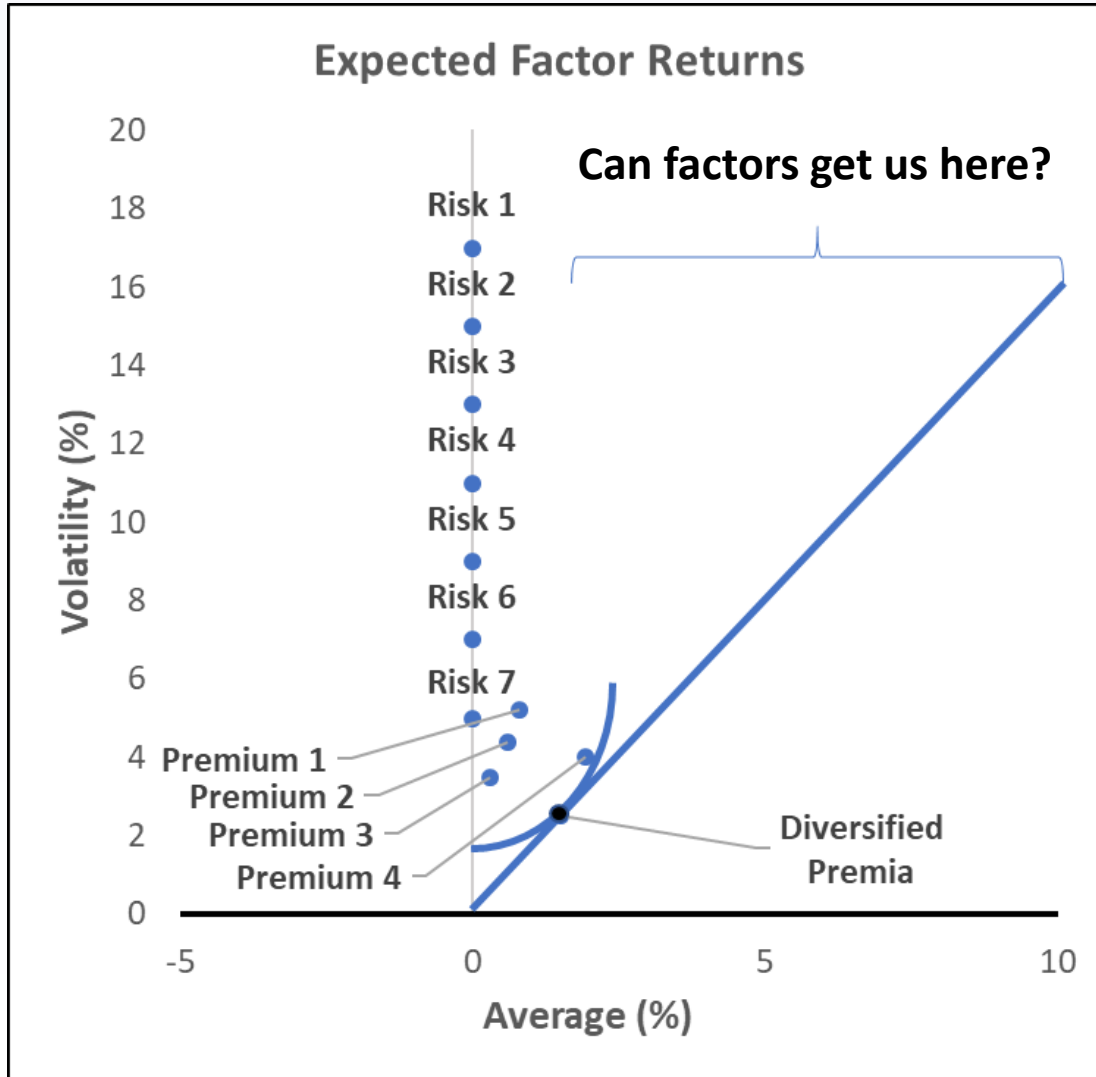
Outputs

Outputs:

- r_k = returns from the common factors
- r_i = idiosyncratic returns for the assets



Factor Risk & Returns Expectations



Source: Windfactor

Options for Higher Returns

1. Leverage
2. Discover new factors
3. Factor timing

Need More Information for Factor Timing

Components of Equity Return

$$r_a = \frac{D + P_1 - P_0}{P_0} = \frac{\frac{D + P_1}{S_0} - \frac{P_0}{S_0}}{\frac{P_0}{S_0}} = \frac{V_1 - V_0}{V_0}$$

Prices and
dividends...

... divided by
starting revenue ...

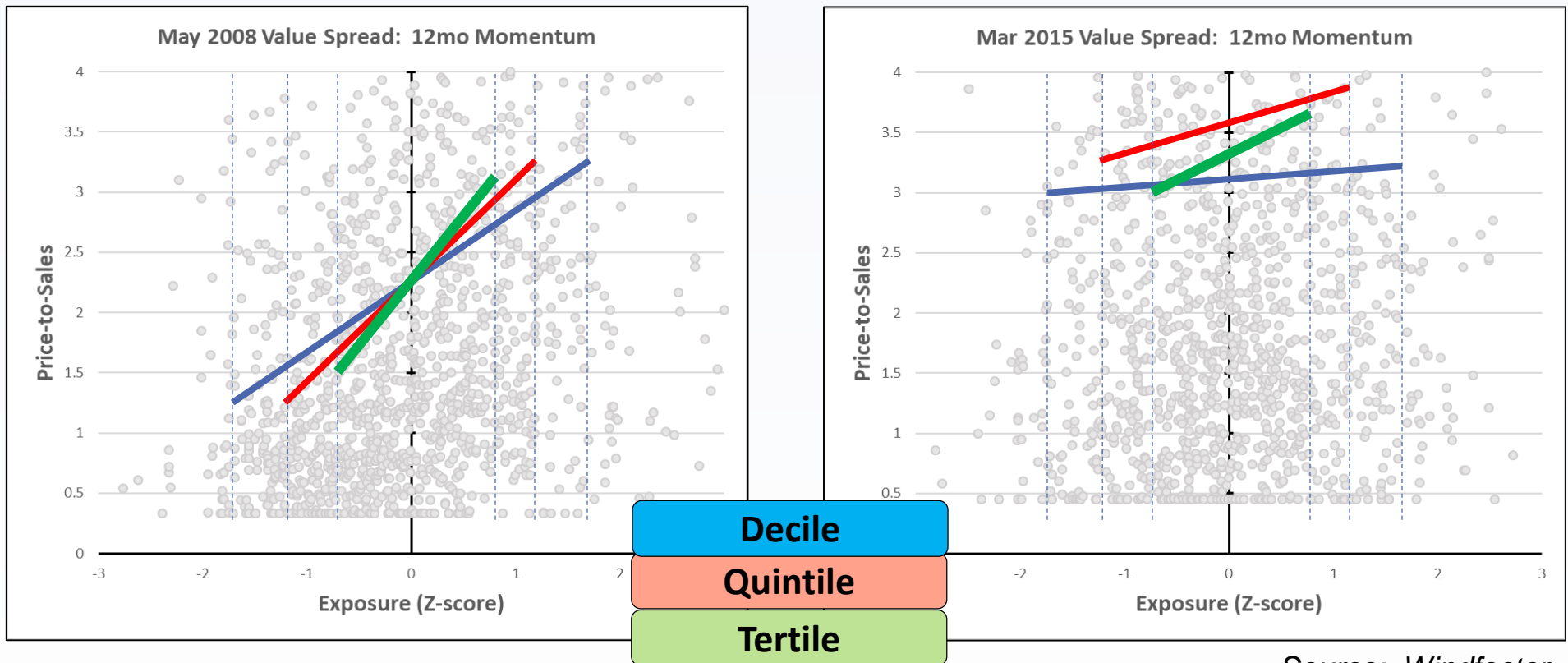
... equal starting &
ending valuations

Stock returns are inversely related to starting valuations so factor returns must be also.

Common Approach: Value Spreads

Big Spread = Expensive Factor

Small Spread = Cheap Factor



Source: Windfactor

For any factor, the difference in average valuation between high exposure stocks and low exposure stocks.

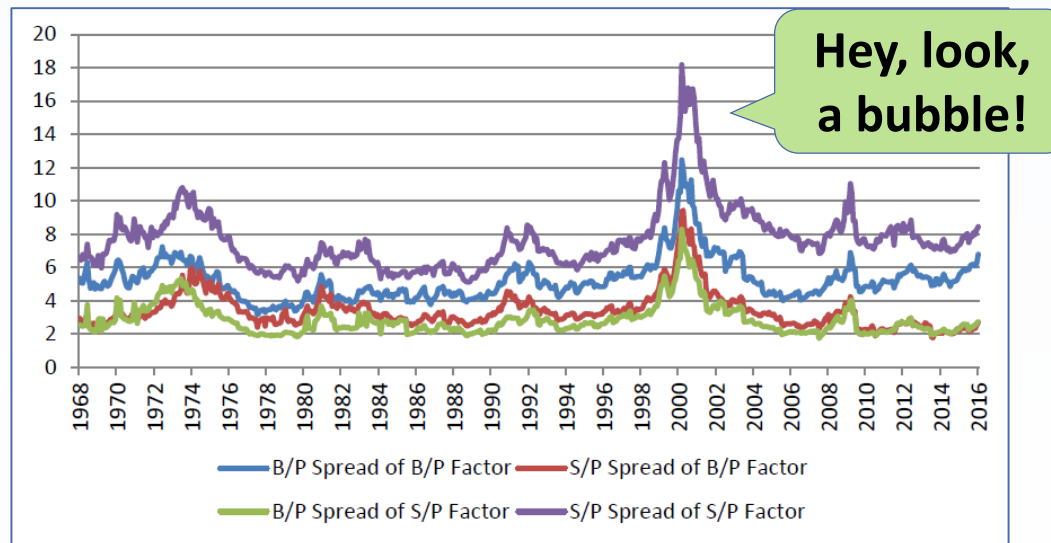
Problems

Value spreads are an unrefined tool...

1. Arbitrary decile, quintile, tertile choice
2. Don't control for other factors
3. Factors are designed to explain returns not valuations

... with unclear benefits

1. Return correlations appear weak without tech bubble
2. Limited ability to enhance tilt strategies (Asness)



Source: Cliff Asness, *My Factor Phillipic*, May 2016

Alternative: Valuation Factor Models

Start of Period: $V_0 = \sum_k X_{ak} V_{k0} + V_{i0}$

End of Period: $V_1 = \sum_k X_{ak} V_{k1} + V_{i1}$

Variables:

V_0 and V_1 = starting and ending* asset valuations

k = the factors

X_{ak} = start-of-period asset exposures to the factors

V_{k0} and V_{k1} = starting and ending* factor valuations

V_{i0} and V_{i1} = starting and ending* asset-specific valuations

Valuation Factors vs. Returns Factors

Explain $\Delta P/P$ (returns) using:

- E/P (Earnings Yield)
- D/P (Dividend Yield)
- BV/P (Value)

Explain P/S (valuations) using:

- E/S (Earnings), EBITDA/S (Cost Advantages)
- D/S (Dividends)
- BV/S (Book Value)

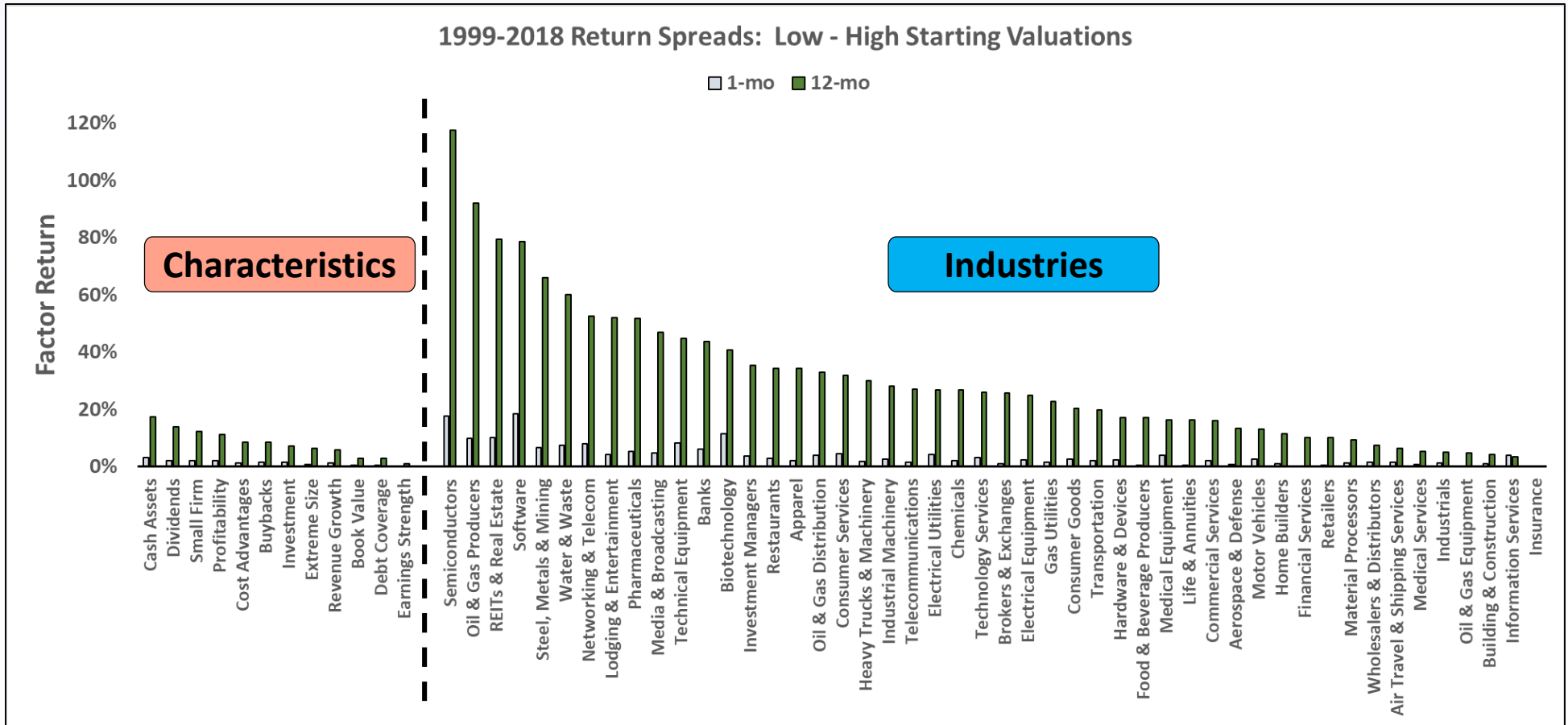
Independent variable structure should match dependent variable.

From Valuations to Returns

$$r_a = \sum_k \underbrace{(X_{ak}/V_0)}_{\text{Exposures}} * \underbrace{(V_{k1} - V_{k0})}_{\text{Factor Returns}} + \underbrace{(V_{i1} - V_{i0})/V_0}_{\text{Specific Return}}$$

Exposure to return = exposure to valuation scaled by $1/V_0$.

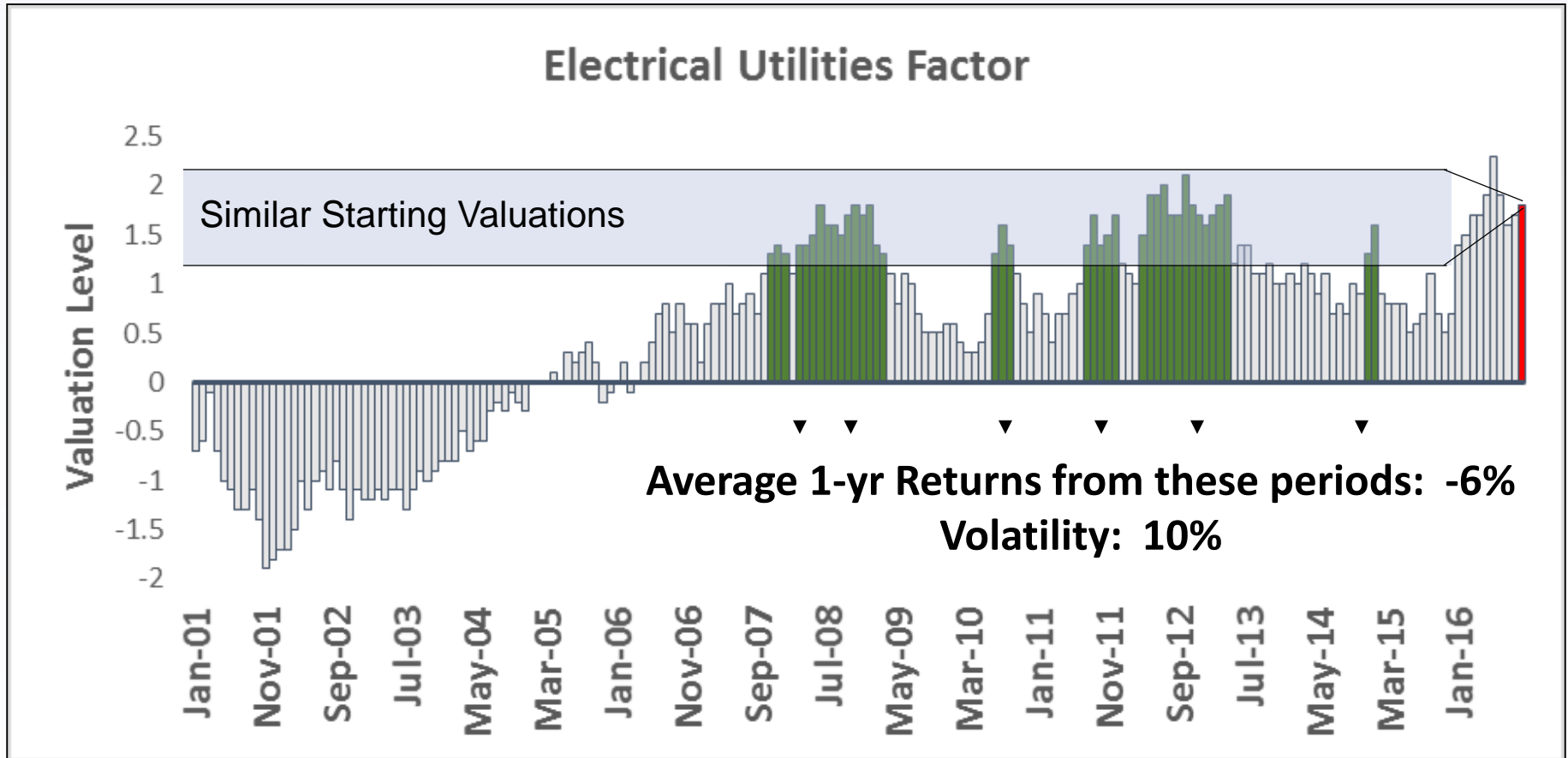
Lower Starting Valuation = Higher Return



Fact: Lower factor valuations have consistently meant higher factor returns.

Question: Does this help with forecasting?

Valuation-dependent Expected Factor Returns

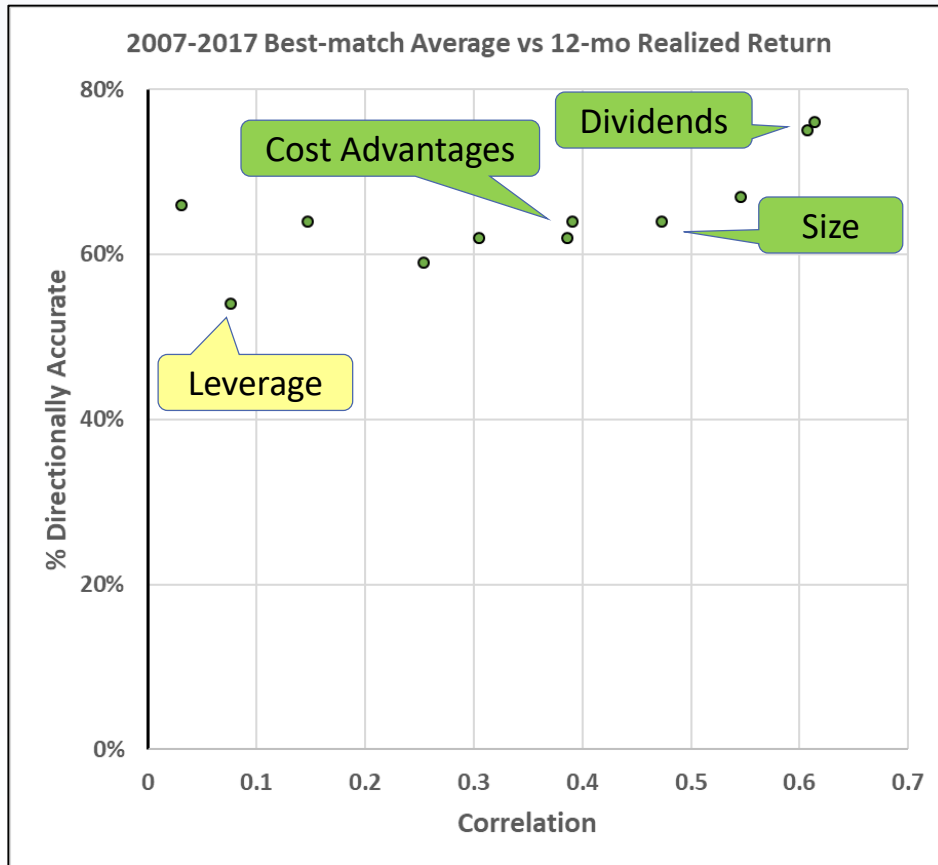


Source: *Best-match Returns: The End of Half-life as We Know It*

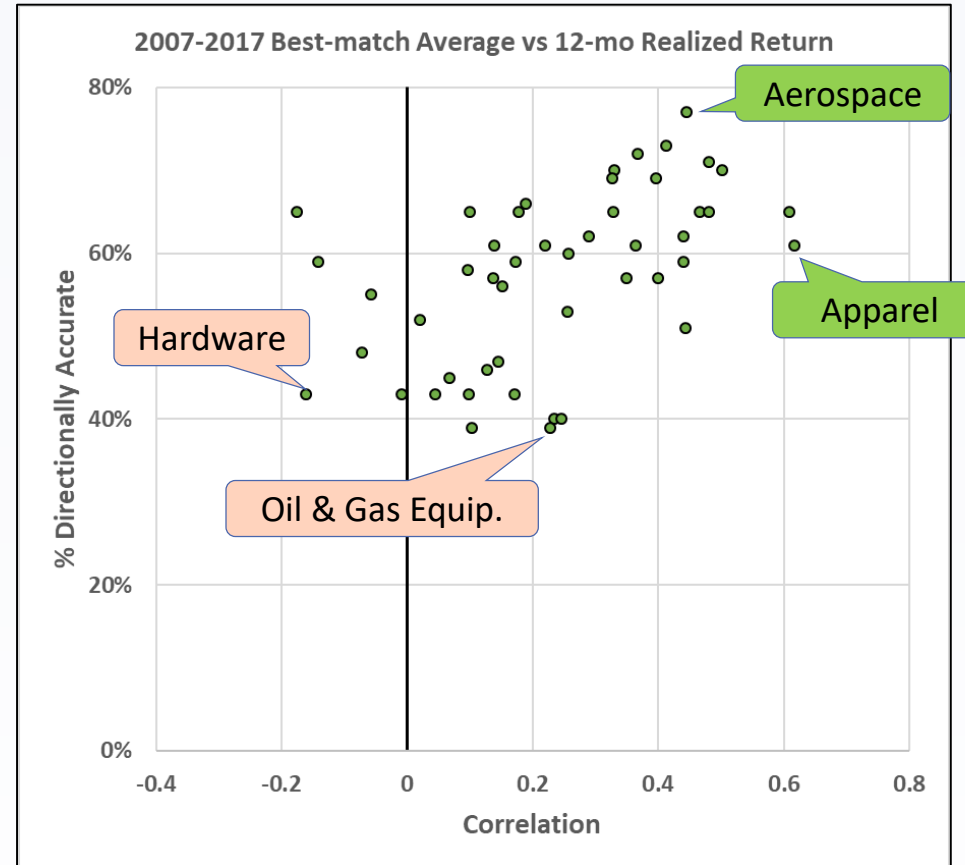
Idea: Forecasts from “best-match” historical periods instead of recent past (half-life) or full history.

Best-match Returns as Forecasts

Characteristics



Industries



- Positive returns correlations for most factors.
- Directional accuracy weaker for some industry factors.

From Factors to Funds

Best-match Performance

- Average and volatility of active fund returns
- Shows directional risk for next 12-months assuming markets follow historical patterns.

Windfactor

- Normal distribution applied to best-match returns
- Shows probability of outperformance under best-match assumptions

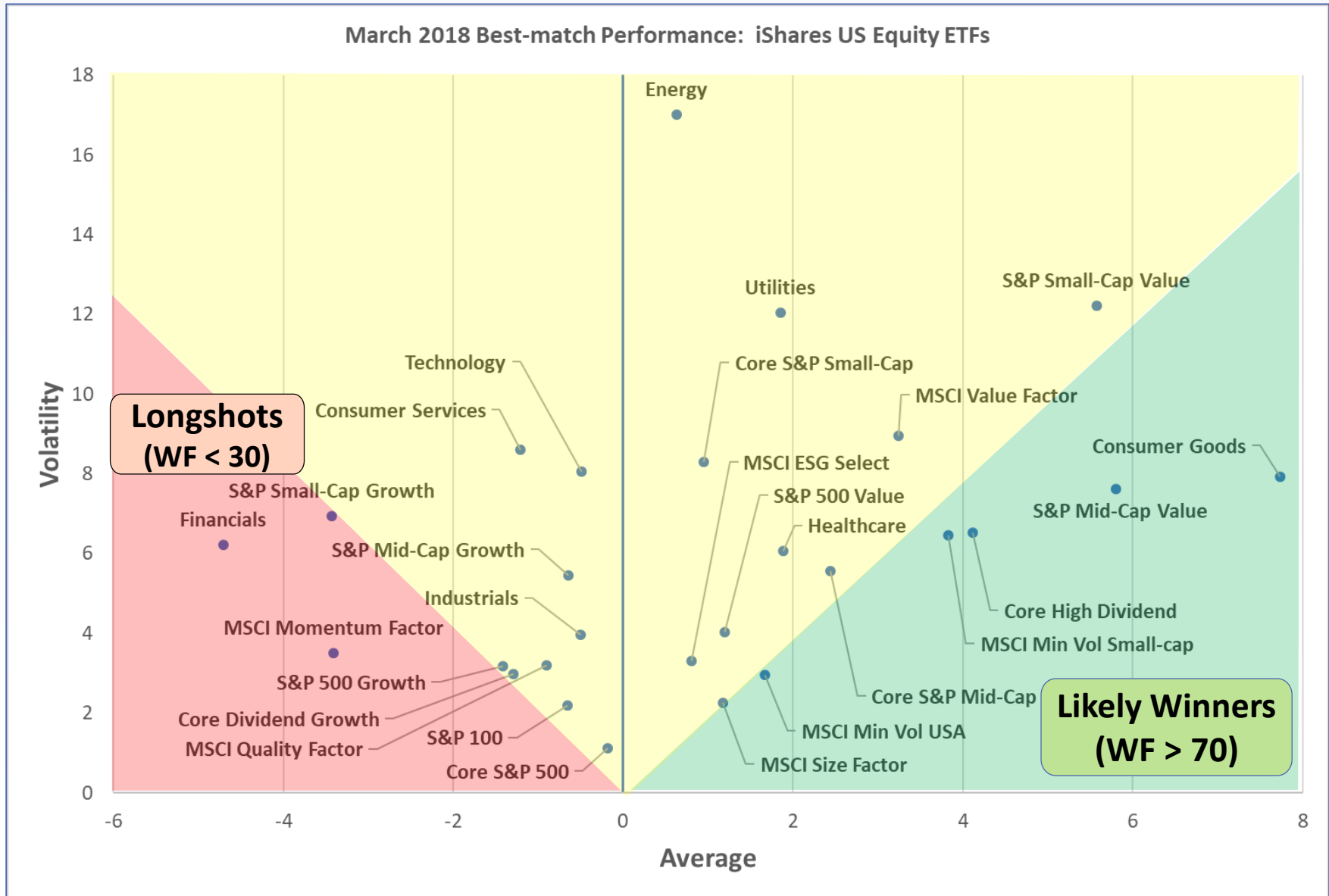
iShares MSCI USA Min Vol ETF vs US Market

Factor Category	Active Weight	Best-match Returns	
		Avg	Vol
Characteristics	8.2	1.4	1.9
Industries	-20.4	0	4.7
Firm-specific	10.9	0.3	-3.6
Cash	1.3	0	0
Total	0	1.7	3
Windfactor			71

Values in percent

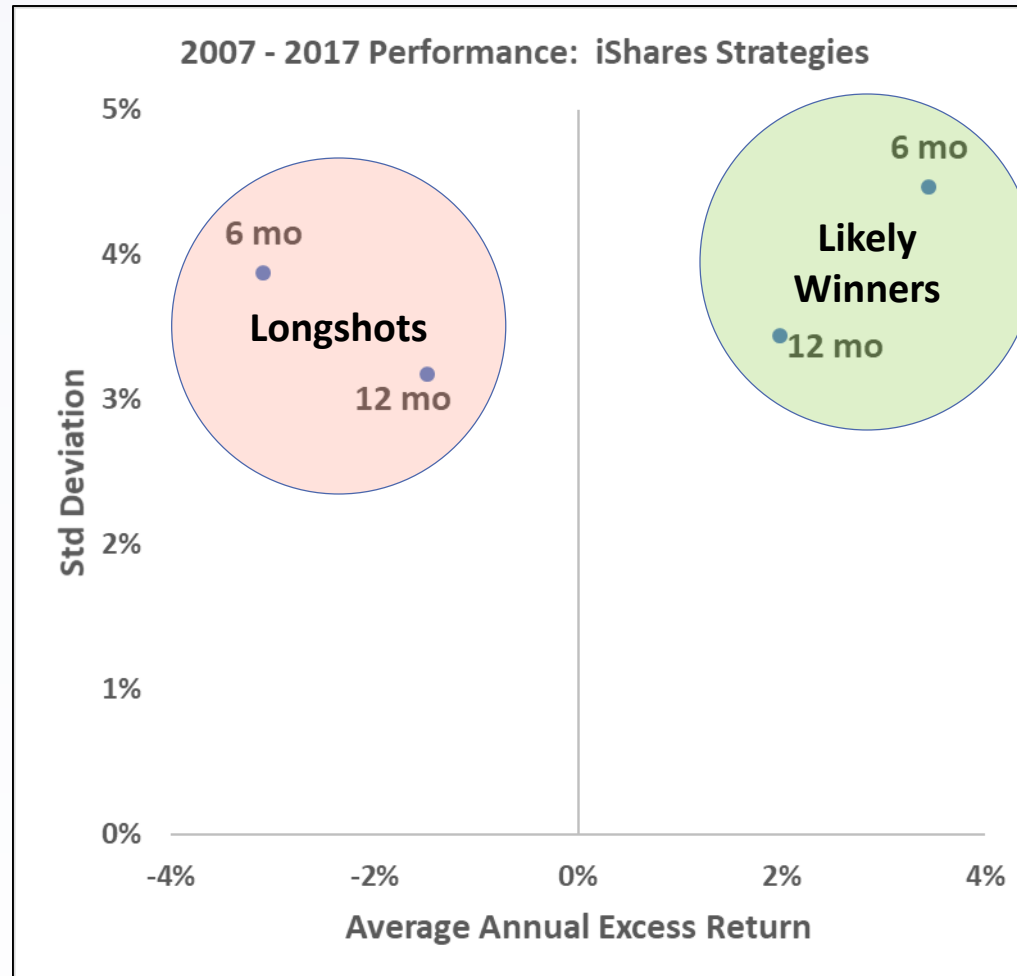
Source: Windfactor.com, 3/2018

Best-match Returns as a Forecast



Source: Windfactor.com

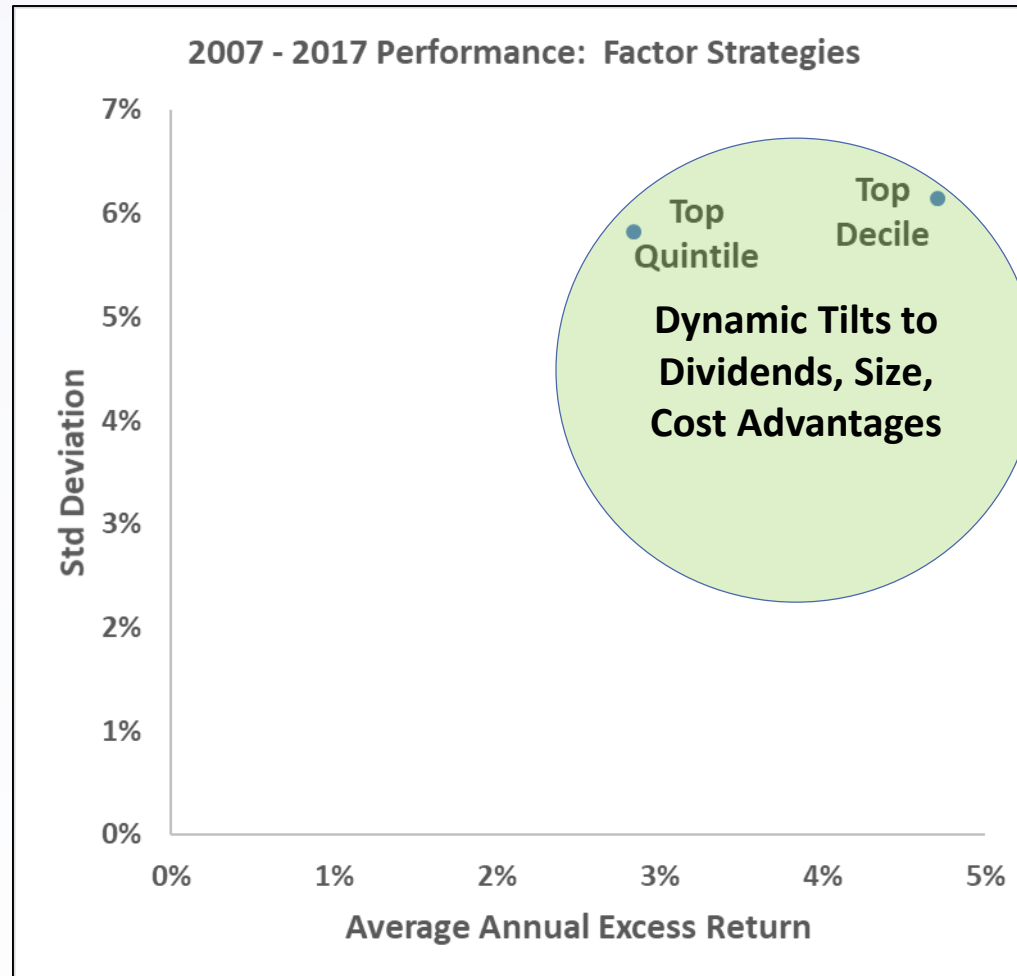
Fund Picking Strategies



Source: Windfactor

Holding high (low) windfactor ETFs for 6-12 months saw high (low) relative performance over the past decade.

Factor Picking Strategies

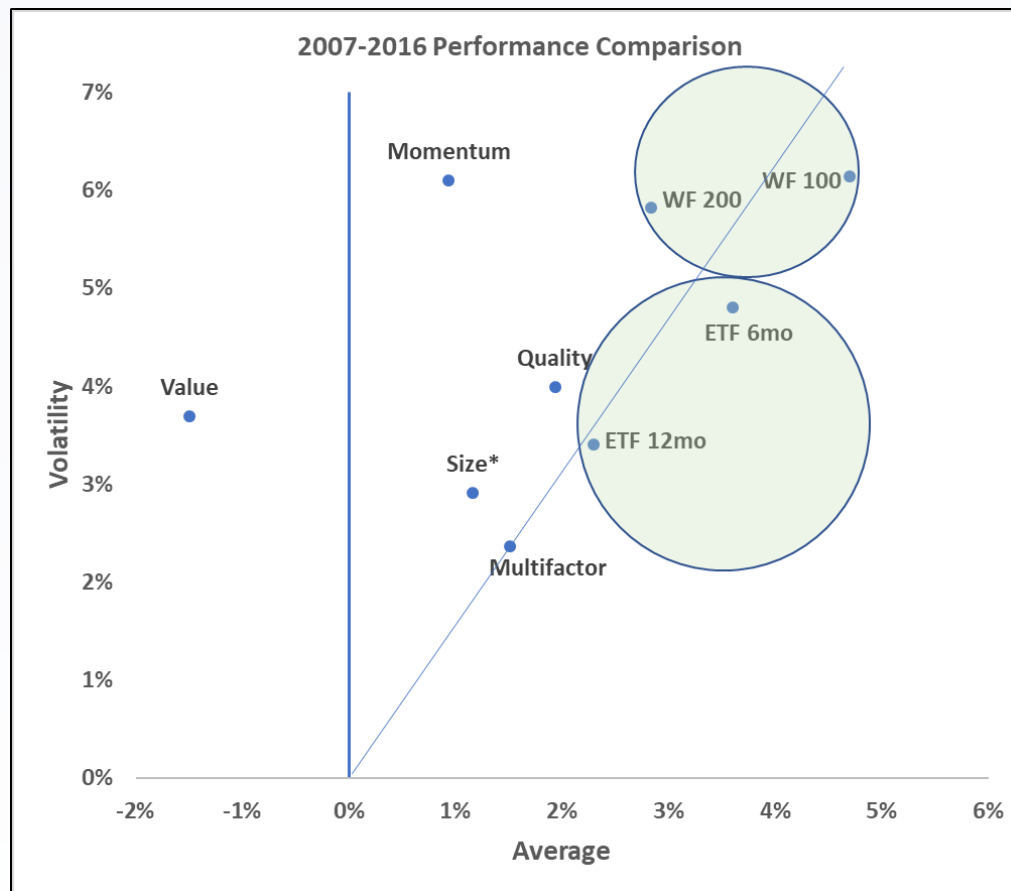


Source: Rutgers MQF Internship, Aug 2017

Varying tilts to factors with stable fundamentals using best-match returns would have worked even better.

Summary

More information may enable higher risk-return strategies...



... but good judgment is likely a key driver of success.

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client_service@windfactors.com



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1350 Avenue of the Americas, 2nd Floor
New York, NY 10019