

Research update

INET Complexity meeting

Aymeric Vie, 17 October 2022



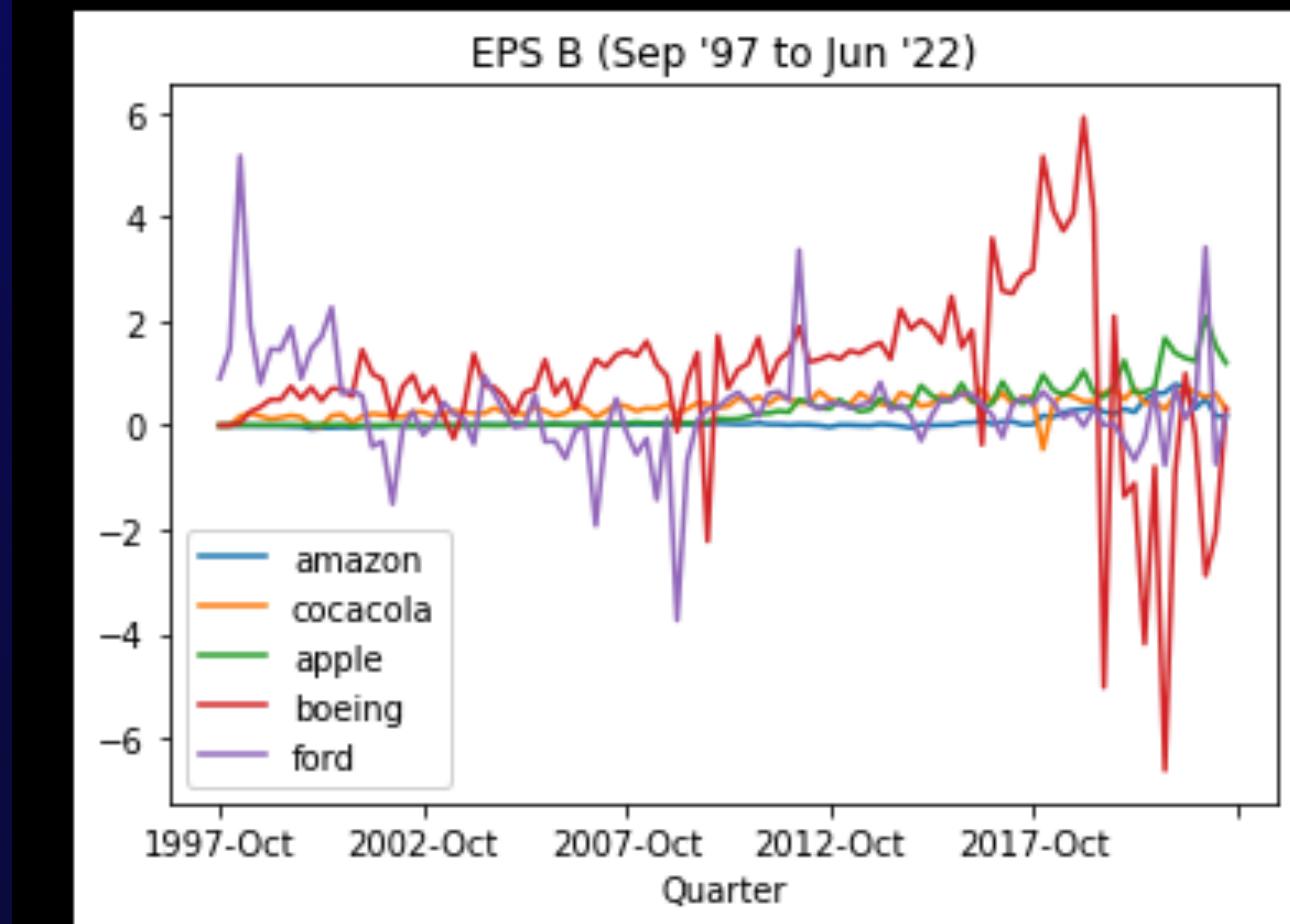
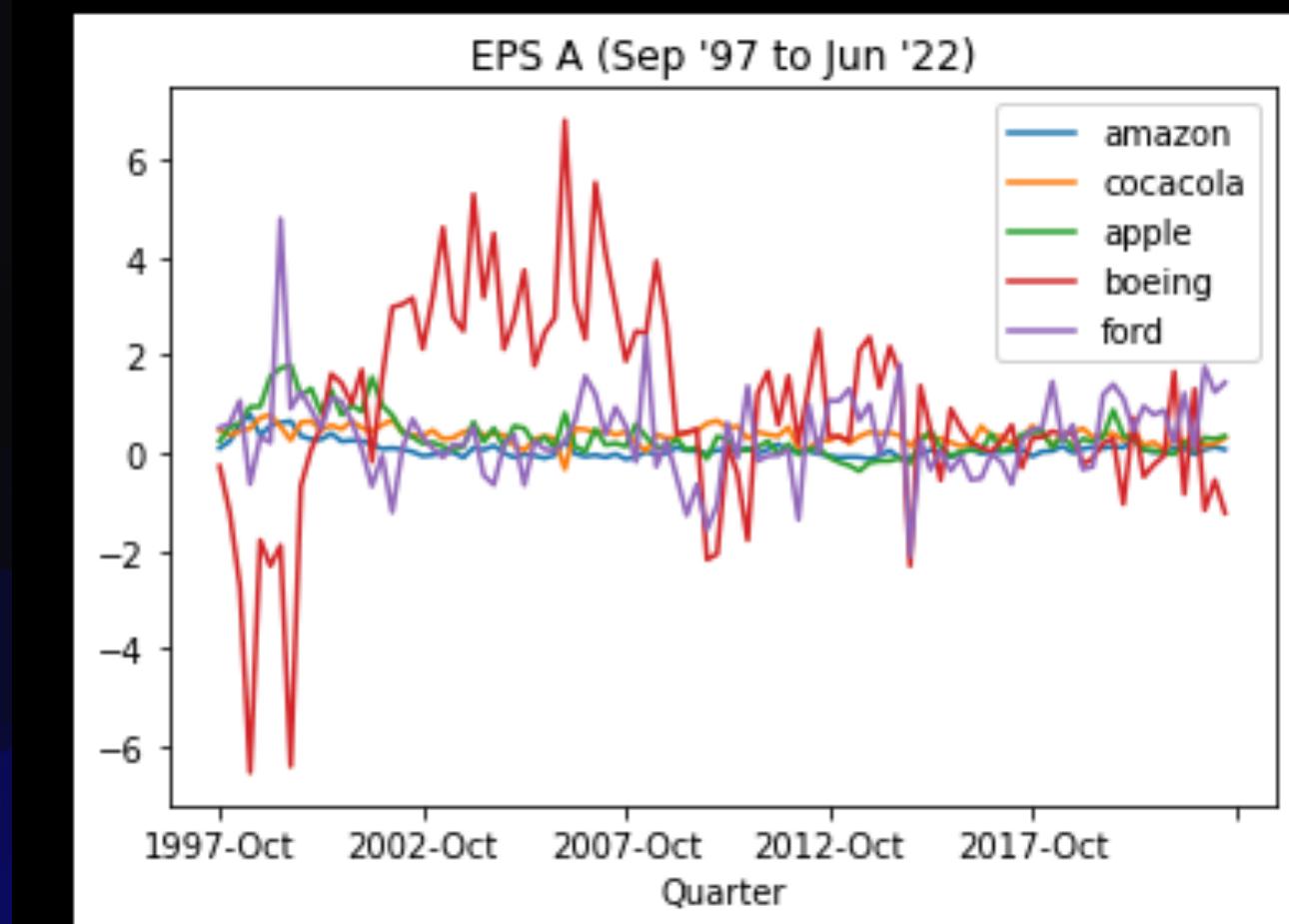
Context: market ecology

- Aim at realistic financial agent-based model
- Market ecology: ecosystem analogy and focus on agents' investment styles
- Study market malfunction, trading strategies, policies, index funds, ESG...
- Update: 3 key model areas in progress



Generating realistic stock fundamentals

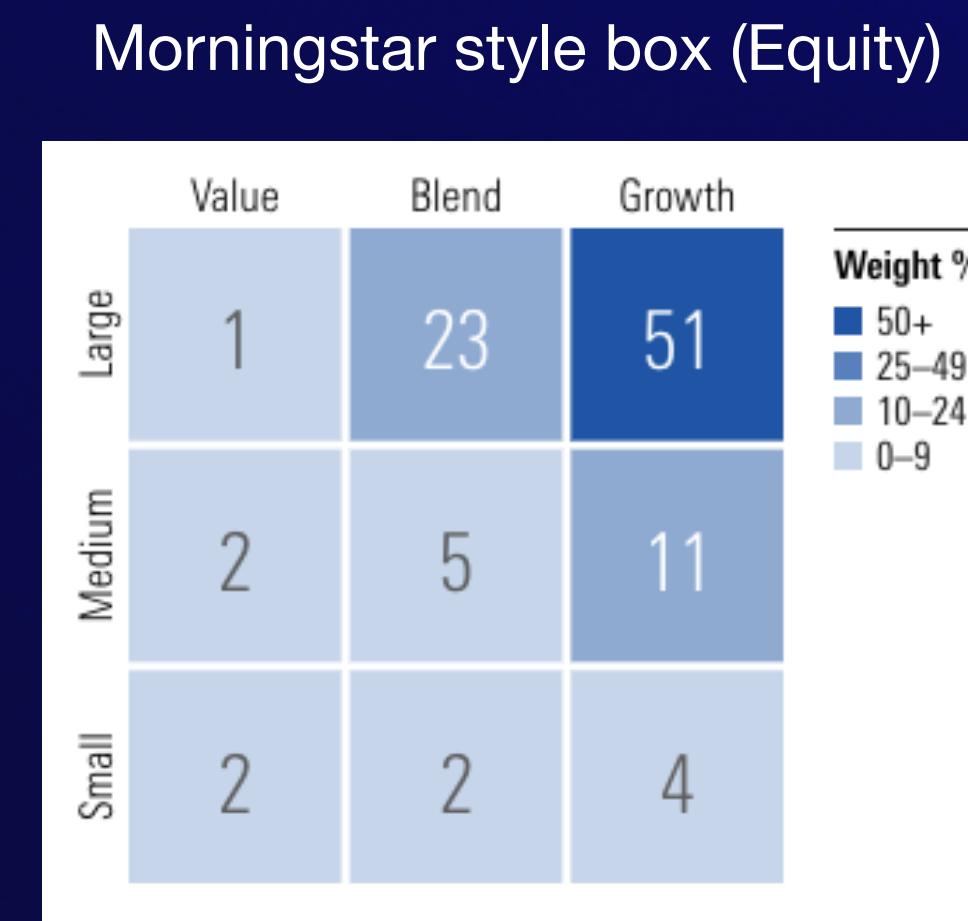
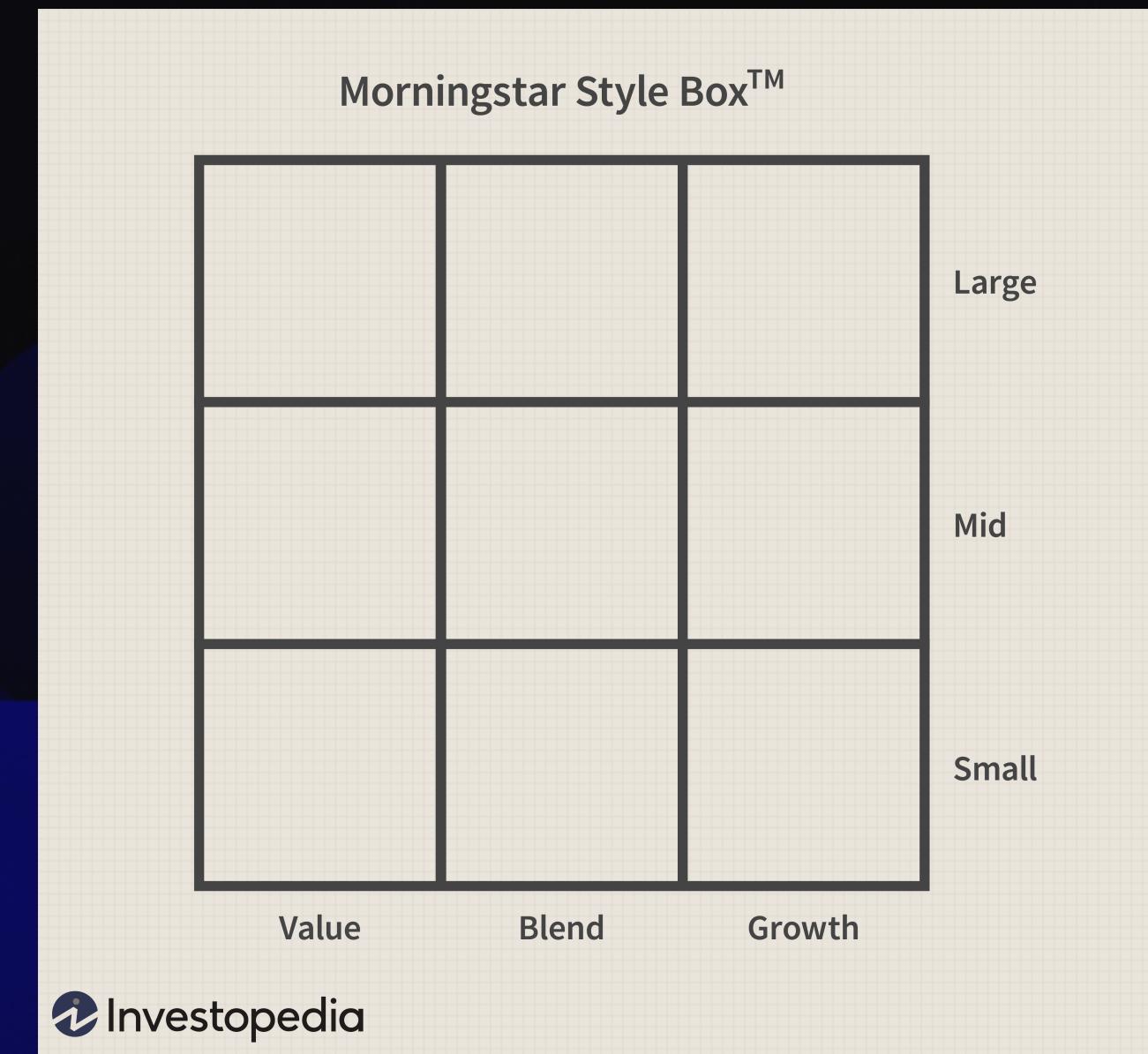
- Simulate realistic fundamentals, market ABM will generate the price
- Combine Fourier transformation with Principal Components
- Surrogates are random and statistically-like real stocks data: moments, correlations, autocorrelations
- Generate series (earnings and payout ratios) of length T from 25 years of data



Who is the original stock and who is the surrogate?

Bringing investment styles closer to the data

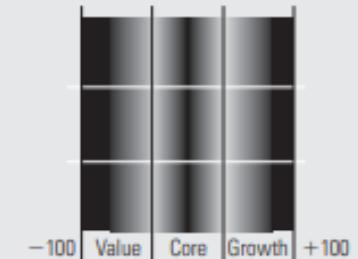
- Previous research: Value Investor + Trend Follower + Noise Trader
- Data suggests: **Value, Blend, Growth x market cap**
- Calibration with actual assets under management of styles
- Future: fund-level continuous style



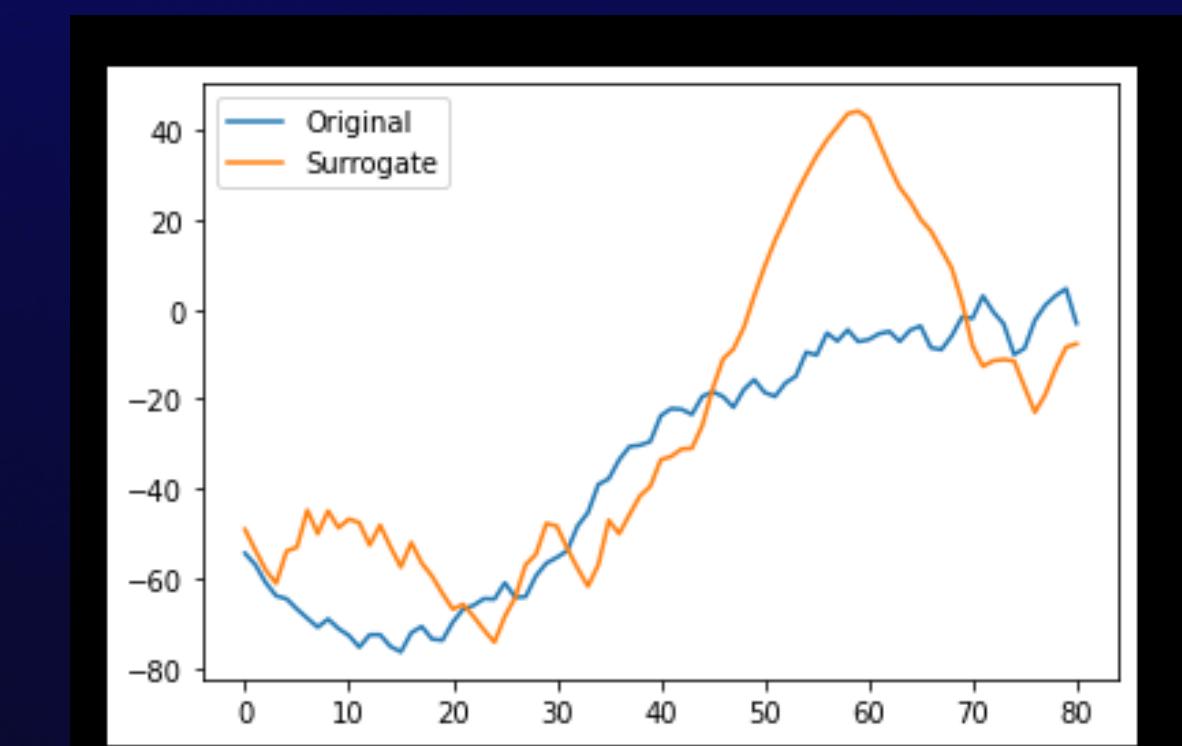
Style of Fidelity Growth
Discovery Fund (FDSVX)

Generating stock preferences of funds' styles

- IRL, funds trade stocks similar to their style: e.g. Growth or Value
- Balance sheets and company life cycles change classification
- Surrogate stocks generate dynamic styles

The Horizontal Axis: Style	Value Score Components and Weights	Growth Score Components and Weights
	Forward looking measures ▶ Price-to-projected earnings	Forward looking measures ▶ Long-term projected earnings growth
	Historical based measures ▶ Price-to-book ▶ Price-to-sales ▶ Price-to-cash flow ▶ Dividend yield	Historical based measures ▶ Historical earnings growth ▶ Sales growth ▶ Cash flow growth ▶ Book value growth
Determining the Style Score		
	Growth Score ⊖ Value Score	0 to 100 0 to 100
	⊖ Style Score	-100 to 100
		
The value score is subtracted from the growth score. If the result is strongly negative, the stock's style is value; if the result is strongly positive, the stock is classified as growth. If the scores for value and growth are not substantially different, the stock is classified as "core."		
The dividing points between value, core and growth stocks vary to some degree over time, as the distribution of stock styles changes in the market. However, on average, each of the three stock styles accounts for approximately one-third of the total free float in a given size category.		

How Morningstar classifies a stock (style score)



Style score of original and surrogate Coca Cola stock.
Growth=100, Value=-100



Style of Fidelity Growth Discovery Fund (FDSVX)