AI Fund Managers
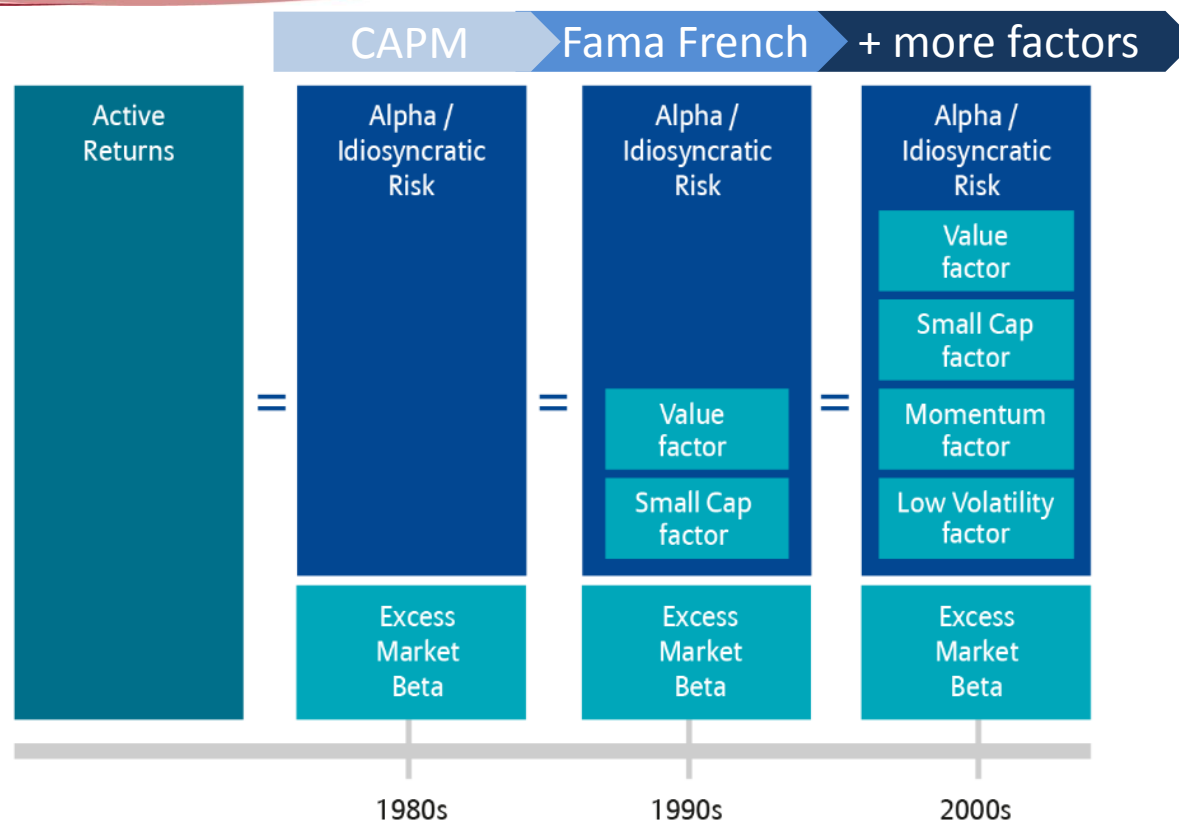
Dan Philps,CFA and Raj Shah,FIA
Rothko Investment Strategies

# Traditional quant – the need for an alternative

Traditional quant

Why bother?

- Better understand manager returns (i.e. attribute risks)
- Better optimise plan level risk
- Associate manager selection (and fees) with multi-factor alpha potential

Traditional quant

**EM active quant peer group (15 managers representing 85% of AUM
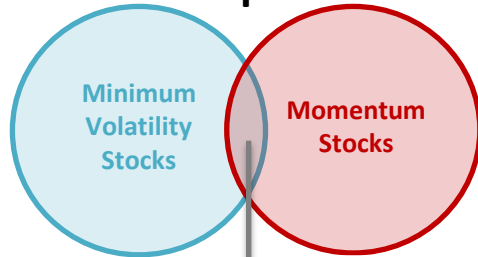Five year relative return (annual))**

Performance converging
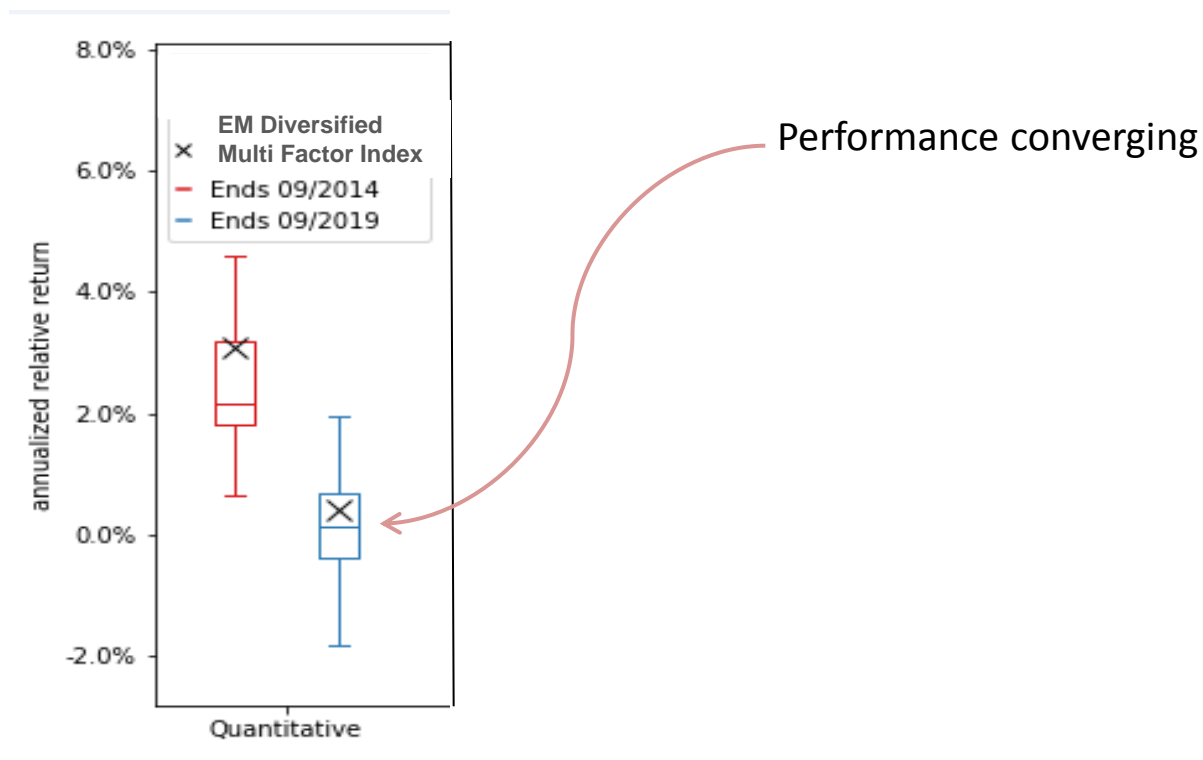
"Doing **Similar Things** for **Similar Reasons** at **Similar Points** in time"

Note: top 15 quantitative strategies by AUM as of September 2019 in the eVestment Global Emerging Markets universe where data was available. These strategies accounted for 82% of AUM within their respective investment approaches.
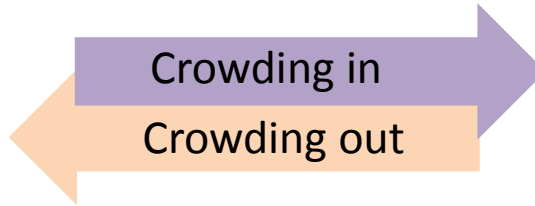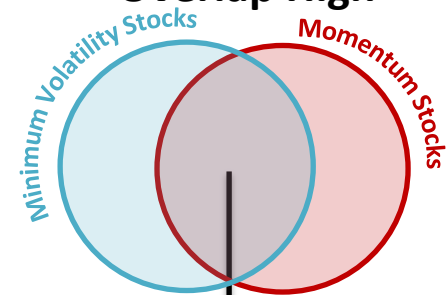
Stock-Selection Factors: Crowded & Dangerous

- **Why so dangerous?** Example using MinVol and Momentum: popular with Traditional-Quants
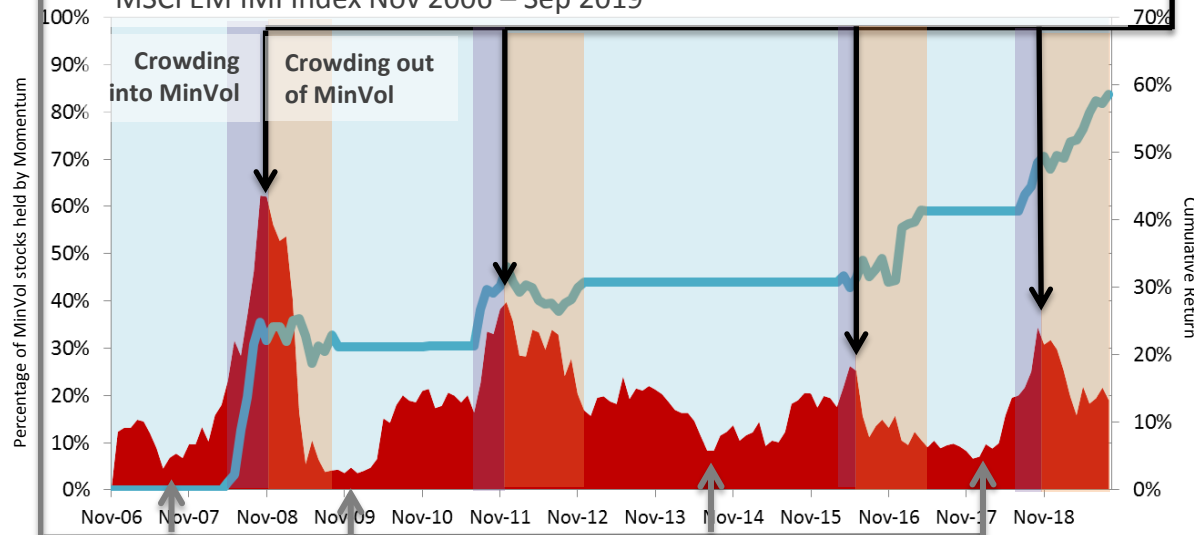- **Factor reversals:** Getting **more painful** and **more dangerous**

Overlap Low

Minimum Volatility Stocks

Momentum Stocks

Crowding in
Crowding out

Overlap High

Minimum Volatility Stocks

Momentum Stocks

Intersection: Percentage of MinVol stocks held by Momentum
MSCI EM IMI Index Nov 2006 – Sep 2019

Crowding into MinVol

Crowding out of MinVol

Buy MinVol stocks / Sell Momentum Stocks

Sell MinVol stocks / Buy Momentum Stocks

Cumulative Return

Notes: MinVol stocks are taken as those in the bottom quartile of the MSCI EM IMI Index by standard deviation, while Momentum stocks are taken as the top quartile of stocks by 6 and 12-month price gains in the MSCI EM IMI Index .
Hypothetical arb strategy is based on the change in % overlap of MinVol and Momentum stocks: Buy MinVol/Sell Momentum when Momentum exceeds a high level of overlap. Sell MinVol/Buy Momentum when Momentum overlap peaks and falls. Sources: Rothko Investment Strategies, MSCI and Factset.

An alternative way?
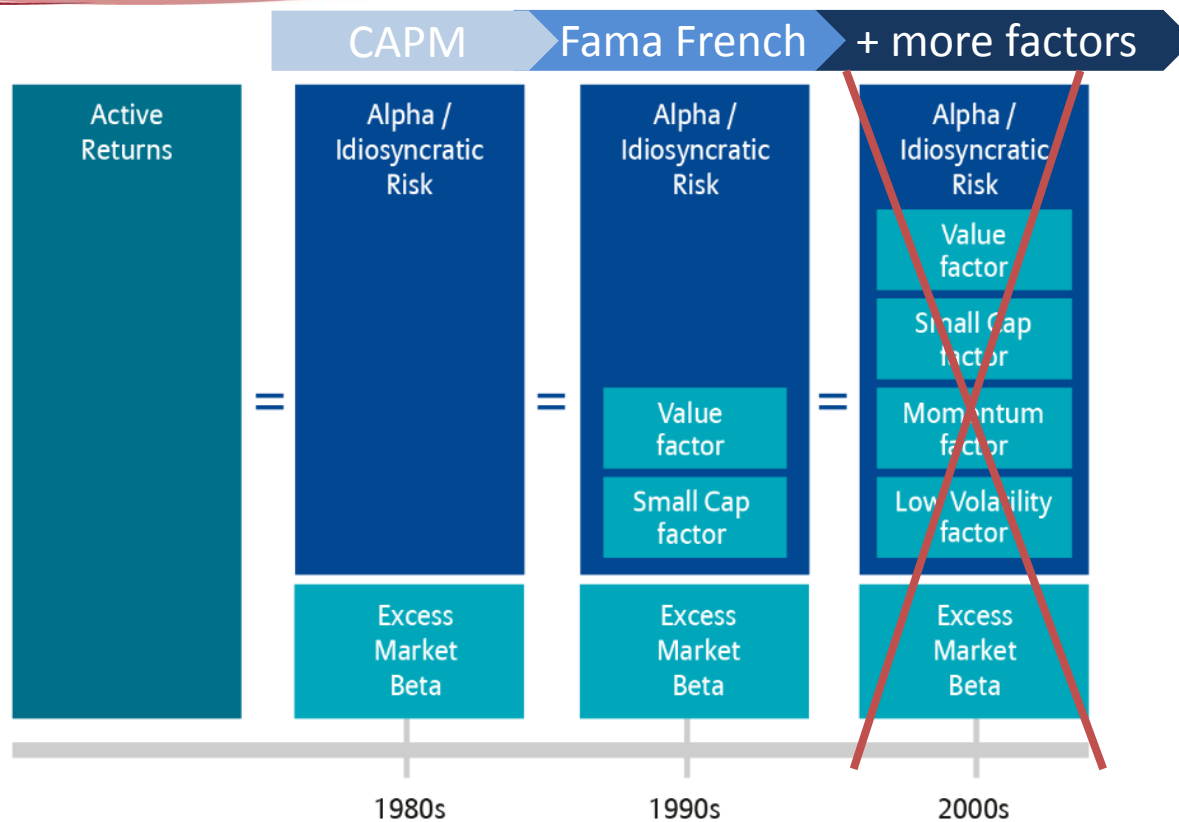
The alternative - Applying AI to Investing

How to Access this Alpha Source?
A: Bottom-up. AI

- **MSCI EM IMI Index**
  - Broad universe (3,000 stocks)
  - Well diversified: Name/Country/Sector
  - **… all about stock selection**

	Fundamental (human)	**Traditional-Quant**	**AI**
Bottom-up driven?	✔	✘	✔
Easily scales across vast universes?	✘	✔	✔

|	**Fundamental** (human)	**Traditional-Quant**	**AI**
Basis	Stock-selection	Factors (after Fama-French)	Stock-selection
Key Advantage	Theoretically, can **adjust to changing environments**	Off the shelf implementations	**Objectivity. Remembers & Learns**
Key Disadvantage(s)	Subjectivity	**Crowded factor-trades.** Catastrophic Forgetting	Differentiated/New. **Perceived complexity**

Game Changers for Quant:
1) Data
2) Technology (ie ML/AI)
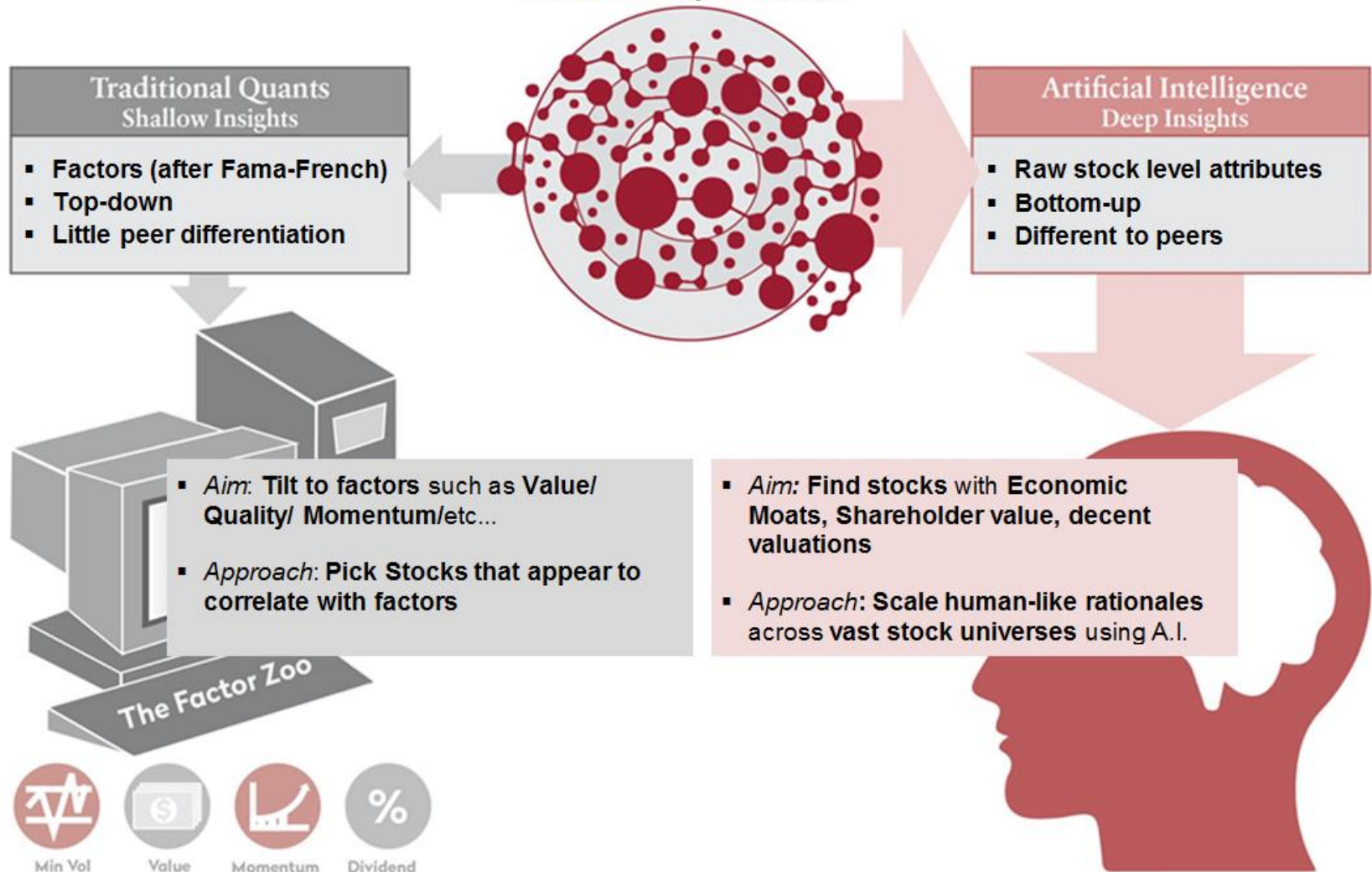
# AI: Learning Where Humans Don't. Objective Where Humans Won't.

Take the Best of Human Decision Making and Leave the Worst

Advantages of AI

✓ Objective human-like rationales

✓ Memories of past mistakes and opportunities

✓ Scales to large and inefficient stock universes

Disadvantages of human decision making

X Behavioral pitfalls

X Subjective judgments
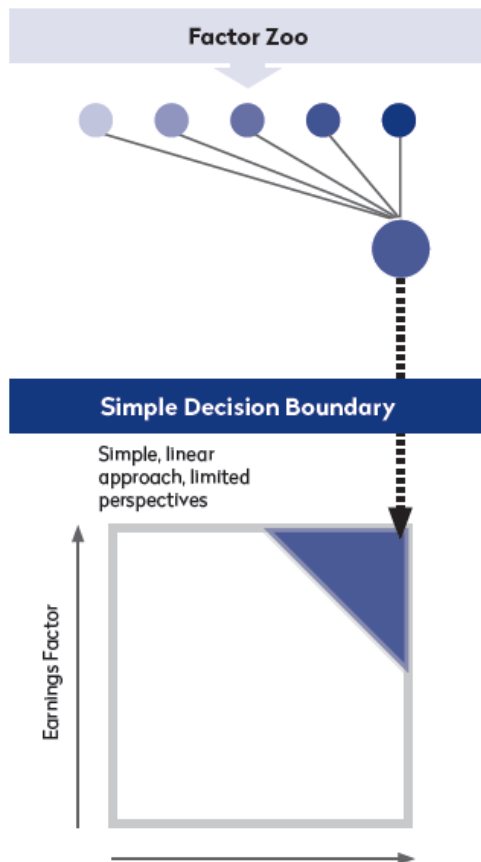
X Inconsistent decision making
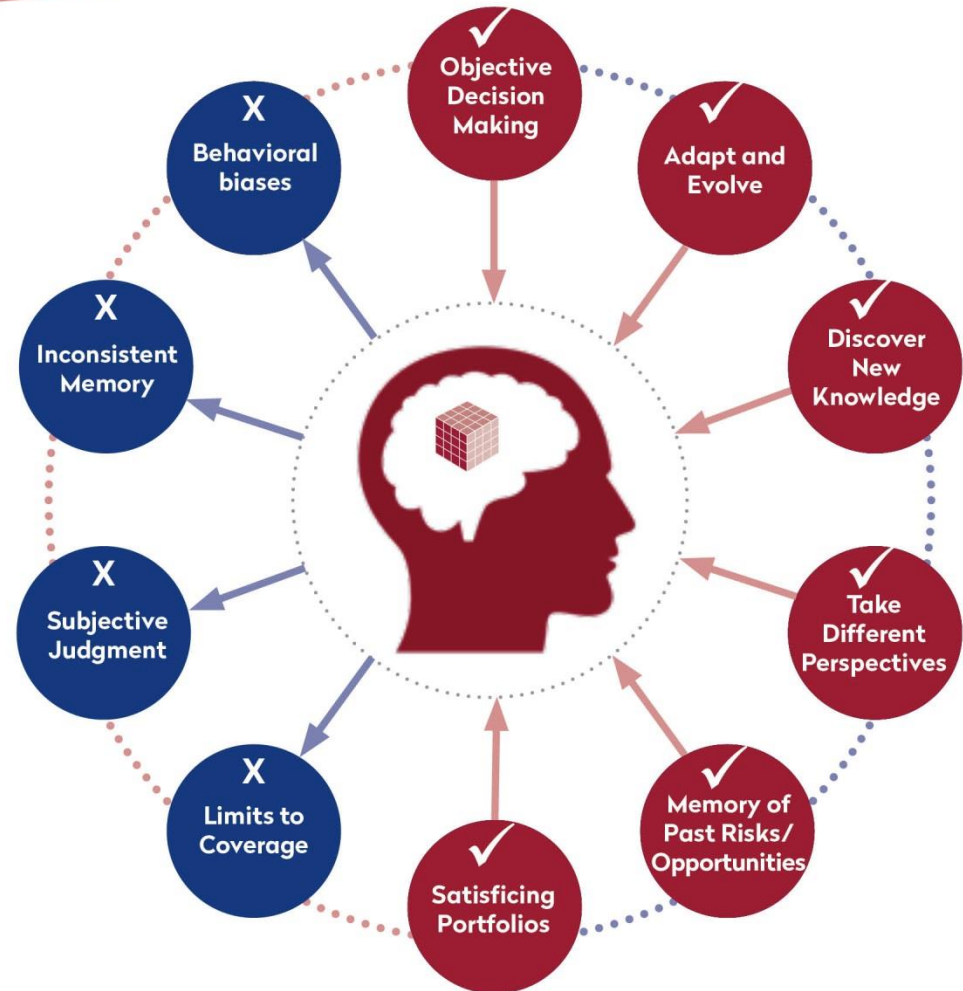
Rothko's Approach Compared to Traditional Quant and Decision Trees

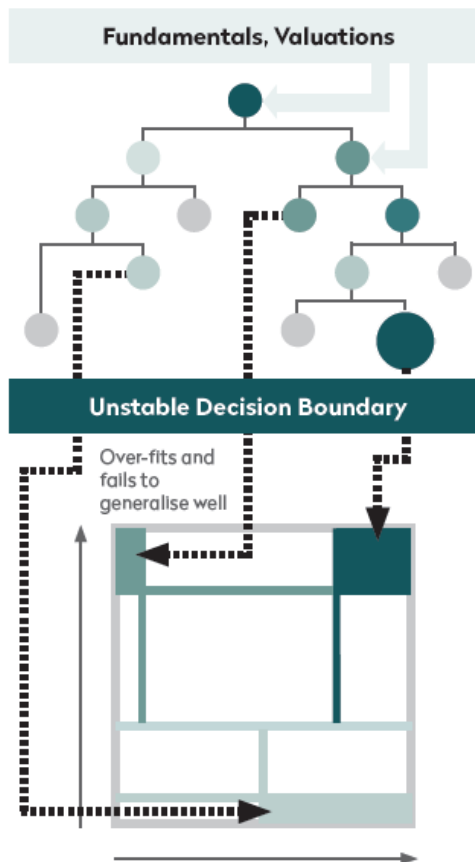## We Do Not Use Factors or Decision Trees

Traditional Quant:
- Highly stylized inputs
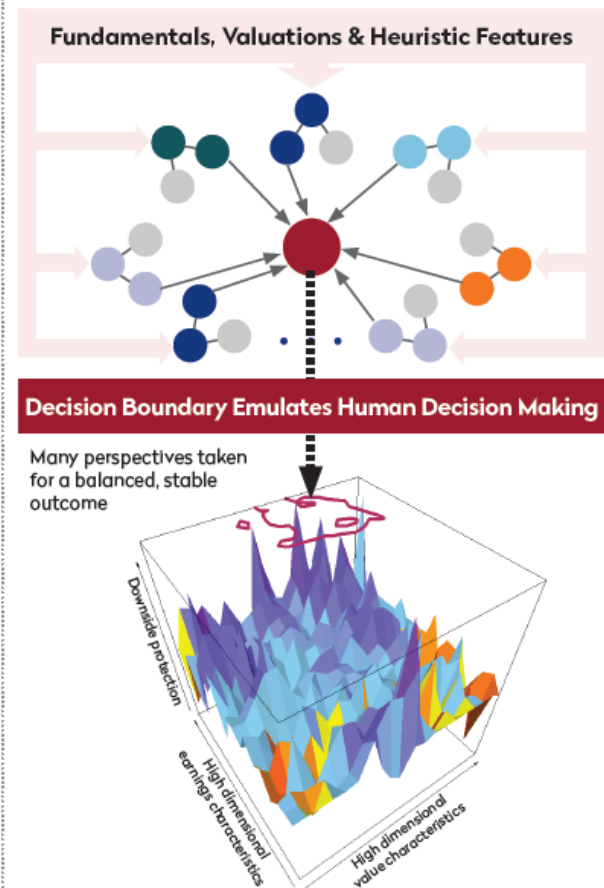- Constraining assumptions
- Information lost

Factor Zoo

Simple Decision Boundary

Simple, linear approach, limited perspectives

Earnings Factor

Decision Trees:
- Over-fit is typical
- Bad generalisation
- Unstable performance

Fundamentals, Valuations

Unstable Decision Boundary

Over-fits and fails to generalise well

Rothko Approach:
- Ensemble model; associated with stability
- Many experts/perspectives, one decision
- Many features used in every decision

Fundamentals, Valuations & Heuristic Features

Decision Boundary Emulates Human Decision Making

Many perspectives taken for a balanced, stable outcome

Downside protection

High dimensional earnings characteristics
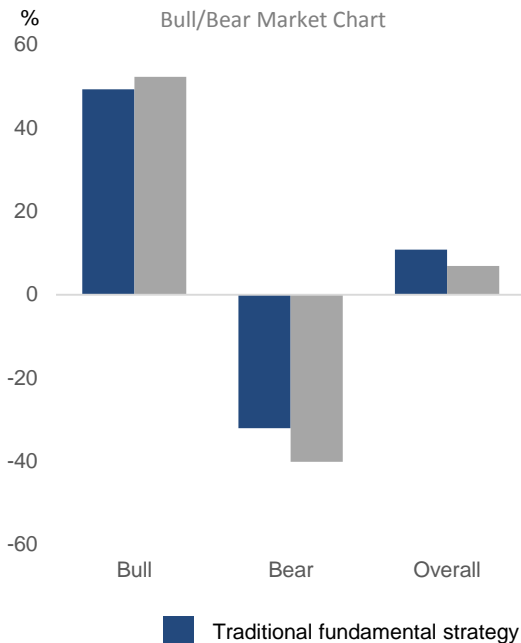
High dimensional value characteristics

Old School: Human Fund managers….
Decent returns, decent alpha

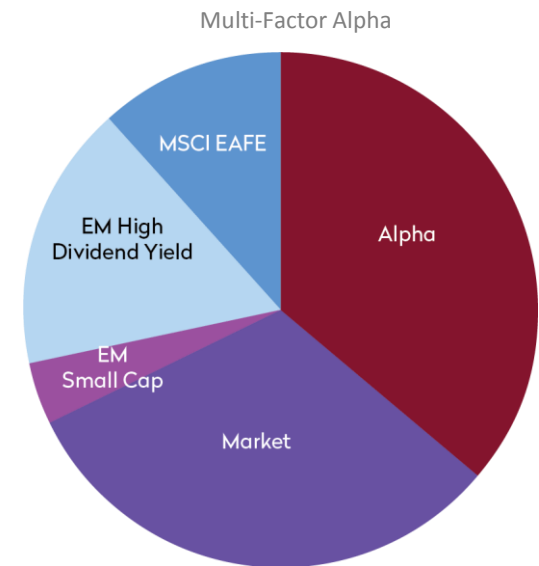## Target profile: A successful EM, value strategy…

Defensive characteristics: seek to preserve capital in protracted market declines

Value characteristics: bottom-up drivers result in higher yield and lower PE

Multi-factor Alpha: complex investment rationales not easily replicated by "factors"

Bull/Bear Market Chart — Bull, Bear, Overall

Dividend Yield

Price to Earnings

Multi-Factor Alpha (pie chart: Alpha, Market, EM Small Cap, EM High Dividend Yield, MSCI EAFE)

Traditional fundamental strategy   MSCI EM Index

Note: The graphs show the stylized performance and characteristics of an example traditional fundamental emerging markets manager versus the MSCI Emerging Markets Index (July 1996 – September 2013). Characteristics data at September 2013. The returns on this page are presented net of advisory fees and other expenses associated with managing an investment advisory account. Past performance is not a guarantee of future results. The pie chart (right) shows hypothetical, unconditional factor contributions from statistically significant factor loadings only. Alpha is taken as the residual. The full analysis underlying this data can be provided on request. A Bull Market quarter is defined as one in which the benchmark showed a positive U.S. dollar return, and a Bear Market quarter when the benchmark showed a negative U.S. dollar return .
Source: Mondrian Investment Partners and MSCI.

Next Gen: A.I. Does the Investing
Better returns, better alpha

Example EM Portfolio Characteristics (September 2013 – September 2017)
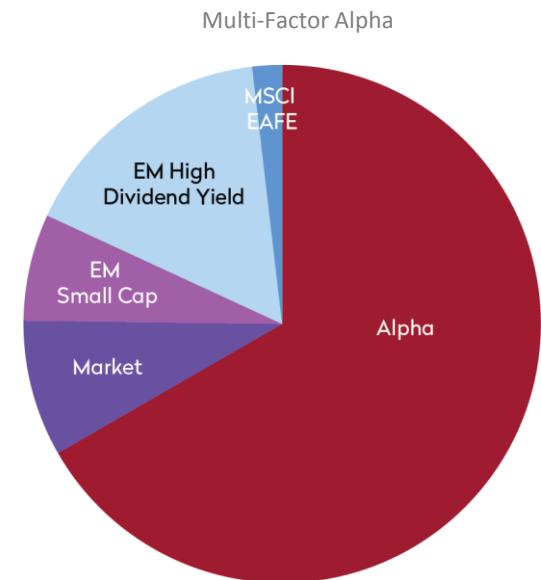
Defensive characteristics: seek to preserve capital in protracted market declines
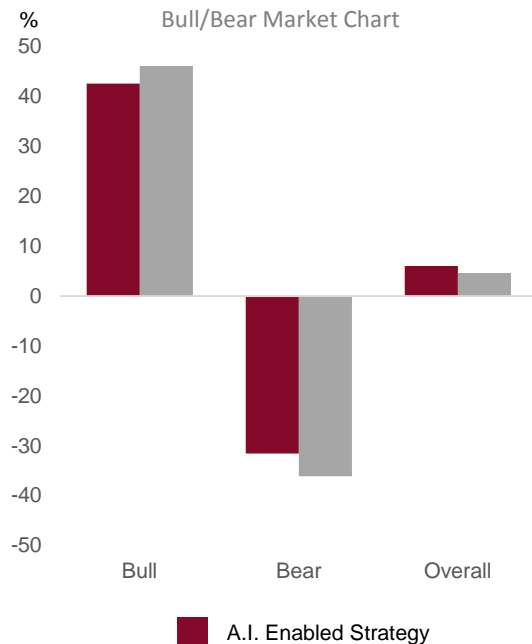
Value characteristics: bottom-up drivers result in higher yield and lower PE

Multi-factor Alpha: complex investment rationales not easily replicated by "factors"

Bull/Bear Market Chart

Dividend Yield

Price to Earnings

Multi-Factor Alpha

- MSCI EAFE
- EM High Dividend Yield
- EM Small Cap
- Market
- Alpha

■ A.I. Enabled Strategy   ■ MSCI EM Index

Note: The returns on this page are presented net of advisory fees and other expenses associated with managing an investment advisory account. Past performance is not a guarantee of future results. The pie chart (right) shows hypothetical, unconditional factor contributions, for the strategy's live track record (gross of fees) from statistically significant factor loadings only. Alpha is taken as the residual. The full analysis underlying this data can be provided on request. A Bull Market quarter is defined as one in which the benchmark showed a positive U.S. dollar return, and a Bear Market quarter when the benchmark showed a negative U.S. dollar return.
Source: Rothko Investment Strategies, MSCI