Modern trends in portfolio management

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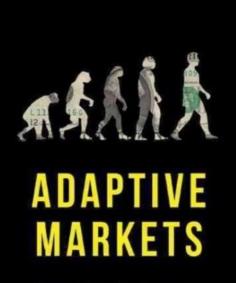
Adaptiveness is key to our investment philosophy

We have been inspired by the Adaptive Markets Hypothesis, with its key principles:

- Investors are neither always rational, nor always irrational
- They learn and adapt
- Financial market dynamics are driven by our interactions as we behave, learn, and adapt to each other

"Knowing the environment and population dynamics of market participants may be more important than any single factor model"
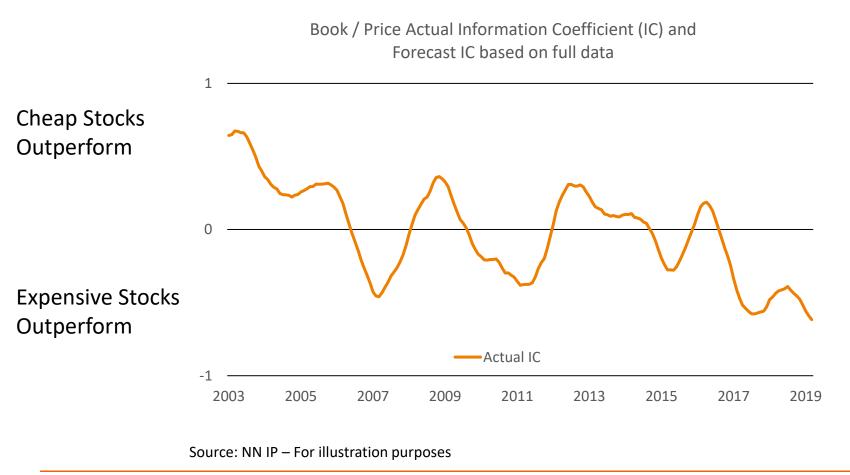

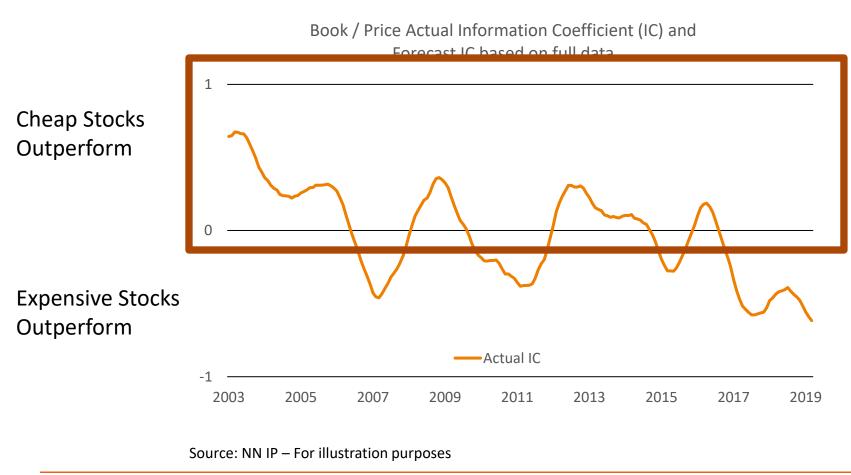ADAPTIVE MARKETS

Financial Evolution at the Speed of Thought

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Alpha Signal Selection

Does a signal contain price moving information?

Book / Price Actual Information Coefficient (IC) and Forecast IC based on full data

Cheap Stocks Outperform

Expensive Stocks Outperform

—— Actual IC

2003 2005 2007 2009 2011 2013 2015 2017 2019

Source: NN IP – For illustration purposes

- When assessing our alpha sources, determining the lookback period is key: "longer is not necessarily better"

- With the book/price signal, using the entire history of data leads to a "overweight" of the signal throughout the period
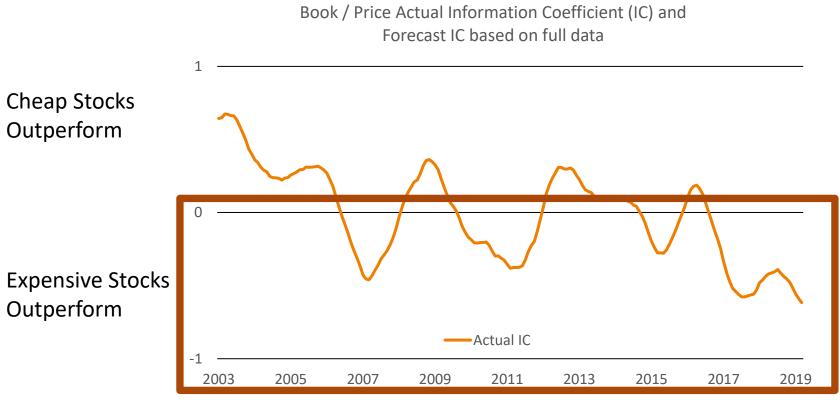
- This would lead to underperformance half of the time

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| | 1 | 0 | -1 |

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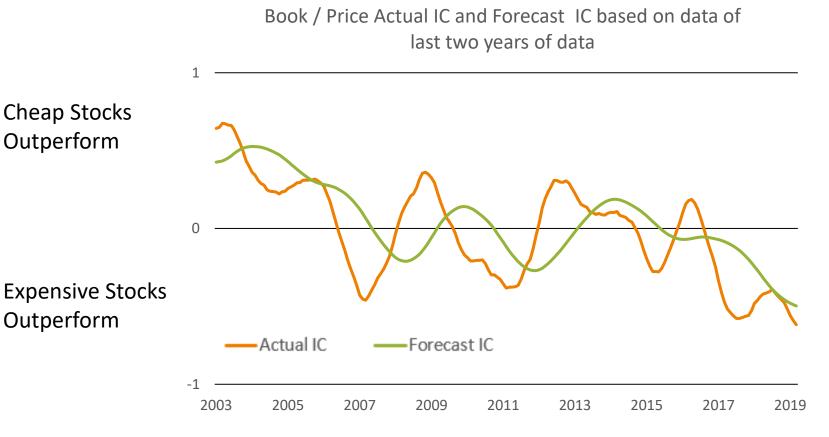
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Alpha Signal Selection

Example of forecast using an alpha source's two years of rolling data

Book / Price Actual IC and Forecast IC based on data of last two years of data

Cheap Stocks Outperform

Expensive Stocks Outperform

— Actual IC   — Forecast IC

1

0

-1

2003 2005 2007 2009 2011 2013 2015 2017 2019

Source: NN IP – For illustration purposes

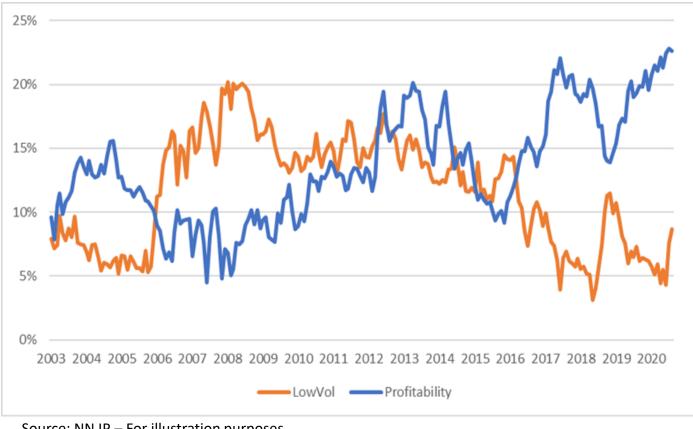- An adaptive use of the book/price signal, using two years of rolling data, provides a more accurate forecast

- Depending on our adaptive signal we either select Expensive or Cheap Health Care Stocks

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Adaptiveness leads to changing weights over times

Predictive power determines weight of each signal

Source: NN IP – For illustration purposes

- Adaptive alpha signal selection coupled with a robust framework that includes new signals effectively and efficiently.

- Predictive power of signals and thus weights vary through time.

- Ability to pick the right styles (and stocks) at the right time, agnostic to preconceived ideas and forward looking.

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Investing with Innovative Data and Methods

Examples

Crowd Sourcing of Opinions

MarketPsych – a key partner in providing Behavioral Data

Natural Language Understanding (NLU)

Predicting Revenue Growth from textual data

Artificial Intelligence

Artificial Stock Market to generate Data and Test adaptive framework

Social Media (800+ sites): *(Examples)*

Professional News (2000+ sources): *(Examples)*

Comparison of the Three and Nine Months Ended September 30, 2019 and 2018

Revenue

	Three Months Ended September 30,		Change		Nine Months Ended September 30,		Change	
	2019	2018	Amount	%	2019	2018	Amount	%
	(in thousands, except percentages)							
Revenue	$ 103,397	$ 62,589	$ 40,808	65.2%	$ 261,460	$ 164,420	$ 97,040	59.0%

The increase in our revenue for the three and nine months ended September 30, 2019 as compared to the three and nine months ended September 30, 2018 was primarily from additional sales to existing customers and, to a lesser extent, the increase in our total number of customers. In addition, the increase in revenue is due to our continued expansion in international markets.

Artificial Stock Market (ASM)

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Model Features

Profitability
- Return on Equity
- Free Cash Flow Margin
- Return on Assets

Growth
- Revenue Growth
- Management Discussion
- Margin Growth

Volatility
- Long Term
- Short Term
- Analyst Dispersion

Price Patterns
- Long Term Momentum
- Short Term Momentum
- Seasonality

Sentiment
- News and Social Media Feed
- Analyst Revisions
- Short Positions data

ESG
- Business Journals
- NGO Reports
- News and Social Media Opinions

Valuation Ratios
- Price to Book
- Earnings Yield
- Cash Flow Yield

Balance Sheet Quality
- Capital Expenditures
- Accruals
- Debt to Equity

Robust Investment Process – example NN (L) Health Care

Expand Universe

The investment universe is expanded from 160 benchmarks stocks to 300 Health Care stocks

Select Best Stocks

Using 40 features the best stocks per industry are selected, using an optimizer that accounts for risk, return and transaction costs

Determine Size Positioning

Based on spread information a preference for smaller or larger stocks id chosen

Evaluate and Adapt

Evaluate Performance Attribution and review and adapt feature selection

Robust Portfolio

Portfolio of 100 stocks, taking intended risk while limiting unintended risk

ESG integration – example NN (L) Health Care

ESG as risk mitigator

Compliance to industry standards on:

ESG in NN (L) Health Care	
Voting	✓
Engagement	✓
Exclusions	✓

ESG as alpha source - AI driven real time ESG data

◈ TRUVALUE LABS

An outside-in view

Structured according the SASB Materiality framework

Sources from news publications, trade journals, social media, and NGO reports

Using Tech to Bring ESG Data into the 21st Century

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Engagement and voting

The best way to encourage better corporate behaviour

We **engage** on behalf of our clients to **put their money to work** towards creating a better world and to maximise the value of their investments.

We engage on specific ESG targets in two ways:
1. **Controversy engagement** – focuses on companies that severely and structurally breach our norms-based criteria
2. **Thematic engagement** – focuses on themes that have a material impact on society and that we believe our engagement efforts can achieve beneficial change

Voting is one of the best ways for shareholders to **express their opinions about performance and strategy**. It encourages companies to change for the better and it plays an important role in holding management accountable to shareholders.

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Disclaimer

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